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**THE LOGISTICS SERVICE PROVIDER'S CAPABILITIES, THE
GOVERNMENT ADMINISTRATION, RESOURCES AND
COMPETITIVE ADVANTAGE TO THE PERFORMANCE
OF THE OPERATIONAL CROSS-BORDER LOGISTICS
BETWEEN THAILAND AND MALAYSIA**

By

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UUM
Universiti Utara Malaysia

**Thesis Submitted to
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ABSTRACT

The economic growth of countries with shared borders primarily relies on effective cross-border logistics operations as accelerated by the relevant parties. Therefore, it is pertinent to investigate the performance of the operational cross-border logistics (POCL) between Thailand and Malaysia, where operational limitations could be resolved. This covers the relationships between government administration (GA), logistics service providers' capabilities (LSPC), resources (R), competitive advantage (CA) and POCL. There is also a need to ascertain whether GA, LSPC and CA mediate these relationships grounded upon the Global Value Chains (GVCs), Resources-Based View (RBV) and Competitive Advantage (CA) theories. Data was collected from 181 logistics enterprise employees in both countries. All the constructs were processed quantitatively using the Partial Least Squares Structural Equation Modeling (PLS-SEM). The Smart PLS V3 and SPSS V21 were used for data analysis. The findings indicate that R has a positive effect on LSPC, CA and GA, whilst POCL is influenced by GA, LSPC and CA. LSPC has a significant effect on CA, whilst GA has a no significant effect on CA. In addition, GA, CA and LSPC act as significant mediators in the relationship between R and POCL. These results provide straightforward recommendations for enhancing POCL which highlight the important roles of LSPC in service and innovation capabilities, and GA in trust and reliability for cross-border operations. In terms of resources, the focus is on how resources can be properly managed to achieve more effective operations for cross-border logistics. The findings have theoretical implications on the GVCs, RBV and CA integrated in the model, given the approaches to minimize complexities with maximum value for the operations, and recommend unique strategies for providing high quality services with competitive prices. The study supports the context of cross-border logistics which is applicable for achieving high POCL in the current circumstance.

Keywords: cross-border logistics performance, resources, logistics service providers' capabilities, government administration, competitive advantage

ABSTRACT

Pertumbuhan ekonomi negara-negara bersempadan sebahagian besarnya bergantung kepada operasi logistik rentas sempadan yang efektif dan digiatkan lagi oleh pihak-pihak berkaitan. Oleh itu, adalah wajar untuk mengkaji prestasi operasi logistik rentas sempadan (POCL) di antara Thailand dan Malaysia, di mana sebarang masalah operasi boleh ditangani. Ini merangkumi hubungan di antara pentadbiran kerajaan (GA), keupayaan penyedia perkhidmatan logistik (LSPC), sumber-sumber (R), kelebihan daya saing (CA), dan POCL. Terdapat juga keperluan untuk menentukan samada GA, LSPC dan CA bertindak sebagai mediator di dalam hubungan-hubungan tersebut berasaskan teori Rantaian Nilai Global (GVCs), Pandangan Berasaskan Sumber (RBV) dan Kelebihan Daya Saing (CA). Data telah dikumpul daripada 181 kakitangan syarikat-syarikat logistik di kedua-dua negara. Kesemua konstruk dalam kajian ini diproses secara kuantitatif menggunakan *Partial Least Squares Structural Equation Modeling* (PLS-SEM). Smart PLS V3 dan SPSS V21 pula digunakan untuk menganalisis data. Dapatan kajian menunjukkan bahawa R mempunyai kesan positif ke atas LSPC, CA dan GA, manakala POCL pula dipengaruhi oleh GA, LSPC dan CA. LSPC mempunyai kesan signifikan ke atas CA, manakala GA tidak mempunyai kesan signifikan ke atas CA. Selain itu, GA, CA dan LSPC bertindak sebagai mediator penting di dalam hubungan di antara R dan POCL. Kesemua hasil dapatan ini secara langsung membawa kepada saranan untuk mempertingkatkan POCL yang menggariskan peranan penting LSPC dalam aspek keupayaan perkhidmatan dan inovasi, serta GA dalam aspek keyakinan dan kebolehpercayaan untuk operasi rentas sempadan. Dalam aspek sumber, tumpuan adalah ke atas bagaimana sumber-sumber boleh diuruskan dengan baik untuk mencapai operasi logistik rentas sempadan yang lebih efektif. Hasil dapatan menunjukkan implikasi teori ke atas GVC, RBV, dan CA yang dirangkumi di dalam model ini, berdasarkan pendekatan-pendekatan bagi meminimakan kerumitan dan memaksimakan nilai operasi serta memberi saranan strategi-strategi unik bagi menyediakan perkhidmatan berkualiti tinggi pada harga yang kompetitif. Kajian ini juga menyokong konteks logistik rentas sempadan yang boleh digunakan untuk mencapai tahap POCL yang tinggi dalam keadaan semasa.

Kata kunci: prestasi logistik rentas sempadan, sumber-sumber, keupayaan penyedia perkhidmatan logistik, pentadbiran kerajaan, kelebihan daya saing

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LIST OF ABBREVIATIONS

POCL	Performance of operational cross-border logistics
LSP	Logistics service provider
LSPC	Logistics service providers' capabilities
R	Resources
CA	Competitive advantage
GA	Government administration
LPI	Logistics performance index
RBV	Resource based view
SEM	Structural equation modeling
SmartPLS	Partial least square (statistical package)
SPSS	Statistical package for the social science



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CHAPTER ONE

BACKGROUND OF THE RESEARCH

1.1 Introduction

Logistics processes are prevalent in almost every circadian rhythm of human activity, whether directly or indirectly (Stock & Lambert, 2001). Logistics management is a part of the supply chain process defined as the planning, implementation and control of the physical flow of goods, services and related information from the point of origin to the point of use to meet customers' needs at a profit (Kotler & Killer, 2015; Stock & Lambert, 2001). In the context of border crossing, logistics activities make up several components of a whole system where both opportunities and threats could be presented at the same time (Slusarciuc, 2015). A variety of business strategies have also been put in place to ensure effectiveness in global distribution (Bhantnagar & Teo, 2009). This is because effective border crossing operations impact the results in terms of time and cost reduction. Thus, countries especially those with shared borders are more concerned about developing cross-border logistics operations (Mohmand et al., 2015) with the aim to increase potential and stability among them (Pengman & Kettapan, 2018).

However, effective cross-border trading operations are achievable with the readiness of logistics operators and sufficient resources to compete with rivals in the industries as the processes are relevant to various organizations such as importer-exporter, shipping agents, freight forwarders, banks, port operators and transporters (Malaysia Customs, 2018). Malaysia and Thailand appear to have the highest competitive streak in cross-border trade, with both countries having had simplified their cross-border trade business processes and secured the first and second ranking among the neighboring countries (The World Bank, 2019).

On the other hand, challenges await companies providing logistics service at the cross-border of Thailand-Malaysia (Melan & Sabar, 2013). This study thus intends to investigate the contribution of the performance of operational cross-border success

logistics between Thailand-Malaysia. The background and context of this study will be presented in next section.

1.1.1 Thailand export

The export-oriented economy in Thailand accounts for approximately 65% of the country's GDP. Manufactured goods make up 86% of the country's export including electronics (14%), vehicles (13%), machinery and equipment (7.5%), and food products. Additionally, 8% of the entire shipment consist of agricultural goods mainly rice and rubber. The Bank of Thailand (BOT, 2018) reported 10 major Thailand export partners in 2017 namely China (USD 67.20 billion), Japan (USD 49.85 billion), the United States (USD 38.12 billion), Malaysia (USD 20.35 billion), Vietnam (USD 15.03 billion), Singapore (USD 15.02 billion), Indonesia (USD 14.93 billion), Hong Kong (USD 13.75 billion), Australia (USD 13.53 billion) and South Korea (USD 11.72 billion). Thus, Thailand's economy depends heavily on export and manufacturing industries, with the service sectors serving as the most significant contributors to Thailand's continuously expanding economic value (Fiscal Policy Office [FPO], 2018).

The amount of Thailand export has continuously increased due to clear direction and supporting activities. The country aims to be the logistics hub in South-East Asia. Therefore, developments of logistics system and trade facilitation have been conducted to increase cost efficiency, customer responsiveness, reliability, and security, and to create value-addedness in logistics and other supporting industries (Office of The National Economic and Social Development Board [NESDB], 2018). For instance, in 2008, Thailand lessened the time spent for cross-border trade by installing an electronic submission system of customs declarations and used different agencies for simultaneous verification of data. In 2009, the upgrading of the Electronic Data Interchange (EDI) system in Thailand resulted in a reduction of time spent and number of documents required for import-export (The World Bank, 2018).

In 2007–2011, Thailand took a more explicit direction in promoting the country to be the hub of South-East Asia logistics and conducted many logistics system development projects (Limcharoen et al., 2017) implemented by Thailand's Logistics Development Strategy (2007-2011). This strategy led to a world-class logistics system supporting Thailand for trading and investment in the Indochina area. In addition, the Thai

government is also expected to streamline trade facilitation, increase efficiency, improve customer responsiveness, reliability, and security, and create value-addedness for the logistics and other relevant industries (NESDB, 2018). Furthermore, the National Single Window (NSW) was established during this period since the Ministry of Information Technology and Communications developed the e-Logistics into a central system for the linkage of information between government and business in providing import-export and logistics services (Raktham & Keawkitipong, 2011).

The growth in Thailand export is driven by logistics and the establishment of an information system to facilitate trading across borders or the establishment of the Special Economic Development Zones (SEZs) for the advantages of investors interested to invest in these areas. The concept of SEZs has been widely studied in many countries to attract investment and foster economic growth and development (Walsh, 2013; Sigler, 2014), with several thousand individual zones and more than 100 countries around the world (Farole & Akinci, 2011). Thailand is one of the countries that conducted the SEZs at border areas including Kanchanaburi which is connected to Myanmar; the area borders at Chiang Rai, Mukdahan, Nong Khai and Nakhon Phanom which are connected to the People's Republic of Laos; the border post at Sa Kaeo which is linked to Cambodia, and the borders at Songkhla and Narathiwat in southern Thailand which are connected to Malaysia. At present, distribution centers and labour-intensive industries are beginning to invest in these countries. Therefore, the investors can conveniently access labour, distribute goods to neighbouring countries, and import goods including raw materials or parts from neighbouring countries to Thailand (Office of The Board of Investment [BOI], 2015). Therefore, the intense concentration in cross-border logistics would bring more potential and competitive advantage for international business.

1.1.2 Cross-border trade in Thailand

With outstanding commitment and clear direction to level up the economy, Thailand became among the top ten countries that had improved ease of doing business in 2017, which means that the trade environment and condition are more effective for starting a business for local firms. The intentional implementation of cross-border development in Thailand drove the country to be on the highest list for trading across borders among five neighbouring countries. The country was also ranked 59th in the

world ranking for cross border trade in 2017 (The World Bank, 2018) and 21st for ease of doing business in 2019 (in 2018, the country was ranked 27th) (The World Bank, 2018; The World Bank, 2019). This implies that it is difficult for countries to run a business efficiently and be in the highest rank without supportive regulation from governments to administrate and facilitate commercial collaboration together with the private sector. Table 1.1 shows the ranking of Thailand and its border countries in terms of ease of doing business and trading cross-border between 2017 and 2019. The table significantly illustrates that Malaysia and Thailand are doing well in supporting the economy of both countries. Nevertheless, another three countries including Myanmar, Lao PDR and Cambodia still need more development. The increasing efficiency and potential of cross-border logistics in Thailand would positively impact the competitive advantage in neighbouring countries and make up their trade competencies, thus leading to a more robust economy among the ASEAN Economic Community (AEC).

Malaysia and Thailand appear to have the highest level of competitiveness in cross-border trade, ranking first and second in ease of doing business since 2017, as shown in Table 1.1. This is because both countries share a border that covers 647 kilometres, and their bilateral commerce is already the highest in ASEAN in terms of value (Parpart, 2016). Table 1.2 clearly illustrates that the Thai-Malaysian border trade averaged at THB 48.384.90 million in January–November 2018, accounting for more than half of Thailand's border trade (51.00 %) compared to the trade value with Cambodia, Laos and Myanmar.

Table 1.1

Economic ranking of Thailand and its border countries in ease of doing business and trading cross-borders in 2017-2019

Countries	Ranking number			Scores			Trading cross-borders rank	
	2017	2018	2019	2017	2018	2019	2018	2019
Malaysia	23	15	12	78.11	80.60	81.50	48	49
Thailand	46	27	21	72.53	78.45	80.01	59	59
Cambodia	131	138	144	54.79	54.80	53.80	115	118
Lao PDR	139	154	154	53.29	51.26	50.08	76	78
Myanmar	170	171	165	44.56	44.72	46.80	168	168

Source: World Bank Group (2017); The World Bank (2018); The World Bank (2019)

Table 1.2

Overall Cross-Border Trade Value with Thailand's Neighbouring Countries (Malaysia, Lao PDR, Myanmar and Cambodia) from January – November 2018)

Countries	Trade Value (THB: million)	Proportion (%)
Malaysia	525,667.99	51.00
Lao PDR	195,908.93	19.00
Myanmar	176,846.07	17.16
Cambodia	132,376.84	12.84
Total	1,030,799.83	100.00

Source: Department of Foreign Trade [DFT] (2019)

1.1.3 Cross-border trade between Thailand and Malaysia

Countries with a shared border have better chances of developing more substantial bilateral trade relations. Therefore, the borders have a significant positive impact on bilateral trade (Mohmand et al., 2015). Well-planned logistics activities at the cross-border could help increase the country's effectiveness and value of trade performance. In recent years, Malaysia and Thailand's trade values have been favourable with improved ranking in the Global Competitiveness Index 4.0 2018 edition at no. 25 and 38 respectively out of 140 countries (World Economic Forum, 2018). Their ranking improved because of the cost and complexity reduction they made in making it easier to trade across the border. Both countries have improved a lot in electronic submission

and processing of documents for import-export. Malaysia has strengthened its border infrastructure by upgrading the management system, expanding terminals and decreasing the cut-off time, and enhancing customs administration and inspections for cross-border operations (The World Bank, 2018).

Figure 1.1 shows the growing cross-border trade value for 2016-2018, in which the year 2018 recorded THB 525,667.99, and increase of 0.84% compared to the previous year i.e. at THB 521,267.79.

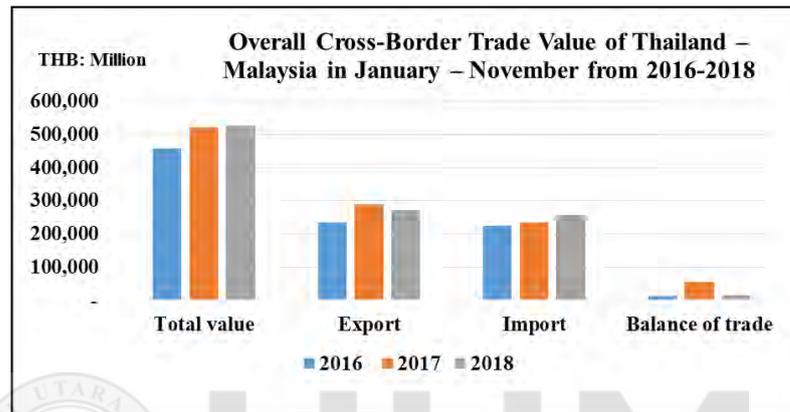


Figure 1.1
Overall Cross-Border Trade Value for Thailand–Malaysia in January–November from 2016 to 2018

Source: Department of Foreign Trade [DFT], Thailand, 2019

Eight border posts are operating cross-border trade in Thailand-Malaysia. The Songkhla province had gained the biggest value in trading which includes the Sadao, Padang Besar, and Ban Prakob borders. Other posts are located in different areas connected to Malaysia: Betong border in the Yala province, Sungai Kolok, Ban Buketa and Takbai borders in the Narathiwat province, and Wangprachan in the Satun province as presented in Figure 1.2. Moreover, Table 1.3 shows several Thai customs in four southern Thailand provinces with the estimated trade values from 2016–2017 and January–November 2017 compared to the same period for 2018. The Sadao border has continuously remained on the top lists of trade value, recording an increase of 7.68% from 2017-2018, compared to other border checkpoints. In addition, the Sadao - Bukit Kayu Hitam checkpoints mark the beginning of the Malaysia for North-South Express way and Federal Route 1, which the roads covered until the Singaporean border in Johor Bahru (Fau et al., 2014).

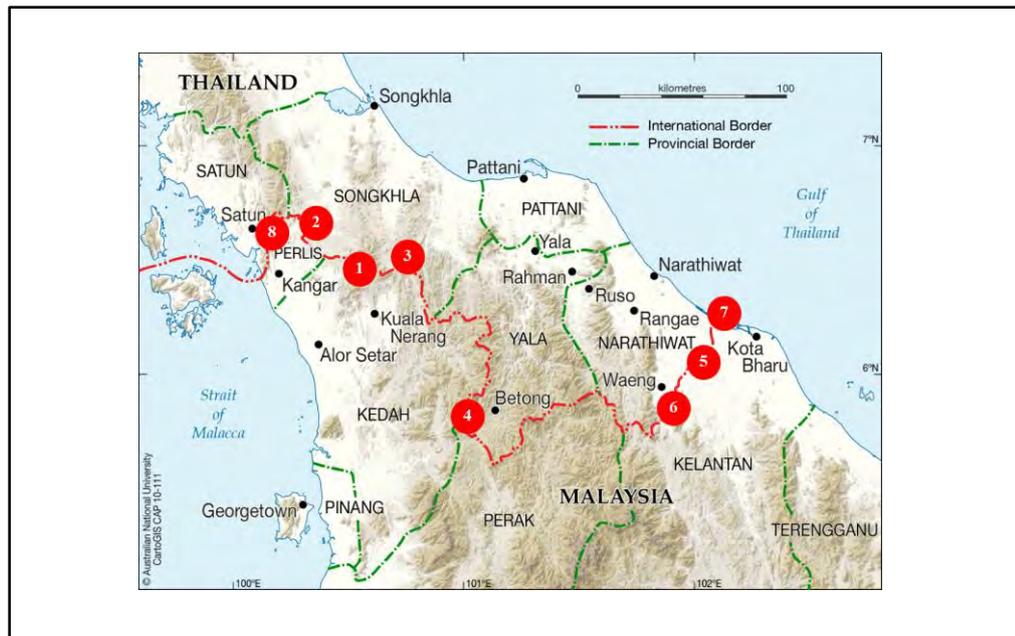


Figure 1.2

A map of Thailand – Malaysia borders

Source: Modified from DFT, Thailand, 2019 & Thaireefer group, 2022

Table 1.3

Trade value at Thai customs in four southern Thailand provinces from 2016-2018

Borders	2016 (THB: Million)	2017 (THB: Million)	2017 (Jan-Nov) (THB: Million)	2018 (Jan-Nov) (THB: Million)	%YoY 2017/2018 (Jan-Nov)
1. Sadao	332,788.76	348,824.22	320,825.68	345,461.58	7.68
2. Padang Besar	159,037.14	204,018.91	189,562.97	170,777.55	-9.9
3. Ban Prakob	886.85	1,488.95	1,362.90	1,566.20	14.91
4. Betong	2,780.07	4,171.64	3,777.86	3,402.71	-9.93
5. Su-ngai Kolok	3,179.71	3,180.59	2,983.21	2,708.35	-9.21
6. Ban Buketa	37.61	23.86	23.17	6.73	-70.94
7. Takbai	1,557.27	1,157.23	1,075.16	713.24	-33.66
8. Satun	751.29	1,028.84	1,001.63	538.37	-46.25
9. Wangprachan	253.60	396.09	335.04	377.04	12.53
10. Pattani	35.16	262.03	243.63	116.22	-52.29

Source: Department of Foreign Trade [DFT], Thailand (2019)

The maximum border trade value at the Sadao borders has both advantages and disadvantages. The positive impacts include the strengthening of the importance of international trade in each country, developing their trade competencies among

countries of the same economic regions, and increasing trade and investment in the cross-border areas. Furthermore, businesses will be expanded and the surrounding population will be employed, which will affect a better quality of life. Other advantages include the improvement of life standards and the socio-economic position of the regional communities as the local communities in the border area become more and more involved with cross-border cooperation (Slusarciuc, 2016).

Meanwhile, the more shipments and vehicles move through the border checkpoints, the longer the time would be taken for border crossing. Many problems generally come along with these delays, mainly an increase in transportation and trade cost, a decrease in industry competitiveness and economic development, and impacts on local communities, regions and nations. These delays also affect the environment surrounding the border areas, such as emissions attributed to vehicles and when congestion eliminates cross-border trips which in turn reduces customs income (Cornejo et al., 2017). This will be discussed further in the problem statement section.

Table 1.4
Current Malaysia and Thailand border crossing time

Malaysia	Border Gate		Opening Time		Closing Time		
	State	Thai Province	Malaysia Time	Thai Time	Malaysia Time	Thai Time	
Wang Kelian	Perlis	Wang Prachan	Satun	08.00 AM	07.00 AM	07.00 PM	06.00 PM
Padang Besar	Perlis	Padang Besar	Songkhla	06.00 AM	05.00 AM	10.00 PM	09.00 PM
Bukit kayu Hintam	Kedah	Dannok Sadao	Songkhla	06.00 AM	05.00 AM	12.00 PM	11.00 PM
Kota Putra	Kedah	Ban Prakob	Songkhla	08.00 AM	07.00 AM	06.00 PM	05.00 PM
Pengkalan Hulu	Perak	Betong	Yala	06.00 AM	05.00 AM	07.00 PM	10.00 PM
Bukit Bunga	Kelantan	Ban Buketa	Narathiwat	06.00 AM	05.00 AM	07.00 PM	06.00 PM
Rantau Panjang	Kelantan	Su-ngai Kolok	Narathiwat	06.00 AM	05.00 AM	10.00 PM	09.00 PM
Pengkalan Kubor	Kelantan	Tak Bai	Narathiwat	06.00 AM	05.00 AM	07.00 PM	06.00 PM

Source: riderchris (2018)

Government sectors in Thailand and Malaysia have continuously streamlined the efficiency of cross-border trade because they recognize that a significant part of the economy in both Thailand and Malaysia depends on the efficiency of the movement of the goods. As a result, Malaysia and Thailand have agreed to remove bureaucratic procedures at border crossings with the expectation to operate 24 hours a day because currently, the borders at Sadao – Bukit Kayu Hitam are opened for 18 hours daily, while there is a shorter operating time at other border checkpoints (Ministry of Foreign Affairs, Kingdom of Thailand, 2019). The Malaysian government is building two bridges which will connect Kelantan to the border to facilitate the movement of goods as stated by the then Prime Minister Tun Dr Mahathir Mohamad on 24th October 2018 during his visit to Thailand (Parpart, 2016; Elankovan, 2018; Jaafar, 2018; Palansamy, 2018). Table 1.4 shows the Malaysian and Thailand border crossing that allows shipping and carrier to move through the post. Effectiveness in cross-border operations will boost the macroeconomy of the countries and improve the life quality of the citizens in both countries.

1.2 Problem statement

Even though border trade between Thailand and Malaysia remains robust, there are some problems in their cross-border operations. Among others is the unresolved issue of delayed movements of the commodities across borders which results in long queues. Furthermore, it generated longer time spending for border crossing and increased cost of transportation and trade due to huge shipments with over a thousand tons of goods, numerous people movements, and high trade values. Therefore, to reduce the time for border-crossing, there is a need to improve the infrastructure links to make the process smoother and to eliminate the complexity of regulation, processes and procedures for operational cross-border. This is because the cooperation for cross-border can streamline the economic development of the participating countries. However, this cooperation mainly relies on the relationship between the associated countries (Slusarciuc, 2016). Accordingly, the two governments have also agreed to encourage the ease of cross-border operations and their logistics and transport capacities, as mentioned above (Parpart, 2016).

Previous studies revealed that the situations in border-crossing implementation in Thailand and Malaysia are not as smooth as it appears. These studies were in line with

many other studies focused on the problems of trading across borders in other areas such as movement of labour (Vaičiute et al., 2017), cross-border cooperation, formalities and documents needed (Studzieniecki et al., 2016). and government support (Pinto et al., 2017) especially in relation to logistics problems involving transportation, import-export and value chain (Vaičiute et al., 2017; Gani, 2017; Dong & He, 2018).

SCG Logistic (2015) described the border trade situation in Thailand from a logistics service provider perspective. The company indicated that cross-border logistics problems occurred in all four countries bordering Thailand. For instance, Myanmar is short of raw materials, most of which are aquatic animals. The border in the Ranong province has been facing improper road transportation and below-standard private shipment service providers. Trading with Cambodia has limitations in trade regulation and transport because lorry and trucks from Thai logistics companies are not allowed to operate in Cambodia.

Moreover, the unfair trading fee and undeveloped logistics infrastructures in Cambodia hinder cross-border trade. The problems of product loading/unloading and product value-addedness are apparent in border trade with Lao PDR, affecting delayed shipments and broken goods at the destination. Even trading with Malaysia, the most valued cross-border trade in Thailand, has faced barriers similar to other neighbouring countries. The major problems are associated with the operation of the logistics process. For example, the slow formality and inspection at the border point, and limited area at the cross-border checkpoint due to a substantial volume of shipments. Moreover, lorries and trucks from Thai logistics companies are not allowed to operate in Malaysia and exporters need to change the header from Thai plate numbers with Malaysian plate numbers, thus creating more delays.

In addition, the logistics operations in Southern Thailand have also been facing delays at the Sadao border. This is because the checkpoint is undergoing renovation. Another problem is caused by traffic regulation. Trucks spend 6 to 8 hours passing through Malaysia from Songkhla's Sadao district because there are about 500 trucks in the queue each day; drivers stay overnight thus causing damage to the goods particularly agricultural products (Samart, 2016). These problems add to the logistics service providers' challenges as a result of the congestion at the Sadao – Bukit Kayu Hitam

checkpoints i.e. more than the cross-border activities in other areas such as Padang Besar which has multimodal options (Jeevan et al., 2021). The unrest in the southern border provinces including Yala and Narathiwat which has intensified since 2004 has severely affected the development of the border trade and caused lack of confidence among investors (Amage et al., 2015). Additionally, the Wang Kelian - Wang Prachan checkpoints still have limited trade facilitation and transportation infrastructures (Wedchasitt, 2015). Therefore, the Sadao border in Thailand which is connected to Bukit Kayu Hitam in Malaysia plays a vital role in boosting the economy due to the tremendous flow of trades. However, it still faces logistics problems which should be improved to enable a more effective cross-border logistics operations.

On the other hand, 90% of all goods transported from the US to Mexico can be cleared at the border in 20 seconds or less (Robert, 1995). This significant difference in capabilities between both regions reveals that the logistics operations between Thailand and Malaysia are in dire need of improvement. According to the World Bank's Logistics Performance Index, Singapore has been ranked first in Asia since 2007 in terms of efficiency of customs clearance out of 160 countries, particularly in customs processes where 90% of electronics permit applications are cleared within 10 minutes and 90% of physical cargo within 8 minutes (Economic Development Board, Singapore [EDB, SG], 2019). Thailand and Malaysia hold the lowest scores in the customs aspect for global logistic performance in 2018. The countries scored 3.14 and 2.91, respectively, while Singapore scored 3.89 (The World Bank, 2018). This implies that both Thailand and Malaysia have low efficiency in the process of clearance specifically in the speed, simplicity and predictability of formalities by border control agencies including customs.

Many carriers are crossing the border at the Sadao and Padang Besar checkpoints because some merchandise from the Surat Thani province in Thailand must go through Penang's Malaysian port (Samart, 2016). In contrast, Canada could process documentation for more than 1.5 million motor carrier shipments before the freight even arrives at the borders, shortening the time spent to release the freight once it reaches the border (Robert, 1995). Issues with clearance result in petrol and time wastage, delays in the delivery to ports, postponements and additional expenses and document corrections, the loss of government credibility and reliability among

investors, dissatisfied customers, and the effects on the competitiveness of southern exporters.

In Malaysia, ease of trading across borders has remained favourable in worldwide comparisons (The World Bank, 2018). However, Malaysia's import barriers aim to protect the domestic market and strategic sectors and to maintain cultural and religious norms such as halal certification for the importation of meat and poultry which is regulated through licensing and sanitary controls. All importers must originate from facilities that have been approved by the Malaysian authorities. Pork products may be imported into Malaysia only if Malaysia's Department of Veterinary Services (DVS) issues a permit authorizing its importation. Each consignment of pork and pork products must be accompanied by a valid import permit issued by the Malaysian Quarantine and Inspection Services, Malaysia (MAQIS). Other permit requirements for other products have been announced in the same way onwards. As a result, there has been a key-driven economic and job growth in Malaysia in recent years (Export Gov., 2018). On the contrary, this could also cause more complexity in the carrying of goods between the countries which would take time to resolve.

Many factors could influence problems at the border crossing between Thailand and Malaysia as global logistics is abundant with uncontrollable factors (Stock & Lambert, 2001). Traders must also deal with a number of intermediaries that provide a variety of import-export services. Additionally, many facilitators or organizations are involved in activities at the border posts. This is because they are under the policies and regulations of each country which they must follow. The most important organizations are the export distributors, international freight forwarders, trading companies, and customhouses, which determine the operational cross-border processes and procedures. Indeed, different countries often have different approaches, such as the documents required for a permission, payment condition, formalities, and even the information system used to proceed cross-border operations (Thai Custom, 2016; Malaysia Customs, 2018; Jeevan et al., 2021). From the problems of cross-border operation as discussed above, low efficiency causes poor logistics performance which in turn causes many disadvantages and losses. Table 1.5 explains the problematic issues and implications due to poor cross-border logistics operations performance at the Sadao – Bukit Kayu Hitam's posts.

Table 1.5

Problematic issues resulting from the poor cross-border logistics operations performance at the Sadao – Bukit Kayu Hitam’s posts.

Problematic issues	Implications
1. Congestion	1. Eliminate cross-border trip
2. Slow formality and inspection at border points	2. Increase transportation cost
3. Involvement of many documents	3. Delay delivery
4. Stringent regulation	4. Loss of credibility
5. Pollution	5. Unsatisfied customers
	6. Reduce competitiveness in supply chain
	7. Decrease customs revenue and loss in tax collection
	8. Poor quality of life

Source: Author (2021)

However, international trade has involved a complex network of actors, both within and outside sovereign borders. Trade processes not only rely on government authorities and private firms but also on customs brokers, commercial banks, vendors, insurance companies and freight forwarders. Therefore, the complexity of the process has been resolved by establishing the Single Window to connect all stakeholders to digitalize the trade for more efficiency and time reduction in border compliance to both exporters and importers (World Bank Group, 2017). Figure 1.3 shows the importance of all stakeholders' connection by the Single Window.

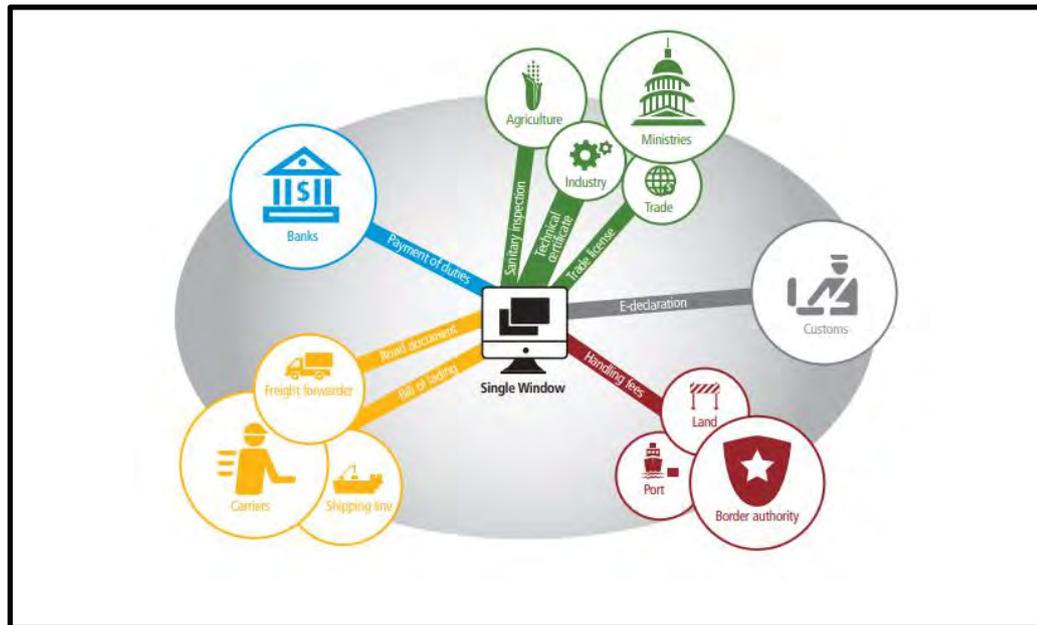


Figure 1.3

All stakeholders' connection by the Single Window

Source: World Bank Group, 2017

The cross-border trading situation between Thailand and Malaysia shows weakness in operational cross-border and logistics performance which is positively significant with export or imports (Gani, 2017). There are many reviewed studies focusing on measuring logistic performance. For instance, Limcharoen et al. (2017) measured Thailand's logistics performance based on the World Bank's Logistics Performance Index (customs, infrastructure, international shipments, logistics quality and competence, tracking and tracing and timeliness). The study found that even if Thailand's economy is attractive and growing strong, its logistics trend shows limited improvements. The study also suggested that Thailand's logistics need attention in terms of infrastructure, logistics, quality and competence, and tracking and tracing if the government want to compete and attract investors. A similar study by Rezaei et al. (2018) emphasized that infrastructure and services are considered the most critical criteria in the Logistics Performance Index. Even in recent years, logistics have gained importance due to the increase in foreign trade volume. A country must have a sustainable domestic and foreign trade system, and this trade must be supported by efficient logistics performance. A high level of country logistics, quality and competence promote port efficiency, which directly impacts the continuity of

economic activities as logistics is the most crucial factor in changing economic indicators (Schøyen et al., 2018; Çemberci et al., 2015).

Based on the overall process and problematic situation occurring at the Thailand-Malaysia cross-border trade, previous studies revealed that there are many parties concerned in the logistics process namely governmental sectors which serve as the policymaker for trade facilitation (e.g., Pinto et al., 2017; Valarezo et al., 2018; Herrera et al., 2014; Haughton & Isotupa, 2012; Teangsompong & Sirisunhirun, 2018; Vaghi & Lucietti, 2016; Gani, 2017), trade cooperation for agreement (e.g., Doan & Xing, 2018; Mohmand et al., 2015), import and export companies (e.g., Dong & He, 2018) and especially logistics service providers and third-parties including transportation, freight forwarder, and shipping firms (e.g., Chung et al., 2018; Zhu et al., 2018; Haughton & Isotupa, 2012; Vaghi & Lucietti, 2016; Gani, 2017) who are the direct users of cross-border.

Nowadays, the environment of worldwide trade has become more digitalized. Training and communication in trade facilitation are concerned with supporting trading experts to be more capable of taking advantage of electronic systems. About 85% of training is regularly provided to customs clearance officials (The World Bank, 2019). Therefore, the government is directly involved in the performance of cross-border operations as a policymaker. Customhouse brokers are mainly concerned with this activity because they are the key parties responsible for ensuring the proper movement of import-export products and the accuracy and competencies of related documents (Stock & Lambert, 2001). They require license approved by the customs as well. Thus, the training provided to them would be one of the necessary actions to achieve the goal of trade facilitation (The World Bank, 2019).

The service providers also serve as intermediaries between the point of origin to the end of consumption. Most end-users make decisions for outsourcing and use the logistics service provider to operate their business because of the decision to reduce operating costs related to shipping frequency, shipment sizes, transportation costs, and discounts (Kumar et al., 2013). The concept of outsourcing has been applied for a long time as indicated by Loh and Venkatraman (1995) who investigated the benefits, risk, and performance implications of information technology outsourcing. It was found that the concept of outsourcing consequently boosts performance as outsourcing

significantly influences firm performance with a moderate cost structure. One main advantage of using a third party for logistics cross-border is cost reduction (Leung et al., 2002; Ongkunaruk & Piyakarn, 2011). The higher the Logistic Service Provider Capabilities (LSPC) the greater the Cross-Border Logistics Performance (CBLP), which would ultimately generate large trade for both countries (Bakar & Jaafar, 2016; Rahman et al., 2014).

The resources were also found to have a significant relationship with LSPC (Yang et al., 2009), especially in terms of international business according to the Resource-based View theory. As cross-border logistics is an international business, the resources should be mentioned namely knowledge access, business knowledge, and country knowledge in the context of border trade (Pinto et al., 2017). It should not only focus on the resources of the LSP, but also on the resources of the border. The majority of borders that are relevant to government sectors (i.e., the customs) are key for cross-border operations because they are the policymaker.

There are many studies focusing on logistics performance, even in the context of cross-borders especially with regards to the logistics service providers' capabilities which directly influence cross-border logistics performance (e.g., Gani, 2017; Limcharoen et al., 2017; Çemberci et al., 2015; Bakar & Jaafar, 2016; Roslan et al., 2015; Rahman et al., 2014; Banomyong et al., 2015; Lu & Lin, 2012; Chen & Zhang, 2018). However, very few studies had empirically explored the combination of factors which link the logistics service providers' capabilities. Although some published studies have addressed the relationship between resources and performance under the resource-based view theory which state that resources have a positive impact on firm performance (Yang et al., 2009), some researchers also revealed that the capabilities are vital sources of competitive advantage (Vaičiute et al., 2017) and show the role of competitive advantage in performance issues. The competitive advantage strategy is also applied in this study because the research findings would develop strategic management for LSPs to design a more effective workflow in their organization to improve cross-border logistics performance. The cooperative management approach is also significant. Operational cross-border logistics have two leading players namely the logistics service providers and the government who consistently work together in every aspect of border crossing. The cooperation management among organizations is perceived as more reliable in service options, time flexibility and trust, thus

establishing strong logistical relationships between all those concerned (Lendel, 2015). Therefore, the connection and relationship of all the aspects would lead to the achievement of superior cross-border logistics performance towards building considerable trade in the ASEAN economic region.

These motivate the researcher to study the logistics service providers' capabilities and government administration contribution to the performance of operational cross-border logistics in the Thailand–Malaysia border. Logistics service providers are the actual users for which businesses decide to outsource for the purpose of cost-saving and achieving effortless business operation. Therefore, the knowledge of border trade logistics will be extended in decision making for outsourcing and third party strategies that fit the context of border trade. In terms of the government, administration may result in flexible procedures and elimination of long waiting time before clearance, congestion at the border, and inefficient service deliveries, which in turn reduce transaction costs. In addition, the relationship between government administration and the LPS would be mentioned to extend knowledge.

The results from this research will also be practically advantageous because this activity involves continuous growth in the quantitative aspects of cross-border logistics performance, such as increasing trade value and the number of shipments per day. Moreover, from a qualitative perspective, it can be measured by user satisfaction. Therefore, the results would offer high value-addedness covering all stakeholders of cross-border logistics.

1.3 Research questions

- 1) What are the resources of the logistics service providers and government administration?
- 2) How do the logistics service providers' capabilities contribute to the performance of operational cross-border logistics between Thailand and Malaysia?
- 3) How does government administration contribute to the performance of operational cross-border logistics between Thailand and Malaysia?
- 4) How does Competitive Advantage (CA) contribute to the performance of operational cross-border logistics between Thailand and Malaysia?

1.4 Research objectives

Consistent with research questions, the general objective of this study is to determine the effects of resources, the logistics service providers' capabilities, government administration, and competitive advantage on the performance of operational cross-border logistics (POCL) in Thailand–Malaysia border's posts. Moreover, the research aims to propose the model for the contribution of POCL in the area of study which investigates the direct effects and interacting effect of the mediating roles of the key elements (GA, CA, and LSPC) on the relationship between Resources (R) and the POCL. The research also focuses on describing the association between the variables in the model that is related to the current situation which links to the descriptive research design. Therefore, the specific objectives of this descriptive study are as follows:

- 1) To analyze the influence of resources (R) on government administration (GA), logistics service provider capabilities (LSPC), and competitive advantage (CA) of the operational cross-border logistics between Thailand and Malaysia.
- 2) To examine the relationship between government administration (GA), logistics service provider capabilities (LSPC) and competitive advantage (CA) with the performance of operational cross-border logistics (POCL) between Thailand and Malaysia.
- 3) To investigate the influence of government administration (GA) and logistics service provider capabilities (LSPC) on the competitive advantage (CA) of operational cross-border between Thailand and Malaysia.
- 4) To evaluate the mediating roles of government administration (GA), competitive advantage (CA), and logistics service provider capabilities (LSPC) in the relationship between resources (R) and the performance of operational cross-border logistics (POCL) between Thailand and Malaysia.
- 5) To develop a model of the elements that affect the performance of operational cross-border logistics (POCL) between Thailand and Malaysia.

1.5 Scope of study

The scope of this study entails relevant players in operational cross-border logistics. The logistics service providers (LSPs) are examined in this research because they are recognized as critical players in cross-border operations. The capabilities focused on include logistics quality and innovation capabilities which promote cross-border efficiency. However, the LSPs' practices are under the rules and regulations specified by the government sector as policymakers. The customs are the authority for cross-border operations; hence, the focus will be on the perception of government administration (GA) related to the responsibilities of cross-border logistics operations, as perceived by the LSPs. The trade resources (R) of both the logistics service providers' capabilities and government administration are accordingly mentioned as they could be the drivers fostering the outstanding performance of the cross-border procedure. The relationship between the LSPs' capabilities (LSPC) and customs operations with existing resources is also studied to establish the performance of operational cross-border logistics (POCL). Moreover, the concept of competitive advantage (CA) creates sustainability through a highly localized process which is suitable for cross-border trading. All the investigated elements (R, LSPC, GA, CA) are proposed to develop a model for enhancing the POCL in Malaysia and Thailand's border checkpoints. The study area focuses on the Thailand-Malaysia border, specifically the Sadao border as this point typically gains the highest value of border trade in Thailand. This study nevertheless concentrates on the performance of operational cross-border.

1.6 Significance of the study

The operational cross-border of Thailand–Malaysia is quite complicated with complex processes and the involvement of many people, which can affect the efficiency and performance of cross-border trade. Therefore, it is crucial to investigate the root cause of border-crossing problems, especially at the Sadao border. The border post at Sadao is an important border in Southern Thailand, with many trucks and passenger vehicles going through Malaysia.

Many studies focused on how Logistics Service Providers foster the performance of cross-border logistics with a variety of logistics performance measurement indicators. In addition, some studies emphasized the function of the government related to border

trade improvement, such as providing training programs, investment in information technology to facilitate import-export, and initiation of trade infrastructure development projects which may involve high cost to improve the flow of cross-border operations. However, the researcher acknowledged that most empirical studies had overlooked the linkages outlined in this research in a single model. The current research investigates factors that influence the performance of operational cross-border due to the problem occurring in Thailand and Malaysia i.e. the processes and procedures in the operations. Additionally, no study had carried out in-depth investigations on the capabilities of government administration and logistics service providers and the existing resources that support their workflow.

1.6.1 Knowledge contribution

In the aspect of theoretical contribution, the findings from this study are expected to strengthen and enrich the operational performance of cross-border logistics. Moreover, the relationship between LSP capabilities, government administration, and resources would be vital in improving cross-border operational performance in terms of quantitative aspects such as increasing trade value and the number of shipments per day. In addition, the study may also help identify relevant training programs that can be designed to enhance the capabilities of the LSP and government administration.

The theories and concepts applied in this study aim to build approaches to improve the supply chain of the products effectively with the added value of efficient services provided by all the related parties namely the logistics service providers (transportation, shipping, freight forwarders and broker) and the government (customs and customs' broker). This is because the achievement of organizational goals depends on determining the needs and wants of the target markets and delivering the desired satisfaction more effectively than competitors. Thus, logistics plays a critical role particularly in carrying the product to the right place at the expected time (Stock & Lambert, 2001). This way, the logistics and supply chain management would be extended by a deep understanding of customer needs and expectations in using the service for border-crossing operations. Also, this research would be the first study that focuses on integrating relevant theories and concepts to investigate the relationship and factors that effect the performance of operational cross-border logistics.

For instance, the resource-based view theory may be thoroughly magnified in the context of international trade that intensely focuses on the resources involved in the cross-border logistics operation. This may aid in strengthening the resources and managing them to support every procedure running in the process.

Further, the results from this study may enable the expansion of the competitive advantage theory. Most of the studies applied this theory in creating international trade advantages (Porter, 1990). Some studies focused on generating benefits over the organization's competitors, leading to their sustainability in the market through differentiation and penetrating groups. Those results generally focus on the role of competitive advantage in the sustainability of business operations (Fensterseifer, 2009; Holdford, 2018; Othman et al., 2015). Moreover, some studies determined that logistics enhance competitiveness (Bhantnagar & Teo, 2009). There was no link to strategy throughout the supply chain that will be able to create value in terms of money and response to customer expectations as well as those involved in organizational management.

The current research program focuses on using the CA's theoretical concepts by considering the various elements that contribute to competitive advantage, combining the analysis of resources under the RBV theory that replenish the most superior products or services among industries. The concentration of the application of an LSP organization primarily responsible for providing international logistics services will be considered to create a new concept of CA, which had not been extensively studied. This research could be developed into a strategic framework for LSPs by considering all aspects of the market orientation, scope or capability for the adoption of service provider, conservative cost control and effectiveness of the organization. It is a response to the call to create competitive advantage in cross-border logistics service within the country, which will be able to further develop the competitive advantage of the trading partners and ultimately lead to regional border trade.

1.6.2 Practical contribution

This research is expected to contribute to cross-border practice procedures. In view of the service providers, efficient performance in operational cross-border would lead to the provision of more services and attainment of more profits, enabling all relevant organizations to grow sustainably. For instance, transportation services could make

more trips to carry goods at the appropriate time and reduce fuel usage for operations, which will save their cost and improve their ability to compete in the global market. In addition, the freight forwarders could manage more orders per day without complicated practices, thus reducing mistakes and increasing value and customer satisfaction.

In terms of government administration, cooperation between the government and the LSP could be established for a smoother flow of goods. The broker could be in a role to perform a more straightforward cross-border operation. Furthermore, the complexities, barriers and difficulty in the operations would be eliminated by chance that the key players can do more development and education to improve their capabilities. In addition, an efficient operation will support global market expansion although currently the demand for cross-border operations service in Thailand and Malaysia mainly comes from firms sourcing raw materials, parts or assemblies. Nowadays, many organizations have a significant and growing presence in resources and demand markets outside of their country of origin (Stock & Lambert, 2001). Therefore, in the future, customers or importers and exporters will receive high-quality services from all providers. The logistics providers would offer strategic services that fit the context of border trade with more demand, and create easier and more efficient border trading such as via cross-border e-commerce, cross-border retailing, and tourism and services sectors.

1.6.3 Methodological contribution

There are two main methodological implications in the current study. The first is related to the data collection process which contains the samples in Thailand and Malaysia in order to receive the opinions from practitioners in both countries. The study also employs the cluster sampling method for collecting data which is most appropriate when the population is geographically divided, and of which is more effective, less expensive and lacks bias and error (Kumar, 2014; Adam et al., 2007; Zigmund et al., 2013; Sekaran & Bougie, 2016; Wilson, 2012). The data in this study was collected during the COVID-19 pandemic which made the collecting process harder because of travel restrictions and social distancing. Therefore, the current study employed a variety of methods for data collection and follow-ups to gather non-biased and non-erroneous data. Although the process of collecting data in this research had faced many

challenges, the researcher managed to overcome all barriers and obtained the necessary data for analysis to achieve the research objectives.

This study is also the first of its kind to employ the advance PLS-SEM analysis technique using the latest version of Smart PLS software for evaluation. In the PLS-SEM, the constructs are evaluated by using a reflective-formative hierarchical model for type-II (Ford, 2017) which is very rare in logistics performance studies. Furthermore, the current study employed the two-stage approach rather than the repeated indicators approach to validate the measurement and structural model. The usage of this approach is also very limited in logistics performance studies.

1.7 Operational definition

1.7.1 Performance of operational cross-border logistics (POCL)

The competence of a country in facilitating domestic and international trade (Stock & Lambert, 2001) entails better customer service, improved productivity, just-in-time modifications, and quick response (Kain & Verma, 2018) which are just several aspects of the whole system of logistics activities (Slusarciuc, 2016).

1.7.2 Logistics service providers' capabilities (LSPC)

Carriers, freight forwarders, forwarding companies, transporters, third-party transport services, logistics service suppliers, subcontracted logistics service partners, logistics operators, third-party logistics and so on (Costes et al., 2009) serve essential authorities in import-export activities and arrange the movement of merchandises from where they were produced to the customers (Stock & Lambert, 2001).

1.7.3 Resources (R)

Organizational capabilities that enable an organization to compete with rivals include its valuability, rareness, inimitability, being non-substitutable (Barney, 1991; Furrer et al., 2008; Fensterseifer, 2009; Mile, 2012; Holdford, 2018).

1.7.4 Competitive advantage (CA)

This refers to the ability of an organization to produce superior products or services in the market and outperform its competitors in the industry (Ding et al., 2019) by the input of specific resources (VRIN) (Cao et al., 2019).

1.7.5 Government administration (GA)

This refers to the pattern of government activities in several actions (Ezeani, 2006) including, for example, decision making, planning, advising, coordination and so on (Oyedele, 2015) which concern to the approaches of performing (Akindele & Olaopa, 2005).

1.8 Chapter overview

Through a clear direction and commitment on the economy of Thailand, which had promoted the country to become the logistics hub in Indochina, the higher amount of international trades and products coming in and out of the country had resulted in maximum trade value and contributed to the country's economic growth among neighbouring countries. Malaysia is one of Thailand's neighbouring countries which is ranked first in ease of doing business and cross-border trading compared to other countries connected to Thailand. Both countries account for the largest trade value in AEC with THB 525.67 billion (51%), especially the trade at the Sadao–Bukit Kayu Hitam border posts. This is contributed by the improved cost and reduced complexity, electronic submission, strengthened border infrastructures, customs administration, and inspection enhancement.

Meanwhile, the recent growth in global commerce and the congestion of products or services delivery between both Thailand and Malaysia had also caused drawbacks such as the expanded sizes and complexities of logistic operations as different countries have different processes and longer border crossing time (6-8 hours) due to the high number of vehicles (approximately 500 trucks/day), slow formality and inspection at border points (clearance process), strict regulations and pollutions. These problems cause lower effectiveness of logistics operations such as the elimination of cross-border trips, higher transportation cost (petrol and time), delayed delivery, loss of credibility, unsatisfied customers, reduced organization competitiveness, decreased customs revenue, and poor quality of life for local people.

The replenishment of logistics performance of operational cross-border in the context mentioned above is related to two major parties. The first is the logistics service providers (LSP) who are responsible for border-crossing operations and reducing cost and risk of processes. The other party is the government i.e. the policymaker who

supports trade facilities, infrastructure, systems, and customs brokers and plays a role in trade cooperation and agreement. Managing organizational resources is the key to performing effective operations for border-crossing and for gaining national competitive advantage in the regional economy.

Therefore, the theories and concepts applied in this study are under logistics and supply chain management and competitive advantage, including the value chain, competitive advantage and resource-based view theories. Combining those factors under these theories would generate more value creation for the LSPs and authorized government, and more value delivery for the users that emphasize border trade value. As for practical contribution, this study provides beneficial information for creating new approaches to trade cooperation between government and users, which help to eliminate complexities, barriers and difficulties in cross-border operations. Moreover, practitioners would be able to develop approaches for more education and training to support the operations. The global market will also be encouraged by increasing demand from other business types such as retailing, e-commerce, tourism, and so on. This will ultimately lead to regional border trade via productive operations of cross-border logistics.

Chapter Two will present the literature review on the main variables i.e. the determinants of value chain and supply chain, logistics performance, operational cross-border, logistics service providers, government administration, resources, and competitive advantages. Chapter Three will explain the research framework for this study, and the relationships among the key variables and the proposed hypotheses for the study. The chapter will also present the research methodology, research design, measurement of variables, data collection process, sampling design, method of data analysis, and measurement model analysis. Chapter Four will present the study's findings, the specific outcomes of the study, and the hypothesis testing results. Finally, Chapter Five will summarize the study by providing the conclusion and recommendation. The summary of the study is highlighted in this chapter, along with the concluding findings that lead to the achievement of the research objectives. Detailed contributions to academia and its implication on industry practitioners are also explained. Finally, the limitations of the study is presented together with the recommendations for further research.

CHAPTER TWO

REVIEW OF EMPIRICAL STUDIES

This research aims to develop a model of the elements that affect the performance of operational cross-border logistics in Thailand and Malaysia's border posts. It is done by analysing and synthesizing relevant theories, concepts, documents and empirical studies. Thus, this chapter begins by presenting some of the concepts of the value chain of international trade on cross-border logistics. Next is a discussion on previous literatures on logistics service providers and their capabilities to understand the fundamentals and overview of cross-border logistics in an extensive context. Finally, this chapter also demonstrates cross-border logistics activities along with concerned parties such as logistics services providers and government administration that may affect the performance of cross-border logistics operations.

Further explanation is presented on other elements and their connection with the performance of cross-border logistics operations. The discussion is underpinned by the value chain theory, resource-based view theory, competitive advantages strategy and cooperative management approach.

Finally, the backgrounds of all concerned elements and empirical studies are synthesized to build a conceptual framework for further examination on the logistics service providers and government administration. The literature review consists of six aspects as follows:

- 2.1 Global value chain
- 2.2 Overview of the performance of cross-border logistics
- 2.3 Overview of logistics service providers
- 2.4 Government administration in operational cross-border
- 2.5 Resources
- 2.6 Competitive advantage
- 2.7 Theoretical Underpinning of the Study

2.1 Global value chain

2.1.1 Importance of supply chain

Businesses have been competing to take advantage of the opportunities to offer goods or services that fulfill the needs of consumers with the best offerings within the organization's time and expense cap. At the same time, new generation customers expect their needs to be fulfilled. Most of them alternatively decide based on acquired information, their own experiences, and the experiences of others. Therefore, the efficiency of internal administration and management, together with effectiveness in responding to consumers' needs, should be examined.

Many contemporary management tools and modern business strategies have been considered as options for supporting organizational performance and fulfilling customer requirements. Some businesses concentrate on marketing perspectives as the concept of mixed-marketing is well known as an effective tool for ensuring smooth running business operations among highly competitive organisations. For example, the retail mix has always been applied with a close relationship with customers (Bult et al., 2018) or innovative technologies that lead to customer recognition of their shopping experiences (Foroudi et al., 2018). However, even though numerous businesses are doing well in offering products or services to meet customer expectations, some of them still face uncontrollable costs, limited resources and a slow adaptation to the changes of business environments, causing them to fail in the end.

The revolution in each era has forced organizations to increase their capabilities in managing internal and external expectations for goal accomplishment. Vendors and service providers are required to have good practices in every process and procedure, from upstream to downstream, where products and services are delivered to consumers. The risks involved in supply chain are known as Supply Chain Risks. They have received significant academic and industry attention due to globalization and outsourcing which typically lead to a huge broadcast of Supply Chain Structure among different countries and continents (Chung et al., 2018). Similarly, the concept of supply chain management has also been widely used in every business and has become a necessary tool for value creation. Also, companies can improve their organizational environment or cost performance by implementing logistics practices from upstream

to downstream in the supply chain (Graham et al., 2018). Understanding supply chain management can bring economic benefits to an organization from cost structure analysis (Ongkunaruk & Piyakarn, 2011) and improve operating efficiencies in cost reduction from using third party or outsourcing strategy implementation (Kumar et al., 2013).

The concept of supply chain management has been an essential factor for companies recently and has been widely applied in every industry, including the construction sector. The supply chain consists of all firms and organizations which contribute to the delivery of high-quality projects or services to the project owner (Benton & McHenry, 2010).

2.1.2 Concept of supply chain management

Many academicians defined the concept and advantages of supply chain management differently, for instance, in terms of flexibility, speed and empirical abilities (Stock & Lambert, 2001).

There are several significant differences between the above definition of supply chain management and the council of logistics management's description of logistics. First and foremost, supply chain management is the management of eight critical business processes namely:

- 1) Customer relationship management
- 2) Customer service management
- 3) Demand management
- 4) Order fulfilment
- 5) Manufacturing flow management
- 6) Procurement
- 7) Product development and commercialization
- 8) Returns

Supply chain is related to a broad spectrum of functional areas. It concerns the management of goods and services from raw material suppliers at various tiers to the product delivery to the end-users within the organization. Supply Chain Management is also related to inbound and outbound transportation or lodging warehouse, inventory control, procuring and supply management, forecasting production planning and

scheduling, ordered process, and customer services. Supply chain management includes all activities related to the movement of goods from the raw materials stage to the end users/customers (Choudhary et al., 2018).

Figure 2.1 illustrates the integration of key business processes, from raw material suppliers to the end-users, entailing the provision of products, services, and information that add value to customers and other stakeholders.

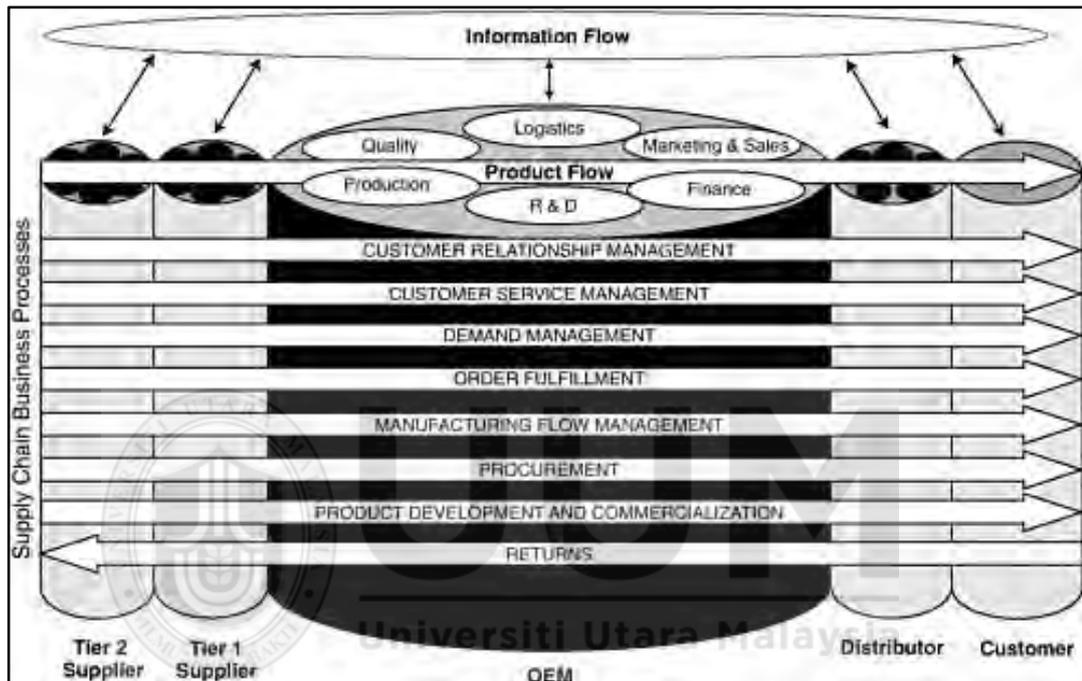


Figure 2.1

Supply Chain Management: Integrating and managing business processes across the supply chain

Source: Stock and Lambert, 2001

There has been very little effort to identify specific supply chain members, the fundamental processes that require integration, or what management must do to manage the supply chain successfully. The SCM framework encompasses the combination of three closely interrelated elements i.e. the structure of the supply chain, the supply chain business processes, and the supply chain management components, as shown in Figure 2.2

The implementation of SCM involves identifying critical supply chains members, processes that need to be connected with each of these vital members, and the type or level of integration that applies to each procedure.

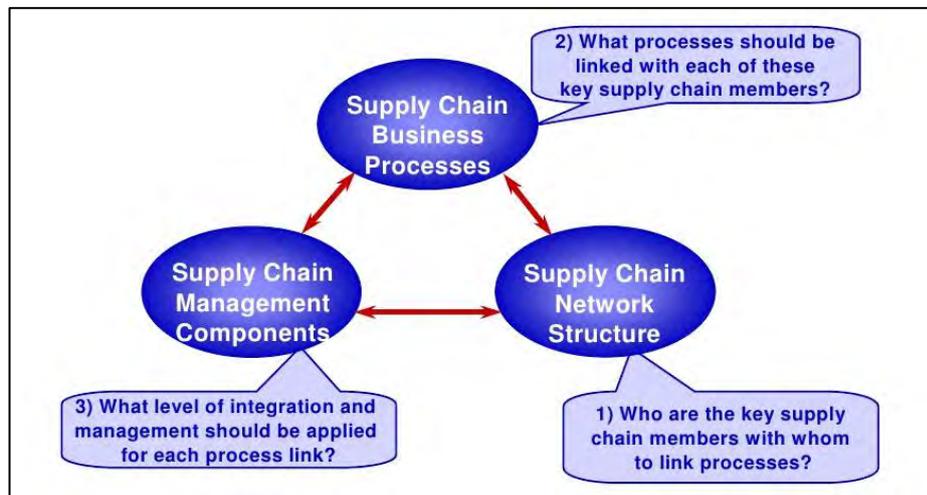


Figure 2.2

Supply chain management framework: Elements and key decisions

Source: Stock and Lambert, 2001

One key element of managing the supply chain is explicit knowledge and understanding of how the supply chain network structure is configured. The three primary structural aspects of a company's network structure are: (1) the supply chain members, including all companies or organisations with whom the focal company interacts directly or indirectly through its suppliers or customers from point-of-origin to point-of-consumption to make a very complex network more manageable, (2) the structural dimensions of the network, which are essential for describing, analyzing, and managing the supply chain including the horizontal structure and the vertical structure, and (3) the different types of process links across the supply chain consisting of four major business processes. The first one is the Managed Process Links that the focal company finds essential to integrate and manage. The second one is the Monitored Process Links which are essential to the focal company, and are integrated and managed appropriately between the other member company. The third one is the Not Managed Process Links in which the focal company is not actively involved, and are not critical enough to use resources for monitoring. The final process is the Non-Member Process Links which often affect the performance of the focal company and supply chain. The intercompany business process links are illustrated in Figure 2.3.

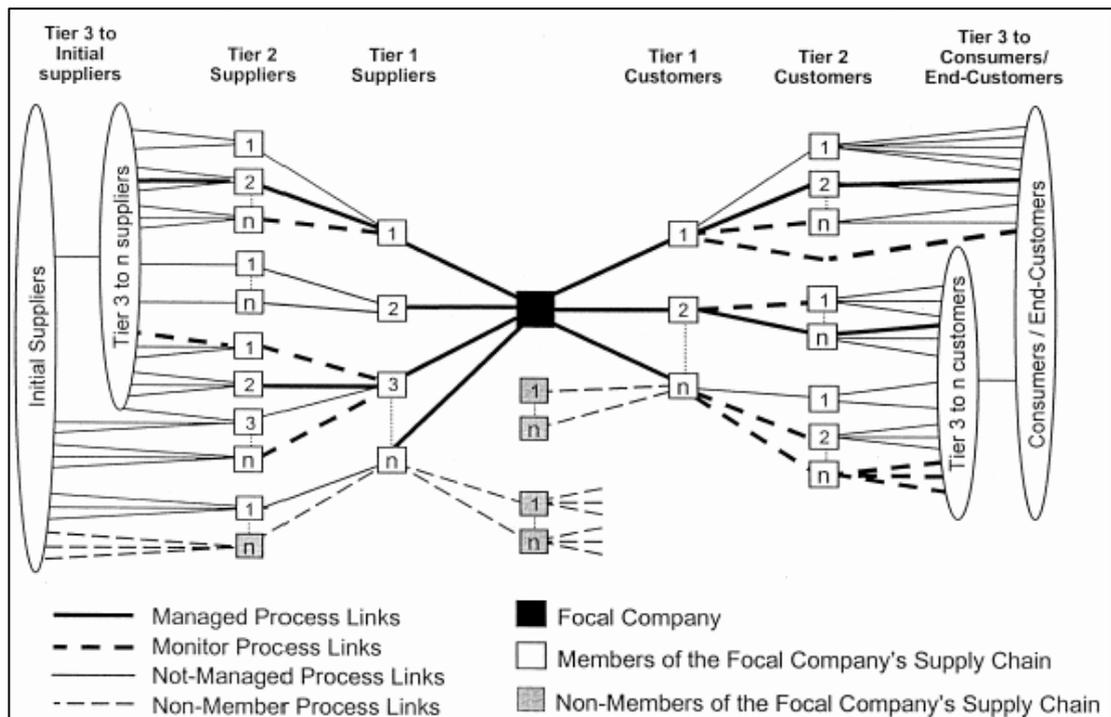


Figure 2.3

Types of intercompany business process links

Source: Stock and Lambert, 2001

The concept of supply chain management is closely related to the management of cross-border logistics operations. The processes that occur at the border post are parts of the supply chain. It is halfway between the sender from one country of production to the recipient who is in the destination of another country through the supply lines managed between the key players from both countries. There are many sub-activities throughout this line. The major players are the related organizations or departments that require an effective internal management approach to increase the overall performance of this supply line.

However, effective internal management throughout the supply chain may not be sufficient to conduct a business amidst regional competition. It also requires the creation of an advantage over national and international competition. Therefore, the “Value Chain” concept has become an essential tool for the organization to achieve the goal, as discussed below.

2.1.3 Importance of value chain

The manner in which a product is manufactured and the new service offerings have changed significantly to provide the company with the goal of satisfying consumer demands with the best value when accepting order from consumers, instead of putting the original product on the market without buying order. The dimension of the divergence on consumer behaviour allows marketers to focus on adding value to the products and services to achieve the highest satisfaction for consumers. Due to that, the concept of Value Chain developed by Michale E. Porter from the book *Competitive Advantage* is accepted as a management tool that drives the understanding of product and service value creation from the first step of resources input until the finished products are launched.

The principles of Value Chain are different from those of the Supply Chain. Supply chain management emphasises raw material management or resources within the organization that creates maximum efficiency until the consumer receives the product or uses the service. Meanwhile, the concept of value chain focuses on delivering value to the consumer in every process, starting from raw materials intake to the end of the supply chain process. Firstly, the “pull strategy” is relevant to drive customers to realize the needs of the product because this strategy focuses on communicating with the end consumers to perceive and recognize needs. The marketing tools support the pull strategy, such as branding and brand image to increase sales. In contrast, the “push strategy” is more considered about the effort for promoting products or services through distribution channels. This strategy is usually implemented because the company already has a relationship with the distribution channels.

The significance of the theory and the concept of the value chain have motivated many academicians to study the value of products and services throughout the supply chain. For example, in the tourism industry, customer satisfaction is created by increasing value from tour operators as pre-delivery support. In the process of tourism delivery, the value is also enhanced by transporters and third parties such as hotels and travel agents who carry travel packages as post-delivery support (Yilmaz & Bititci, 2006). Likewise, in the manufacturing industry, the value chain analysis is a must because it increases value for the customer and the positive effect of relationship marketing perspective (Song et al., 2015). In addition, value-addedness contribute to functional

business development such as in research and development, marketplace value delivery, management information system, branding, financial perspective and after-sales customer service to strengthen the value creation of the product (Yang et al., 2013).

2.1.4 Concept of value chain

McGee (2014) defined value chain as “the activities that a firm performs become part of the value-added produced from a raw material to its ultimate consumption”. Figure 2.4 illustrates the fundamental supply chain function and basic activities essential to carry the finished product or services to the final consumer. Throughout the path, the numerous activities in each business are differently implemented. Therefore, the value chain created by each firm appears as its value chain, or a part of the “supply chain”.

“Value chain” is identified as the practical activities implemented by firms to add value for their customers. Michael Porter, a professor from Harvard Business School, created this concept in 1985. The concept entails primary activities and supporting activities. Following these principles, products or services become more value-added because value is added to the products or services of the business in every movement of products in the value chain along with each activity. The value chain system management is a concept for optimising the chain that focuses on value maximization and cost minimization. The company must create the value from the implementation in their activities and subsequently keep that value. In addition, it is essential to ensure that the value created all over the chain should be more than the consequent value added in each activity.

Figure 2.4 illustrates Porter’s five generic classifications of primary activities concerned with the competition in the industry. Each of these can be separated into a list of particular functions that depend on the choices appropriated to the marketplace and the company's strategy. The description of these categories are as follows (McGee, 2014):

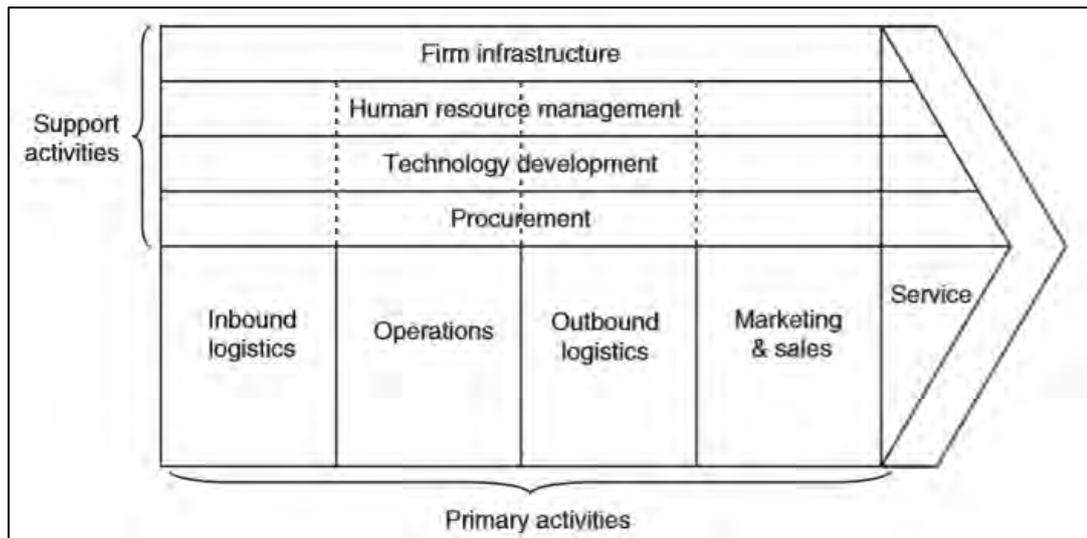


Figure 2.4

The generic value chain

Source: Porter, 1985

(1) Inbound logistics entail the work activities required to receive, store, and disseminate rights to the products such as material carrying, warehouse management and stock or inventory management.

(2) Operations entail every function in transforming the inputs into outputs, and the effective implementation of value-addedness which can be done from product machining, package design, assembly system, service, experimentation, and so on.

(3) Outbound logistics refers to all activities associated with collecting, storing, and physically distributing the output. It is a significant element to either generate value or develop differentiation. Numerous companies take this activity to operate along with the strategies of distribution as it has been proven that outbound logistics is a leading source of competitive advantage. Incredibly, there is a recognition that more than half of value creation for most businesses appears nearby the final consumer.

(4) Marketing and sales are functions concerned with communicating products and services of the company to the target customers, motivating them to purchase via sales representatives, advertisement, sales promotion, and so on.

(5) Service refers to the enhancement of the features of the tangible products by way of contributions to the next buying, for example, providing after-sales service, product repair, and so on.

The upper section in the second part of the value chain associates all administrative functions (identified support activities) necessary for the business. They are labelled as procurement, human resource management, technology development, and firm infrastructure as explained in detail below:

(1) Procurement involves the intake of materials for processing whole activities. Even if this is under the authority of the department of purchasing, almost every staff in the company has a role in purchasing some resources. As a result, the procurement is usually low cost with numerous impacts on the firms.

(2) Human resource management refers to the acquisition of policies, practices, and systems required to influence employee behaviour, attitude, and performance (Noe et al., 2014). Its functions consist of recruitment, training and human development, rewarding system, and authorizing the staff in the firm.

(3) Technology development is associated with the media, operating systems, electronic devices, practical skills, and transforming inputs into outputs. There are two types of technology development. The first is scientific development which is concerned with the needed skills. The second is artistic development which is not generally perceived as it only supports limited activities such as accounting, procurement, and so on. In addition, the results may connect to an essential element in adding more value.

(4) Firm infrastructure is related to the functions of essential management, organization plan, finance, legal, external association, and so on, which encourage the implementation of operational aspects along the value chain.

2.1.5 The concept of global value chain

The production process patterns in world products have changed from the original, which focuses on vertical production or expansion of the business, to the stability of raw materials instead. The ability to control the distribution of products into the distribution of separated production in small parts has achieved maximum efficiency in various countries. Such patterns exist in the products and services that create value-added chains (Office of Industrial Economics [OIE], 2014). The increasing separation had caused the Global Production Networks or Global Value Chains to face relentless

competitive pressure to enhance customer value. A variety of business strategies have also been established in every firm for global distribution effectiveness (Bhantnagar & Teo, 2009).

The idea of doing things primarily in one country has changed. At present, the units of finished goods are generally the outputs produced by numerous countries. The value is added in each activity from the beginning to the end of the product's manufacturing. During the process of producing goods in the global value chain (GVCs), countries trade the products or services and make a deal with the procedure and connect works. Therefore, product and service imports are essential to product and service exports to be successful GVCs (The World Bank, 2019).

Figure 2.5 illustrates the value chain/supply chain/logistics management. The strategic business is used to create value in each activity that can be built before the beginning of the supply chain; the company must clearly understand the value expected by the customer to start sourcing and producing the product or service to respond to them. Throughout the supply chain in each activity, the cost must be minimized with maximum value. Customer's value can create those product and service attributes, value delivery, value communication, value production, value proposition, assets and core competencies, and value objective and strategy. The process of creating value in the supply chain is controlled by logistics management, which implements the effective movement and storage of related information, goods, and services from origin to destination.

Consequently, the value creation in every process would lead the business to be successful in responding to customer needs and returning enough value in the organization management. Although the companies have varying patterns in offering different products and services, they are implemented entirely based on the supply chain loop with various strategies to manage sub-activities to create value for consumers.

Many studies had focused on investigating the global value chain, with the purpose of reducing cost and driving efficiency in the business operation process. For instance, Claro and Claro (2004) investigated the coordination of business to business (B2B) cross-border supply chains using the case study of the green coffee supply chain. They

found that the cooperative business relationship emphasizes the efficiency of the supply chain through the cost reduction in international transactions. Figure 2.6 explains the cooperation of the concerned organization along the supply chain of the organic coffee industry. Figure 2.6 also presents the activity flow in the chain, which mostly occur at cross-borders: the more the activities, the more potential for problems and costs. The development of cross-border logistics performance therefore brings more competitive advantage among regional areas.

Grunert et al. (2010) studied the global supply chain of Danish pork to Japan. They found various operational complexities before the products are delivered to the final customer. Figure 2.7 shows the overall value chain of Danish pork to Japan, both domestic and international destinations. From the border operation process perspective, the processing trade relies on the flows of raw materials, components, finished products, order and product information, and payments among partners in the overall supply chain. The global supply chain is sometimes not about the flow of finished goods, the operational process of importing raw materials and input components tax-free, and exporting of finished products assembled from the raw materials and components, or called processing trade (Kang et al., 2018). Instead, it is about the overall supply chain. Therefore, effective and efficient flows of such materials, information, and payments among supply chain partners play a vital role in implementing the processing trade. The performance of operational cross-border is concerned with a place where the goods are inspected and allowed to flow.

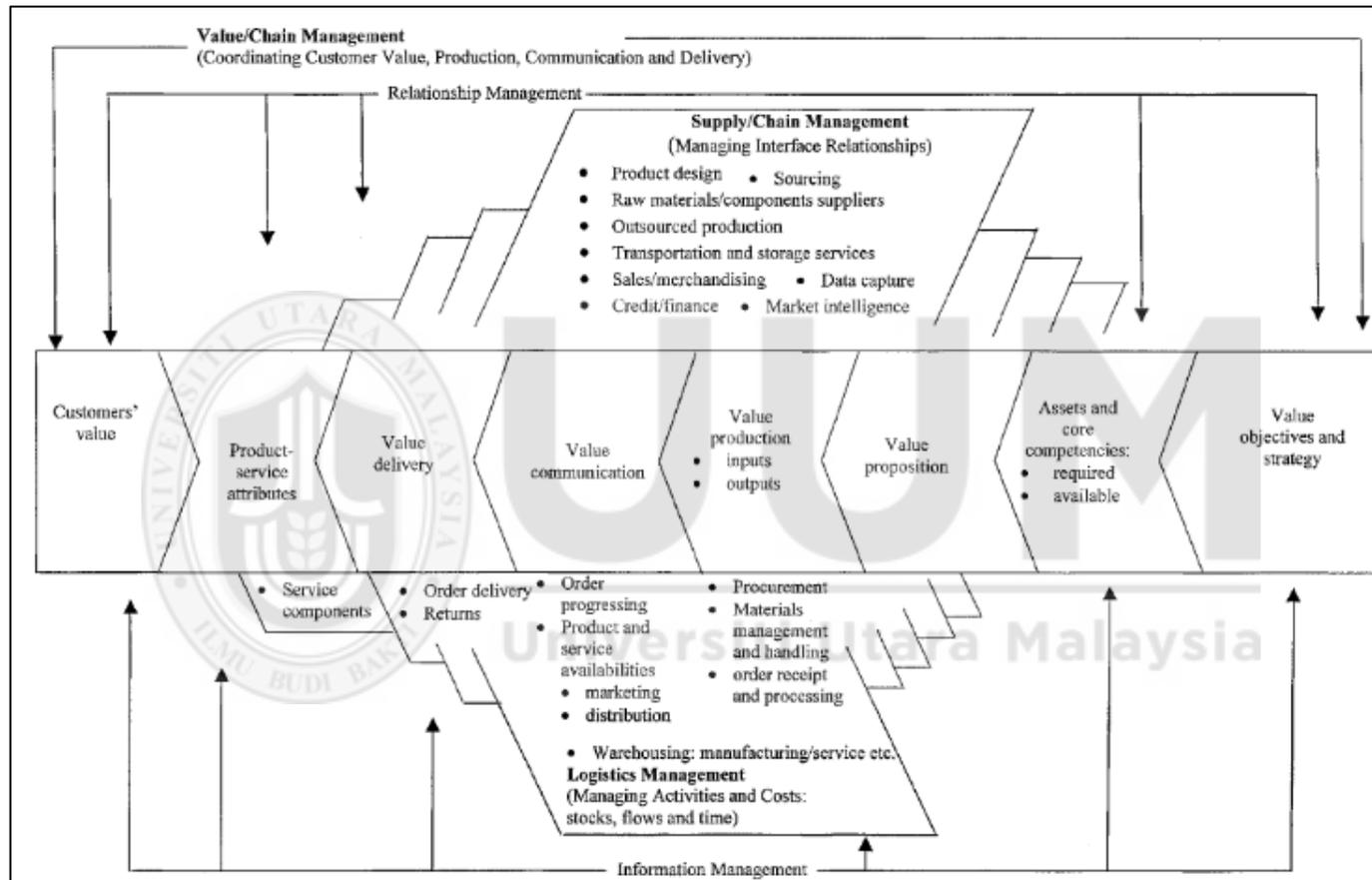


Figure 2.5

Value chain/supply chain/logistics management.

Source: Walters and Lancaster, 2000

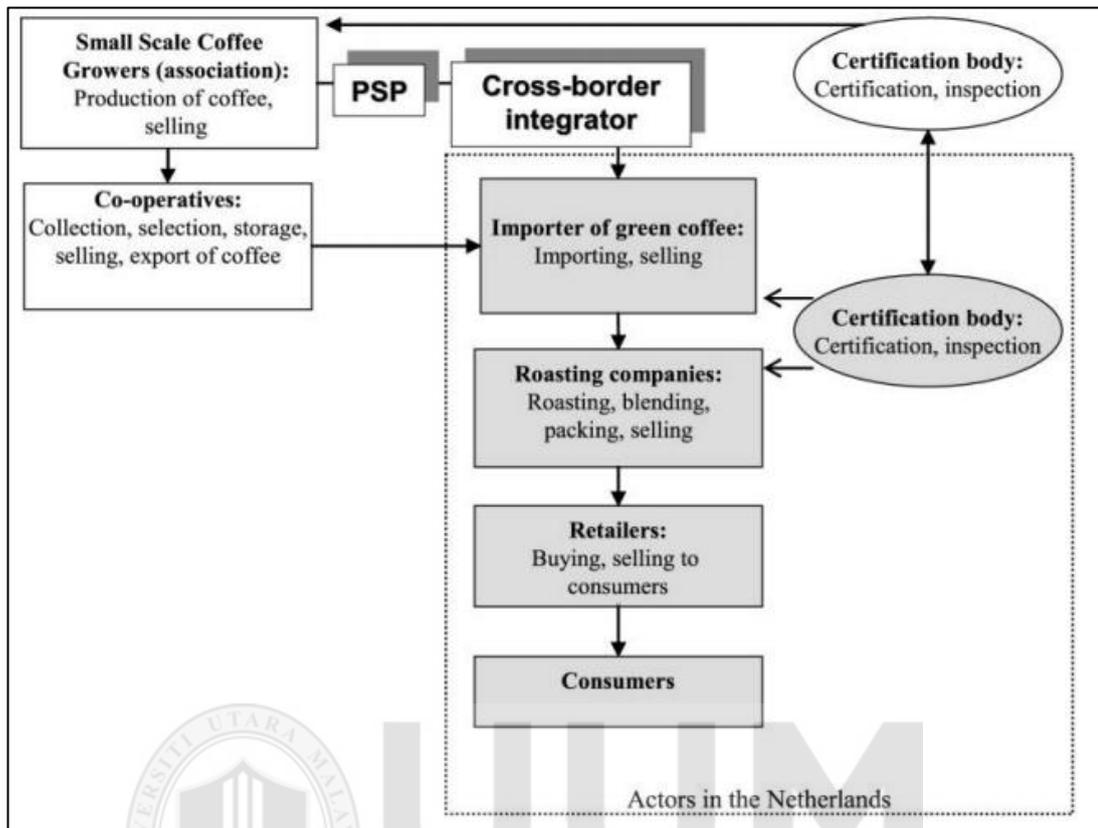


Figure 2.6
The chain of the green coffee model (PSP: processing service provider).
 Source: Claro and Claro, 2004

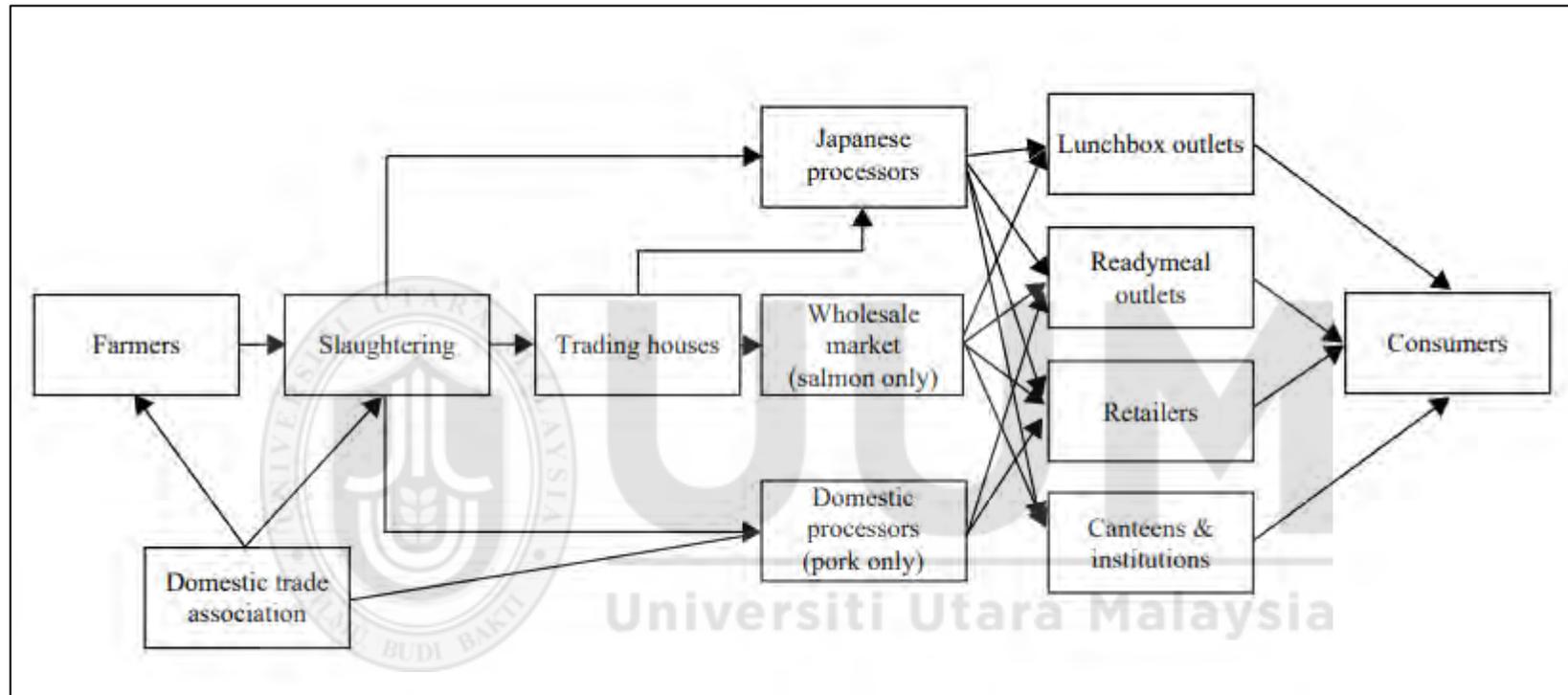


Figure 2.7

Value chain structure: Danish pork to Japan

Source: Grunert *et al.*, 2010

The supply chain of a business is not the only aspect that should be concentrated on. This study is also about operational cross-border logistics, and the government as a significant key to operational success. Effective procedures for government, therefore, raise the overall value chain in border-crossing. The chain of impact is schematically presented in Figure 2.8. The processes of public administration consisting of horizontal functions such as “financing” and “human resources management” are the primary conditions for activities implemented by line departments and agencies. The outputs of public administration are the inputs of functions in the processes. For example, the output of ethical division is an ethical training session. This is also the input for the social security department (Dooren et al., 2012).

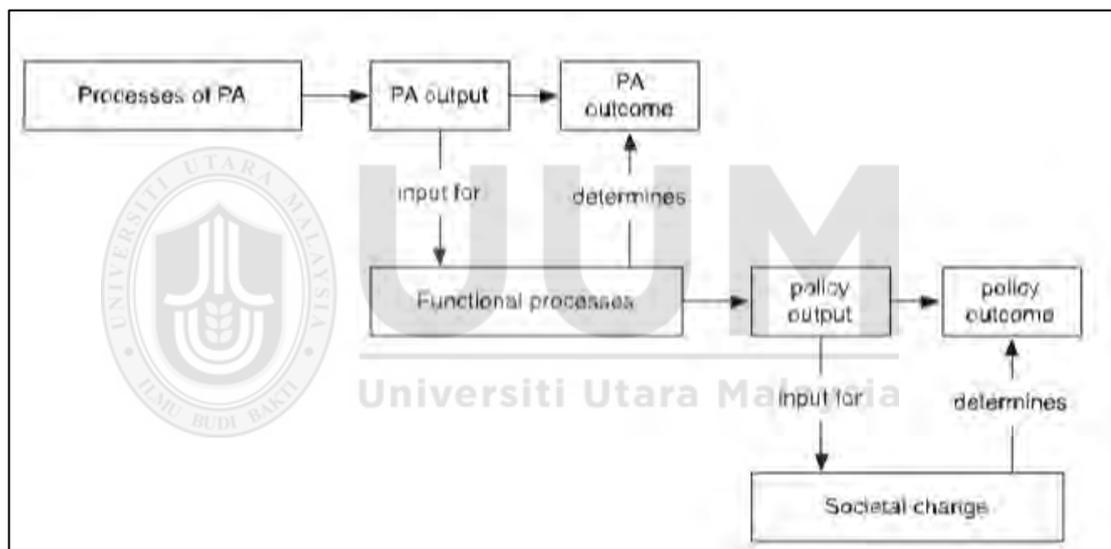


Figure 2.8

Chained approach to outcome

Source: Dooren *et al.*, 2012

2.2 Overview of performance of cross-border logistics

With increased economic competition worldwide, the concept of “Economic Integration” has begun to be implemented to increase potential and stability among countries in a geographic region (Pengman & Kettapan, 2018). Consequently, many researchers have identified ways to ensure the efficiency and effectiveness of all procedures and capabilities with concerned parties for trading. The organization then becomes involved in global operations. The logistical components are considered to

minimize cost and provide an acceptable level of service to customers (Stock & Lambert, 2001) to reach competitive advantage.

Doan and Xing (2018) identified the factors influencing trade efficiency i.e. the establishment of Free Trade Agreements (FTAs) including ASEAN, EU, and NAFTA that transformed the country into a more valuable economy and contributes positively to the efficiency of exports with the regional countries. Those factors consist of the rules of origin (ROO) which represent one of the significant barriers undercutting efficiency, and the Foreign Direct Investment (FDI) that plays a vital role in the promotion of exports and improvement of export volume. This finding is similar to the findings of Mohmand et al. (2015) who found six significant factors affecting the export environment namely: 1) GDP whereby the theoretical assumption is that the larger the country size, the more it would trade, 2) distance which captures transportation cost between the two countries whereby the greater the distance, the greater the transportation cost, 3) Regional Trade Agreement (RTA) which bolsters trade, 4) religion and language i.e. the cultural influence for both trading countries, and 5) border whereby countries with a shared border have stronger bilateral trade relations.

Therefore, low limitations in cross-border operations will usually have a positive impact on trading. The cross-border area has been considered as a source of opportunity too (Slusarciuc, 2016). Potential accessibility and border effects have also been explained as variables affecting market potential. For example, the improvement of road infrastructure should encourage more productive accessibility for border crossing, and the increase of consolidation of the single market would also enlarge the market potential (Olmedo et al., 2015).

In the context of trade logistics, logistics performance is an important aspect that determines a country's competence in facilitating domestic and international trade (Stock & Lambert, 2001). Thus, cross-border logistics is a significant operation of all logistics functions that enable a more straightforward trade between the countries with the point of origin to the destination where the end-users are. The importance of cross-border logistics is described in the subsequent section.

2.2.1 Importance of cross-border logistics

The processes of logistics are associated directly or indirectly with the whole circadian rhythm of human activity. In addition, logistics activities also impact society, industries, organizations and individuals. Therefore, issues involving logistics management have been widely studied especially cross-border logistics. Many academicians have specified the definitions of logistics as described below.

Kotler and Killer (2015) defined logistics as the planning, implementation, and manipulation of the physical movement of raw materials and merchandise from the point of production to the end-user to meet the customer's requirements at a profit.

Stock and Lambert (2001) defined logistics management as a part of the process in the supply chain which ensures that the storage of goods, services and related information are efficiently planned, implemented, and controlled from the starting point to the end point while meeting the customers' needs. This definition entails the movement of goods, services and information in both service sectors and manufacturing.

When conducting the flow of goods, materials, and services across the border, the operations occurring at the border area only involve several pieces of the entire systems of logistics activities in the global supply chain where the company could simultaneously acquire both opportunities and threats (Slusarciuc, 2016). For instance, the border area has a strong potential for knowledge transfer, but it also risks a variety of barriers under global standards that are inflexible. However, it would be worth handling cross-border trades in a well-managed way to ensure the smooth and efficient movement of all resources (goods, services and information) because it could maximize the organizations' success.

2.2.2 Type of cross-border operations

Various cross-borders operation types have been identified in studies that focus on cross-border operations in different areas and purposes. Thus, many activities happen during operations cross-border, depending on the types and objectives of the implementation. The following statement explains the activities for each category of cross-border operations including cross-border tourism, cross-border eCommerce, cross-border mobility, and cross-border logistics.

Firstly, cross-border tourism refers to the impermanent travelling of populations to the separate regions of two neighbouring countries, which encourage the growth of economies in these areas (Río et al., 2017). Therefore, organizations offering cross-border tourism are directly concerned with coordination between the National Tourism Administration (NTA) and the National Tourism Organization (NTO), which cover the national, regional and local levels. Therefore, government administration is mainly responsible for regional and local level tourism (Studzieniecki et al., 2016).

Improving “cross-border tourism” is almost a governmental role and cross-border operation such as border traffic and border formalities. For example, in the Polish-Russian borderland as studied by Studzieniecki et al. (2016), each area connected to both regions was allocated for cross-border tourism development which is divided into five areas in the Polish-Russian borderland including: (1) the frontier zone, where policies of government are strict to the development in tourism, (2) the administrative region i.e. the locality of official cooperation, (3) the Euroregions which affect the development of cross-border tourism because of the lifting of visa obligations, (4) the eligible area of the European Neighbourhood Instrument which focuses on determining the territory where EU-funded projects can be implemented, and (5) the local border traffic which is an essential part of the cross-border administrative region with activities for cross-border tourism development. The five points for cross-border tourism areas have effective service in the operating system of border traffic when there is strong government cooperation between the local and central units and to a certain extent, tourist companies from both countries at the regional and local levels.

Even though the appropriate system in cross-border tourism operation is advantageous in the perspective of tourism improvement based on the administrative cooperation units of government in centre and locality, from the standpoint of measuring tourism, customer satisfaction and tourism services value are also essential and influence positive impacts on the whole tourism supply chain (Río et al., 2017; Yilmaz & Bititci, 2006). The government should support border knowledge and attitude towards the border to create destination value and visitor loyalty. More excellent understanding of the visitor has a significantly positive influence on the visitors’ attitude towards the border destination, and the value of the border destination will be perceived. More

perceptions of the border destination value mainly influence tourists' loyalty in the border destination area and impact visitor satisfaction (Río et al., 2017).

The knowledge is necessary for the potential contribution of cross-border tourism, consisting of mobility, connectivity, internationalization and socio-cultural proximity, which the government is directly concerned with (Weidenfeld, 2013). A critical aspect of cross-border tourism is to measure the performance of providing tourism with different players for communication and coordination of their processes and activities. Thus, measuring and managing overall efficiency and effectiveness is necessary, especially the measurement of tourism products and services along the value chain because it can affect customer relationship management (Yilmaz & Bititci, 2006).

For cross-border ecommerce, it related to the increased usage of the Internet is generally associated with the disappearance of distance or at least the lower relevance of geographical distance (Herrera et al., 2014). People currently can shop for goods and services online which offer obvious customer advantages. Therefore, many countries take this chance to enhance their e-commerce system thus supporting the higher demand from countries worldwide, especially the market leaders in global commerce and e-commerce.

One example is the launch of the cross border e-commerce of Tmall Global in February 2014. Tmall Global is a platform for cross-border e-commerce that enables international products to enter the online retail market in China. Tmall Global is developing into the most extensive foreign goods shopping platform for Chinese consumers (Quian, 2019) and the European Union (EU). Cross-border e-commerce is encouraged as an important instrument in its roadmap to achieve the Digital Single Market (Valarezo et al., 2018). Therefore, the cross-border e-commerce system has entirely motivated researchers to investigate how it effectively flows with minimum cost and high value in the supply chain and make the company successful in cross-border online business.

The drivers and barriers of cross-border e-commerce include cross-border e-commerce in Spain (CBeC), cross-border e-commerce in the European Union (CBeC_EU), and cross-border e-commerce to the world or external EU (CBeC_RW) as studied by Valarezo et al. (2018). The survey on the use of ICT in households in 2016 revealed

that males are significantly and positively related to the usage of cross-order e-commerce, whilst people aged 65 years and above are negatively and significantly affected by CBeC. Education is most significant with a positive effect on CBeC_EU, while there is no significance in other cases. PC skills have a significant and positive relationship in the models, whilst Internet skills are most significant at the high and very high levels. Trust on the Internet appears to be positive with cross border e-buyers, particularly in higher levels of trust.

This research suggested that political tools are required to encourage e-commerce cross-border. Furthermore, knowledge in foreign languages also has a positive relationship with trade, especially English, as it strongly benefits digital markets (Herrera et al., 2014) and decisively represents the role of online buying overseas. Therefore, understanding languages is an important individual skill in terms of efficiency improvement and reduction of trade barriers. Moreover, the population group with less attention in cross-border e-commerce, such as older people and housekeepers, should be focused on target because they can learn more about online buying from overseas.

The other significant factors influencing cross-border e-commerce as investigated by Herrera et al. (2014) include distance, delivery cost, payment system and home bias. The geographical spread is strongly reduced in online trade because of a drastic reduction in information cost in the digital economy that enables consumers to scan and place their buying orders. However, it is suspicious that the quality of the legal system is not statistically significant because EU policymakers have fixed Digital Agenda Policy targets for e-commerce in terms of increasing volumes of online cross-border trade. Furthermore, the efficiency of online payment systems is an essential driver for cross-border online commerce in the EU. Finally, home bias is not significantly different in online markets compared to traditional offline trade.

The results of empirical studies indicated that the users and practitioners should have the language skill for cross-border e-commerce because some of them are still facing problems of system usage, which limit trade value (Valarezo et al., 2018). Therefore, the skills and abilities of the users and key players can become the main support of cross-border operations. Moreover, an international trade agreement should consider the distance, delivery cost, payment system, and home bias. The countries with

bilateral trade agreements or cooperation have the same legal practice, such as the country member of the EU. The members have non-differential languages and cultures which contain fewer trade barriers for commerce. However, the product delivery in this type of country remains recognized by the users and government as a major aspect for increasing capacity and improving the level of operation in cross-border e-commerce to ensure top efficiency and top customer satisfaction (Herrera et al., 2014).

Next, cross-border mobility is an essential matter for people travelling and trade flowing between two or more countries. Cross-border people mobility has long been mentioned as a commitment to facilitate people and upscale the countries. The activity that occur in cross-border mobility is under government authority. International mobility enhancement is related to the security of cross-border mobility. Konrad (2015) investigated evolving Canada-United States cross-border mobility in the Cascade Gateway. It was found that border traffic data and document affect security on mobility in the US and Canada, and the government articulated responses.

Understanding factor influencing cross-border mobility aligns with the mobility of trade. Therefore, the international traders have to manage well to persuade customer movements, such as to conduct marketing communication via word of mouth and social networking. Moreover, social capital, logistical, and financial considerations are also necessary to foster the country's economy. For example, Bochaton (2014) found that social networks significantly influence treatment itineraries to go overseas for medical treatment services throughout the decision-making process. In addition, expansion and alignment of the cross-border transportation system, transnational co-operation in mobility governance, and initial reconstitution of a culture of cross-border movement are also the key for enhancing cross-border mobility.

In terms of trade mobility, Vaghi and Lucietti (2016) studied the report of formalities for the arrivals and departure of ships from the port of EU state members which focused on port management system integration. Cost reduction of administration in the port community for authorities and reported parties is also coming at the priority of trade mobility improvement, followed by time reduction, especially the time spent on customs declarations and time waiting at ports for the movement of goods from storage before inspection. These ways would benefit the chain of logistics from a container in ports with lower dwell time.

To summarize, the results from previous studies indicated that successful cross-border e-commerce relied on the development of specific skills, cost and time reduction in the operational process of the users and operators. The development of cross-border logistics also need to be improved to enable a more effortless flow of people or labour. The methods for the flow of goods between the countries of origin to the countries of buyer concern each activity happening in cross-border logistics because it will affect cross-border mobility (Korad, 2015) which in turn influences trade mobility for the two countries (Bochaton, 2014). The cost reduction of administration and time reduction for inspection are also a matter of concern (Vaghi & Lucietti, 2016) as they are connected to cross-border logistics. This will generate trade potential and competitive advantage of cross-border commerce and services along the supply chain.

The last issue is about cross-border logistics. The logistics of business are vital because materials flow into the nation's manufacturing capacitation, and finished products are distributed to consumers through the logistical process. The recent growth in global commerce has also expanded the size and complexities of logistic operations (Bowersox et al., 2013). Therefore, the operational cross-border is one of the global supply chain elements that make a business successful. Still, the operation implementing there might not go smooth as it would be. The following results are the previous researches concerning cross-border logistics function that reveals an overall problematic area in cross-border logistics.

The continuing rise of world trade and the desire of many countries to speed up the pace of integration within global trading reflect that logistical achievement in a low and middle-income group of countries is at lower levels than the high-income countries (Gani, 2017). The government has always been considered when talking about macroeconomics because the government plays a big part in supporting cross-border trade throughout the supply chain such as the efficiency of the customs clearance process and trade quality and transport-related infrastructure, which the government sector should provide.

Although the government may not directly cause border logistics problems, the government sector is essential to foster up the trade and invest in development and promote economic activities occurring in the business supply chain to be more efficient, more convenient, and faster to achieve a competitive advantage. For

example, at the Beit-bridge Border Post, the governments have come to understand the critical nature of border-crossing and the need to improve the numerous projects and campaigns launched, such as the building of a new bridge across the Limpopo river, which would reduce traffic congestion and render significant improvements in physical infrastructure on the Zimbabwean side (Trademark Southern Africa, 2011).

In terms of investment, the ownership in cross-border acquisitions (CBAs) is associated with the government. There are three components under governmental authority that support the effect of the ownership in CBAs namely: institutional distance, knowledge access (e.g., business knowledge access, country knowledge access) and support from the government (e.g., financial matters, participation of stock, political ties) which means that the government has both direct and indirect effect on ownership received by customers (Pinto et al., 2017). The performance of cross-border logistics has been investigated to measure how well the business is doing in each activity. Six logistics performance indexes can measure logistics performance analysis in international trade namely: (1) ability to track and trace consignments, (2) competence and quality of logistics services, (3) ease of arranging competitively priced shipments, (4) efficiency of the customs clearance process, (5) frequency in which the shipment reaches the consignee within the scheduled or expected time, and (6) quality of trade and transport-related infrastructure. Gani (2017) provided strong evidence of the positive role that logistics play in increasing trade. However, every organization whether a manufacturer, wholesaler, or retailer, buys materials, services, and supplies to support the operations. Without reliable providers, the most commercial activity could not function, and the trade could not have existed (Bowersox et al., 2013). Therefore, the importance of the providers' competencies, skills, and knowledge should not be ignored as they are the key players of cross-border operation.

Vaičiute et al. (2017) investigated the three competencies of the key players in the cross-border process i.e. transport management specialists, executives' attitudes and skills, and capabilities that match the ability or competencies to operate cross-border logistic because transportation cost represents the number of products to be carried using route by lorry are paid in terms of order (Leung et al., 2002). Furthermore, an organization that understands the current trade labour situations should rethink its human resource strategies and react to rapid changes and diversity in the labour force

and the labour movement. Moreover, cross-border cooperation and border formalities are also significantly affected by the movement of border traffic (Studzieniecki et al., 2016).

Unless the hiring cost of product delivery and inventory for storing excess products in ware become the efficiency barriers, the allowance or extra paid for related people also become cost reduction. Leung et al. (2002) supported that the cost could save 75% of efficient operations, especially in transportation costs. On the other hand, Dong and He (2018) found that the economic development of countries with import-export relations influences the high or low efficiency of operations in each activity.

Table 2.1

Summary of previous studies on cross-border logistics problems

Author & Year	Problem	Concerned
Vaičiute et al. (2017)	Competencies of staffs concerned cross-border operation	Operations/ Logistics service provider
Studzieniecki et al. (2016)	Cross-border operations in tourism development	Operations
Leung et al. (2002)	Cross-border efficiency problem	Operations
Pinto et al. (2017)	The role of government support in ownership in cross-border acquisitions (CBAs)	Operations/ Government administration
Gani (2017)	Performance of logistics in oversea trade based logistics	Operations/ Logistics service provider/ Government administration
Dong and He (2018)	Import-export value & supply chain	Operations/ Logistics service provider/ Government administration

Source: Author (2019)

The problems illustrated in Table 2.1 are concerned with cross-border operations, logistics service providers and government administration. The most mentioned issue involve processes at the border area, especially trading, performed by logistics service providers and government administration. Thus, this study will explicitly mention two significant players who handle cross-border logistics operations: logistics service providers (LSP) and the government administration (GA). Firstly, factors influencing overall operations at border areas were investigated to foster a level of customer

satisfaction and logistics performance, which will be discussed more in the next section.

2.2.3 Performance and operational cross-borders

In this part, the following statement explained the literatures investigating cross-border operation which contained the processes and action from the relevant parties. Moreover, it illustrated about the approaches for cross-border improvement in other border lands. In addition, the statement presented the important of performance of operational cross-border which linked to the efficiency of logistics activities in the global supply chain.

Firstly, the evidence of empirical studies related to cross-border operations showed that the operations across the border had been observed from various perspectives in substantial contexts. Their primary purposes are to reduce barriers and increase the capabilities of cross-order operations in many types of operational cross-border such as cross-border tourism, cross-border e-commerce, cross-border mobility, and cross-border logistics. From the analysis of the overall findings, numerous researches had found that improving trade, services, and merchandise flow in cross-border operations requires cooperation from many different parties (Bochaton, 2015; Studzieniecki et al., 2016; Pinto et al., 2017).

For several reasons, the government is generally posited first when discussing cross-border issues (Río et al., 2017; Yilmaz & Bititci, 2006). Firstly, the government is an essential player in legislating policies and regulations for any activities across the border. Therefore, the flexibility and transparency of government practices are excellent opportunities for a smooth operations for border-crossing. Secondly, the government is a leader of trade facilities development that support organizations in the establishment of necessary facilities to ensure a good flow of cross-border activities. For example, infrastructure development may improve border traffic areas and bring new tools of technology to eliminate working steps and complexities in the process. In addition, it will increase efficiency in both cost and time reduction taken in the operations. Finally, the government is indeed responsible for creating cooperation on many different levels i.e. regionally, nationally, and internationally, which supports the implementation of border-crossing activities to be faster and more efficient.

Besides that, the speed and efficiency of the operation have been significantly investigated by many researchers as they are essential drivers for developing the process of border-crossing.

In cross-border operation, efficiency can be attained when unnecessary costs and processes are eliminated, and customers receive their expected value. For instance, the development of paperworks for cross-border logistics in terms of the flow of goods, services, and people that can be helpful by time spent decrease and for cross-border operations. Furthermore, the shorter processes of customs clearance, document declaration, and the reduction of dwell time in the movement of finished goods are favourable signs of effective operational cross-border logistics. However, developing all the processes discussed above is operating under concepts of cost minimization and high value.

The factors that should be considered for improving cross-border operations and fostering efficiency are the specific knowledge and skills (Vaičiute et al., 2017). Some studies indicated that all players namely the manufacturers, wholesalers, retailers, buyers, services, suppliers, and others are associated with supporting cross-border operations (Dong & He, 2018). Therefore, necessary knowledge and skills should be fulfilled for enhancing capability to enable cross-border operations. For instance, the logistics service providers must clearly understand the logistics knowledge, formalities, and steps involved in cross-border operations. Also, cooperation and communication skills are vital because it is precisely more than one country working in cross-border operations. Therefore, staff should be able to communicate in foreign languages. Especially English requirement should be at the fluent level for communication. The professionalism in English communication of the workforce working in cross-border logistics fields would help to reduce trade barriers and improve cross-border efficiency because they can deliver services with higher accuracy, lower mistakes and faster progress. Thus, the organizations associated with the operational cross-border need to analyze necessary knowledge and skills for working and developing competencies and capabilities of the human resources to meet the actual requirements as demand expectation (Vaičiute et al., 2017).

Cross-border operation development discussed above results in time and cost reduction. In addition, the effectiveness of cross-border operation may improve the

country's economy when its performance is fulfilled with good service quality. Many academicians have demonstrated how to measure the quality of cross-border implementation in various contexts such as cross-border tourism (Studzieniecki et al., 2016) and cross-border mobility (Koran, 2015) using international standard indicators such as the logistics performance index to identify cross-border process competencies (Gani, 2017; Su & Ke, 2017).

The World Bank (2019) summarized the approaches of cross-border operations improvement categorized by the three main criteria facilitating trade across borders. The first criterion is the initiation of electronic submission and documents improvement processing for import and export. An example of practical approaches is Kazakhstan which introduced an electronic customs declaration system for reducing customs administration fees. Meanwhile, Uganda carried out a full implementation of a centralized document-checking platform using an electronic system known as the Uganda Electronic Single Window, which provides document submission and information exchange via the electronic system. Moreover, the traders in Lesotho reduced document-checking time for import activities using an automatic system for customs data. Finally, in Paraguay, an electronic signature for commercial operations had been certified as legally valid.

The second criterion is the improvement of infrastructure which could reinforce the border for import and export activities. There are several highlighted approaches for improving infrastructure, which mainly resulted in time and process reduction. For example, El Salvador established new customs posts in Santa Ana to reduce the congestion of border crossing in the main post at Anguiatu. Also, Rwanda implemented the Single Customs Territory which arranged for more staff to operate a one-stop border post thus reducing processing time. Additionally, Malaysia reduced processing time by expanding a new gate at Port Klang using a modern management system with more scanners and two terminals.

The third criterion is the enhancement of administration and inspection in customs for imports and exports. For example, in Mauritius, fourteen hours were cut in border compliance by implementing risk-based management. Ukraine eliminated the requirement in auto-parts verification. The operations in Kosovo simplified border control and the physical examination process of customs clearance.

Table 2.2 shows the components of effective operations for trading across the border, including: 1) electronic processing system, 2) infrastructure development, and 3) improvement of customs inspection. These three components will be discussed later as a variable affecting the functional performance of cross-border operations.

Table 2.2

Important approaches for cross-border operations improvement

Feature	Highlights
Initiation of electronic submission and documents improvement processing for export	Kazakhstan: Electronic customs declaration system Uganda: Centralized documents checking platform by using an electronic system called “Uganda Electronic Single Window”.
Initiation of electronic submission and documents improvement processing for import	Lesotho: Automatic system for custom data Paraguay: Certify legal validity of electronic signature for commercial operations
Infrastructure reinforcement of border for export	EL Salvador: New customs post established in Santa Ana Rwanda: Single Customs Territory, with more staff to operate one-stop border post
Infrastructure reinforcement of border for import	Malaysia: Expand a new gate at Port Klang with a modern management system, more scanners and two terminals.
Enhancement of administration and inspection in customs for imports and exports	Mauritius: Risk-based management implementation Ukraine: Fewer requirements in auto-parts verification. Kosovo: Simplified border control and physical examination process for customs clearance.

Source: The World Bank (2019)

Next, we discuss about the performance of operational cross-border which is related to the logistics activities in the supply chain. Logistics management must consider five significant differences between domestic and international operations to enhance a firm’s global capabilities. These differences include performance cycle structure, transportation, operational considerations, information systems integration, and alliances. All these differences must then be incorporated into the firm’s global strategy. Besides that, there are several unique operational consideration support supply chains. The first one is that international operations typically require multiple

languages, both for product delivery and documentation. The second is unique national accommodations such as performance features, technical characteristics, environment and safety requirements. The third is the formality and the sheer amount of documentation required. The fourth is the high incident of countertrade and duty drawback found in some international situations (Bowersox et al., 2013). Therefore, the cross-countries operations have broad factors to be considered.

The performance of cross-border operation has also been widely studied in various contexts. Kain and Verma (2018) provided three issues to mitigate problems and barriers for cross-border operations. Firstly, the performance comes up with better service of customers, improved productivity, modifying just-in-time and quick response needs as a process. Secondly, system structure means establishing a better relationship with the suppliers, customers, and third parties to better manage the supply chain and relationships within the organisation. And finally, technology integration from a better information system that connects functions and organizations which would combine information and material handling system for increased efficiency and effectiveness.

Cost and CO₂ emissions per vehicle estimation is one approach to measure the performance of cross-border operation with the purpose of a sustainable cross-border supply chain due to currently the environmental impact is also essential and has been talked as a key issued (Nakamichi et al., 2016; Rezaei et al., 2018).

It functionally provides product movement and product storage (Bowersox et al., 2013) and complicated procedures that occur in these operations. Haughton and Isotupa (2012) proposed an approach to measure performance in terms of the scheduling system using various indicators including arrival rates, probability distribution of intra-hour arrival volumes, breakdown of shipment, inspection time for truck shipments, rates of referrals for shipments, number of inspection channels at the primary phase, number of inspection channels at the preliminary stage for FAST trucks, number of inspection channels at the secondary inspection phase, and service system responsiveness to intra-day fluctuations. It improved the efficiency of transportation procedures in cross-border logistics which benefits arrivals and the centres and servers such as border administration personnel and institutions. When the trucking company schedules delivery times that facilitate traffic instead of at times that

reflect its current practices, all operations could flow smoother for all relevant stakeholders.

There are several examples of operational cross-border performance improvement. For instance, at the Beit-bridge border post, service delivery had been improved. The service quality and clearing time reduction using an efficient management system concentrates on four major governmental sector issues: the joint border, operation committee, task team, steering committee and ministerial committee (Trademark Southern Africa, 2011). In Mexico, logistics platforms at borders contribute to the planning agencies in countries' governments to structure the logistics infrastructure master plan with the formulation of economic and financial feasibility (Antún & Alarcón, 2014).

In summary, the performance of operational cross-border was investigated by focusing on two significant issues. The first concentration is about environmental impact as during the process of cross-border causes some Co₂ emission, which results in a negative effect on the environment. Therefore, the ecological problem is a significant matter for global attention. However, this problem can be resolved by the efficiency during the border-crossing process by spending less time and implementing more simplified operations. Therefore, the speed and control of the movement of goods pose a direct effect on the operations.

Most of the empirical studies found that efficiency is one element representing the performance of the operational cross-border. It involves processes, transportation and government related to cross-border operations. For the processes, customer relationship and technology integration are good options for better operation cross-border. In the view of transportation, significant concerns to product movement and its acquisition are generally from the scheduling system, shipping management, and truck control. For the government, it represents a process controlling which can support all of the activities in cross-border operations. Thus, the performance also mainly depends on the government. Finally, most studies focused on efficiency, which primarily refers to the time and cost spent for the operation. Therefore, the appropriate time taken in the operational cross-border should be considered.

The study in the expectation of delay, as shown in Table 2.3, illustrates the appropriate time for shippers. It carries for the border operations of crossing the bridge, including the actual time taken by the shippers or carriers, expected time, and limitation for the adequate time estimated by importer and exporter.

The importer and exporter expect the best time taken for border-crossing i.e. at 60 minutes or not more than 76.23 minutes which is still different by two times from the actual report. However, the delay reported by the shippers and carriers includes payment for drivers, fuel for the trucks while waiting, fines charged for the delay, the price for late driving hours, and inventory cost of goods stuck in the US or Mexico. These were the reasons why logistics performance has been used as a tool for border crossing operation development. And this issue has been deeply studied by many researchers.

Table 2.3

Summary of appropriate time for the operations of crossing the bridge

Shipper/ Carrier	Bridge	Actual time (Minutes)	Expected time (Minutes)	Limitation for acceptable time (Minutes)
Carrier 1	Santa Teresa, New Mexico	90	40	80
Carrier 1	Ysleta-Zaragoza	135	60	90
Carrier 1	Ysleta-Zaragoza	240	120	20
Carrier 1	Ysleta-Zaragoza	Not given	Not given	Not given
Carrier 1	Bridge of the Americas	180	40	60
Carrier 1	Ysleta-Zaragoza	130	40	60
Carrier 1	Ysleta-Zaragoza	150	60	120
Carrier 1	Ysleta-Zaragoza	90	60	120
Carrier 1	Bridge of the Americas	120	60	60
Average		141.875	60	76.25

Source: Cornejo *et al.* (2017)

2.2.4 Performance of operational cross-border logistics

The shaded area in Figure 2.9 illustrates the internal operation scope of integrated logistics operations. Information from and about customer flows through the enterprise due to sale activity, supply chain collaboration forecast, and orders. Vital information is refined into specific manufacturing, merchandising, and purchasing plans. As products and materials are procured, a value-added inventory flow is initiated, resulting in ownership transfer to finished products to customers. Thus, the logistical process is viewed in terms of two interrelated flows: inventory and information.

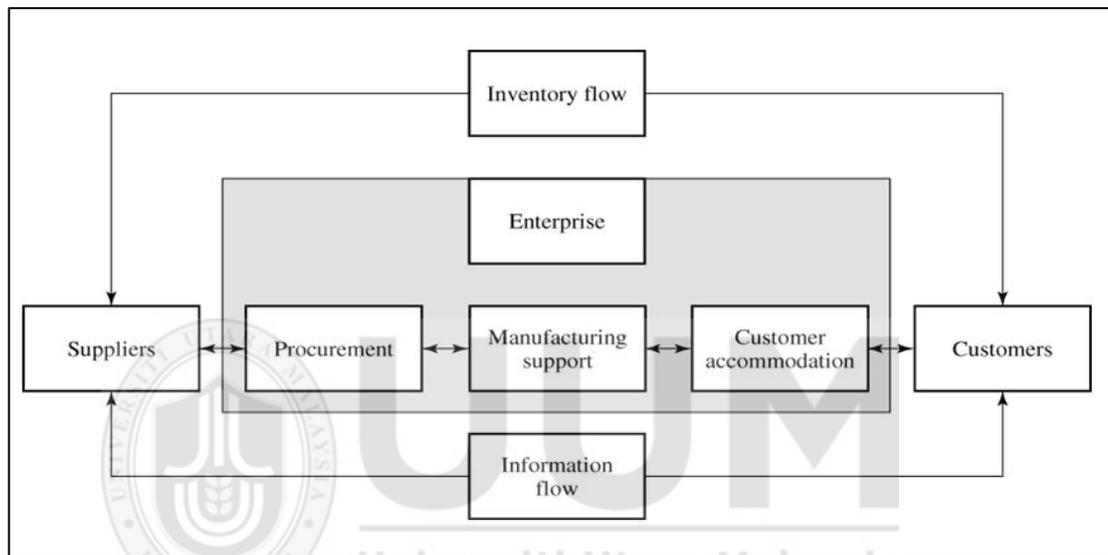


Figure 2.9

Logistical integration

Source: Bowersox *et al.*, 2013

An effective logistics system is vital for domestic supply chain integration. It is essential for successful global sourcing, manufacturing, and marketing, which support operations in various national, political, and economic settings while also dealing with increased uncertainty associated with the distance, demand, diversity, and documentation of international commerce (Bowersox *et al.*, 2013). The more the cost reduction, the more value and efficiency gained.

2.3 Overview of logistics service providers

The service providers can ensure a high quality of service provided in logistics, which makes the business successful (Zhu et al., 2018). Therefore, measuring the performance of logistics service providers should be considered a factor to ensure efficiency in the entire supply chain (Rahman et al., 2014). However, either the logistics providers can foster business success or the manufacturers who certainly operate import and export merchandise.

Rahman et al. (2014) indicated that delivery time is vital for logistic partnership success due to support, route and product quality. This success can enhance brand image, which creates company loyalty and a good perception among customers. However, the service providers should maintain good performance by providing customer reliability in a timely and efficient manner for more value creation in customer perception. Additionally, infrastructure, shippers or the consignees and institutional framework are critical components for strengthening the logistics system (Banomyong et al., 2015).

There is a wide range of “names” used to refer to a logistics service provider (LSP) including carriers, freight forwarders, forwarding companies, transporters, third-party transport services, logistics service suppliers, subcontracted logistics service partners, logistics operators, and third-party logistics (Costes et al., 2009). However, even when the LSP provides international services, international freight forwarders serve as a critical authority in the import-export for many firms. Their primary role is to arrange the movement of merchandise from where the products were produced to the end customer’s site (Stock & Lambert, 2001) and promote their business in logistics service operations to enter the international market (Chen & Zhang, 2018).

Therefore, the effectiveness and efficiency of logistics organizations are principal components of the supply chain management. The LSPs also develop their capabilities, providing service and offering solutions that are personalized to their customers or customer focus (Costes et al., 2009). The performance of cross-border operations of logistics enterprises investigated by Chen and Zhang (2018) generated two perspectives in evaluating performance. The first one is financial performance, namely net profit growth, increased return on investment, and rising sales and market share. The second one is non-financial performance, which includes better customer and team

member satisfaction. Therefore, the business plan expands with two elements on the performance of cross-border operations, including external and internal factors. Firstly, the business market environment is related to external factors. In contrast, the internal factors focus on organizational factors such as sufficient funds, human resources, information and knowledge, products service with high quality and strong adaptability, and business decision-makers with plenty of skills and experiences (Chen & Zhang, 2018). Then, the capabilities of the LSPs will improve customer service and financial performance for container shipping service firms (Yang et al., 2009).

An essential role of the logistics service providers (LSP) in cross-border activities and value creation in the supply chain, as mentioned above, clearly reveals its influence on the performance of operational cross-border logistics and the impact on decision making for import-export business in selecting LSP in their organizational activities. Three significant aspects should be considered to explain how well the LSP perform. Firstly, logistic service quality comes together with customer expectation and behavioural intention to choose the services. Moreover, logistics process quality is the main driver for repurchase intention, followed by outcome quality (Giovanis et al., 2013). Secondly, business decision-making is concerned with the business function to enrich quantitative outcomes in managing the logistic process among limited resources and high service quality. Thirdly, this function can represent ways of organizing effective logistics that people at the management level implement as the manager and supervisors, which reflect the logistics performance (Bakar & Jafar, 2016). The final important aspect is the capabilities of the LSP in relation to its primary expertise in providing logistic services, which are a principal part of developing operational logistic procedures as they are the key players. All highlighted issues will be identified in the next part.

2.3.1 Type of logistics service providers in operational cross-border

Tsekeris (2017) studied the domestic transport of exported goods in Greece's regional trading, and found that domestic transport conditions can enhance the apparent development of local firms, which support the regional and national growth of the business. The transport conditions should be supported by cooperation policies among related administrations in a region. It was also clear that decision-making related to a cargo hubs location is supported by transportation, especially the manufacturers who

would take advantage of the logistics hubs that are established close to the urban areas and borderland.

In terms of transportation and vehicle management, Andrejić et al. (2016) found that fleet efficiency is related to a higher level of decision making. Transport efficiency can be generated by the company's fleet management system with the utilization of information systems, vehicle routing, and scheduling. Vehicle efficiency is highly affected by decision-making levels. Fewer capacity vehicles are more efficient, contrasting with the age. Moreover, more important factors include manufacturer selection price, vehicle price, maintenance costs, and warranty. Lastly, according to the gravity area, there are differences in the efficiency scores across small and large catchment areas. The fleets operating in large cities with a wider catchment area are less efficient than those with narrower catchment areas in small towns because of environmental factors such as traffic congestion.

According to the efficiency of cross-border processes operating by logistics service providers, many problems can decrease efficiency. Leung et al. (2002) examined cross-border logistics problems, which are affected by several reasons. The first reason is the volume of products to be transported using the lorry hired per order or the cost of transportation. The second reason is the cost of service procurement for product delivery between two countries or the cost of hiring. Next, the cost that exists from the excess of product storage in the warehouse or the inventory cost. The final cost is the allowance paid to a lorry driver for making double trips operation per day. The findings revealed approaches to reduce cost problems. Firstly, at least 7.5% of the total cost of transportation can be reduced by the company's logistics strategy. Secondly, corresponding methods are suggested to lower the cost of hiring a lorry. Thirdly, the decision-making process is considered for optimal inventory cost. However, more lorry for responding to future demand is not recommended.

Roslan et al. (2015) reviewed a case study on the logistics sector in Iskandar Malaysia using the SERVQUAL Model. The research focused on third-party logistics service quality namely: 1) tangible, 2) reliability, 3) responsiveness, 4) assurance, and 5) empathy. Customer satisfaction was employed as the moderator in this model. The participants are consumers of Iskandar Malaysia (IM) logistics service providers (Electrical and Electronics, Petro and Oleo Chemical, Food and Agro Processing and

Tourism) who were selected via purposive sampling based on a telephone conversation with Iskandar Regional Development Authorities (IRDA). The location is in Iskandar, Malaysia, using SPSS for analysis.

The findings revealed that there is a relationship between customer satisfaction and service quality dimensions in the context of Iskandar Malaysia's logistics service providers. However, there are positive gaps between the expectation and perception of the customers towards the service quality of Iskandar Malaysia's logistics service providers.

2.4 Government administration in operational cross-border

The government is a major player in supporting cross-border activities (Pinto et al., 2017) and cross-border trade (Valarezo et al., 2018) as the systems of trade flow had been set and proceeded by government policy at the national and international level (Herrera et al., 2014). It concerns performance and efficiency of operational cross-border logistics, resulting in the output and outcome of the process (Haughton & Isotupa, 2012) with the legal authority of control especially the customhouse which provides training and communication in trade facilitation (The World Bank, 2019).

The role of government in cross-border logistics operations in this research is mentioned as a factor influencing the performance in operational for border crossing. Therefore, the concept and definition of government administration and its importance will be identified under previous studies related to government and public administration. Then, there will be a brief of government administration measurement in the final part of the conclusion.

2.4.1 Concept and meaning of government administration

The governmental organization is noticed to support the country's development, which concerns the whole system of the nation. The government properly stays in roles of driver and challenge for encouraging and pushing companies to increase their direction and step up of competitive performance (Porter, 1990). It was regularly recognized as the public function that provides facilitation, security, and wealth, not for individual benefit but the public advantages. However, it is necessary to define and clarify the terms of government administration and public administration.

The “public” generally means the administrative practice, especially in a social segment and the public sector. Thus, public administration is the operation implemented by governmental administration, which concerns the approaches and function of organizing for administration (Akindele & Olaopa, 2005).

Kolawole (1997) defined public administration as a machinery and the whole process of the government in performing its functions. Thus, it is a relationship of human networking with the lowest paid, and the powerless individual charged to keep a daily touch with all resources, natural and human, and all the aspects of the life of the society with which government is concerned.

Ezeani (2006) defined public administration as the management of activities done by the government. Therefore, the activities of bureaucrats are also concerned with the management of administration and the study of activity under the control of the government.

Meanwhile, Oyedele (2015) delineated public administration as a form of routinized activities related to decision making, planning, advising, coordination, negotiation, conciliation, arbitration, command and data gathering through which the government carries out its responsibilities.

From the meaning of public administration as defined by academicians, it can be concluded that public administration is the pattern of government activities in several actions, including decision-making, planning, advising, coordination, and so on, which concern the approaches of performing. In addition, public administration ensures substantial impacts on every section of the countries, which is difficult to estimate whether to support or interrupt. It is, therefore, necessary to be clear about its function and significance.

Many scholarly and policy literature of public administration takes a massive role in social development. Therefore, it requires understanding of the definition of the two principle features of the public administration. Firstly, public administration is more relevant to enable rather than deliver. It rarely offers finished goods and services. However, it is a condition that comes before achieving the successful operation of other departments under the government. Secondly, the service delivered by the public section is like an intermediary that connects inputs and outputs as a chain of service

(Oyedele, 2015). It is clear that good public administration practice helps enrich effective flow in other concerned sections, followed by the efficiency of operational activities that enrich higher value along the supply chain.

In terms of international trade, the government properly stays in the roles of driver and challenge for encouraging and pushing companies to increase their direction and step up of competitive performance.

2.4.2 Importance of government administration in operational cross-border logistics

The importance of government administration is recognized by many researchers, resulting in many studies investigating the role of government, its impact and its relationship in supporting the workflow at a particular national level. For instance, Pinto et al. (2017) found that there is a direct and indirect effect on the acquisition of the ownership in cross-border. The government plays an important role in terms of knowledge access, financial consideration, the participation of stock and the strictness of policy. Countries with reputation, flexible policy and rich information resources were supported by the government as well.

Moreover, the government has a role in considering the potential application of infrastructure that provides for the trade facilitation as the case of the improvement of railway policy in Thailand which the government could apply lessons learned from EU rail liberalization for the reinforcement of the trade (Charanwanitwong & Fraszczyk, 2018).

The government implementation as a policymaker is associated with practical matters, while some research findings concern more about the principle in theory. Thus, the academicians and policymakers should work closely together for knowledge sharing between theory and practice to develop the process and procedure and solve logistic problems occurring in cross-border operations. This approach would bring positive results, but the government should first accelerate infrastructure projects in the country and support the infrastructure development of neighbouring countries. Next, it should improve the country's technology and human resources in the rail industry. Finally, it should establish a rail research and development institution, and funding more students.

In conclusion, there is a significant role of government that affects the overall development of cross-border trade. The government is the only organization that enables control and has full authority to improve the whole process for operational cross-border such as infrastructure project, human resource management and funding for operation development. Thus, the government can support financing and unlocked policy for the trading of cross-border. Moreover, it can also create a good image, reputation and information resources for the private sector. However, as a policymaker, the government generally concentrates on practical matters. Therefore, it will be a more successful operation when knowledge sharing and strong cooperation from all concerned.

2.5 Resources

Resources are essential factors for business administration. The difference of resources in each firm generates different performance, even if the firms have the same strategies (Furrer et al., 2008). Therefore, the firm's resources are directly associated with their capacities (Holdford, 2018). For instance, the organization can be more competitive when the firm's internal resources have been developed (Fensterseifer, 2009), which positively affects working operations' performance because different resources contribute to different organization capacities to provide goods or services (Chen & Zhang, 2018). The implementation of cross-border logistics operations concerns many parties, both public and private organizations. Thus, adequate and efficient resources of each organization involving cross-border logistics would lead to a greater performance of cross-border logistics operations. This is a significant reason to propose a framework applied with the resource-based view theory (RBV), the concept of the RBV theory and their integration, and the measurement of resources.

2.5.1 The Resource-based view theory

The resource-based concept of the firm has been broadly studied in management sciences. This resource-based theory is the beginning of knowledge extended in contemporary management. The RBV is a remarkable concept that is generally applied for the strategic planning of organizational operations, an influential understanding of strategic management (Barney et al., 2001).

Barney (1991) had focused on sustainable resources for a firm to generate competitive advantage. The study demonstrated that a firm could gain competitive advantage when its resources and capabilities are valuable, rare and imperfectly imitable.

Furrer et al. (2008) identified that a firm could obtain sustainability when its resources are well-managed, unique, rare, and inimitable. Those resources can be a source of high performance in the firms.

In the view of Fensterseifer (2009), resources can be identified as strategies that can be adapted to create capabilities and competencies that strengthen competitiveness when the resources are valuable, rare and difficult to imitate or replicate. Moreover, an organisation's resources will unlock them to achieve firm knowledge and capabilities and technology deployment.

Mile (2012) asserted that the RBV theory provides a sustainable competitive advantage when the firms have resources that are effectively controlled and managed to obtain value, rareness, imperfect imitation, and non-substitutability.

Holdford (2018) illustrated that organizational resources originate the competitive advantage and long-term success of the firms. However, it is based on the ability of the firms to manage resources effectively for generating competitive advantage and contributing the firm performance with innovation.

In summary, the RBV concept can be defined as the organisation's entire capabilities that empower the organization to compete with rivals under the control of resources management. These capabilities bring a high potential for the firms when the resources are developed to become valuable, rare, difficult to imitate, and not be substituted. Moreover, it would lead to high performance and successful sustainability for the firms. This achievement requires knowledge and competencies such as IT and innovation skills to transform.

2.5.2 The importance and characteristics of the Resource-based view theory

Most empirical studies adopting RBV concentrated on enriching firm performance from the management practices of resources in each organization. For example, Ding et al. (2012) revealed that logistics resources could be utilized to attain superior performance in the Chinese market due to features such as delivery speed and reliability, and responsiveness to the target market are essential capabilities for competing. In addition, big data represents the organisation's enormous resources and has become valuable firm resources and capabilities (Yu et al., 2018). Empirical research also mentioned the reinforcement of firm performance by utilizing resources. The firm's capability and competency will then be generated by organizational strategies of which aim is to compete among rivals. For example, Parrish et al. (2004) applied the RBV to develop niche market strategies in the apparel marketplace, similar to Fensterseifer (2009) which proposed strategic resources for sustainable competitive advantages in the industrial cluster.

Many studies have applied the RBV to investigate the firm's competencies to obtain valuable resources and strategic management to enable organisations to compete in the market. This study focuses on the logistics performance in the context of operational cross-border, which the RBV can either be adopted business sector and drive competency of logistics service providers or the resources management of the government sector. For example, Yang et al. (2009) supported the use of the RBV approach. They proved that there are relationships between resources and firm performance, which implied that a firm providing high quality information equipment resources and corporate image would have better capabilities in terms of service and innovation. Another example was a study on enhancing efficiency, effectiveness, and government service delivery using electronic resources by Waller and Genius (2015). The findings clearly explained that technical issues such as infrastructure, privacy, and security are significant resources to develop the effectiveness of e-government in Jamaica, which means that the good management of resources brought validated government. In addition, the governments associated with the development of the economy by facilitating border crossing for logistics service providers (Antún & Alarcón, 2014).

The previous studies revealed evidence of the adoption of the RBV theory in cases relevant to logistics for border-crossing. Furthermore, it showed many more perspectives of resources characteristic, which can be explained accordingly.

Barney (1990) identified the characteristics of resources and capabilities that can be divided into two significant perspectives namely tangible and intangible assets, which are skills of management, daily work in the organization and information, knowledge and organizational attributes.

Kostopoulos et al. (2003) argued that the productive use of firm resources determines the firm's innovative capacity by the availability of financial resources, technical resources, and intangible resources. It is because adequate funds are more conducive to support research and development (R&D) activities and investment, which generate a high level of innovation. Technical resources are an essential requirement of the innovation capability of the firms. This issue helps organizations to increase their value and quality because the technology entails sophisticated tools for generating efficient outputs at the lowest cost. Intangible resources are a good source of strategic plans that emphasize on sustainable organization and of which develop a competitive advantage by qualified human capital with advanced technical skills. A summary of the concept is presented in Figure 2.10.

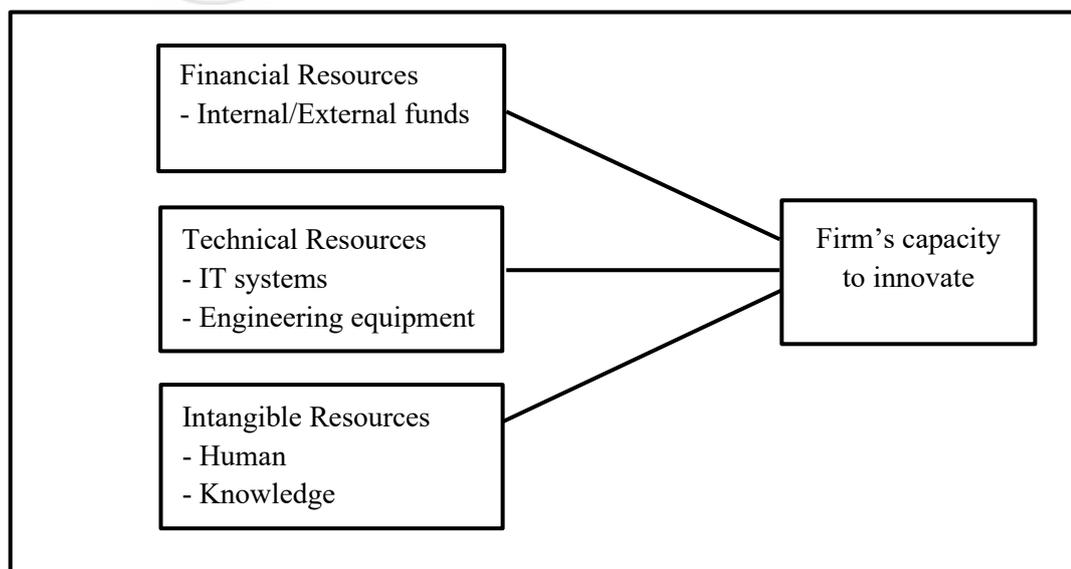


Figure 2.10

Resources determining a firm's capacity to innovate

Source: Kostopoulos *et al.*, 2003

Madhani (2010) reviewed the attributes of resources under RBV by adapting from many researchers. Then, examples and the types of resources and capabilities were summarized by categorizing them into two main aspects: tangible and intangible resources and capabilities. The tangible resources include financial issues such as the ability to gather up internal funds and generate external capital. It also has physical matters, for example, location of plants, machines, offices, and geographic location, access to raw materials and distribution channels, technological issues consisting of trademarks, copyrights, possession of patents and trade secret, and organizational issues such as formal planning, command, control system, integration of management information systems. The intangible resources and capabilities consist of human issues that concern talent management and organizational culture. It also includes innovation issues, which refer to the capabilities for research and development (R&D) to innovate new products, processes and services, and the organisation's readiness among the change of environment. Also, the reputational issue concerns perceptions of product quality, durability, and reliability among customers, satisfied and loyal customers of product branding and positioning, a good image for the employer and cooperate social responsibility for the community.

The RBV has recently been adopted to investigate logistics management which is better explained in the context of cross-border logistics as it is the primary purpose of this study. Therefore, elements of resources of the study examining the effects between resources and performance of container shipping services in Taiwan conducted by Yang et al. (2009) were divided into three main parts: corporate image resource, information equipment, and network resource. The corporate image consisted of four items: corporate reputation, financial stability, low cargo damage or loss record, and several branch companies or agencies. The information equipment resource comprised three items: cargo tracking system, EDI, and internet service facilities. And the network resource consisted of two items i.e. high frequency of sailings and geographical coverage of service.

Mile (2012) adopted the RBV and proved that the theory could also be applied at an individual level based on the following questions: What resources make you valuable to your organization? What are the knowledge, skills, abilities, capabilities, and competencies that you have that make you more valuable to your company than your

rivals? What is it about you that makes you indispensable to your organization? If you are deficient in any areas, what training and education can you get that will help make you even more valuable to your company? You must possess resources that are valuable to your company and make sure that your company knows that you have them. Finally, find ways to continually demonstrate to your company how valuable you are: specifically document how productive you are and how much you are saving the company in time and resources compared to other employees. If you can demonstrate your worth to your company, then you may not be the first one to be let go if times get tough, because you will be seen as a valuable resource that the company wants to keep around for a long time.

Monteiro et al. (2019) explored the relationship between linking intangible resources and export performance by adopting the RBV concept. The intangible resources include three dimensions which are financial resources, informational resources and relational resources. The financial resources include three elements which are capital accessibility, ability to find additional funds when required and speed of acquiring and deploying financial resources. The information resources consist of export market information, customer knowledge and knowledge of competitors. Finally, the relational resources comprise the relationship with concerned stakeholders such as customer relationships, current relationships, and the closeness of existing customer relationships.

Iyer et al. (2019) studied the implication of relational resources on operational performance. There were two types of resources investigated in this research i.e. resources specificity and resource complementary. The relational resources also mention the collaborative sharing of operational information and planning with close supply chain partners. Although culture is a different element of resources discussed before, it is crucial in cross-border logistics. The person in charge needs to adjust and learn the language of their trade partners.

To summarize, the scope of resources under the RBV theory has been widely studied. Both profit-oriented enterprises and governmental organizations can benefit from managing, analyzing and upgrading their available resources in different dimensions. It will also lead to superior performance because these managerial resources are a significant factor driving the capability of employees, competency and effective

administration towards the organization. In addition, when the firm's resources gradually become valuable, rare, imperfectly imitable, and non-substitutable, sustained competitive advantage will proceedingly turn to the organization, which will be explained more in the next session.

2.6 Competitive advantage

In the global supply chain, the concept of competitive advantage is conformed as it generates proper strategic management for the company to gain more benefit from the trade beyond the competitors. Therefore, the competitive advantage strategy is also applied in this study. The research findings are expected to develop a strategic plan for LSPs companies to design a more effective workflow in their organization to foster up cross-border logistics performance and add more value to the global supply chain. This part will give a critical explanation of competitive advantage, how it links with the value chain, and its roles to magnify cross-border logistics performance, connect to resources under the theory of RBV, government administration and LSP's capabilities and the measurement of competitive advantage.

2.6.1 Concept of competitive advantage

The concept of competitive advantage was found by Porter (1990) in the classical economics era. It has been widely studied in management sciences, especially nowadays which the organization has faced volatile environmental in economies. This competitive advantage is a source of knowledge extended in modern management among technological disruption and tremendous rivals for sustainability. Moreover, the fundamental idea of competitive advantage has been adopted to foster competitive success for international trade.

Porter (1990) stated that a nation's competitiveness depends on the capacity of its industry to innovate and upgrade. The competitive advantage is created and sustained through a highly localized process. Differences in national values, cultures, economic structures, institutions, and histories contribute to competitive success.

A company achieves competitive advantage through acts of innovation which can be manifested in a new product or services design, a new operations process, a new

marketing approach, or a new method to conduct people development. Figure 2.11 explains all the elements for gaining national competitive advantage.

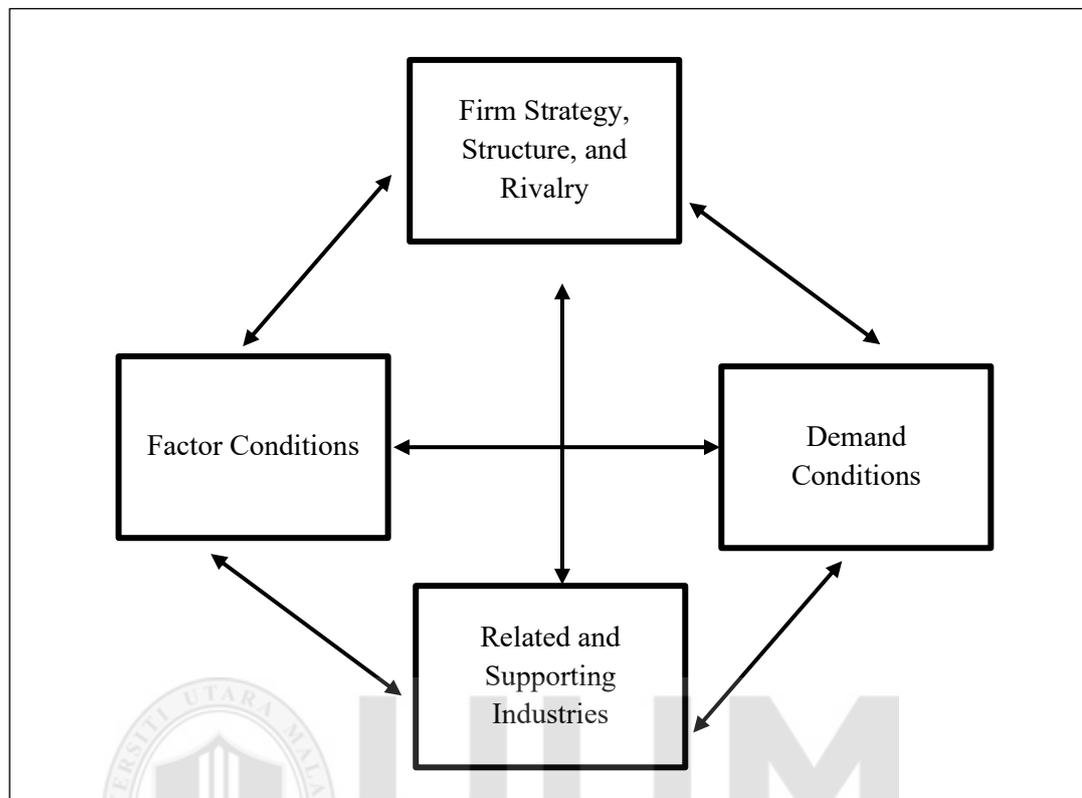


Figure 2.11
Determinants of national competitive advantage

Source: Porter, 1990

Figure 2.11 i.e. the diamond of national advantage proposed by Porter (1990) illustrates the four attributes of national competitive advantage namely: (1) factor conditions i.e. the nation's position in factors of production such as skilled labour or infrastructure, necessary to compete in a given industry, (2) demand conditions i.e. the nature of home-market demand for the industry's product or service, (3) related and supporting industries i.e. the presence or absence of supplier industries and other related industries that are internationally competitive, and (4) firm strategy, structure, and rivalry i.e. the conditions in the nation governing how companies are created, organized, and managed, as well as the nature of the domestic rivalry.

Porter (1998) proposed an extended concept of a competitive advantage that differs from the previous one. Instead of attempting to predict what countries will specialize in or where they will be located, the theory provides a model for determining why certain industries in certain countries are successful and continue to be. Then it comes

up with competitive strategies of specialization, which is the way to achieve success through focusing on differentiation (Parrish et al., 2004).

Madhani (2010) explained that an advantage that continues to hold after the efforts of others to duplicate the benefit have ceased. In this current era of the fast-changing globalized world, if an organization can change swiftly and be more alert to changes in the competitive market, they are more likely to gain and sustain a competitive advantage.

Ding et al. (2019) explained that competitive advantage in the supply chain is an attribute that allows a supply chain to outperform its competitors in among industries.

Cao et al. (2019) argued that the competitive advantage based on the RBV claimed that the specific resource/capability is valuable, rare, inimitable, and non-substitutable (VRIN), and that the amount of that resource/capability is correlated with a competitive advantage.

From the above definition of competitive advantage, it can be concluded that an organization enables more superior products or services in the market by the input that are specific resources (VRIN). Thus, the competitive advantage of the company will turn to sustain competitive advantage.

2.6.2 Value chain and competitive advantage

The idea of the value chain in the competitive advantage perspective is an analysis of comparing the occurring value along the chain of business to the competitors' value chains. The activities generating value in a firm's value chain bring firms to gain advantages beyond their competitors by following two conditions: (1) the competitors do not perform the activity, and (2) the firm performs similar activities with another firm in the industry, and that those performed by the firm are more superior than the activity performed by the competitors.

The supply chain is the system regarding the interconnection of the value chains. Each firm through the supply chain generates value to the supply chain by the value created in each activity along the chain. Moreover, a value system is the interconnected system of chains along the supply chain as stated by Michael Porter. Focusing on strengthening the value system can also improve a firm's competitive advantage.

Therefore, analyzing the value chain is recognized as an essential tool for strategic management in business. In addition, the firm director is responsible for identifying increased value from each implemented activity to the company.

The activities generating value-addedness are divided into primary activities. Those activities are associated with significant operations, sales, market, customer service and support activities, including human resource management, firm infrastructure management, information technology and technology development, and procurement. The value can be increased after the business can identify which part or process of activities to add to and take action.

To increase value in the business chain, the firm director is certainly responsible for identifying related costs spent in each activity and the value contribution for that activity. Furthermore, there is a consideration for ensuring that an acquired value is worthwhile enough compared to the cost to perform value creation in those activities.

The analysis of functional activities improvement concerns the activity with value maximization while the cost is minimized. This idea should be followed for each move from the beginning to the end as a whole supply chain mainly purpose of the value chain analysis is to seek approaches to generate and keep value.

2.7 Theoretical underpinning of the study

Previous studies on the performance improvement of cross-border logistics had extensively focused on the theories of value chain, resource-based view, and competitive advantage. Throughout the supply chain, each activity is expected to be minimized with maximum value which can be controlled by good practice in logistics management (Walters & Lancaster, 2000). Therefore, with regards to the value creation in the global supply chain related to the performance of operational cross-border logistics which is mostly implemented by LSPs and the government sector, a greater performance would generate better cost efficiency and more productive cross-border operations that would bring up value creation through the global supply chain (Claro & Claro, 2004; Grunert et al., 2010). On the other hand, LSPs and the government are required to have adequate and proper resources to handle the operations. Therefore, the theory of resource-based view was adopted in this current study as it involves the strategy and ability to control the resources (Barney et al.,

2001) and deconstruct the sources of a firm's competitive advantage both internally and across cooperative partnerships (Foysal & Zhen, 2019). The following statement clarifies the theories used to develop the research model, and how the variables suit the framework and support their mediating roles.

2.7.1 Theory of global value chains (GVCs) adoption

Current empirical studies have extensively focused on the theory of global value chains (GVCs) in a wide range of academic disciplines, including economic sociology, international economics, regional and development studies, economic geography, international political economy, supply chain management, operations management, and international business (Kano et al., 2020). Moreover, the framework of global value chain has evolved from its academic origins into a major paradigm used by a wide range of country governments and international organizations (Gereffi & Fernandez-Stark, 2016). The GVCs concept supported how the firms handle all activities efficiently with specific resources to enhance competitive advantage and gain more value-addedness along the supply chains. Researchers are interested mainly in the strategies of firms to strengthen their profit and exploit their specific advantages. For example, Griffith and Myers (2005) found that the firms can achieve better performance when the strategies for governing are fitted to the cultural expectation of global supply chains partners. Eriksson et al. (2014) found that small firms need to develop dynamic capabilities to manage GVCs to overcome liabilities of smallness and newness. Lojacono et al. (2017) stated that more complex transactions in a GVC requires greater coordination for all related participants, which is similar to the findings of Sinkovics et al. (2019) who agreed about building knowledge connectivity in a GVC. Zhang and Gregory (2011) stated that efficiency, innovation and flexibility in the global supply chain are the key success factors for value creation in each operations.

Consequently, the GVCs concept has been used to support and explain the variables of the study in terms of the linkage of its principles for cost reduction and driving efficiency in the business operation process with the performance of operational cross-border logistics (POCL) which is the main investigated variable of the study. Furthermore, the GVC generates the connection of the key players of increasing value-addedness in the global supply chain which includes the logistics service provider's

capabilities, government administration (LSPC, GA) and their collaborative implementation in the supply chain. Table 2.4 summarizes the empirical studies related to the role of LSP in the global supply chain. Also, Table 2.5 illustrates the general role of the government in the global supply chain.

Table 2.4

Summary of previous studies related to the role of LSPs in global supply chain

Authors (Year)	Role of LSPs in global supply chain
Tsekeris (2017)	Domestic transport conditions can enhance the apparent development of local firms, which support the regional and national growth of the business.
Prapinit, Boonyarit, Netsangsee, Melan and Hassan (2020)	The ability of transportation impacted the effectiveness of cross-border trades between Thailand, Lao Pdr, Vietnam, and China. Also, a transport condition should be supported by cooperative policies among related administrations in a region.
Andrejić, Bojvovic and Killibarda (2016)	The vehicle management based on the fleet efficiency concept is related to a higher level of decision making to select a transport service because it is concerned with the cost of product delivery along the supply chain.
Leung et al. (2002)	Logistics service providers affected the efficiency of the cross-border process in a tremendous way because they are concerned with the cost-of-service procurement, product delivery, warehouse, inventory, and allowance paid for workers, which occurs within a country and between countries.
Prapinit and Melan (2018)	Transportation is an activity generating economic connectivity in the tourism supply chain of Loei in Thailand, Laos Pdr., Vietnam and China.
Roslan, Wanhab and Abdullah (2015)	The LSP with capabilities to provide services with tangible, reliability, responsiveness, assurance, and empathy are enabled to maintain quality in providing services in the global supply chain.
Giovanis, Tomaras and Zondiros (2013)	The service quality of the LSP was the main driver for value creation in the supply chain because it can respond to customer expectations and behavioral intention to choose a service.
Pengman (2020)	The capabilities of LSP can develop operational logistics procedures for international trade due to primary expertise in providing logistics service as they are critical players in cross-border operations.

Source: Literature review of existing studies

Table 2.5

Summary of previous studies related to the role of government in global supply chain

Authors (Year)	Role of LSPs in global supply chain
Antún and Alarcón (2014)	Well-managed resources could validate government administration which is linked to the economic development in Mexico.
Charanwanitwong and Fraszczyk (2018)	Good practices related to financial management are the best resources of a government's performance on fundamental infrastructure development for rail liberalisation in Europe.
Oyedele (2015)	The service delivered by the public section is an intermediary that connects input and outputs as a chain of service.
Pinto et al. (2017)	The government plays an important role in the acquisition of the ownership in cross-border operations.

Source: Literature review of existing studies

In addition, the concept is also associated with the theories of resources-based view and competitive advantage in terms of strategic management to serve the development of cross-border logistics performance and strengthen cross-border trade in the regional areas. Therefore, the concept of GVC adopted in this research is suitable with the study's context and covers all investigated variables.

2.7.2 Theory of Resource-based view (RBV) adoption

The concept of RBV theory can be identified as the capabilities of an organization that enable it to compete with rivals using resources that are valuable, rare, difficult to imitate and cannot be substituted. The organization's capability in managing its resources will lead to its high performance and sustainable success. It requires knowledge and competencies such as those related to information technology and innovative skills (Barney, 1991; Furrer et al., 2008; Fensterseifer, 2009; Mile, 2012; Holdford, 2018). Different firms with the same strategy demonstrate different performance levels and resources (Furrer et al., 2008). There are direct relationships between firm resources and capacities (Holdford, 2018). For example, organizations with good internal processes and development resources will generate a better competitive advantage (Fensterseifer, 2009). Greater operational performance can be achieved due to the variety of resources that contribute to the capacity of the organization in offering products or services (Chen & Zhang, 2018).

Based on the original principle of the RBV model proposed by Barney (1991), the model presented an approach to achieve competitive advantage (see Figure 2.12). The supporters of this view stated that organizations should consider the internal environment to seek the sources of competitive advantage (Foysal & Zhen, 2019).

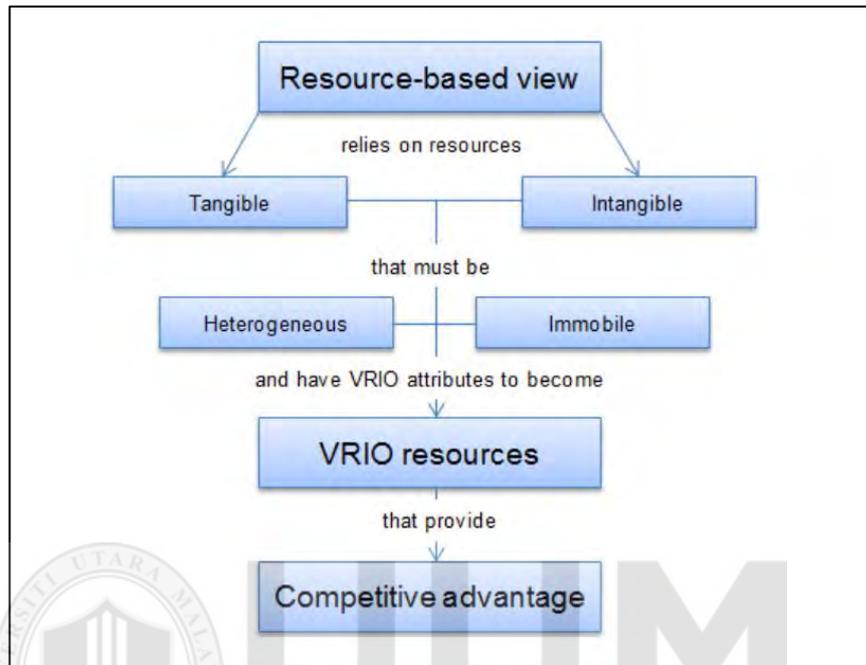


Figure 2.12

The Resource-based view model

Source: Barney, 1991

Later, the model was applied to a paradigm in various perspectives such as management, economics and finances, entrepreneurship, marketing and international business (Barney et al., 2001). Many empirical studies have extensively focused on the association between resource and firm performance and also proved that resources with value, rarity, imitability, and non-substitutability generate higher firm performance due to the enhancement of capabilities in the organization based on the VARIN framework (Yang et al., 2009; Kostopoulos et al., 2003), followed by the VRIO framework which mentioned value, rarity, imitability, and organization (Jurevicius, 2021) which had been proven by numerous other studies (i.e. Rivera et al., 2016; Monterio et al., 2019; Yuen et al., 2019; Yu et al., 2017; Yang et al., 2009; Ding et al., 2012; Chen & Zhang, 2018; Yu et al., 2018).

However, extending knowledge of the RBV theory in an organization's capabilities and competitive advantage had been widely proven to contribute more superior performance for both public and private organizations. For example, the studies by Santa et al. (2019), Mishra and Dey (2018), Charanwantitwong and Fraszczyk (2018), Dong and He (2018), and Studzieniecki et al. (2016) confirmed the robust of performance by capabilities of government, while the studies conducted by Wang et al. (2018), Monterio et al. (2019), Roslan et al. (2015), Yu et al. (2017), and Chung et al. (2018) also confirmed the contribution of the logistics service provider's influence on the performance of cross-border operation.

The RBV theory was adopted as the underpinning theory of the study in perspective of the relationship between R with GA, CA and LSPC. In addition, this theory was employed to support the extended knowledge on the capabilities of the operational performance and the linkage to the relationship between GA, CA and LSPC on the performance of operational cross-border logistics. Therefore, this study adopted the RBV under the assumption of the combination of all the variables in terms of the mediating roles of GA, CA and LSPC which can enhance the performance of operational cross-border logistics between Thailand and Malaysia. The assumption of the mediating roles of the variables in this study are extensively interesting as the results would generate an extraordinary concept applied specifically to strengthen the performance of operational cross-border and can be widely implemented in cross-border trading in other areas. Moreover, it is also a way to integrate the RBV concept more extensively and to expand more insights of the theory for practitioners and related implications.

2.7.3 Theory of competitive advantage

In the global supply chain, competitive advantage is conformed as generating proper strategic management to gain more benefits from trade beyond the competitors (Porter, 1990). Competitive advantage creates sustainability through a highly localized process. Differences in national values, cultures, economic structures, institutions, and histories contribute to competitive success. A company is able to achieve competitive advantage through its acts of innovation which can be manifested in the form of a new product or services design, a new operations process, marketing approach, or method

to enable people development. Therefore, this study adopted the theory of competitive advantage to link the resources and the performance of operation.

From a theoretical perspective, the firm's capabilities and competitive advantage are related. Based on the resources-based view theory, competitive advantage can be generated from resources and capabilities that are valued and differentiated from competitors (Porter, 1990). Many researchers reviewed the fundamental concept of how the organization can gain competitive advantage and propose ideas for practitioners to develop organizational resources to become capabilities (i.e. Holdford, 2018; Chen et al., 2019; Gunasekaran et al., 2017; Prapinit et al., 2019; Kang et al., 2018; Claro & Claro, 2004; Rai et al., 2018; Pengman & Kettapan, 2018). Therefore, the theory of competitive advantage is suitable to apply as an underpinning theory to support the model development of this research framework because the theory connects to the theories of GVC and RBV and also represents the mediating role to transform and develop necessary resources of both GA and LSPC to operate more efficiently for cross-border logistics.

2.7.4 Model development

This study investigated the contribution of the performance of operational cross-border logistics between Thailand and Malaysia. The performance of operational cross-border logistics (POCL) depends on several factors, including government administration (GA), competitive advantage (CA), and logistics service provider's capabilities (LSPC). However, those variables (GA, CA, & LSPC) could have full potential to drive efficient performance of operational cross-border logistics when they obtain the necessary and valuable resources (R). Therefore, to investigate the POCL between Thailand and Malaysia, the RBV is the relevant model for this study. The RBV model helps to activate the strategy to manage resources that generate capabilities and competitive advantage to handle the process of cross-border logistics. Another two theories had been integrated in this study which are the theories of competitive advantage and the GVCs which cover all activities occurring under cross-border trading with a focus on cost and efficiency. This study formulates a new model as illustrated in Figure 3.21 that combines all the elements namely R, GA, CA, and LSPC as a base to examine factors for both direct effects and mediating interacting effects on the POCL between Thailand and Malaysia.

2.8 Chapter Summary

In conclusion, past studies had focused on cross-border logistics, logistics and logistics services providers, firm capabilities and government administration. Generally, the studies pointed out that the logistics service providers' capabilities positively impact the performance of cross-border logistics. In contrast, the sources of capabilities come from internal and external resources of the cross-border context. Studies have also highlighted that internal resources have a positive and significant effect on competitive advantage, which in turn is positively related to cross-border logistics performance. Moreover, the high capabilities of logistics service providers also result in a good effect for competitive advantage. The relationship between all the factors discussed, designed as a model for the current research, is shown in Chapter three.



CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter discusses the research methodology which enables the generalization of the research output and the accomplishment of the research objectives. This research aims to investigate the resources of the logistics service providers and government administration and subsequently examine the relationship between the resources and capabilities of the logistics service providers and the logistics performance of the cross-border operations between Thailand and Malaysia. Accordingly, the methods of conducting this study including the research framework, hypotheses development, measurement of variables, research design, population, sample size selection and sampling technique, scales of the variables, validity and reliability tests, data collection procedures, and statistical tests for data analysis will be discussed thoroughly.

3.2 Theoretical framework

The synthetic concepts and background of related theories including the global value chain theory, the resource-based view theory, and the competitive advantage theory along with the summary of all relevant definitions of government administration and logistics service capabilities reveal that the performance of operational cross-border logistics is influenced by two main factors i.e. logistics service capabilities and government administration. However, the effectiveness of both factors in driving the performance of operational cross-border logistics depends on the resources and how they are managed to be valuable enough to build competitive advantage. The factor of competitive advantage will also generate logistics performance for border crossing operations. Therefore, this part of the literature review will explain more on how to develop a research model and show the relationship between each factor from relevant studies.

3.2.1 Resources for logistics service providers' capabilities

Rivera et al. (2016) investigated logistics clusters and the impact of further aggregation, training, and firm size on collaboration and value-added services. Training is a form of intangible resource. The study investigated the influence of training on capabilities, including a partnership that refers to transportation capacity, equipment, employees and warehouse resource sharing, value-added service, and transportation collaboration of logistic distribution companies. The results indicated that:

- 1) Training positively impacts transportation collaboration.
- 2) Training positively impacts resource collaboration.
- 3) Training positively impacts the provision of value-added services (VAS).

It was also revealed that training has a positive link with all the benefits (i.e., transportation capacity sharing, resource sharing, and VAS). This means that small and big companies with higher levels of training generate more collaboration and value-added services. Workers with technical course training also demonstrate better implementation and initiative, thus encouraging cooperation and value-added services.

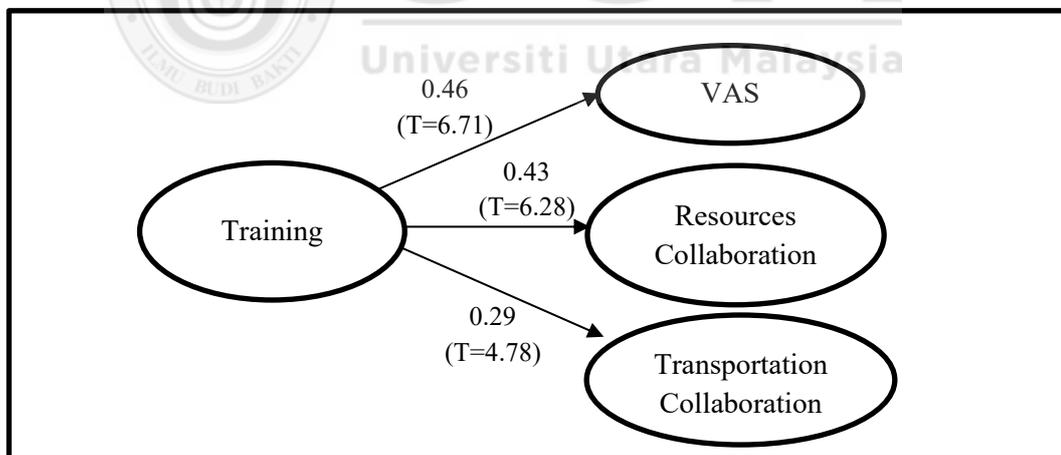


Figure 3.1

The relationship between training and capabilities of logistics distribution companies

Source: Adapted from Rivera *et al.*, 2016

Monteiro et al. (2019) investigated export performance and the mediating effect of dynamic capabilities. The factors investigated include financial, informational, and relational resources via a survey on 265 Portuguese exporting companies. The results indicate that:

- 1) Financial resources have a positive effect on dynamic capabilities.
- 2) Informational resources have a positive effect on dynamic capabilities.
- 3) Relational resources have a positive effect on dynamic capabilities.

The results suggest that financial advantage could be obtained by building strong relations with national financial institutions, which may help companies acquire funds for expanding their service operation and achieve competitive advantage due to their superior position and export performance. The information resources theory implies that lack of knowledge is the main barrier to the internationalization of small businesses because knowledge can lead to the identification of opportunities in the international market. Also, the relational factor theory explains that the networks between the company and external entities such as customers, suppliers, competitors, and government institutions revolve around the value of the firms' networks.

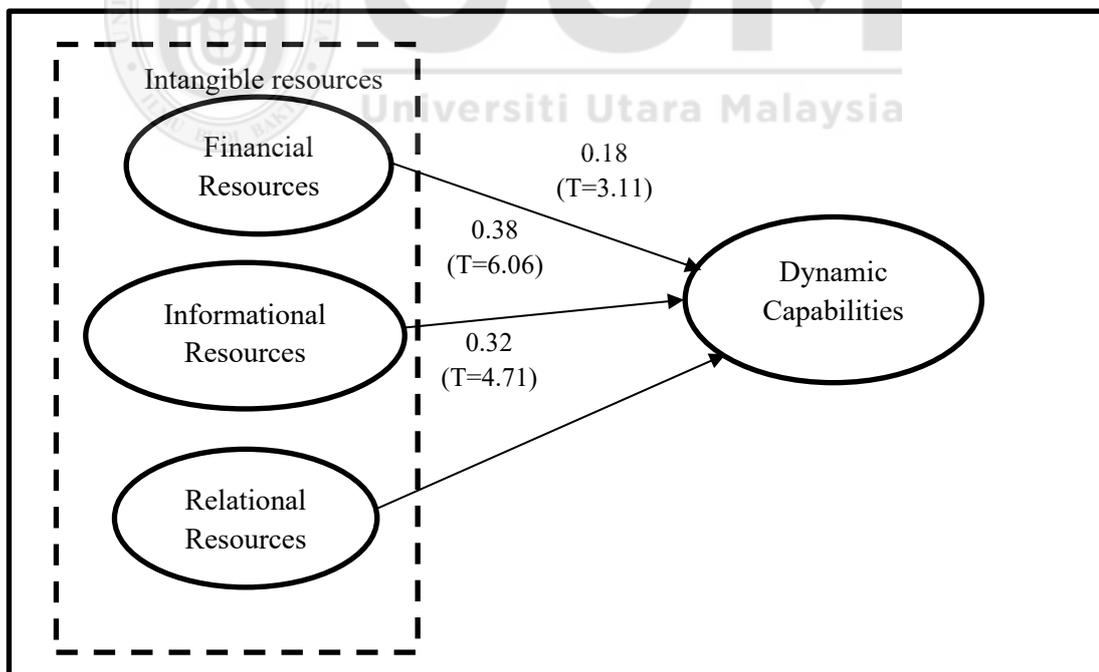


Figure 3.2

The relationship between the intangible resources (finance, information, relation) and dynamic capabilities of Portuguese exporting companies

Source: Adapted from Monteiro *et al.*, 2019

Yuen et al. (2019) investigated a taxonomy of resources for sustainable shipping management as well as their interrelationships and effects on business performance. Sustainable management is an essential capability of shipping companies due to an unstable environment. The research focused on the factors affecting sustainable shipping management i.e. internal resources, firm relationship management, and organizational learning resources, using the financial data derived from 162 shipping companies. The results indicate that:

- 1) A shipping company's internal resource has positive effects on sustainable shipping management.
- 2) A shipping company's inter-firm relationship management resources have positive effects on sustainable shipping management.
- 3) A shipping company's organizational learning resources have positive effects on sustainable shipping management.

It was indicated that an internal firm's resources (i.e., assets, capabilities, processes, attributes, and knowledge) which a shipping company solely possesses can enhance sustainable shipping management through supportive leadership, stakeholder focus, as well as training and education. Effective leadership minimizes the gap of sustainability strategy formulation between managers and employees, as well as build greater stakeholder satisfaction and commitment. Training and education on sustainability enhance both the managerial and technical competencies of a shipping company's employees.

Moreover, sustainable shipping management can be enhanced by creating internal firm resources such as contractual governance, relational governance, and communication channels.

A company with the ability to apply organizational learning resources can also improve sustainable shipping management (most significant effect), which relates to handling incremental changes and initiating radical changes such as innovation and technologies.

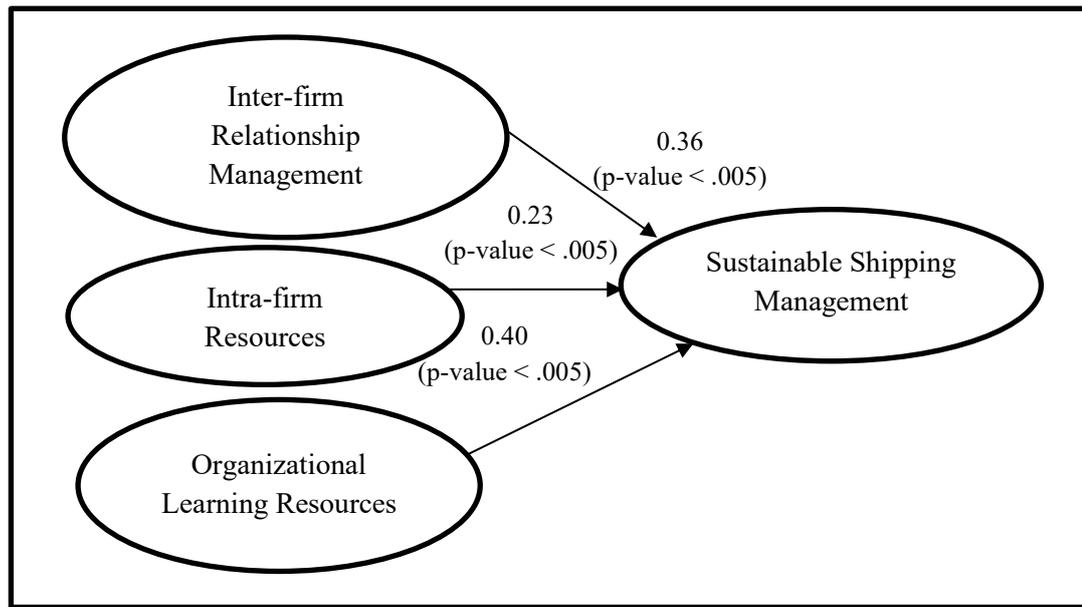


Figure 3.3

The relationship between resources of shipping companies and sustainable shipping management

Source: Adapted from Fai *et al.*, 2019

Yu et al. (2017) examined the flexibility and quality in logistics and relationships by focusing on intangible resources factors namely logistics flexibility and relationship flexibility, to influence logistics service quality. The research investigated supplier-buyer relationships in a distribution channel, collecting data by manufacturers, in which service quality is an essential capability that the logistics service provider should have. The results indicate that:

- 1) The higher the logistics flexibility level, the higher the level of logistics service quality.
- 2) The higher the level of relationship flexibility, the higher the logistics service quality.

The results indicated a relationship between logistics service quality and satisfaction by maintaining quick and accurate order delivery. In addition, in an environment of high uncertainty, high logistics flexibility is fitting. Also, a stable environment would help a firm obtain the benefits of relationship flexibility and work better to maintain supplier-buyer relationships.

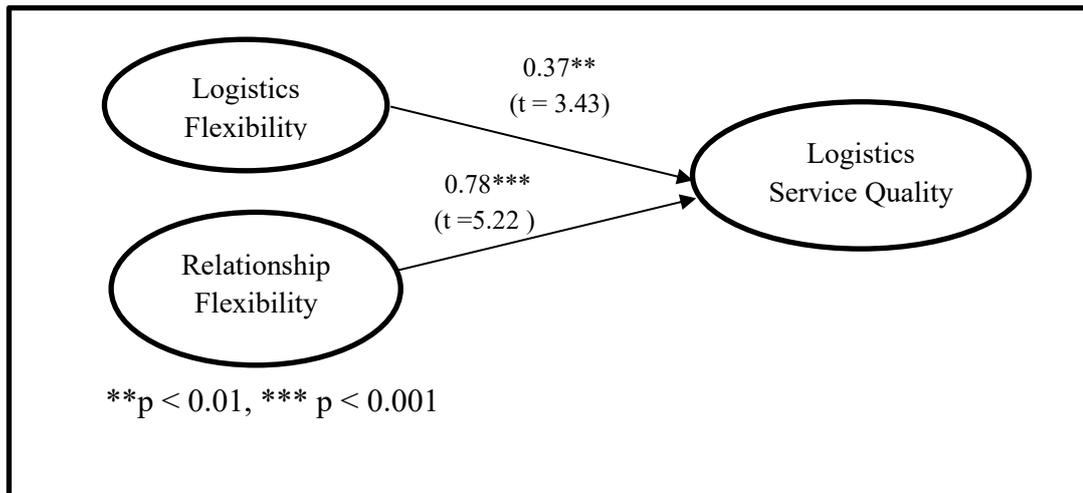


Figure 3.4

The relationship between flexibility and logistics service quality

Source: Adapted from Yu *et al.* (2017)

Koc and Ceylan (2007) investigated factors impacting the innovative capacity of large-scale companies i.e. internal technological environment, idea generation technology, and technology acquisition and exploitation, using data derived from 119 large-scale firms in Turkey. The results indicate that:

- 1) Technology strategy is a significant predictor of innovative capacity.
- 2) Idea quality and idea generation are significant predictors of innovative capacity.
- 3) Technology acquisition and exploitation is a significant predictor of innovative capacity.

The findings revealed that technology strategy is a significant predictor of innovative capacity. Institutional characteristics and internal management resources such as planning expertise generate innovative capacity in the strategic business plan because they usually have sufficient managerial skills for innovation management. Idea quality and idea generation were also emphasized as important determinants. Ideas are the main resources and starting point of innovation. Formal and informal idea generation systems enhance the number and quality of ideas. In addition, technology acquisition and exploitation is also an important predictor of innovative capacity specifically high-technology, advanced technical know-how, and research capabilities which may be gained from outside resource capabilities.

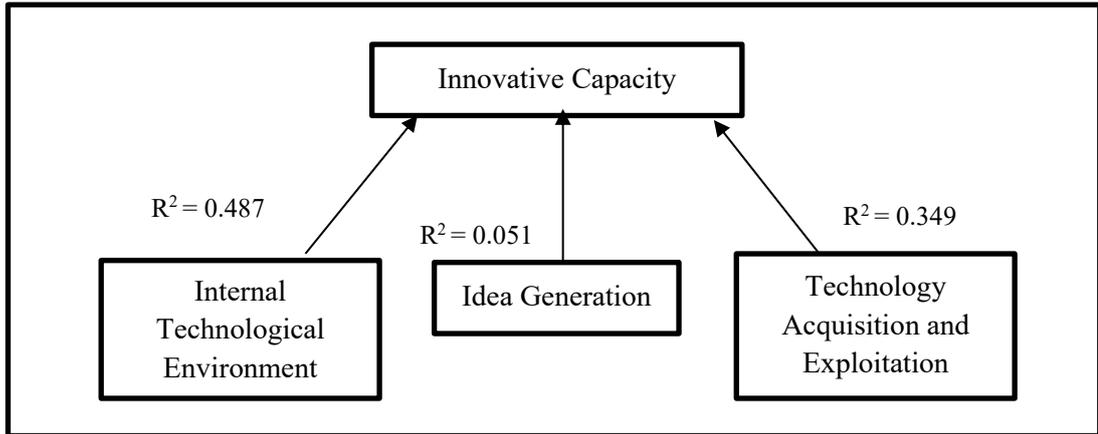


Figure 3.5

The relationship between factors influencing Innovative Capacity

Source: Adapted from Koc and Ceylan (2007)

Yang et al. (2009) examined the relationship between resources, logistics service capability, and innovation capability using data derived from a survey on 123 Taiwanese container shipping service firms based on the resource-based view (RBV) theory. The finding indicated that resources have a significant positive effect on logistics service capabilities and innovation capabilities. Furthermore, it implied that a high degree of resources such as information equipment and corporate image would generate better firm capabilities in terms of service and innovation. The results also supported and confirmed the RBV as a theoretical foundation for explaining the relationship between resource, innovation capability, and logistics service capability.

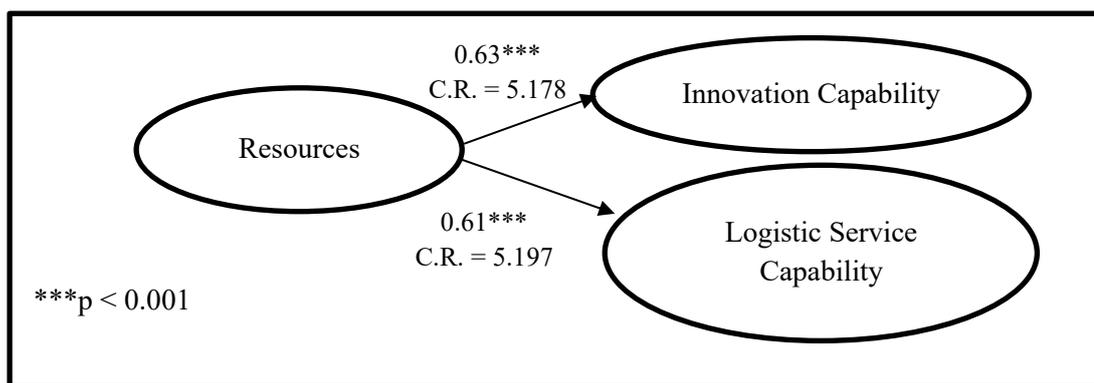


Figure 3.6

The effect of resources on innovation capability and logistic service capability

Source: Adapted from Yang et al., 2009

Ding et al. (2012) examined the operational routines and supply chain competencies of Chinese logistics service providers. The competencies examined include positioning, distribution support, and agility, using data collected from a survey on 76 Chinese logistics service providers (LSP). The standard operating procedures are intangible resources of the firm that affect its capabilities. The results clearly show that standard operation procedures with increased responsiveness have a statistically significant and positive effect on the competencies of the Chinese LSPs. The finding also indicated that resources in information and communication technology capability affect the Chinese LSPs.

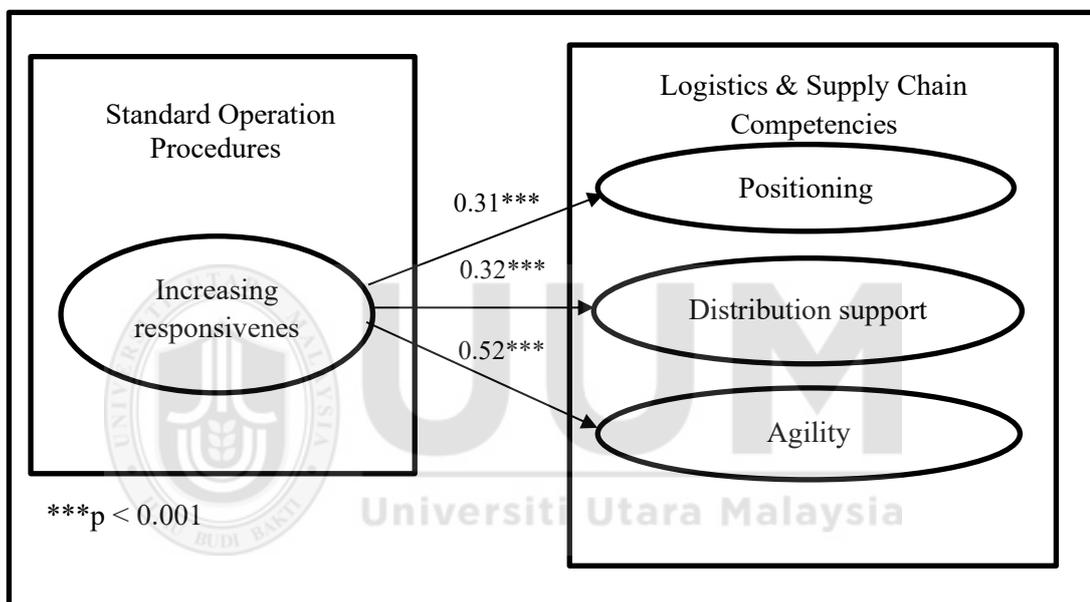


Figure 3.7

Relationship between the standard operation procedures and logistics & supply chain competencies

Source: Adapted from Ding *et al.*, 2012

Furrer et al. (2008) examined the relationship between firm-level resources, firm strategies, and performance. The data was collected from generalists, specialists, and innovators of a new industry. The study focused on resource configurations, generic strategy, and firm performance exploring the parallels between the resource-based and competitive strategy theories. The results revealed that two firms that are close in strategy space but are members of different resource configurations would have different performances. Therefore, it is implied that resource configurations lead to different performance levels even for firms belonging to the same strategy.

Chen and Zhang (2018) investigated the factors influencing the performance of logistics enterprises crossover, concentrating on internal and external resources. The data was collected from a survey on 101 logistics enterprises. The internal factor mentioned in the study is the intangible resources of the firm, which affect the firm's capabilities. The finding indicated that the internal factors including organizational factors, products or services, and business decision-maker have a positive significant impact on the cross-border operation performance of the logistics enterprises.

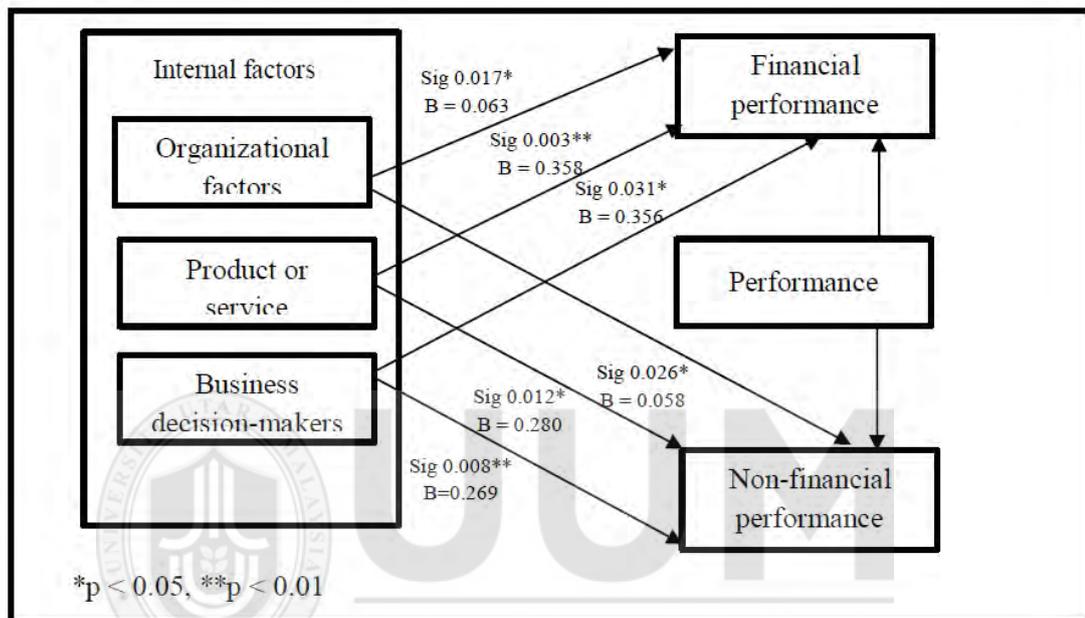


Figure 3.8

The relationship between internal factors and the performance of logistics enterprises crossover

Source: Adapted from Chen and Zhang, 2018

Yu et al. (2018) examined data-driven supply chain capabilities and performance anchored by the RBV theory. The research concentrated on the influence of data-driven supply chains on supply chain capabilities, consisting of information exchange, coordination, activity integration, and responsiveness, based on data gathered from China's manufacturing industry. The finding indicated that data-driven supply chains significantly affect supply chain capabilities i.e. information exchange, coordination, activity integration, and responsiveness. Furthermore, the results implied that the manufacturers always take critical issues on fluctuated demands from customers and suppliers to increase supply chain flexibility and responsiveness. Therefore, data-driven supply chain affects the capability of transforming the decision-making process

and leads to new frontiers in supply chain transparency, visibility, and process automation, enabling the service provider to posit collaboration, delivery, and service of complex customer orders.

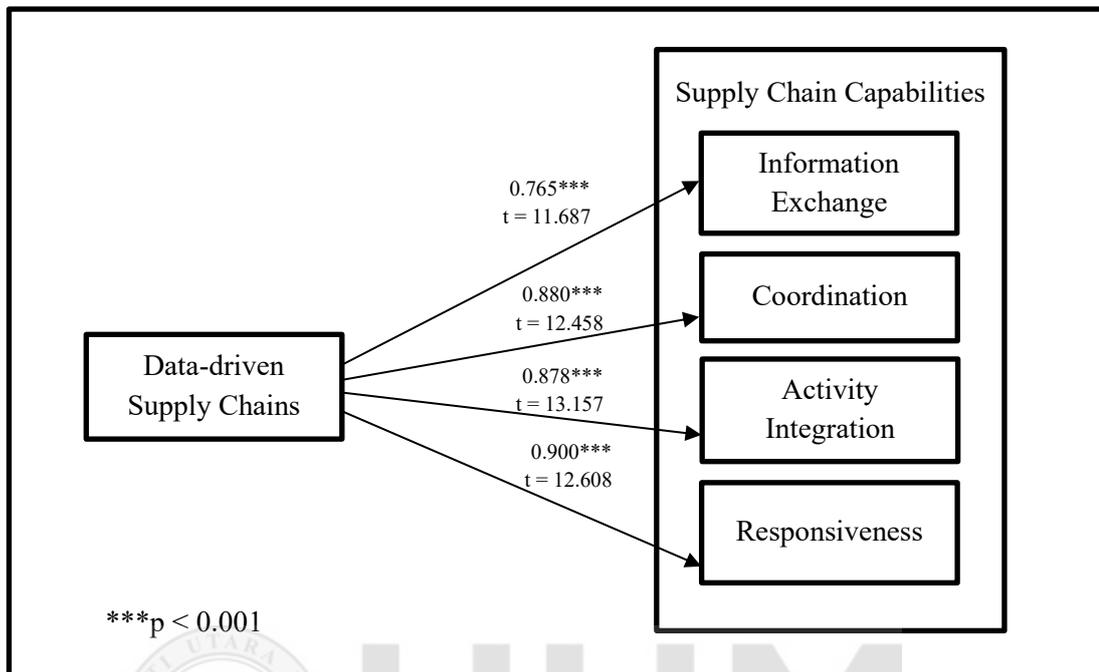


Figure 3.9

The relationship between data-driven supply chains and supply chain capabilities

Source: Adapted from Yu *et al.*, 2018

There are several essential considerations when studying the factor of resources. Firstly, there is a need to consider the important contribution of the RBV theory which has been applied in many researches. For example, the studies related fluctuated business environment, strong competition, and complicated operations faced by the firms. The results generally ensured that the firms' resources could obtain organizational capabilities. The volatile situation can typically occur on the Thailand-Malaysia border. Also, the processes implemented for cross-border trades depend on many stakeholders along the supply chains (Yu *et al.*, 2018). In addition, trade barriers and limited effectiveness could occur in cross-border logistics operations due to lack of knowledge. Therefore, the knowledge can identify opportunities in the international market which impact the firms' value (Monteiro *et al.*, 2019).

Secondly, the previous studies also illustrated that capabilities are enabled by two major resource perspectives i.e. tangibility and intangibility. The tangible resources will encourage working procedures such as information equipment and

communication technology. Meanwhile, company image will drive better firm capability in terms of service and innovation (Yang et al., 2009) and create a strong relationship with related agencies (Ding et al., 2012). It will also support providers with the capabilities to provide effective products or services to users.

The intangible resources hold a significant function in supporting better workforce capabilities in the organization. Training develops service providers to be more cooperative and value-added (Rivera et al., 2016). Learning organizational resources would lead to robust employee ideas (Fai et al., 2019), which are the primary resources and beginning of innovation (Koc & Ceylan, 2007). For the logistics service provider, logistics flexibility and relationship flexibility are essential resources that lead to high quality logistics services (Yu et al., 2017) as they concentrate on sustainable management in responding to customers in an unstable environment (Fai et al., 2019). It is also crucial for the business decision-maker at a management level, which positively impacts the cross-border operation performance of firms providing logistics services (Chen & Zhang, 2018).

All the past empirical findings confirmed that the capabilities of the organization cannot be established without appropriate and sufficient resources. Therefore, it motivates the researcher to study the influence of resources on logistics service capabilities in the context of cross-border operations between Thailand and Malaysia, which will benefit practitioners to innovate a strategic plan for improving operational cross-border logistics in the region.

Therefore, the following assumption is made:

H1. Resources positively and significantly affect the Logistics Service Providers' Capabilities.

3.2.2 Resources toward competitive advantage

Cao et al. (2019) proved the resource-based view and competitive advantage theories by investigating the linkage between information processing capability and competitive advantage as mediated by decision-making effectiveness. The resources mentioned in this research were intangible, including the information processing capability's value, rarity, inevitability, and non-substitutable. The data was collected from medium and large UK companies. The finding revealed that the information

processing capability's value, rarity, and inimitability are positively linked to competitive advantage. This implies that a firm can gain competitive advantage from its information-processing capability if it is simultaneously valuable, rare, and inimitable by developing the ability to capture, integrate and analyze information. A firm will match its information processing requirements with information processing capabilities, thereby better understanding its customers, making real-time decisions, and responding more quickly to increasing competition and other business challenges.

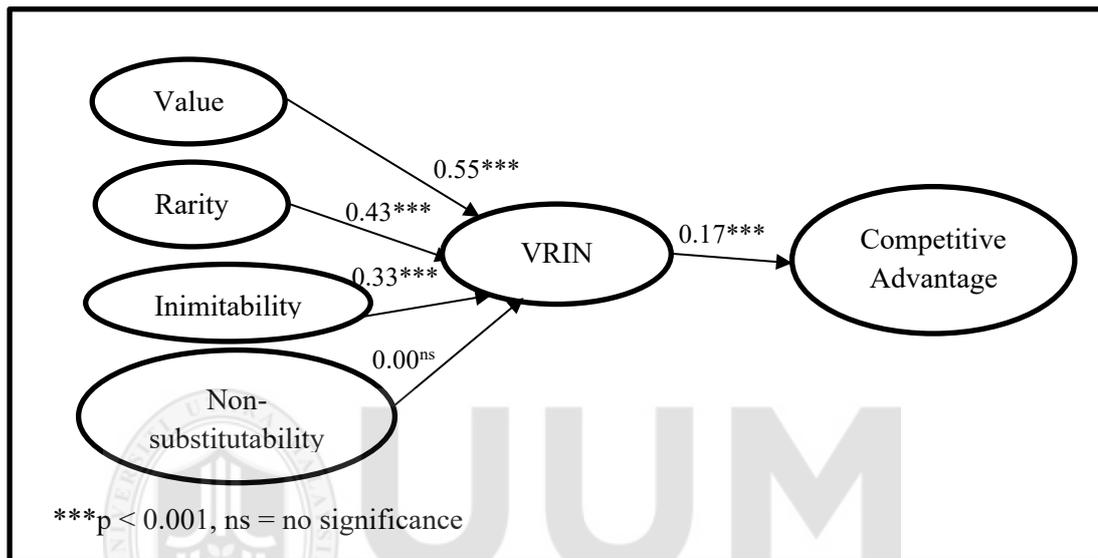


Figure 3.10

The relationship between resources and competitive advantage

Source: Adapted from Cao *et al.*, 2019

Fensterseifer (2009) proposed an analytic framework from secondary data for creating sustainable competitive advantages. The RBV approach is the underlying conceptual base for the territory-related (cluster and country) factors, whilst the MBV approach is the basis for the industry-related factors. This study concentrated on the influence of resources and capability development of firms belonging to industrial clusters. The model explains that the cluster-specific and country-specific factors including economic, social, cultural, and institutional, influence the firm's internal resources and capability development process. Therefore, these factors' can potentially lead to a sustainable competitive advantage for the firm.

In addition, the MBV approach was proven based on the finding that the industry-specific factors directly impact the value-delivering system of the firm, which concerns relations with buyers and suppliers. This generates and sustains the firm's competitive

advantage. Therefore, firms with internal resource processes and capability development generate better competitive advantage.

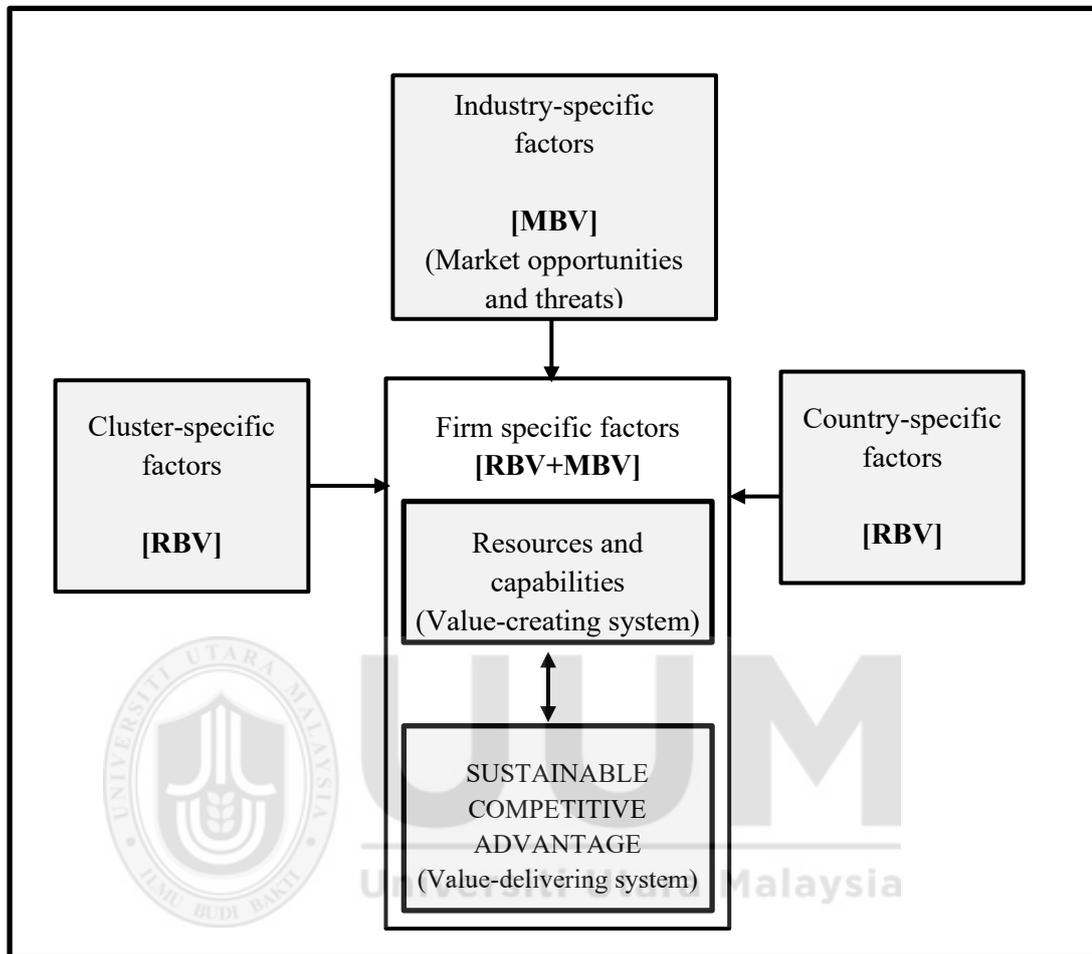


Figure 3.11

Strategic analysis of sustainable competitive advantages framework

Source: Adapted from Fensterseifer, 2009

Gani (2017) examined the logistics performance effect in international trade. The findings provided strong evidence of the positive role that logistics play in increasing business. The discussion also revealed that logistics achievements in low- and middle-income countries are at lower levels than the high-income countries. The logistics performance indicators and dummy variables, trade liberalization, contract enforcement, common language, and common border, were examined for international trade. The finding also revealed that contract enforcement and common borders are core and significant determinants for export and import, respectively, which positively affects competitive advantage in trade.

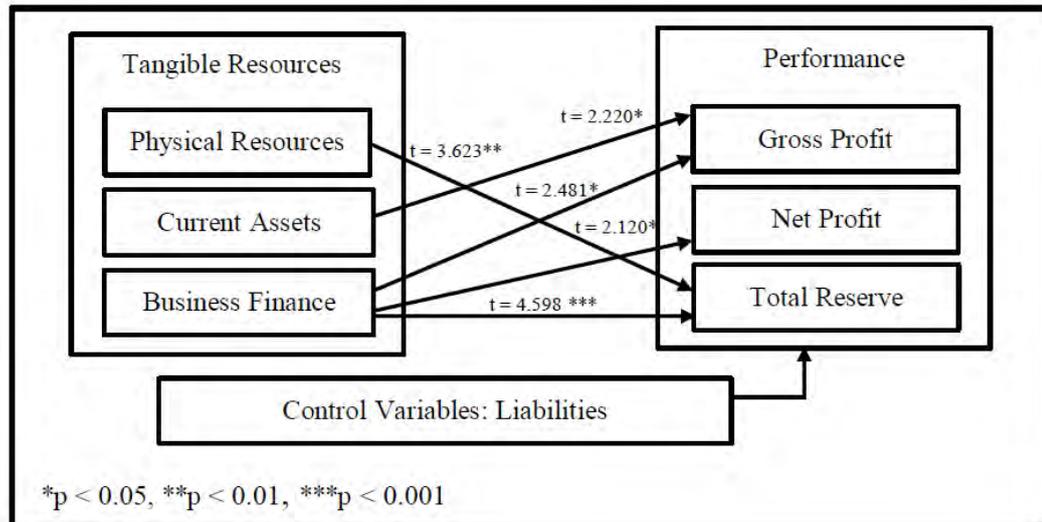


Figure 3.12

Relationship between tangible resources and performance that leads to competitive advantage

Source: Adapted from Othman *et al.*, 2015

Othman et al. (2015) examined the organizational resources and sustained competitive advantage of cooperative organizations in Malaysia based on data collected from 39 cooperatives registered in Malaysia. This study was conducted under the resource-based view theory which posits that tangible organizational resources are sources of superior performance and sustainable competitive advantage. The results showed that tangible resources, including physical resources, current assets, and business finance, have a significant positive influence on the performance of cooperative organizations. Furthermore, the positive effects of resources on performance also generate competitive advantage through internal strengths and weaknesses analysis, which exploit these resources because they can differentiate a company from its competitors thus leading to improved financial performance.

There is a linkage between resources and competitive advantage. Competitive advantage is gained when organizational resources are valuable, rare, inimitable, and non-substitutable (Porter, 1985; Cao et al., 2019; Fensterseifer, 2009). When information processing capabilities are specified, it will generate more effective customer service, responsiveness, and decision-making to a higher degree than other competitors because of better market understanding. This indicates that intangible resources have a positive impact on competitive advantage.

For tangible resources including physical resources such as infrastructure, current assets and business finance such as contract enforcement are speculated as a core competency and significant determinants for import and export, respectively, which has a positive effect on competitive advantage on trade (Gani, 2017; Othman et al., 2015). Therefore, resources are a critical factor leading to competitive advantage. However, there are still limited quantitative studies to identify the statistical significance level, which should be more beneficial for practical action. If the providers realize that resources actually lead to strong competitive advantage, they would have a clear direction in developing their operations and handling more superior business than industrial rivals, which bring long-term improvement in operations for cross-border logistics and supply chain.

Therefore, the following assumption is made:

H2. Resources positive and significantly affect Competitive Advantage.

3.2.3 Resources toward government administration

Waller and Genius (2015) examined the effect of information and communication technology in reducing the barriers of transforming the efficiency, effectiveness, and service delivery of government processes and systems in Jamaica through a qualitative approach. The data analysis results indicated that ICT infrastructure leads to the successful implementation of e-Government initiatives; specifically, the use of ICTs such as ICT infrastructure, privacy, and security improves government efficiency, effectiveness, and public service delivery in Jamaica. It was also found that social issues such as culture and digital divide affect the effectiveness of government.

Charanwanitwong and Fraszczyk (2018) investigated researches on rail liberalization in Europe and lessons for Thailand from the perspective of policymakers and academicians. The study drew attention to the problem of rail liberalization development in Thailand as well as examined the European rail liberalization and its potential application in Thailand. The finding revealed that funding is impacted by the implementation of rail liberalization in the context of Thailand. Government funding for rail infrastructure and subsidies is significant for railway performance in Thailand because the policymakers are concerned with issues in practice, especially financial management, which is a crucial indicator of organizational performance.

Antoniades and Haan (2019) examined government capabilities as drivers of performance towards the prosperity of Cyprus, anchored by the resource-based view (RBV) model. The study focused on government capabilities i.e. entrepreneurship, motivation, investment, and adaptation in affecting performance. Data was collected from 200 citizens in Cyprus. The results indicate that:

1) There is a positive relationship between Cyprus' government entrepreneurial capability and performance.

2) There is a positive relationship between Cyprus' government adaptation capability and performance.

Different firms have different abilities in managing their organization. Therefore, both entrepreneurship and adaptation capabilities of the government can be referred to as intangible resources as it is the organization's ability. The impact of entrepreneurial capability on performance implies that Cyprus' government could find and take advantage of opportunities and interpret innovation or technology into new products. In addition, this capability enables the government to recognize the commercial potential in managing capital, talent, and other resources that turn into benefits.

Adaptive capability affects political and governmental performance driver and leads a country to prosperity by managing the people's needs, thus generating both sustainable competitive advantage and success in new product development (NPD) and trading.

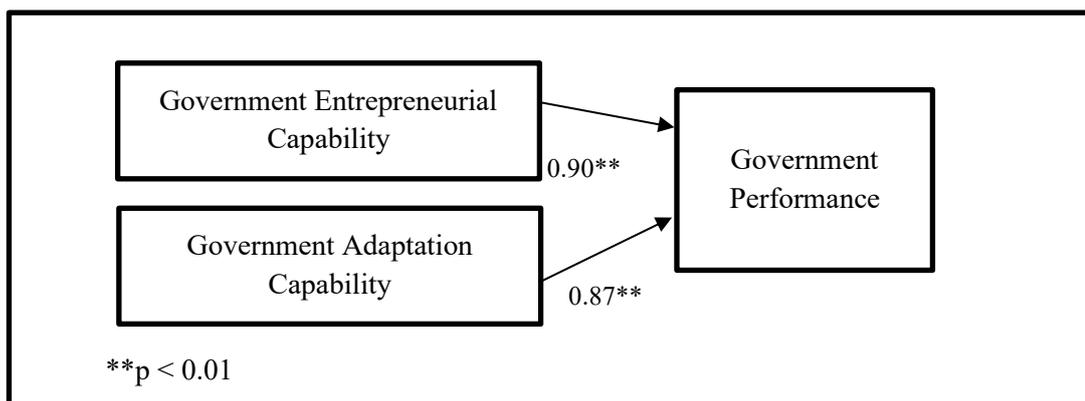


Figure 3.13

The relationship between government capabilities and performance

Source: Adapted from Antoniades and Haan, 2019

It is no wonder that available resources in the governmental sector can enhance government administration because the government is an organization that can be referred to as a policymaker that has full responsibility in controlling every process of international trade and facilitating trade infrastructures such as roads and rail liberalization (Charanwanitwong & Fraszczyk, 2018). In addition, the government is also related to practical issues that require all forms of resources. For instance, the consistency of information and communication technology, reduction of service delivery barriers, and the improvement of social issues (Waller & Genius, 2015).

There are yet any study focusing on proving the association between resources and government administration. However, some results demonstrated that the government would have better implementation if they were fulfilled with entrepreneurial and adaptive capabilities acquired by organizational resources (Antoniades & Haan, 2019).

Thus, it is interesting to explore the results of testing the quantitative relationship between both factors to confirm practical operation and to devise a strategic plan that will encourage a strong bilateral trade between Thailand and Malaysia.

Therefore, the following assumption is made:

H3. Resources positive and significantly affect Government Administration.

3.2.4 Government administration toward competitive advantage

Vaghi and Lucietti (2016) examined the costs and benefits of speeding up reporting formalities in maritime transport by establishing the MEDNET project (Mediterranean Network for Custom Procedures and Simplification of Clearance in Ports). Member countries of the Mediterranean Network run this project under national-level control. Therefore, the government is the primary organization for project implementation. The results indicated that integrating and upscaling existing Port Management Information System (PMIS) and National Single Window (NSW) impact port competitiveness.

If the government of the country can integrate those systems and operate them efficiently, the country would gain competitive advantage from the reduction of administrative costs for authorities and report parties in the port community, improvement of time-release of customs declaration, and reduction of time costs for goods due to lower waiting time for storage at the port before inspections. In addition,

the country will also get the potential benefit for the logistic chain triggered by the decrease of dwell time for containers in ports. Thus, the results of this study confirm that countries or organizations can gain better competitive advantage with proper administration of the procedural cost and benefits by the government.

Herciu (2013) investigated the international competitiveness of Romania as measured using Porter's Diamond. This research focused on the problem of competitive advantage using secondary data to analyze competitive advantage and disadvantage. The analysis concentrated on two particular factors on the international competitiveness of nations i.e. government and domestic enterprises. The results showed that Romania has more competitive disadvantage than competitive advantage. Competitive disadvantage has five determinants based on Porter's Diamond namely: 1) factor conditions, 2) demand conditions, 3) related and supporting industries, 4) firm strategy, structure and rivalry, and 5) government caused by favoritism, corruption and transparency in policy making (see Table 3.1). Therefore, this study's findings certify that the government (antitrust, education, subsidies) affects the macroeconomic level of international competitiveness.

Table 3.1

Porter's Diamond for Romania

Diamond determinants	Competitive advantage	Competitive disadvantage
Factor conditions	Redundancy costs Hiring and firing costs Investor protection	Availability of financial services Quality of overall infrastructure
Demand condition	Market size Number of procedures to start a business Trade tariffs	Poor investment in R&D Degree of customer orientation
Related and supporting industries	Internet bandwidth Broadband Internet subscriptions	Local supplier quality Local supplier quantity State of cluster development
Firm strategy, structure, and rivalry	Tertiary education enrollment Quality of math and science education	Firm-level technology absorption Capacity for innovation
Government	General government debt	Favoritism in decisions of government officials Corruption Transparency of government policy making.

Source: Adapted from Herciu (2013)

The relationship between government administration and competitive advantage has not been properly investigated. Still, the findings from the review of empirical studies on cross-border logistics operations reveal the theoretical idea of achieving competitive advantage from the good management of organizational resources which directly contributes to differentiated and superior products or services among competitors (Porter, 1990; Parrish et al., 2004). Therefore, factors of government administration would generally influence competitive advantage for national commerce.

In addition, numerous studies confirmed the relationship between government and competitive advantage. The countries or organizations will gain competitive advantage when the cost and benefits of the procedures are well administrated by the government (Vaghi & Lucietti, 2016). The government (antitrust, education, subsidies) also affects the macroeconomic level of international competitiveness (Herciu, 2013). Thus, it is interesting to explore the results of testing the quantitative relationship of both factors. The findings of this current research would come up with confirmation on theoretical knowledge and lead to the practical implementation in formulating government management strategies in terms of policies that will create a competitive advantage in the international trade between Thailand and Malaysia.

Therefore, the following assumption is made:

H4. Government Administration positive and significantly affects Competitive Advantage.

3.2.5 Government administration toward the performance of operational cross-border logistics

Santa et al. (2019) examined the role of trust in e-government effectiveness, operational effectiveness, and user satisfaction of e-Government-to-Business services (e-G2B) in Saudi Arabia. The study was conducted to explore the operational effectiveness of organizations from three government-controlled factors: quality of systems, quality of service, and quality of information. The results indicate that:

- 1) There is a predictive relationship between the quality of the system and operational effectiveness.

2) There is a predictive relationship between the quality of the service and operational effectiveness.

3) There is a predictive relationship between the quality of the information and operational effectiveness.

The findings imply that government systems facilitate the ability of businesses to gain competitiveness through better and faster operations and with higher quality and lower cost of products or services than the competition. Moreover, these results clearly speculate that operational effectiveness accomplishment via the use of e-Government systems would strengthen organizations to conduct more effective management decisions, maintain the productivity of the business, and enable the achievement of operational effectiveness. The use of e-Government systems could also assist organizations in making faster decisions, thus improving efficiency and productivity and remaining responsive to the needs of citizens and businesses. Therefore, the performance of operations can be influenced by productive government administration.

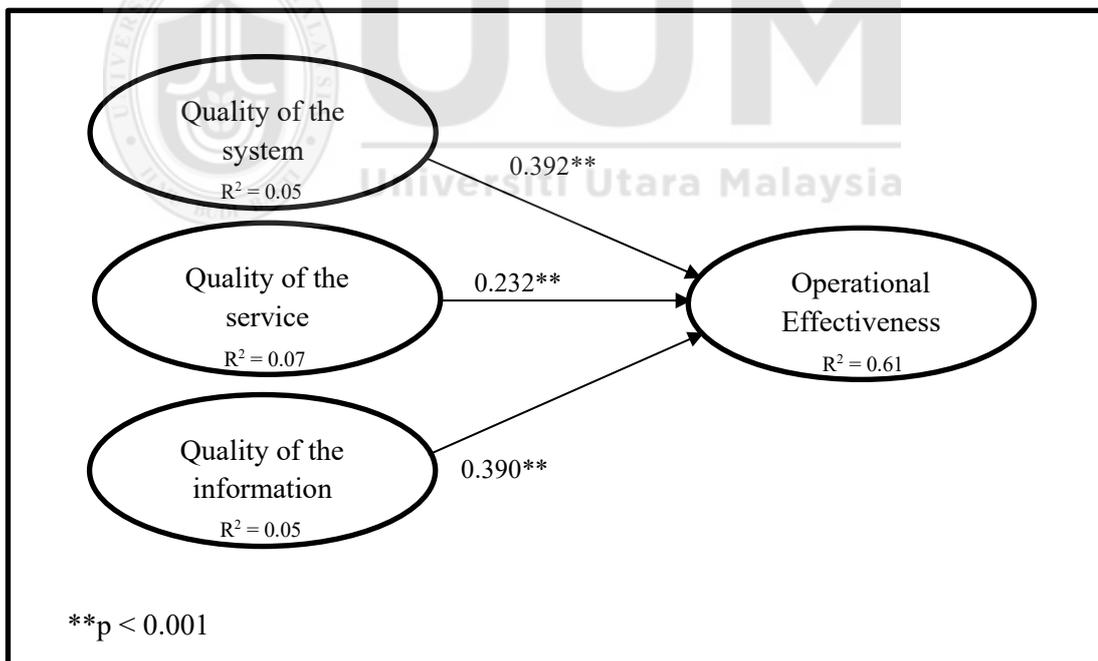


Figure 3.14

The relationship between quality of government administration and operational effectiveness

Source: Adapted from Santa *et al.*, 2019

Mishra and Dey (2018) examined the governance and performance of agricultural value chains in India. This research was conducted using a semi-structured interview from 25 key informants covering different categories of actors: farmers, traders, managers, scientists, and processors. The results showed that the standardization for cross-border trade of agricultural products is controlled by governance with cooperation and policymakers.

Charanwanitwong and Fraszczyk (2018) reviewed researches on rail liberalization in Europe and lessons for Thailand from the perspective of policymakers and academicians. The focus was on the roles of policymakers in affecting railway performance. This study revealed that problems of rail liberalization in Thailand are caused by the increase of freight volume and number of passengers due to poor government support in terms of road transport, customer satisfaction, capital share, and revenue potential of the railway market. The role of government related to labor, law, transparency issues, and restriction of railway infrastructure expenditure involves the development of rail liberation in Thailand, focusing on international partners in terms of intergovernmental agreements. Thus, these roles contribute to the performance of the railway operations.

Dong and He (2018) explored the linking of the past to the future of the cross-border timber trade from Myanmar (Burma) to China via the Yunnan Province, using a global value chain analysis. The results indicate that the political factors of countries affect the efficiency of border trade. Therefore, a government that allows more market liberalization reinforces the cooperation and coordination among international trade and stakeholders and persuades more investment for border business to strengthen the bilateral countries' financial and technological performance and ultimately cross-border logistic performance.

Studzieniecki et al. (2016) investigated the system of cross-border tourism in the Polish-Russian borderland, with the aim to develop the performance of cross-border tourism operations at the cross-border administrative area. The study had focused on the roles of government for cross-border cooperation to generate a performance development approach. The findings indicate that the act of the government in minimizing complicated formalities and documents for cross-border would eliminate the border traffic. Additionally, the focus on lifting border traffic barriers and

accessibility of Poland to the EU contributes to further tourism development opportunities at cross-border operating areas.

Very few studies had investigated the relationship between government administration and operational cross-border logistics performance using a quantitative approach. In the global supply chain, different countries have different practices for cross-border logistics operations. However, most empirical research investigated the association between governance and the performance of cross-border logistics by using a qualitative approach that can identify the sources and the effect of each problem occurring in cross-border operations. Based on the results summarized above, the government is fully responsible for developing the process of border-crossing functions such as standard control (Mishra & Dey, 2018), developing resources and infrastructures of border-crossing (Charanwanitwong & Fraszczyk, 2018), establishing cooperation and coordination among international trade and stakeholders (Dong & He, 2018), as well as facilitating operation process for cross-border to unlock complexities and barriers of commerce in the volatile environment of the country and region (Studzieniecki et al., 2016). Thus, the study had proven the positive effect of government administration on the performance of cross-border logistics.

The consideration of the relationship of both factors is simplified by the confirmed results from Santa et al. (2019), which indicated the influence of the quality of the government system on operational effectiveness i.e. faster processes, higher quality, and lower costs. Thus, it is interesting to explore the results of testing the quantitative relationship between the factors of government administration and the performance of operational cross-border logistics to confirm practical implication knowledge, which will contribute to a strong practical implementation and easier application in other contexts of cross-border logistics.

Therefore, the following assumption is made:

H5. Government Administration positively and significantly affect the Performance of Operational Cross-Border Logistics.

3.2.6 Logistics service providers' capabilities toward competitive advantage

Holdford (2018) reviewed the resource-based theory of competitive advantage for innovative pharmacy practice. The study aimed to describe, understand, and predict the integrated use of two theories i.e. the resources-based theory and competitive advantage theory for routine service of pharmacy practice. The results argued that the firms' capabilities are sources of business innovation, which lead to competitive advantage. This indicates that there is a directional relationship between firm capabilities and competitive advantage.

Chen et al. (2019) investigated the case study of JD.com, specifically the role of supply chain finance in improving the competitive advantage of online retailing enterprises. The research examined competitive advantage as enhanced by employing supply chain finance (SCF) practices for the online retailer, using an interview method for data collection. The results demonstrated that an improved competitive advantage could be generated by fintech development and bargaining power. Fintech facilitates digitalization and capitalization, which in turn improve transparency and efficiency, whilst bargaining power affects the production process. Furthermore, the results from this study provided a model for implementation that assists the enterprise in building a relationship with supply chain partners to achieve competitive advantage. Therefore, it is clear that the firm's capability in handling the supply chain finance influences its competitive advantage.

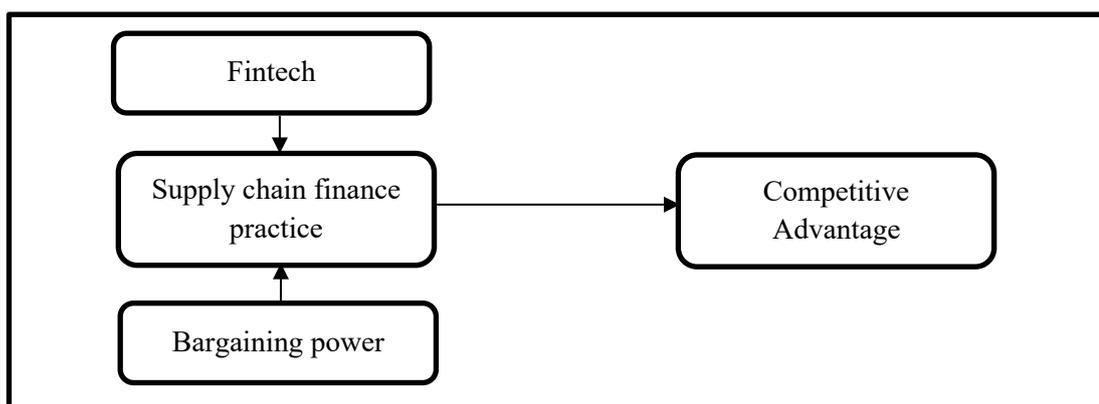


Figure 3.15

The relationship between supply chain finance practice and competitive advantage

Source: Adapted from Chen *et al.*, 2019

Gunasekaran et al. (2017) reviewed of literatures on the usage of information technology (IT) in logistics and supply chain management to achieve competitive advantage. The results demonstrated that the strategic and synergistic use of IT for adaptation, alignment, and agility in logistics and supply chain management contributes to competitive advantage. Additionally, firms would be able to deal with uncertainties in the supply chains, have IT share information, increase performance, assist in evaluating the situation, and provide accurate forecasts according to market changes. This study also provided a framework for explaining the influence of strategic IT use on competitive advantage.

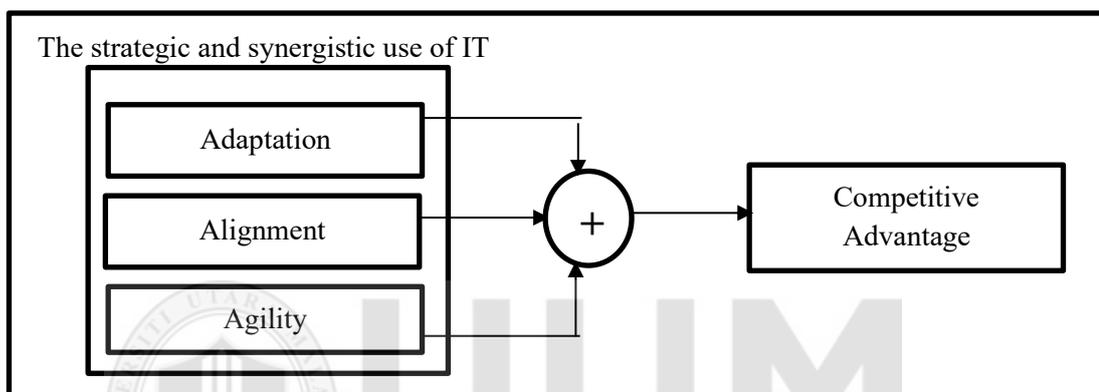


Figure 3.16

The influence of strategic IT usage on competitive advantage

Source: Adapted from Gunasekaran *et al.*, 2017

The theoretical perspective states that firm capabilities and competitive advantage are related. The resources-based view theory asserts that competitive advantage is generated from resources and capabilities that differentiate a firm from its competitors (Porter, 1990). Many researchers had reviewed the fundamental concept of how an organization can gain competitive advantage and proposed ideas for practitioners to develop organizational resources to become capabilities that contribute to sustainable performance (Holdford, 2018) such as online retailing enterprises that improved competitive advantage by employing supply chain finance (SCF) practices i.e. fintech and bargaining power (Chen et al., 2019). In addition, the strategic and synergistic use of IT that can be adapted and aligned with the appropriate situation is also essential for generating competitive advantage (Gunasekaran et al., 2017).

Although many empirical studies had confirmed the direct relationship between firm capabilities and competitive advantage, very few had investigated the relevance by testing the statistical significance of those two factors. Therefore, there is a need to prove the direct relationship between the logistics service providers' capabilities and competitive advantage. The results will be beneficial for extending the theoretical knowledge thus leading to practical implementation in the many contexts of international trade.

Therefore, the following assumption is made:

H6. Logistics service providers' capabilities positively and significantly affect Competitive Advantage.

3.2.7 Logistics service providers' capabilities toward the performance of operational cross-border logistics

Wang et al. (2018) examined the relationship between logistics capability, supply chain uncertainty and risk, and logistics performance based on an empirical analysis of the Australian courier industry. The study examined the effect of logistics capability on logistics performance under volatile risks along the supply chain. The results proved a positive association between logistics capability and logistics performance in the Australian 3PL courier companies. This is because logistics capability can mitigate uncertainty and risk in the supply chain, which improves logistics performance. For example, firms with the capability of reducing risks and uncertainty in logistics operations do not need to hire additional risk consultants to resolve risk management activities, thus minimizing the operating cost caused by damages, disruptions, and delays.

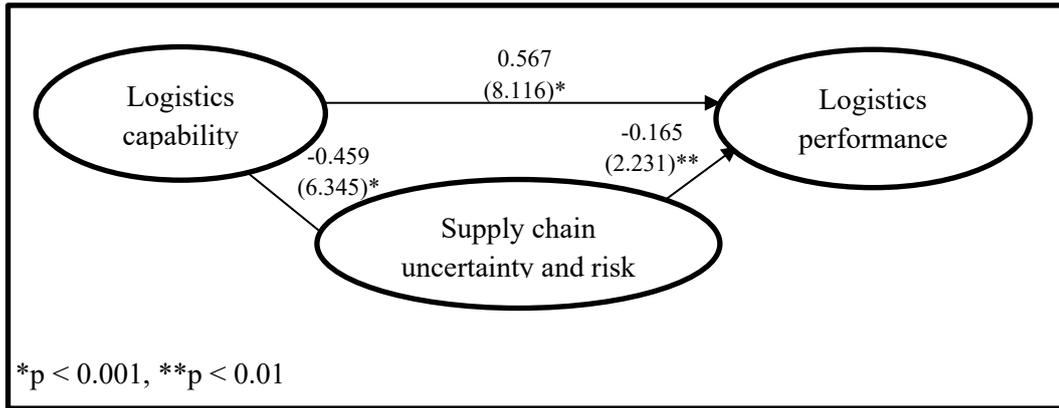


Figure 3.17

The relationship between logistics capability, supply chain uncertainty and risk, and logistics performance

Source: Adapted from Wang *et al.*, 2018

Monteiro *et al.* (2019) examined the effects of dynamic capabilities and entrepreneur orientation on export performance. The results confirmed that:

- 1) Dynamic capabilities have a positive impact on export performance.
- 2) Entrepreneurial orientation has a positive effect on export performance.

The results indicate that dynamic capabilities are a transformer of resources, converting them into performance development especially in the fluctuating and rapidly-changing environment in international markets such as resource integration and reconfiguration capability, learning capability, and ability to react to rapid changes.

Entrepreneurial orientation can be seen as a particular dynamic capability to describe enterprise opportunities and deploy resources such as innovation, proactiveness, and risk-taking, which are linked to the good management of intangible resources. The research finding also supports the theory that capabilities can foster performance in terms of rapid growth, expansion of business, and customer satisfaction.

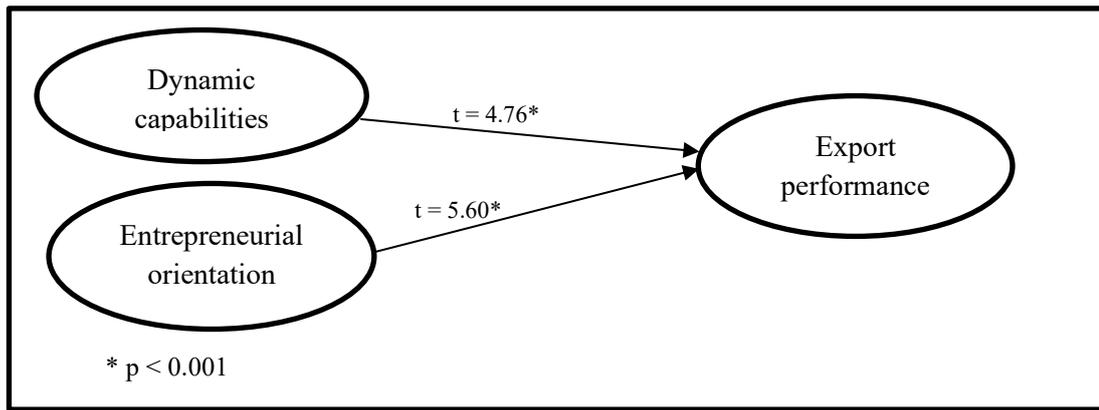


Figure 3.18

The relationship between dynamic capabilities, entrepreneurial orientation and export performance

Source: Adapted from Monteiro *et al.*, 2019

Roslan et al., (2015) investigated the case study of third-party logistics in Iskandar Malaysia using the SERVQUAL model. The study focused on identifying the effect of service quality on customer satisfaction, using the survey as a tool to distribute data among the customers of third-party logistics. The SERVQUAL model applied in this study consists of five tangible dimensions i.e. reliability, responsiveness, assurance, empathy, and service cost. The study explained relationships between customer satisfaction and service quality dimensions in Iskandar Malaysia's logistics service providers. The finding also indicated that the effectiveness of logistics services would lead to improvement in logistics operation performance.

Yu et al. (2017) examined the influence of logistic service quality on relationship satisfaction, using data from a survey of manufacturers in China. This study was based on the contingency theory which claim the effects of logistics service quality on firm satisfaction under different environmental conditions. There are three components of logistics service quality studied in this research i.e. timeliness, condition, and availability. The results indicated that logistics service quality affects relationship satisfaction positively and significantly. Furthermore, the results indicated that implementing strategies to enhance logistics service quality (e.g., investing in specific information systems to facilitate distribution) would allow a supplier to develop more satisfying relationships with its buyers. However, the study also identified that logistics service quality might depend on the logistics flexibility and relationship flexibility of logistics service providers.

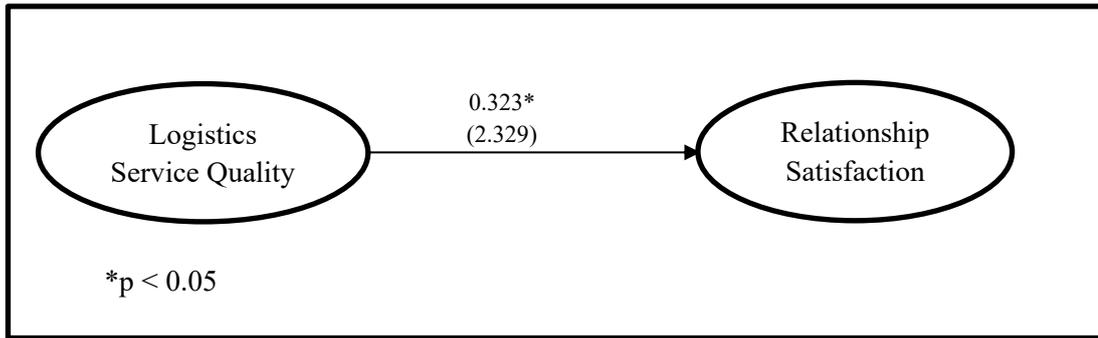


Figure 3.19

The effect of logistics service quality on relationship satisfaction

Source: Adapted from Yu *et al.*, 2017

Chung et al. (2018) investigated the effects of lead-time uncertainties and safety stocks on logistical performance in the border-crossing of the JIT supply chain. This study focused on the delivery risk problem that firms in free trade zones (FTZ) along the US-Mexico border (i.e., maquiladoras) face in their daily operations such as delays due to export/import procedures of international shipment. The results revealed that the third-party buffer inventory positively affects the JIT performance in a border-crossing. For example, replenishments can cause delays due to capacity or transportation issues. Therefore, capabilities to handle problems occurring in the operation of border-crossing logistics of third parties would improve logistics performance.

In a fundamental sense, the capabilities of the firm generate firm performance, similar to the idea that the capabilities of logistics service providers lead to the performance of their operations, especially in cross-border logistics where logistics service providers play a vital role in the success of international trade operations.

The previous studies also supported this concept because logistics capability can mitigate uncertainty and risk in the supply chain, thus improving logistics performance (Wang et al., 2018) such as delays due to export/import procedures of international shipment (Chung et al., 2018). The service providers are required to concentrate more on their dynamic capabilities and service quality in managing services offering, especially in the global market which is characterized by fluctuations and rapid environmental changes (Monteiro et al., 2019). This scenario also streamlines performance in terms of rapid growth, business expansion, and customer satisfaction

(Roslan et al., 2015; Yu et al., 2017). Thus, it is interesting to study the relationship between the capabilities of logistics service providers and operational cross-border logistics performance.

Therefore, the following assumption is made:

H7. Logistics service providers' capabilities positive and significantly affect the performance of operational cross-border logistics.

3.2.8 Competitive advantage toward the performance of operational cross-border logistics

Bendickson and Chandle (2019) examined the effect of human capital development programs and financial performance on operational performance. This research was conducted using data from Baseball Almanac, Forbes, and USA Today. The results indicated that good human capital development programs generate competitive advantage which positively influences operational performance, thus leading to improved financial outcomes. Therefore, competitive advantage affects operational performance and mediates the relationship between the firms' capabilities and operational performance.

Çemberci et al. (2015) examined the moderating effect of the Global Competitiveness Index (GCI) on the dimensions of Logistics Performance Index (LPI). The study focused on the evaluation of the logistics performance indicator created by The World Bank. The results revealed that GCI has a statistically significant effect as a moderator in the relationship between three of the six dimensions of LPI namely international transportation i.e. the capability of arranging competitively priced shipments, tracking and tracing i.e. the ability to track and trace consignments, and timeliness of shipment i.e. the time schedule of carrying transports. In short, these three dimensions build competitive advantage from the firms' capabilities in providing logistics services. Thus, the firm's high level service capabilities would lead to more competitive advantage and ultimately greater logistics operations performance.

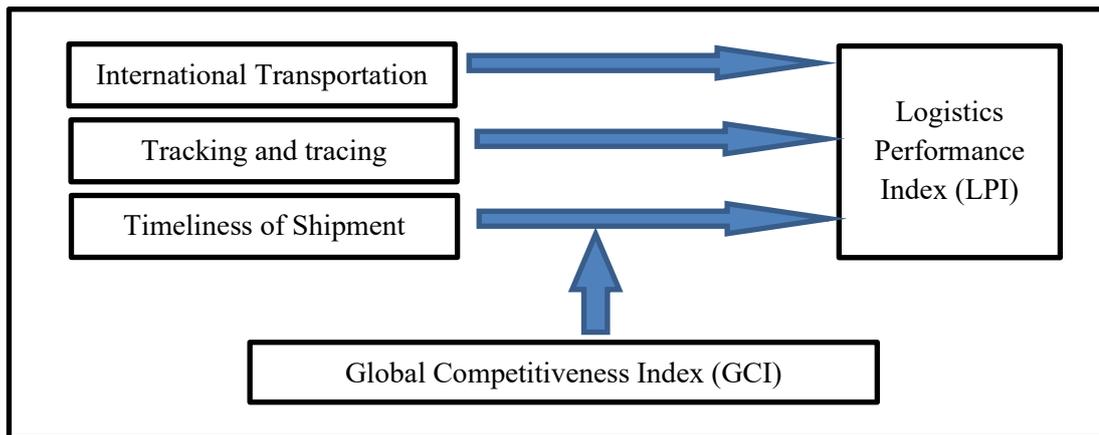


Figure 3.20

The moderating effect of global competitiveness index on logistics performance index.

Source: Adapted from Çemberci *et al.*, 2015

Very few studies had investigated the role of competitive advantage in creating logistics performance for cross-border operations and the connection between competitive advantage, resources, and the capabilities of logistics service providers. This is due to the very strong theoretical contribution of competitive advantage concepts applied in strategic management, which creates a successful organization and generates effective performance (Porter, 1985; Othman *et al.*, 2015). This concept also identifies factors that drive the competitiveness of the organization. Most ideas integrated to practitioners are well articulated with the resource-based view theory that concentrates on organizational capabilities (Fensterseifer, 2009; Cao *et al.*, 2019).

The above literature speculates that competitive advantage affects operational performance and mediates the relationship between organizational capabilities and operational performance (Bendickson & Chandle, 2019). The competitive advantage created from the firm's capabilities in providing logistics services and from the government's transparency, accessibility, responsiveness, and ability to create greater international cooperation (Dooren *et al.*, 2012; Transparency International, 2019; Veljković *et al.*, 2014) would lead to more competitive advantage and ultimately greater logistics operations performance (Çemberci *et al.*, 2015).

Therefore, the following assumption is made:

H8. Competitive Advantage positively and significantly affect the performance of operational cross-border logistics.

Therefore, it is fascinating to prove the connection between competitive advantages, logistics service capabilities, government administration, and performance of operational cross-border logistics based on the competitive advantage and resources-based view theories.

3.3 Hypotheses/propositions development

3.3.1 Main affect

The following eight hypotheses are concerned with the relationship between resources, government administration, and the logistics service provider's capabilities with the performance of operational cross-border logistics.

H1: Resources positively and significantly affect the logistics service providers' capabilities.

H2: Resources positively and significantly affect competitive advantage.

H3: Resources positively and significantly affect government administration.

H4: Government administration positively and significantly affect competitive advantage.

H5: Government administration positively and significantly affect the performance of operational cross-border logistics.

H6: Logistics service providers' capabilities positively and significantly affect competitive advantage.

H7: Logistics service providers' capabilities positively and significantly affect the performance of operational cross-border logistics.

H8: Competitive advantage positively and significantly affect the performance of operational cross-border logistics.

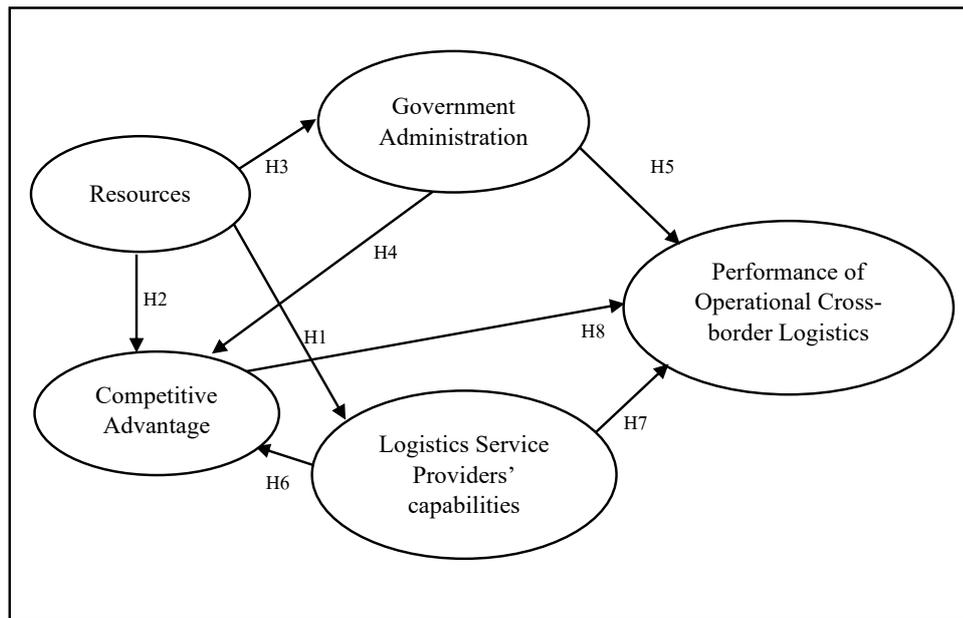


Figure 3.21

Conceptual model of the study

Source: Author, 2019

3.3.2 Interacting effect

This study was conducted to support the relationship between government administration, resources, competitive advantage, and the logistics service providers' capabilities as well as the mediator effect to extend the knowledge and theoretical contributions. Therefore, the mediator effects are hypothesized as follows:

H9: Government administration has a mediator effect in the relationship between resources and the performance of operational cross-border logistics.

H10: Competitive advantage has a mediator effect in the relationship between resources and the performance of operational cross-border logistics.

H11: Logistics service providers' capabilities have a mediator effect in the relationship between resources and the performance of operational cross-border logistics.

3.4 Measurement of variable/instrument

To evaluate the implementation of resources and the logistics service providers' capabilities, government administration should indicate the operational cross-border logistics performance. The respondents were assessed using a five-point scale for the sample group of LPSs and a structured interview for the sample group representing the government.

3.4.1 Measuring performance of operational cross-border logistics (POCL)

Many studies had investigated cross-border logistics. The following empirical studies indicate the measurement of cross-border logistics in different contexts. Therefore, no completed method can be concretely applied for measuring logistics performance. For example, some researchers measured the operation of border-crossing by the time taken for process operating. At the same time, some studies evaluated the performance of operational cross-border logistics by focusing on logistics quality. However, logistics efficiency is highly considerable for measuring border-crossing operations. Based on this study's aim to examine the relationship between the performance of operational cross-border logistics and related factors using the resource-based view and competitive advantage theories, this section will explain the use of time in logistics operations, logistics quality, and logistics efficiency to measure the performance of logistics operations. Finally, a summary of items suitable for measuring operational cross-border logistics performance is presented.

Time is highly significant in the operation of cross-border logistics, and one of the producers' motives with logistics systems is to securely transport their goods to consumers in a cost-effective way with minimal time lags (Gani, 2017). Limcharoen et al. (2017) explored Thailand's logistics performance by measuring the cost (USD) and time (Hours) for import-export. Chung et al. (2018) provided the effects of lead-time uncertainties and safety stock on logistics performance in a border-crossing Just-In-Time (JIT) supply chain. The factors affecting border-crossing in the JIT supply chain include third party (3PL) buffer inventory, on-hand safety stock, and capacity risk.

The study's findings mentioned that replenishment depends on delays because of the effect of transportation or capacity. The delays can also occur by call-off deliveries

because an inspection for border-crossing and customs requires the manufacturer with JIT to carry the level of safety stock. Most of the users agreed that the clearance process in the transparent and timely information needs to be highlighted (Bakar & Jaafar, 2016). Therefore, the time is generally related to the cost, which represents the performance of the operations.

For more efficiency, Vaghi and Lucietti (2016) suggested eliminating unnecessary costs for authorized administration and report parties in the community of the port so as to enhance customs declaration time for releasing, reduce time costs by decreasing waiting time before inspection, and reduce dwell time for the container in ports.

Another aspect of assessing the performance of cross-border logistics is to focus on logistics, quality competence, and global competitiveness (Limcharoen et al., 2017; Çemberci et al., 2015; Bakar & Jaafar, 2016) based on six main dimensions i.e. customs, infrastructure, international shipments, tracking and tracing, and timeliness or also known as Logistics Performance Index (LPI) (Schøyen et al., 2018; Rezaei et al., 2018). The Global Competitiveness Index (GCI) also has a moderator effect on international transportation; the capability to arrange competitively priced shipments, tracking and tracing; the ability to track and trace the consignments and timeliness, and the ability to carry out the transports at a scheduled time. Ekici et al. (2019) examined logistics performance by reforming the 12 pillars of GCI, and found that infrastructure, higher education and training, technological readiness, market size, business sophistication, and innovation pose a significant impact on logistics performance. Meanwhile, the pillars of institutions, macroeconomic environment, health and primary school, goods market efficiency, labor market efficiency and financial market development pose no effect on logistics performance.

Su and Ke (2017) explained the concept of each LPI item initiated by the World Bank, which was used to assess the logistics gaps between countries as follows:

- 1) Customs: the efficiency of customs and border clearance.
- 2) Infrastructure: the quality of trade and transport infrastructure.
- 3) International shipments: the ease of arranging competitively priced shipments.

4) Service quality: the competence and quality of logistics services, including trucking, forwarding, and customs brokerage.

5) Tracking and tracing: the ability to track and trace consignments.

6) Timeliness: the frequency with which shipments reach consignees within scheduled or expected delivery times.

Gulc (2017) also proposed the logistic indicators and service dimensions including tangibles, reliability, responsiveness, assurance, empathy, and logistic indicators i.e. lead time, regularity, reliability, completeness, flexibility, correctness, harmfulness, and productivity. Moreover, some studies still mention the factors influencing logistics process quality performance such as: 1) Logistics Process Quality (LPQ) performance namely Procedural Quality (PQ), Contact Quality (CQ), Information Quality (IQ), and Discrepancy Handling (DH), 2) Logistics Outcome Quality (LOQ) performance namely Product Availability (PA), Order Accuracy (OA), Timeliness (T), and Order Condition (OC), 3) repurchase intentions (RI), and 4) word-of-mouth communication (WOM) which is covered more in the operation of cross-border activities (Giovanis, et al., 2013). All these item factors will be summarized again in Chapter Three for the hypotheses and research model.

A high level of logistics quality and competence can also promote port efficiency because sufficient port capacity and size for one of the ports can be attractive for direct calls of deep-sea shipping lines (Schøyen et al., 2018). Yu et al. (2017) also mentioned that flexibility and the relationship with logistics have a positive significance that affects the service quality of logistics.

The performance measurement in the quality of operational cross-border logistics can also be recognized by customer satisfaction which is related to downstream environmental logistics practices, especially customer engagement, which can serve as a moderator in the relationship when companies engage with customers to tackle environmental concerns. An example of this is the effectiveness related to delays in inspection and consignments which impact customer satisfaction (Bakar & Jaafar, 2016). Moreover, environmental logistics practices provide an environmental mechanism than can drive performance improvements which in turn can be enhanced via engagement with appropriate stakeholders (Graham et al., 2018).

Schøyen et al. (2018) studied port efficiency by measuring inputs from terminal area, quay length, numbers of yard machines, and the outputs from container throughput, price, tracking & tracing, and timeliness. The indicators are quite similar to the borderland efficiency measurement that include LPs. As the international transportation and forwarding activities were fully outsourced to the Logistic Service Provider (LPS), LPS influences logistics efficiency as well (Bakar & Jaafar, 2016) as it was found that transportation infrastructure is the essential criterion followed by logistics services (Rezaei et al., 2018). The study on China's One Belt and One Road (OBOR) initiative by Liu et al. (2018) focused on the two factors affecting the initiative of OBOR namely functional logistic service provider and logistics service integrator. Thus, innovation is an essential factor in gaining competitive advantage and significant change in the supply chain which may directly and indirectly affect logistics performance and the relevant organization.

In logistics cost components, the charge and rate for domestic and international movement recorded the highest rate, which were improved by supporting environment-friendly processes. It posed a positive result for logistics efficiency.

Yu et al. (2017) studied logistics service quality (timeliness, availability, condition & quality) and found that both logistics and relationship flexibilities positively affect logistics service quality and indirectly affect relationship satisfaction. Logistics service quality has a significant positive effect on relationship satisfaction, and mediated the relationship between logistics and relationship flexibility. In addition, logistics service quality is influenced more by the relationship flexibility than a perceived uncertain environment. The high logistics flexibility that fits this environment would help a supplier enhance its logistics service quality and develop a more satisfactory relationship with its buyers.

Giovanis et al. (2013) studied the supplier's performance in Logistics Service Quality (LSQ) and its effect on retailers' behavior. The results appeared that the retailers evaluate the process elements of LSQ by assessing the supplier's procedural quality, discrepancy in handling procedures, and information quality. Process quality influences their perceptions about the transactions' outcome quality.

Logistics process quality was found to be the main driver, followed by outcome quality. Suppliers have to ensure the accuracy of orders, product availability, and timely delivery by investing in modern inventory management systems. It was also confirmed that the performance of LPQ positively affects the quality of logistics outcome, repurchase intentions, and favorable word-of-mouth communication. Moreover, the quality of logistics outcome positively affects repurchase intentions and favorable word-of-mouth communication.

Ling et al. (2013) reviewed studies on the effectiveness of the logistics performance assessment. The authors concluded that logistics assessment improves the quality and efficiency of comprehensive construction logistics, as well as the efficiency and benefit in the value of the income of each activity. The research suggests assessing the main validity, the method validity, the indicator validity, and dynamic effectiveness. There is also the need to assess the implementation of the QUO status and the future direction of development to further enhance the effectiveness of the performance evaluation of logistics support. This leads to the identification of the mechanism's inherent regularity to guide the logistics performance evaluation practices better.

The empirical studies revealed numerous studies on logistics performance with various constructs to measure. Table 3.2 shows that most of the studies mentioned Logistics Performance Index (LPI) to indicate performance as it represents the entire logistics operations. This research only focuses on measuring the performance of Operational Cross-border Logistics (POCL). The results found that the items selected to measure the logistics performance of operational cross-border were considered accordingly.

Firstly, the most frequently used components were selected to ensure accurate results. Then, the context and relevancy of each study was considered resulting in six main items adapted from the LPI. Next, each item was narrowed down to focus on the functions related to the operation for border-crossing, which obviously represents a specific area as a research scope. Ultimately, six constructed items were selected to measure the performance of operational cross-border logisitcs in this study as shown in Figure 3.22, namely customs, infrastructure, services, international shipments, tracking and tracing, and timeliness which are explained in Table 3.3.

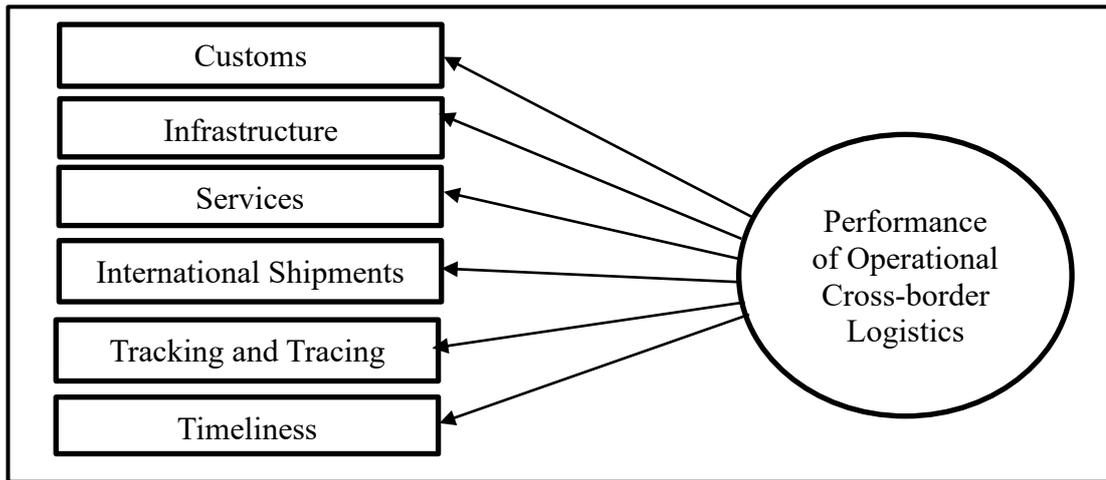


Figure 3.22

Measurement of the performance of operational cross-border logistics

Source: Modified from The World Bank, 2018; Rezaei et al., 2018; Roekel, 2017; Bakar and Jaafarr, 2016; Tavasszy, 2018.



Table 3.2

Summary of previous studies on Logistics Performance Measurement

Measurement	Authors	Gani (2017)	Limcharoen et al. (2017)	Çemberci et al. (2015)	Graham et al. (2018)	Bakar & Jaafar (2016)	Bakar et al. (2014)	Rezaei et al. (2018)	Ekici et al. (2019)	Schøyen et al. (2018)	Santa et al. (2019)
Customs		✓	✓	✓		✓	✓	✓			
Infrastructures		✓	✓	✓		✓	✓	✓			
International Shipments		✓	✓	✓				✓			
Logistics Quality and Competency		✓	✓	✓		✓					✓
Tracking and Tracing		✓	✓	✓				✓		✓	
Timeliness		✓	✓	✓				✓		✓	✓
Global Competitive Index				✓					✓		
Customer engagement					✓						
Cost						✓	✓				✓
Effectiveness						✓				✓	
Environment Friendly						✓	✓				
Service								✓			

Source: Literature review of existing studies

Table 3.3

Measuring Performance of Operational Cross-border Logistics (POCL), scale's definition, and sources of adopted questions

Scale	Sources	Scale items	Level of measurement
Customs: The efficiency of customs and border management clearing.	The World Bank (2018) Rezaei et al. (2018)	Customs declarations can be submitted and processed electronically and online. You and your customers are able to choose the location of the final clearance of the goods for imports. Goods can be released pending final clearance against an accepted guarantee.	Interval scale measured by the level of performance on a five-point scale where: 5 means "Very high" 4 means "High" 3 means "Average" 2 means "Low" 1 means "Very low"
Infrastructure: The quality of trade and transport infrastructure.	Rezaei et al. (2018) Roekel (2017) Bakar and Jaafar (2016)	The quality of the roads, and terminals The quality of telecommunications and other information sharing systems that are crucial for trade facilitation. The main infrastructures are well maintained. Logistics facilities are well developed.	Interval scale measured by the level of performance on a five-point scale where: 5 means "Very high" 4 means "High" 3 means "Average" 2 means "Low" 1 means "Very low"
Services: The competence and quality of logistics services.	Rezaei et al. (2018) Tavasszy (2018)	Logistics services (e.g., storage/loading facilities, transport agents, customs administrations) provide adequate services. Expedited clearance for the traders with high levels of compliance. Service with standard inspection. Less damaged and reduced lost freight. Providing logistic services without solicitation of informal payments in connection with logistics activities.	Interval scale measured by the level of performance on a five-point scale where: 5 means "Very high" 4 means "High" 3 means "Average" 2 means "Low" 1 means "Very low"

Table 3.3 (Continued)

Scale	Sources	Scale items	Level of measurement
International Shipment: The ease of arranging competitively price shipment.	The World Bank (2018) Rezaei et al. (2018) Wang et al. (2018)	Trucking charges are reasonable. Transloading facility charges are competitive. Maintaining of low operating costs in shipment.	Interval scale measured by the level of performance on a five-point scale where: 5 means "Very high" 4 means "High" 3 means "Average" 2 means "Low" 1 means "Very low"
Tracking and Tracing: The ability to track and trace consignments.	The World Bank (2018) Roekel (2017) Wang et al. (2018)	It is easy to track and trace consignments. Always providing a quick response about the status of tracking. Knowing the consignment location every certain point in time.	Interval scale measured by the level of performance five-point scale where: 5 means "Very high" 4 means "High" 3 means "Average" 2 means "Low" 1 means "Very low"
Timeliness: The frequency with which shipments reach consignees within expected delivery times.	The World Bank (2018) Rezaei et al. (2018) Bakar et al. (2014) Roekel (2017)	Consignments reach the consignee within the expected time. The order placement and receipt within expected time. Clearance and delivery of imports and exports as scheduled. Provision of adequate and timely information on regulatory changes.	Interval scale measured by the level of performance on a five-point scale where: 5 means "Very high" 4 means "High" 3 means "Average" 2 means "Low" 1 means "Very low"

Source: Literature review of existing studies

3.4.2 Measuring logistics service provider's capabilities (LSPC)

The problems occurring for cross-border logistics operations involve cooperation in many levels such as locality, region, nation, and inter-coordination from the related players including manufacturers, the government, and especially the service providers. However, as shown in many studies, service quality with a utilized strategic plan can bring efficiency in the cross-border logistics process. Therefore, their capabilities should be enhanced in response to good performance in logistics service.

Competencies of transport specialists in transport/logistics companies in Lithuania and Poland were studied to ascertain the essential abilities and practical skills for the transport/logistics specialists as the most critical factor driving the success of companies in the industrial market is the development of employee skills and competencies (Vaičiute et al., 2017). In this study, three components were investigated for competency specification namely competencies of the specialists in transport management and the transport manager's perspective on their attitudes, skills, and capabilities. The research findings revealed the essential competencies namely planning, coordinating, and controlling process fulfillment, maintaining customer relationships, estimating service cost, and seeking new customers and carriers. In addition, their essential character traits consist of being responsible, concentration on goals and results, communication ability, and logical reasoning. Moreover, employers also claimed that specialists in transport management should be professional and have experience in logistics. The skills needed are leadership, teamwork, and driving with a license. The capabilities of logistics service providers can also increase firm performance, especially innovation capabilities related to the handling of information technology systems and equipment resources. Innovation capability positively affects the service capabilities of container shipping as claimed by Yang et al. (2009). Therefore, better innovation capabilities will lead to enhanced logistics service capabilities. On the other hand, engaging with political sectors can also bring stakeholders wealth (Schweizer et al., 2019).

Empirical studies related to logistics service providers' capabilities (LSPC) speculated how the LSPC plays a vital role in OCBL and enriches performance in border-crossing operations. Therefore, this study adopts the measurement of logistics service

providers' capabilities. The indicators were then categorized in three significant aspects namely logistics, service quality, and capabilities as summarized in Table 3.4.

However, there are many sub-items measuring the capabilities of LSP as the influence of LSP towards value creation in the whole supply chain management is relevant to the advantages for both logistics service enterprises and customers. Items relevant to the context of cross-border logistics operation and those selected in this study as shown in Figure 3.23 are explained in Table 3.5.

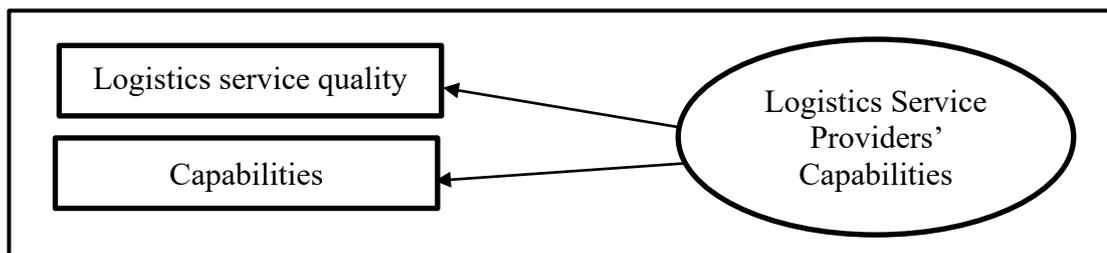


Figure 3.23

Measurement of Logistics Service Providers' Capabilities

Source: Modified from Wang et al., 2018; Yang et al., 2009; Parasuraman et al., 1985; Chatzoglou et al., 2014; Rivera et al., 2016.



Table 3.4

Summary of previous studies on the measurement of Logistics Service Providers Capabilities (LSPC)

Authors	Items	Zhu et al. (2018)	Gulc (2017)	Roslan et al. (2015)	Giovanis et al. (2013)	Yang et al. (2009)	Vaičiute et al. (2017)	Yu et al. (2017)
Measurement								
Logistics	Service culture	✓						
Service quality	Tangible		✓	✓				
	Reliability		✓	✓				
	Responsiveness		✓	✓				
	Assurance		✓	✓				
	Empathy		✓	✓				
	Timeliness					✓		✓
	Availability					✓		✓
	Condition					✓		✓
	Value-added						✓	
	Relationship building						✓	
	Information integration						✓	
	Flexibility					✓	✓	✓
	Procedural Quality					✓		
	Contact Quality					✓		
	Discrepancy Handling					✓		
	Order Accuracy					✓		

Table 3.4 (Continued)

Authors	Items	Zhu et al. (2018)	Gulc (2017)	Roslan et al. (2015)	Giovanis et al. (2013)	Yang et al. (2009)	Vaičiute et al. (2017)	Yu et al. (2017)
Measurement								
Capabilities	Innovation					✓		
	Attitude						✓	
	Transport management specialist						✓	
	Transport manager						✓	

Source: Literature review of existing studies



Table 3.5

Measuring Logistics Service Providers Capabilities (LSPC), scale's definition, and sources of adopted questions

Scales	Sources	Scale items	Level of measurement
Logistics Service Quality: The ability of logistics service providers to create and deploy resources to satisfy the logistics needs of their customers in pursuit of better service performance.	Wang et al. (2018) Yang et al. (2009) Parasuraman et al. (1985) Chatzoglou et a. (2014)	Providing simplification of logistics operations Providing protection for freight safety and risk Maintain at consistent on-time delivery for all customers Prompt response to problems and complaints Accurate and efficient routine service offering (e.g. price calculation, formality documentation)	Interval scale measured by the level of satisfaction on a five-point scale where: 5 means "Very good" 4 means "Good" 3 means "Modest" 2 means "Poor" 1 means "Very poor"
Innovation Capability: The firm's ability to continuously transform knowledge and ideas into new products, processes, and systems for the firm's benefit.	Yang et al. (2009) Rivera et al. (2016)	Systematic service quality management Regularly improve company's operational systems Exploring best methods to achieve corporate goals Employee reward system for innovative ideas Providing services that go beyond the standard logistics offering (e.g. multimodal service, door-to-door service, Quality Assurance testing and etc.) Operational collaboration with other logistics service companies	Interval scale measured by the level of satisfaction on a five-point scale where: 5 means "Very good" 4 means "Good" 3 means "Modest" 2 means "Poor" 1 means "Very poor"

Source: Literature review of existing studies

3.4.3 Measuring government administration (GA)

There is no fundamental way to ensure how well the government performs without measurement because of the complexities and variety of responsibilities in the public sector. It has been subjected to various variables under different phenomena to find an appropriate approach for measuring government or public administration. There is no source with available information to confirm the best government evaluation (Trapnell, 2013). Therefore, the indicators that are frequently considered by a variety of experts for selecting the measurement of public administration is to compare the quality and intensity of usage of each approach as shown in Figure 3.24 (Dooren et al., 2012).

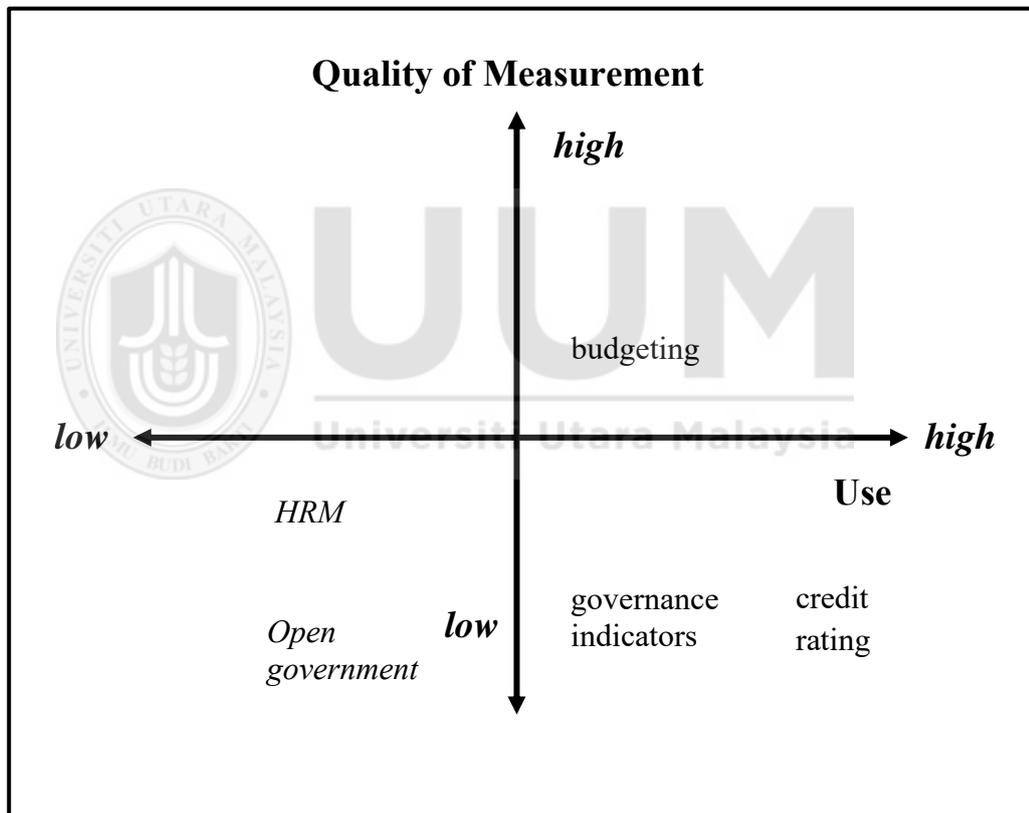


Figure 3.24

Measurement of quality and use

Source: Dooren et al., 2012

Some studies measure the quality of government based on the dimensions related to capacity, autonomy, and ability to work consisting of rules, capacity, output, and bureaucracy (Trapnell, 2013). Dooren et al. (2012) also identified the definition of performance i.e. 1) product performance which reflects success in matching resources

to defined tasks, 2) procedural performance which reflects success in keeping the government fair and honest, and 3) regime performance which refers to success in keeping the public sectors robust and resilient. A number of empirical studies had measured the performance of public or government administration.

The performance of public administration as analyzed by Dooren et al. (2012) with synthetic methods indicated three significant elements of public administration i.e. budgeting, human resources management, and open government. Measurement in budgeting is gradually well-developed. It is acknowledged as a relatively robust and comparative indicator. Human resources management is a component in which general measurement efforts exist as well. Still, these are not well developed to suit international comparative objectives as the different patterns of human resource management leaves a variety of management standards. With the dimension of open government, it is appropriate to measure the experimentation field. Its usage is implicated in the quality and intensity of use as shown in Figure 2.12. However, budgeting is higher quality than other dimensions. Although the open government and human resources management offer relatively low quality, the low frequency of usage leaves space for usage experimentation.

e-Government is also an essential part of the successful operation of cross-border logistics. Some international logistics processes are run using the electronic data interchange (EDI) system (The World Bank, 2018). e-Government refers to the use of information technology by government agencies (such as Wide Area Networks: WAN, internet, and mobile computing) that connect relations with citizens, businesses, and other governmental sections. These technologies provide a wide range of different purposes and improve the quality of governmental service delivery to citizens, better interactions with business and industry, and empower the citizens through information accessibility and efficient government management (The World Bank, 2002). Waller and Genius (2015) also claimed that Information and Communication Technologies (ICTs) enable the successful implementation of e-Government by using technology as an enabler, taking into account current realities, participative process and simple executions. Thus, one crucial indicator that is qualitatively applied in this study is the accessibility of the government's information and technology, which is also effective to apply for the cross-border logistics operation in this study.

The only effective procedure in one country would not successfully operate cross-border logistics because it is implemented by the networking between two countries/parties or more. The simplification of the process is encouraged by the government. Therefore the government administration can be measured under competitive advantage through Porter's Diamond determinants. They include four main determinants at the macroeconomic level namely 1) the factor conditions i.e. basic and advanced factors, 2) the demand conditions i.e. the level of buyer sophistication and market size, 3) the related and supporting industries i.e. the activities from value chain to promote competitiveness, and 4) the firm strategy, structure, and rivalry i.e. how they manage and compete (Porter, 1990). Measuring government administration by following Porter's Diamond was proven by Herciu (2013) who indicated that the government could be measured by monetary policy consisting of low inflation, low-interest-rate currency policy, and capital market regulation, as well as the public infrastructure, social and ecological standards. Another aspect found in the research was trade policy and competition policy such as open and free markets, education policy, and R&D policy.

Cooperation is related to cross-border activities as they are recognized as a networking system. Studzieniecki et al. (2016) mentioned the importance of collaboration in measuring cross-border operations in the authority of government at both national and international levels, depending on the context of each country. The cooperation in border-crossing for trade involves four constructs namely: 1) governmental collaboration i.e. the bilateral commitment of the countries among the same region, 2) cooperation of regional authorities i.e. the first order of foreign cooperation, 3) Euro-regional cooperation i.e. the condition among member countries in the region, and 4) cooperation of economic entities in which associated partners promote fair displays and provide business services.

Good cooperation between two countries is subject to governmental management. Some research revealed that the logistics operations made by port management and policymaker account for performance in technical efficiency, which means that the structure of government influences port efficiency (Schøyen et al., 2018). The governance structure can be measured by customs related to the operation in customs clearance and border management, logistics quality and competence that represent the

outcome as perceived by users, and infrastructure relevant to hard and soft structures that also appear to promote port efficiency. For example, Schweizer et al. (2019) mentioned that corporate governance could be ensured to meet the standard of local government, which enables the completion of a cross-border deal.

However, in the global environment, it is always related to the cross-border participants namely the shipper (consignor), destination party (consignee), carriers, the government, the Internet, and the public. Thus, the information explosion, growing global engagements, and the focus on international supply chain integration are forced to consider collaborative relationships with all stakeholders (Browsersox & et al., 2013). The cooperation or collaborative relationship should be critically concentrated on measuring government administration.

Open government is a culture of public governance that promotes the principles of transparency, integrity, accountability, and stakeholder participation in support of democracy and inclusive growth (Organisation for Economic Co-operation and Development [OECD], 2018).

From the outcome-oriented perspective, responsiveness refers to the degree to which policymakers alter the public administration and policy positions and spending in accordance with a change in public opinion (Baumgartner & Jones, 2010; Starling, 2010; Yoon, 2001). From the process-oriented perspective, responsiveness refers to the policymakers' practice of considering citizens' changing needs, wishes, and claims (Eom et al., 2018).

There are different types of collaboration in government namely: internal collaboration within the government (G2G—government to government), intra-collaboration between government and non-profit organizations and the private sector (G2B—government to businesses), and external collaboration between the government and the citizens (G2C—government to citizens) (Veljković et al., 2014).

There are many sub-items for measuring government administration as the influence of the performance of operational cross-border logistics, as summarized in Table 3.6. But the items that specifically fit with the context of this study consist of open government and cooperation. The open government covers all crucial elements of governmental procedures including transparency, accessibility, and responsiveness of

government practices. In addition, the government sector has a role in connecting every player and reinforcing border-crossing procedures. The cooperation then becomes another concentrated element for measuring government administration in this study, as shown in Figure 3.25. More details on how to evaluate each item and item question are shown in Table 3.7.

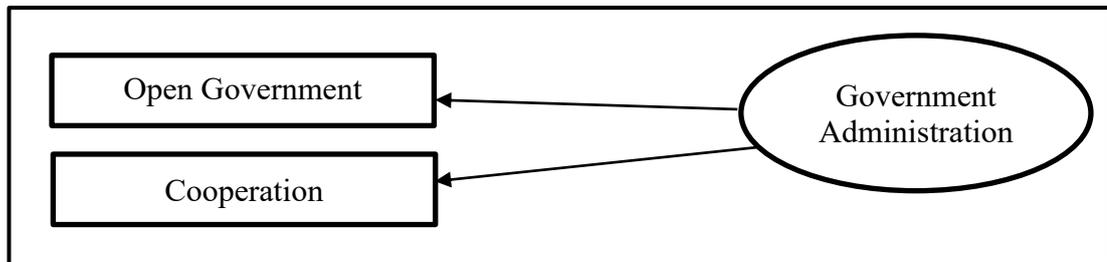


Figure 3.25

Measurement of government administration

Source: Modified from Dooren et al., 2012; Transparency International, 2019; Veljković et al., 2014; Parasuraman et al., 1985; Eom et al., 2018; OECD, 2018; Noordin, 2016; Wang et al., 2018; Rivera et al., 2016.



Table 3.6
Summary of previous studies on the measurement of Government Administration (GA)

Measurement	Authors	Dooren et al. (2012)	Waller & Genius (2015)	Herciu (2013)	Studzieniecki et al. (2016)	Schøyen et al. (2018)	Schweizer et al. (2019)
Budgeting		✓					
Human Resource Management		✓					
Open Government		✓					
Accessibility of Information and Technology			✓				
Monetary Policy				✓			
Public Infrastructure				✓		✓	
Social and Ecological Standard				✓			
Trade Policy				✓			
Competitive Policy				✓			
Cooperation					✓		✓
Customs						✓	
Logistic Quality and Competence						✓	

Source: Literature review of existing studies

Table 3.7

Measuring Government Administration, scale's definition, and sources of adopted questions

Scale	Sources	Scale items	Level of measurement
Open Government			
Transparency: The ability of the government to ensure that its actions, and those who are responsible for its actions, are exposed to public scrutiny and challenge.	Dooren et al. (2012) Transparency International (2019) Veljković et al. (2014)	Full disclosure of all consolidated subsidiaries Public commitment of being compliance with relevant laws	Interval scale measured by the level of performance on a five-point scale where: 5 means "Strongly Agree" 4 means "Agree" 3 means "Average" 2 means "Disagree" 1 means "Strongly Disagree"
Accessibility: Achievement when the government can ensure everyone's capacity to obtain information and to utilize services at any time, anywhere, and in a user-friendly manner	Dooren et al. (2012) Parasuraman et al. (1985)	Publication of information provided by government under open links that are available to download Convenient location and hours of operation	Interval scale measured by the level of performance on a five-point scale where: 5 means "Strongly Agree" 4 means "Agree" 3 means "Average" 2 means "Disagree" 1 means "Strongly Disagree"

Table 3.7 (Continued)

Scale	Sources	Scale items	Level of measurement
Open Government			
Governmental Responsiveness: The degree to which policymakers reacting to new ideas, demands, and needs of citizens	Dooren et al. (2012) Eom et al. (2018) OECD (2018) Parasuraman et al., (1985) Noordin (2016)	Regularly collect feedbacks on practice or policies by using a formal program	Interval scale measured by the level of performance on a five-point scale where: 5 means “Strongly Agree” 4 means “Agree” 3 means “Average” 2 means “Disagree” 1 means “Strongly Disagree”
Cooperation			
G2G—government to government: Internal collaboration within the government	Veljković et al. (2014) Wang et al. (2018)	Expand foreign trade relation Work towards concluding regional trade agreements Improve the effectiveness of border services	Interval scale measured by the level of performance on a five-point scale where: 5 means “Strongly Agree” 4 means “Agree” 3 means “Average” 2 means “Disagree” 1 means “Strongly Disagree”

Table 3.7 (Continued)

Scale	Sources	Scale items	Level of measurement
Cooperation			
G2B—government to businesses: Collaboration between government and non-profit organizations and the private sector	Veljković et al. (2014) Rivera et al. (2016)	Collaboration regarding employee exchange Support of participation in operational logistics courses	Interval scale measured by the level of performance on a five-point scale where: 5 means “Strongly Agree” 4 means “Agree” 3 means “Average” 2 means “Disagree” 1 means “Strongly Disagree”

Source: Literature review of existing studies



3.4.4 Measuring resources (R)

Numerous results of empirical studies had categorized two main aspects of resources namely tangible and intangible resources. Still, there is a small difference in the concentration of the application of the RBV. For example, some studies focused on the resources enriching the firm's performance, while some pointed to enhancing operational performance. Therefore, this study focuses on the resources that strengthen LSP enterprises' capabilities, which will result in logistics performance for border-crossing operations. Thus, the following measures were applied.

Empirical studies on the resources for operational cross-border logistics (e.g., Furrer et al., 2008; Ding et al., 2012; Yang et al., 2009; Antún & Alarcón, 2014; Madhani, 2010) mentioned two major aspects of the construct items for measuring tangible resources. The first is information communication technology (ICT) i.e. the capability to provide global connectivity and supply-chain visibility. The second one is web-enabled communications and infrastructure i.e. the equipment that supports the operational logistics process, allows proper management of the goods' flow, and improves productivity of transport operations.

The aspect of intangible resources includes corporate image i.e. the term for characterizing the attitude of the consumer towards certain goods and the consumers' perception of the service quality related to the corporate name (Holdford, 2018; Yang et al., 2009; Madhani, 2010). Management expertise relates to management practices, which lead to improved supply chain responsiveness (Yu et al., 2018; Madhani, 2010).

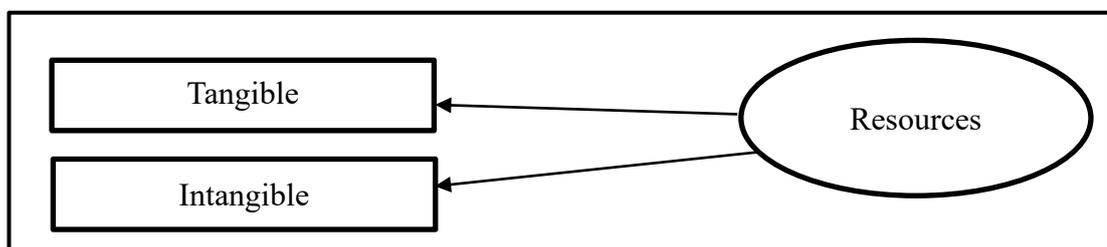


Figure 3.26

Measurement of resources

Source: Modified from Yu et al., 2018; Kam and Lalwani, 2012; Yang et al., 2009; Antún, and Alarcón, 2014; Madhani, 2010; Yu et al., 2018; Agmeka et al., 2019.

Table 3.8

Summary of previous studies on the measurement of resources (R)

Measurement		Authors	Holdford (2018)	Furrer et al. (2008)	Ding et al. (2012)	Yu et al. (2018)	Yang et al. (2009)	Antún & Alarcón (2014)	Madhani (2010)
Tangible	Land		✓						
	Machine & Infrastructures		✓				✓	✓	✓
	People		✓	✓					✓
	Technology		✓		✓	✓			✓
Intangible	Institutional Knowledge		✓	✓					✓
	Brand reputation		✓				✓		✓
	Management expertise		✓	✓					
	Financial assets		✓				✓		✓
	Organizational culture		✓				✓		✓

Source: Literature review of existing studies

Table 3.9

Measuring Resources, scale's definition, and sources of adopted questions

Scale	Sources	Scale items	Level of measurement
Tangibility: The physical things like buildings, fixtures, land, machines, people, and technology.	Yu et al. (2018) Kam and Lalwani (2012) Yang et al. (2009) Antún, and Alarcón, (2014)	Readily adapted information system to fulfill the needs of customers and partners. Information system of the customs is secured for business transaction. Cargo tracking system facilities are ready to use. Electronic Data Interchange (EDI) facilities are ready to use.	Interval scale measured by the level of performance on a five-point scale where: 5 means "Very Good" 4 means "Good" 3 means "Modest" 2 means "Poor" 1 means "Very Poor"
Intangibility: The resources that bring together more frequently the requirements necessary for producing sustainable advantage: to be valuable, rare, and difficult to imitate and replace by competitors.	Yang et al. (2009) Madhani (2010) Yu et al. (2018) Agmeka et al. (2019)	Financial stability. Successful product branding and positioning with satisfied and loyal customer base. Formal planning, command and control systems. Skillful and qualified personnel.	Interval scale measured by the level of performance on a five-point scale where: 5 means "Very Good" 4 means "Good" 3 means "Modest" 2 means "Poor" 1 means "Very Poor"

Source: Literature review of existing studies

3.4.5 Measuring competitive advantages (CA)

Competitive Advantages can be classified into two main streams. The first stream defines competitive advantage in terms of performance. In contrast, the second stream defines competitive advantage in terms of its sources or determinants (Sigalas et al., 2013) such as value, rareness, imperfect imitability, and substitutability (Porter, 1985). Thus, many researchers develop the measurement of competitive advantage from various perspectives.

Benchmarking is the practice of measuring competitive advantage and disadvantage. It is a strategic planning activity that identifies strategic gaps and compares business performance indicators with the competition (Mar, 2013). Vaghi and Lucietti (2016) also recommended the benchmarking method to measure the formalities in maritime transport for competitiveness. Therefore, benchmarking is a critical activity that identifies the position of a business.

A strategic plan can also be a tool for measuring competitive advantages. The four dimensions of business strategy as identified by Furrer et al. (2008) include:

- 1) Product orientation (PO): product/service innovation
- 2) Marketing orientation or differentiation
- 3) Scope: niche vs. related diversification
- 4) Conservative cost control; low cost, harvester, cost leadership.

The sub-dimensions are as follows: product/service quality control, developing/reforming existing products/services, advertising, competitive pricing, procurement of raw materials, maintaining high-inventory levels, reputation within the industry, innovation in marketing techniques and methods, experienced/trained personnel, capability to manufacturer/delivery of specialty product/services, innovation in manufacturing/service delivery processes, product/services in a high-price market segment.

Sigalas et al. (2013) developed a measure of competitive advantage suited for strategic management, which include:

- 1) Exploitation of all market opportunities.
- 2) Full exploitation of all market opportunities.
- 3) Exploitation of more market opportunities from a competitor.
- 4) Neutralization of all competitive threats.
- 5) Full neutralization of all competitive threats.
- 6) Neutralization of more competitive threats than competitors.
- 7) Reduction of total expense at a higher rate than competitors.
- 8) Reduction of operating expense at a higher rate than competitors.
- 9) Reduction of total expense divided by revenue to a higher extent than competitors.
- 10) Reduction of operating expenses divided by revenue to a higher extent than competitors.

Fu, Zheng, and Yan (2019) investigated factors that determine the competitive advantage of dairy supply chains. This study's measurement of competitive advantage consists of brand image, consumer trust concerning market orientation, risk resistance capacity, sustainability, and supply chain coordination.

Cao et al. (2019) conducted a research to study the linkage between information processing capability, decision-making effectiveness, and competitive advantage. The performance items of the company compared to that of the competitors were adopted to measure competitive advantage namely: increasing sales, increasing revenue, generating profits, and providing a product at a lower cost. The more effective ones were used to increase the firm's competitive advantage.

This current research prefers to focus on strategic management items as presented in Figure 3.27 because they provide a sense of direction and an outline of measurable goals. Moreover, strategic planning is a tool that is useful for guiding day-to-day decisions and for evaluating progress and changing approaches when moving forward (Gartenstein, 2018), which is suitable for the context of border-crossing operations among global rivals and complicated differentiation between both countries.

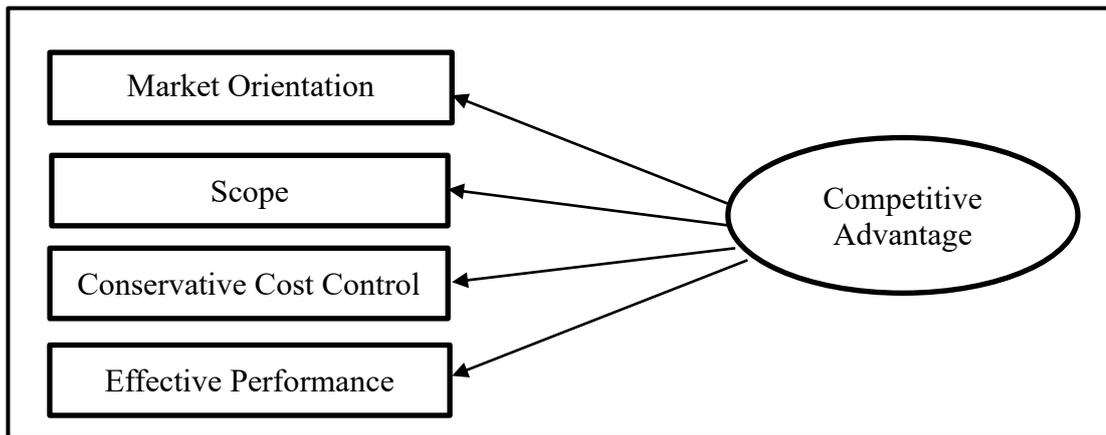


Figure 3.27

Measurement of competitive advantage

Source: Modified from Furrer et al., 2008; Market Business News, 2020; Fu et al., 2019; Holloway, 1998; Sigalas et al., 2013; Cao et al., 2019.



Table 3.10

Summary of previous studies on the competitive advantage (CA)

	Authors	Mar (2013)	Vaghi & Lucietti (2016)	Furrer et al. (2008)	Sigalas et al. (2013)	Fu et al. (2019)	Cao et al. (2019)
Measurement							
Benchmarking		✓	✓				
Product Orientation				✓			
Market Orientation				✓	✓	✓	
Scope				✓		✓	
Conservative Cost Control				✓	✓		✓
Neutralization					✓		
Sustainability						✓	
Effective Performance							✓

Source: Literature review of existing studies

Table 3.11

Measuring competitive advantage (CA), scale's definition, and sources of adopted questions

Scale	Sources	Scale items	Level of measurement
Market Orientation: A business strategy where the focus is on identifying customer needs or wants and meeting them.	Furrer et al. (2008) Market Business News (2020)	Innovation in marketing techniques and methods Exploitation of all market opportunities Exploitation of more market opportunities from competitor Perceptions of service quality and reliability among customers	Interval scale measured by the level of performance on a five-point scale where: 5 means "Strongly Agree" 4 means "Agree" 3 means "Average" 2 means "Disagree" 1 means "Strongly Disagree"
Scope: An intention of business to group focus market to outperform competitors in the marketplace	Furrer et al. (2008) Fu et al. (2019) Holloway (1998)	Capability to manufacture/deliver specialized product/services Capability to provide product/services in high-price market segments Risk resistance capacity Capability of supply chain coordination	Interval scale measured by the level of performance on a five-point scale where: 5 means "Strongly Agree" 4 means "Agree" 3 means "Average" 2 means "Disagree" 1 means "Strongly Disagree"

Table 3.11 (Continued)

Scale	Sources	Scale items	Level of measurement
Conservative cost control: The business aims to be the lowest-cost producer, operating across a broad swathe of the market	Furrer et al. (2008)	Competitive price offering	Interval scale measured by the level of performance on a five-point scale where: 5 means “Strongly Agree” 4 means “Agree” 3 means “Average” 2 means “Disagree” 1 means “Strongly Disagree”
	Sigalas et al. (2013)	Reduction expenses at a higher rate than competitors	
	Cao et al. (2019)	Providing services at a lower cost than competitors	
	Holloway (1998)		
Effective performance: Business process and operation perceived competitive advantage	Cao et al. (2019)	We are more effective than our competitors at Increasing sales from providing services	Interval scale measured by the level of performance on a five-point scale where: 5 means “Strongly Agree” 4 means “Agree” 3 means “Average” 2 means “Disagree” 1 means “Strongly Disagree”
		We are more effective than our competitors at Increasing revenue	
		We are more effective than our competitors at Generating profit	

Source: Literature review of existing studies

3.5 Research design

A research design is a detailed framework or plan for data collection, measurement, and analysis created to answer the research questions (Sekaran & Bougie, 2016). This masterplan helps guide methods and procedures for fulfilling research objectives (Wilson, 2012; Adams et al., 2007). The research process with clarification of knowledge about sources of information, the data technique, sampling methodology, and the schedule as well as the cost involved will clarify questions on how to collect information from respondents, how to select the respondents, how to analyze collected data, and how to communicate the findings (Kumar, 2014).

A variety of situations and problems stated in each study are designed differently. Based on the purposes of the study, Zigmund et al. (2013) classified three types of business research namely: 1) Exploratory, 2) Descriptive and, 3) Causal. Exploratory research is usually conducted to clarify ambiguous situations, relying on qualitative approaches (Sekaran & Bougie, 2016). This current study aims to examine the relationship between resources, logistics service providers' capabilities, government administration, competitive advantage, and performance of operational cross-border logistics in the Thailand and Malaysia border, focusing on describing the association among the variables regarding the current situation. Therefore, this study is a descriptive research because the descriptive study's objective is to obtain data that describes the aspect of interest (Sekaran & Bougie, 2016).

To this end, a successful model was built based on previous studies to test this area. In this research model, five variables are proposed as factors of success relying on literature, and of which are interdependent. Eleven hypotheses were formulated on the basis of the research model. The objective is to test the hypotheses and define the strength of the relationships. Thus, the descriptive research design is most suitable for acquiring effective results in this study.

The causal research is the identification of cause-and-effect relationships (Zigmund et al., 2013) which is not applicable for this study as its objectives are not concerned with determining a particular course of action and the cause and effect to the output. Thus, based on the research purpose mentioned above, this study is essentially descriptive and should not be seen as an attempt at causal research. It is neither practical nor

possible to detect and investigate all variables that can lead to a phenomenon. However, it must be open to the possibility of other variables not included in the model, which could generate a strong correlation.

3.6 Research approach

Research methods are basically associated with two approaches i.e. inductive and deductive. The reason for choosing each approach may depend on existing literature of which gap remains to be filled, or a type of research question looking at relationships between variables or theory building. The inductive approach is conducted to make observations about the research and generate a new theory. Conversely, the deductive method starts with and applies a well-known theory. It concerns developing a hypothesis based on existing theory and then designing a research strategy to test the hypothesis. This type of research is often quantitative in nature (Wilson, 2012).

The research types categorized by mode of inquiry to answer research questions generally consist of: 1) the quantitative or structured approach, 2) the qualitative or unstructured approach, and 3) the mixed-method approach (Kumar, 2014). There is a difference in the research process of these three approaches. Quantitative research relies on the positivism methodological principle, which adheres to the standards of a strict research design where statistical analysis is used. Meanwhile, qualitative research employs data collection and analysis methods that are non-quantitative to explore relations and describe reality (Adams et al., 2007). The mixed-methods approach uses the strengths of both quantitative and qualitative research to reach an answer (Kumar, 2014). Therefore, the study must be investigated by the method that best serves its goals.

This current study aims to develop a successful model relying on previous literature and test the success model for operational cross-border logistics performance in the Thailand–Malaysia border; thus, a quantitative method was used to verify the research model. In addition, this quantitative study conducted a survey approach to collect data. The survey strategy is very popular in business research because it allows the researcher to collect data on many types of research questions (Sekaran & Bougie, 2016). Moreover, the survey technique is the most widely used for gathering data related to social science. This method has also been acknowledged as a technique for

data collection based on communication with a representative sample of the individual (Zikmund et al., 2013). These approaches involve creating hypotheses based on theoretical approaches and previous studies, and verifying the research model that was empirically developed on the basis of a large sample size, giving importance to the validity. It also allows the researcher to communicate findings in an analytical and aggregate manner as well as generalize conclusions and inferences (Sekaran & Bougie, 2016).

3.7 Sampling

The primary aim of selecting a sample in quantitative studies is to achieve maximum precision in estimating the given sample size. Randomization is basically used to ensure that a small group of sample is chosen to represent the study population without bias (Kumar, 2014). Two main approaches for accomplishing this are via probability sampling and non-probability sampling. In the probability technique, every unit in the population has a known, non-zero probability of selection with an equal probability of being selected. Conversely, any particular population element in non-probability sampling is an unknown (Zigmond et al., Griffin, 2013). Therefore, probability sampling was chosen for this quantitative study because this approach is technically supported by statistical techniques and is suitable for a specific population within the scope of people who work for logistics service provider companies in Sadao and Bukit Kayu Hitam customs. The representatives should be experienced in managing and operating logistics services in this area, and they might include the staff level to the top level.

Obtaining utilizable samples with suitable sampling for specific research purposes is necessary due to limited time, cost, and location, whereby it is virtually impossible to collect data for the whole population. For more information on the entire population, kindly refer to Appendix A.

3.7.1 Choosing the sampling frame

Availability of samples exists when the sample unit accurately represents the crucial characteristics of the population. Thus, the researcher needs to determine a sampling frame i.e. a list of units from the entire sample that may be chosen, or also called active population (Zigmund et al., 2013). For instance, a simple frame might be all member lists of an institution or employees in a company or a particular type of organization (Adams et al., 2007). As mentioned above, this quantitative research focused on investigating the relationships between resources, government administration, logistics service providers, competitive advantage, and operational cross-border logistic performance in the context of cross-border operations between Thailand and Malaysia. Hence, the sample frame must consist of all people who work in the logistics service provider companies with experiences in managing and operating cross-border logistics service in the study area (Sadao and Bukit Kayu Hitam Border Posts). However, the government officials were excluded due to the research relies on quantitative method and to prevent the error that might be occurred from different characteristics of the respondents.

To acquire the list of a sampling frame that highly conforms to the research objectives, letters of recommendation for data collection and research work were issued by the school and submitted to the Sadao customs and Malaysia customs (Appendix B) as there was no public record list on the active companies providing logistics service for cross-border operations especially in that area. The list of companies providing logistics service from both sources were more articulate with relevant information such as addresses, email addresses, names of the persons in charge, and telephone numbers, which are majorly beneficial for further data collection using the survey method.

Although the sampling frame of the study was identified, coverage error can occur if documents are not up-to-date. To avoid the problem, a screening of the respondents' characteristics was conducted to ensure that they meet the criteria for the target population (Sekaran & Bougie, 2016), which will be clearly magnified in the data collection procedure.

3.7.2 Sample size

The border trade between Thailand and Malaysia has expanded extremely well; Thailand and Malaysia's border trade value over the past nine months was more than 420 billion Baht or 52.5 percent of the country's total border trade value. The most common Thai products shipped to Malaysia include rubber and rubber products, computers, and electronic parts, whilst Thailand imported computers and parts, industrial machinery, and circuit boards from the neighboring country. Two major border crossings used for goods and products transport in Malaysia are Sadao and Padang Besar. The border trade value of these two checkpoints accounted for 98 percent of the total border trade between Thailand and Malaysia (National News Bureau of Thailand [NNT], 2017). Therefore, the scope of the population in this research was limited within the trade between the Thailand and Malaysia borders.

This study aims to examine the relationship between the logistics service providers' capabilities, government administration, and performance of operational cross-border logistics in the Thailand and Malaysia border. Based on the objective of this study, a survey method was used for data collection from the respondents. The target respondents were from various management levels with knowledge related to logistics for cross-border operations and vast experience in cross-border logistics service operations.

For general information of the area study, the sample for this study was selected from LPSs (both Thai and Malaysian companies) as the key players that operate the border-crossing in the Thailand and Malaysia border post. Therefore, the amount of population is unknown and limited in the sample frame.

Roscoe (1969) stated that sample sizes larger than 30 and less than 500 are appropriate for most research. However, there are several approaches to calculate the sample size. Firstly, as there is an unknown population and number of LPSs, Cochran's formula was used to calculate the sample size as below:

The Cochran formula is:

$$n = \frac{P(1-P)Z^2}{e^2}$$

Where:

- e is the desired level of precision (i.e., the margin of error),
- p is the (estimated) proportion of the population that has the attribute in question,
- z is 1 – p.

The z-value is found in a Z table.

Half of the LPS is assumed to respond to the questionnaire, which gives maximum variability. So, $p = 0.5$. with 95% confidence and at least 5 percent—plus or minus—precision. A 95 % confidence level gives us Z values of 1.96, per the normal tables, so we get


$$\begin{aligned} n &= \frac{0.5 \times 0.5 \times (1.96)^2}{(0.05)^2} \\ n &= \frac{0.9604}{0.0025} \\ n &= 384.16 \end{aligned}$$

Therefore, a random sample of 385 as the target population should be enough.

To ensure the sample size is suitable for conducting the research, the GPower is another method used for calculating the sample size. The GPower version three is a freeware program with statistical power considerations (Mayr et al., 2007) which provides high-precision power and sample size analyses. It allows sample size calculation and the computation of effect sizes, power values, and alpha and beta values. The use of GPower for estimating the sample size can generate useful, practical insights into the ‘balancing act’ of sample size and power analysis (Cunningham & Gardner, 2007). Therefore, this research calculated the sample size by using the GPower software, resulting in 119 samples as shown in Figure 3.28.

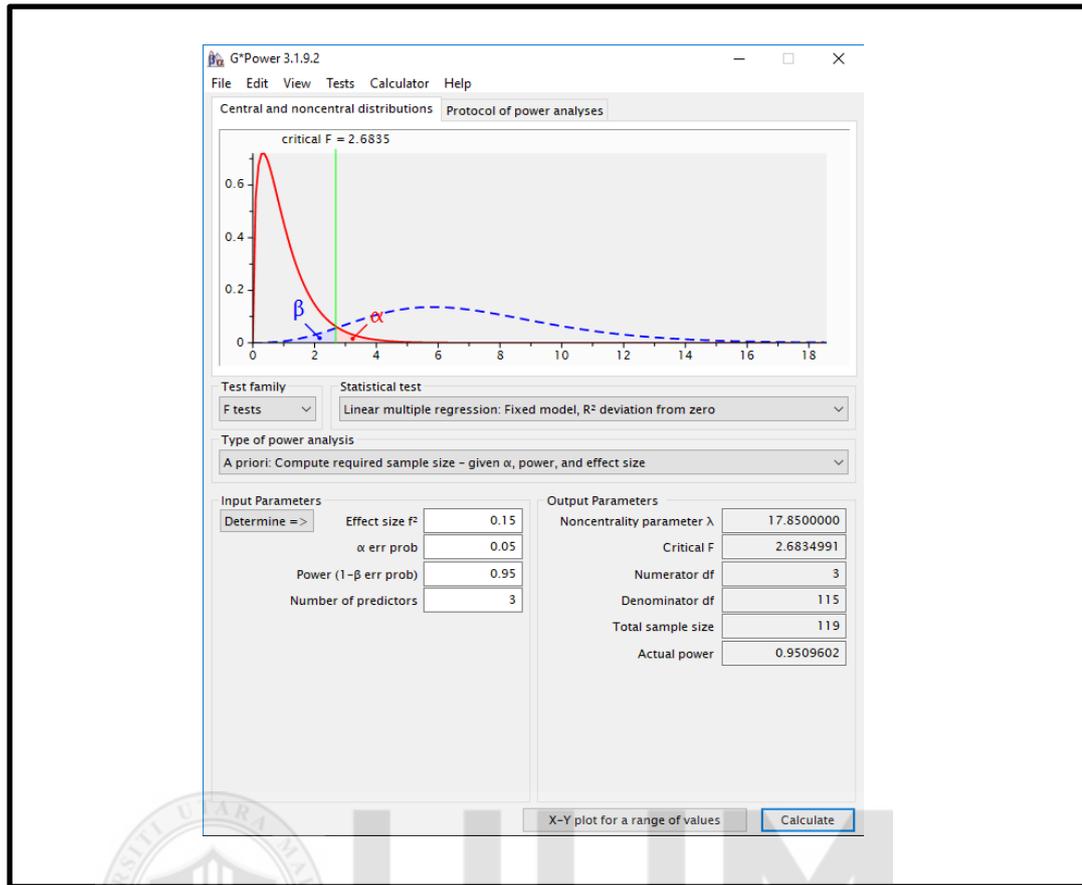


Figure 3.28

Sample size calculated by GPower

Source: Author, 2019

Based on the research analysis method, the PLS software was used for data analysis. Therefore, to determine the required sample size for PLS-SEM, researchers should rely on power analyses that consider the model structure, the anticipated significance level, and the expected effect sizes (Hair et al., 2018). According to Hair et al. (2011), the PLS-SEM minimum sample size should be ten times the largest number of formative indicators used to measure one construct. This research contains 16 constructs (Resources: tangibility and intangibility; Logistics service provider's capabilities: logistics service quality and capabilities; Government Administration: open government and cooperation; Performance of operational cross-border logistics: customs, infrastructure, services, international shipment, tracking and tracing, and timeliness; Competitive Advantage: Market orientation, Scope, Conservative cost control, Effective performance). Thus, the appropriate amount of sample size should be 160, consistent with the recommendation of Sekaran and Bougie (2016) that in

multivariate research, the sample size should preferably be ten times or more as the number of variables in the study.

From the above approaches of sample size estimation, the sample size should not be less than 119. By considering the data analysis that uses the PLS software, the sample size in this study is 160 people including shipping agents, transporters, and freight forwarders in the logistics service provider enterprises in Thailand and Malaysia.

Most of the researchers from the literature review considered firm-level as a unit of analysis (e.g., Giovanis et al., 2013; Monteiro et al., 2019; Banomyong et al., 2015; Koc & Ceylan, 2007; Yang et al., 2009). The main reason was that there was a large population, and the firm-level analysis carried more weight to represent the beliefs and shared values throughout the organization. However, the target sample in this study was not adequate to be selected (only 109 companies) due to a limited number of companies and the specific area of study. Therefore, this study conducted the individual-level analysis to cover the number of a sample size to gain effective results for further steps of research analysis.

3.7.3 Sampling technique

To consider the plan for the sampling method, the researcher needs to decide the target population, the sampling frame, the sampling technique, and the sample size (Sekaran & Bougie, 2016). The sampling method for probability sampling consists of four approaches: simple random sampling based on an unrestricted sampling plan, systematic sampling, stratified sampling, and cluster sampling, which are all restricted sampling plans (Zigmund et al., 2013; Sekaran & Bougie, 2016). Each method has its advantages and disadvantages; therefore, the researcher must decide on the most appropriate sampling methods by considering: 1) cost-saving or other benefits, 2) reduction in the degree of accuracy of resources that should be available and can be accessed with the lowest restriction, 3) time consumption, 4) advanced knowledge of the population as it would rule out the idea of sampling in case of inadequate lists, and 5) national versus local project as the difference between the groups of population will affect the sample design (Zigmund et al., 2013).

Using the current research design, the people who work for LSP companies providing border-crossing services in the Sadao and Bukit Kayu Hitam customs were scoped as the target population in the sampling frame. The probability sampling technique was implemented, and the sample was selected from the sampling frame which consists of 160 people from logistics service provider enterprises in Malaysia and Thailand including shipping agents, transporters and freight forwarders. Therefore, the study employed a cluster sampling technique because cluster sampling is more suitable when the whole population is divided into groups (Wilson, 2012). In particular, this method is most suitable when the clusters are geographically defined or are used for a nationwide survey (Adams et al., 2007). It is also less expensive, and it does not depend on the lists of the sampling frame (Zigmund et al., 2013; Sekaran & Bougie, 2016), which is more appropriate due to the unknown population lists in this study.

Following the cluster sampling technique, the sampling population was divided into groups. Each sampling unit was then selected within each cluster, using the simple random sampling technique (Kumar, 2014). The sample size of this research was drawn around 180. Next, it was geographically divided into two groups; all the observation units were selected in Thailand with 90 samples and Malaysia with 90 samples. The characteristics of each group are heterogeneous with the area base. In contrast, the sampling unit in each group is homogeneous: the people who work for the companies providing logistics service consist of those from the operations level to the top management level, including shipping agents, transporters, and freight forwarders. The sampling method used in this research was chosen to avoid sampling bias and sampling error and to ensure that further research methodologies are carried out to achieve the study objectives.

3.8 Adapting the measurement for the study

This section discusses the measurement of the variables as well as the operationalization and scale adoption procedure from empirical studies. Measuring variables is a part of the research. The importance of measuring variables is that it will help the researchers to answer the research questions. Some variables are easy to measure through the use of appropriate measuring instruments. In contrast, the measurement of more abstract and subjective attributes of the variables is more difficult because the object's attribute is required to render the meaning in a tangible

way i.e. operationalizing the concept (Sekaran & Bougie, 2016). However, the survey respondents may be unwilling to take the time to complete the questionnaire. Therefore, it is necessary to consider the construct length, which will be advantageous for the response rate (Hair et al., 2014).

Similarly, this research consists of five variables i.e. the performance of operational cross-border logistics (POCL), logistics service provider's capabilities (LSPC), government administration (GA), resources (R), and competitive advantage (CA), which are all studied subjectively. Firstly, their definition from previous concepts and studies were reviewed together with relevant dimensions. Then, the constructs were generated to become the question items for the research instrument to measure the variables, along with a response format in which an odd-numbered scale was recommended (Adams et al., 2007). The five-point Likert scale was designed in the research questionnaire. In this type of questionnaire, the respondents were asked for their level of agreement, anchored by "strongly disagree" and "strongly agree" which were easy to answer and analyze. Even though some researchers argue that the respondents can be forced to choose between negative and positive in this numerical rating scale, it was recommended for business management issues if the respondents genuinely feel neutral about it (Adams et al., 2007). After that, the content of each question was considered; this step is associated with the content reliability test and validity test, which will be discussed next.

3.8.1 Measure of the dependent variable

There are six dimensions for measuring the performance of operational cross-border logistics, covering the functionality and characteristics of logistics performance namely: customs, infrastructure, services, international shipment, tracking and tracing, and timeliness. Twenty-two question items were then generated from the six dimensions. All questions were selected and adapted from the previous studies by The World Bank (2018), Rezaei et al. (2018), Roekel (2017), Bakar and Jaafar (2016), Wang et al. (2018), Bakar et al. (2014).

Table 3.12

The measurement scale for the performance of operational cross-border logistics

Variable	Code	Items
Performance of operational cross-border logistics for "Customs" Dimension	CT1	Customs declarations can be submitted and processed electronically and online.
	CT2	You and your customers are able to choose the location of the final clearance of the goods for imports.
	CT3	Goods can be released pending final clearance against an accepted guarantee.
Performance of operational cross-border logistics for "Infrastructure" Dimension	Inf1	The quality of the roads, and terminals
	Inf2	The quality of telecommunications and other information sharing systems that are crucial for trade facilitation.
	Inf3	The main infrastructures are well maintained.
	Inf4	Logistics facilities are well developed.
Performance of operational cross-border logistics for "Services" Dimension	SV1	Logistics services (e.g., storage/loading facilities, transport agents, customs administrations) provide adequate services.
	SV2	Expedited clearance for the traders with high levels of compliance
	SV3	Service with standard inspection
	SV4	Less damaged and reduced lost freight
	SV5	Providing logistic services without solicitation of informal payments in connection with logistics activities
Performance of operational cross-border logistics for "International Shipment" Dimension	IS1	Trucking charges are reasonable.
	IS2	Transloading facility charges are competitive
	IS3	Maintaining of low operating costs in shipment
Performance of operational cross-border logistics for "Tracking and tracing" Dimension	TK1	It is easy to track and trace consignments
	TK2	Always providing a quick response about a status of tracking
	TK3	Knowing the consignment location every certain point in time

Table 3.8 (Continued)

Variable	Code	Items
Performance of operational cross-border logistics for “Timeliness” Dimension	T1	Consignments reach the consignee within the expected time.
	T2	The order placement and receipt within expected time.
	T3	Clearance and delivery of imports and exports as scheduled
	T4	Provision of adequate and timely information on regulatory changes

Source: Literature review of existing studies

3.8.2 Measure of logistics service provider’s capabilities

The two dimensions of logistics service provider’s capabilities were selected to exhibit question items that cover the functionality and attributes of the logistics service provider’s capabilities i.e. logistics service quality and innovation capability. The measurement was carried out using 12 question items which were selected and adapted from the empirical studies by Parasuraman et al. (1985); Wang et al. (2018); Yang et al. (2009); Chatzoglou et al. (2014); and Rivera et al. (2016).

Table 3.13

The measurement scale for logistics service providers’ capabilities (LSPC)

Variable	Code	Items
Logistics Service Providers Capabilities for “Logistics Service Quality” Dimension	LSPQ1	Providing simplification of logistics operations
	LSPQ2	Providing protection for freight safety and risk
	LSPQ3	Maintain at consistent on-time delivery for all customers
	LSPQ4	Prompt response to problems and complaints
	LSPQ5	Accurate and efficient routine service offering (e.g. price calculation, formality documentation)

Table 3.13 (Continued)

Variable	Code	Items
Logistics Service Providers Capabilities for "Innovation Capability" Dimension	LSPI1	Service quality management system in your company
	LSPI2	Regularly improve company's operational systems
	LSPI3	Exploring best methods to achieve corporate goals
	LSPI4	Employee reward system for innovative ideas
	LSPI5	Providing services that go beyond the standard logistics offering (e.g. multimodal service, door-to-door service, Quality Assurance testing and etc.)
	LSPI6	Operational collaboration with other logistics service companies

Source: Literature review of existing studies

3.8.3 Measure of government administration

There are two dimensions for measuring government administration which cover the functionality and characteristics related to cross-border logistics operations namely: open government and cooperation. The open government dimension consists of three sub-dimensions: transparency, accessibility, and governmental responsiveness. The cooperation dimension includes two sub-dimensions: G2G and G2B. Ten question items were then generated from every dimension. All questions were selected and adapted from the empirical studies by Veljković et al. (2014), Wang et al. (2018), and Rivera et al. (2016).

Table 3.14

The measurement scale for government administration (GA)

Variable	Code	Items
Government Administration for "Open Government" Dimension	OG1	The government discloses all of its fully consolidated subsidiaries.
	OG2	The government publicly commit to be in compliance with all relevant laws.
	OG3	The information provided by government are published under open link and are available to download.
	OG4	Convenient location and hours of operation
	OG5	The government uses a formal program to collect your feedbacks on practice or policies regularly.

Table 3.14 (Continued)

Variable	Code	Items
Government Administration for “Cooperation” Dimension	COP1	Expand foreign trade relation
	COP2	Work towards concluding regional trade agreements
	COP3	Improve the effectiveness of border services
	COP4	Collaboration with government regarding employee exchange
	COP5	An access to operational logistics course supported by government

Source: Literature review of existing studies

3.8.4 Measure of resources

The two main dimensions for resources were selected to generate eight-question items that cover the operational definition and attributes of resources i.e. tangible and intangible resources. The question items were derived from past studies by Yu et al. (2018), Kam and Lalwani (2012), Yang et al. (2009), Antún and Alarcón (2014), Madhani (2010), Jacobs and Feng (2018), and Agmeka et al. (2019).

Table 3.15

The measurement scale for resources (R)

Variable	Code	Items
Resources for “Tangibility” Dimension	TR1	Readily adapted information system to fulfil the needs of customers and partners
	TR2	Information system of the customs is secured for business transaction.
	TR3	Cargo tracking system facilities
	TR4	Electronic Data Interchange (EDI) facilities
Resources for “Intangibility” Dimension	ITR1	Financial stability
	ITR2	Successful product branding and positioning with satisfied and loyal customer base
	ITR3	Formal planning, command and control systems
	ITR4	Skillful and qualified personnel

Source: Literature review of existing studies

3.8.5 Measure of competitive advantage

There are four dimensions for measuring competitive advantage, which cover the operational and attributes of competitive advantage concept, namely: market orientation, scope, conservative cost control, and effective performance. Eleven question items were generated from every dimension. All questions were selected and adapted from the empirical studies by Furrer et al. (2008), Market Business News (2020), Fu, Zheng and Yan (2019), Holloway (1998), Sigalas et al. (2013), Cao et al. (2019), and Holloway (1998).

Table 3.16

The measurement scale for competitive advantage (CA)

Variable	Code	Items
Competitive advantage for “Market Orientation” Dimension	MKO1	Innovation in marketing techniques and methods
	MKO2	Exploitation of all market opportunities
	MKO3	Exploitation of more market opportunities from competitor
	MKO4	Perceptions of service quality and reliability among customers
Competitive advantage for “Scope” Dimension	Sco1	Financial stability
	Sco2	Successful product branding and positioning with satisfied and loyal customer base
	Sco3	Formal planning, command and control systems
	Sco4	Skillful and qualified personnel
Competitive advantage for “Conservative cost control” Dimension	CCC1	Competitive price offering
	CCC2	Reduction expenses at a higher rate than competitors
	CCC3	Providing services at a lower cost than competitors
Competitive advantage for “Effective performance” Dimension	EFP1	We are more effective than our competitors at Increasing sales from providing services
	EFP2	We are more effective than our competitors at Increasing revenue
	EFP3	We are more effective than our competitors at Generating profit

Source: Literature review of existing studies

3.9 Data collection procedure

After the research instrument was employed with a clear concept and definition, a reliability test was conducted to confirm the quality of the questionnaire before distributing it. The survey questions were translated from English to Thai to ensure better understanding among the Thai respondents. The processes of reliability tests and instrument translation are discussed in the next section. This current section mainly explains the primary data collection using the survey questionnaires (Zikmund et al., 2013).

The data for this research was self-administrated which means that the respondent completed it without the assistance of the interviewer (Wilson, 2012). The researcher distributed the questionnaires via e-mail due to speed of distribution, faster turnaround time, lower distribution and processing costs, more flexibility, less paper handling, and quicker response time (Zikmund et al., 2013). The procedures of data collection are indicated in the following sub-sections.

Firstly, e-mails with a cover letter and a Google form survey link were randomly sent to the person in charge of logistics service provider companies, both in Thailand and Malaysia. The cover letter indicated details of the questionnaires, such as research objectives, how to answer the survey questions, and the questions being asked to the respondents. In addition, it assisted in persuading the respondents to respond, assuring their confidentiality. The survey link connects to a Google form in which the intention of data collection was mentioned with the details of the questionnaire. This is to ensure that every question item would be properly answered. This tool also eliminated barriers of using an e-mail attachment, such as limitations to open e-mail attachments in some organizations and unbalanced question formatting, the difficulty of marking the answer choices, and printing out to write and return (Zikmund et al., 2013). Moreover, the time required to finish the survey was not more than 20 minutes.

Next, after four weeks, follow-up e-mails and calls were made to those who had not completed the survey questionnaire. The Google form survey allowed the researchers to review the sample size count and data reports from the cloud server in real-time. Therefore, it was more convenient to follow-up on the pending cases.

However, in the next three weeks, the target amount of the sample size had not been reached. Therefore, a mixed-mode survey was done for the remaining sample lists to improve the response rate. This method is one of the most effective ways to increase the number of respondents (Zikmund et al., 2013). The researcher used a door-to-door interview to collect data, and the survey questionnaires were distributed to the representatives of logistics service provider companies together with fountain pens. After that, explanations of the survey questions and directions to answer the questions were given to the respondents. After the survey was completed, the questionnaires were checked. The fountain pens were given to the respondents as a souvenir for completing the survey. Finally, the data collected using the door-to-door method were filled up to the Google form.

To sum up, this research conducted mixed-mode survey methods, including mailing and door-to-door, to reach the target amount and improve the response rate. The different procedures might cause response errors and bias (Polonsky & Waller, 2005) associated with data triangulation where data was collected from different sources in the study phenomenon, and manifests the validity from the comparison between the results of the two sources (Wilson, 2012).

3.9.1 Instrument translation

A well-produced questionnaire is capable of generating sufficient and accurate data (Wilson, 2012). Therefore, it is necessary to design the question in a way that can be understood by the respondents (Sekaran & Bougie, 2016). The sample units investigated in this research are people working in logistics service provider enterprises in Malaysia and Thailand. Therefore, it is essential to make a clear understanding of the survey questionnaire. The original survey questionnaire was written in English. Thus, the research instrument was translated into Thai specifically for the Thai respondents. The translation process was done by an expert who had 10 years of experience working in logistics operation service companies in import-export with a bachelor's and master's degree in Business Administration from Assumption University of Thailand - ABAC (International program), and expertise in various language services such as English-Thai translation, academic tutoring and interpretation. This is to ensure the instrument's quality and accuracy, to avoid lack of content validity, and to ensure that the translation of the instrument accurately

conforms to the original language (Sekaran & Bougie, 2016). The instruments in both versions are illustrated in Appendix C.

3.10 Pilot test

All surveys must be tested before their actual use. This test ensures that the questionnaire is clearly understood by the respondents (Adams et al., 2007). One of the best ways to perform a pretest is by conducting a screening procedure involving a trial run with a group of respondents to generate a fundamental problem in the survey design (Zikmund et al., 2013). However, limited sample sizes as well as time and cost consumption rendered difficulties in conducting the pretest because this research design required data collection across countries. Zikmund et al. (2013) also stated that this research stage could be eliminated because of cost and time concerns despite its substantial value. Furthermore, the research population's limitations can affect the accurate data collection of the actual survey. Therefore, this study did not conduct the pretest.

Even though the pretest was not implemented, the validity and reliability test of the instrument had been performed to ensure the questionnaire could be used effectively and to assure the validity of the construct. Furthermore, a series of discussions with experts were carried out for the questionnaire development. The questionnaire was assessed by five academicians. Two of them are experts in logistics and supply chain management, whilst another is an expert in business management and marketing, which are related fields. For more information about the experts, kindly refer to Appendix D. The comments from the experts were utilized for questionnaire development so that the feedback would provide familiarization for the researchers prior to the actual survey and projection of any challenges that could occur during data collection.

3.11 Data analysis

The next step is to analyze the collected data to reveal the answers for the research questions. This study aims to examine the relationships between logistics resources, logistics service providers' capabilities, government administration, competitive advantage, and operational cross-border logistics performance. The data should be ready to analyze before starting the analysis process (Sekaran & Bougie, 2016).

Therefore, the data was analyzed using both descriptive statistics and inferential statistics. More details of the data analysis are stated below accordingly.

The data was analyzed using the Statistical Package Social Sciences (SPSS-21). Firstly, the collected data was recorded into SPSS-21. Secondly, the data was screened for missing entries and outliers. Lastly, the descriptive test was conducted to compare and describe the demographics. Descriptive statistics provided the frequencies, mean, mode, and standard deviation (Sekaran & Bougie, 2016).

In the second phase for inferential statistics analysis, the current study employed the Partial Least Squares Structural Equation Modeling (PLS-SEM) method to test the hypotheses. Firstly, the exploratory factor analysis was employed to identify the relationship of each dimension. A structural equation modeling approach was subsequently used to test the research hypotheses. Before analysis, the data was tested for primary conditions, including normality, homoscedasticity, and linearity.

The PLS-SEM is an important statistical analysis tool to investigate the correlational links between latent variables (Hair et al., 2014). The PLS path modeling is a variance-based structural equation modeling technique widely applied in business and social sciences and is a flexible tool for statistical model building, testing, and predicting theories (Henseler et al., 2016). The PLS-SEM is widely used to set flexibility in a complex model i.e. a large model with many latent variables and indicators, such as a model with eight or more constructs and 50 or more items (Henseler et al., 2015). In addition, while analyzing the structural model, one can establish the direct effects i.e. predictors for the response variable(s), indirect effects (mediating effects), and moderating effects (multi-group analysis) (Hair et al., 2018).

In conclusion, SEM is a complex and wide-ranging methodology involving first and higher-order effects; learning how to use it using Smart PLS may require substantial time and effort. Therefore, this study applied Smart PLS v 3.0 to determine the reliability, convergent validity, discriminant validity, significance of the path coefficient, coefficient determination, and the effect size of the constructs.

3.12 Chapter summary

This chapter explains the research methodologies employed. It begins with the operationalization of the variables and the adaptive measurement. The research design is then explained including the sample frame consideration, sample size selection, and sampling technique. The survey questionnaire development and validity and reliability test for the instrument are discussed before the data collection procedures. Finally, this chapter ends with the conclusion of the data analysis. Below is a summary of the overall process.

To operationalize the constructs of performance of operational cross-border logistics (POCL), logistics service provider's capabilities (LSPC), resources (R), government administration (GA), and competitive advantage (CA), a broad literature review was conducted beyond the multidisciplinary area of studies to cover the dimensions associated with the observation constructs. The research framework and hypotheses were also developed. A set of items from previous studies was adapted and employed to examine the dependent and independent variables based on a clear concept of operational definition.

This study adopted the positivistic research philosophy for the methodology, which appropriately conforms to the quantitative methodology. This descriptive research employed a cluster sampling technique for selecting the sample unit from the population frame. The survey sample was drawn from the list of logistics firms providing cross-border logistics operation services in Sadao and Bukit Kayu Hitam border posts at a total of 180 people.

In the data collection section, the five-point Likert scale questionnaire was employed for the validity and reliability tests by five experts. It was translated into Thai before the actual data collection procedure was carried out. The survey approach was conducted using a mixed-mode survey. Emails attached with the survey link in Google form were sent to the representatives. Then, both email and self-administrated survey questionnaire were distributed to improve the response rate. Finally, the data collected was analyzed using descriptive statistics and inferential statistics using SPSS and PLS-SEM.

Every step of the research methodologies implemented in this research was appropriately carried out to generate the most accurate data. The data collected would mainly affect the results associated with the research questions and research objectives discussed in Chapter four.



CHAPTER FOUR

DATA ANALYSIS AND RESULTS

4.1 Introduction

This chapter presents the results and data analysis of the main study over four sections. The first section presents the fundamental information analysis of the respondents, namely the response rate and an overview of the respondents' characteristics. The second section reports the descriptive statistics of the constructs and the testing of non-response bias. The third section presents the Partial Least Squares Structural Equation Modelling (PLS-SEM) analysis which is carried out to assess the outer measurement model as a condition for the inner structural model assessment and hypotheses testing. The final section presents the results of the coefficient of determination (R^2), effect size (f^2), blindfolding, predictive relevance Q^2 , and the goodness of the outer model.

4.2 Response rate

According to Zikmund et al. (2013), the response rate is the number of questionnaires returned or completed divided into the number of eligible respondents in the survey sample size. Even though a lower response rate is a significant limitation in a lower response rate, especially via e-mail (Hair et al., 2014), this research took appropriate measures to gain a good response, such as follow-up mailings and door-to-door methods as discussed in Chapter 3.

Table 4.1 reveals a summary of the response rate. A total of 109 questionnaires were electronically distributed via e-mail to the staff of LSP companies providing border-crossing services at the Sadao and Bukit Kayu Hitam customs. Throughout the mailing, there was an explanation scale levels of the respondents' opinions to evaluate the level of performance on the study variables including cross-border logistics operations, resources, logistics service providers' capabilities, competitive advantage, and government administration perception. The process started on September 1st, 2020, and ended on December 16th, 2020. The initial mailing elicited 49 usable

responses. Follow-up e-mails were sent out four weeks after the initial mailing, along with a door-to-door approach. An additional 60 usable responses were returned from mailing, and 75 responses were received from the door-to-door approach. Therefore, a total of 184 questionnaire forms were returned. A total of 124 of the staff are working in Thailand and the other 138 are working in Malaysia. The response rate of this research is 70.23% which similar to that of previous studies investigating international logistics services companies using the self-administrated method (Imran, 2018; Kanan, 2017; Giovanis et al., 2013). The current study's response rate is better than that of previous studies that used the online mailing approach (Lu & Lin, 2012; Yang et al., 2009; Bakar & Jaafar, 2016; Rezaei et al., 2018). However, 78 of the questionnaires representing 29.77%, were not returned. After screening the returned questionnaires, it was found that 3 out of the 184 questionnaires were not completed appropriately and were consequently discarded. Therefore, the data analysis contained only 181 (69.08%) of the returned questionnaires.

Accordingly, Zikmund et al. (2013) determined that a researcher's best attempts rarely gain a 50% or greater response rate. In line with that statement, Babbie et al. (2007) specified that a 50% response rate is acceptable for social science research surveys. Therefore, it implies that this study relies on an appropriate and adequate response rate. The total number of questionnaires used was appropriate (Roscoe, 1969) and acceptable to run the statistical analyses required, especially a PLS analysis (Hair et al., 2011; Sekaran & Bougie, 2016).

Table 4.1

Summary of the response rate

Questionnaires Status	Thailand	Percentage Thailand	Malaysia	Percentage Malaysia	Total	Percentage Total
Distributed questionnaires	124	100%	138	100%	262	100%
Unreturned questionnaires	40	32.26%	38	27.54%	78	29.77%
Uncompleted questionnaires	3	2.42%	0	0%	3	1.15%
Returned and usable questionnaires	81	65.32%	100	72.46%	181	69.08%
Response rate	84	67.74%	100	72.46%	184	70.23%

Source: Author (2021)

4.3 Characteristics of sample

Demographics are divided into two categories: the firms' profiles and the respondents' characteristics. The firms' profiles as presented in Table 4.2 illustrates that 43.7% of the survey respondents are engaged in transportation, 25.4% in freight forwarding, 22.1% in third-party logistics (3PL), 5.5% in all services, and 3.3% in shipping & forwarding. In terms of ownership pattern, 47.0% of the respondents are private limited companies, while 22.1%, 9.4%, 8.8%, 7.2%, and 5.5% are partnership, state-owned, single owner business, public limited company, and limited liability partnership, respectively. Furthermore, around 53.0% of the responding firms have fewer than 50 full-time employees. Also, 26.0% have 50 – 99 employees, 9.9% have 100 – 149 employees, 2.8% have 150 – 199 employees, and 8.3% have 200 and above employees. Furthermore, 32.6% of responding firms have been operating for more than 15 years, whilst the remaining 31.5% have been operating between 6 and 10 years, 27.6% have been in operation between 1 and 5 years, and only 8.3% have been operating between 11 and 15 years. Finally, in terms of the firms' annual revenue in 2019 (MYR), the results revealed that 37.6% of the respondents reported a yearly income of less than 2.0 million, 33.1% had revenue between 2.0 and 5.0 million, 17.1% earned about 5.1-25.0 million, and 6.1% earned between 25.1 and 50.0 million and 50.1 million or above.

Table 4.2

Profile of firms

Characteristics	Frequency	Percentage (%)	Cumulative (%)
Type of logistics services			
Transportation	79	43.7	43.7
Freight forwarding	46	25.4	69.1
Third Party Logistics (3PL)	40	22.1	91.2
All Services	10	5.5	96.7
Shipping & Forwarder	6	3.3	100.0

Table 4.2 (Continued)

Characteristics	Frequency	Percentage (%)	Cumulative (%)
Ownership			
Private Limited Company	85	47.0	47.0
Partnership	40	22.1	69.1
State-owned	17	9.4	78.5
Single Owner Business	16	8.8	87.3
Public Limited Company	13	7.2	94.5
Limited Liability Partnership	10	5.5	100.0
Number of full-time employees			
below 50	96	53.0	53.0
50 – 99	47	26.0	79.0
100 – 149	18	9.9	89.0
150 – 199	5	2.8	91.7
200 and above	15	8.3	100.0
Age of the company			
0-5 years	50	27.6	27.6
6-10 years	57	31.5	59.1
11-15 years	15	8.3	67.4
>15 years	59	32.6	100.0
Annual revenue in 2019 (MYR)			
Below 2.0 million	68	37.6	37.6
2.0 - 5.0 million	60	33.1	70.7
5.1 - 25.0 million	31	17.1	87.8
25.1 - 50.0 million	11	6.1	93.9
50.1 million and above	11	6.1	100.0
Total	181	100	

Source: Authour (2021)

In conclusion, the company types conformed to the scope of the study and are well distributed. Even if most of the firms have fewer than 50 full-time employees, over half of the responding firms had been operating logistics services for more than ten years. The finding, therefore, implied that the respondents had abundant practical experience to answer the questions. On the other hand, only 12.2% recorded more than MYR 25.1 million in annual revenue, which means that the remaining 87.8% of the responding firms can somehow boost their financial performance from the results and implications of these research findings, which will be discussed in Chapter five.

The characteristics of the respondents presented in Table 4.3 reveal that 46.4% of the sample comprised operation staff, 22.1%, 15.5%, 11.0%, and 5.0% comprised senior executive, department manager, supervisor, and area and/or country manager, respectively. Table 4.3 also shows that 45.9% of the respondents have worked in Malaysia, while 39.8% and 14.4% have worked in Thailand and both countries. The participants whose age category falls between 20 and 29 years had the highest participation of 37.6%. In comparison, the respondents whose age is between 30 and 39 years accounted for 36.5%, and the participants above 50 years accounted for 25.9%. As for education levels, 69.6% possess a bachelor's degree qualification, 15.4% and 13.3% hold a diploma degree and higher than undergraduate, respectively, while the remaining 1.7% have education level up to secondary school. Furthermore, considering the working experiences in logistics operation, the results indicated that 42.5% of respondents have worked in the logistics operation service for less than five years, while 27.1%, 15.5%, and 8.8% of them have between 6-10 years, 11-15 years and 16-20 years of work experience, respectively. Only 6.1% of the participants have worked for more than 20 years. The personal income (USD) with the highest representative in the sample is in the range between 501 and 1,000 (33.7%), 27.6% of the respondents earned between 1,001-2,000, 26.5% of the participants had a total income less than 500, 8.3% had a total monthly income above 3,001, while the remaining 3.9% earned monthly income in the range of 2,001-3,000.

In conclusion, the managers are actively involved in and anchor operations in businesses. At the same time, supervisors are practically associated with the operating processes. Over half of respondents comprised supervisors or above. It implies endorsing the survey findings' reliability due to the high percentage of responses

collected from managers or above. Moreover, more than 50% of the participants have experienced international logistics operations for more than six years. Thus, the finding implied that the respondents have abundant practical experience to answer the questions. The study sample represents people who work for LSP companies providing border-crossing services at the customs checkpoints at Sadao, Thailand, and Bukit Kayu Hitam, Malaysia. As a result, the respondents have some characteristics that may help accomplish the overall purpose of the current study.

Table 4.3

Respondents' profile

Characteristics	Frequency	Percentage (%)	Cumulative (%)
Position			
Operations	84	46.4	46.4
Senior Executive	40	22.1	68.5
Department Manager	28	15.5	84.0
Supervisor	20	11.0	95.0
Area and/or Country Manager	9	5.0	100.0
Working country			
Thailand	72	39.8	39.8
Malaysia	83	45.9	85.6
Both countries	26	14.4	100.0
Age			
20-29	68	37.6	37.6
30-39	66	36.5	74.1
above 40	47	25.9	100.0
Qualification			
< Secondary school	3	1.7	1.7
Diploma Degree	28	15.4	17.1
Undergraduate	126	69.6	86.7
Higher than undergraduate	24	13.3	100.0

Table 4.3 (Continued)

Characteristics	Frequency	Percentage (%)	Cumulative (%)
Experience in Logistics operation			
< 5 years	77	42.5	42.5
6-10 years	49	27.1	69.6
11 - 15 years	28	15.5	85.1
16 – 20 years	16	8.8	93.9
> 20 years	11	6.1	100.0
Salary (USD)			
below 500	48	26.5	26.5
501-1,000	61	33.7	60.2
1,001-2,000	50	27.6	87.8
2,001-3,000	7	3.9	91.7
3,001 and above	15	8.3	100.0
Total	181		100

Source: Authour (2021)

4.4 Descriptive statistics of constructs

The analysis results in this section derived the descriptive values of the variables, consisting of the mean and standard deviation values. The questionnaire relied on the five-point Likert scale to measure the investigated variables, including Performance of Operational Cross-border Logistics (POCL), Logistics Service Providers' Capabilities (LSPC), Government Administration (GA), Resources (R), and Competitive Advantage (CA). The performance level based on the scale in which 1 is very low to 5 which is very high was considered to measure the POCL. The opinion level based on the scale ranging from 1 = strongly disagree to 5 = strongly agree was employed to measure the LSPC, GA, R, and CA. Therefore, 1 represents the minimum value, whereas 5 shows the maximum value.

This research found that POCL has a minimum mean value of 3.83 with a standard deviation (SD) of 0.64. LSPC has a mean value of 3.94, with the highest SD of 0.66. The mean value of GA is similar to the POCL, and its SD is 0.65. The variable obtaining the highest mean value at 4.01 is R with 0.61 of the SD. CA records a similar mean value with the LSPC. Meanwhile, the SD is the same as the R. Therefore, the variables with the lowest and highest mean values are R, LSPC & CA, and POCL & GA, respectively.

A summary of the findings of the descriptive statistics is illustrated in Table 4.4, together with the descriptive values for the sub-items of the five major variables. The sub-items of the POCL as shown in Table 4.4 consists of customs (Mean = 3.78, SD = 0.73), infrastructure (The lowest mean = 3.73, SD = 0.84), services (Mean = 3.82, the lowest SD = 0.70), international shipment (Mean = 3.77, SD = 0.77), tracking and tracing (Mean = 3.93, SD = 0.73), and timeliness (The highest mean = 3.97, the lowest SD = 0.70). For the LSPC sub-variables, logistics service quality shows a maximum mean value (3.96) and minimum standard deviation (0.63), while innovation capability records a minimum mean value (3.91) and maximum standard deviation (0.73). For the GA's sub-items, the descriptive statistics of open government and cooperation are revealed to be 3.77 and 3.89 of the mean value, and the SD is recorded to be 0.71 and 0.70, respectively. Also, two sub-constructs under the R construct are recorded accordingly, including tangibility (Mean = 4.01, maximum SD = 0.66) and intangibility (Mean = 4.00, SD = 0.64). Finally, the sub-items of the CA as shown in Table 4.4 consists of Market Orientation (the highest mean = 4.00, SD = 0.67), Scope (Mean = 3.97, the lowest SD = 0.66), Conservative Cost Control (the lowest mean = 3.83, the highest SD = 0.72), and Effective Performance (Mean = 3.96, SD = 0.71).

As a result, the top five rankings of the mean value from the 16 sub-constructs include tangible resources, intangible resources & market orientation, timeliness & scope, effective performance, and tracking and tracing, implying high-performance level and strong customers satisfaction. In contrast, infrastructure, international shipment & open government, services, conservative cost control, and cooperation are recorded as the bottom five of the mean value, implying average performance level and modest satisfaction.

Table 4.4

Descriptive statistics for study variables (N=181)

Variables	Mean	Std. Deviation (SD)
Performance of Operational Cross-border Logistics (POCL)	3.83	0.64
Customs (CT)	3.78	0.73
1) Customs declarations can be submitted and processed electronically and online.	3.87	0.84
2) You and your customers are able to choose the location of the final clearance of the goods for imports.	3.91	0.84
3) Goods can be released pending final clearance against an accepted guarantee.	3.57	1.00
Infrastructure (Inf)	3.73	0.84
4) The quality of the roads, and terminals	3.51	1.07
5) The quality of telecommunications and other information sharing systems that are crucial for trade facilitation.	3.83	0.86
6) The main infrastructures are well maintained.	3.76	0.92
7) Logistics facilities are well developed.	3.81	0.89
Services (SV)	3.82	0.70
8) Logistics services (e.g., storage/loading facilities, transport agents, customs administrations) provide adequate services.	3.82	0.84
9) Expedited clearance for the traders with high levels of compliance	3.85	0.86
10) Service with standard inspection	3.94	0.84
11) Less damaged and reduced lost freight	3.80	0.87
12) Providing logistic services without solicitation of informal payments in connection with logistics activities	3.71	0.90
International Shipment (IS)	3.77	0.77
13) Trucking charges are reasonable.	3.76	0.90
14) Transloading facility charges are competitive	3.86	0.80
15) Maintaining of low operating costs in shipment	3.69	0.85
Tracking and tracing (TK)	3.93	0.73
16) It is easy to track and trace consignments	3.94	0.81
17) Always providing a quick response about a status of tracking	3.97	0.78
18) Knowing the consignment location every certain point in time	3.88	0.90

Table 4.4 (Continued)

Variables	Mean	Std. Deviation (SD)
Timeliness	3.97	0.70
19) Consignments reach the consignee within the expected time.	4.08	0.77
20) The order placement and receipt within expected time.	3.97	0.81
21) Clearance and delivery of imports and exports as scheduled	3.98	0.81
22) Provision of adequate and timely information on regulatory changes	3.85	0.84
Logistics Service Providers' Capabilities (LSPC)	3.94	0.66
Logistics Service Quality (LSPQ)	3.96	0.63
23) Providing simplification of logistics operations	4.01	0.72
24) Providing protection for freight safety and risk	3.98	0.71
25) Maintain at consistent on-time delivery for all customers	4.01	0.72
26) Prompt response to problems and complaints	3.87	0.81
27) Accurate and efficient routine service offering (e.g. price calculation, formality documentation)	3.96	0.78
Innovation Capability (LSPi)	3.91	0.73
28) Systematic service quality management	3.94	0.83
29) Regularly improve company's operational systems	3.99	0.85
30) Exploring best methods to achieve corporate goals	4.00	0.85
31) Employee reward system for innovative ideas	3.72	0.93
32) Providing services that go beyond the standard logistics offering (e.g., multimodal service, door-to-door service, Quality Assurance testing and etc.)	3.86	0.84
33) Operational collaboration with other logistics service companies	3.96	0.85
Government Administration (GA)	3.83	0.65
Open Government (OG)	3.77	0.71
34) Full disclosure of all consolidated subsidiaries	3.68	0.75
35) Public commitment of being compliance with relevant laws	3.82	0.78
36) Publication of information provided by government under open links that are available to download	3.80	0.85
37) Convenient location and hours of operation	3.78	0.88
38) Regularly collect feedbacks on practice or policies by using a formal program	3.78	0.84

Table 4.4 (Continued)

Variables	Mean	Std. Deviation (SD)
Cooperation (COP)	3.89	0.70
39) Expand foreign trade relation	3.92	0.76
40) Work towards concluding regional trade agreements	3.87	0.80
41) Improve the effectiveness of border services	3.87	0.83
42) Collaboration regarding employee exchange	3.85	0.83
43) Support of participation in operational logistics courses	3.91	0.85
Resources (R)	4.01	0.61
Tangibility (TR)	4.01	0.66
44) Readily adapted information system to fulfil the needs of customers and partners	4.04	0.75
45) Information system of the customs is secured for business transaction.	4.04	0.75
46) Cargo tracking system facilities are ready to use.	3.97	0.78
47) Electronic Data Interchange (EDI) facilities are ready to use.	3.98	0.81
Intangibility (ITR)	4.00	0.64
48) Financial stability	3.96	0.76
49) Successful product branding and positioning with satisfied and loyal customer base	3.99	0.72
50) Formal planning, command and control systems	4.02	0.73
51) Skillful and qualified personnel	4.05	0.73
Competitive Advantage (CA)	3.94	0.61
Market Orientation (MKO)	4.00	0.67
52) Innovation in marketing techniques and methods	3.94	0.77
53) Exploitation of all market opportunities	4.02	0.71
54) Exploitation of more market opportunities from competitor	3.96	0.77
55) Perceptions of service quality and reliability among customers	4.08	0.77
Scope (Sco)	3.97	0.66
56) Capability to manufacture/deliver specialized product/services	4.07	0.74
57) Capability to provide product/services in high-price market segments	3.99	0.75
58) Risk resistance capacity	3.92	0.81
59) Capability of supply chain coordination	3.90	0.76

Table 4.4 (Continued)

Variables	Mean	Std. Deviation (SD)
Conservative cost control (CCC)	3.83	0.72
60) Competitive price offering	3.88	0.81
61) Reduction expenses at a higher rate than competitors	3.76	0.82
62) Providing services at a lower cost than competitors	3.85	0.83
Effective performance (EFP)	3.96	0.71
63) We are more effective than our competitors at increasing sales from providing services	3.98	0.74
64) We are more effective than our competitors at increasing revenue	3.94	0.78
65) We are more effective than our competitors at generating profit	3.94	0.79

Note: All the variables were measured using a 5-point Likert scale in which 1 = strongly disagree, 5 = strongly agree.

Source: Author (2021)

4.5 Testing non-response bias

The essential issue of reporting survey research is to ensure that adequate information is provided to enable readers to determine the validity and representativeness of the research findings (Lewis et al., 2013). Non-response error identifies a situation in which it is difficult to get a response for the questionnaire (Imran, 2018) i.e. where the respondents are motivated not to return it. It might be due to fear of disclosure or anxiety of the results (McGovern et al., 2018). Furthermore, the non-response error can affect the generalization of the sample of the total population. Therefore, the non-response error should be checked before any further analysis (Lewis et al., 2013).

Regarding this research, data collection started on September 1st, 2020 and ended on December 16th, 2020. The questionnaires were distributed to collect data by using an e-mail survey. After four weeks, follow-up e-mails and calls were made to those who had not completed the survey questionnaire. A total of 49 questionnaires were returned in the first month and categorized as early responses. However, in the next three weeks, the sample size still did not reach the target amount. Therefore, a door-to-door survey was done for the remaining sample lists to improve the response rate. It resulted in 132 questionnaires being returned, and they were categorized as late responses. In this

situation, according to McGovern et al. (2018), the late responses are associated with non-response because the respondents showed an inclination of not participating.

In the non-response bias test, the data was divided into two groups i.e. one group for early respondents and another for late respondents. SPSS 21 was carried to run a non-response test. According to Armstrong and Overton (1977), the significant difference between early and late responses indicated the difference between non-respondents and respondents. Therefore, if there is no significant difference in mean between the two groups, the assumption is that non-response bias exists. Therefore, to determine the existence of a non-response bias, Pallant (2007) suggests that the independent samples t-test can test a non-response through a comparison between the early and late responses.

Apart from that, the t-test criterion was also used. Early response refers to those who responded within one month after the questionnaire was distributed (n= 181, 27.07%). In contrast, late response refers to those who returned the questionnaires after two months of distribution (n = 181, 72.93%). Based on the t-test, there is no significant difference between the early and late responses in terms of Performance of Operational Cross-border Logistics (POCL), Logistics Service Providers' Capabilities (LSPC), Government Administration (GA), Resources (R), and Competitive Advantage (CA). The results can be seen in Tables 4.5 and 4.6. The results imply that the early and late respondents were not biased regarding their responses, as confirmed by Levene's test for equality of variances (see Table 4.6).

Table 4.5

Group Statistics of Independent Sample t-test for response bias test (n=181)

Construct	Response Bias (Early/Late)	N	Mean	Std. Deviation	Std Error Mean
Performance of Operational Cross-border Logistics (POCL)	Early Response	49	3.7461	.61273	.08753
	Late Response	132	3.8666	.64362	.05602
Logistics Service Providers' Capabilities (LSPC)	Early Response	49	3.9177	.65778	.09397
	Late Response	132	3.9470	.66207	.05763
Government Administration (GA)	Early Response	49	3.7327	.68080	.09726
	Late Response	132	3.8636	.64385	.05604
Resources (R)	Early Response	49	3.9821	.58741	.08392
	Late Response	132	4.0170	.61427	.05347
Competitive Advantage (CA)	Early Response	49	3.8703	.60757	.08680
	Late Response	132	3.9643	.61251	.05331

Source: Author (2021)

Table 4.6

Levene's Test of Independent Samples t-test for the response bias test (n=181)

Variable	Levene's Test for Equality of Variances		T-test for Equality of Means		
	F-Value	Significance	T-Value	df	Significance
POCL	.503	.479	-1.133	179	.259
LSPC	.161	.688	-.265	179	.791
GA	.001	.977	-1.197	179	.233
R	.356	.552	-.344	179	.732
CA	.072	.789	-.919	179	.359

Source: Author (2021)

4.6 Common method bias tests

The research conducted diverse data collection techniques to reach the sample group's target number, including the online and door-to-door surveys to improve response rates. Moreover, the study investigated the situation in two countries i.e. Thailand and Malaysia. Therefore, the questionnaires were separated into Thai and English versions for the sample in different countries.

The common method bias tests were carried out to check the validation of collected data. According to Wilson (2012), data triangulation is an integral approach to test the data collected at a different time or from various sources to study a phenomenon. Moreover, triangulation is a technique that is often associated with using questionnaires in different languages of sample groups which require addressing multiple perspectives to interpret and explain the data (Sekaran & Bougie, 2017). Many alternative forms of triangulation can clarify and refine the research findings, especially the triangulation of data to cross-check information collected from multiple empirical sources (Eriksson & Kovalainen, 2016). Thus, this research conducted the validity and reliability tests to ensure the goodness of the instrument for collecting data as expected in the research objectives.

The independent sample t-test was analyzed for the mean of the data group, test survey method bias, and instrument translation bias. However, the data in Thailand was collected mainly by door-to-door survey 88.89% (n=81), while the online survey was 100% used for data collection in Malaysia. At the same time, the respondents from both countries used different language questionnaires. Therefore, the different locations of the two groups (Thailand and Malaysia) may cause different means.

Based on the t-test for the survey method bias, as shown in Tables 4.7 and 4.8, there is no significant difference between the online and door-to-door surveys in terms of Logistics Service Providers' Capabilities (LSPC) and Resources (R). At the same time, there is a significantly different mean for Performance of Operational Cross-border Logistics (POCL), Government Administration (GA), and Competitive Advantage (CA). The results probably imply that LSP capabilities and resources for operating cross-border logistics between the two countries are different because of their culture and behavior differentiation.

Table 4.7

Group Statistics of Independent Sample t-test for survey method bias test (n=181)

Construct	Response Bias	Thai	Malaysia	N	Mean	Std. Deviation	Std Error Mean
Performance of Operational Cross-border Logistics (POCL)	Online	9	100	109	4.0138	.60006	.05748
	door-to-door	72	0	72	3.5618	.59408	.07001
Logistics Service Providers' Capabilities (LSPC)	Online	9	100	109	4.0113	.66103	.06332
	door-to-door	72	0	72	3.8296	.64566	.07609
Government Administration (GA)	Online	9	100	109	3.9523	.64127	.06142
	door-to-door	72	0	72	3.6403	.63394	.07471
Resources (R)	Online	9	100	109	4.0447	.60942	.05837
	door-to-door	72	0	72	3.9514	.59987	.07069
Competitive Advantage (CA)	Online	9	100	109	4.0403	.57056	.05465
	door-to-door	72	0	72	3.7853	.64134	.07558

Source: Author (2021)

In terms of the t-test for the instrument translation bias, as shown in Tables 4.9 and 4.10, there is no significant difference between the online and door-to-door surveys for Logistics Service Providers' Capabilities (LSPC), Resources (R), and Competitive Advantage (CA). At the same time, there is a significantly different mean for Performance of Operational Cross-border Logistics (POCL) and Government Administration (GA). The results show the mean differentiation of two out of the five constructs, which implies that instrument translation is acceptable. The original survey questionnaire was written in English and translated into the Thai. The process was done by an expert with 10 years of experience in a logistics operations company and current expertise in various language services. Therefore, it can ensure that the instrument used in this research is non-biased.

Table 4.8

Levene's Test of Independent Samples t-test for the survey method bias test (n=181)

Variable	Levene's Test for Equality of Variances		T-test for Equality of Means		
	F-Value	Significance	T-Value	df	Significance
POCL	.012	.913	4.980	179	.000
LSPC	.007	.935	1.827	179	.069
GA	.239	.626	3.218	179	.002
R	.009	.926	1.015	179	.312
CA	2.355	.127	2.801	179	.006

Source: Author (2021)

Table 4.9

Group Statistics of Independent Sample t-test for instrument translation test (n=181)

Construct	Response Bias (Thai/English)	N	Mean	Std. Deviation	Std. Error Mean
Performance of Operational Cross-border Logistics (POCL)	English	100	3.9959	.60480	.06048
	Thai	81	3.6341	.61982	.06887
Logistics Service Providers' Capabilities (LSPC)	English	100	3.9755	.66329	.06633
	Thai	81	3.8940	.65544	.07283
Government Administration (GA)	English	100	3.9480	.64924	.06492
	Thai	81	3.6802	.63471	.07052
Resources (R)	English	100	4.0038	.60445	.06044
	Thai	81	4.0123	.61097	.06789
Competitive Advantage (CA)	English	100	4.0140	.56876	.05688
	Thai	81	3.8462	.65093	.07233

Source: Author (2021)

Table 4.10

*Levene's Test of Independent Samples t-test for the instrument translation test
(n=181)*

Variable	Levene's Test for Equality of Variances		T-test for Equality of Means		
	F-Value	Significance	T-Value	df	Significance
POCL	.073	.787	3.959	179	.000
LSPC	.005	.946	.826	179	.410
GA	.182	.670	2.787	179	.006
R	.120	.730	-.095	179	.925
CA	2.957	.087	1.849	179	.066

Source: Author (2021)

4.7 Normality assumption

In the parametric tests, it is assumed that the numerical data unit in the sample was drawn from a normally distributed population, meaning that the data value for each quantitative variable should be normally distributed, being clustered around the variable's mean in a symmetrical pattern forming a bell shape curve of the data distribution (Zikmund et al., 2013; Suanders, Lewis & Thornhill, 2016). Therefore, it is crucial for the research to carefully examine the normality distribution of a variable, especially for each multivariate analysis, such as multiple regression, factor analysis and SEM before analyzing the sample data related to other statistical methods assessment (Hair et al., 2018). It can quickly be checked by using graphs from plotting either the frequency polygons or histograms (Suanders et al., 2016; Wilson, 2012).

The distribution of value can also be seen by statistical tests using the Kolmogorov-Smirnov test and the Shapiro-Wilk test, which automatically calculates a comparable normal distribution as well as the Skewness and kurtosis calculation (Suanders et al., 2016). Pallant (2007) also stated that the researcher could use the Skewness and the Kurtosis to examine validated normality assumptions. Accordingly, Skewness is used to describe the extent of the sample data distribution. It thus addresses whether the data is positively skewed, negatively skewed, symmetrically distributed, or normally distributed by showing balanced, unbalanced, shifted to the right, left, centered, or

symmetrical with about the same shape on both sides of the graph (Suanders et al., 2016).

The other distribution's shape indicator of normality assumptions is the Kurtosis which represents the pointedness or flatness of the distribution by comparing with the "peakedness" or "flatness" of the sample data distribution (Suanders et al., 2016). Furthermore, Hair (2010) stated that if the Skewness values and test of Kurtosis values are between ± 1.96 at the .05 significant levels and ± 2.58 , the sample data is normally distributed. Kline (2011) also supports this by stating that Skewness values within ± 3.00 and Kurtosis values within ± 10.00 show that the data is normally distributed. A crucial calculation of the Skewness and the Kurtosis, as illustrated in Table 4.11, indicates that the entire variable items gained Skewness values greater than (0.011) and Kurtosis values greater than (-0.888) which are in the condition and appropriately acceptable.

Table 4.11
Assessment of the Normality Assumption (n=181)

Variables	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Performance of operational cross-border logistics (POCL)	.112	.181	-.670	.359
Customs (CT)	-.221	.181	.288	.359
Infrastructure (Inf)	-.354	.181	-.472	.359
Services (SV)	-.298	.181	.162	.359
International Shipment (IS)	-.061	.181	-.514	.359
Tracking and tracing (TK)	-.059	.181	-.688	.359
Timeliness (T)	-.024	.181	-.888	.359
Logistics Service Providers Capabilities (LSPC)	-.428	.181	.235	.359
Logistics Service Quality (LSPQ)	-.475	.181	.406	.359
Innovation Capability (LSPI)	-.357	.181	-.130	.359

Table 4.11 (Continued)

Variables	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Government Administration (GA)	-.217	.181	-.016	.359
Open Government (OG)	-.264	.181	.071	.359
Cooperation (COP)	-.227	.181	-.340	.359
Resources (R)	.075	.181	-.820	.359
Tangibility (TR)	-.116	.181	-.354	.359
Intangibility (ITR)	.011	.181	-.840	.359
Competitive Advantage (CA)	-.183	.181	-.461	.359
Market Orientation (MKO)	-.396	.181	.234	.359
Scope (Sco)	-.373	.181	.204	.359
Conservative cost control (CCC)	-.150	.181	-.407	.359
Effective performance (EFP)	-.216	.181	-.478	.359

Source: Author (2021)

4.7.1 Analysis

The current study employs the Partial Least Squares Structural Equation Modelling (PLS-SEM) method for testing the hypotheses. The PLS-SEM is an effective statistical analysis tool to investigate the correlational links between latent variables (Hair et al., 2014). The PLS path modeling is a variance-based structural equation modeling technique widely applied in business and social sciences and a flexible tool for statistical model building, testing, and predicting the theory (Henseler et al., 2016). Also, while analyzing the structural model, one can test the hypotheses for direct effects (predictors for the response variable(s)), indirect effects (mediating effects), and moderating effects (multi-group analysis) (Hair et al., 2018).

The first step in PLS-SEM analysis is to examine the measures' reliability and validity related to formative and reflective measurement model specifications (Hair et al., 2011). Ford (2017) stated how to decide formative and reflective constructs analysis that the researcher should consider the causal relationship between the indicators and latent variables. Moreover, the theoretical viewpoint should be demonstrated by

answering the two questions of : (1) Does the latent construct exists on its own or the indicators form it? and (2) Does the construct manifest the indicators, or do they define it? Additionally, the data should be determined for measurement error and collinearity for choosing the most appropriate model form (Hair et al., 2014). This study relies on a hierarchical component model, which refers to a construct measured at more than one level of abstraction in a PLS path model (Hair et al., 2018). This model type most often involves the test of second-order structures containing two layers of constructs. It sometimes represents a higher-order component (HOC) which helps to reduce the number of path model relationships (Ford, 2017).

This study adopted a second-order reflective-formative hierarchical model for type II, representing a more general construct of the reflectively measured lower-order constructs (LOCs) (Hair et al., 2018). It is similar to the researches associated with performance, business management, and marketing studies (e.g., Kashif et al. 2016; Amin et al. 2016; Imran, 2018; Jansri, 2015; Kana'an, 2018; Yong et al., 2019). Thus, previous studies obviously indicated that the reflective-formative type model is the most popular for adopting social sciences data analysis which is most suited to this study.

The HOC model in this study was employed with a two-stage approach to resources (R) dimension as an exogenous variable, competitive advantage (CA), logistics service providers capabilities (LSPC), and government administration (GA) as mediating variables and performance of operational cross-border logistics (POCL) as an endogenous variable. These five variables (R, CA, LSPC, GA, and POCL) are higher-order formative constructs as formed by first-order, in which R was formed by tangibility (TR) and intangibility (ITR), CA was formed by market orientation (MKO), scope (Sco), conservative cost control (CCC) and effective performance (EFP), LSPC was formed by logistics service quality (LSPQ) and innovation capability (LSPI), GA was formed by open government (OG) and cooperation (COP), and POCL which is the endogenous variable was created by customs (CT), infrastructure (Inf), services (SV), international shipment (IS), tracking and tracing (TK), and timeliness (T).

The basic PLS-SEM algorithm follows a two-stage approach. In the first stage, the latent constructs' scores are calculated and the second stage estimates the final assessments of the outer weights and loadings as well as the structural model's path

coefficients (Hair et al., 2011). The current study implemented a two-stage approach due to using the reflective-formative hierarchical model (type II). Thus, the indicators for the first-order constructs are modeled reflectively, as is the entire set of repeated indicators for the second-order constructs. Still, the second-order constructs are modeled formatively to the first-order constructs, which cause multiple-item loading and creating collinearity issues (Garson, 2016). Moreover, Hair et al. (2018) suggested implementing the two-stage approach in a mediator or moderator reflective-formative type model to avoid the error due to the model complexity. Therefore, the two-stage approach is preferred in this study to eliminate collinearity issues (Hair et al., 2019).

Based on that, this study followed the study of Imran (2018) in calculating the two-stage approach. In the first step, an assessment of the measurement model for the reflective first-order model was examined to ensure reliability and validity of items, and the indicator loadings, AVE, composite reliability, discriminant validity (Hair et al., 2018) were reported. Then, the latent variable score was taken and formed the formative measurement model (second-order model). For the formative measurement model confirmation, bootstrapping on 5000 resamplings was done to demonstrate the weights and maximum variance inflation factor (VIF). In the second step, the structural model was calculated to examine the strength of relationships between the study constructs (Hair et al., 2018).

All the procedures for the two-stage approach implementation can be seen in Figures 4.1 and 4.2. The construct of R, CA, GA, LSPC, and POCL were developed as first-order constructs. Two dimensions of R (TR and ITR) are interpreted as second-order factors that affect CA, LSPC, and GA. The four dimensions of CA (MKO, Sco, CCC and EFP) represent second-order constructs affecting POCL. Two dimensions of GA (OG and COP) are interpreted as second-order factors that affect POCL. Two dimensions of LSPC (LSPQ and LSPI) represent second-order factors that affect POCL and CA. Finally, six dimensions of POCL (CT, Inf, SV, IS, TK and T) are interpreted as a second-order endogenous construct. By doing so, the number of relationships in the structural model was reduced.

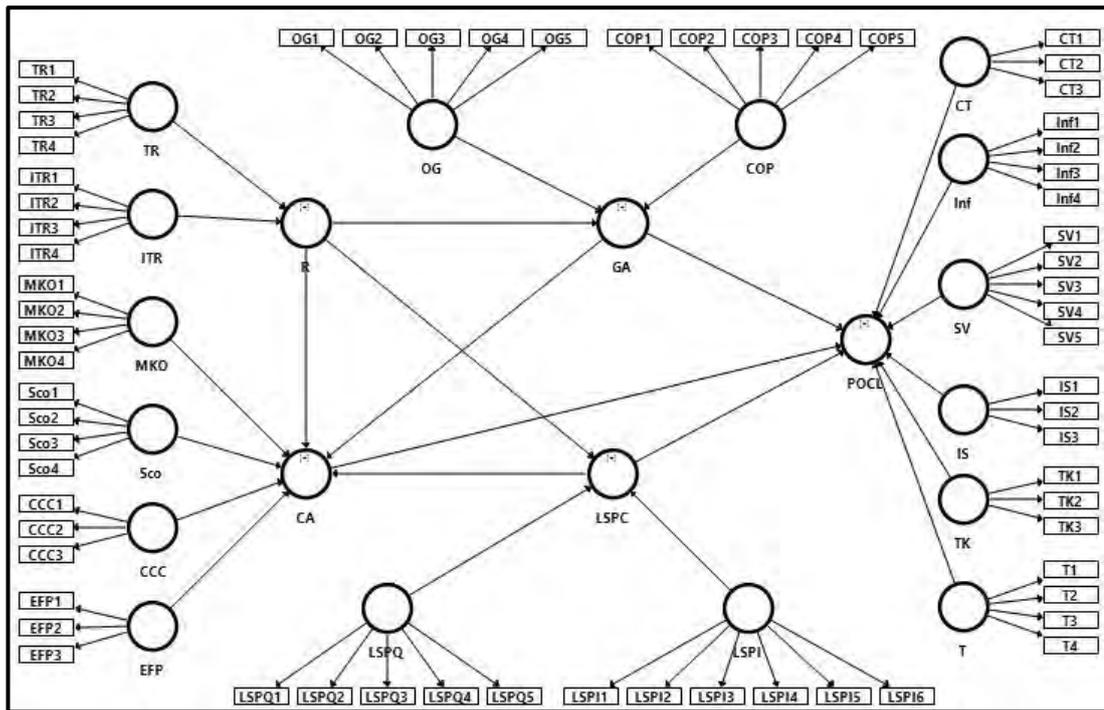
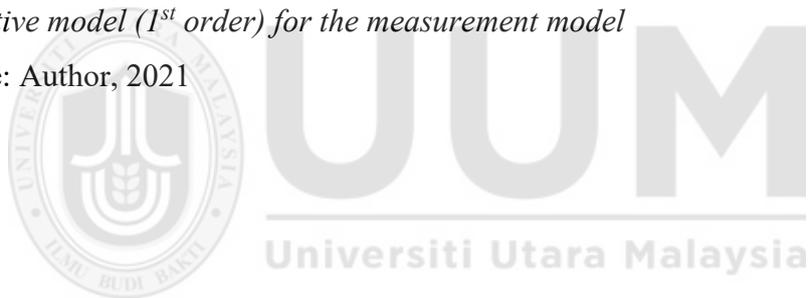


Figure 4.1

Reflective model (1st order) for the measurement model

Source: Author, 2021



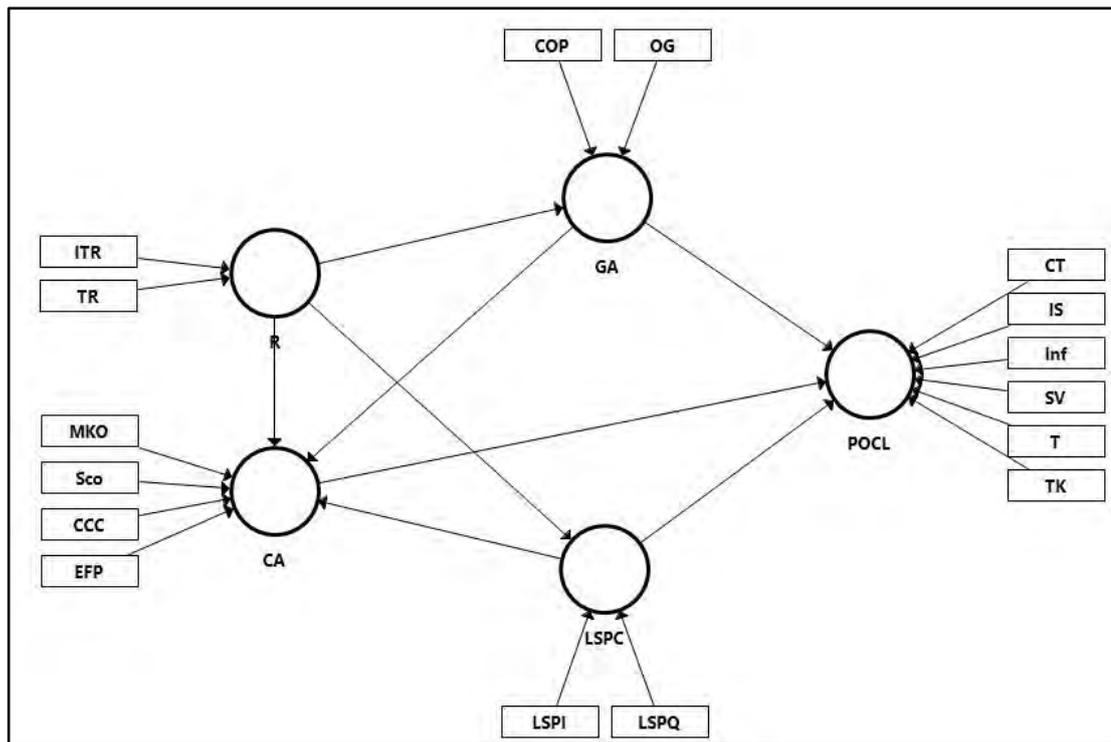


Figure 4.2

Two-stage model (2nd order Formative)

Source: Author, 2021

4.7.2 Measurement model

The measurement model demonstrates the relations between a construct and its observed indicators, whereas the structural model demonstrates the relationships between the constructs (Henseler et al., 2016). The assessment of the measurement model has been examined appropriately by using SmartPLS 3.2.7. It had been recommended to analyze internal consistency (Cronbach's alpha, composite reliability, and Rho_a), convergent validity (factor loading, AVE), and discriminant validity (Fornell & Larcker criterion, cross-loadings, and HTMT criterion) for the validation of reflective first-order constructs measurement model (Hair et al., 2015). Similar to the assessment of formative measurement model constructs, the collinearity (VIF), weight and loading were analyzed using bootstrapping to examine their significance to confirm the measurement model (Hair et al., 2018).

However, to sum up, the measurement model's internal consistency, convergent validity, and discriminant validity of constructs in earnings quality measurement. Internal consistency reliability relies on Cronbach's Alpha, composite reliability, and

rho_a values. Many academicians provided the rule of deciding the value of Cronbach Alpha. For example, Sekaran and Bougie (2016) stated that reliabilities less than 0.60 are considered poor. Those in the 0.70 range are acceptable, and those over 0.80 are indicated as good. Hair et al. (2019) recommended 0.70 – 0.90 or minimum at 0.60 in exploratory research and a maximum of 0.95 to avoid indicator redundancy. The current study gained Cronbach's Alpha results between 0.811 and 0.940, which are standard values.

As the Cronbach's Alpha is in the lower bound, the upper bound for the internal consistency reliability test is composite reliability, which should be accepted on the value of 0.70 and higher. Rho_a is currently the only consistent reliability measure of PLS constructed scores (Dijkstra & Henseler, 2015). The reliability measure rho_A estimates the squared correlation of the PLS construct score with true construct score and reliability coefficient value not less than 0.70. Thus, all threshold values of Cronbach's alpha, composite reliability, and rho_A are acceptable in this study. The results can be seen in Tables 4.12-4.16.

Tables 4.12-4.16 also illustrate the results of the convergent validity assessment, measured by average variance extracted (AVE) analysis. The AVE identifies the average commonality for each latent factor in a reflective model. Its value should be greater than 0.5 and higher than the cross-loading, which means factors should explain at least half the variance of their respective constructs (Garson, 2016; Hair et al., 2019). Another way to consider reliability for measurement model evaluation is to recommend factor loading of more than 0.7 or higher. Factor loadings of more than 0.7, 0.6, 0.5, or 0.4 are adequate if other loadings have high scores of loadings to complement AVE and CR. In another view, to confirm the measurement model, the researcher should minimize measurement error by deleting constructs based on the factor loading, cross-loading, discriminant validity, CR, and AVE before evaluating the structural equations model to study the relationship of hypotheses (Hair et al., 2018). The deleted items in this study are presented in the tables below.

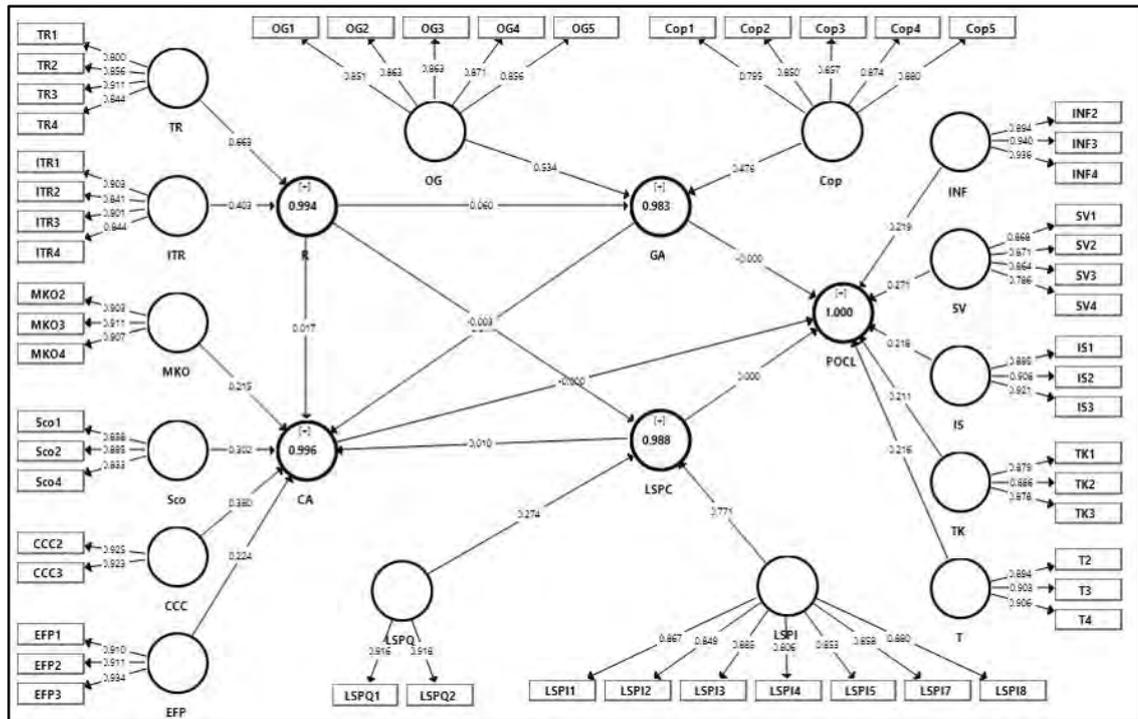


Figure 4.3

PLS-Path analysis of R-square values (n=181)

Source: Author, 2021

Table 4.12

Findings for the performance of operational cross-border logistics measurement model of PLS (First order, reflective, n=181)

Construct	Items	Loading	AVE	Composite Reliability	roh-a	Cronbach's Alpha
Infrastructure	INF2	0.894	0.854	0.946	0.916	0.914
	INF3	0.940				
	INF4	0.936				
Services	SV1	0.868	0.719	0.911	0.871	0.869
	SV2	0.871				
	SV3	0.864				
	SV4	0.786				
International Shipment	IS1	0.895	0.825	0.934	0.895	0.894
	IS2	0.908				
	IS3	0.921				
Tracking and tracing	TK1	0.879	0.776	0.912	0.857	0.856
	TK2	0.886				
	TK3	0.878				

Table 4.12 (Continued)

Construct	Items	Loading	AVE	Composite Reliability	roh-a	Cronbach's Alpha
Timeliness	T2	0.894	0.812	0.928	0.885	0.884
	T3	0.903				
	T4	0.906				

Note: CT1, CT2, CT3, INF1, SV5, and T1 were deleted due to main loading less than 0.7; AVE: Average Variance Extracted.

Source: Author (2021)

Table 4.13

Findings for logistics service providers capabilities measurement model of PLS (First order, reflective, n=181)

Construct	Items	Loading	AVE	Composite Reliability	roh-a	Cronbach's Alpha
Logistics Service Quality	LSPQ1	0.916	0.841	0.914	0.811	0.811
	LSPQ2	0.918				
Innovation Capability	LSP11	0.867	0.735	0.951	0.940	0.940
	LSP12	0.849				
	LSP13	0.885				
	LSP14	0.806				
	LSP15	0.853				
	LSP17	0.858				
	LSP18	0.880				

Note: LSPQ4 & LSPQ5 were transformed to LSP17 & LSP18 due to their cross-loadings value; LSPQ3 & LSP16 were deleted due to HTMT larger than the correlations between the construct and other constructs in the model; AVE: Average Variance Extracted.

Source: Author (2021)

Table 4.14

Finding of government administration measurement model of PLS (First order, reflective, n=181)

Construct	Items	Loading	AVE	Composite Reliability	roh-a	Cronbach's Alpha
Open Government	OG1	0.851	0.741	0.935	0.913	0.913
	OG2	0.863				
	OG3	0.863				
	OG4	0.871				
	OG5	0.856				
Cooperation	COP1	0.795	0.725	0.929	0.907	0.905
	COP2	0.850				
	COP3	0.857				
	COP4	0.874				
	COP5	0.880				

Note: AVE: Average Variance Extracted.

Source: Author (2021)

Table 4.15

Findings for resources measurement model of PLS (First order, reflective, n=181)

Construct	Items	Loading	AVE	Composite Reliability	roh-a	Cronbach's Alpha
Tangibility	TR1	0.800	0.729	0.915	0.878	0.875
	TR2	0.856				
	TR3	0.911				
	TR4	0.844				
Intangibility	ITR1	0.903	0.762	0.927	0.898	0.895
	ITR2	0.841				
	ITR3	0.901				
	ITR4	0.844				

Note: AVE: Average Variance Extracted

Source: Author (2021)

Table 4.16

Findings for the competitive advantage model of PLS (First order, reflective, n=181)

Construct	Items	Loading	AVE	Composite Reliability	roh-a	Cronbach's Alpha
Market Orientation	MKO2	0.903	0.822	0.933	0.896	0.892
	MKO3	0.911				
	MKO4	0.907				
Scope	Sco1	0.858	0.744	0.897	0.829	0.827
	Sco2	0.895				
	Sco4	0.833				
Conservative Cost Control	CCC2	0.925	0.854	0.921	0.829	0.829
	CCC3	0.923				
Effective performance	EFP1	0.910	0.843	0.942	0.907	0.907
	EFP2	0.911				
	EFP3	0.934				

Note: CCC1 & Sco3 were deleted due to main loading less than 0.7; MKO1 was deleted due to HTMT was larger than the correlations between the construct and other constructs in the model; AVE: Average Variance Extracted

Source: Author (2021)

In terms of discriminant validity, Fornell & Larcker criterion, cross-loadings, and HTMT ratio were assessed to determine the external consistency of the model. First, the Fornell & Larcker criterion, the AVE, is also associated with the discriminant validity establishment. For any latent construct, the square root of AVE should be greater than its correlation with any other latent construct. The variance shared with its block of indicators is higher than the variance it shares with any other latent variable (Garson, 2016). Table 4.17 indicates that the square root of the AVE (as presented on the diagonal, in bold) is higher than the correlations between the constructs.

Table 4.17

Discriminant validity - Fornell-Larcker Criterion (n=181)

Constructs	CCC	Cop	EFP	INF	IS	ITR	LSPI	LSPQ	MKO	OG	SV	Sco	T	TK	TR
CCC	0.924														
Cop	0.527	0.852													
EFP	0.716	0.588	0.918												
INF	0.509	0.526	0.495	0.924											
IS	0.507	0.530	0.569	0.700	0.908										
ITR	0.606	0.612	0.705	0.520	0.522	0.873									
LSPI	0.570	0.754	0.635	0.613	0.600	0.645	0.857								
LSPQ	0.463	0.605	0.596	0.489	0.558	0.618	0.765	0.917							
MKO	0.600	0.544	0.759	0.457	0.487	0.788	0.660	0.602	0.907						
OG	0.491	0.748	0.507	0.599	0.603	0.557	0.711	0.551	0.456	0.861					
SV	0.544	0.590	0.522	0.780	0.702	0.585	0.686	0.589	0.525	0.698	0.848				
Sco	0.610	0.574	0.766	0.538	0.466	0.696	0.620	0.531	0.767	0.507	0.527	0.862			
T	0.512	0.590	0.541	0.645	0.713	0.576	0.691	0.671	0.571	0.659	0.649	0.556	0.901		
TK	0.530	0.647	0.604	0.692	0.751	0.566	0.731	0.672	0.549	0.663	0.769	0.577	0.784	0.881	
TR	0.589	0.729	0.640	0.531	0.532	0.736	0.764	0.612	0.664	0.709	0.646	0.662	0.615	0.700	0.854

Source: Author (2021)

In terms of cross-loading values, it is an alternative way to AVE for assessing discriminant validity in reflective models. In a good model, indicators load well on their intended factors, and cross-loadings with other factors they are not meant to measure should be marked. Based on the rule of thumb, the intended loadings should be higher than 0.7, and cross-loading should be under 0.3. If it does not follow the rule, the model is inappropriately specified (Garson, 2016). Therefore, the current study adjusted variables to be appropriate constructs, which are noted below the table 4.13. In addition, Table 4.18 illustrates that the items load higher in the respective construct than on any other construct and possess traditional value.

Table 4.18

Cross Loading (n=181)

Constructs	CCC	Cop	EFP	INF	IS	ITR	LSPI	LSPQ	MKO	OG	SV	Sco	T	TK	TR
CCC2	0.925	0.489	0.676	0.466	0.440	0.540	0.527	0.429	0.541	0.455	0.501	0.596	0.471	0.496	0.538
CCC3	0.923	0.485	0.647	0.476	0.498	0.579	0.526	0.427	0.569	0.451	0.503	0.531	0.475	0.483	0.551
Cop1	0.499	0.795	0.569	0.417	0.464	0.604	0.669	0.558	0.533	0.630	0.419	0.521	0.534	0.526	0.607
Cop2	0.445	0.850	0.539	0.396	0.482	0.523	0.666	0.518	0.509	0.638	0.495	0.498	0.502	0.566	0.612
Cop3	0.339	0.857	0.413	0.399	0.380	0.437	0.544	0.461	0.338	0.621	0.482	0.395	0.467	0.496	0.547
Cop4	0.449	0.874	0.461	0.470	0.413	0.509	0.641	0.505	0.458	0.621	0.505	0.498	0.478	0.543	0.652
Cop5	0.501	0.880	0.514	0.547	0.509	0.527	0.678	0.528	0.467	0.670	0.602	0.524	0.528	0.612	0.677
EFP1	0.634	0.544	0.910	0.471	0.541	0.639	0.625	0.580	0.699	0.463	0.515	0.683	0.520	0.576	0.596
EFP2	0.665	0.542	0.911	0.412	0.476	0.639	0.572	0.538	0.712	0.476	0.431	0.691	0.468	0.528	0.583
EFP3	0.673	0.534	0.934	0.480	0.548	0.665	0.553	0.525	0.681	0.458	0.490	0.735	0.501	0.560	0.584
INF2	0.472	0.489	0.394	0.894	0.615	0.454	0.539	0.389	0.379	0.577	0.725	0.400	0.557	0.585	0.466
INF3	0.448	0.460	0.470	0.940	0.677	0.476	0.563	0.455	0.430	0.548	0.715	0.540	0.625	0.671	0.498
INF4	0.493	0.510	0.506	0.936	0.647	0.510	0.597	0.508	0.457	0.539	0.724	0.547	0.605	0.661	0.508
IS1	0.429	0.406	0.514	0.610	0.895	0.492	0.473	0.514	0.404	0.507	0.600	0.384	0.662	0.680	0.456
IS2	0.434	0.495	0.486	0.636	0.908	0.438	0.535	0.501	0.425	0.506	0.630	0.400	0.626	0.653	0.460
IS3	0.516	0.541	0.548	0.659	0.921	0.492	0.623	0.506	0.496	0.627	0.679	0.483	0.654	0.714	0.529
ITR1	0.537	0.542	0.607	0.459	0.418	0.903	0.595	0.542	0.693	0.508	0.533	0.638	0.526	0.515	0.658
ITR2	0.450	0.491	0.534	0.336	0.402	0.841	0.476	0.500	0.640	0.484	0.424	0.484	0.441	0.402	0.588
ITR3	0.567	0.531	0.654	0.490	0.490	0.901	0.537	0.557	0.707	0.468	0.499	0.643	0.495	0.471	0.640
ITR4	0.552	0.569	0.658	0.516	0.506	0.844	0.633	0.554	0.706	0.485	0.576	0.652	0.541	0.576	0.677
LSPI1	0.476	0.647	0.562	0.513	0.526	0.594	0.867	0.715	0.616	0.621	0.589	0.566	0.600	0.656	0.663
LSPI2	0.435	0.608	0.503	0.452	0.416	0.524	0.849	0.590	0.562	0.554	0.526	0.479	0.506	0.542	0.644
LSPI3	0.507	0.652	0.545	0.558	0.513	0.529	0.885	0.652	0.566	0.631	0.630	0.469	0.603	0.680	0.669
LSPI4	0.554	0.647	0.571	0.564	0.557	0.515	0.806	0.615	0.542	0.647	0.566	0.597	0.573	0.627	0.628
LSPI5	0.461	0.659	0.565	0.549	0.508	0.587	0.853	0.660	0.547	0.593	0.573	0.560	0.602	0.622	0.630
LSPI7	0.519	0.638	0.504	0.552	0.539	0.534	0.858	0.597	0.517	0.614	0.620	0.516	0.614	0.620	0.626
LSPI8	0.466	0.668	0.556	0.487	0.534	0.583	0.880	0.750	0.607	0.600	0.607	0.529	0.642	0.631	0.720
LSPQ1	0.407	0.523	0.547	0.482	0.545	0.558	0.676	0.916	0.544	0.564	0.567	0.458	0.638	0.614	0.556
LSPQ2	0.441	0.586	0.547	0.416	0.479	0.575	0.726	0.918	0.560	0.449	0.514	0.515	0.594	0.619	0.567
MKO2	0.494	0.490	0.653	0.373	0.429	0.693	0.548	0.537	0.903	0.398	0.443	0.671	0.476	0.447	0.577
MKO3	0.622	0.498	0.755	0.455	0.486	0.750	0.624	0.608	0.911	0.450	0.495	0.738	0.566	0.536	0.599
MKO4	0.509	0.491	0.648	0.410	0.405	0.697	0.618	0.485	0.907	0.388	0.486	0.673	0.505	0.506	0.632
OG1	0.429	0.652	0.440	0.451	0.501	0.477	0.569	0.472	0.372	0.851	0.565	0.412	0.538	0.530	0.562

Table 4.18 (Continued)

Constructs	CCC	Cop	EFP	INF	IS	ITR	LSPI	LSPQ	MKO	OG	SV	Sco	T	TK	TR
OG2	0.459	0.613	0.484	0.506	0.506	0.542	0.588	0.433	0.427	0.863	0.565	0.503	0.559	0.561	0.617
OG3	0.368	0.652	0.393	0.552	0.492	0.435	0.639	0.505	0.331	0.863	0.616	0.411	0.549	0.598	0.617
OG4	0.392	0.618	0.362	0.540	0.492	0.469	0.613	0.443	0.394	0.871	0.634	0.440	0.588	0.572	0.628
OG5	0.461	0.681	0.499	0.530	0.602	0.474	0.647	0.519	0.434	0.856	0.623	0.415	0.600	0.591	0.626
SV1	0.426	0.500	0.430	0.705	0.581	0.466	0.560	0.465	0.436	0.547	0.868	0.461	0.503	0.625	0.559
SV2	0.499	0.529	0.453	0.719	0.627	0.555	0.576	0.529	0.470	0.663	0.871	0.447	0.589	0.619	0.533
SV3	0.461	0.516	0.468	0.667	0.609	0.468	0.609	0.508	0.420	0.635	0.864	0.444	0.538	0.706	0.585
SV4	0.457	0.454	0.418	0.548	0.559	0.494	0.582	0.495	0.454	0.516	0.786	0.435	0.573	0.660	0.512
Sco1	0.495	0.493	0.650	0.439	0.407	0.651	0.562	0.478	0.678	0.456	0.466	0.858	0.499	0.513	0.602
Sco2	0.544	0.507	0.684	0.510	0.431	0.611	0.511	0.419	0.658	0.479	0.469	0.895	0.506	0.500	0.559
Sco4	0.538	0.486	0.647	0.441	0.367	0.538	0.532	0.479	0.650	0.373	0.426	0.833	0.431	0.481	0.553
T2	0.481	0.480	0.510	0.549	0.671	0.517	0.576	0.632	0.502	0.531	0.561	0.472	0.894	0.708	0.516
T3	0.408	0.518	0.484	0.568	0.593	0.505	0.630	0.583	0.544	0.622	0.610	0.512	0.903	0.671	0.527
T4	0.494	0.595	0.468	0.625	0.662	0.533	0.662	0.600	0.498	0.627	0.584	0.518	0.906	0.739	0.616
TK1	0.430	0.564	0.528	0.554	0.670	0.521	0.628	0.628	0.462	0.553	0.631	0.500	0.650	0.879	0.593
TK2	0.493	0.591	0.574	0.645	0.642	0.551	0.676	0.597	0.539	0.625	0.742	0.546	0.678	0.886	0.632
TK3	0.476	0.555	0.495	0.628	0.676	0.425	0.626	0.555	0.449	0.572	0.657	0.480	0.742	0.878	0.624
TR1	0.486	0.542	0.562	0.337	0.410	0.677	0.608	0.505	0.647	0.512	0.451	0.564	0.487	0.495	0.800
TR2	0.535	0.587	0.530	0.514	0.509	0.600	0.662	0.556	0.532	0.636	0.600	0.541	0.521	0.598	0.856
TR3	0.559	0.687	0.607	0.535	0.503	0.636	0.712	0.532	0.597	0.657	0.609	0.637	0.578	0.683	0.911
TR4	0.426	0.670	0.481	0.418	0.386	0.601	0.621	0.498	0.491	0.610	0.538	0.515	0.508	0.606	0.844

Source: Author (2021)

And the last indicator to consider for discriminant validity is the Heterotrait-Monotrait ratio (HTMT). The HTMT index is the average of the heterotrait-heteromethod correlations relative to the average monotrait-heteromethod correlations. All values of the HTMT index should be less than 0.90, thereby confirming discriminant validity (Henseler et al., 2015). Therefore, according to the criteria, discriminant validity for all the constructs is achieved. The results for the HTMT values are shown in Table 4.19.

Table 4.19

Discriminant validity of Heterotrait-Monotrait Ratio (HTMT) (n=181)

Constructs	CCC	Cop	EFP	INF	IS	ITR	LSPI	LSPQ	MKO	OG	SV	Sco	T	TK	TR
CCC															
Cop	0.606														
EFP	0.826	0.648													
INF	0.586	0.577	0.543												
IS	0.588	0.586	0.631	0.774											
ITR	0.701	0.677	0.780	0.570	0.581										
LSPI	0.646	0.815	0.688	0.661	0.652	0.699									
LSPQ	0.564	0.705	0.696	0.567	0.656	0.724	0.874								
MKO	0.694	0.602	0.841	0.503	0.542	0.879	0.719	0.704							
OG	0.563	0.822	0.557	0.657	0.665	0.616	0.766	0.641	0.502						
SV	0.641	0.663	0.587	0.875	0.795	0.660	0.759	0.702	0.595	0.782					
Sco	0.736	0.662	0.884	0.616	0.540	0.804	0.704	0.649	0.891	0.582	0.622				
T	0.597	0.658	0.604	0.716	0.802	0.645	0.757	0.793	0.641	0.732	0.741	0.649			
TK	0.628	0.732	0.685	0.780	0.859	0.643	0.813	0.808	0.626	0.749	0.892	0.686	0.900		
TR	0.690	0.817	0.718	0.591	0.599	0.831	0.841	0.728	0.752	0.792	0.739	0.778	0.697	0.806	

Source: Author (2021)

4.7.3 Measurement model for formative constructs

The formative measurement model is based on an assessment of potential multicollinearity among items and the analysis of their weights to avoid unstable estimates. The variance inflation factor (VIF) of the indicators, the statistical significance of weights, and the relevance of indicators with significant and non-significant weights are recommended to examine (Hair et al., 2019). VIF values far higher than one probably indicate a role of multicollinearity (Henseler, 2017). The maximum VIF value for each formative indicator was computed, resulting in a maximum VIF value of 5. The possible collinearity issues when VIF are at the range of 3-5 is an ideal value when the VIF is less than 3 (Hair et al., 2019).

Another alternative method to measure the contribution of each formative item to the variance of the construct is the estimated statistical significance of weights. Based on the rules of thumb, a significant level of at least 0.05 or the 95% confidence interval indicates that a formative measure is relevant for constructing the composite latent constructs. The larger significant weights contribute more relevance (Hair et al., 2019).

The current study examined the significance of the weights with a re-sampling procedure (bootstrapping with 5000 re-samples) (Garson, 2016) and noticed the insignificant formative indicators. It was decided to retain these items, which also showed outer loading factors above 0.50.

Next, each indicator's outer weight (relative importance) and outer loading (absolute importance) were tested and bootstrapping was run for their significance assessment. When an indicator's weight is significant, there is empirical support to keep the indicator. When an indicator's weight is not significant, but the corresponding item loading is relatively high (i.e., ≥ 0.50) or statistically significant, the indicator should generally be kept. If the outer weight is insignificant and the outer loading is relatively low (i.e., < 0.5), it was decided to eliminate the formative indicator from the model (Henseler, 2017).

The results from the examination of outer weights, as shown in Table 4.20, indicated three insignificant outer weight items ($p > .05$) including INF, IS, and EFP. Still, they were retained due to higher significance ($p < .01$) of outer loadings. The retainment of these constructs was not decided based on the protection of item validity of the formative constructs. It relies on the fact that when measuring a construct with a large number of formative indicators, it is more likely that one or more indicators will have low or insignificant outer weights (Henseler et al., 2015).

Table 4.20

Findings of the measurement model for formative constructs

Constructs	Indicator	Outer loading	OL T-Value	Outer weight	OW T-Value	VIF
Performance of operational cross-border logistics	INF	0.785	17.825**	0.025	0.280ns	2.969
	SV	0.885	27.920**	0.350	2.412*	3.494
	IS	0.794	16.464**	-0.010	0.088ns	2.883
	TK	0.936	47.458**	0.356	3.713**	4.004
	T	0.899	23.244**	0.384	3.987**	2.908
Logistics Service Providers Capabilities	LSPQ	0.870	25.486**	0.285	3.232*	2.407
	LSPI	0.983	87.642**	0.765	9.859**	2.407
Government Administration	OG	0.927	29.545**	0.504	4.581**	2.268
	COP	0.942	33.294**	0.566	5.241**	2.268

Table 4.20 (Continued)

Constructs	Indicator	Outer loading	OL T-Value	Outer weight	OW T-Value	VIF
Competitive advantage	MKO	0.923	33.772**	0.432	4.228**	2.955
	Sco	0.888	23.147**	0.268	2.284*	3.038
	CCC	0.810	17.148**	0.273	2.804*	2.102
	EFP	0.889	27.115**	0.160	1.410ns	3.599
Resources	TR	0.959	76.820**	0.653	10.692**	2.180
	ITR	0.897	25.094**	0.416	7.022**	2.180

Note: OL= outer loading, OW= outer weights, **p<.01, *p<.05, ns= not significant (p>.05); VIF= Variance Inflation Factor

Source: Author (2021)

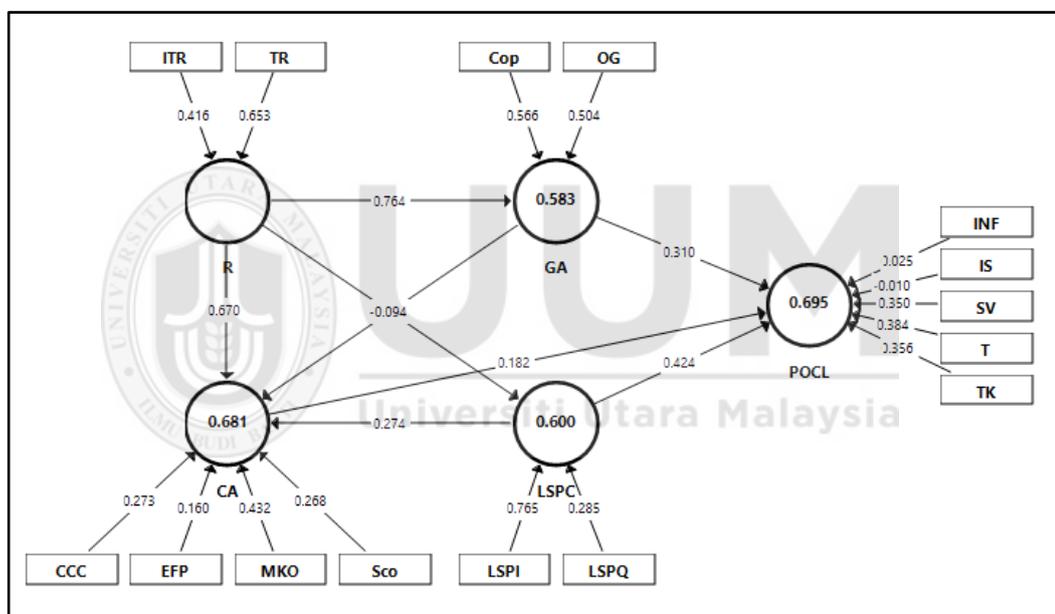


Figure 4.4

PLS-Path analysis of R-square values (Second order, n=181)

Source: Author, 2021

4.7.4 Structural model assessment

After the measurement model assessment was confirmed to be satisfied, the next step to calculate PLS-SEM results is assessing the structural model. Standard assessment criteria that should be considered consist of the coefficient of determination (R^2), the predictive relevance of a block of manifest variables (Q^2), and the statistical significance and relevance of the path coefficients between latent variables (Shmueli et al., 2016). Then, decisions based on the results will be made.

4.7.5 Direct (total effect) relationship assessment (path coefficient)

In SmartPLS, the structural model provides an inner-modeling analysis of the direct significant relationships between the constructs, including *t*-values and path coefficients. The path coefficient is similar to the regression analysis and standardized beta coefficient (Henseler, 2017). The level of significance associated between the constructs was analyzed by considering the *t*-values and beta values (β values) which involved running all the data through a bootstrapping method (with 5000 sampling iterations for 364 bootstrap cases) (Hair et al., 2014). Based on the rule of thumb, Hair et al. (2019) explained that the β values of the coefficient of the regression and *t*-values must be greater than 1.96 to consider resulted in significant value. The results were derived by the procedures mentioned above for further decision-making on the proposed hypothesis. The critical objective of this study is to evaluate the model by analyzing the relationships between constructs. Henseler (2017) recommended that the hypotheses testing of direct effects be evaluated first, followed by additional analyses involving the mediating and moderating effects. Therefore, of the eleven hypotheses proposed in the current study, eight direct relationships were preliminarily analyzed. Seven hypotheses were accepted, and one hypothesis was rejected because the *t*-value is less than 1.96. Table 4.21 indicates all the direct effect results.

Table 4.21

Significance of direct effects - Path coefficients (n=181)

Hypothesis	Path	Path Coefficient	Beta value	SE	t-value	p-values	Result
H1	R -> LSPC	0.774	0.774	0.036	21.468	0.000***	Supported
H2	R -> CA	0.670	0.670	0.074	9.079	0.000***	Supported
H3	R -> GA	0.764	0.764	0.034	22.168	0.000***	Supported
H4	GA -> CA	-0.094	-0.094	0.098	0.961	0.336	Not Supported
H5	GA -> POCL	0.310	0.310	0.075	4.129	0.000***	Supported
H6	LSPC -> CA	0.274	0.274	0.095	2.891	0.004**	Supported
H7	LSPC -> POCL	0.424	0.424	0.096	4.401	0.000***	Supported
H8	CA -> POCL	0.182	0.182	0.073	2.500	0.012**	Supported

Note: * $p < 0.05$, $t\text{-value} > 1.645$, ** $p < 0.01$, $t\text{-value} > 2.327$, *** $p < 0.001$, $t\text{-value} > 3.092$ (One Tailed); SE: Standard Error

Source: Author (2021)

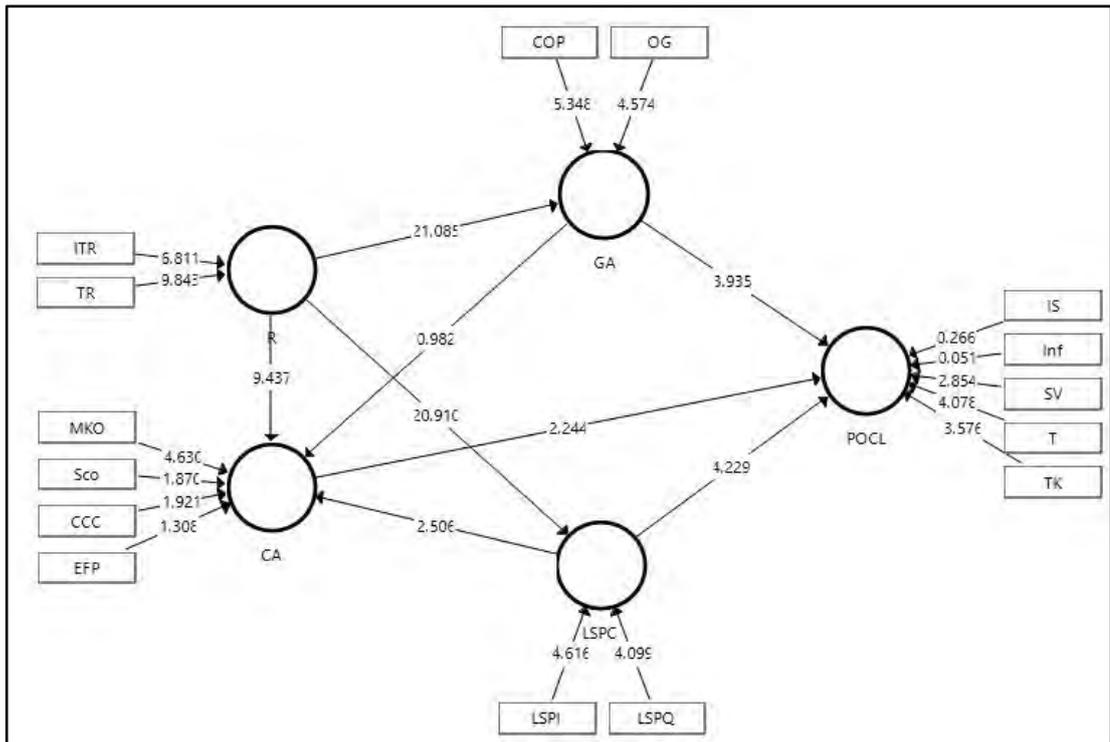
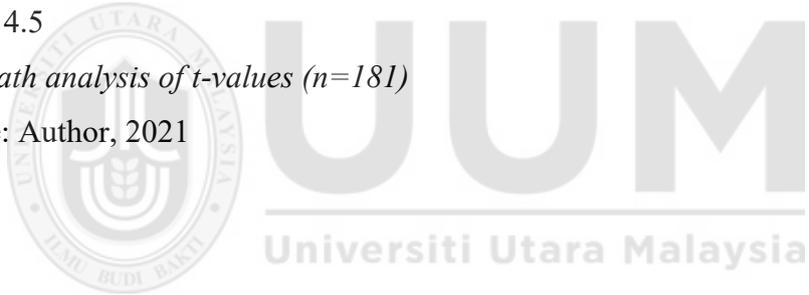


Figure 4.5
 PLS-Path analysis of *t*-values (*n*=181)
 Source: Author, 2021



4.7.6 Mediation model

In the mediation model, variable X is postulated to affect an outcome variable Y through one or more intervening variables, sometimes called mediators (Hayes, 2009). It involves a third variable that plays an intermediate role in the relationship between the independent and dependent variables (Carrión, Nitzl & Roldán, 2017). This study examined multiple parallel mediators. In such a model, mediators may be correlated with specific direct effects, one for each mediator. Thus, the mediation analysis in the current study is used to test hypotheses about or better understand how an effect of X on Y operates (Hayes et al., 2017).

One inferential technique is the product of the coefficients approaches, most well known as the Sobel test. However, the Sobel test requires the assumption that the sampling distribution of the indirect effect is normal. An alternative procedure for testing mediation effects in PLS is a prerequisite to evaluate a significant indirect using a bootstrap test. It is a more valid and powerful method for intervening variable effects assessment (Hayes, 2009). The bootstrapping method also makes no assumptions about the shape of the variables' distribution or the sampling distribution of the statistics. Thus, it can be applied to small sample sizes with more confidence (Hair et al., 2014).

The requirements that must be fulfilled for mediation model analysis as recommended by Baron and Kenny (1986) include: (1) the independent variable significantly affects the dependent variable without mediator variable (path c), (2) the independent variable significantly affects the mediator (path a), (3) the mediating variable significantly affects the dependent variable (path b), (4) the effect of the independent variable and dependent variable shrinks upon the addition of the mediator (path c'), and also the use of Sobel test is not required.

In contrast, Hayes (2009) and Carrión (2017) argued that the paths are unnecessary for the bootstrapping procedure when the following cases occur: (1) the exogenous variable significantly affects the endogenous variable without the mediator, (2) the exogenous variable significantly affects the mediator, (3) the mediator has a significant and unique effect on the endogenous variable, and (4) the effect of the exogenous on the endogenous shrinks upon the addition of the mediator.

This study assumed three hypotheses of mediators. Thus, in the next step of the mediation model assessment using SmartPLS 3 is to focus on analyzing whether the indirect effect of R, via the GA, CA, and LSPC mediator variables on POCL is significant (H9, H10, and H11). A necessary (but not sufficient) condition is the significance of the relationship between R and GA (i.e., 0.764), as well as R and CA (i.e., 0.670), and R and LSPC (i.e., 0.774). This was confirmed by evaluating the structural model results in Table 4.21. Its significance is again tested using the bootstrapping technique on 5000 re-sampling limits at 95 percent confidence interval level (two-tail). Therefore, all assumptions of the current study were acceptable i.e. there is a significant mediation effect of GA between R and POCL (p-value = 0.000; t-value = 4.073), the mediation effect of CA between R and EP (p-value = 0.013; t-value = 2.481), and the mediation effect of LSPC between R and POCL (p-value = 0.000; t-value = 4.102). The mediation results are shown in Table 4.22.

Table 4.22

Significance of specific indirect effects- Path coefficients (n=181)

Hypothesis	Path	Path Coefficient	Beta value	SE	t-value	p-values	Result
H9	R -> GA -> POCL	0.122	0.236	0.058	4.073	0.000**	Supported
H10	R -> CA -> POCL	0.328	0.122	0.049	2.481	0.013*	Supported
H11	R -> LSPC -> POCL	0.122	0.328	0.080	4.102	0.000**	Supported

Note: *p<0.05, t>1.96, **p<0.01, t>2.58 (two tailed); SE: Standard Error

Source: Author (2021)

4.7.7 Results of hypotheses

This section presents the study decision regarding hypothesis acceptance and rejection, as shown in Table 4.23. The results of the path coefficient analysis between the independent variables and the dependent variable found that resources (R) positively and significantly affect logistics service providers' capabilities (LSPC), competitive advantage (CA), and government administration (GA). Also, government administration (GA) positively and significantly affects the performance of operational cross-border logistics (POCL). Moreover, logistics service providers' capabilities (LSPC) positively and significantly affect competitive advantage (CA) and performance of operational cross-border logistics (POCL). However, government

administration (GA) has no significant effect on competitive advantage (CA). Thus, hypotheses H1, H2, H3, H5, H6, H7, and H8 are accepted, and H4 is rejected.

In terms of the mediating effect, it was found that the influence of resources (R) through the government administration (GA), competitive advantage (CA), and logistics service providers' capabilities (LSPC) mediator variables on the performance of operational cross-border logistics (POCL) is significant. Therefore, hypotheses H9, H10, and H11 are accepted.

Table 4.23

Results of Hypotheses

Hypothesis No.	Statement of Hypotheses	Decision
H1	Resources positively and significantly affect Logistics Service Providers' Capabilities.	Supported
H2	Resources positively and significantly affect Competitive Advantage.	Supported
H3	Resources positively and significantly affect Government Administration.	Supported
H4	Government Administration positively and significantly affects Competitive Advantage.	Not Supported
H5	Government Administration positively and significantly affects Performance of Operational Cross-border Logistics.	Supported
H6	Logistics Service Providers' Capabilities positively and significantly affect Competitive Advantage.	Supported
H7	Logistics Service Providers' Capabilities positively and significantly affect Performance of Operational Cross-border Logistics.	Supported
H8	Competitive Advantage positively and significantly affects Performance of Operational Cross-border Logistics.	Supported
H9	Government Administration has a mediator effect on the influence of resources on Logistics Operational Cross-border Logistics Performance.	Supported
H10	Competitive Advantage has a mediator effect on the influence of resources on Logistics Operational Cross-border Logistics Performance.	Supported
H11	Logistics Service Providers' capabilities have a mediator effect on the influence of resources on Logistics Operational Cross-border Logistics Performance.	Supported

Source: Author (2021)

4.7.8 Coefficient of determination (R^2)

The next step in the structural model evaluation is to assess R^2 . The R^2 measures the variance, which is explained in each of the endogenous constructs and is a measure of the model's explanatory power. R^2 values of 0.25, 0.50, and 0.70 are referred to as weak, moderate, and strong coefficients of determination, respectively (Hair et al., 2019). In this case, the R^2 value of 0.695 indicates that government administration (GA), competitive advantage (CA), and logistics service providers' capabilities

(LSPC) explain 69.50 percent to the total variance of the performance of operational cross-border logistics (POCL). Also, R^2 value of 0.583 indicates that resources (R) explain 58.30 percent to the government administration (GA). The R^2 value of 0.681 indicates that resources (R), government administration (GA), and logistics service providers' capabilities (LSPC) explain 68.10% to the competitive advantage (CA). And the R^2 value of 0.600 indicates that resources (R) explain 60.00 percent to logistics service providers' capabilities (LSPC). Therefore, the R^2 values as presented in Table 4.24 are considered moderately good.

4.7.9 Effect Size (f^2)

After testing the structural model, Hair et al. (2019) recommended that researchers can also assess how the removal of a certain predictor construct affects an endogenous construct's R^2 value by evaluating the effect size (f^2). Guidelines for assessing f^2 are listed by Cohen (1988), who suggested that values of 0.02, 0.15, and 0.35 represent small, medium, and large effects of the exogenous latent variable. This study found effect size as R-GA (1.400) large, R-CA (0.470) large, R-LSPC (1.490) large, GA-POCL (0.121) small, GA-CA (0.009) small, CA-POCL (0.051) small, LSPC- POCL (0.182) medium, and LSPC-CA (0.075) small. The sizes of f^2 in each construct association indicate the effect in producing the R^2 for each endogenous latent variable. However, Chin, Marcolin and Newsted (2003) suggested that a small effect size (f^2) does not essentially mean that the underlying exogenous latent variable effect is unimportant, as even a small interaction effect can be meaningful under extreme complex conditions (moderating, mediating). If the resulting beta changes are meaningful, then it is important to take these conditions into account. Table 4.24 shows the results of the effect size (f^2) assessment.

Table 4.24

Values of R^2 and effect size f^2

Exogenous Variable	f^2				R^2	
	POCL	GA	CA	LSPC		
R		1.400	0.470	1.498	POCL	0.695
GA	0.121		0.009		GA	0.583
CA	0.051				CA	0.681
LSPC	0.182		0.075		LSPC	0.600

Source: Author (2021)

4.7.10 Blindfolding and Predictive relevance (Q^2)

In addition to evaluating the magnitude of the R^2 values as a criterion of predictive accuracy, researchers should also examine the Q^2 value, which indicates the model's predictive relevance (Fornell & Cha, 1994). The Q^2 measure applies a sample re-use technique that omits part of the data matrix and uses the model estimates to predict the omitted part. Specifically, when a PLS-SEM model exhibits predictive relevance, it accurately predicts the data points of the indicators in reflective measurement models of multi-item and single-item endogenous constructs (the procedure does not apply to formative endogenous constructs).

For SEM models, Q^2 values larger than zero for a specific reflective endogenous latent variable indicate the path model's predictive relevance for a particular construct. Q^2 values of zero or below indicate a lack of predictive relevance. As a relative measure of predictive relevance, values of 0.02, 0.15, and 0.35 indicate that an exogenous construct has a small, medium, or large predictive relevance for a selected endogenous construct (Hair et al., 2014).

According to Hair et al. (2014), the blindfolding procedure assesses the predictive relevance of the path model by using a cross-validated commonality approach. This method uses only the construct scores estimated to target endogenous construct (without including the structural model information) to predict the omitted data points.

In the first step, before running the blindfolding option for cross-validated redundancy, the researcher runs the multiple latent variables for one reflective target construct and

one after the other until all have been tested. Table 4.25 shows that all Q^2 values are considerably above zero, thus supporting the reputation model's predictive relevance for the four endogenous constructs.

Table 4.25

R-Square value and Q-Square value (n=181)

Endogenous Variables	R-Square	Q-Square
Performance of operational cross-border logistics (POCL)	0.695	0.510
Government administration (GA)	0.583	0.501
Competitive Advantage (CA)	0.681	0.510
Logistics service providers' capabilities (LSPC)	0.600	0.504

Source: Author (2021)

4.8 Chapter summary

This chapter has comprehensively discussed the results of the data analysis, which cover several statistical analysis techniques. Firstly, data cleaning and data screening were preliminarily implemented to check data accuracy and resolve missing values. This is followed by tests to determine the response rate, missing values, outliers, normality, multicollinearity, non-response bias, correlation matrix procedure for common method variance, demographics of the respondent, and all the variables under study. Next, descriptive analysis statistics were run to examine the means and standard deviation, followed by skewness analysis and kurtosis analysis.

Secondly, the measurement model for the formative constructs and reflective construct was examined using PLS algorithms to check the validity and reliability, including the test of individual item reliabilities, convergent validity, and discriminant validity. For the structural model assessment in the form of a significant path coefficient, bootstrapping was conducted to evaluate the association between the independent and dependent variables. The direct relationship of R, GA, CA, LSPC, and POCL revealed that seven out of the eight hypotheses were supported. Finally, the mediating effect was also critically tested through PLS-SEM bootstrapping. All three hypotheses for

the mediation role of GA, CA, and LSPC were accepted. After testing the hypotheses, the relative sizes of the path coefficients were evaluated to determine effect size (f^2).

Lastly, predictive relevance (Q^2) was tested to assure the predictive capability of the model. Therefore, this chapter has achieved the major objectives of the data analysis. The next chapter presents the results and discussion on the findings associated with the empirical studies and theories and offers a study conclusion.



CHAPTER FIVE

DISCUSSION AND CONCLUSION

5.1 Introduction

This chapter presents the discussion of the research findings based on the study objectives. Furthermore, this chapter indicates the study's implications in perspectives of theories, practices, and methodologies. Finally, limitations and future recommendations are also discussed.

5.2 Summary of the study

The following section demonstrates the alignment between the research objectives and results. The current study was conducted to analyze the performance of operational cross-border logistics. The areas of study were in Thailand and Malaysia, which focused on cross-border operation at the Sadao-Bukit Kayu Hitam borders, which accounted a maximum trade value. A total of 181 employees of logistics service providers in Thailand (81 people) and Malaysia (100 people) responded to the study's questionnaire. The research objectives as presented in Chapter One include: (1) to analyze the influence of resources (R) on government administration (GA), logistics service provider capabilities (LSPC), and competitive advantage (CA) of the operational cross-border logistics between Thailand and Malaysia, (2) to examine the relationship between government administration (GA), logistics service provider capabilities (LSPC) and competitive advantage (CA) with the performance of operational cross-border logistics (POCL) between Thailand and Malaysia, (3) to investigate the influence of government administration (GA) and logistics service provider capabilities (LSPC) on the competitive advantage (CA) of operational cross-border between Thailand and Malaysia, (4) to evaluate the mediating roles of government administration (GA), competitive advantage (CA), and logistics service provider capabilities (LSPC) in the relationship between resources (R) and the performance of operational cross-border logistics (POCL) between Thailand and

Malaysia, and (5) to develop a model of the elements that effect the performance of operational cross-border logistics (POCL) between Thailand and Malaysia.

The purposes of the study were specified by following the research questions formulated from the research background and problem statement as demonstrated in the first chapter namely: (1) What are the resources of the logistics service providers and government administration?, (2) How do the logistics service providers' capabilities contribute to the performance of operational cross-border logistics between Thailand and Malaysia?, (3) How does government administration contribute to the performance of operational cross-border logistics between Thailand and Malaysia?, and (4) How does the competitive advantage contribute to the performance of operational cross-border logistics between Thailand and Malaysia? The study intensely investigates the proposed relationships to improve operational cross-border logistics performance (POCL) in the Thailand–Malaysia border. The current research framework is supported by the resource-based view (RBV), competitive advantage, and value chain theories. It was claimed that for effectiveness in global distribution, the tangible and intangible resources that are strengthened could bring capabilities to influence the logistics performance of cross-border operations. This study also reported that both tangible and intangible resources are sources of logistics and innovation capabilities for the logistics service providers. The resources also support the government administration in conducting well-performed cross-border operations. Subsequently, the valuable and different resources of the firms providing cross-border logistics services enable the firm to achieve competitive advantage. Therefore, the results obviously prove that the relationship between each investigated variable is associated with the performance of operational cross-border logistics in the Thailand–Malaysia border, which will be discussed in future research. The assessment of eleven hypotheses was examined appropriately through the PLS-SEM technique, using the SmartPLS 3.2.7 software. Eight of these eleven hypotheses tested the direct relationships, while three were developed to test the indirect relationships (mediating role).

The empirical results of objective one found a significant positive effect of R on LSPC, CA, and GA for operational cross-border in the Thailand–Malaysia border. Regarding objective two, the study found a significant relationship between GA, LSPC, and CA with POCL. Objective number three indicated a significant positive effect of LSPC in

CA, but no significant relationship between GA and CA. Finally, concerning the mediation effect of GA, CA, and LSPC on the relationship between R and POCL for objective four, the current study found the mediating roles of all GA, CA, and LSPC in the relationship between R and POCL. In summary, ten hypotheses were supported out of the eleven proposed hypotheses.

5.3 Discussion of results

The reduction of international trade restrictions, improvement of trade integration, and free trade areas have caused a high demand for cross-border trade. In the global supply chain, the government is directly involved in the performance of cross-border operations as a policymaker. At the same time, the logistics service providers have been forced to increase the capability of providing services in every process and procedure, from where products and services are delivered to consumers. Therefore, both government and logistics service providers should improve their resources and capabilities to generate competitive advantage, which is found to achieve high-performance accomplishment in operational cross-border logistics. The following sections will discuss research findings that are prioritized in accordance with the research objectives.

5.3.1 The influence of R on GA, LSPC, and CA for the operational cross-border logistics between Thailand and Malaysia. (objective 1)

Operational cross-border logistics between Thailand and Malaysia involves many parties. The complex procedures and lack of capabilities on the part of the service providers and government operators may cause logistics problems and a low level of logistics performance. Therefore, the operations require adequate and appropriate resources. Resources are an organization's capabilities that enable it to compete with rivals under the control of resources management until it becomes valuable, rare, difficult to imitate and cannot be substituted. The capability to manage the organization's resources will lead to the organization's high performance and sustainable success. The findings of this research supported H1, H2, H3, which are discussed as follows:

H1: R positively and significantly affects LSPC

Hypothesis one proved that R positively and significantly affects LSPC, referring to resources as primary sources of organizational capabilities. In the cross-border operation context between Thailand and Malaysia, the stakeholders along the supply chains specifically the LSP operate the trade in a volatile situation (Yu et al., 2018). The necessary tangible resources generating capabilities to provide good service quality for cross-border logistics include a readily adapted information system to fulfill the needs of customers and partners, the security of the business transaction, readiness to use cargo tracking system facilities, and the Electronic Data Interchange (EDI). The results empirically validated the findings of Hassan et al. (2017) and Yang et al. (2009) who revealed that communication technology and information equipment are tangible resources that support the working process because advanced technology and adequate equipment generate logistics and innovation capabilities which in turn create a strong relationship with related agencies (Ding et al., 2012). Moreover, it will support LSPs to provide effective services for users as all information and equipment are interrelated in a management system.

In addition, providing cross-border operations also requires the company's knowledge and competency, which is contributed by a well-managed and effective control system of intangible resources. Hence, intangible resources play an essential role in encouraging human resources to be more qualified for driving firm competency to promote capability for operating cross-border logistics. The necessary intangible resources include financial stability, branding, positioning with satisfied and loyal customers, formal planning, and skillful staff (Yang et al., 2009; Madhani, 2010; Yu et al., 2018; Agmeka et al., 2019). The results are consistent with the findings of Rivera et al. (2016) which stated that training more qualified staff would generate more collaboration and value-added services provision, and the findings of Yuen et al. (2019) which indicated that knowledge could enhance sustainable management and in turn create capabilities for handling innovation and technology changes. Moreover, the results empirically supported the study of Koc and Ceylan (2007) who stated that learning organizational resources will develop people's ideas which is a starting point of innovation.

H2: R positively and significantly affects CA

There is a link between resources and competitive advantage especially when the resources are valuable, rare, inimitable, and non-substitutable. Therefore, resources are a critical factor leading to competitive advantage. Tangible resources, including physical resources such as infrastructure, serve as a core competency and significant determinant for import and export which has a positive effect on competitive advantage in trade (Gani, 2017; Othman et al., 2015). The findings are aligned with that of Othman et al. (2015) which revealed that tangible corporate resources are sources of superior performance and sustainable competitive advantage. Furthermore, IT system was found to be the most critical tangible resource for gaining competitive advantage, which is consistent with the results of Handoko et al. (2015) who indicated that ERP systems help firms to achieve competitive advantage from the process of information flow through connected functional systems between related partners namely suppliers, manufacturers, distributors, and even end-users.

Intangible resources such as company security, successful branding, and skillful staff are perceived as good image for the firms among users, which in turn develops trust and reliability of the service provided (Agmeka et al., 2019). Staff with sufficient knowledge about information processing of related works is linked to competitive advantage (Cao et al., 2019). Well-known and trustworthy LSPs can generate satisfied and loyal customers. The results are also consistent with that of Pearson et al. (2015) which found that brand and service reputation are essential resources for generating core competencies. Furthermore, these are sources of sustained advantage because they are high-value, rare, difficult to imitate, and non-substitutable. LSPs with such resources would perform more effectively in customer service, are more responsive, and make better decisions than their competitors (Cao et al., 2019; Fensterseifer, 2009). The findings are supported by Madhani (2010) who found that the resources and capabilities that reside within the organization would lead to the development of sustainable competitive advantages.

H3: R positively and significantly affects GA

The findings support that resources (R) positively and significantly affect government administration (GA). The government administration in terms of cross-border logistics is required to perform open government and cooperation explicitly. Therefore, the government needs to have the necessary resources. Available resources in the governmental sector will enhance government administration because the government has full responsibility in controlling every process of international trade and developing trade facilities such as roads, rail liberalization, and so on (Charanwanitwong & Fraszczyk, 2018). On the other hand, the government is also concerned with a practical issue in which all resources are required. The resources recommended by Waller and Genius (2015) include information and communication technology because it helps reduce the barrier of service delivery and improve social issues that could bring the government to convey the logistics operations at a convenient time and location. The findings of Antoniadis and Haan (2019) confirmed that the government would perform better when they own entrepreneurial and adaptive capabilities generated by organizational resources. It also enables the government to engage in more productive operations in terms of publishing information that should be available to download (Dooren et al., 2012). Waller and Genius (2015) also revealed that technical issues such as infrastructure, privacy, and security are essential resources that can improve the effectiveness of e-government in Jamaica. Therefore, this research's findings have confirmed that tangible and intangible resources positively impact government administration.

However, the government needs to manage all resources to support the administration because well-managed resources are not only beneficial for cross-border operations, but also for economic development as proven by Antún and Alarcón (2014) and Uyar et al. (2021). Thus, a government with efficient resources would be able to develop a strategic plan to encourage strong bilateral trade between countries.

5.3.2 The relationship between GA, LSPC, and CA with POCL between Thailand and Malaysia (objective 2)

This research objective focuses on the effect of GA, LSPC, and CA on POCL, a major issue that motivated the researcher to conduct this study. According to the problem statement demonstrated in Chapter One, Thailand and Malaysia appear to have the highest competitiveness in cross-border trade because both countries had simplified the processes for cross-border trade business with the first and second ranking in Thailand's neighboring countries (The World Bank, 2019). Both Thailand and Malaysia share the borderlines and use the bilateral trade agreement, and were recorded as the largest in ASEAN countries with values of THB 52.5 Billion (Parpart, 2016). They showed good volumes in recent years (World Economic Forum, 2018). On the other hand, favorable trade values from the Thailand-Malaysia cross-border come from the countless number of shipments and loadings, which challenge the service providers and government to overcome many problems such as waiting time, delayed inspections, and limitations of space (Melan & Sabar, 2013) which had decreased productivity and reduced cross-border trips and customs incomes (Cornejo et al., 2017). Therefore, the POCL in the Thailand-Malaysia border investigated in this study relied on five dimensions of cross-border operation logistics performance namely: infrastructure, services, international shipment, tracking and tracing, and timeliness. This research considers that GA, LSPC, and CA have a positive significance with the POCL, and that those factors somehow contribute to a higher performance for the POCL, which will be discussed below.

H5: GA positively and significantly affects POCL

Even though there are very few studies investigating the relationship between government administration and operational performance, they nonetheless confirmed the relationship demonstrated in H5. These research findings confirmed that there is a positive and significant relationship between GA and POCL.

The functions for policymakers investigated in this research include two main roles: open government and cooperation logistics. The first role is related to three dimensions: (1) transparency i.e. the ability of the government to ensure that its actions and those who are responsible for its actions are exposed to public scrutiny and

challenge (Dooren et al., 2012; Transparency International, 2019; Veljković et al., 2014), (2) accessibility i.e. when the government can ensure that everyone can obtain information and utilize services anytime, anywhere, and in a user-friendly manner (Dooren et al., 2012; Parasuraman et al., 1985), and (3) governmental responsiveness i.e. the degree to which policymakers are reacting to new ideas, demands, and needs of citizens (Dooren et al., 2012; Eom et al., 2018; OECD, 2018; Parasuraman et al., 1985; Noordin, 2016). The findings are consistent with that of Uyar et al. (2021) which demonstrated transparency control at customs procedures and accountability of customs officials can reinforce two elements of the POCL i.e. the efficiency of customs and border management clearing and timeliness, which is related to the arrival of shipment within expected delivery times without interruption.

Furthermore, government effectiveness is expected to be public service quality. Regularly collecting feedback on practice or policies using a formal program can foster the competence and quality of logistics services and track and trace consignments. Studzieniecki et al. (2016) also indicated that the act of the government in improving complicated formalities and documents for cross-border activities can improve service quality. For example, using an e-government system will strengthen organizations by generating quality systems, services, and information to make faster decisions, improve efficiency and productivity, and remain responsive to the needs of citizens (Santa et al., 2019). The cost reduction can be achieved from service process and build opportunities to expand the trade to other neighbouring countries such as setting up free tax for the first 30,000 tons of perishable goods, and arranging security desks at the border-trade area to eliminate crimes (Piyanusorn & Teppanya, 2019). Thus, it is obvious that the performance of operations can be influenced by productive government administration. All discussed issues impact the development of logistics performance for cross-border operations. The results are aligned with that of Mishra and Dey (2018) which stated that the government is fully responsible for developing the process of border-crossing operations such as standard control.

Secondly, at the policy level, the government is expected to expand foreign trade relations and trade agreements and improve the effectiveness of border services (Veljković et al., 2014; Wang et al., 2018). Cooperation related to trade policy and border services may develop collaboration regarding team member exchange and the support of participation in operational logistics courses for the officials (Veljković et

al., 2014; Rivera et al. 2016). Such implementations by the government can improve cross-border logistic performance. This is consistent with the findings of Dong and He (2018) which revealed that the government of bilateral countries allow for more market liberalization, reinforce cooperation and coordination among international trade and stakeholders, and persuade more investment for border business. The study by Jeevan et al. (2021) also emphasized on the strategies to improve the efficiency at the Thailand–Malaysia cross-border which can be initiated and performed by the government administration such as maximising import/export counters, using an automation system for document clearance procedures, or seeking the best possible way to merge customs clearance between Thailand-Malaysia. The government also needs to make sure that all relevant parties understand every updated regulatory and trade agreement for cross-border operations (Piyanusorn & Teppanya, 2019) which will contribute to cross-border logistics performance.

H7: LSPC positively and significantly affects POCL

The role of LSPs in cross-border activities generally creates value in the supply chain that influences operational CBL. The critical capabilities of the LSPs that should be considered to foster POCL include logistics service quality and innovation capabilities (Giovanis et al., 2013; Bakar & Jafar, 2016). Many existing studies support the argument that higher LSP capabilities elicit greater logistics performance (e.g., Wang et al., 2018; Monteiro et al., 2019; Roslan et al., 2015; Yu et al., 2017; Chung et al., 2018; Ren et al., 2020). LSPs with the ability to create and deploy resources to satisfy the logistics needs of their customers in pursuit of better service performance would accommodate smooth services for cross-border operations with greater competence and quality of logistics services such as providing simplification of logistics operation, protecting freight safety and risk, maintaining consistent on-time delivery, prompting response to problems and complaints, and ensuring accuracy and efficiency of routine service offerings (e.g., price calculation, formality, and document) (Wang et al., 2018; Yang et al., 2009; Parasuraman et al., 1985; Chatzoglou et al., 2014). Furthermore, LSPs with capabilities on logistics service quality can enhance services related to tracking and timeliness whereby the shipment reaches consignees within expected delivery times. When customers know the consignment location at every point in time and can easily check a tracking status, it will improve logistics performance and

customer satisfaction (Roslan et al., 2015). The findings of this research are consistent with that of Yu et al. (2017) which found that the quality of the logistics of the manufacturing industry in China positively affects logistics performance due to the ability to offer flexible services which is an important capability in handling services under different environmental conditions. Chung et al. (2018) also found that third-party buffer inventory positively affects logistics performance by eliminating delay and transportation problems.

In addition, the results of this study demonstrate that the POCL with greater innovation capabilities report higher logistics performance for operational cross-border because innovation capabilities can only be achieved by firms with abilities to transform knowledge and ideas into new products, processes and systems (Yang et al., 2009; Rivera et al., 2016). Hence, the innovation capabilities are mainly considered with the POCL of all perspectives, such as quality of trade and transport infrastructure, services, competitively-priced shipment, tracking and tracing, and timeliness, especially in the Thailand-Malaysia border where thousands of trucks are passing through. The service providers are then required to seek innovative approaches to help them operate more effective performance. For example, to provide a systematic service quality management, a regular improvement of the company's operational systems and exploration of the best methods are needed to achieve corporate goals. Furthermore, innovation capabilities are also relevant to the service provided beyond standards such as multimodal service, door-to-door service, quality assurance testing, collaboration with other logistics service companies, as well as the organizational system regarding employee reward system for innovative ideas which also support logistics service capabilities (Yang et al., 2009; Rivera et al., 2016). This finding is consistent with that of Wang et al. (2018) which revealed that for 3PL companies in Australia, the manager with continuous improvement-oriented capability could mitigate uncertainty risks in the supply chain. Monteiro et al. (2019) also supported this finding in the context of Portuguese exporting companies where dynamic capabilities help the organizations to transform resources into performance development for logistics operations. Additionally, Ren et al. (2020) confirmed that new management ideas such as capacity on allocation or consolidating orders of the third-party-forwarding-logistics (3PFL) service in China contribute to cross-border performance in minimizing operational cost.

H8: CA positively and significantly affects POCL

Very few studies had investigated the role of competitive advantage (CA) in driving the performance of operational cross-border logistics (POCL). The strong theoretical contribution of competitive advantage applied in strategic management brings successful organization and generates effective performance (Porter, 1985; Othman, et al., 2015), which motivated the researcher to conduct this study. The result of the study supports hypothesis H8, meaning that greater CA creates better cross-border logistics operations performance. This study has also proven that well-managed resources influence the CA of the organization, both the government and private sectors. Organizations with competitive advantage can perform specific organizational strategies, which generally include market orientation, scope, conservative cost control, and effective performance (Dooren et al., 2012; Transparency International, 2019; Veljković et al., 2014), and they are considered to have higher logistics operations performance (Çemberci et al., 2015).

In the Thailand and Malaysia border, competitive advantage is derived from the firm's capabilities in providing logistics services and from the government administration's transparency, accessibility, responsiveness, and ability to create international cooperation at a higher level. Therefore, the market orientation strategy to operate services with the innovation in marketing techniques and methods to exploit market opportunities more than that of the competitors influence more effective cross-border logistics operations (e.g., less damage, service sufficiency, perceived quality and reliability). On the other hand, a government with competitive advantage in market orientation would be able to enhance the infrastructures used for cross-border logistics operation by offering services with standard, expedited clearance for traders with high levels of compliance, and logistics services without solicitation of informal payment in connection with logistics activities (Furrer et al., 2008; Market Business News, 2020).

The improvement of POCL can be enhanced with the scope strategy or the intention of business to group focus market to outperform competitors in the marketplace. For example, the logistics performance in the Thailand-Malaysia border would be improved if the LSPs gain the capability to deliver specialized services, risk resistance and supply chain coordination. In addition, LSPs that provide service in high-price

market segments have more chance of using IT infrastructures for cross-border implementation due to the current procedures of cross-border operations that generally rely on IT systems (Ding et al., 2012; Yuen et al., 2019; Koc & Ceylan, 2007; Furrer et al., 2008).

However, a clear competitive advantage cannot be gained without cost control, such as the ability to offer competitive price, reduce expenses at a higher rate than competitors, and provide services at a lower cost than competitors (Furrer et al., 2008; Sigalas et al., 2013; Cao et al., 2019; Holloway, 1998). The cost control and effective performance implemented by the LSP and the government are substantial competitive advantages that bring more effectiveness on the POCL because financial stability is one indicator for measuring the organization's implementation performance. The results are consistent with that of Bendickson and Chandle (2019) which found that a better development program of human capital generates competitive advantage that positively influences operational performance.

5.3.3 The influence of GA and LSPC on the CA of operational cross-border between Thailand and Malaysia. (objective 3)

H4: GA positively and significantly affects CA

Based on the results of the online questionnaire, the direct relationships as asserted in H4 were evaluated to confirm the findings of previous literatures on the Thailand–Malaysia border crossing operations. Furthermore, some empirical studies revealed the theoretical idea of achieving competitive advantage from the proper management of organizational resources into becoming value, which directly contributes to the organization for more differentiated and superior products or services among competitors (Porter, 1990; Parrish et al., 2004). For example, countries or organizations acquire competitive advantage when the cost and benefits of the procedures are well administrated by the government (Vaghi & Lucietti, 2016). The government also affects the macroeconomic level of international competitiveness (Herciu, 2013). However, the actual findings did not demonstrate a direct relationship with governmental organization, and the results revealed that the GA has no effect on the CA, meaning that H4 is not supported.

The results are not so surprising because the initial concepts for gaining national competitive advantages require more than only the action of the government. It also includes: (1) factor conditions i.e. the nation's position in factors of production such as skilled labor or infrastructure which is necessary to compete in a given industry, (2) demand conditions i.e. the nature of home-market demand for the industry's product or service, (3) related and supporting industries i.e. the presence or absence of supplier industries and other related industries that are internationally competitive, and (4) firm strategy, structure, and rivalry i.e. the conditions in the nation governing how companies are created, organized, and managed as well as the nature of domestic rivalry (Porter, 1990). Furthermore, in this new era with absolute competition all around the world, the business organization aspect carries greater weight because it is concerned with the strategic roles of the organization in specifying competitive strategies of specialization, which is the way to achieve success through a focus of differentiation (Parrish et al., 2004).

Therefore, the government plays the roles of driver and challenger to encourage and push companies to increase their direction and step up competitive performance (Porter, 1990). The pattern of government activities includes several actions such as decision-making, planning, advising, coordination, and so on, which concern the approaches of performing and organizing the administration in the entire country (Akindele & Olaopa, 2005). The roles of government in the operation of cross-border logistics are more relevant to enable rather than deliver. It rarely offers finished goods and services. However, it is a condition that comes before achieving the successful operation of other departments under the government. The service delivered public section is like an intermediary to connect inputs and outputs as a chain of service (Oyedele, 2015).

The results clearly indicate that even the GA has no significant effect on the CA. Instead, good practice in public administration helps to enrich effective flow in other concerned sections, followed by the efficiency of operational activities that enrich higher value all along the supply chain.

H6: LSPC positively and significantly affects CA

The crucial roles of the LSP for cross-border operations include providing high-quality logistics services and creating value in the supply chain for the enrichment of logistics performance. However, the logistics firms that are well-perform to achieve those results are considered to be contained with appropriate resources for creating logistic capabilities, as demonstrated in H1. Therefore, the research findings are confirmed to support hypothesis H6, which implies that a higher level of LSPC contributes to a more excellent CA.

All activities and procedures in the process of carrying the products or services from the home country to the end-users in another country are mainly accomplished by implementing the LSP. Studies on the essential role of LSP in the global supply chain such as Prapinit et al. (2020) found that ability of transportation impact the effectiveness of cross-border trades between Thailand, Lao Pdr, Vietnam and China. Andrejić et al. (2016) stated that vehicle management is related to the efficiency of cost control for product delivery along the supply chain, which is similar to the findings of Leung et al. (2002) which revealed that the LSPs had roles in handling logistics cost in the cross-border process. Hence, all procedures done by the LSPs with adequate capabilities will enable business growth (Tsekeris, 2017) and value creation in the supply chain (Giovanis et al., 2013).

Two major aspects should be considered to explain how well the LSPs perform. The first one is logistics service quality as it comes together with customer expectation and behavioral intention to choose the services because the quality in logistics process was found to be the main driver for repurchase intention, followed by outcome quality (Giovanis et al., 2013) and efficiency of cross-border operations (Prapinit et al., 2020). The other important aspect is the capabilities of the LSP as its main expertise is to provide logistic services which are a principle part of developing operational logistics procedures. In addition, to ensure the capability in offering service for international trade, the LSP should also evaluate service quality in order to fulfill customer expectation and motivate behavioral intention to choose the services which assist the companies to strengthen their competitive advantage.

From a theoretical perspective, the relationship between the firm's capabilities and competitive advantage is related. In resources-based theory, the competitive advantage will be generated from resources and capabilities that are valued and differentiated from competitors (Porter, 1990). Many researchers reviewed the fundamental concept of how the organization can gain competitive advantage and propose ideas for practitioners to develop organizational resources to become capabilities such as innovation capability which helps pharmacies to provide sustainable services (Holdford, 2018), and online retailing enterprises that improve competitive advantage by employing supply chain finance (SCF) practices i.e. fintech and bargaining power (Chen et al., 2019). In addition, strategic and synergistic use of IT that can be adapted and aligned with the appropriate situation is an important capability for generating competitive advantage (Gunasekaran et al., 2017). Prapinit et al. (2019) also proved that transportation as a service provider needs to ensure the best understanding of the whole process of services and functions along the supply chain. Therefore, the capabilities of the LSP in providing service in the global supply chain are a major consideration to generate competitive advantage because it can eliminate the complexity in the operations (Kang et al., 2018) and seek cooperative relationships which brings more competitive advantage among the areas of services (Claro & Claro, 2004). The innovations in logistics namely physical innovation, conceptual innovation, and information technology regularly hold an essential role in long-term growth potential (Rai et al., 2018). These capabilities of logistics service providers are also vital to enable trade facilitation and ensure security of supply chain under the single-window integration because the relevant agencies of the processing procedure of international trade are connected in one system for competitive advantage and sustainability (Pengman & Kettapan, 2018).

5.3.4 The mediating roles of GA, CA, and LSPC in the relationship between R and POCL in the Thailand–Malaysia border (objective 4)

The research's fourth and final objective is to investigate the mediating roles of GA, CA, and LSPC in the relationship between R and POCL in the Thailand-Malaysia border. Consequently, hypotheses nine (H9), ten (H10), and eleven (H11) were evaluated to consider the mediating roles of GA, CA, LSPC with R towards the logistics performance for cross-border operation (POCL) in the Thailand–Malaysia border. According to the data analysis, as stated in Chapter Four, every mediation

effect identified in the model was accepted. As a result, R was found to affect the POCL positively through the mediating role of GA, CA, and LSPC. The following discussion will demonstrate the mediator effect of each relationship on the POCL, respectively from H9, H10, and ending with H11.

H9: GA has a mediator effect on the influence of R on POCL

According to this hypothesis, finding resources will help the government gain a foothold into the good practices to enable greater cross-border logistics performance in the Thailand–Malaysia border. Nowadays, organizations cannot refuse to adapt themselves to societal and technological changes (Waller & Genius, 2015). Therefore, IT resources would render more productive work for cross-border operations, such as developing an e-government system, paperless system, tNSW system, the EDI, and other systems related to cross-border operations between two countries. The impact of supportive IT systems for cross-border operations would generate higher logistics performance in terms of more responsive services, faster procedure, and the ability to track the cargo from available information provided. In addition, the e-government system will unlock the barriers of information accessible from all users, which support government transparency. However, the current study does not concern the development of infrastructures and the enormous tangible resources used for cross-border facilitation such as roads and terminals as they involve maximum budget and depend on the financial readiness of each country (Charanwanitwong & Fraszczyk, 2018). Therefore, focus is given on resources for the development of management approaches.

Other essential intangible resources contributing to government administration are the users' trust and good image. An open government is a culture of public governance that promotes the principles of transparency, integrity, accountability, and stakeholder participation in support of inclusive growth (OECD, 2018). It can be reinforced by improving administration systems such as formal planning, command, and control systems performed by skillful and qualified officials (Antoniades & Haan, 2019; Tangi et al., 2021). Systematic government administration will impact more excellent operations in the government's authorization (Dooren et al., 2012; Veljković et al., 2014) such as customs declarations, queue management, releasing goods, and other procedures occurring at the borders. Smoother operations by the government in the

border areas will influence the POCL in terms of timeliness and maintaining low operating costs in shipment as all complexities have been eliminated (Rezaei et al., 2018; Wang et al., 2018). The current research findings are also consistent with that of Ali et al. (2021) which identified the mediating role of corporate governance in the relationship between public governance and logistics performance. The research also explained that corporate governance is a strategic resource of the organization that impacts good image and trust in transparency that encourages higher operational performance.

Both tangible and intangible resources discussed above also have a positively significant effect on government administration in the perspective of cooperation. The cooperation investigated in this study can be divided into two types i.e. government to government (G2G) or an internal collaboration within the government, and government to business (G2B) or the collaboration between government and non-profit organizations and the private sector (Veljković et al., 2014; Wang et al., 2018; Rivera et al., 2016). Therefore, developing an e-government system will support the ease of use and trust of users and customers, which encourage more cooperation from the related stakeholders (Santa et al., 2019). Moreover, when there is external and internal cooperation, the productivity of cross-border operation will be strengthened (Studzieniecki et al., 2016; Dong & He, 2018) which may also drive economic integration and growth for both countries.

H10: CA has a mediator effect on the influence of R on POCL

Regarding the results for H10, a mediation effect of CA between R and POCL identified in the model was accepted. It implies that there is a linkage between R and POCL, which is mediated by CA. According to the respondents of the research questionnaire, LSPs that provide cross-border logistics in Thailand and Malaysia were in a modest range in the CA. The firms with adequate and appropriate resources would generate more competitive advantage and help to increase more of the CA. It is because the resources could be developed to be a core competency that makes the firm's ability for superior services than competitors. The firm with a competitive advantage will have a business strategy focusing on identifying customer needs. In addition, their intention of the business is to group focus market to outperform competitors in the marketplace with the aim of lowest cost of operation and providing more effective than

competitors at increasing sales or profits. This competitive advantage is formed and developed by well-managed resources (Handoko et al., 2015; Gani, 2017; Othman et al., 2015). It will convey the greater performance of cross-border logistics operations supported by many previous studies. For instance, Ding et al. (2012), Yuen et al. (2019), Koc and Ceylan (2007), and Furrer et al. (2008) indicated that all resources generating competitive advantage should be well arranged and planned to accomplish organizational goals.

Therefore, having enough resources does not necessarily mean that the organization can achieve improved operational cross-border logistics performance. To increase value in the business chain, the firm director is responsible for identifying related costs spent in each activity and the value contribution for that activity. Furthermore, there is a consideration for ensuring that an acquired value is worthwhile enough when comparing with the cost to perform value creation in those activities (Bowersox et al., 2013). Thus, the CA in this current study can represent a good role on the mediating affect on POCL.

The logistics performance in the Thailand-Malaysia border can be improved if the LSPs gain the capability to deliver specialized service, risk resistance, and supply chain coordination which is the way to achieve success through a focus of differentiation (Parrish et al., 2004). However, the firms' cost control and effective performance are substantial competitive advantages that bring more effectiveness to the POCL.

H11: LSPC has a mediator effect on the influence of R on POCL

The current study considers insights into processes through which resource value contributes to logistics performance for cross-border operations. The recent study's findings also support H11 which confirmed the mediating role of the logistics service providers capabilities (LSPC) in the resources and logistics performance for cross-border operations (POCL) relationship. The influence of the LSPC in POCL is consistent with the results of Monteiro et al. (2019) who studied the export performance of Portuguese exporting companies, and of Yuen et al. (2019) who revealed that the resources of shipping companies for transport cargo operations in Singapore such as assets, processes, and knowledge could enhance sustainable

management in the company, thus creating capabilities to handle innovation and technology change. As a result, it will directly generate a more excellent business performance in logistic implementation. Specifically, these results lend credence to the thought that dynamic capabilities (LSPCs) are regarded as a transformer for converting resources into improved performance for cross-border operations, especially in the Thailand–Malaysia border. The explaining power of the LSPC relies on two dimensions i.e. the logistics service quality and innovation capabilities, which have a transformative role in converting resources into enhancing logistics performance for cross-border operations.

Tangible resources are physical items like buildings, fixtures, land, machines, people, and technology (Yang et al., 2009). The LSPCs are concerned with transforming those resources to be readily used and maintaining capacities for providing border services. For example, a better POCL can be streamlined by the technology systems that enable the LSP to update and develop the procedure to fulfill the requirement of users and to respond to changes in the logistic environment (Yuen et al., 2019; Yu et al., 2017; Eliaa et al., 2021). On the other hand, the intangible resources are more crucial in terms of cross-border operations performance improvement because these resources frequently combine the requirements necessary for producing sustainable advantage which is difficult to be replaced by competitors, such as sustainable finances, successful service branding, formal and efficient systems, and skillful personnel (Yang et al., 2009; Madhani, 2010; Yu et al., 2018; Agmeke et al., 2019). Thus, for increasing the level of performance of operational cross-border logistics, the LSPs play the role of transforming all of them by developing innovation capabilities that enable the firm to provide services that go beyond the standard logistics offering (Yang et al., 2009; Rivera et al., 2016). The current research findings prove that intangible resources transformed by the capabilities of logistics service providers can enhance the performance, competence and quality of logistics services.

5.3.5 The POCL model for the Thailand-Malaysia border (objective 5)

In the extant literatures, logistics performance has been investigated in a wide range of studies. However, this research formulates a new model as illustrated in Figure 4.5 that combines all elements which consists of R, GA, CA, and LSPC as a base to examine the factors for both the direct effects and mediating interacting effects on the

POCL between Thailand and Malaysia. The model has been proven to support 10 out of the 11 hypotheses, which indicates that the adoption of the RBV under the assumption of combining all the variables in terms of the mediating roles of GA, CA and LSPC. It is able to enhance the performance of the operational cross-border logistics between Thailand and Malaysia which is acceptable and of which conform to the theories in past studies as discussed in sections 5.3.1 – 5.3.4. However, what is more important from the proven model is how it fits with the current circumstances in applying it in the context of borders trade between Malaysia and Thailand nowadays.

Regarding the ongoing Covid-19 pandemic and travel restrictions, the border checkpoints in Sadao and Bukit Kayu Hitam had been closed for a period of time. This had affected the movement of people across borders to pass through the countries by alternative checkpoints such as Betong, Sungai Kolok or Wang Prachan; however, only the transport of goods have been allowed to operate (Bangkokpost, 2020). It is obvious that the Sadao-Bukit Kayu Hitam checkpoints still play significant roles for cross-border trade compared to the others. This is because the maximum trade value and these border checkpoints mark the beginning of the Malaysian North-South Expressway and Federal Route 1, of which roads stretch to the Singaporean border in Johor Bahru (Fau et al., 2014). In addition, the proposed model is strongly suitable for enhancing efficiency, especially in the current dire situation for cross-border logistics. In the perspective of the LSP, they need to seek for unique strategies that would serve them under the competitive price and service quality. For example, Things on Net Co., Ltd. (TON) and Xperanti Solutions (M) Sdn Bhd (XPERANTI) have created a collaboration to facilitate seamless cross-border tracking between Thailand -Malaysia within various sectors of the transportation and logistics industry (Malaysiakini, 2020). Most of them provide one-stop services that meet set requirements and of which complete the services with safety, reliability, speed, and accuracy (Profreight Group, 2021; NRS Logistics, Thailand, 2021; Logitem, Thailand, 2021; True Logistics, 2021). These strategies reflect on the concept of RBV and competitive advantage towards the performance of logistics firms. It contains appropriate resources which are able to take more opportunities to boost the performance of cross-border logistics. A great management approach to transform the resources towards the capabilities is important to deliver the ideas, instructions and correct direction to perform cross-border logistics operation as well as the related activities. This will help the whole system to be ready

to perform cross-border logistics throughout the global supply chain (Tarmizi et al., 2014). On the other hand, LSPs without capabilities to handle the services during this pandemic might fail and have minimize efficiency for cross-border operations.

In the aspect of government perspectives, the model truthfully represents government administration in driving the performance of cross-border logistics towards ensuring a smooth cross-border transaction which requires significant collaboration between various players in the global supply chain (Jeevan et al., 2021). Therefore, it is vital for the authority to be handled directly by the government which is responsible for creating trust and reliability in every single process of cross-border logistics (Uyar, 2021). However, during the Covid-19 pandemic, the government should communicate through the media effectively and clarify all the latest information regarding the spread of Covid-19 as well as on trade limitations (Noknoi & Boripunt, 2021). In addition, the government's prediction regarding cross-border trade is considered a new strategy rather than technology dependency. More digitalised borders, or even smarter procedures and systems for daily operations, using data analytics, visualisation for regular self-assessment, and preparation of supporting documentation will all become necessary in the near future (PWC, 2020). Consequently, the impact of Covid-19 is significantly related to governmental actions and the performance of the operational border trade between Thailand and Malaysia which is partly based on government policy responses (Babero et al., 2021). The Malaysian and Thailand governments have been consistent in bilateral trades and in promoting the border projects for better innovations in logistics which is expected to be completed by 2022. The government of Thailand has accelerated the improvement of the Sadao checkpoint to support trade facilitation in the Thai-Malaysian border as well as the extension of road lanes at the Ban Prakob border which is expected to be ready by 2023 (Thansettakij, 2022; MGR online, 2021).

From the discussion, it is clearly indicated that the model of POCL is realistic and applicable. This model demonstrates the integration of all parties related to the operational cross-border logistics. The relationship of each variables were combined in the research model, and are also able to be adopted under the theories of RBV, GVCs and competitive advantage. This can be extended to further studies so as to accelerate and promote cross-border trade between the countries and increase their efficiency and economic growth based on the bilateral agreements.

5.4 Contributions of study

Our contribution to the relevant literature on the performance of operational cross-border logistics is three-fold. Firstly, the theoretical implication relies on the underpinning theories applied in this research i.e. the supply chain, resources-based view (RBV), and competitive advantage (CA) theories. Thus, this current research had extended the theoretical perspectives in different ways that are beneficial for practitioners. Secondly, the practical implications are relevant to the recommendation for all stakeholders involved in the cross-border operations at the Sadao–Bukit Kayu Hitam border in Thailand and Malaysia. Moreover, the recommendation provided from the current study results would fulfill the development of the logistics firms providing international logistics services for the borderland in other countries that own a similar logistics environment. Finally, the methodological implication of this study is vital for improving data collection approaches affected by the COVID-19 pandemic and how the researcher can get the validated data through the analysis process.

The study also recommends an analysis methodology for evaluating SEM and path analysis with the higher order model, including formative and reflective models. Therefore, the methodological implication would be highly beneficial for new researchers, both academicians and practitioners. The next sub-sections discuss the aspects of the study's contribution.

5.4.1 Theoretical implications

Firstly, our results are relevant to the RBV literature. They support the theory that the organization's resources are capabilities that enable it to compete with rivals under control. This research focused on both tangible and intangible resources. However, the findings indicated that the necessary resources for cross-border operations belong to the LSPs and are managed by them including the information system, cargo tracking system facilities, EDI, financial stability, successful product branding and positioning, formal management and control system, and high qualified staffs. These all are necessary resources that every firm is expected to have. However, many empirical studies stated that those resources can directly influence the performance of the firm and its operations i.e. LSPs that possess the above resources can handle effective operations for border-crossing implementation and create satisfied customers. In fact,

the study's findings argued that there should be a mediator to transform all necessary resources to become capabilities such as GA, CA, and LSPC because there are many risks and uncertain environments in the international context which require adequate and efficient resources to handle all processes and attain effective performance. Therefore, resources should be managed and developed in a good practice.

Moreover, as mentioned before, the resources (R) belong to the LSPs. Therefore, it is not a surprise that R has a significant effect on LSPC. Surprisingly though, R also has a positive significant effect on GA, meaning that good management of resources in the LSP strengthens better administrative operations for the government. For example, the readily adapted information system and good image of the LSPs contribute to the government's transparency, accessibility, responsiveness, and collaboration-supported cross-border logistics. The role of the government in supporting the development of firm performance as found in this current study was also empirically validated by Ho, Hoang and Wilson (2021) who found that government subsidization via the implementation of strategic R&D activities increases market shares in international markets for labor-managed firms. In addition, Jiao et al. (2015) stated that governance provides innovation activities to encourage performance.

However, the effect of the firm's resources can be considered to generate the GA. Aisbett and McAusland (2013) stated that firms are more likely to experience greater regulatory constraints from environmental and safety rules which influence rule-making. Shinkle, Hodgkinson and Gary (2021) also found that the firms account for changes in government policy on goal dimensions, similar to the Thai Post that had been widely adapted from high competitors situation of logistics' service in Thailand (MNG online, 2018).

Secondly, the linkage between supply chain and competitive advantage will be explained. It is clear that LSPs play a crucial role in value creation in the supply chain. In the theoretical perspective, the firm's capabilities and competitive advantage are related. The resources-based view theory asserts that competitive advantage will be generated from resources and capabilities valued and differentiated from competitors (Porter, 1990). Many researchers reviewed the fundamental concept of how the organization can gain the competitive advantage and propose ideas for practitioners to develop organizational resources to become capabilities such as the innovation

capability which help the pharmacy to provide sustainable service (Holdford, 2018) online retailing enterprises that improved competitive advantage by employing supply chain finance (SCF) practices both fintech and bargaining power (Chen et al., 2019). In addition, the strategic and synergistic use of IT that can be adapted and aligned with the appropriate situation is important capabilities of the firm to generate competitive advantage (Gunasekaran et al., 2017). Prapinit et al. (2019) also proved that transportation service providers need to ensure the best understanding in the whole process of services and functions along the supply chain. Therefore, the capabilities of the LSP in providing service in the global supply chain are a major consideration to generate competitive advantage because it can eliminate complexity in the operations (Kang et al., 2018) and seek cooperative relationships, which brings more competitive advantage in the areas of services (Claro & Claro, 2004). The innovations in logistics, namely physical innovation, conceptual innovation, and information technology regularly hold an essential role for long-term growth potential (Rai et al., 2018). These capabilities of logistics service providers are also vital to enable trade facilitation and security of supply chain under the single-window integrated because the relevant agencies of a processing procedure of international trade are connected in one system for competitive advantage and sustainability (Pengman & Kettapan, 2018).

Therefore, the results of this study had extended the RBV and CA theories in different perspectives as very few studies had investigated the role of competitive advantage in creating logistics performance in cross-border operations and the connection between competitive advantage, resources, and capabilities of logistics service providers. The discussion also identified factors driving competitiveness and examples of extending theories in cross-border operations for both academic and practical views.

5.4.2 Practical implications

The results presented crucial information for policymakers, logistics sector operators, and companies. Service providers that can identify the exact resources that contribute to competitive advantage would have a clear direction in developing their operations and in handling more superior business than industrial rivals, bringing long-term improvement in cross-border logistics and supply chain processes.

In the international market, which is characterized by fluctuations and fast-changing environments, both Thai and Malaysian service providers need to focus more on dynamic capabilities and service quality (Monteiro et al., 2019) which will drive their performance in terms of rapid growth, business expansion and customer satisfaction (Roslan et al., 2015; Yu et al., 2017).

In conclusion, the government significantly affects the overall development of cross-border trade. The government is the only organization that enables control and has full authority to improve the whole operational cross-border process which include infrastructure projects, human resource management, and funding for operation development, the government can support financing and unlock policy for cross-border trading. Moreover, it can also create a good image, reputation, and information resources for the private sector. However, as a policymaker, the government generally concentrates on practical matters. Therefore, it will be a more successful operation when there is knowledge sharing and strong cooperation from all the parties concerned.

The importance of government administration is recognized by many researchers, resulting in many studies investigating the role of government, its impact, and its relationship with the workflow at a particular national level. For instance, Pinto et al. (2017) found both direct and indirect effects on the acquisition of cross-border ownership. The government plays an essential role in knowledge access, financial consideration, the participation of stock, and strict policy. The government also supports the country with reputation, flexible policy, and rich information resources.

Moreover, the government has a role in considering the potential application of infrastructure that provides trade facilitation. Therefore, the government should be more open towards knowledge sharing and having strong cooperation from all concerned parties to collaborate in improvement strategies such as the implementation of the Public-Private Partnership (PPP) for infrastructure development (Jeevan et al., 2021) which had been established in the Dry Port of Coslada in Madrid, Spain (Department of International Economic Affairs, 2019) i.e. the lessons learned from the EU rail liberalization for the reinforcement of the trade (Charanwanitwong & Fraszczyk, 2018).

The government implementation as a policymaker is associated with practical matters, while some research findings are more concerned about the principle in theory. Thus, academicians and policymakers should work closely for knowledge sharing between theory and practice to develop the process and procedure and solve logistic problems occurring in cross-border operations. This approach would bring positive results, but the government should firstly accelerate infrastructure projects in the country such as the IT system and support the infrastructure development of neighboring countries. Next is the development of the country's human resources to be high skilful to provide progressive response at cross-border operations.

5.4.3 Methodological implications

The first implication is related to the data collection approaches. Firstly, this research was conducted during the COVID-19 pandemic. Therefore, the study population is very limited, which affected the response rate. Secondly, this research employed the e-mail and door-to-door method for data collection, with follow-ups using telephone calls, e-mails, and self-collection. Triangulation methods were used on the data, approaches, and language to ensure content validity, which is rare in logistics performance studies.

The second implication is concerned with the analysis of the study. According to previous studies, traditional or first-generation SPSS is used for data analysis; but to the author's best knowledge, very few studies had used Smart PLS 3.2.7 (Ringle et al., 2015) or advance and second-generation statistical data analysis to make the decision (acceptance or rejection of the study hypothesis). Specifically, the current study analyzed the psychometric properties of the variables by examining the construct's convergent and discriminant validity.

Moreover, this study conveyed that the PLS-SEM advance analysis and technique such as the constructs used for R, GA, CA, LSPC, and POCL are reflective-formative with higher-order type-II (Becker et al., 2012), which is very rare in logistics performance study. Furthermore, this study conducted the two-stage approach instead of the repeated indicators approach to validate the measurement and structural model, which is also very rarely done in logistics performance studies.

5.5 Limitations and future recommendations

This study investigated the relationship between R, GA, CA, LSPC on the POCL by using quantitative analysis. It would be more insightful to explore the topic using mix-methods with qualitative analysis to gain a deeper understanding and to identify specific resources, competitive advantage strategies, and logistics quality development for the service providers.

Moreover, this research was conducted by collecting data from employees responsible for cross-border logistics. Therefore, the results only reflect the perspective of the practitioners. At the same time, the policymaker or the government has an essential role in rule and regulation issuance and process control, which is the central part of cross-border logistics operations. Therefore, future studies should consider having the government to participate in the research.

All variables investigated in this study can be extended to different contexts of cross-border logistics to compare the results and seek the approach for promoting border trade between the countries.

5.6 Conclusion

The operational cross-border of Thailand–Malaysia is quite complicated with complex processes and the involvement of numerous parties, which can affect the efficiency and performance of cross-border trade. This is the main motivation for this research.

The current study employed empirical supports to fulfill the gaps of the study in several issues. This study had proven that resources (R) have a positive influence on government administration (GA), competitive advantage (CA), and logistics service provider's capabilities (LSPC), and that tGA, LSPC, and CA have a significant positive relationship with the logistics performance of cross-border operations (POCL). Furthermore, the current study had successfully proven that the LSPC influences CA, but there is no significant effect on the CA from the GA. More importantly, the results come up with the support of mediator effect from GA, CA, and LSPC between R. This combination model generates substantial contribution on the RBV and competitive advantage theories for all academic users and can be implemented by the practitioners.

Finally, this present study also reveals practical, theoretical and methodological implications to firms and government with future recommendations for handling the limitations of the present study. In conclusion, this research work has fulfilled valuable practical, theoretical, and methodological implications in business, logistics and international management as well as strategic management literature.



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Appendix A: Lists of forwarding agents and logisitics companies

1. Lists of transportation company in Thailand provided by Sadao Customs

รายชื่อบริษัทขนส่ง ที่ติดต่อด่านศุลกากรสะตอ

ลำดับที่	ชื่อบริษัท	ที่อยู่	โทรศัพท์	โทรสาร	E-mail
1	MAYGLOBE (THAILAND) CO.,LTD.	เลขที่ 5/3 หมู่ที่ 13 แขวงมีทองกลาง เขตลำลูกกา จังหวัดปทุมธานี รหัสไปรษณีย์ 12150	02-5495151	02-5195144-5	mail@mayglobe@hai.com
2	MAHACHAI TRANSPORT SERVICE CO.,LTD.	เลขที่ 27 หมู่ที่ 1 ถนนเสด็จเมือง ต.สวนผึ้ง อ.หาดใหญ่ จ.สงขลา 90100	074- 501501	074-501664	
3	SAHADEE EXPORT-IMPORT CO.,LTD.	เลขที่ 302/2 อ.วัดการ ต.หาดใหญ่ อ.หาดใหญ่ จ.สงขลา 90110	074-232023	074-349137	
4	CHAREON RESOURCE IMPORT-EXPORT CO.,LTD.	เลขที่ 17,18 อ.สุวรรณภูมิ ต.หาดใหญ่ อ.หาดใหญ่ จ.สงขลา 90110	074-346100	074-326185	
5	KARUNYAPAS CO.,LTD.	เลขที่ 42 หมู่ที่ 5 อ.เพชรเกษม อ.เมือง จ.เพชรบุรี 76000	032-425494	032-419898	
6	HATYAI CHAREAN IMPORT EXPORT LTD.,PART.	เลขที่ 323-325 อ.ศรีภูมิวนรต ต.หาดใหญ่ อ.หาดใหญ่ จ.สงขลา 90110	074-234565	074-236900	
7	TEERAPHAN FORWARDING CO.,LTD.	เลขที่ 545 อ.นิพัทธ์สงคราม ต.หาดใหญ่ อ.หาดใหญ่ จ.สงขลา 90320	074-500626	074-500625	
8	ONE TRANSPORT CO.,LTD.	เลขที่ 252 ซ.อ่อนนุช 36 อ.สุขุมวิท 77 แขวงสวนหลวง เขตสวนหลวง กรุงเทพฯ 10250	02-3320878	02-3320878	
9	NAKORN HATYAI SOUTHERN TRANSPORT PARTNERSHIP	เลขที่ 12 ถนนท่าบ่อ 31 ซอย 2 ต.พะตง อ.หาดใหญ่ จ.สงขลา 90230	074-291845	074-370204	nkhy_hatyai@yahoo.com hkhy_hatyai@hotmail.com
10	HUP DEE TRANSPORT CO. LTD	เลขที่ 89 หมู่ที่ 1 ต.บ้านพรุ อ.หาดใหญ่ จ.สงขลา 90250	074-217521-4	074-240621	hub-dee@yahoo.com. hub-dee@hotmail.com
11	T.K.C.SOUTHERN TRANSPORT CO.,LTD.	เลขที่ 984/97 ซ.ปรีดีพนมยงค์ 40 อ.สุขุมวิท 71 แขวงคลองตันเหนือ เขตวัฒนา กรุงเทพฯ 10110	02-3925206-8	02-3925209	tkobkk99@ksc.th.com
12	E.A.E.LOGISTICS CO.,LTD.	เลขที่ 82/1-2 หมู่ที่ 2 ต.สำนักขาม อ.สะเตาะ จ.สงขลา 90320	074-434265-6	074-434267	nittaya@straitsexpress.net
13	TNT EXPRESS WORLDWIDE (THAILAND) CO.,LTD.	เลขที่ 1768 อ.เพชรบุรีตัดใหม่ แขวงบางกะปิ เขตห้วยขวาง กรุงเทพฯ 10320	074-301077	074-434252	tnt_edt@hotmail.com
14	GEODIS WILSON TRANSPORT CO.,LTD.	เลขที่ 39/4 อ.อาขยวงศ์ แขวงคลองเตย เขตคลองเตย กรุงเทพฯ 10110			
15	HATYAI PONGSIRI FORWARDING CO.,LTD.	เลขที่ 99/1 หมู่ที่ 1 ต.เสด็จเมือง ต.สวนผึ้ง อ.หาดใหญ่ จ.สงขลา 90110	074-474723		

ลำดับที่	ชื่อบริษัท	ที่อยู่	โทรศัพท์	โทรสาร	E-mail
16	SAHASIN TRANSPORT TRADING CO.,LTD.	เลขที่ 85/30 หมู่ที่ 5 ต.คชพวงส์ อ.หาดใหญ่ จ.สงขลา 90110	074-434144	074-43 9004	kin979@hotmail.com
17	SOUTHERN HAULIERD(THAILAND) CO.,LTD	เลขที่ 641/20 หมู่ที่ 5 อ.กาญจนวิชัย ต.บ้านพรุ อ.หาดใหญ่ จ.สงขลา 90250	074-553135-9	074-43 9726	kannak@southernhaulers.com
18	PRASERT WATTANATHAILTD.,PART.	เลขที่ 7 อ.เขื่อนขันธ์ อ.หาดใหญ่ อ.หาดใหญ่ จ.สงขลา 90110	074-245037	74236620	
19	OVERLAND LOGISTICS (THAILAND) CO.,LTD.	เลขที่ 48 ซ.บางนา-ตราด 27 อ.บางนา-ตราด (กม.3.5) แขวงบางนา เขตบางนา กรุงเทพมหานคร 10260	02-7440107-9	02-7440106	
20	DAIAEE EXPRESS LIMITED PARTNERSHIP.	เลขที่ 56/1 หมู่ที่ 2 ต.สำนักขาม อ.สะเตกา จ.สงขลา 90320	074-301678-9	074-43 4112	
21		เลขที่ 462/472 อ.สุขุมวิท แขวงคลองตัน เขตคลองเตย กรุงเทพมหานคร 10110	02-9735161	02-	
22	UTI WORLDWIDE CO.,LTD.	เลขที่ 388 ห้อง 1903-4 อ.สุขุมวิท แขวงคลองเตย เขตคลองเตย กรุงเทพฯ 10110	02-9735161	02-973 5082	thanatouch@ct.co.th
23	S.T.V. TRADING AGENCY CO.,LTD.	เลขที่ 54 หมู่ที่ 8 ต.ท่าช้าง อ.บางกล่ำ จ.สงขลา 90110	074-457811-12	074-45 7813	stv_tradingagency@ mail.com
24	SV FORWARDING & TRANSPORT CO.,LTD.	เลขที่ 46/2 หมู่ที่ 2 ซ.ราษฎร์รัง อ.เมือง จ.สงขลา 90000	074-480181	074-480281	svtrasports@yahoo.com
25	SAHATEAP TRANSPROT COMPANY LIMITED	เลขที่ 44 อ.คลองวิชน 2 อ.หาดใหญ่ จ.สงขลา 90110	074-333846	074-33 3867	

2. Lists of forwarding agents in Thailand provided by Sadao Customs

รายชื่อตัวแทนออกของ ที่ติดต่อผ่านศุลกากรระยอง

ลำดับที่	ชื่อบริษัท	ที่อยู่	โทรศัพท์	โทรสาร	E-mail
1	MAYGLOBE (THAILAND) CO.,LTD.	1647 ซอยไทย-จังโหลน 16 คลังนิคม อ.ระยอง จ.สงขลา 90320	074-301060 089-8904670		mothadao@mavoiobethai.com
2	MAHACHAI TRANSPORT SERVICE CO.,LTD.	เลขที่ 27 หมู่ที่ 1 ถนนสิงหนธรเมือง คล.ควนเค็ง อ.หาดใหญ่ จ.สงขลา 90100	074- 501501	074-501664	
3	HADYAI LOGISTICS CO.,LTD	เลขที่ 30/59 ซอยไทยจังโหลน 30 หมู่ที่ 7 ถนนกาญจนาภิเษก คล.สำนักงาน อ.ระยอง จ.สงขลา 90320	074-301369 074-434126	074-301367	
4	O.K.SHIPPING SERVICE LTD.,PART.	เลขที่ 118/78 ซ.รพินทร์ 5 หมู่ที่ 2 คล.สำนักงาน อ.ระยอง จ.สงขลา 90320	074-557085		
5	TEERAPHAN FORWARDING CO.,LTD.	เลขที่ 97 หมู่ที่ 2 อ.กาญจนาภิเษก คล.สำนักงาน อ.หาดใหญ่ จ.สงขลา 90110	074-301350 074-434236	074-301351 074-434055	
6	T-MAN IMPORT EXPORT CO.LTD.	เลขที่ 301/5-6 หมู่ที่ 1 อ.ปัทมาสาร คล.ปัทมาสาร อ.ระยอง จ.สงขลา 90240	074-522711-2	074-522710	tman@koxinfo.co.th
7	T.K.C.SOUTHERN TRANSPORT CO.,LTD.	เลขที่ 128/19 หมู่ที่ 7 ซ.24 ไทย-จังโหลน อ.กาญจนาภิเษก คล.สำนักงาน อ.ระยอง จ.สงขลา 90320	074-557161-4	074-557160	tchdy@tksc.th.com.
8	SARITPONG TRADING CO.,LTD	เลขที่ 125 หมู่ที่ 5 คล.วังอ.บางแก้ว จ.สงขลา 90110	074-457104-6	074-552133	sr1990@hotmail.com
9	M.M LOGISTICS CO.,LTD.	เลขที่ 978 อ.ศรีนครินทร์ แขวงสวนหลวง เขตสวนหลวง กรุงเทพฯ 10250	02-3227979	02-3227177	mmbkk@mmsvs.com
10	SAHACHAI INTERNATIONAL COMPANY LIMITED	เลขที่ 85/12 หมู่ที่ 5 คล.สงฆ์ อ.หาดใหญ่ จ.สงขลา 90110	074-439490-5	074-439496-8	saida@sahachaihaiyai.co.th
11	STRAITS EXPRESS (THAILAND) CO.,LTD.	เลขที่ 82/1-2 หมู่ที่ 2 คล.สำนักงาน อ.ระยอง จ.สงขลา 90320	074-434265-6	074-434267	ritsaya@straitsexpress.net
12	TNT EXPRESS WORLDWIDE (THAILAND) CO.,LTD.		074-301077	074-434252	nt_edj@hotmail.com
13	BANGKOK FREIGHT FORWARDERS CO.,LTD.	เลขที่ 10 อ.ระยอง คล.บ่อทอง อ.เมือง จ.สงขลา 90000	074-321644-5	074-440619	syraoikes@bafoothai.com
14	SUNRISE FREIGHT AND FORWARDING CO.,LTD.	เลขที่ 58 คล.ปึก อ.ระยอง จ.สงขลา 90120	074-301811 074-301733	074-301812	sunrise forwarding@yahoo.com
15	INFINITY SHIPPING & SERVICES LTD.,PART.	เลขที่ 76/22 หมู่ที่ 2 คล.สำนักงาน อ.ระยอง จ.สงขลา 90320	074-434241	074-434242	infinity shipping-service@hotmail.com
16	S.D.INTERLINE SERVICE CO.,LTD.	เลขที่ 80/21 อ.กาญจนาภิเษก คล.สำนักงาน อ.ระยอง จ.สงขลา 90320	074-434303		sdinters@hotmail.com
17	PSP LOGISTICS LTD.,PART.	เลขที่ 76/21 หมู่ที่ 2 คล.สำนักงาน อ.ระยอง จ.สงขลา 90320	074-434288	074-301830	psp_logistic@hotmail.com

ลำดับที่	ชื่อบริษัท	ที่อยู่	โทรศัพท์	โทรสาร	E-mail
18	MAJOR PROFIT CO.,LTD.	เลขที่ 82/25-26 หมู่ที่ 2 ค.สามัคคีชัย อ.สะเตา จ.สงขลา 90320			
19	FOUR SEAS INTERNATIONAL CO.,LTD.	เลขที่ 82/41 หมู่ที่ 2 อ.กาญจนวณิช ค.สามัคคีชัย อ.สะเตา จ.สงขลา 90320	074-301489 074-301697	074-301004	shipping_dasao@hotmail.com
20	SONGCHAI IMPORT EXPORT LTD. _PART.	เลขที่ 84/16 หมู่ที่ 2 อ.กาญจนวณิช ค.สามัคคีชัย อ.สะเตา จ.สงขลา 90320	074-301184-7	074-301188	
21	BANG HAN SHIPPING CO.,LTD.	เลขที่ 80/22 หมู่ที่ 2 อ.กาญจนวณิช ค.สามัคคีชัย อ.สะเตา จ.สงขลา 90320	074-434140-43 074-301108-10	074-434140 074-434145	
22	KAOWNA FORWARDING LTD.,PART.	เลขที่ 84/50 หมู่ที่ 2 ค.สามัคคีชัย อ.สะเตา จ.สงขลา 90320	074-434309	074-301654	kaowna_baw@hotmail.com
23	THATDICH CO.,LTD.	เลขที่ 85/11 หมู่ที่ 2 อ.กาญจนวณิช ค.สามัคคีชัย อ.สะเตา จ.สงขลา 90320	074-434049	074-557083	thatdich@ksc.th.com
24	THAI ACTION SERVICE SHOP CO.,LTD.	เลขที่ 82/39 หมู่ที่ 2 อ.กาญจนวณิช ค.สามัคคีชัย อ.สะเตา จ.สงขลา 90320	074-301132	074-424363	sunisa_thaiaction@yahoo.co.th suk_thaiaction@hotmail.com
25	981 PLUS IMPORT-EXPORT CO.,LTD.	เลขที่ 47 อ.เสด็จ อ.สะเตา จ.สงขลา 90120	074-412631	074-412631	fon_981plus@hotmail.com
26	THAI-MALAY SHIPPING CO.,LTD.	เลขที่ 76/23 อ.กาญจนวณิช ค.สามัคคีชัย อ.สะเตา จ.สงขลา 90320	074-301344 074-301244	074-434436	thai_malay99@hotmail.com
27	SEA-AIR LOGISTICS CO.,LTD.	เลขที่ 360/1 อ.สุทวารวดี อ.หาดใหญ่ อ.หาดใหญ่ จ.สงขลา 90110	074-365450-2	074-365453	somsak@seair.co.th
28	P&B UPDATE TRADING LIMITED ARTNERSHIP	เลขที่ 76/9 หมู่ที่ 2 ค.สามัคคีชัย อ.สะเตา จ.สงขลา 90320	074-434124	074-434124	
29	DAIAEE EXPRESS LIMITED PARTNERSHIP.	เลขที่ 82/48 หมู่ที่ 2 ค.สามัคคีชัย อ.สะเตา จ.สงขลา 90320	074-301678-9	074-434112	
30	PROMPT DYNAMICS (THAILAND) CO.,LTD.	เลขที่ 22/57 หมู่ที่ 7 ค.สามัคคีชัย อ.สะเตา จ.สงขลา 90320	074-557263-4	074-557267	prompt.dyn.th@hotmail.com
31	I P D SHIPPING CO.,LTD.	เลขที่ 145/4 หมู่ที่ 2 อ.กาญจนวณิช ค.สามัคคีชัย อ.สะเตา จ.สงขลา 90320	074 434120	074 434120	
32	THINNAPHAT TRADING LTD.,PART.	เลขที่ 49 อ.วามบุรีรัตน์ 1 ค.หาดใหญ่ อ.หาดใหญ่ จ.สงขลา 90110	074 301682	074 301683	thinnaphat_trading@yahoo.co.th
33	S.T.V. TRADING AGENCY CO.,LTD.	เลขที่ 54 หมู่ที่ 8 ค.ท่าช้าง อ.บ.จกถ้ำ จ.สงขลา 90110	074-457811-12	074-457813	stv_tradingagency@gmail.com
34	TNT LOGISTICS LTD.	เลขที่ 334 หมู่ที่ 9 อ.ปากพะยูน อ.สะเตา จ.สงขลา 90240	074-522839	074-522849	sawipa_j@tnt.co.th
35	SUWANKEEREE SERVICE LIMITED PARTNERSHIP	เลขที่ 81/2 หมู่ที่ 2 อ.กาญจนวณิช ค.สามัคคีชัย อ.สะเตา จ.สงขลา 90320	074-301555	074-301001	j_suwankeeree@hotmail.com

ลำดับที่	ชื่อบริษัท	ที่อยู่	โทรศัพท์	โทรสาร	E-mail
36	AMARIT AND ASSOCIATES CO.,LTD.	เลขที่ 159 หมู่ที่ 2 ต.จิ้งโกล อ.สิงหนคร จ.สงขลา 90280	074-338501-4	074-338500	shippingskd@amarit.co.th
37	SUNFLOWER FORWARDING LIMITED PARTNERSHIP	เลขที่ 291 อ.กาญจนวิชัย ต.สะตอ อ.สะตอ จ.สงขลา 90120	074-414154	074-414154	yingsunflower@hotmail.com
38	HISPEED IMPORTEXPORT LIMITED PARTNERSHIP	เลขที่ 9 ซอชดลศรีชัย อ.พระพรบุรี ต.สะตอ อ.สะตอ จ.สงขลา 90120	074-398746	074-398746	high-speed007@hotmail.com
38	K.S.P SHIPPING LTD, PART	เลขที่ 824 หมู่ที่ 4 ต.นาหม่อม อ.นาหม่อม จ.สงขลา 90310	074-217323	074-217323	
39	V-SERVE LOGISTICS LTD.	เลขที่ 709/57 อ.อ้นบรูช แขวงสวนหลวง ต.สวนหลวง กทม. 10250	02-3323940	02-3320754	southern@v-servegroup.com
40	THAISOMDEJ SERVICE CO.,LTD.	เลขที่ 82/44 หมู่ที่ 2 อ.กาญจนวิชัย ต.สำนักาม อ.สะตอ จ.สงขลา 90320	074-434129	074-301372	pu-wangsawa@windowslive.com purida_04@hotmail.com
41	SUPHASIN IMPORTEXPORT	เลขที่ 3 อ.หลังพัฒนา 2 ต.ปัทมราษฎร์ อ.สะตอ จ.สงขลา 90240	074-521553	074-522108	spimex@cscoms.com
42	SEAGULL LOGISTICS (THAILAND) CO., LTD.	เลขที่ 82/40 หมู่ที่ 1 ต.สำนักาม อ.สะตอ จ.สงขลา 90320	074-301838	074-301839	www.nmseagull.com
43	V.C.HATYAI SHIPPING CO.,LTD	เลขที่ 62 อ.ไร่ตึกอู่ถูล 2 ต.หาดใหญ่ อ.หาดใหญ่ จ.สงขลา 90110	074-429139	074-429140	vc_hy@hotmail.com



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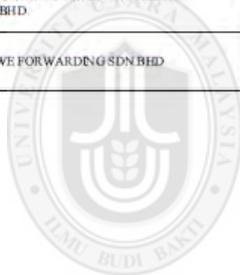
2. Lists of forwarding agents in Malaysia provided by Malaysia Customs

Persatuan Ejen Penghantaran & Logistik Bukit Kayu Hitam (PPM-035-02-20022018)

No 9, Tingkat 1, Susunan Chengal Emas, Kompleks Chengal Emas, 06050, Bukit Kayu Hitam, Kedah Darul Aman

BIL. (NO)	NAMA SYARIKAT (COMPANY NAME)	ALAMAT SYARIKAT (COMPANY ADDRESS)	E-MAIL	NO. TELEFON (CONTACT NO.)	
				OFFICE NO.	H/P NO.
AHLI PERSATUAN YANG BERDAFTAR - EJEN PENGHANTARAN (REGISTERED ASSOCIATION MEMBER)					
1	BIFORST LOGISTICS SDN BHD	Lot 203, Kawasan Perindustrian Bukit Kayu Hitam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	bikh-forwarding@biforst.com	04-9221200	013-8551050
2	BKH BERSATU ENTERPRISE	Lot 14, Kawasan Perindustrian Bukit Kayu Hitam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	bkh889@gmail.com	04-9229888	016-5789067
3	C & Z AGENCY	NO.78, Tingkat 1, Kompleks Darul Qiyam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	totalinterlink1101@yahoo.com	04-9221968	019-4083031
4	CENTRE SIDE EXPRESS SDN BHD	Lot 21, Kawasan Perindustrian Bukit Kayu Hitam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	sham@cseworldwide.com	04-9222600	019-4544591
5	CJC SOUTHEAST SDN BHD	No. 32A, Bandar Baru Laka Temin, 06050, Bukit Kayu Hitam, Kedah Darul Aman	cjcops@atigroup.com.my	04-9221289	012-4758229
6	CURIO PACK SDN BHD	Lot 203, Kawasan Perindustrian Bukit Kayu Hitam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	nani@curio.com	04-9222505	012-4330141 / 013-599494
7	DB SCHENKER – SCHENKER LOGISTICS (M) SDN BHD	Lot 22-27, Kawasan Perindustrian Bukit Kayu Hitam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	FaizalRedza.MohdPuzzi@dschenker.com	04-9310017	011-2075030
8	DEE Z ENTERPRISE SDN BHD	No 9, Tingkat 1, Susunan Chengal Emas, Kompleks Chengal Emas, 06050, Bukit Kayu Hitam, Kedah Darul Aman	dzeenz95@yahoo.com.sg	04-9229969	019-4438404
9	D-MULTISERVE RESOURCES SDN BHD	Lot 20, Kawasan Perindustrian Bukit Kayu Hitam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	dzm_bkh@yahoo.com		012-4320655
10	E A E FREIGHT & FORWARDING SDN BHD - KART	Lot 213, Kawasan Perindustrian Bukit Kayu Hitam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	eam@kart-asia.com.my	04-9222551	013-5309963
11	ERA OSM FORWARDING & TRANSPORT SDN BHD C/O CITY ZONE EXPRESS SDN BHD	No 7, Tingkat 2, Susunan Chengal Emas, Kompleks Chengal Emas, 06050, Bukit Kayu Hitam, Kedah Darul Aman	bkhfwdg@ozone.com.my	04-9222500	011-42454799
12	EZZRYNA ENTERPRISE	NO.76, Tingkat 1, Kompleks Darul Qiyam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	ezan@ezn177@yahoo.com.my	04-9222572	012-4568660
13	FILIM ENTERPRISE	Lot 210, Kawasan Perindustrian Bukit Kayu Hitam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	filim5000@gmail.com	04-9222729	019-4122729
14	FM GLOBAL LOGISTICS SDN BHD	No 6, (1ST Floor), Susunan Chengal Emas, Kompleks Chengal Emas, 06050, Bukit Kayu Hitam, Kedah Darul Aman	cbx-bkh@fmgloballogistics.com	04-9221098	017-3435461
15	FORWARD EXPRESS BKH SDN BHD	No. 10, Bandar Baru Laka Temin, 06050, Bukit Kayu Hitam, Kedah Darul Aman	fehkh@forwardexpress.com.my	04-9222557 / 04-9222558	013-4041808
16	FREIGHT MARK (M) SDN BHD	Lot 22-27, Kawasan Perindustrian Bukit Kayu Hitam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	azmeey.ali@freightmark.com.my	04-9222031	013-6062175
17	GW FORWARDING SERVICES SDN BHD (GEODIS MALAYSIA SDN BHD (BKH BRANCH))	No.15, Bangunan Seri Temin, 06050, Bukit Kayu Hitam, Kedah Darul Aman	jamil.zakaria@geodis.com	04-9221987 / 04-9221988	012-4109499
18	I&L LOGISTICS SDN BHD	Lot 28, Kawasan Perindustrian Bukit Kayu Hitam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	anong.bkh@iandlonline.com	04-9229128	017-5977479
19	JAYA ENTERPRISE	NO.49, Tingkat 1, Kompleks Darul Qiyam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	jaya_enterprise@hotmail.com	04-9221531	017-4390488
20	JC PIONEER SDN BHD	No. 11, Bangunan Seri Temin, 06050, Bukit Kayu Hitam, Kedah Darul Aman	hafizjcp@gmail.com	04-9221587	013-4712266
21	KALBER PROSPEK (M) SDN BHD	No.3A, Susunan Chengal Emas, Kompleks Chengal Emas, 06050, Bukit Kayu Hitam, Kedah Darul Aman	kallber.fwdg@gmail.com	018-2084616	012-5923006
22	KUMPULAN SAMASTAR SDN BHD	Lot 206, Kawasan Perindustrian Bukit Kayu Hitam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	abu_bakar@k.samastar.com	04-9221152	019-4423355
23	LAKA TEMIN ENTERPRISE	No 67 & 68, Tingkat 1, Kompleks Darul Qiyam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	lakatemin_unara@yahoo.com	04-9221752	019-4190695
24	LEE AGENCY (IMPORT & EXPORT)	No. 13, Bangunan Seri Temin, 06050, Bukit Kayu Hitam, Kedah Darul Aman	khoo2277@gmail.com	04-9221335	019-4432277
25	PERKAPALAN MARITIME	No. 13, Bangunan Seri Temin, 06050, Bukit Kayu Hitam, Kedah Darul Aman	khoo2277@gmail.com	04-9221335	019-4432277
26	MAJUJUKAN FORWARDING SDN BHD	Lot 4050, Kawasan Perindustrian Bukit Kayu Hitam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	mfbfforwarding@gmail.com	04-9222411 / 04-9221182	017-4319318
27	NORTH TRANS LOGISTICS SDN BHD (NORTH TRANS INTERLINK (M) SDN BHD)	Lot 11, Kawasan Perindustrian Bukit Kayu Hitam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	supramaniamnan@northtrans.net	04-9221573	012-4921336
28	OVERLAND FORWARDING (M) SDN BHD	Lot 4050, Kawasan Perindustrian Bukit Kayu Hitam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	suflam@ofmsb.com.my	04-9222025	012-4110137

BIL. (NO)	NAMA SYARIKAT (COMPANY NAME)	ALAMAT SYARIKAT (COMPANY ADDRESS)	E-MAIL	NO TELEFON (CONTACT NO.)	
				OFFICE NO.	H/P NO.
29	POS LOGISTICS BERHAD	Lot 22-27, Kawasan Perindustrian Bukit Kayu Hitam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	faiz.zaid@pos.com.my	04-9221487	016-4620740
31	REDDYJAYA ENTERPRISE SDN BHD	NO.70, Tingkat 1, Kompleks Darul Qiyam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	gibhd011@gmail.com	04-9222462	012-5858217
32	RITZ OCEAN SDN BHD - JJ EXPRESS SERVICES SDN BHD	Lot 818, Gudang PKNK, 06050, Bukit Kayu Hitam, Kedah Darul Aman	jitksou@jjexpress.com.my	04-9221039	012-4153968
33	SAIBURI AGENCY	Lot 29, Kawasan Perindustrian Bukit Kayu Hitam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	pejbkb@gmail.com	04-9222933	019-5099679
34	SAMASIA TRADING	Lot 54/55, Kawasan Perindustrian Bukit Kayu Hitam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	samasia-bkb@hotmail.com	04-9222292	013-4992917
35	SEAGULL LOGISTICS SDN BHD	Lot 38, Jalan PKNK 6/2, Kwsn Perindustrian Bukit Kayu Hitam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	erna@myseagull.com	04-9228222 / 04-9228223	012-9355977
36	SIXSTAR INTERTRADE LOGISTICS SDN BHD	Lot 22-27, Kawasan Perindustrian Bukit Kayu Hitam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	khatally@sixstar.com.my	04-9221966	019-4770202
37	STETS LOGISTICS SDN BHD .SRIUTARA	Lot 217, Kawasan Perindustrian Bukit Kayu Hitam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	manambuka@yahoo.com	04-9222408	013-7272408
38	SWIFT INTEGRATED LOGISTICS SDN BHD	Lot 22-27, Kawasan Perindustrian Bukit Kayu Hitam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	narman_adri@swiftlogistics.com.my	04-9221403	019-4171029
39	SYARIKAT LOGISTIK PETIKEMAS SDN BHD	Lot 22-27, Kawasan Perindustrian Bukit Kayu Hitam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	sachada@petikemas.com.my		017-5824965
40	TRANSEXPRESS FORWARDING SDN BHD	Lot 818, Gudang PKNK, 06050, Bukit Kayu Hitam, Kedah Darul Aman	transexpressforwarding@gmail.com	04-9221096	012-4487253
41	TRANSNORIS AGENCY SDN BHD	Lot 22-27, Room 1 & 7, Kawasan Perindustrian Bukit Kayu Hitam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	transnorisagency@yahoo.com	04-9221940	016-4491655
42	UFA UTARA FORWARDING AGENCY SDN BHD	No. 2, Seri Temin, 06050, Bukit Kayu Hitam, Kedah Darul Aman	ufabkb@gmail.com	04-9222155	012-4185255
43	ZAEWE FORWARDING SDN BHD	NO.53, Kompleks Darul Qiyam, 06050, Bukit Kayu Hitam, Kedah Darul Aman	wkz697@fz.comail.com	04-9221921	012-4136967




Universiti Utara Malaysia

Appendix B: Data collection letter



OTHMAN YEOP ABDULLAH GRADUATE SCHOOL OF BUSINESS
Universiti Utara Malaysia
06010 UUM SINTOK
KEDAH DARULAMAN
MALAYSIA



Tel.: 604-928 7101/7113/7130
Faks (Fax): 604-928 7180
Laman Web (Web): www.oyagsb.uum.edu.my

UUM/OYAGSB/R-4/4/1
24 November 2019

Director
Royal Malaysian Customs Department
Bukit Kayu Hitam

Dear Sir/Madam,

LETTER OF RECOMMENDATION FOR DATA COLLECTION AND RESEARCH WORK

This is to certify that **PENGMAN HASAMON (Matric No: 903057)** is a student of Othman Yeop Abdullah Graduate School of Business, Universiti Utara Malaysia pursuing her Doctor of Philosophy (PhD). She is conducting a research entitled "**Logistics Service Providers' Capabilities and The Government Administration Contribution to the Performance of Operational Cross-Border Logistics in Thailand and Malaysia Border**" under the supervision of Prof. Madya Dr. Mustakim bin Melan and Dr. Suhaila binti Abdul Hanan.

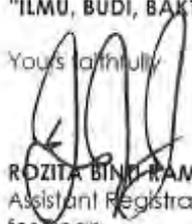
In this regard, we hope that you could kindly provide assistance and cooperation for her to successfully complete the research. All the information gathered will be strictly used for academic purposes only.

Your cooperation and assistance is very much appreciated.

Thank you.

"BERKHIDMAT UNTUK NEGARA"
"KEDAH AMAN MAKMUR – HARAPAN BERSAMA MAKMURKAN KEDAH"
"ILMU, BUDI, BAKTI"

Yours faithfully,


ROZITA BINTI RAMLI
Assistant Registrar
for Dean
Othman Yeop Abdullah Graduate School of Business

c.c. - Supervisor
- Student's File (903057)

Universiti Pengurusan Terkemuka
The Eminent Management University



Appendix C: Questionnaires English and Thai versions



QUESTIONNAIRES

Dear valued respondents,

I am conducting a survey for the requirements as part of the PhD research entitled; “Logistics Service Providers’ Capabilities and The Government Administration Contribution to the Performance of Operational Cross-Border Logistics in Thailand-Malaysia”. The survey is to determine the impact of the logistics service providers and government administration on operational performance of cross-border logistics. The researchers believed that the outcome of this research will benefit and improve the performance in cross-border logistics operations.

This survey will take approximately 5-10 minutes and your effort in answering on the questionnaires is highly appreciated. All responses will be kept strictly confidential and the data will be aggregated and used for academic purposes.

The questionnaire consists of 6 (Six) sections. Please read the items carefully and all answers will determine on important roles for the success of this study.

Thank you in advance for your cooperation.

Hasamon Pengman hasa.peng@gmail.com +66 87-3914709

PhD Candidate

Assoc. Prof. Dr. Mustakim Bin Melan mustakim@uum.edu.my +60 49287045

Main Supervisor

Dr.Suhaila Binti Abdul Hanan suhai@uum.edu.my +60 49287019

Co Supervisor

SECTION 1: GENERAL INFORMATION OF RESPONDENTS

Direction: Please fill in the blank and tick (✓) the appropriate boxes that corresponds to your answer to each of the question below.

Section A: Organizational Information

1. Types of logistics services

- 1) Freight forwarding
- 2) Transportation
- 3) Third Party Logistics (3PL)
- 4) Others

2. Ownership

- 1) State-owned
- 2) Private Limited Company
- 3) Single Owner Business
- 4) Partnership
- 5) Limited Liability Partnership
- 6) Public Limited Company

3. Number of full time employees

- 1) below 50
- 2) 50 – 99
- 3) 100 – 149
- 4) 150 – 199
- 5) 200 and above

4. Age of the company

- 1) 0-5 years
- 2) 6-10 years
- 3) 11-15 years
- 4) >15 years

5. Annual revenue in 2019 (MYR)

- 1) Below 2.0 million
- 2) 2.0 - 5.0 million
- 3) 5.1 - 25.0 million
- 4) 25.1 - 50.0 million
- 5) 50.1 million and above

Section B: Personal Information

6. Your position (choose one)

- 1) Senior Executive
- 2) Area and/or Country Manager
- 3) Department Manager
- 4) Supervisor
- 5) Operations

7. The country you are currently working in

- 1) Thailand
- 2) Malaysia
- 3) Both countries

8. Age

Please specify.....

10. Qualifications

- 1) < Secondary school
- 2) Diploma Degree
- 3) Undergraduate
- 4) Higher than undergraduate

11. Experience in Logistics operation

- 1) < 5 years
- 2) 6-10 years

- 3) 11 - 15 years
- 4) 16 – 20 years
- 2) > 20 years

12. Salary

Please specify.....

SECTION 2: PERFORMANCE OF OPERATIONAL CROSS-BORDER LOGISTICS

Direction: Following are statements pertaining to *performance of operational cross-border logistics*. Considering only yourself, Please tick (✓) the appropriate response of your opinion which you agree or disagree with following statement using 5 points Likert scale ranging from 1 = strongly disagree to 5 = strongly agree.

Subjects	Level of Performance				
	(5)	(4)	(3)	(2)	(1)
Customs Department- processes					
1. Customs declarations can be submitted and processed electronically and online.					
2. You and your customers are able to choose the location of the final clearance of the goods for imports.					
3. Goods can be released pending final clearance against an accepted guarantee.					
Infrastructure					
4. The quality of the roads and terminals					
5. The quality of telecommunications and other information sharing systems that are crucial for trade facilitation					
6. The main infrastructures are well maintained.					
7. Logistics facilities are well developed.					
Services					
8. Logistics services (e.g. storage/loading facilities, transport agents, customs administrations) provide adequate services.					
9. Expedited clearance for the traders with high levels of compliance					
10. Service with standard inspection					

Subjects	Level of Performance				
	(5)	(4)	(3)	(2)	(1)
11. Less damaged and reduced lost freight					
12. Providing logistic services without solicitation of informal payments in connection with logistics activities					
International Shipment					
13. Trucking charges are reasonable.					
14. Transloading facility charges are competitive.					
15. Maintaining of low operating costs in shipment					
Tracking and Tracing					
16. It is easy to track and trace consignments.					
17. Always providing a quick response about a status of tracking					
18. Knowing the consignment location every certain point in time					
Timeliness					
19. Consignments reach the consignee within the expected time.					
20. The order placement and receipt within expected time.					
21. Clearance and delivery of imports and exports as scheduled.					
22. Provision of adequate and timely information on regulatory changes					

SECTION 3: LOGISTICS SERVICE PROVIDER CAPABILITIES

Direction: Following are statements pertaining to *logistics service provider capabilities*. Considering only yourself, Please tick (✓) the appropriate response of your opinion which you agree or disagree with following statement using 5 points Likert scale ranging from 1 = strongly disagree to 5 = strongly agree.

Subjects	Level of Satisfaction				
	(5)	(4)	(3)	(2)	(1)
Logistics Service Quality					
23. Providing simplification of logistics operations					
24. Providing protection for freight safety and risk					
25. Maintain at consistent on-time delivery for all customers					
26. Prompt response to problems and complaints					
27. Accurate and efficient routine service offering (e.g. price calculation, formality documentation)					

Subjects	Level of Satisfaction				
	(5)	(4)	(3)	(2)	(1)
Innovation capability					
28. Systematic service quality management					
29. Regularly improve company's operational systems					
30. Exploring best methods to achieve corporate goals					
31. Employee reward system for innovative ideas					
32. Providing services that go beyond the standard logistics offering (e.g. multimodal service, door-to-door service, Quality Assurance testing and etc.)					
33. Operational collaboration with other logistics service companies					

SECTION 4: GOVERNMENT ADMINISTRATION

Direction: Following are statements pertaining to *government administration*. Considering only yourself, Please tick (✓) the appropriate response of your opinion which you agree or disagree with following statement using 5 points Likert scale ranging from 1 = strongly disagree to 5 = strongly agree.

Subjects	Level of Performance				
	(5)	(4)	(3)	(2)	(1)
Open Government					
34. Full disclosure of all consolidated subsidiaries					
35. Public commitment of being in compliance with all relevant laws					
36. Publication of information provided by government under open links that are available to download					
37. Convenient location and hours of operation					
38. Regularly collect feedbacks on practice or policies by using a formal program					
Cooperation					
39. Expand foreign trade relation					
40. Work towards concluding regional trade agreements					
41. Improve the effectiveness of border services					
42. Collaboration regarding employee exchange					
43. Support of participation in operational logistics courses					

SECTION 5: RESOURCES

Direction: Following are statements pertaining to *resources*. Considering only yourself, Please tick (✓) the appropriate response of your opinion which you agree or disagree with following statement using 5 points Likert scale ranging from 1 = strongly disagree to 5 = strongly agree.

Subjects	Level of Performance				
	(5)	(4)	(3)	(2)	(1)
Tangibility					
44. Readily adapted information system to fulfil the needs of customers and partners					
45. Information system of the customs is secured for business transaction.					
46. Cargo tracking system facilities are ready to use.					
47. Electronic Data Interchange (EDI) facilities are ready to use.					
Intangibility					
48. Financial stability					
49. Successful product branding and positioning with satisfied and loyal customer base					
50. Formal planning, command and control systems					
51. Skillful and qualified personnel					

SECTION 6: COMPETITIVE ADVANTAGE

Direction: Following are statements pertaining to *competitive advantage*. Considering only yourself, Please tick (✓) the appropriate response of your opinion which you agree or disagree with following statement using 5 points Likert scale ranging from 1 = strongly disagree to 5 = strongly agree.

	Level of Performance				
	(5)	(4)	(3)	(2)	(1)
Market Orientation					
52. Innovation in marketing techniques and methods					
53. Exploitation of all market opportunities					
54. Exploitation of more market opportunities from competitor					

	Level of Performance				
	(5)	(4)	(3)	(2)	(1)
55. Perceptions of service quality and reliability among customers					
Scope:					
56. Capability to manufacture/deliver specialized product/services					
57. Capability to provide product/services in high-price market segments					
58. Risk resistance capacity					
59. Capability of supply chain coordination					
Conservative cost control:					
60. Competitive price offering					
61. Reduction expenses at a higher rate than competitors					
62. Providing services at a lower cost than competitors					
Effective performance					
63. We are more effective than our competitors at Increasing sales from providing services					
64. We are more effective than our competitors at Increasing revenue					
65. We are more effective than our competitors at Generating profit					

Thank you.



เรียน ผู้ตอบแบบสอบถามที่นับถือ

ดิฉันได้ทำแบบสำรวจฉบับนี้เพื่อเป็นส่วนหนึ่งของปริญญาคุณวุฒิบัณฑิต ในหัวข้อเรื่อง “ขีดความสามารถของผู้ให้บริการด้านโลจิสติกส์ และการสนับสนุนจากรัฐในการดำเนินงานด้านโลจิสติกส์ ข้ามพรมแดนประเทศไทย-มาเลเซีย” การสำรวจนี้มีขึ้นเพื่อประเมินผลกระทบของผู้ให้บริการด้านโลจิสติกส์ และการสนับสนุนจากรัฐในการดำเนินงานด้านโลจิสติกส์ผ่านด้านศุลกากรไทย-มาเลเซีย กลุ่มผู้วิจัยเชื่อมั่นว่าผลของการวิจัยนี้จะ เป็นประโยชน์ และสามารถนำไปปรับปรุงกระบวนการดำเนินงานด้านโลจิสติกส์ได้

การสำรวจนี้จะใช้เวลาประมาณ 5-10 นาที ข้อมูลในแบบสอบถามทั้งหมดจะถูกเก็บเป็นความลับ และนำไปใช้เพื่อวัตถุประสงค์ในการศึกษา แบบสอบถามประกอบไปด้วยคำถาม 6 ส่วน โปรดอ่านแต่ละหัวข้ออย่างละเอียด และตอบคำถามตามข้อเท็จจริง เพื่อจะนำคำตอบไปประมวลให้เกิดความสัมฤทธิ์ผลจากการศึกษานี้ ขอขอบคุณสำหรับความร่วมมือที่ท่านสละเวลาในการทำแบบทดสอบนี้



สำหรับภาษาไทย

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นักศึกษาปริญญาคุณวุฒิบัณฑิต

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ที่ปรึกษาหลัก

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ที่ปรึกษาร่วม

ส่วนที่ 1: ข้อมูลทั่วไปของผู้ตอบแบบสอบถาม

คำชี้แจง : โปรดทำเครื่องหมาย (✓) ในช่องว่างหน้าของแต่ละหัวข้อที่ตรงกับความเป็นจริงของท่าน

ส่วน ก: ข้อมูลเกี่ยวกับองค์กร

1. ประเภทของโลจิสติกส์ที่ท่านให้บริการ

- 1) บริการการขนส่งระหว่างประเทศ
- 2) บริการการขนส่ง
- 3) ตัวแทนให้บริการขนส่งและโลจิสติกส์ (Third party Logistics-3PL)
- 4) อื่นๆ โปรดระบุ.....

2. การให้บริการดำเนินโดย

- 1) รัฐบาล
- 2) บริษัทจำกัด
- 3) เจ้าของคนเดียว
- 4) ห้างหุ้นส่วน
- 5) ห้างหุ้นส่วนจำกัด
- 6) บริษัท (มหาชน) จำกัด

3. จำนวนพนักงานประจำ

- 1) น้อยกว่า 50 คน
- 2) 50 - 99 คน
- 3) 100 - 149 คน
- 4) 150 - 199 คน
- 5) 200 คน ขึ้นไป

4. ระยะเวลาการเปิดดำเนินการ

- 1) 0-5 ปี
- 2) 6-10 ปี
- 3) 11-15 ปี
- 4) มากกว่า 15 ปี

5. รายได้ในปี พ.ศ. 2562 (บาท)

- 1) น้อยกว่า 14.8 ล้านบาท
- 2) 14.8 - 37.0 ล้านบาท
- 3) 37.1 - 186.0 ล้านบาท
- 4) 186.0 - 370.0 ล้านบาท
- 5) มากกว่า 370.0 ล้านบาท

ส่วน ข: ข้อมูลส่วนบุคคล

6. ท่านดำรงตำแหน่ง (เลือกเพียง 1 คำตอบ)

- 1) ผู้บริหารระดับอาวุโส
- 2) ผู้จัดการภาค
- 3) ผู้จัดการแผนก
- 4) หัวหน้างาน
- 5) ระดับปฏิบัติงาน

7. ประเทศที่ท่านปฏิบัติงาน

- 1) ประเทศไทย
- 2) ประเทศมาเลเซีย
- 3) ทั้งประเทศไทย และมาเลเซีย

8. อายุ

โปรดระบุ.....

9. ระดับการศึกษา

- 1) ต่ำกว่ามัธยมปลาย
- 2) ปวช./ ปวส.
- 3)ปริญญาตรี
- 4) สูงกว่าปริญญาตรี

10. ประสบการณ์ในสายงานโลจิสติกส์

- 1) น้อยกว่า 5 ปี
- 2) 6-10 ปี
- 3) 11 - 15 ปี
- 4) 16 - 20 ปี
- 5) มากกว่า 20 ปี

11. เงินเดือน (บาท) :

โปรดระบุ.....



ส่วนที่ 2: การดำเนินงานในการผ่านด่าน

คำชี้แจง: แบบสอบถามนี้เป็นการประเมินระดับความคิดเห็นต่อ "การดำเนินงานในการเข้าออกสินค้าผ่านด่านศุลกากร" โปรดเลือกระดับความคิดเห็นโดยใช้มาตราวัด 5 ระดับของ ลิเคิร์ต โดยที่ 1 = ไม่เห็นด้วยอย่างยิ่ง ถึงระดับ 5 = เห็นด้วยอย่างยิ่ง

หัวข้อ	ระดับความคิดเห็น				
	(5)	(4)	(3)	(2)	(1)
กระบวนการทำงานของด่านศุลกากร					
1. กระบวนการส่งเอกสารผ่านด่านสามารถดำเนินการ					
2. ท่านและลูกค้าของท่านสามารถเลือกสถานที่สำหรับจัดการผ่านพิธีการศุลกากรในขั้นตอนสุดท้ายสำหรับสินค้านำเข้า					
3. การปล่อยสินค้า จัดการผ่านพิธีการศุลกากรด่านโดยไม่ต้องได้รับการรับรอง และการค้าประกันการจ่ายเงินโดยธนาคาร					
โครงสร้างพื้นฐาน					
4. คุณภาพของถนน และลานรับส่งตู้คอนเทนเนอร์					
5. คุณภาพของโทรคมนาคมด้านการสื่อสาร และระบบการแบ่งปันข้อมูลอื่น ๆ ที่มีความสำคัญต่อการอำนวยความสะดวกด้านการค้า					
6. สิ่งอำนวยความสะดวกหลักได้รับการบำรุงรักษาให้อยู่ในสภาพดี					
7. สิ่งอำนวยความสะดวกด้านโลจิสติกส์ได้รับการพัฒนาอย่างดี					
การบริการ					
8. การบริการด้านโลจิสติกส์ (เช่น การจัดเก็บสินค้า / สิ่งอำนวยความสะดวกเรื่องการไหลสินค้า, ตัวแทนการขนส่ง, การบริหารงานของด่านศุลกากร) ให้การบริการอย่างเพียงพอ					
9. การเร่งรัดการจัดการผ่านพิธีการศุลกากรให้กับผู้ค้าที่ปฏิบัติตามกฎอย่างถูกต้อง ครึ่งครัด					
10. บริการด้านการคุ้มครองสอบเป็นไปตามมาตรฐาน					
11. ความเสียหาย และการสูญเสียน้อย					
12. ให้บริการด้านโลจิสติกส์โดยปราศจากการจ่ายเงินนอกบิลในการเชื่อมสัมพันธ์ในกิจกรรมด้านโลจิสติกส์					
การขนส่งสินค้าระหว่างประเทศ					
13. ค่าบรรทุกสินค้ามีความเหมาะสม					
14. ค่าการขนถ่ายสินค้าสามารถแข่งขันได้					
15. ดำรงสถานะการดำเนินงานต้นทุนต่ำ					
การติดตามสถานะสินค้า					
16. ง่ายในการติดตามสถานะของสินค้า					
17. การตอบสนองต่อลูกค้าเกี่ยวกับสถานะของสินค้าในระยะเวลาอันสั้น					
18. รู้สถานะที่ของสินค้าที่อยู่ในระหว่างการขนส่งได้ตลอดเวลา					

หัวข้อ	ระดับความคิดเห็น				
	(5)	(4)	(3)	(2)	(1)
ดำเนินการภายในเวลาที่กำหนด					
19. สินค้าถึงมือผู้รับภายในเวลาที่กำหนด					
20. การดำเนินการด้านคำสั่งซื้อกระทำภายในเวลาที่กำหนด					
21. จัดการผ่านพิธีการศุลกากร และจัดส่งสินค้าที่นำเข้า และส่งออกตามตารางเวลาที่กำหนด					
22. แจ้งข้อมูลที่เปลี่ยนแปลงอย่างรวดเร็ว และชัดเจน					

ส่วนที่ 3: ซีดความสามารถของผู้ให้บริการด้านโลจิสติกส์

คำชี้แจง: แบบสอบถามนี้เป็นการประเมินระดับความคิดเห็นต่อ "ซีดความสามารถของผู้ให้บริการด้านโลจิสติกส์" โปรดเลือกระดับความคิดเห็นโดยใช้มาตรวัด 5 ระดับของ ลิเคิร์ต

โดยที่ 1 = ไม่เห็นด้วยอย่างยิ่ง ถึงระดับ 5 = เห็นด้วยอย่างยิ่ง

หัวข้อ	ระดับความคิดเห็น				
	(5)	(4)	(3)	(2)	(1)
คุณภาพการบริการด้านโลจิสติกส์					
23. ให้การบริการแบบเข้าใจง่าย					
24. ให้การป้องกันในด้านความปลอดภัย และความเสี่ยงด้านการขนส่ง					
25. สามารถรักษาการจัดส่งให้ตรงเวลาสำหรับลูกค้าทั้งหมด ด้วยความสม่ำเสมอ					
26. ตอบสนองต่อปัญหาและข้อร้องเรียนเสียหายอย่างรวดเร็ว					
27. สามารถให้บริการที่จำเป็นประจำอย่างถูกต้องและมีประสิทธิภาพ (เช่น การคำนวณราคา และการเตรียมเอกสารผ่านด่าน)					
ซีดความสามารถด้านนวัตกรรม:					
28. มีการจัดการด้านคุณภาพการให้บริการอย่างเป็นระบบ					
29. ปรับปรุงระบบการทำงานของบริษัทอย่างสม่ำเสมอ					
30. แสวงหาวิธีการที่ดีที่สุดในการบรรลุวัตถุประสงค์ขององค์กร					
31. มีระบบการให้รางวัลกับพนักงานในเรื่องความคิดด้านนวัตกรรม					
32. จัดหาบริการเหนือมาตรฐานการให้บริการด้านโลจิสติกส์ (เช่น การจัดส่งสินค้าในหลายรูปแบบ, ในการส่งสินค้าถึงหน้าประตูผู้รับสินค้า, ด้านการทดสอบ และตรวจสอบคุณภาพ เป็นต้น)					
33. การร่วมมือทำงานกับบริษัทโลจิสติกส์อื่น ๆ					

ส่วนที่ 4: การบริหารงานของภาครัฐ

คำชี้แจง: แบบสอบถามนี้เป็นการประเมินระดับความคิดเห็นต่อ "การบริหารงานของภาครัฐ" โปรดเลือกระดับความคิดเห็นโดยใช้มาตราวัด 5 ระดับของ ลิเคิร์ท

โดยที่ 1 = ไม่เห็นด้วยอย่างยิ่ง ถึงระดับ 5 = เห็นด้วยอย่างยิ่ง

หัวข้อ	ระดับความคิดเห็น				
	(5)	(4)	(3)	(2)	(1)
ด้านการเปิดเผยของภาครัฐ					
34. เปิดเผยถึงการสนับสนุนจากทุกภาคส่วน					
35. มีพันธะต่อสาธารณะชนในเรื่องการปฏิบัติตามกฎหมายที่เกี่ยวข้องทั้งหมด					
36. การเผยแพร่ข้อมูลของรัฐผ่านลิงก์ที่สามารถเข้าถึง และดาวน์โหลดได้					
37. การปฏิบัติงานของรัฐอยู่ในเวลา และสถานที่ที่สะดวก					
38. มีการรวบรวมข้อเสนอแนะด้านการปฏิบัติงาน หรือนโยบายอย่างสม่ำเสมอโดยใช้โปรแกรมที่เป็นทางการ					
ด้านความร่วมมือ					
39. ขยายความสัมพันธ์ทางการค้าระหว่างประเทศ					
40. ทำงานเพื่อมุ่งไปสู่ข้อตกลงการค้าระดับภูมิภาค					
41. ปรับปรุงประสิทธิภาพการบริการเขตพรมแดน					
42. มีความร่วมมือในด้านการแลกเปลี่ยนเรียนรู้ของผู้ปฏิบัติงาน					
43. สนับสนุนการเข้าเรียนรู้ในเรื่องการทำงานด้านโลจิสติกส์					

ส่วนที่ 5: ทรัพยากร

คำชี้แจง: แบบสอบถามนี้เป็นการประเมินระดับความคิดเห็นต่อ "ทรัพยากรขององค์กร" โปรดเลือกระดับความคิดเห็นโดยใช้มาตราวัด 5 ระดับของ ลิเคิร์ท

โดยที่ 1 = ไม่เห็นด้วยอย่างยิ่ง ถึงระดับ 5 = เห็นด้วยอย่างยิ่ง

หัวข้อ	ระดับความคิดเห็น				
	(5)	(4)	(3)	(2)	(1)
ทรัพยากรที่เป็นรูปธรรม					
44. ระบบข้อมูลของท่านพร้อมที่จะปรับเปลี่ยนไปตามความต้องการของลูกค้า และคู่ค้า					
45. ระบบข้อมูลของด่านศุลกากรปลอดภัยต่อการดำเนินธุรกรรมทางธุรกิจ					
46. สิ่งอำนวยความสะดวกในระบบการติดตามสินค้าพร้อมต่อการใช้งาน					

หัวข้อ	ระดับความคิดเห็น				
	(5)	(4)	(3)	(2)	(1)
47. สิ่งอำนวยความสะดวกด้านการแลกเปลี่ยนผ่านทางคอมพิวเตอร์ (Electronic Data Interchange –EDI) พร้อมต่อการใช้งาน					
ทรัพยากรที่เป็นนามธรรม					
48. ความมั่นคงด้านการเงิน					
49. ประสบความสำเร็จด้านแบรนด์และการวางตำแหน่งองค์กรในด้านความพึงพอใจ และการจูงใจลูกค้าของลูกค้าน้องค์กร					
50. ระบบการวางแผน การสั่งการ และการควบคุมอย่างเป็นทางการ					
51. บุคลากรมีทักษะ และมีประสิทธิภาพ					

ส่วนที่ 6: ความได้เปรียบทางการแข่งขัน

คำชี้แจง: แบบสอบถามนี้เป็นการประเมินระดับความคิดเห็นต่อ "ความได้เปรียบทางการแข่งขัน" โปรดเลือกระดับความคิดเห็นโดยใช้มาตรวัด 5 ระดับของ ลิเคิร์ต โดยที่ 1 = ไม่เห็นด้วยอย่างยิ่ง ถึงระดับ 5 = เห็นด้วยอย่างยิ่ง

	ระดับความคิดเห็น				
	(5)	(4)	(3)	(2)	(1)
ด้านแนวทางการตลาด:					
52. นวัตกรรมทางเทคนิค และวิธีการทางการตลาด					
53. การแสวงหาโอกาสทำกำไรในทุกตลาด					
54. การแสวงโอกาสในตลาดได้มากกว่าคู่แข่ง					
55. มีการรับรู้ด้านคุณภาพบริการ และความน่าเชื่อถือจากลูกค้า					
ด้านขอบเขต:					
56. สามารถผลิต/ส่งมอบสินค้าหรือบริการแบบพิเศษ					
57. สามารถจัดหาผลิตภัณฑ์/บริการออกสู่ตลาดบนที่มีราคาสูง					
58. มีความสามารถในการบริหารความเสี่ยง					
59. สามารถประสานงานระหว่างห่วงโซ่อุปทานได้ดี					
การควบคุมต้นทุนในเชิงอนุรักษ์นิยม					
60. ราคาสามารถแข่งขันได้					
61. ลดค่าใช้จ่ายได้มากกว่าคู่แข่ง					
62. นำเสนอบริการได้ถูกกว่าคู่แข่ง					
ประสิทธิภาพด้านผลงาน					
63. ทำเนียบประสิทธิภาพมากกว่าคู่แข่งในด้านการเพิ่มยอดขายจากการให้บริการ					
64. ทำเนียบประสิทธิภาพมากกว่าคู่แข่งในด้านการเพิ่มรายได้					
65. ทำเนียบประสิทธิภาพมากกว่าคู่แข่งในด้านการสร้างผลกำไร					

ขอขอบคุณสำหรับความร่วมมือในการทำแบบสอบถาม

Appendix D: Letter of appointment for research instrument face and content validity



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16 June 2020

Assistant Professor Dr. Anuwat Songsom
Faculty of Economics and Business Administration,
Thaksin University
140 M.4, Khoa-Roob-Chang, Muang Songkhla 90000

Dear Prof./Dr./Sir,

APPOINTMENT AS EXPERT REVIEWER FOR RESEARCH INSTRUMENT FACE AND CONTENT VALIDITY

We would like to extend our gratitude for your participation and involvement as an expert review in a Ph.D. study as follow:

Student Name	: Pengman Hasamon
Matric Number	: 903057
Programme	: Doctor of Philosophy
Title	: Logistics Service Providers's Capabilities and Government Administration Contribution to the Performance of Operational Cross-Border Logistics in Thailand-Malaysia Border.
Supervisors	: Assoc. Prof. Dr. Mustakim Melan and Dr. Suhaila Abdul Hanan
Phone Number	: 087-3914709

For your information, the instrument will be used for the purpose of her research and need your expertise to review as attached in the reviewing form. We are greatly appreciating your co-operation time and assistance in order for the student to complete her Ph.D. research.

Thank you.

"SERVING THE NATION"
"KNOWLEDGE VIRTUE SERVICE"

Yours faithfully

ROZITA BINTI RAMLI
Assistant Registrar
for Dean
Othman Yeop Abdullah Graduate School of Business

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 Faculty of Economics and Business Administration,
 Thaksin University
 140 M.4, Khoa-Roob-Chang, Muang Songkhla 90000

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Dr. Sanit Srichookiat
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