DESIGNING THE VALUE PROPOSITION FOR E-TRUCKING MARKETPLACE PLATFORM BY APPLYING THE VALUE PROPOSITION CANVAS

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ABSTRACT

The purpose of this thematic paper is to explore the insights of Full-Truck Load (FTL) shippers and carriers toward the channels they use for hiring truck transportation and obtaining a shipment order, to find unmet needs from the existing marketplace channels, and to design the value proposition for a new trucking marketplace platform. In-depth interviews were conducted on 20 respondents, which were 11 shippers and 9 carriers, between July 2020 and August 2020 to gather data for their insights that would clarify the transportation activities they need to manage, obstacles, and expectations from the usage of a marketplace platform. Data were collected by direct individual interviews and phone interviews.

The study suggests that the majority of shippers and carriers use the Line Open Chat -a group chat application as the main online marketplace for a low price backhaul delivery. Six trucking platforms mentioned in the study are divided into two categories which are the on-demand platforms and the marketplace platform. Trials of the on-demand platforms, there are unmet needs in terms of mismatched price, limitation of truck options, seamless payment system, and electronic receipt and withholding tax. In case of the marketplace platforms, there are pains in terms of uncertainty to get a successful matching order and the hassle in manual managing the transportation activities. To fulfill these gaps, this study proposes the value proposition design for the budget trucking segment that is the on-demand budget trucking platform where shippers and carriers can get a backhaul truck/order within their budget instantly and hassle-free form managing the transportation activities.

This study serves as a preliminary step for future researchers to measure the market-solution fit of a concept of the proposed platform. The future study can extend in form of quantitative research to assess the degree of valued factors in terms of pains and gains with greater numbers of shippers and carriers, in order to emphasize the patterns of insights by the mass market

KEY WORDS: Online Trucking Platform / Logistic Marketplace / Truck Transportation / Backhauling / Transportation Marketplace Platform

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CHAPTER I
INTRODUCTION

1.1 Study Background

Either domestically or internationally, freight transportation is an important sector for the economy since it takes a crucial role in distributing raw materials and products at all the stages in the supply chain. In other words, the providers of freight transportation have a duty to move raw materials from upstream producers to the midstream process such as factories and deliver the finished goods to downstream markets and the consumers. Therefore, the freight transportation situation fluctuates up and down due to the economic growth. It can be seen in the figure 1 (Sathapongpakdee, 2019).

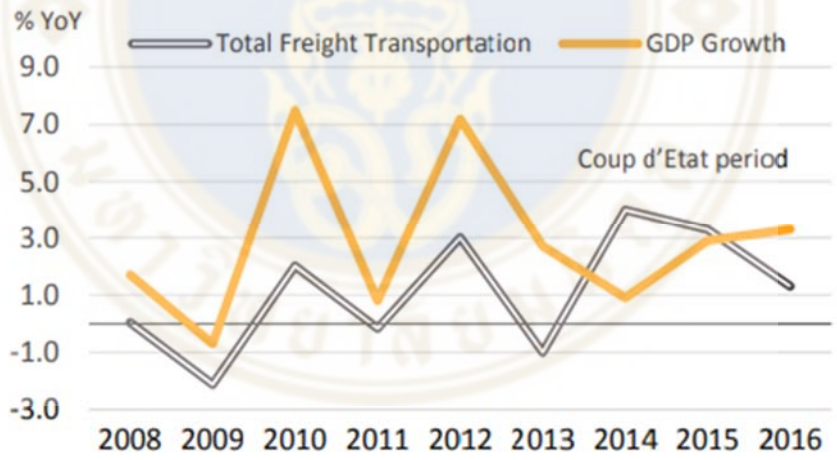


Figure 1.1 GDP & Total Freight Transportation

Source: Sathapongpakdee (2019)

Domestic freight transportation in Thailand can be divided into five major modes (Office of the national economic and social development council, 2019), viz, 1) road transportation 2) rail transportation 3) Inland waterway 4) Coastal transportation and 5) Air transport. The Kasikorn research center has estimated the market value of domestic freight transportation sector in 2018 at 973,728 baht (Kasikorn Research Center,

2018). According to the Thailand logistic report 2018 published by the office of national economic and social development council, there are 615,987 thousand tons of cargo in Thailand and the road transportation takes the major account for 78.6% of the total cargo (Office of the national economic and social development council, 2019).

The popularity of road transportation is reflected from many factors (Sathapongpakdee, 2019). The first reason is the success of the government's prioritization to develop road infrastructures and network systems higher than other modes. Secondly, the road transportation has been used to connect other alternative transportations modes, for example, using trucks to deliver cargo from the custom ports or the train stations to the inland-industrial areas. Thirdly, transportation by road also offers the advantage of door-to door service so the senders can transfer goods from the origin place to the recipient in a single mode. This attribute provides ease and completeness on the single delivery that cannot be found on other alternative transportations. Finally, the E-commerce growth is beneficial to the expansion of road delivery over the country. For these reasons, freight distribution by road has been the major transportation mode and impacted the overall national goods distribution network.

Despite the pro of convenience from door-to-door delivery, the cost of road freight is higher than other forms of transportation (except the air transport). The major reason that road transport has high cost is due to its high variable costs. The proportion of high variable costs are from 1) fuel cost accounts 39% and 2) labor cost 24%, especially the raise of driver wage because of the labor shortage (Sathapongpakdee, 2019). The driver scarcity also leads to the inefficient truck utilization problem. “Data confirms that a large proportion of trucks are either empty or underutilized; globally, 42.6% of trucks are empty and only 56.8% full when not empty" (Davis & Lucido, 2017). In addition, the 2PL or carriers must bear the cost of assets which are trucks. This cost has several hidden costs such as depreciation and maintenance fee. Furthermore, the carriers may assess the road freight price including of the extra charge for empty backhaul due to the carrier’s inability to find cargo for the trucks on the return trip (Phansang, 2011). For these issues, both of the government and truck entrepreneurs are developing solutions to decrease the road freight costs and increase the transport efficiency.

Speaking of the solutions for cost reduction and efficiency in road freight, there are attempts to apply digital technology to solve these problems. According to

the publication from PWC, the global consulting firm, they provide some interesting future trends and guidance for the logistics operators to adapt digital technology to their businesses (PWC, 2016). For instance, applying the Physical Internet-PI (based on the internet of things-IoT), the incumbent logistic providers increase their efficiency and reduce their transportation cost by collaborating and distributing less profit delivery routes to the local carriers who are more expertise on the regional areas. During the process of collaboration, the PI, in other words, the internet and the single system used in the sharing network makes connections about shipment details and autonomously sends the shipping orders related to the packages and routes to the carriers within the network. Not only the PI which is claimed as the great technology to apply for the logistics service, but also the Telematics that is supportive during the delivery process such as route planning in conditions of making short delivery distance or time limitation, and autonomous route suggestion for avoiding heavy traffic (Hofmann & Rüsch, Industry 4.0 and the current status as well as future prospects on logistics, 2017). Furthermore, small carriers can take advantage of being partners with the e-logistic market places that 24/7 match shippers who order freight transport service with the available carriers who are looking for shipment for their empty trucks (Kasikorn Research Center, 2018). As shown above, digital technology and sharing concepts are the obvious trends to eliminate the obstacles and improve the operations efficiency for the logistics market.

E-logistic marketplace is an outstanding business model since it combines the advantages of digital technology and sharing concepts together. To demonstrate how the e-logistic marketplace provides its services, Uber Freight is a well-known model for this topic. Uber Freight is a U.S. mobile application that works as a third-party logistics service provider (3PLs). In general, a broker is the person who collects shipment orders from customers, negotiates prices and decides to distribute which orders to which carriers. However, Uber Freight differentiates from other traditional brokers by using artificial intelligence or AI technology integrated with big data analysis as the main mechanism to generate the dynamic pricing model that calculates the reasonable delivery price for each shipment at the time requested by the shipper. Then, the mechanism also matches the qualified carrier to the shipment requested and automatically assigns the shipment order to the carrier. After that, both shipper and

carrier are able to contact directly and track the delivery status real-time (Kasikorn Research Center, 2018).

This autonomous mechanism cuts off the human errors for making wrong decisions for price estimation and route assignment. Additionally, it saves time and cost to coordinate with brokers for negotiating freight cost and updating shipment status. These benefits help shippers to design a concrete delivery plan with their customers and directly monitor their products along the delivery trip. By the same token, carriers who join the Uber Freight network can access the online payment system that autonomously order to pay the transportation fee right after they complete their jobs. This method reduces the risk for carriers to not get paid or delayed payment compared to relying on the human broker (Davis & Lucido, 2017). Given these advantageous points, carriers who participate in the e-logistic marketplace are either able to use this channel 24/7 to regularly obtain the shipment orders for their living or occasionally seek the shipment for their empty backhauls. This model not only leads to increasing the opportunity for carriers to get more income but it also saves fuel cost from the empty backhaul on the return trip. Of course, it also enhances the professional operation image for small carriers to compete with the reputed brands.

Considering back to the Thai logistics industry, the spread of e-commerce growth over the country leads to the growth of last-mile transportation. By this expansion, there are more and more new trucks as well as road freight entrepreneurs in the market. As it can be seen on the facts that there is 96.75% increase in new small trucks registered in January 2020 comparing to December 2019. In the same pattern, there is 16.6% increasing in the new registered transportation entrepreneurs in January 2020 comparing to the statistic in the same month in 2019 (Department of Land Transport, 2020). As a result, there is more intense competition for SME carriers who are in the segment of last-mile parcel delivery. This segment has some e-logistic marketplaces such as Deliveree and Giztix that provide service for hauling general trucks which focus on parcel delivery. However, according to the share of road freight transportation, agricultural products, construction materials as well as machinery together, has a higher share and less competition than the consumer products which normally are parcel packaging (Sathapongpakdee, 2019). This is an opportunity to develop the application for special truck booking which

offers more types of vehicles, particularly trucks with special equipment for load and unload goods for this segment.

For logistics innovative market value, CBInsights has estimated the accumulated fund raising from 2009 to 2016 that there are going to have 105 deals with the total fund value 620.5 million U.S. dollars while the median size of fund raising is 2.7 million U.S. dollars. The well-known startup directory, AngelList has also listed 149 ventures and 522 investors under the segment “trucking startup”. Most of them are based in the United States but located spread throughout the EU, Middle East and South America (Davis & Lucido, 2017). Based on these facts, it is appealing for Thai startups to develop an innovative solution for the freight trucking market.

Correspondingly to the lean startup concept (Ries, 2011), it is serious to crack the value propositions that are indeed required by customers before wasting time and money on inventing the innovative products or services that are undesired. Therefore, this independent study aims to find the value propositions for developing a truck-booking platform. The researcher applies the value proposition canvas as a framework because it captures insights demographically and psychologically of the shippers and the carriers. In addition, this framework is suitable for starting up a technology-based project since it requires low investment as well as less time consumption (Sylwia, 2017).

1.2 Study Purpose

This independent study aims to explore the insights of shippers and truck carriers because they are the major stakeholders who generate a revenue stream to the platform. The term “shippers or shipper" in this study mainly focuses on the entrepreneurs who are searching for a full truck load (FTL) service to transport their inventories or huge supplies, no matter the shipments are transferred within the organization or to the end-customer. Not to mention, the term “carriers or carrier” have meaning to the road transportation entrepreneurs, including individuals and companies who provide a service for transporting freight by using trucks with full-load capacity. After cracking the insights, the study uses the analyzed data to design the value propositions for the truck transportation market. The structure of this study is organized as detailed as the following topics.

1.2.1 Study Objectives

- To explore insights in three specific areas such as the behaviors, expectations, and obstacles that shippers consider booking a full truck load (FTL) service.
- To explore the behaviors, expectations, and obstacles that FTL carriers consider when they seek for a shipment in the freight trucking market.
- To design the value propositions for a new e-logistic marketplace, particularly targeted in the truck transportation segment.

Applying the principle from the Strategyzer's book series, namely, Value Proposition Design (Osterwalder, Pigneur, Smith, Bernarda, & Papadakos, 2014), customer insights can extract from the customer profile framework, viz, behaviors are categorized in the "customer jobs", expectations are categorized in the "customer gains", and obstacles are categorized in the "customer pains". Afterward, the acquired insights will be analyzed as primary data for designing the attributes that offer the value propositions to meet the needs including expectations and to solve the pains of customers and truckers. The value propositions also should fill in the gap that has not yet been met in the market. Such a design process mentioned previously is displayed on the value map within the value proposition canvas.

1.2.2 Scope of the Study

This study is scoped in the specific areas as shown as in the following topics.

1.2.2.1 Thailand truck transportation industry, particularly, the full truck load (FTL) which is mostly found in the B2B delivery.

In order to identify the growth and opportunity in the truck transportation market, market value, trends, and obstacles in the industry are reviewed.

1.2.2.2 Shippers' behaviors, expectations, and obstacles toward searching and booking for the full truck load (FTL) freight.

Reviewing literature related to these topics, the researcher has some secondary data to set the hypotheses for shippers insights. Later on, the researcher is going to test the hypotheses by interviewing the samples of shippers. The primary data obtained from the interview are analyzed, grouped and displayed on the customer profile section.

1.2.2.3 Carriers' behaviors, expectations, and obstacles toward seeking for a shipment in the truck transportation market.

Reviewing literature related to these topics, the researcher has some secondary data to set the hypotheses for carriers insights. Later on, the researcher is going to test the hypotheses by interviewing the samples of carriers. The primary data obtained from the interview are analyzed, grouped and displayed on the customer profile section.

1.2.2.4 The current e-logistic marketplace in Thailand.

It is essential to review this topic because it presents the existing values offered in the truck transportation market. The reviewed data is useful for suggesting the opportunity and guiding a direction for market segmentation that has not been met by the existing players. Therefore, the data is beneficial to the new players who are interested in developing a new e-logistic marketplace.

1.2.2.5 The value proposition canvas, proposed by Osterwalder and his team (Osterwalder et al., 2014) since it is the framework for this study.

1.3 Expected Benefits

This independent study is going to contribute direct and indirect benefits to Thai logistics market as described in the following list.

1. This study is going to increase the evidence, getting along with more understanding of shipper and truck carrier insights, particularly the behaviors, expectations, and concerns regarding the process of searching for a bothe of freight providers and carriers, creating a freight booking, tracking the shipment, as well as making a payment.

2. This study is going to suggest the new value propositions that are able to fulfill the needs and solve the problems that shippers and carriers rank as a group of high prioritization. With this benefit, there is an opportunity to develop more effective market channels for Thai truck transportation.

3. The e-logistic marketplace crafted from the value propositions design in this study can be practical to further development for the real business.

4. The process and techniques applying in this study can be a guideline case for designing the value propositions for a double-sides platform that is an inherent characteristic of the marketplace business.

1.4 Project Timeline

This research is conducted during June 2020 until the end of August 2020. In June, this month is spent for structure planning and literature reviews. Then, the approval research proposal will be submitted to the ethical review board by the last week of June. After received the research ethical approval, data will be collected and analyzed during the whole of July. Finally, the results will be summarized and presented on the defend meeting by the second week of August.

Table 1.1 Project Timeline

Research Procedure	**Year 2020**													
	June				**July**				**August**					
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	
Date	**1**	**8**	**15**	**22**	**6**	**13**	**20**	**27**	**3**	**10**	**17**	**24**	**31**	
1. Research planning and structure.														
2. Literature reviews														
3. Develop interview guidelines.				IRB		IRB								
4. Collecting Data via the in-dept interview.														
5. Data Analysis.														
6. Reserch summary and suggestion.														
7. Submission to the advisor and the committees.														
8. The project defense and revision for a black book.														

CHAPTER II
LITERATURE REVIEW

This literature review is divided into three areas. First of all, the overview of freight transportation in Thailand, especially the truck transportation is reviewed for sharpening a clear vision and updating trends toward the transportation market. Secondly, the concept, as well as, the examples of the e-logistic marketplace is presented as it is a relatively new business model for logistics and transportation management. Lastly, the reviewing of conceptual knowledge regarding the value propositions canvas is proposed since it is a simple but powerful technique to design values for a new product and service. The knowledge gained from literature review will be used to create a framework for this study in order to generate the new values for the e-logistic marketplace platform for trucking service.

2.1 The Overview of Freight Transportation

In this part, the essential ideas are listed to understand the transportation market, the patterns of road transportation business, and the relationship of stakeholders in the industry, as well as obstacles and opportunities one may encounter. These acquired knowledge and information are applied to set the scope of study, targeting sample group, and designing interview questions to find the differentiated values that new e-logistic marketplace platforms can present as a selling point.

2.1.1 Logistics and Transportation

Before mentioning the importance of land transportation towards the economy, here is the definition of logistics and transportation, to avoid confusion and wrong understanding that logistic is transportation.

Council of Supply Chain Management Professionals (Council of Supply Chain Management Professionals (CSCMP)) provides the definition of logistic as “Logistics

Management is that part of supply chain management that plans, implements, and controls the efficient, effective forward and reverses flow and storage of goods, services and related information between the point of origin and the point of consumption in order to meet customers' requirements" (Council of Supply Chain Management Professionals (CSCMP)).

In the simpler word, Dr. Krit Chanthajiraporn who is one of the important logistics scholars of Thailand has given the definition, that is, Logistics is the process of planning for firms' resources and maximize their utilization including transferring goods and services (Department Of Industrial Promotion, 2019). At the same time, Division of Logistics (Graduate School of Management and Innovation, King Mongkut's University of Technology Thonburi, 2018) has defined transportation that transportation is moving people, goods, or services from one place to another.

It can be seen from the definitions above that the transportation is one activity of logistics, which (Graduate School of Management and Innovation, King Mongkut's University of Technology Thonburi, 2018, p. 1) has also mentioned that transportation is the main activity in managing logistics, and the cost of transporting often is the main cost of the whole logistics process, covers approximately 40% of the whole logistics cost. In the year 2017, the GDP of Thailand is at 455.3 billion USD (15.432 trillion baht) (World Bank), the logistics cost of Thailand has a total value of 2,106.5 billion Baht, or 13.6% of GDP, which logistics cost structure is the cost of transporting goods that covers 54.1% or 1,140.1 billion Baht (Office of the national economic and social development council, 2019). Moreover, transportation is vitally important in the logistics process, because transportation creates the flow of goods and resources for various services in the supply chain.

Thus, good management of transportation is crucial for reducing logistics costs and efficient logistics processes. Furthermore, efficient transportation management, including punctual delivery, good condition of goods after the delivery, and complete delivery without any loss - it can be said that it is part of good customer service, which affects the credibility of the company, which can be a competitive advantage. Hence, each company needs to find a management method that helps reduce the costs and increase the efficiency of logistics in their businesses.

2.1.2 Mode of Freight Transportation

Freight Transportation can be divided into five principle modes which are 1) road transportation 2) rail transportation 3) Water Transportation 4) Pipeline transportation and 5) Air transportation (Graduate School of Management and Innovation, King Mongkut's University of Technology Thonburi, 2018) .

2.1.2.1 Road transportation, in other terms, truck transportation is a mode of transportation that uses trucks in carrying goods and transport them between the positions that have roads or have connected lands. Road transportation is the most popular transportation mode because it can transport goods from the origin to the destination without changing to other modes. Moreover, it is the method that has more flexibility and agility than other forms of transportation. Various types of trucks are used in this method, including pickups, container trucks, hauling and trailer trucks, and refrigerated trucks.

The trucks used in the commercial transport can be divided into two categories which are Privately owned trucks, and Commercial trucks (Department of Land Transport, 2015-2019). The first one, privately owned trucks: used to transport goods within one's own business or one's goods, and the second category, commercial trucks are trucks that owned by registered haulage companies that operate goods transportation services without fixing the schedules (Department of Land Transport, 2020). At the end of the year 2019, the total number of registered trucks in Thailand was 1.14 million, by 8.08 hundred thousand (61.87% of total registered trucks) were privately owned trucks and 3.33 hundred thousand (25.52%) were commercial trucks (Department of Land Transport, 2015-2019). This data shows that the production industry/ domestic businesses mainly uses goods transportation services from in-house transportation facilities for certainty in the distribution of the goods and reduce the risk of lacking vehicles. However, in the past five years (2015-2019), the growth ratio of commercial trucks increased an average of 5.48%, comparing to privately owned trucks that increased an average of 0.96% per year (Department of Land Transport, 2015-2019). This reflects that industries/businesses inclined to either use more services from commercial trucks, or use the vehicles from outsourcing. This trends may have reasons for (1) reducing costs in businesses including management costs and other wasteful expenses that come with vehicles, such as repair and maintenance costs, insurance premium, and human

resource costs, particular driver wage (2) relying on professionalism and experiences in transportation management of commercial truck companies (3) reducing the burden from limitation and regulation from the government such as carriage and vehicle weight, vehicle width, speed limit while carrying freights, and transportation time (differs in each place, i.e. district area, municipal area, and outside district area) (Graduate School of Management and Innovation, King Mongkut's University of Technology Thonburi, 2018).

2.1.2.2 Rail transportation is a method that transports goods through a rail system that has the main tool as a train, and there is only one service provider, which is the State Railway of Thailand. Various types of goods are transported in this mode such as bulk, container, and liquid tank. This system of transportation has a location limitation that there are only locations that the government of Thailand has built, which do not cover many places, and it still needs to use road transportation for transporting goods from station to the destination. Even so, rail transportation is a method that requires a lower cost than road transportation, which is appropriate for transporting a large number of goods to distant places (Graduate School of Management and Innovation, King Mongkut's University of Technology Thonburi, 2018).

2.1.2.3 Water Transportation including of coastal transportation is a mode of transportation that is most saves the cost. It uses a large shipping freight ship to transport the goods, makes it able to transport a large number of goods at once, but at low speed. Thus, it is appropriate for international transportation. Most inland waterways in Thailand are used for transporting heavy goods, which are often crops, and dumped construction materials. For coastal transportation, it uses feeder ships conveying goods from small ports to main ports or deep-water ports, to support exporting and importing goods (Graduate School of Management and Innovation, King Mongkut's University of Technology Thonburi, 2018).

2.1.2.4 Pipeline transportation is a mode used to transport liquids, which has a certain origin and destination in transportation. It is built only for specific purposes, i.e. transporting petroleum, tap water, natural gas, and chemicals (Graduate School of Management and Innovation, King Mongkut's University of Technology Thonburi, 2018).

2.1.2.5 Air transportation is a mode of transportation that uses aircraft to transport goods. This mode of transportation is fast, expensive, and safer for goods than other modes. It is often used to transport goods that have to handle with high caution, have high value, light in weight, or goods that need to be quickly transported to avoid damage or decomposition such as jewelry, electronics parts, flowers, orchids, and exported fresh vegetables and fruits (Graduate School of Management and Innovation, King Mongkut's University of Technology Thonburi, 2018).

Table 2.1 Comparison of characteristics of transportation modes

Characteristics	Road	Rail	Water	Air	Pipe
Speed in transportation	2	3	4	1	5
Service available	1	2	4	3	5
Speed in process	2	3	4	5	1
Number able to transport	3	2	1	4	5
Flexibility to needs	2	4	5	3	1
Total	10	14	18	16	17

Note: 1 = Excellent, 2 = Good, 3 = Fair, 4 = Poor, 5 = Bad

Source: Phansang (2011, p. 8)

From the data above, it can be concluded that road transportation is the mode that is the most convenient since it can be accessed from anywhere although it requires higher costs than other modes.

2.1.3 Truck Transportation Industry

The literature review in this part will further details in the truck transportation industry which will provide a deeper understanding of the characteristics of shipment in truck transportation, the route design principles for shipment, types of goods transported by trucks, stakeholders, problems and the trends in the industry.

2.1.3.1 The characteristics of shipment in truck transportation.

In truck transportation, the characteristics of shipment can be classified into two types which are full-truckload and less-than-truckload.

2.1.3.1.1 Full-Truckload or FTL freight.

Sharon and San (Barker, Sharon, & Sen, 1981) has defined the FTL that is one aspect of hired transportation which transfer goods from one location to another one and the quantity of customer's goods are equal to the amount of goods that the truck can load.

Komkrit Waleewong (Phansang, 2011, pp. 8-10) has similarly defined the FTL that is the transporting goods in which the amount of cargo loaded in each truck reaches the maximum capacity, and mostly all products are transported to one destination.

According to the previous definitions, it can be summarized the meaning of full-truckload or FTL that is the transportation in which the amount of cargo loaded equals the truck capacity.

2.1.3.1.2 Less-than-Truckload or LTL freight

Powell and Sheffi (Powell & Sheffi, 1983) has defined LTL that is the transportation of goods that the quantity of customers products in different locations is less than the capacity that the truck can carry. Therefore, there needs to be consolidation of products from multiple customers in order to maximize the truck capacity. By this way, it reduces the cost for transportation.

Komkrit Waleewong (Phansang, 2011, pp. 8-10) has defined LTL that is the transporting goods in which the amount of cargo loaded in each truck is less than the maximum of truck capacity. Therefore, this type of transportation is more costly than the FTL.

According to the previous definitions, it can be summarized the meaning of less-than-truckload or LTL that is the transportation in which the amount of cargo loaded is less than the truck capacity.

2.1.3.2 The route design principles for shipment

The route design for shipment can be generated into different options related to customer intensity, demand, cargo size and its monetary value. The details for each option are listed in the following lists.

2.1.3.2.1 Direct Shipment

Direct Shipment is the full-truckload transportation transfer straightly from the factory to its customer (Phansang, 2011, pp. 8-10). By this

means, the product is neither passed through the distribution center nor is changed vehicles on the way to customers. Therefore, there are several advantages of this options such as 1) saving cost and delivery time due to cutting off the requirement of warehouse or distribution center 2) fast and supporting the just-in-time delivery since there no needs to drop off cargo in different places 3) able to select the short-distance route plan because the delivery is on the straight route without passing to any distribution center.

2.1.3.2.2 Milk-Run Shipment

Tippawan Wiriyasahakij (Wiriyasahakij, 2015) explains that milk-run is the transportation in which a manufacturer sends a truck to pick up material parts from different suppliers in several locations within one trip, instead of letting each supplier sends parts to the factory. By this option, the manufacturer can control the receiving process under the conditions of the right product, right quantity and right time. This leads to the plenty of contributions for the factory such as saving transportation as well as the storage and warehouse maintaining cost. Moreover, it reduces the lead time (L/T) to obtain the materials between the manufacturer and the supplier. Chaiyot and Mayukaphan (Phansang, 2011, pp. 8-10) also defines the milk-run transportation that is the shipment method that utilizing the truck capacity in several ways as listed below.

- Freight collection from multiple manufacturers to a single customer.
- Freight from a single manufacturer to multiple customers.
- Freight collection from multiple manufacturers to multiple customers.

In summary, the milk-run shipment is transporting products more than one time in one cycle of a trip in order to reduce the transportation cost, storage and inventory management as well as the lead time between shippers and receivers.

The main points considered in choosing between the direct shipment or the milk-run shipment are the cost and truck capacity. For direct shipment, carrying at the full truck capacity is the lowest transportation cost. In other words, trucks are underutilized when they contain cargo less than the full truck load.

Whereas the milk-run shipment is a hero for this case by sending a single truck to collect the LTL cargoes within the nearby area on a single trip.

2.1.3.3 Types of goods transported by trucks.: Parcel vs Non Parcel

The Ministry of Transport (MOT) has provided the total quantity of road freight transportation in 2014 that is 442,170 billion tons (Department of Land Transport, 2014). Also, based on the statistics from MOT in 2015, Krungsri Research (Sathapongpakdee, 2019, p. 3) has categorized types of goods transported by trucks into five categories as well as presented the numbers in percentage of shares of the road freight transportation in the following list.

2.1.3.3.1 Agricultural goods such as livestocks and crops. According to the statistics in 2015, the quantity transported (measured by weight of the products) for this group is 33% of the road freight transportation. However, the numbers of quantities tend to fluctuate according to its seasonal yields (Sathapongpakdee, 2019).

2.1.3.3.2 Construction materials and industrial goods such as construction equipment and machinery, cement, construction steel, gravel, soil and sand. This category accounts for 28.5% of the total road freight (Sathapongpakdee, 2019). The numbers of quantities transported are various in different locations depending on the level and type of construction activity within each area. Thus, the goods transportation in the industrial zone tends to be industrial raw materials and finished goods for export. Meanwhile, in the urban areas, where demand for real estate increases, the transportation of building materials is also in rapid growth (Sathapongpakdee, 2019).

2.1.3.3.3 Coal and fossil fuels are further 22.7% of road freight transport, Despite these sorts of fuels are usually transported over fairly short distances from the mining sites to the factories or plants for further processing, most of them are carried out by in-house firms' transportation or by their contracted companies with the regular distribution routes (Sathapongpakdee, 2019).

2.1.3.3.4 Consumer goods and miscellaneous items occupy 6.5% share of the total road freight. This category implies the finished goods that are usually packaged into the parcel cases and distributed to the market over the country. The shipment may be done by the manufactures' facilities, or by the distributors

which are the companies within the same commercial network, or by the contracted commercial haulers to move goods on the fixed routes between distribution centers and retail outlets (Sathapongpakdee, 2019).

2.1.3.3.5 Other goods category takes the remaining 9.3% share of the road freight market. This category comprises items such as dangerous goods, goods packed in the containers, industrial waste and etc. Shipping these goods typically need the specialized vehicles and operators who have deep caution and expertise in managing their transport (Sathapongpakdee, 2019).

Freight price charged is normally calculated according to their weight and transportation distance. Freights in categories 2.1.3.3.1 - 2.1.3.3.3 above are heavy and bulky so they are mostly full-truckload transported and charged a price on a per-vehicle basis. On the contrary, freights in categories 2.1.3.3.4 and 2.1.3.3.5 are charged depending on how they are loaded on a truck. If they are exclusively loaded from a single customer, in other words, full-truckload, so a price on a per-vehicle basis is applied. In case the shipment is less-than-truckload that customers need to share the vehicle space with others, then the freight price is calculated based on weight and distance. Moreover, the case for dangerous goods, temperature control goods, some agricultural products and construction/industrial machinery that require the use of a particular type of vehicle as well as the extra equipment will usually incur higher freight price due to the additional costs involved such as for specialist equipment and insurance (Sathapongpakdee, 2019).

2.1.3.4 Stakeholders in the truck transportation

Since transportation is one of activities in the economic supply chain so there are plenty of stakeholders involved in the transportation process. For example, customers who own their freights, the transportation providers who supply vehicles and moving service, the freight agent who collect shipment order from customers and distribute these orders to the transportation providers, the distribution centers who storage freights from different customers and coordinate with the freight agents, the Department of Land Transport, as well as, its sub departments and the police officers who involve in the regulations and law enforcement related to the road transportation. Here, the further details will provide for three main stakeholders who have direct activities related to the transportation.

2.1.3.4.1 Shippers

The Shipper in terms of transportation usually means to a person or a company who supplies or owns the items shipped (Texas International Freight, 2019). Without a doubt, shippers are considerable as the significant customers of the transportation industry. Shippers can be divided into two majors groups according to whether their freights can be packaged into parcel or non-parcel. Parcels often are the household commodities and finished goods that are sold in the retail markets. Differing from parcels, non-parcel freights are usually large in size and too heavy to be packed into the boxes otherwise they are bulk products. In case of parcel shipment, this segment has an estimated value up to 100 billion baht in 2020 (Changlom & Tantipidok, 2020) due to the growth of the ecommerce trend along with the new normal behaviors changed from the global Covid-19 pestilence that encourage the growth of online commodity trading (Changlom & Tantipidok, 2020). In Spite of the growth in parcel delivery, non-parcel shipment still has higher market shares since this category includes agricultural products, machinery, construction materials and others that special vehicles are required. Based on the information in the beginning of literature review, non-parcel delivery has calculated the approximate values at 1,900 billion baht.

2.1.3.4.2 Carriers

Carriers are formally defined as a person or a firm that provides transportation services, typically owning and operating transportation equipment (Hofmann & Rüsch, Industry 4.0 and the current status as well as future prospects on logistics, 2017) as well as responsible for the loss and damage of goods during transport (Texas International Freight, 2019). Here, the carriers specifically reply to the trucking carriers. Haulage segmentation can be done in many ways.

First, carriers can be segmented according to the size of cargo loaded that are full-truckload (FTL) and less-than-truckload (LTL). The explanations of FTL and LTL is previously pinpointed on the characteristics of shipment in truck transportation (2.1.3.1.1 and 2.1.3.1.2).

Second, carriers are classified by types of cargos which are parcels and non-parcels. To clarify, parcel carriers are the trucking providers who transport any merchandise that does not require specialized equipment, in other words, this type of carrier is defined as general carriers (Aoaeh & Azubuike, 2016). In

contrast to parcel carriers, the non-parcel carriers provide service to move any freights that require particular vehicles and equipment, for example, flatbed trucks, tankers, refrigerated trucks, and hazmat trucks. This type of carrier is similar to the definition of specialized carriers by Aoaeh (Aoaeh & Azubuike, 2016).

Last, trucking carriers are segmented based on the types of vehicles operated (Kasikorn Research Center, 2018). Details about sub-segmentation are given below.

- Container trucks: this segmentation comes in two types. First, chilled and frozen containers mostly distribute fresh agricultural products such as seafood, meat, imported fruits and vegetables. So, income of carriers tends to be seasonal according to the inherent characteristics of agriculture. Second, dry merchandise containers mostly transport general finished goods between the manufacturers, distribution centers and their marketplaces including transportation for border export. Income for these carriers is highly dependent on the level of goods outputs into the market. Thus, trucking carriers may attempt to reduce the income risk by making long-term contracts for provision of transportation services. Moreover, they may increase the transport efficiency by attempting to acquire shipment for both legs of their journey.
- Special trucks: carriers in this segmentation provide particular trucks and extra equipment for transporting liquid goods, dangerous goods, and goods with special handling requirements. This group of operators have special expertise and acquire official certificates proving their qualifications that meet the laws and regulations to transport the special goods, especially fuels and hazmat goods. Apart from low numbers competitors, the market is also quite stable because long-term contracts for the provision of transport service are often agreed. So carriers are relatively stable in terms of revenue and have the bargaining power to determine the freight rates. However, business income may fluctuate depending on the market situation of the loaded products.
- General trucks: This segment faces significant competitive pressures due to the large and growing number of players active in the market. Demonstrated data from the Department of Land Transport in 2019 (Department of Land Transport, 2015-2019), the sum of small trucks (or pickups) and big trucks were 615,703 trucks registered, or 53.9% of the total number of all trucks and 2.16% increase

rate during the past five years. Pickups accounted for 281,543 trucks, or 4.8% increase rate in this category which includes both trucks for personal use and hidden commercial small carriers. For commercial trucks, there were 386,622 trucks in total, or 0.3% increase from the last five year. According to the commercial truck statistics, 355,112 trucks or 91.85% of all trucks were privately operated. This data represents a very intense competition in the general truck segment. This is a significant obstacle for small carriers, who have large numbers of idle vehicles and empty backhaul trucks.

2.1.3.4.3 Third-party logistics providers (3PLs)

In general, the logistics service providers (LSPs) can be defined as companies that carry out the logistics services on behalf of others (Delfmann, Albers, & Gehring, 2002, p. 204). Hofmann and Lampe differentiate among the following LSP clusters (Hofmann & Lampe, Financial statement analysis of logistics service providers: ways of enhancing performance, 2013):

- Carriers (as mentioned earlier) focus their service on the physical movement of goods by certain transport modes such as rail, trucking, water and sea freights.
- Curriers (CEP) are the transporters of express parcels which are small (weight less than 70 kilograms) and non-palletized items to various types of customers, within 1-2 days (Reportlinker, 2014).
- Third-party logistics providers (3PLs) offer the largest scope of services from transportation to additional customized logistics services that are related to its transportation.
- Fourth-party logistics providers (4PLs) develop entire supply chain and logistics management solutions for customers but they do not have their own physical assets. All physical activities are outsourced to other LSPs.

The U.S. government legislation defines 3PLs as “A person who solely receives, holds, or otherwise transports a consumer product in the ordinary course of business but who does not take title to the product” (Davis & Lucido, 2017). As a matter of fact, the term of 3PL can be used for a wide variety of services such as freight-forwarding, warehousing, distribution center, freight consolidation, transport management, brokerage and/or technology services (Robinson, 2014).

To be clarified, Margaret (Rouse, 2020) has given an example of a book publisher to demonstrate how 3PL works in logistic management. In this case, a book publisher wants to focus on its core business which is producing publications. So it outsources the activities of managing online orders and shipments to a fulfillment center. The publisher also hires trucking carriers to haul its freight. In this case, the fulfillment center and carrier both act as 3PLs. Alternatively, if the fulfillment center hires a trucking carrier to distribute books for the publisher, the fulfillment center is the 4PLs and the trucking carrier is the 3PLs.

Margaret also provides the explanation of freight forwarders that "they do not actually ship materials, and instead function as a liaison between a client company and shipping firms. The freight forwarder negotiates prices, determines the best modes of transportation, establishes economical shipping routes and works on other logistics concerns". This is similar to the term of broker that Davis and Lucido mention as the connector between shippers and carriers in exchange for a commission (Davis & Lucido, 2017).

Since there are 387,265 registered truck carriers (Department of Land Transport, 2020) spread all over the country and each of them has different discipline for contract, so it is difficult and inconvenient for shippers to contact and negotiate with them, individually. Thus, many shippers strategically outsource the process of delivery to brokers. It can be seen that one of the roles of third-party logistics providers is the intermidary in freight transportation. The relationship of 3PL, shipper, and carrier is illustrated in the figure 2.1.

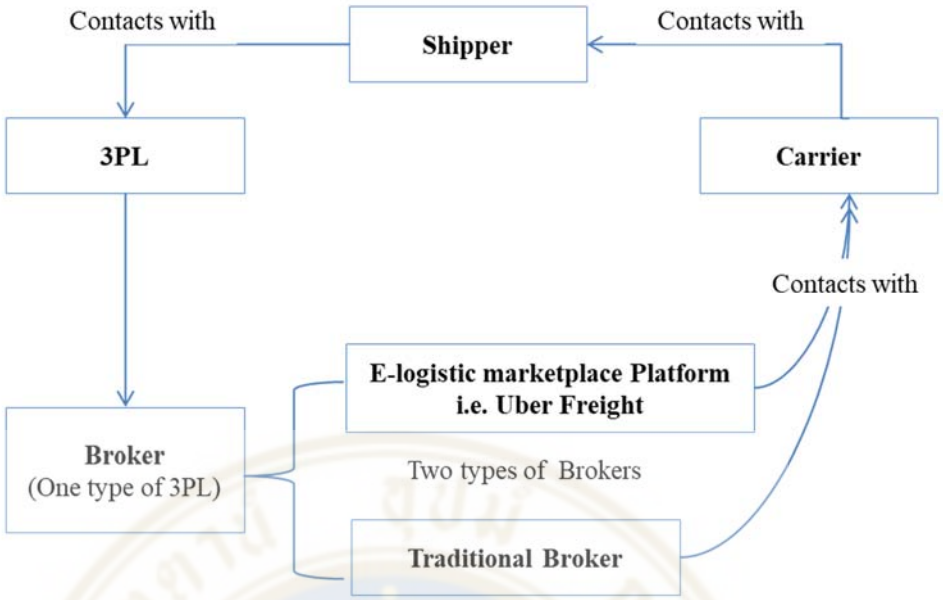


Figure 2.1 The relationship of 3PL, shipper, and carrier

Source: Davis & Lucido (2017, p. 20)

In figure 2.1, a shipper sends a shipment order to a 3PL who may perform several functions such as being a warehouse and distribution center. This 3PL has operated as a freight broker who distributes shipment orders to the outsourced truck carriers. The responsibilities of broker are estimating the freight price for customer, route planning, selecting the most suitable carrier among its network membership for each shipment order, negotiating transportation fee with a carrier, making agreement between a shipper and a carrier, arranging schedule for picking up freights, updating delivery status, assurancing the freight quality after delivery, collecting transportation fee from the shipper and forwarding it to the carrier with a subtraction of the broker's commission. For instance, all of these delivery activities are done through a broker, without the direct interaction between the shipper and the carrier.

It could not agree more that assignment of the whole management of freight transportation has provided convenience and time saving to the entrepreneurs that they can have more focus on their business core competency. In the meanwhile, truck carriers also have a channel to gain more customers. In spite of these pros, this method has several cons. Firstly, brokers are human and there is the possibility that they make wrong decisions (Davis & Lucido, 2017, p. 18) such as over or under price estimation, irrational selecting the preferred carriers, or error in route planning. Secondly, the price

of transportation is relatively higher than its actual cost because of the add-on commission of brokers. Thirdly, there is a delay of tracking freight status since it takes time to coordinate with a broker. This advantage has an effect on the service quality of shippers that they cannot promptly provide a shipment status to their receivers. Relying on receiving information from the intermediary also causes the inflexibility for shippers to make a decision on adjusting the delivery. In the shoes of carriers, their profit is lessened by the deduction of broker's commission which has various rates based on how size the load is contracted (Davis & Lucido, 2017, p. 18). In general, truck carriers have to cover numerous other operating expenses which leave them earning a margin of only about 5% (Aoaeh & Azubuike, 2016). Table 1 below shows the average breakdown of major cost drivers that American carriers reported in 2015.

Table 2.2 Cost driver for carriers

Cost Driver	2015 Proportion of Total Costs per Mile
Fuel costs	25 %
Truck / trailer lease or purchase payments	14 %
Repair and maintenance	10 %
Truck insurance premiums	6 %
Permits and licenses	1 %
Tires	3 %
Tolls	1 %
Driver wages	31 %
Driver benefits	8 %

Source: Torrey & Murray (2016)

With these pros and cons in mind, plenty of new inventions of solutions as well as business models based on the technology and digitalization are emerging and disrupting the traditional 3PLs and transportation industry (Hofmann & Osterwalder, Third-Party Logistics Providers in the Digital Age: Towards a New Competitive Arena?, 2017). One of them is the e-logistics marketplace which is a platform that performs most of the complex duties of human brokers while it enables shippers to have more

flexibility in managing their shipment orders and to have direct communication with carriers. Details for the e-logistics marketplace are reviewed and described in the next chapter.

2.2 E-Logistics Marketplace

The intense overseas competition for logistics becomes the weakness of Thai entrepreneurs since it seems unable for them to compete with the international companies. However, there is a new model called E-Logistic Marketplace which helps increase e-commerce sales volume and create entrepreneurs networks. Under those circumstances, it helps boost efficiency in the transportation management system.

Logistics industry in Thailand has low concentration, crowded entrepreneurs, and fierce competition. Road transportation, for example, is the toughest competition for logistics and the profitability ratios are rather low (8%-15%) (Kasikorn Research Center, 2018). Throughout 5 years passed, entrepreneurs who compete in the road transportation market had faced terribly keen competitions. This is because large international logistics companies, which usually focus on providing services to manufacturers that export products, spread investment in Thailand by significantly expanding their services to manufacturers that sell products within the country. As a result, the majority of Thai logistics entrepreneurs, who are in the B2B logistics marketplace, are inevitably affected (Department of Industrial Promotion, 2019).

2.2.1 Definition of E-Logistic Marketplace

E-logistic marketplace is an intermediary platform to connect shippers (the owners of products) to transportation carriers. In doing so, the shippers and the carriers are able to make deals regarding of prices and conditions of freight transportation through the online platforms. At the same time, e-logistic marketplace will receive orders for transportation services and build market mechanisms for creating truck sharing with maximum efficiency (Kasikorn Research Center, 2018).

2.2.2 Characteristics of E-Logistics Marketplace

Desirable characteristics of E-Logistic Marketplace are listed below (Giztix, 2019).

- Be able to calculate costs from different companies immediately.

Comparing prices is an outstanding feature of the online freight marketplace. The costs and services of different transportation companies are shown, which is more comfortable for customers to compare them. It is able to reserve online directly and saves a lot of searching time for window shopping. Also, it eliminates the steps of making a call for information and wait for quotations, company by company.

- Trustworthy freight companies

Every freight company is required to provide proof of identity and transportation certificates from an online marketplace to confirm their creditability as well as the abilities to transfer products. In addition, the required certifications are enterprise certificates, services vehicles, or customers' reviews,

- Real-time tracking and monitoring transportation status

It is quite a problem for customers when they are unable to check their products' transportation status. Logistics Marketplace solves this problem by using tracking numbers for monitoring the transportation status in real time. It will update the information and then acknowledge it to customers. By this method, it makes them feel more comfortable and convenient that their products will not miss out.

- Simple and various methods of payment

Paying by cash may not be comfortable for all customers so the logistics marketplace adds various methods of payment which are friendly with customers including online transfer, debit cards, credit cards and e-wallet such as Paypal.

2.2.3 E-Logistics Marketplace in Solving Problems of Transportation in Thailand

The major problem which makes Thai carriers unable to compete with international logistics companies is a lack of online channels to sell their services throughout the country. It decreases an ability to contact with customers across the regions, so their market is limited for the locals and the nearby. Therefore, problems of inefficient and high-cost operation of transportation arise. To explain, there is waste due to the

underutilized truck capacity because of uncompleted load, in other words, less-than-truckload (Jungthawan, 2019) and empty vehicles on the way back (Phansang, 2011). Transferring products to faraway places makes minor entrepreneurs a higher cost because they cannot manage resources effectively (Department of Industrial Promotion).

For this reason, if entrepreneurs in transportation for different places are able to create a network to share information about transportation orders within the group, it will give advantages to all entrepreneurs in the network and reduce the cost of transferring up to 5%-15% (Kasikorn Research Center, 2018). In Thailand, building truck carriers networks is not a new thing. There are several networks of road transportation entrepreneurs organized by the government and private companies. These existing networks slightly enhance effectiveness in transportation. Nonetheless, setting a fair and reasonable price to decentralize advantages and provide them fairly profits to the entrepreneurs in the network is a tough work to do. It is harder when the leader of the network is a trucking entrepreneur (Chuwitsakunlert, 2012).

These problems will be very well managed by, for instance, building a trucking entrepreneurs network through an online platform (Kasikorn Research Center, 2018). In the United States, e-logistic marketplace such as Uber Freight was made to be a network leader who gathers transportation orders from all over the country, makes use of artificial intelligence (AI), and Big Data to be a main mechanism for making Dynamic Pricing Model which helps set the right freight price in the real time (Kasikorn Research Center, 2018).

In effect, the e-logistic marketplace is able to reduce the cost of transportation and bring benefits to allies in the network. Furthermore, it is the key mechanism which helps minor entrepreneurs to compete with large-scale entrepreneurs more equally.

2.2.4 The Opportunity of E-Logistics Marketplace

Nowadays, E-Logistic Marketplace platforms are a new business model. In 2018, Uber Freight had yearly revenue of 359 million US dollars which is only 0.5% of brokerage market revenue of truck transportation enterprises. Nevertheless, Uber Freight's sales volume increased dramatically. For the third quarter of 2019, their yearly revenue was 218 million US dollars which increased 78% from the previous year.

Thereupon, it demonstrates the capability growth of the e-logistic marketplace platform (Kasikorn Research Center, 2018).

Kasikorn Research Center argues that a business model such as e-logistic marketplace is capable of growth and offers benefits to allies in networks. In the same way, Thailand began to have a few start-up businesses in the area of e-logistic marketplace such as Deliveree, Giztix, GrabExpress(Pick-up). Kasikorn Research Center estimates that the e-Logistic marketplace in Thailand will expand rapidly within five years ahead together with the growth of B2B e-commerce (Kasikorn Research Center, 2018). It will make a group of manufacturers change their behaviors and adopt the digital technology for goods transportation.

However, the e-logistic marketplace will provide higher efficiency in transportation over the international logistics companies if it is regional freight transportation such as agricultural products as well as fishery products, and machinery movement. Also, product distribution in which a wholesaler transfers products to retailers is a segment which has a high volume of transportation but low quantity of carriers (Kasikorn Research Center, 2018). On the contrary, the international logistics companies have advantages in national products transportation. This is because they make use of the distribution center to transport products, which is able to use heavy trucks within the distribution center and change to pick-up trucks in order to transfer freights from the distribution center to the last-mile destination.

In the future, when there is increase in numbers of e-logistic marketplaces players in the industry, they will boost sales volume and efficiency in transportation. Local transportation entrepreneurs will be able to win customer loyalty in the B2B logistics market. This is because small carriers have prominent points including flexibility of operation, lower expenses, overhead, and hidden cost than those costs of the big international logistics companies.

Henceforth, when the management of regional transportations by e-logistic marketplace has higher efficiency, the international logistics companies may subcontract the last-mile orders to the local carriers within the network of e-logistic marketplace (Hofmann & Osterwalder, Third-Party Logistics Providers in the Digital Age: Towards a New Competitive Arena?, 2017). This is because transferring products from a distribution center to several different final destinations is an activity that is costly and has low

economy of scale. Moreover, the last-mile delivery also requires the expertise of local carriers who are familiar with their regions, which may not be worth for international logistics companies to operate in all routes by themselves.

In the future, the e-logistic marketplace will sure be able to provide great advantages for Thai transportation entrepreneurs. No matter what, there will be only some of adaptive transportation carriers who are able to make use of the e-logistic marketplace. Those who cannot be allies with the digital disruption will face the risk of losing abilities to compete with others and leave out of the business, eventually.

2.3 The Concept of Value Propositions

2.3.1 Definition of The Value Propositions

In general perception, the concept of a value proposition is often thought to be as same as a specific products or services that offered by the company. Actually, the value proposition is the aggregate of benefits that a company offers to the customers through their consumption of products and services (Osterwalder & Pigneur, Business Model Generation, 2010). In other words, the value proposition solves a customer problem or satisfies a customer need that is the reason why customers choose the offer made by a company rather than its competitors.

The value propositions consist of a bundle set of elements that meet the specific needs of a particular customer segment. These elements can be either quantitative or qualitative. Values in term of quantitative elements can be price, speed of service, efficiency, cost reduction, and performance of the product or service. A group of qualitative values may be design customer experience, innovation, brand or social status, availability, convenience, and utility (Gierej, 2017).

In this sense, each product and/or service are specifically invented to offered different values to different group of customers. Some products may be innovative and represent a new or disruptive offer while others may only added features and attributes to the existing market (Osterwalder & Pigneur, 2010).

2.3.2 The Value Proposition Design (VPD)

There are many concepts and tools related to the value creations. Mostly, the majority of methods are from startup ventures that share their experiences in developing a successful business model. Here, the value proposition canvas is proposed. This technique is derived as a supplement tool for designing the business model canvas (BMC). In the BMC, value proposition is one of the fundamental nine blocks that show the logic of how a product or/and service can transfer the values offered in order to generate income (Osterwalder & Pigneur, 2010). To clarify the process of how to conduct the value propositions, Osterwalder and his crew have developed a scheme for value proposition design. This scheme comprises of four distinguished steps (Osterwalder et al., 2014).

- Canvas – at this stage, the author proposes the value proposition canvas (VPC) which consists of another two canvas; customer profile and value map. VPC will present the main characteristics of behaviors, needs and concerns of potential customers, and then compare them with the values offered by the company.
- Design - values offered from the VPC are still assumptions. At this stage, the solution prototyping, in other word, a product prototype is designed to verify the assumptions.
- Test – the prototype are tested to collect feedback for improvement. By this method, testing the prototype before launching the product into the market will minimize risks on failure investment.
- Evolve – At this stage, the product is measured at the level to be competitive in the market. The product is introduced to the market and kept monitoring and analyzing performance as well as the possible modification of assumptions.

2.3.3 Value Proposition Canvas (VPC)

Among value creation concepts, Sylwia Gierej (Gierej, 2017) has finalized on her research that the value proposition canvas (VPC) is the most suitable technique for starting design values propositions because it has ease of use, low cost, no requirement for specialized infrastructure or expertise skills and it is simple to communicate this model to members of the organization. In this part, the method to use the value proposition canvas is revealed.

There is no an exact definition of the value proposition canvas but it is described in the book, namely the value proposition design, that “the value proposition canvas has two sides. With the customer profile, you clarify your customer understanding. With the value map, you describe how you intend to create value for that customer. You achieve fit between the two when one meets the other” (Osterwalder, et al., 2014, p. 3). The illustration of value proposition canvas is on the figure 2.2.

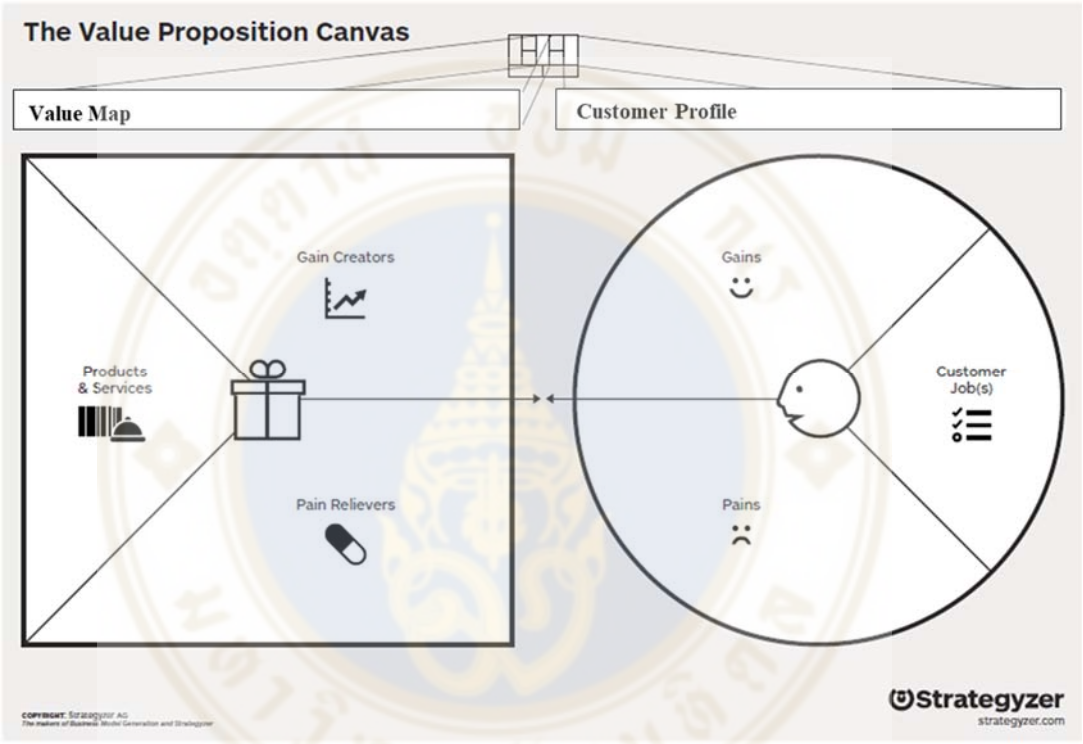


Figure 2.2 The value proposition canvas

Source: Osterwalder et al. (2014)

Thus, the value proposition canvas is a tool used for discussing and designing the connections between the customer insights and the values that a company tries to offer. VPC provides the analysis of customer side which consists of customer problems, expectations, and concerns, on the customer profile canvas. At the same time, a company will design the value map which contains ways to solve customer problems, relieve concerns and meet expectations. When two canvases match each other, this can be identified that the product and/or service contains the desired values by customers

(Osterwalder et al., 2014). With this intention, VPC reduces the risk of product failure that a company produce a product or service that no need customers need.

The implementation of VPC is focusing on two canvases which are the customer profile and the value map. The explanation of both canvas are explained in the next topics.

2.3.4 Customer Profile

Customer profile is the circle canvas which comprises of three elements for describe a specific customer segment (Osterwalder et al., 2014). These elements are customer jobs, pains, and gains.

- Customer jobs – "describe what customers are trying to get done in their work and in their lives, as expressed in their own words" (Osterwalder et al., 2014, p. 9)

Customer jobs are categorized into three types which are functional jobs, social jobs, and emotional jobs. First, the functional jobs are certain tasks or specific problems which customers try to perform or complete. Second, the social jobs describe how customers want to be perceived by others such. Third, the emotional jobs occur when customers seek a specific emotional state such as feeling good or secure.

- Pains – "describe bad outcomes, risks, and obstacles related to customer jobs." (Osterwalder et al., 2014, p. 9). To be more clarify, This element identifies anything that annoys customers before, during, and after trying to get a job done. The examples of pains are obstacles, fears, risks, and the anxiety of unable to achieve the jobs. Pains can be categorized into three types which are undesired things (outcomes, problems and characteristics), obstacles, and risks. In addition, the pain severity can be various to different customers depend on how they rank its significant. Some pains can be moderate when customers rate their significant as low. while some pains can be extreme that customer cannot stand them and give the high rate significant.

- Gains – "describe the outcomes customers want to achieve or the concreate benefits they are seeking" (Osterwalder et al., 2014, p. 9). The outcomes and benefits that customers want such as functional utility, social gains, positive emotions, and cost savings. Gains are categorized into four types which are required gains, expected gains, desired gains and unexpected gains. Moreover, a customer gain can be essential or just nice to have, depending on how customers rate its relevance.

2.3.5 Value Map

Value map is a square canvas which describes the feature of a specific value proposition that is conveyed by a product and/or service to the segmented customers, in a structure of three components which are gain creators, pain relievers, and product and service (Osterwalder et al., 2014, p. 8).

- Gain creators – describe how the products and services create customer gains. This is the outline of attributes to produce outcomes and benefits that customer expect, desire, or would be surprised by considering the functional utility, social gains, positive emotions, and cost saving. In addition, gain creators should be built around a few gains that are most relevant to customers and differentiate the products and services from the existing ones in the market (Osterwalder et al., 2014, p. 33).
- Pain relievers – describe how the products and services mitigate customer pains. This is the outline of ways to eliminate or reduce some of the things that annoy or prevent customers before, during, or after they try to complete a job. Pain relievers should be focus on a few extreme pains that matter to customer (Osterwalder et al., 2014, p. 31).
- Product and services – this is the list of all the products and services that value proposition is built around. The values occurs when the use of this bundle of products and services can help customers complete their jobs either functional, or social, or emotional jobs, or help them satisfy their basic needs (Osterwalder et al., 2014, p. 29).

The Value Proposition Canvas is a starting point to begin work on the conceptual idea in order to create a new product and service. There is no need to rush on completing a full business model. Instead, it is essential to explore customer needs and examine possible solutions. The advantage of the canvas is also to draw attention to two important areas of value creation for the customer: benefits and pains. That is what a company should look for in a unique value proposition for developing a product or service (Gierej, 2017).

2.4 Past Researches Reviews

Review of past researches is divided into two areas as sorted below;

2.4.1 The past researches related to the truck transportation

There are four researches related to the truck transportation including of the e-logistics marketplace platform. The researcher has screened for the researches that contribute the knowledge and understanding of current problems and trends that shippers and carriers are facing in freight trucking industry. The brief of these researches are listed below.

- Wiphawan (Phansang, 2011) conducts the research namely the development of a transportation planning system for reducing empty trucks. This research is about designing and testing a software for matching the empty truck carriers with shippers since the empty-backhaul trucks causes the problem of fuel waste and inefficient asset utilization. The results indicate that the software can reduce up to 25% of job requests, 24.53% of empty-backhaul trucks, 13.99% of transportation cost and 12.53% of Carbon Dioxide emission. In addition, the system evaluation shows that truck carriers are capable to learn and use the software. They also have high satisfaction with the software. In summary, this research may state the empty-backhaul truck as a job of carrier and the solution is the software to match empty-backhaul truck with available shipment orders.

- Peeranuch (Chuwitsakunlert, 2012) conducted a research namely framework for less-than-truckload carriers collaboration. This research studies on the patterns of collaboration between the domestic LTL truck carries, and to find the pattern for successful collaboration. The result is the successful collaboration are in form of a registered company acting as a 3PL that responsible for setting the standard price for shipping, collecting orders from customers, distributing jobs, collecting income and distributing profit to members in the network. All the operation must be trackable and transparency. To conclude, this research may state that shippers prefer a solution to help them find customers, set the standard price for delivery, managing and plan a shipment order. All of the activities have to be on track.

- Sutthipun (Promma, 2013) conducted the research namely shipper and carrier collaboration in truck transportation. This research studies the collaboration between shipper and carrier toward co-managing shipment. The results show that the

driver for shippers to enter collaboration is to reduce transportation cost while the driver for carriers is to improve customer service. Both of them have the same idea that their employees are the key facilitator for successful collaboration. The barrier for shipper is the lack of knowledge of supply chain collaboration whereas the barrier of carrier is the lack of employee capability. Therefore, the guideline for developing collaboration should include the decision-support tool and collaborative activities to develop relationship between each other. To be concise, this research may state that shippers and carriers need to have direct interaction such as a platform to collaborate and communicate about their shipments in order to improve both of their performance.

- Davis and Lucido (Davis & Lucido, 2017) conducted the research namely innovative transportation solutions: Uber for freight. This research is conducted to answer the question that whether a trucking marketplace platform is suitable for transporting the hazardous material or not. The result shows that even though the trucking platform can offer values of cost saving and increased efficiency gained though a frictionless interface, it is not suitable for transport hazmat because it involves special regulations that require high level of service. However, if the platform can provide safety and level of service to meet the standards for transporting this type of shipment, the shipper will tend to use this platform. This study shows the possibility to develop a trucking marketplace platform that offers values for special shipments.

According to the review of past researches on the truck transportation, there are unsolved problem and needs that shippers as well as carries are not satisfied such as the empty-backhaul trucks, professional tools for managing shipment, special shipments transportation, and a platform for direct interaction between shippers and carriers. However, these problems are specifically to some issues and mostly conducted data from the LTL logistics providers. Therefore, there should have a research contributing on identifying problems and needs of shippers and carriers towards the overall process of delivery, particular for the segmentation of non-parcel shipments with full-truckload carrying.

2.4.2 The past researches related to the implementation of value proposition canvas

There are two researches related to the implementation of the value proposition canvas (VPC). The researcher focuses on how each research is conducted and how the methodology is applied with the VPC framework. The brief of these previous researches are listed below.

2.4.2.1 Value proposition canvas: identification of pains, gains and customers jobs at farmers' markets (Pokorná, Pilař, Balcarová, & Sergeeva, 2015) is a research conducted by a team of Czech Republic and Russian scholars. The researchers select the VPC for their study framework. The goal of this research is to identify the factors of business model that form the value proposition of farmers' market customers. The method used for acquiring the primary data is questionnaire survey which is divided into three parts concerning; products and services, gain creators and pain relievers. The questionnaire contains 15 core and 3 identifying questions. Core questions are all open. For the analysis, the researchers select to present the most frequent factors for each identifying questions which are the most frequent customer jobs, the most frequent gains, and the most frequent pains. These factors are also labeled their types which present the values proposition offered by each factor. The customer jobs factors and gains factors have three labels which are functional, emotional and social jobs. Pain factors have two labels which are product and convenience. Finally, the researchers suggest the solution to provide value proposition for the farmers 'market by improving those highest frequent factors.

24.2.2 Synchro-modality and slow steaming: new business perspectives in freight transportation (Perboli, Musso, Rosano, Tadei, & Godel, 2017) is a research conducted by the collaboration of Canadian and European scholars. "This paper presents the SYNCHRO-modal supply chain eco-NET (SYNCHRO-NET) project which demonstrate the effectiveness of slow steaming combined with synchro-modality in reducing the cost and the emissions of international supply chains and improving reliability and sustainability through the optimization of the planning process." (Perboli et al., 2017). The researcher team adopts the GUEST methodology for their study framework in order to identify values offered of the SYNCHRO-NET project as well as its business

model. GUEST methodology is stood for five steps. The brief explanations for each step are described below.

- Go – is gathering the needs of stakeholders which are conducted through a survey.
- Uniform – Applying the value proposition canvas to identify the jobs, pains, and gains of the stakeholders on the stakeholder profile. Whereas, the value map defines the value proposition, in term of the bundle of products and services, that the project has to offer to each stakeholder based on the jobs, pains, gains on the stakeholder profile. The fit between stakeholder profile and value map occurs if the project generates pain relievers and gain creators that combine with one or more of the most important jobs, pains, and gains for the stakeholders.
- Evaluate – is the illustration of the final value proposition canvas and the business model canvas to demonstrate how the SYNCHO-NET project provides values to its stakeholders and how it captures value in return.
- Solve – "given the specific problems and the actions highlighted to cope with them, a list of operational models is proposed." (Perboli et al., 2017).
- Test – "the actions are implemented in case studies and their performance evaluated. The findings are released according with the Results Dissemination Plan." (Perboli et al., 2017).

Due to the SYNCHRO-NET project is currently ongoing, the Solve and Test phase are under development and have no result.

As shown above, the review of previous researches presents that both of them use the VPC as the framework to identify factors for creating business values and all of them have conducted the quantitative researches to obtain the primary data for their factors analysis. However, as it stated by Ash Maurya (Maurya, 2012, p. 82), that the positive aspect of survey is that it assumes a researcher knows the right questions to ask, on the other hand its negative side is that it assumes a researcher know the answers too. Therefore, the survey is not an appropriate method for the initial learning to specify factors that a researcher has no experience. In the meanwhile, the customer interview is a form of qualitative validation that is quite more effective in covering customer insights or identifying a strong signal for or against hypotheses using a purposive selecting of small sample size. Once a preliminary validation on the hypotheses from

customer interview is determined, a researcher can then use these validated data to craft a survey and verify the findings, quantitatively (Maurya, 2012).

For the most part, since the goal of this study is to design the value proposition for a trucking marketplace platform, this study involves the initial identification of value factors of shippers and truck carriers. Therefore, this research will use the VPC as the study framework and apply the interview with open-ended questions as the qualitative method to collect the insights of shippers and truck carries. In other word, interview is the method used for gathering the primary data of this research.

CHAPTER III
RESEARCH METHODOLOGY

Since the objective of this study is to identify the value propositions for developing a trucking marketplace platform. Thus, this particular study is a qualitative research that will use the in-depth interview for exploring insights of two groups of stakeholders; shippers and carriers which are the majority users of trucking marketplace platform. Shippers comprise a group of small to medium enterprises who has a demand for shipping with full-load truck (FTL). At the same time, carriers are a group of FTL trucking service providers. This particular study provides insights for each group of users on their behaviors, expectations, and concerns towards domestic trucking service and its online marketplace. Then, the acquired insights will be analyzed by applying the value proposition canvas as a framework to identify values for a trucking marketplace platform. This chapter will present the research methodology using in this study step by step as shown as on the below figure.

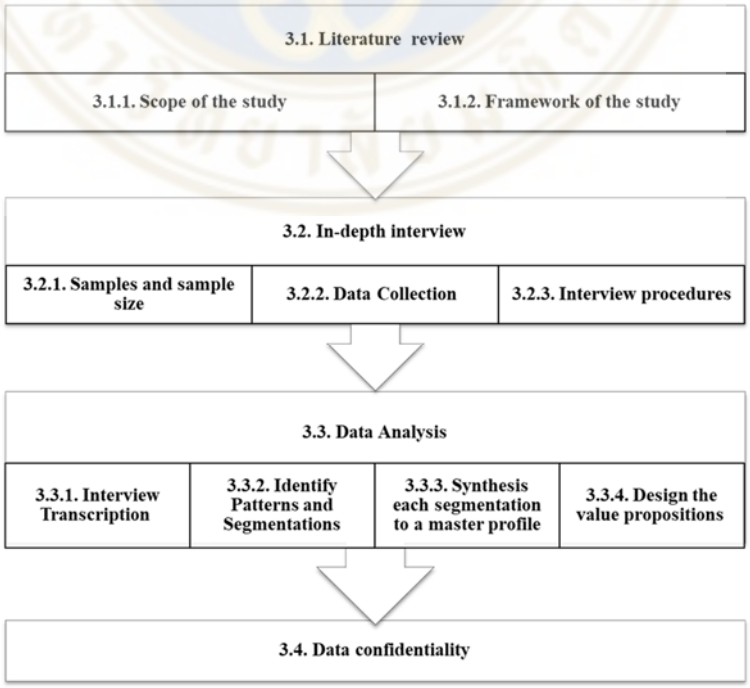


Figure 3.1 The research methodology

3.1 Literature Review

This method is a fundamental step of research. The researcher examines concepts and theories from academic documents and several articles from diverse sources. The examination areas consist of three topics which are the overview of truck transportation, e-logistics marketplace, and the concept of the value proposition design, including past researches. Details are previously described in chapter two.

According to the review of the first two topics; the overview of truck transportation and e-logistic marketplace, the researcher has deeper knowledge of domestic trucking transportation market. This information includes the characteristics of segments within the market and the characteristics of the marketplace platform which globally disrupts the traditional logistics business. The obtained information and knowledge will be used to determine the scope of this study and guideline the interview questions.

Literatures and past researches on the concept of value proposition design provide the understanding of the process in creating values for a product or service. The research selects the value proposition canvas to be a framework for this study.

The study process in this research is detailed in the next topics.

3.1.1 Scope of the Study

Documents and researches review in the overview of truck transportation unveiled the quantity of non-parcel truck transportation is 70% of the overall road freight transportation which has a high volume of approximately three hundred billion tons (calculation based on data of Department of Land Transport, 2014). This is a large and heavy shipment or bulk product that is unable to ship by standard couriers for instant, agricultural products, chill and frozen products, construction materials, machinery, and dangerous chemicals. More often, transportation of these products comes in a format of Full-Truckload (FTL) and requires particular vehicles including extra equipment. Truck transportation service providers of this level are more limited and have strong potential to expand (Sathapongpakdee, 2019).

In light of these circumstances of non-parcel shipment, it pushes up the cost of individual transportation to the roof. Thus, the producers usually hold their own trucks to reduce costs but the nature of this transportation is literally seasonal with

uncertain demand, some of the trucks will be kept and unused during the low season, unable to convert to reach their full potential. Furthermore, these trucks carry a high maintenance cost such as drivers cost which will increase every year, fuel cost, maintenance cost, truck insurance, and depreciation of assets. Therefore, they incline to earn lesser numbers of trucks ownership and outsource the delivery to the truck service providers. This trend offers an opportunity to raise demand for the FTL carriers as well as demand for hiring the empty backhaul trucks that offer a fewer transportation fee (Phansang, 2011).

In transportation industry, technology and digitalization have disrupted the industry in four ways which are the autonomous vehicles, 3D printing, platform-based business model, the sharing economy (Hofmann & Osterwalder, Third-Party Logistics Providers in the Digital Age: Towards a New Competitive Arena?, 2017). The trucking marketplace is one of the platform-based business models. This platform involves applying the computer algorithm to match shipment order and dynamically calculate the shipping fee for shippers and carriers who want to transport things in the same route. This application has rapidly replaced the traditional third-party logistics providers and the way of hauling for transportation. In Thailand, E-logistics marketplace platforms are generally seen in food delivery, calling a cab, or sending small to medium parcels. However, it is seldom found the platform for trucking service whereas there are demand and a room to grow for transporting non-parcel freights (Kasikorn Research Center, 2018).

For a new platform, the success key to compete the market is offering the values that customers want and never meet in any products before. Based on the literature review in the concept of value propositions design, researcher has found that the value proposition canvas is the most suitable framework for startup because of its simple pattern to follow, low financial investment, as well as low time consuming.

Based on the previous summary of the literature review, the researcher utilizes this information to determine the scope of this study which comprises of the market segmentation, customer targeting, and the value proposition canvas. Details are as follows:

- Market Segmentation; this study will scope on the domestic truck transportation service, particular the full-loaded truck (FTL) shipment for non-parcel

freights, for example agricultural products, frozen products, construction materials, machinery, dangerous chemicals, and etc.

- Customer Targeting; the trucking marketplace is an intermediary who performs as a matchmaker to connect demand to meet supply for shipment service. Thus, its business model is considered as a double-sides platform which the monetized activity is subjected to the values creation for two stakeholders; shippers and carriers.

Consequently, the researcher has broken down the scope customer targeting into two groups consisting of the value proposition for shippers and value proposition for carriers and defined the significant qualification of each target group as below.

Shipper: A small to medium (SME) entrepreneur or enterprise who produces non-parcel products or selling non-parcel products with consistent demands to ship the products at least one time per month and requires the full-loaded truck service (FTL) for domestic transportation solely.

Carrier: A small to medium (SME) entrepreneur or enterprise who provides truck transportation service or holds ownership of trucks and has a desire to offer domestic transportation service in the form of a full-loaded truck (FTL). The truck is compulsory to be able to carry non-parcel products.

- The value propositions canvas; this is an implement for identifying customer insights related to their behaviors, concerns, and expectations through the model of jobs, pains and gains toward a specific consumption of the existing products in the market, and for utilizing these insights to develop the value propositions for a better product. With this in mind, this study is scope on implementing the value propositions canvas to explore the insights of shippers and carriers toward the trucking transportation service as well as the e-trucking marketplace, in order to establish the values for a new trucking marketplace platform.

3.1.2 Framework of the Study

In this research, the researcher adopts a diagram named “the value proposition canvas (VPC)” presented by Osterwalder at el (Osterwalder et al., 2014) as a primary framework to develop the point of questions for the interview and to analyze insights

of shippers and carriers towards truck transportation. This framework consists of two significant diagrams; the customer profile and the value map.

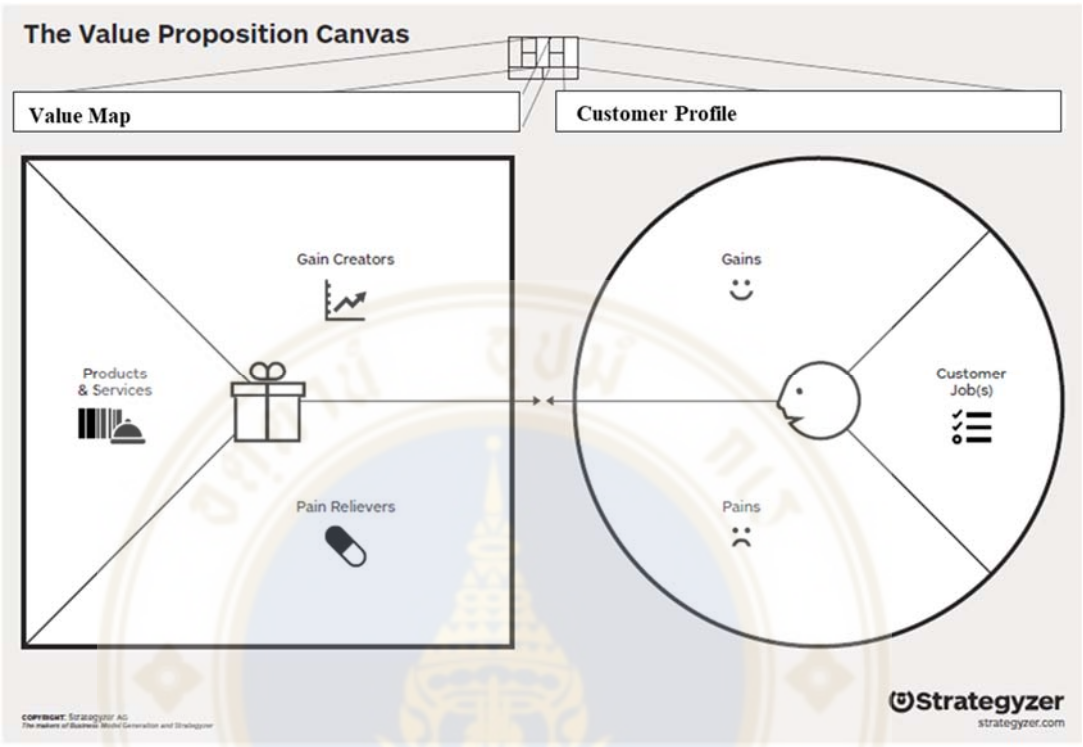


Figure 3.2 The value proposition canvas

Source: Osterwalder et al. (2014)

The first diagram is “the customer profile” which is a method to identify insights of customers in three elements.

- Customer jobs (Jobs). This element identifies things including of tasks, commitments, responsibility as well as activities where customers have to achieve in their work or in their life (Osterwalder et al., 2014, p. 12). Therefore the customer’s decision behaviors to complete these jobs are also identified here. Customer jobs are categorized into three types which are functional jobs, social jobs, and emotional jobs. First, the functional jobs are certain tasks or specific problems which customers try to perform or complete. Second, the social jobs describe how customers want to be perceived by others such. Third, the emotional jobs occur when customers seek a specific emotional state such as feeling good or secure.

Since this research mainly focus on the behaviors of business units which are shippers and carriers in the FTL trucking industry, so their jobs may mostly found on the functional jobs. However, the social and emotional jobs are also conducted through the interview. In addition, the experiences of using a trucking marketplace platform are identified in this section as well.

- Customer pains (Pains). This element identifies anything that annoys customers before, during, and after trying to get a job done. The examples of pains are obstacles, fears, risks, and the anxiety of unable to achieve the jobs. Pains can be categorized into three types which are undesired things (outcomes, problems and characteristics), obstacles, and risks (Osterwalder et al., 2014).

Thus, it can be implied that the concerns of shippers and carriers towards truck delivery as well as a trucking marketplace platform are identified here. Moreover, the level of pain severity (extreme or moderate) is also conducted through the interview.

- Customers gains (Gains). This element describes the outcomes and benefits that customers want such as functional utility, social gains, positive emotions, and cost savings. Gains are categorized into four types which are required gains, expected gains, desired gains and unexpected gains (Osterwalder et al., 2014, p. 16).

Therefore, it can be implied that expectations of shippers and carriers towards truck delivery as well as a trucking marketplace platform are identified here. Moreover, the level of gain relevance (feel essential or nice to have) is also conducted through the interview.

The second diagram is the value map. This canvas consists of three elements which are product and service, pain relievers, and gain creators. After analyzing data obtained from the interview, the researcher will use the value map to design value propositions of e-trucking marketplace platform. The values are created from how this service solve customer jobs, meet customer gains (gain creators), and solve customer pains (pain relievers).

3.2 In-depth Interview

Once settled the scope and framework of this study, the researcher will conduct the in-depth interview with open-ended questions. By this method, there is an opportunity to receive the primary data which is valid insights from the shippers and carriers and may have more surprise opinions than ones found in the document review (DeFranzo, 2014). The methodology implemented during the in-depth interview is explained as follow.

3.2.1 Samples and Sample Size

According to the market segmentation, the populations of this study are the small to medium (SME) shippers and carriers who want to domestically transport freights by the method of FTL trucks. Based on data in 2018, the numbers of populations are 3,077,822 SME entrepreneurs (Office of Small and Medium Enterprises Promotion, 2019, pp. 4-01).

3.2.1.1 Samples; for selecting samples, the research uses the purposeful sampling which is "a non-probability sample that is selected based on characteristics of a population and objective of the study, in other words, a judgmental, selective, or subjective sampling." (Crossman, 2020). Based on the scope of customers targeting (chapter 3.1.1.2), there are two groups of samples, detailed below.

Shipper: A small to medium (SME) entrepreneur or enterprise who produces non-parcel products or selling them with consistent demands to ship the products at least one time per month and requires the full-loaded truck service (FTL) for domestic transportation solely.

Carrier: A small to medium (SME) entrepreneur or enterprise who provides truck transportation service or holds ownership of trucks and has a desire to offer domestic transportation service in the form of a full-truck load (FTL). The truck is compulsory to be able to carry non-parcel products.

According to the sampling of the participants, the researcher gains access to the both groups of the samples by posting a notice on the open network groups or public associations on the social media which related to the trucking transportation in order to find volunteers participants for this research study. Then, the researcher will collect the name list from these mediums. In addition, the researcher will use the

snowballing method to offer an opportunity for participants to refer qualified prospects who have similar qualifications to participate in this research. This particular method will help to find prospects within the scope more rapidly (Maurya, 2012, p. 101).

For whom interested in participate in this research, the researcher will contact prospects by email or direct message to request for a consensual consent to participate in the interview and attach along with two document forms.

- Participant Information Sheet

A form contains introductory information of the researcher and explains the objective of research and advantage including the impact that may occur to the research participants.

- Consent Form

A form for prospects to give written permission to the researcher that they understand the terms of an event or activity that will be performed and consensually agree to participate in the research. The prospects will be required to sign a consent form.

3.2.1.2 Sample size; the researcher applies a purposive interview method and will cease the whole interview when the result becomes an identical pattern. Approximately, the sample sizes for each group are 20 people from the shippers group and 20 people from the carriers group.

3.2.2 Data Collection

A participant will be invited to join the interview one time. Each interview session will be last for 45 minutes to an hour. The researcher will ask the participants with a format of the semi-structured questions related to jobs, pains, and gains (the customer profile; see chapter 3.1.2). Details of interview questions are displayed on the interview guidelines on the appendix 1 and the appendix 2.

3.2.3 Interview Procedures

With regards to the interview method, the researcher will conduct one-on-one interview to observe non-verbal language from the participants. This method helps the researcher to understand and share the mutual emotional experience of the interviewee towards questions, otherwise, perhaps to notice body language that determines conflict,

worrisome and curiosity during the interview. In this case, the researcher will be able to ask questions or provide the direct answer to these points immediately (DeFranzo, 2014).

Nonetheless, due to this research is conducted during the situation of coronavirus and impact to one-on-one interview. The researcher and participants will be required to wear a mask or face shield throughout the interview. In the light of participant most comfort and convenience in regards to health protection, the interview can be conducted online via the online communication platforms such as Zoom, Line VDO calling, and etc.

Prior to the interview, the researcher will begin with self-explanatory and describe the objective of research and collected data transformation including data protection, security, and privacy of the participants, and ask for permission to contact them to collect further data to enhance this research. In addition, the researcher will provide an opportunity for participants to identify and ask questions regarding to their concerns that may arise during the interview. Once prospects agree to the interview terms and understood the risk of revealing information, the researcher will be asking the prospect to sign a consent form.

During the interview, the researcher will ask questions and write answers into the interview summary card (see the appendix 3 and 4) as well as record the vocal answering to later transcribe and analyze data in the next process. In case there is a question where participants finds uncomfortable to answer or unwilling to continue the interview, the researcher will cease the interview immediately.

3.3 Data Analysis

The researcher will analyze the acquired data from the interview by applying the process proposed in the book namely, the value proposition design (Osterwalder et al., 2014). Data analysis in this study is divided into five steps as described as below.

3.3.1 Interview Transcription

When the interview is done, the researcher examines each interview summary card in order to check for a missing point. In case there is a vanished point, voice recorded will replay to fill into the gap in order to complete the interview summary card. Then, the data from the interview summary card will be analyzed and sorted into each proper box which are jobs, gains, and pains on the customer profile. To clarify this process, the insights regarding customer behaviors will be transferred into jobs. Any customer concerns are categorized as pains. Finally, customer expectations are grouped into gains.

3.3.2 Identify Patterns and Segmentations

When all single customer profiles are transcripted, the researcher will identify the patterns in jobs, pains, and gains. After that, the researcher will group similar customer profiles into one or more separate segments.

3.3.3 Synthesis each Segmentation to a Master Profile

This step is to synthesis the profile from each segment into a single master profile (Osterwalder et al., 2014, p. 116). At this step, the most frequent jobs, pains and gains are grouped as a single description label. Then, put each label into each job, pain, and gain box on a single master profile. For the outlier profiles, even though they are not synthesised and segmented into the master profile, they still could be a bellwether or a sign to become a better solution for jobs, pains, and gains than the other peers' offers from the master profile. Thus, the researcher will keep the outlier profile stand-alone and report them in the results chapter.

3.3.4 Design the Value Propositions

At this stage, the analyzed data in the master profile are used to prototype a solution. That is a trucking marketplace platform which helps its stakeholders to complete their jobs, to illuminate their pains, and to meet their gains. This solution prototype will be illustrated on a single canvas, namely, the value map. This canvas consists of 3 components which are pain relievers, gain creators, as well as product and service. Pain relievers demonstrate how pains (from the customer profile) are solved. Gain creators represent the selected benefits that the trucking platform can offer to shippers

and carriers. Finally, product and service shows the features of the trucking platform. All in all, the value map is the canvas presenting how the trucking marketplace platform contributes values to its stakeholders; shippers and carriers.

3.4 Data Confidentiality

During the whole study process, efforts to maintain confidentiality for all participants will be assured. All voice records, transcripts, notes and electronic files are going to be stored in the researcher's laptop with security passcode to login. All data provided by participants will be used solely for the study research. All records will be destroyed when this research receives the official approval for the graduation of the master degree. To retain security of participants' identities, all participants are not required to inform their full names including their names of workplaces. Instead, they have rights to provide alias. All documents contained of participants' signatures will be stored in the researcher's personal safety box with passcode for access. Furthermore, revealing participants' contacts as well as their identities without a permission is prohibited in any circumstance. In case of citations and references on the study results, each participant's identity is encoded to a general alphabet plus a number. For example, MR. Smith who is a shipper is encoded as S1 whereas MR. John is a trucking provider that is encoded as C1. By this measure, personal identity is retained unidentified.

CHAPTER IV
FINDINGS AND DATA ANALYSIS

This chapter presents the study results in five areas. First of all, the research shows demographics of the respondents to present the overall characteristics of shippers and carrier. Second, it clarifies the behaviors of shippers and carriers when they select a channel to book and obtain a full-truck load (FTL) delivery. Third, the research also presents the awareness, experiences and desire on the existing e-trucking marketplace platform which is a new channel for transportation market. Fourth, the research presents the shippers-and-carrier profile which illustrates the obstacles and expectations among shippers and carriers towards Line Group as well as the existing marketplace platforms where shippers and carriers use as the channels to match their demands and supplies. Finally, this research attempts to identify the value proposition for developing the concept of e-trucking marketplace platforms.

4.1 Demographics of The Respondents

According to the purposive interview method, researcher has ceased the interviews when the result becomes an identical pattern. This research achieved 20 interviews of SME entrepreneurs which are 11 shippers and 9 carriers. The couple of sample groups include both of ordinary person registration and juristic person registration. Thus, the characteristics of the sample sizes are relevant for the analysis.

4.1.1 Demographics of Shippers

Table 4.1 Age of surveyed shippers

Age of shippers.	Millennials			Generation X			Baby Boomer
	25-30 Yrs.	31-35 Yrs.	36-40 Yrs.	41-45 Yrs.	46-50 Yrs.	51-55 Yrs.	Over 56 Yrs.
No. of respondents	0	5	3	2	0	0	1
Total = 11 (100%)	8 (73%)			2 (18%)			1 (9%)

Table 4.2 Categories of business industrial and vehicle requirement.

Business Industry	Vehicle Requirement
Construction materials, machinery and industrial equipment.	6-wheel to 10-wheels truck. Extra size/capacity Truck with special equipment
Consumer goods	Small truck for the flexibility in a city Extra size; occasional need
Agricultural products & perishable goods	Small truck for local and nearby areas 6 wheels truck for long-distance trip

The demographics of shippers are described in the following details.

- The majority of surveyed shippers are in the age range between 25-40 years old. In other words, 73% of the surveyed shippers are Millennials entrepreneurs (Fry, 2020).
- From 11 shippers, there are 5 people legally committed to process their business as juristic persons. Whereas another 6 people have registered their business partnership as the ordinary persons.
- The surveyed shippers are categorized into three groups, by their business industry. Firstly, the group of Construction material, machinery, and industrial equipment contains 5 respondents. Secondly, the group of consumer goods contains 4 respondents. Finally, the group of agricultural and perishable goods contains 2 respondents.
- Shippers' requirements for vehicle usage are varied depending on their business industry which imply the characteristics of goods to transport and the context

of the final destination. Firstly, the group of construction materials and machinery needs big trucks (over than 6-wheel type) with a special equipment such as a mounted crane, a dumper tray, a tray with bridge tail, and the special trucks such as low bed truck, flatbed truck. They also require a skill driver who has experience in controlling the special equipment attached on the truck in order to safely move a heavy product. Some shippers' customers also require a certificate for controlling machinery from drivers. For example, S3 searches for a 6-wheel low bed truck with a slide-on bridge to transport forklift cars.

Secondly, the consumer goods industry needs general trucks with a compact size of 4 to 6-wheel for city transportation and a bigger size with extra capacity for across the province. It also has specific requirements for one or a couple labours per a truck to help lift or move the goods to customers. Shippers in this industry are concerned about damage and loss of goods because there are high quantities of goods which have high value per shipment. They require a smart driver who has skills in coordinations and documented details in order to contact a variety of distributors which have different disciplines. For example, S5 is a shipper who wants to transport commodities in Bangkok so he requires a 4-wheels truck because it is speedy and compact to travel fast in the city. Moreover, it is not limited to the truck-time entry regulation in Bangkok.

Thirdly, the group of agricultural products and perishable goods demands a truck that can carry large volumes. Since the product's weight is lighter than the volume so the shipper prefers a truck with a high fence to arrange the product vertically and protect them from falling out. For example, S6 is a shipper who wants to transport his agricultural products from his farm in Chiang Mai to Talad Thai (the whole-sale fresh market) so he prefers a 6-wheels truck with extra high fence to maximize capacity and minimize the transportation cost at the same time because agricultural products are perishable and low value. Sometimes shippers require a dumper truck to carry bulky and it's convenient to unload at the destination. For perishable goods, shippers require a truck with chilled cargo to carry them.

- The surveyed shippers budget for the regular trip is double higher than the empty backhaul trip because it is charged for a round-trip price by carrier. The most frequency of the regular price and the backhaul trip for each truck category can be seen in the following list.

1. The regular FTL trip's budget

- Pick-up is 10-11 baht/kilometre.
- 6-wheels truck is 24-25 baht/kilometre
- 10-wheel truck is 26-27 and 30-31baht/kilometre.

2. The backhaul FTL trip's budget

- Pick-up is 4-5 baht/kilometre.
- 6-wheels truck is 14-15 baht/kilometre.
- 10-wheel truck is 20-21 and 22-23 baht/kilometre.

- Most shippers are willing to top-up 10-12% of their budget to get a carrier.

Table 4.3 The surveyed truck transport budget of shippers by truck category.

		Shipper (No. of Responses)													
Baht/km.		**4-5**	**6-7**	**8-9**	**10-11**	**12-13**	**14-15**	**16-17**	**18-19**	**20-21**	**22-23**	**24-25**	**26-27**	**28-29**	**30-31**
Regular FTL Trip	Pick-up	-	1	1	2	1	1	-	-	-	-	-	-	-	-
	6 Wheels	-	-	-	-	-	-	-	-	1	-	2	-	-	-
	10 Wheels	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Backhaul Trip	Pick-up	4	2	-	-	-	-	-	-	-	-	-	-	-	-
	6 Wheels	-	-	-	-	-	2	1	-	-	-	-	-	-	-
	10 Wheels	-	-	-	-	-	-	-	-	1	1	-	-	-	-

Remark: one shipper can provide one budget for each category. But they can provide the answer in more than one category since they have demand for different vehicles. However, there are some respondents who cannot provide the exact number in terms of baht/km, so the answers are calculated based on data of the total price for a trip.

Table 4.4 Shipper's willingness to Top Up Budget by percentage

Shipper's Top Up Budget %					
Top Up %	**1%-3%**	**4%-6%**	**7%-9%**	**10%-12%**	**13%-15%**
No. of responses	1	2	1	6	1

4.1.2 Demographics of carriers

Table 4.5 Age of carriers

Age of carriers.	Millennials			Generation X			Baby Boomer
	25-30 Yrs.	31-35 Yrs.	36-40 Yrs.	41-45 Yrs.	46-50 Yrs.	51-55 Yrs.	Over 56 Yrs.
No. of respondents	4	1	0	1	1	1	1
Total = 9 (100%)	5 (56%)			3 (33%)			1 (11%)

The demographics of carriers are described in the following details.

From table 4.5, there are 5 carriers in the age between 25-40 years old, 3 carriers in the age between 41-55 years old and 1 carrier in the group of age over 56 years old. It can be implied that the majority of carriers (56%) are GenY or Millennials entrepreneurs which is similar to the shippers (Fry, 2020). The second majority is GenX carrier (33%).

Four of nine carriers have registered their transportation business as the juristic persons. In the meanwhile, another five carriers process their transportation business as ordinary persons.

- There are three categories of surveyed carriers classified by the vehicle category. First of all, the group of trucks with special equipment contains five respondents. Secondly, the group of truck cargo contains three respondents. Finally, the group of pick-up trucks has one respondent.

- However, there are two carriers who provide transportation services by using both small trucks (pick-up trucks) and big trucks (6-10 wheels trucks). Only one carrier is a single 4-wheels truck carrier. The rest of the respondents possess and provide the service with 6-wheels trucks. It could be said that 6-wheels trucks are the most popular vehicles for truckers.

- Price of the carrier's regular trip is higher than the empty backhaul trip because it is charged for a back-haul fuel cost and wage cost of the carriers. The difference between the regular trip and the empty backhaul trip is varied to the difference of truck type. For a pick-up, the price for a regular trip is about 33% higher than a backhaul trip.

For a 6-wheel truck, the price for a regular trip is about 50% higher than a backhaul trip. For a 10-wheel truck, the price for a regular trip is about 15% higher than a backhaul trip. The most frequency of the regular price and the backhaul trip for each truck category can be seen in the following list.

1. The regular FTL trip's budget
   - Pick-up is 6-7 baht/kilometre.
   - 6-wheels truck is 24-25 baht/kilometre
   - 10-wheel truck is 28-29 and 30-31baht/kilometre.
2. The backhaul FTL trip's budget
   - Pick-up is 4-5 baht/kilometre.
   - 6-wheels truck is 14-15 and 16-17 baht/kilometre.
   - 10-wheel truck is 20-21 baht/kilometre.

- Most carriers can accept the deducted commission for 10-12%

Table 4.6 The surveyed truck transport budget of carriers by truck category.

		Carrier (No. of Responses)														
Bath/km.		**4-5**	**6-7**	**8-9**	**10-11**	**12-13**	**14-15**	**16-17**	**18-19**	**20-21**	**22-23**	**24-25**	**26-27**	**28-29**	**30-31**	**Over 32**
Regular FTL Trip	Pick-up	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-
	6 Wheels	-	-	-	-	-	-	-	-	1	1	2	-	-	-	1
	10 Wheels	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-
Backhaul Trip	Pick-up	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6 Wheels	-	-	-	-	-	2	2	-	-	-	-	-	-	-	-
	10 Wheels	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-

Remark: one carrier can provide one budget for each category. They can provide answers in more than one category since they supply the service for different vehicles. However, there are some respondents who cannot provide the exact number in terms of baht/km, so the answers are calculated based on data of the total price for a trip.

Table 4.7 Carrier Commission Acceptance

Carrier Commission Acceptance					
Price Range (%) / Truck Type	**1%-3%**	**4%-6%**	**7%-9%**	**10%-12%**	**13%-15%**
Pick up	-	2	-	1	-
6 Wheels	-	-	3	5	1
10 Wheels	-	-	-	2	-

Remark: one carrier can provide one budget for each category. They can provide answers in more than one category since they supply for different vehicles. However, there are some respondents who cannot provide the exact number in terms of baht/km, so the answers are calculated based on data of the total price for a trip.

4.2. Behaviors of shippers

4.2.1 Creating requirement

When shippers determine to outsource a freight transportation, they set a requirement specify on the small details of what goods to be shipped such as dimension, weight and their photos, the demanded vehicle type, the origin and destination for load and unload goods, schedule for the pick-up and as well as the desired arrival date, required extra services such as collecting cash on delivery, returning documents, or able to coordinate with the receivers, the budget and payment term for each shipment. Then, shippers sort out the prospect carriers by follow on the list and give priority to the prospect carriers who meet all the requirements.

Table 4.8 The must-have lists for the requirement of freight trucking.

Must have lists for booking truck transportation.
1. Details of items to be shipped.
2. Vehicle type to use.
3. Pick-up & arrival date and location.
4. Required extra services.
5. Budget & Payment term.

Remark: The information in the table does not specify the priority of each lists, because the data is aggregated from respondent's answers "How to select the most suitable carrier", which each lists is not meant to be measured in priority.

4.2.2 Criterion for selecting a carrier

When the prospects carriers meet the entire requirement, shippers have three criterions to select the most suitable carrier. Firstly, the carrier has a positive transportation mind; high awareness of maintaining the good condition of shipment. Therefore, shippers prefer the truck carrier who has the carrier's liability insurance. In case carriers do not have insurance, shippers consider the carrier who has the safety equipment for goods. Secondly, the carrier is polite and not demanding. Shippers consider carriers are demanding when they ask for more shipping price after deal acceptance. For example, a shipper posts the advertisement; detailing the requirements with photo and dimensions of goods to be shipped into the Line group. Then, a carrier who sees the advertisement calls the shipper for more information, negotiates the price and closes the deal. After that he arrives at the pick-up location and considers the actual goods are bigger or more difficult to carry than he expected, then he starts to re-negotiation for a higher price. Otherwise, the demanding carrier asks for more tips when he finishes the delivery. In case of juristic-person shippers, they define a demanding carrier as a trucker who has low cooperation for the disciplined payment process that requires a money receiver's identification document and allows the shipper to subtract some amount of money for withholding tax. Finally, the carrier bids the lowest price among other carriers.

Table 4.9 Criterion for comparing the most suitable carrier

3 Criterions for comparing the most suitable carrier.	**Indicators for each criterion.**
1. Positive transportation mindset; high awareness of maintaining good conditions of the shipment.	- Carrier's liability insurance. - Safety equipment.
2. Polite and not demanding.	- No negotiation after closed deal. - Willing to cooperate in the payment process of juristic-person shipper.
3. Lowest price.	

Remark: The information in the table is specified as the priority of each list. Data is aggregated from respondent's extended answers "How to select the most suitable carrier", which each list is meant to be measured in priority.

4.2.3 Channels for Booking a Full-Truck Load (FTL) Delivery

For channels and context to acquire a truck carrier, the surveyed shippers have revealed these data from the answers to the questions "Could you tell me which channels you select to find a truck carrier and why?" The aggregated answers are shown in the following paragraphs.

- Familiar carrier

In case of transportation on the regular route such as picking up products from a regular supplier, shippers have first priority to consider calling their familiar carriers whom regularly hired to transport their shipment because they have good records, well-knowledge in route as well as the process to coordinate with the final receiver. Familiar carriers are also trustable and reliable to assign a sensitive extra service such as collecting the cash from the receiver. The requesting shipping price on the regular route is not only under the budget but also slightly lower than the market price. Moreover, familiar carriers allow late payment or credit terms for shippers, usually 7, 15 and 30 days. However, a shipper switches to a new carrier when the familiar carriers do not have any specific vehicle type demanded or the requested transportation price after negotiation is still over the shipper's budget. The shipping price is normally high when the transportation is in the long route such as a shipment transported cross over the

country, thus the carrier needs to request the high price to compensate for the cost of empty-backhaul fuel during the back trip.

- Acquaintance

At the first time that shippers had no experience in booking a carrier, they prioritized asking a carrier contact from their acquaintances that used to hiring a truck such as familiar carriers, family members, entrepreneur-friends, and suppliers. They believe that the referred carrier is trustable to not steal goods. Shippers also concur that there is no price gouging among the referred carriers. When a shipper has a good experience with a referred carrier, then they save each other's contact and become a list of familiar carriers. The shippers also use this method when they search for a special vehicle such as a lorry with a mounted crane, a lorry with a dumper tray, a fridge cargo truck, etc.

- Online trucker's community

Shippers select this channel when they need to find a new carrier. The most often mentioned community is Line group/Line open chat. This channel can be seen as both of a public and a private group in the Line application which is a popular chatting platform. When shippers want to book a truck, they post the advertisement on the Line group and wait for available carriers to call for negotiation and close the deal. Shippers prefer this channel over searching carriers on the search engine because it helps them get a backhaul carrier with nearly 50% discount of the normal price.

Usually, the shippers get a booking from the Line group. In case there is no carrier accepting the deal, shippers are willing to increase their budget up to 20% to close the booking. They prioritize to renegotiate the top up budget with the familiar as well as the referred carriers over the strange ones. For shippers who own trucks, they consider the option to transport goods by themselves because the cost is lower than purchasing the service from other transportation companies.

4.3 Behaviors of Carriers

4.3.1 Criterion for Selecting a Shipment Order

Based on the interview answers, carries consider whether to accept a shipment order when it meets all of their criterions. Firstly, they can supply the shippers' requirements. This means that their vehicles can carry as well as unload shipper's goods on a specific schedule. They can come to pick up goods and transport to the required place under the required budget. Secondly, carriers prefer the shipment order that they can spend the least time to complete the delivery. The least time spent is the more opportunity they can find more orders. For example, C5 concerns on the bad traffic and the time limitation to drive a big truck in Bangkok because it is difficult to let her truck drivers make various trips. Finally, transporting a shipment has to provide no harm for the carrier's or driver's safety and security. For example, the route is safe enough for a driver to not get robbed, the carried weight of goods is not overweight to cause the accident or get fined by a traffic police. However, carriers need to meet the shipper's requirement at the first priority and they negotiate for a higher budget to compensate for the cases of second and third criterions.

Table 4.10 Criterions for Selecting a Shipment Order

3 Criterions for Selecting a Shipment order.
1. Meet shipper's requirements.
2. Less time spending for completing a delivery.
3. No harm for a carrier's safety and security.

Remark: The information in the table is specified as the priority of each list. Data is aggregated from respondent's extended answers "How to select a shipment order?", which each list is meant to be measured in priority.

4.3.2 Channel for obtaining a shipment order

For channels and context to obtain a shipment order, the surveyed carriers have revealed these data from the answers to the questions "Could you tell me how do you find a trucking order?" The aggregated answers are shown in the following paragraphs.

- Acquaintances

Most of the surveyed carriers begin their career by getting an order from acquaintances such as friends and family members who are truck carriers. For example, C9 mentioned that he received his first order when his friend asked him to join an occasional team to transport machinery for a factory. When they get the first order, they will save the shipper's contact. If shippers are satisfied with the service provided by the carrier, then they become a regular shipper who prefers hiring the carrier. Moreover, a carrier also gets a referral from their existing shippers. In other words, there will be word of mouth in the customer group, resulting in a continuous order. The process of gaining orders is in the circular acquaintance network. The cons of this channel is that carriers are required to provide a credit term for shippers, from 15-30 days. C9 also revealed a case that he didn't get paid because his friend collected the whole payment from a shipper and didn't transfer his share to him.

- Online truckers community

Apart from the acquaintance network, a carrier joins the online community of truckers such as Line group to obtain new customers. However, most of them agree that the orders acquired form Line group have very low price and less margin because it is the marketplace for backhaul orders. Carriers search for the backhaul order in order to utilize their empty-truck to get more income which is normally, cash and get paid right after the delivery is done.

Nevertheless there is a case of C3 who is a new carrier who wants to utilize their idle truck to generate income. He owns a 10-wheels truck with a mounted crane as a vehicle for transferring his products between company branches twice a month. He wants to utilize the truck usage during the backhaul trip as well as the time it is idle. Then, he joins the Line group of truckers in order to find a backhaul order but he cannot get one. He's also got a referral order from his brother but the end-customer hasn't made a deal. He revealed that he had experience for some trucking platforms as a shipper. However, he never has any experience in a platform as a carrier and he is likely to try it out.

- 3PL's partner

Carriers who are partnered with the third-party logistic providers (3PL) such as a transportation company, a logistic company, and a distributor center. This

carrier group has regular orders from the 3PL but they need to provide a long period of credit term from 30-60 days. The frequency to obtain orders from 3PL is varied to the business type of 3PL. For example, C5 is partnered with a consumer goods distributor company and she is contracted to transport goods five days a week during the regular hours. C10 is partnered with a local transportation company which is owned by his relatives. This transportation company does marketing activities to gain customers and distributes the shipment orders to their partners in que. When the company has no awaiting order, C10 has to waste his time to stand by for an incoming order from the transportation company because he has consideration for his relatives if he denies their orders. In addition, he is afraid of being left behind when the order is in his turn. According to the long period credit term, this group of carriers has a need to gain more cash-shipment orders, apart from the passive orders of 3PLs, in order to balance their cash flow by accessing new customers, such as a shipment order during the backhaul trip and during their free time.

- Own Channels

Some carriers such as C1 and C4 have their own websites to promote the business to new customers. Even though it is an active channel to access new customers, it takes time to generate awareness from the SEO advertisement. In addition, this channel cannot provide the instant demand of shippers, unlike the online community or the online marketplace for truck transportation.

In summary, both new carriers and carriers who have regular orders, still have needs for the new customers and backhaul orders in order to gain more cash and utilize their vehicles to reduce the fixed cost of interest and to reduce the variable cost of fuel per trip.

4.4 Awareness, Experience and Desire for the e-trucking platforms

This part presents the perception of shippers and carries towards the e-trucking marketplace platforms through the exploration of their awareness, experiences, and desire on the existing platforms. The result also includes the analysis of the strengths and weaknesses of the existing platforms which data will be used to design the value proposition for a new platform.

4.4.1 Shipper's awareness, experience and desire on e-trucking marketplace platform

Table 4.11 Shipper's Awareness and Experience on E-Trucking Marketplace Platform

Shipper (No. of responses)		Awareness in e-trucking marketplace platform.				Experience in e-trucking marketplace platform.			
		Percentage		No. of responses		Percentage		No. of responses	
		Yes	No	Yes	No	Yes	No	Yes	No
Juristic person	5	27%	18%	3	2	18%	27%	2	3
Ordinary person	6	18%	37%	2	4	18%	37%	2	4
Total	**11**	**45%**	**55%**	**5**	**6**	**36%**	**64%**	**4**	**7**
*Personal Use	2			1	1			1	1

Remark: 1) Data is aggregated from respondent's answers "Have you ever heard of any hauling marketplace platform such as Deliveree, Giztix?, Which one do you use the most and how often do you use it?". 2) There are two respondents who hire a truck for their personal use. The data from them is not counted for the percentage but the research collects their narrative experiences for the analysis.

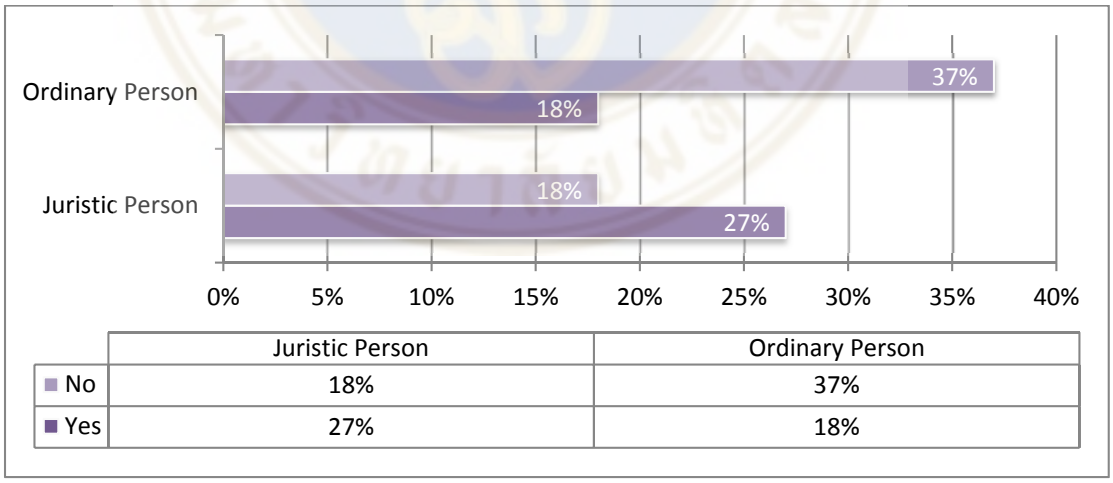


Figure 4.1 Shipper's awareness in e-trucking marketplace platform

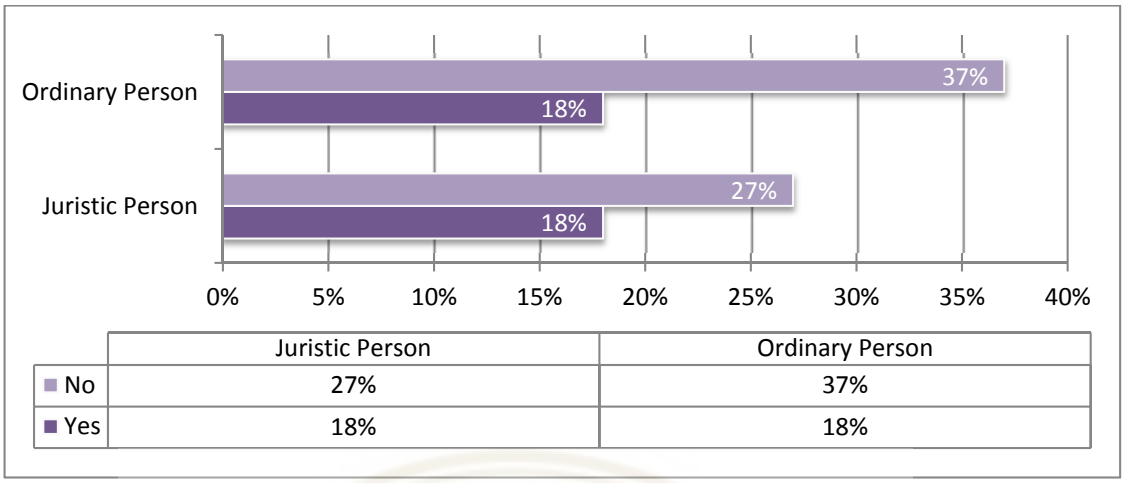


Figure 4.2 Shipper's experience in e-trucking marketplace platform

4.4.1.1 Shippers' awareness of the platform

There are five respondents out of eleven or 45% of shippers are aware of the e-trucking marketplace platform such as Giztix, Deliveree, 360Truck, Pantruck, and Lalamove. Four out of five shippers (80%) who are aware of the platform also have experiences in using it. However, only three of them accomplished booking on the platform.

4.4.1.2 Shippers' experiences in the platform

There are three shippers who completed booking on the platform. Two shippers use platforms to find trucks for their business while another shipper use it for his personal transportation. The successful platforms are 360Truck, Lalamove and Deliveree which these platforms can meet all the shipper's requirements. For example, S2 revealed that the 360Truck provided a 6-wheels truck under his budget but he did not receive the convenience from using the platform. He filled out his requirement on the website, the system was supposed to match his booking but there were human staff call him to ask for more shipment details and a lot of calls to negotiate price and update the vehicles available. In case of Lalamove and Deliveree, their users used them for booking a pick-up truck. They find the platforms are user friendly and convenient to use on a smartphone. The platform allowed them to see the net price before making a final decision to confirm orders. They got automatically a truck booking for them after they finished filling the requirement. Platforms also notified shipment activities since booking process, during transportation and until the delivery completion. S5 revealed

that he used Deliveree for his personal shipment and showed an email containing receipt and order history from the platform. He added information that the drivers also transported their shipment on-time and had carefulness to their stuff. Even though, the platforms provide money transferring as a payment channel, shippers found that the platforms do not connect the payment system to the internet banking. They had to use their own internet banking applications to transfer the transportation fee to the truck drivers.

There are two shippers who have failed to find booking on the platform. Both of them are construction materials and machinery shippers. They have awareness and trial on Giztix, 360Truck, Pantruck, and Deliveree. The reason that they cannot complete booking because platforms cannot supply all of their requirements such as lack of vehicles or special equipment required, lack of route provided and over transportation budget. For example, S1 mentioned that he used to observe price on Giztix but it was higher than his familiar carrier's price and it did not provide a 6-wheels low bed truck with a slide-on bridge which was suitable for moving a forklift car and other machinery with wheels.

4.4.1.3 Shipper's desire for the e-trucking marketplace platform.

After clarifying the concept of the e-trucking marketplace platform, six out of eleven or 54.55% of the total shippers want to try and continue using any platforms that meet all of their requirements, particular reason is that the price is not over budget and higher than the regular channel they use. They expect that a platform will be a tool to make their life easier when they manage transportation activities. Firstly, it will decrease their time to search for a reliable carrier. Secondly, it stops the annoying repeated calls for tracking delivery status. Finally, the juristic-person shippers added that there will be the transaction records on the platform which can be printed out when the accounting departments require the expense documents.

Among five shippers who are not interested in using the platform provide two significant reasons. Firstly, the platforms provide negative experiences that it cannot meet their requirements; no desired vehicle type, high price, and inconvenience to use. Secondly, the rest of undesired shippers are satisfied with the regular channels they use for hiring a truck carrier so they do not need to switch for the alternatives. For example, S5 is a manager of medical equipment and his company has a monopoly carrier

because of its high standards in service and flexibility to adapt with the company requirement.

Table 4.12 Shipper's desire for the e-trucking marketplace platform

Shipper (No. of responses)		Desire for the e-trucking marketplace platform. (No. of respondents)	
		Yes	No
Juristic person	5	4	1
Ordinary person	6	2	4
Total	11	6	5
*Personal Use	2	1	1

Remark: Data is aggregated from respondent's answer "In case you notice them but never use them, why don't you try it?" and the extended answer on whether the e-trucking marketplace platform is interesting to use after the research explains its concept.

4.4.2 Carriers' Awareness and Experience on E-Trucking Marketplace Platform

Table 4.13 Carrier's awareness and experience in e-trucking marketplace platforms

Carriers (No. of responses)		Awareness in e-trucking marketplace platform.				Experience in e-trucking marketplace platform.			
		Percentage		No. of responses		Percentage		No. of responses	
		Yes	No	Yes	No	Yes	No	Yes	No
Juristic person	4	44%	0%	4	0	12%	32%	1	3
Ordinary person	5	12%	44%	1	4	12%	44%	1	4
Total	9	56%	44%	5	4	24%	76%	2	7

Remark: Data is aggregated from respondent's answers "Have you ever heard of any hauling marketplace platform such as Deliveree, Giztix?, Which one do you use the most and how often do you use it?".

4.4.2.1 Carriers' awareness of the platform

Five of nine of carriers (56%) are aware of the e-trucking marketplace platform such as Giztix, Deliveree, 360Truck, Pantruck and 11lor. Two out of five carriers who are aware of platforms also have experiences in using them. All of the juristic carriers are aware of trucking platforms whereas there is only one carrier out of five ordinary carriers have awareness on platform. By these data, it can be implied that most of ordinary carriers have lack awareness of e-trucking marketplace platform.

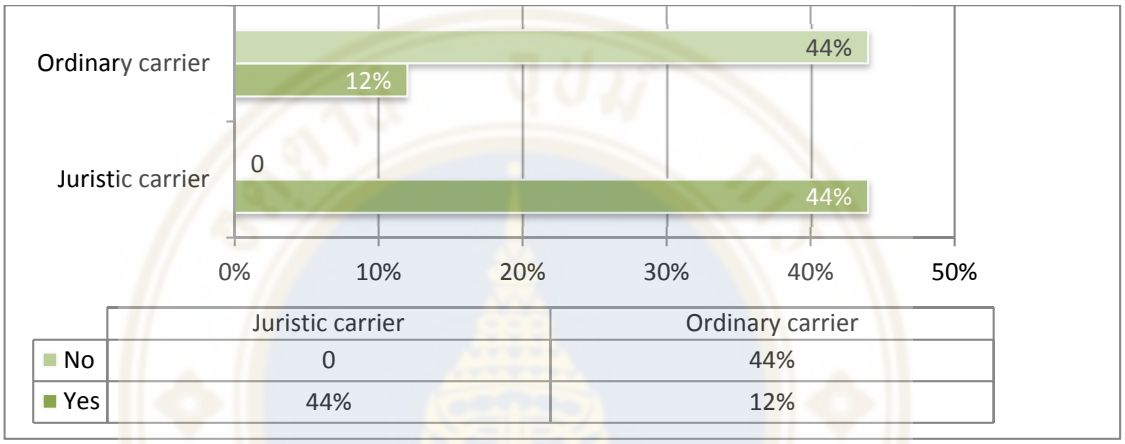


Figure 4.3 Awareness in e-trucking marketplace platform

4.4.2.2 Carriers' experiences in the platform

There are two shippers who get shipment orders from the platform. One of them is a juristic-person carrier and another one is an ordinary carrier. The experienced carriers have revealed the pros and cons of the platform they become members of. C1 is the owner of a transportation company. He explains two advantages of the platform. Firstly, it is a new channel to gain new customers and secondly, orders are automatically generated. However, disadvantage is that his company needs to provide the long credit term to the platform while the platform receives money from the shipper right after the finished shipment. Another experienced carrier is C2. He reveals the shipping price determined by the platform is average to the market price. He has profit from the acquired order. However, he prefers to use the Line group as a channel to find new customers because the platform classifies his vehicle into the normal-size truck. His truck is oversize and can carry more capacity than the general 6-wheel truck.

Therefore, the platform's order has a steady price and is unable to negotiate, unlike the Line group where he can directly bargain with the shipper.

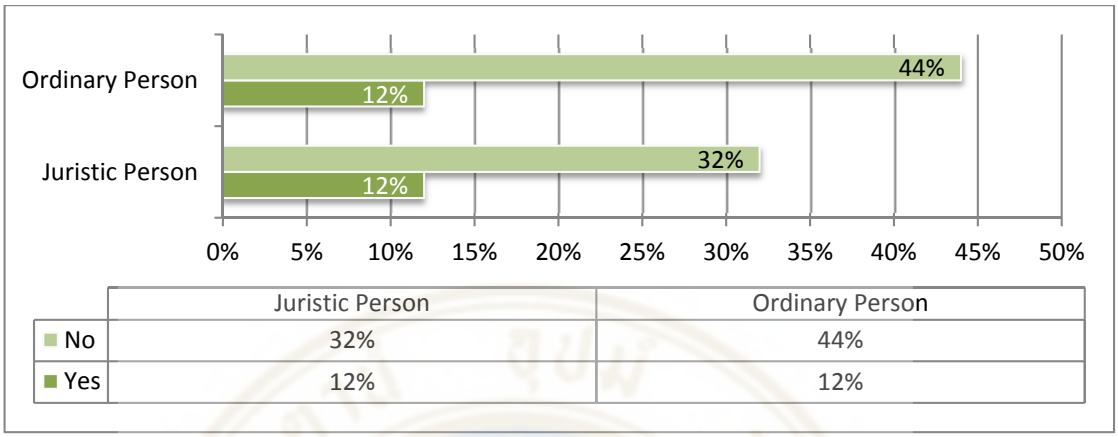


Figure 4.4 Carrier's experience in e-trucking marketplace platform

4.4.2.3 Carrier's desire for the e-trucking marketplace platform.

After clarifying the concept of the e-trucking marketplace platform, four out of nine or 44.44% of carriers want to try it. From the group of desired carries, three of them or 75% of total respondents are millennials and another one is a GenX carrier. They provide some positive reasons. Firstly, C5 mentioned that the platform would help her find shipments from new customers. Secondly, C7 mentioned that the platform would stop the annoying calling for tracking delivery status. Finally, C8 added that the platform would autonomously find a shipment order and notify her when she got an order.

Among five carriers who are not interested in using the platform provide three significant reasons. First, they cannot meet shipper's requirement within the platforms such as unmatched route, time and vehicles required. Second, they receive negative experience while using platforms. For example, C1 mentions that to register a carrier, a platform requires too deep information about carrier's business particular the cost structure so he concerns that his trade secret will be leak. In addition, this platform requires a long credit term up to 45 days from their carriers. C2 mentions that a platform is lack of variety of the vehicle categories so it generalizes an extra-capacity truck to be the same as the regular one. So the price is too low for a special truck. Finally, carries are satisfied with the regular channels they use so they do not need to switch for the

alternatives. For example, C9 mentioned that receiving orders from the existing customer and his trucker's network provide enough income for him to not find any new customers. C4 mentioned that he didn't think the platform fit his business because his business was specialized in moving and installation of heavy and high valued machinery. His company received jobs from auctions and direct contact from customers.

Table 4.14 Carrier's desire for the e-trucking marketplace platform

Carrier (No. of responses)		**Desire for the e-trucking marketplace platform. (No. of respondents)**	
		Yes	**No**
Juristic person	4	2	2
Ordinary person	5	2	3
Total	9	4	5

Remark: Data is aggregated from respondent's answer "In case you notice them but never use once, why don't you try it?" and the extended answer on whether the e-trucking marketplace platform is interesting to use after the research explains its concept.

Table 4.15 Age of carriers who desire to try an e-trucking marketplace platform

Age of carriers who desire to try an e-trucking marketplace platform.	**Millennials**			**Generation X**			**Baby Boomer**
	25-30 Yrs.	**31-35 Yrs.**	**36-40 Yrs.**	**41-45 Yrs.**	**46-50 Yrs.**	**51-55 Yrs.**	**Over 56 Yrs.**
No. of responses.	2	1	0	0	0	1	0
Total = 9 (100%)	3 (33%)			1 (11%)			0 (0%)

4.4.3 Analysis of the existing e-trucking marketplace platforms

This part categorizes all mentioned platforms into two groups which are the on-demand platforms and the marketplace platforms. The characteristics of these two groups as well as straights and weaknesses of each platform are described in the follow paragraphs.

Firstly, the on-demand platform is a platform that aims to fulfill a shipper's demand instantly as well as to decrease human's duties such as negotiation, making decisions and tracking process. Therefore, this type of platform works like a 3PL or a

broker. It has a set price of transportation and provides the autonomous system to manage the transportation activities from booking to updating delivery status to collecting payment and to provide receipts as well as records of each delivery. Thus, the offered value of the on-demand platform is making user's life easier. The example of the on-demand platforms are Lalamove, Deliveree, Giztix, and 360Truck. However, there are some limitations. First of all the transportation price is high because pricing is set for the regular FTL trip for covering the cost of empty back-haul and the operation cost of the platform since it has high investment in the system technology. Second, the choices of provided vehicles are selected by the platform which causes the small numbers of provided vehicle choices for shippers and carriers. In general, most platforms determine a set of vehicle choices depend on their popular demand such as a pick-up and a general cargo truck that fit for consumer goods or home moving. Therefore, this platform is not fulfilling the needs of some markets such as car, or heavy machine transportation or temperature goods transportation.

Table 4.16 Examples of The On-demand Platforms

Name of Platforms	Straights	Weaknesses	Same services/ operations
Lalamove	- Well-known brand in Thailand. - Wide range of provided vehicles choices such as messenger, hatchback car, pick-up with dry container and high fence cargo tray.	- Don't focus on truck transportation market. - Lack of truck choices and its special equipment.	- Get instant booking for shipper and order for carrier. - Autonomous system for manage the transportation activities (booking, payment, tracking, transaction records). - Mobile friendly interface: accessible via website and mobile application). - Easy to use: simply follow the booking steps by clicking. - Notifications for all transportation activities
Deliveree	- Wide range of vehicles choices such as messenger, car, van, pick-up, 6-wheels truck. - Provide a truck with temperature container. - Distance-based pricing: price is low, shipper isn't charged for an empty backhaul).	- Out of service in some areas. - Require carrier to solely attach its logo on their vehicle. - Lack of truck choices and its special equipment.	

Table 4.16 Examples of The On-demand Platforms (cont.)

Name of Platforms	Straights	Weaknesses	Same services/ operations
Giztix	- Focus on truck market : It provides a wide range of truck vehicles choices such as pick-up, 6wheels truck, 10 wheel trucks and a hauling truck. - Provide special size trucks and extra equipment. - Accept credit cards. - Accessible via Line application. - Provide both of domestic and import-export transportation.	- High price - Lack of special vehicles choices, particularly for the temperature goods (e.g. a truck with chilled container) and car transportation (e.g. a flatbed truck with slide-on bridge) - Required long credit term from carriers.	- GPS tracking. - Variety of payment channels. - Place for checking price. - Provide extra services such as COD, labors for moving goods. - Platform gain revenue by subtract the commission fee from carriers. Areas to improve: - Able to select only one option for the required vehicle. - Payment system is not linked to the internet banking so shippers need to use their banking application to transfer money. - No electronic receipt and withholding tax for the juristic shippers. They need to wait for collecting documents from post mailing.
360Truck	- Focus on truck market - Wide range of truck vehicles choices from a pick-up, to 6wheels-10wheel trucks, a truck with trailer, flatbed trucks and a hauling truck. - Provide trucks with extra equipment. - Shipper is able to suggest required price (able to require a back truck). - Accessible via Line application.	- Instant price is high. - Take 12-24 waiting hours for matching a backhaul truck with the required price. - For managing the backhaul requirement, this platform uses human for the process of vehicle specification and price negotiation.	

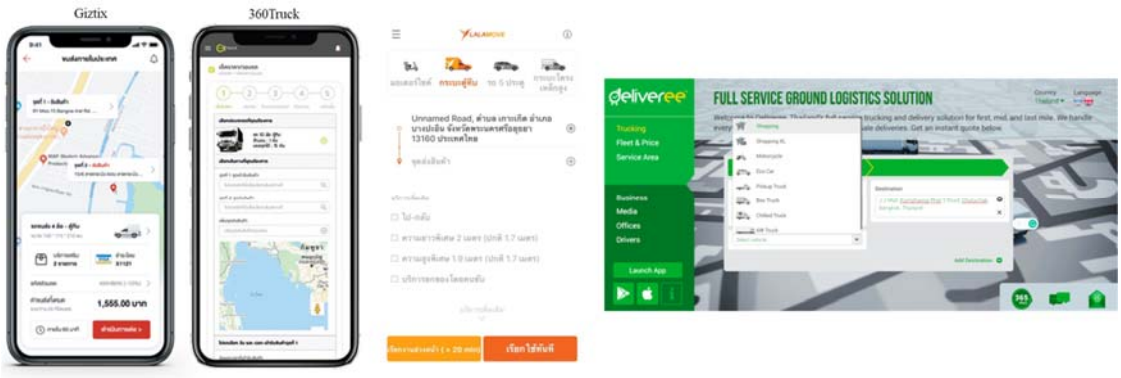


Figure 4.5 Examples of The On-demand Platforms

Secondly, the marketplace platform is an online place where shippers can access and compare multiple carriers at the same time. The examples of this platform type are Pantruck and 11Lor. This platform provides the valuable information for its users since it gathers requirements form various shippers and available carriers in one place. It facilitates shippers by providing filter function to sort out for carriers that meet their requirements. By the marketplace concept, this type of platform eliminates the limitation of vehicle choices. For shippers, they are not limited to select from the provided vehicle options. They are free to inform the vehicle types they need. Meanwhile, carriers are free to get direct contract to shippers and offer their capability of their vehicle and negotiate for a higher price. With the advantage of free style requirements, this platform provides the opportunity to access the empty backhaul carriers who are willing to accept low transportation price. In addition, both Pantruck and 11Lor apply the Line application as a channel for shippers and users to access and use their platforms since Line is a popular and well-known chat application for Thai people. It can be implied that these marketplace platforms have ease of accessibility and usage. Despite of pros, this platform type has remained a con which is it does not make their user life easier from using the platform. Since the platform is only the place for display demands and supplies for transportation but it neither matches them nor facilitates the transportation activities management to their users. Shippers and carriers need to take duties for closing deal, negotiation, tracking delivery, collecting payment as well as documents, by themselves.

Table 4.17 Examples of The Marketplace Platforms

Pantruck and 11Lor	
Services/ operations	- Accessible via Line chat application. - No complicated process for member registration; inform names, workplace, email, set password for login and verify account by uploading ID card photo. - Simply form and a few steps for shippers to fill out their requirements. - Shippers are able to determine price. - Filter tool for carrier to sort out for orders by their selected routes. - Able to have the direct negotiation between shippers and carriers.
Straights	- Focus on bulk-trucking market; particular the agricultural transportation. Thus, it provides deep categories for big trucks such as 6 to12-wheels trucks with low/high fence cargo, dumper trucks, a truck with trailer, flatbed trucks and a hauling truck with containers. - Backhaul and low price transportation marketplace. - Shippers can require multiple vehicle types at the same time. - Shippers and carriers can use the platform for free.
Weaknesses	- No guarantee to get a truck/shipment order. - Shippers need to consider the suitable carrier, tracking delivery status, and record transportation history by themselves. - Carriers need to take responsibility for collecting payment. - No electronic receipt and withholding tax for the juristic shippers. They need to wait for collecting documents from post mailing. - The 11Lor platform is not working. : For carrier, they can access the platform via Line chat but it does not perform any thing. : For shippers, they need to call its customer service to inform their requirements.

Remark: Pantruck and 11Lor have the same platform developers.

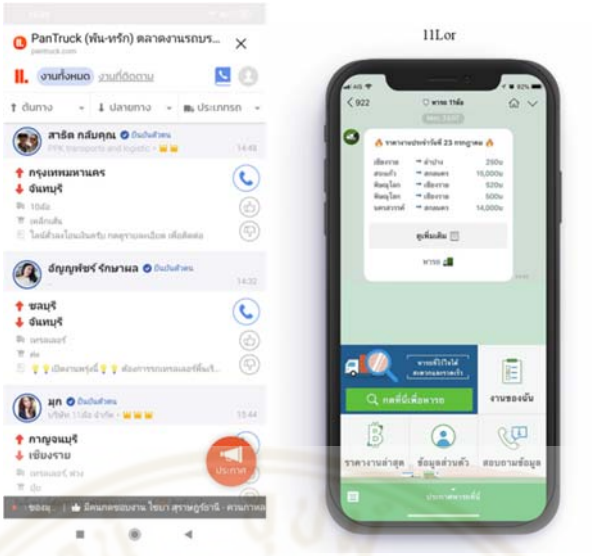


Figure 4.6 Examples of Marketplace Platforms

4.5 Shipper and Carrier Profile

Shipper and carrier profile is a canvas which contains jobs-to be done, pains, and gains; pains and gains analogous to obstacles and expectations of shippers and carriers towards the Line group as well as the existing e-trucking platforms. These are channels where shippers use for outsourcing the transportation activities to truck carriers. On the other hand, it is also the place where truck carriers acquire a shipment order. The process of truck transportation is considered following four aspects which are (1) booking and accepting a shipment order (2) tracking delivery status (3) payment for the transportation and (4) managing the extra services. Thus, the obstacles and expectations of shippers and carriers are analyzed based on the interviews of jobs, pains and gains followed these four aspects and summarized in the following topics.

4.5.1 Jobs-to-be done

Jobs-to-be done describe the activities that shippers and carriers need to get them done in order to complete the process of outsourcing the transportation task to the carrier. This mentioned process contains five aspects which are (1) searching and booking a truck carrier (2) tracking the delivery status (3) payment for the transportation (4) managing the extra services.

4.5.1.1 Booking a shipment order.

For newcomers, they need to join the Line group by going to the menu “Line open chat” on the Line application and key in some keyword such as “งานขนส่ง”. Then, a massive list of transportation groups appears for shippers to join. However, some groups are private and required access approval from admins. The optional way to join the group is receiving the invitation from an insider of the community. According to the interviews, most shippers are aware and receive the invitation from their acquaintances.

After becoming a member of the community, shippers start posting the requirements in the group and waiting for carriers to call back. Negotiation and deals begin when carriers make a call or chat to shippers. The booking is complete when a shipper has found the first calling carrier who meets all the requirements. After the booking is affirmative, shipper send the location for pick-up goods and the destination of shipment via Line application.

Likewise the shippers, the carriers follow the same step to access the Line groups and mostly receive the invitation from colleagues. After becoming a member of the community, carriers let their family members such as spouse or children keep an eye on the shipment advertisements in the groups. Carriers determine to make a call to any shipper when there is a requirement which is matched to their scope; on the same route, type of vehicles, enough budget for compensation with the fuel and labor cost, and ability to provide the required extra services.

4.5.1.2 Tracking the delivery status.

Both shippers and carriers use the phone call to keep updating the shipment status during the delivery. Some shippers who concern the security of goods will ask their carriers to send the shipment picture and the certain location to them via Line chat. When the carriers arrive at the destinations, they confirm the location by sending the photo of the carried shipment surrounding with the background of the final place to shippers. In case there is either no receiver or trouble during the delivery, carriers keep calling to inform shippers.

4.5.1.3 Payment for the transportation fee.

When the carriers finish unloading the carried goods, they affirm the complete jobs by sending the photo of the unloaded goods and their empty truck to

shippers. They also call to confirm with their shippers and ask for collecting the transportation fee. After shippers call to prove with their receivers that the shipments are done and in good condition, they transfer the money including its payment slip to the carrier. This is the shipper's way for payment confirmation.

For the juristic-person shippers, they legally need to subtract 1% of the transportation fee for the withholding tax from every transportation expense and provide the withholding tax certificate to the carriers in return. In addition, they also require a copy of the carrier's identification and receipt to accompany issuing the withholding tax certificate. These documents are crucial evidence in terms of accounting to support the company's disbursement.

4.5.1.4 Managing the extra services.

Since the carriers founded on the Line group are strangers, shippers do not trust them to carry on cash and cashier cheque. Therefore the requirement for cash-on-delivery (COD) is not applied for this channel. The most often required extra services are safety equipment to protect their freights such as rain canvas and rope, returning of documents by postal mails, and the carriers' liability insurance. These services are provided for free by carriers. Other services such as returning of goods or equipment, laborers for moving goods and product replenishment are also provided by carriers and shippers need to pay for them.

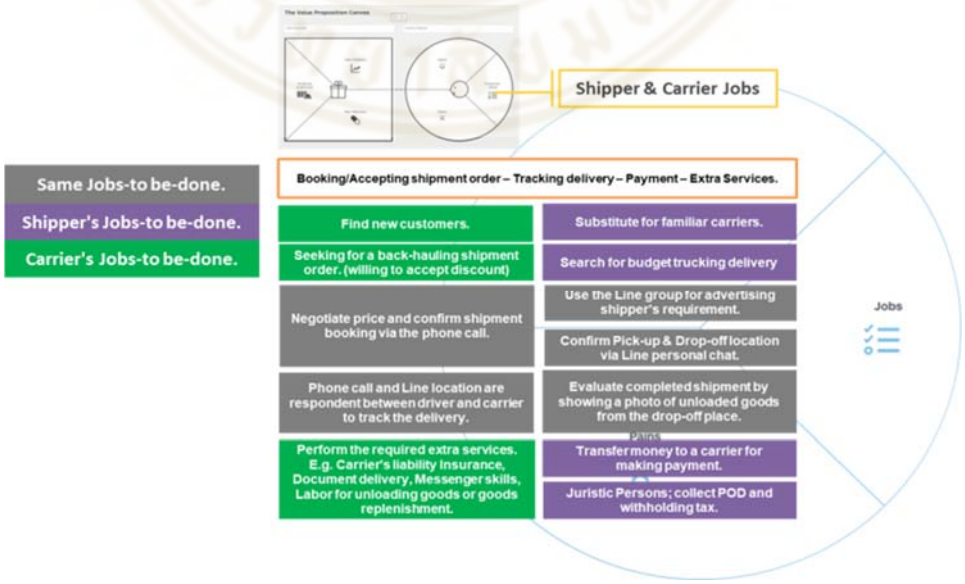
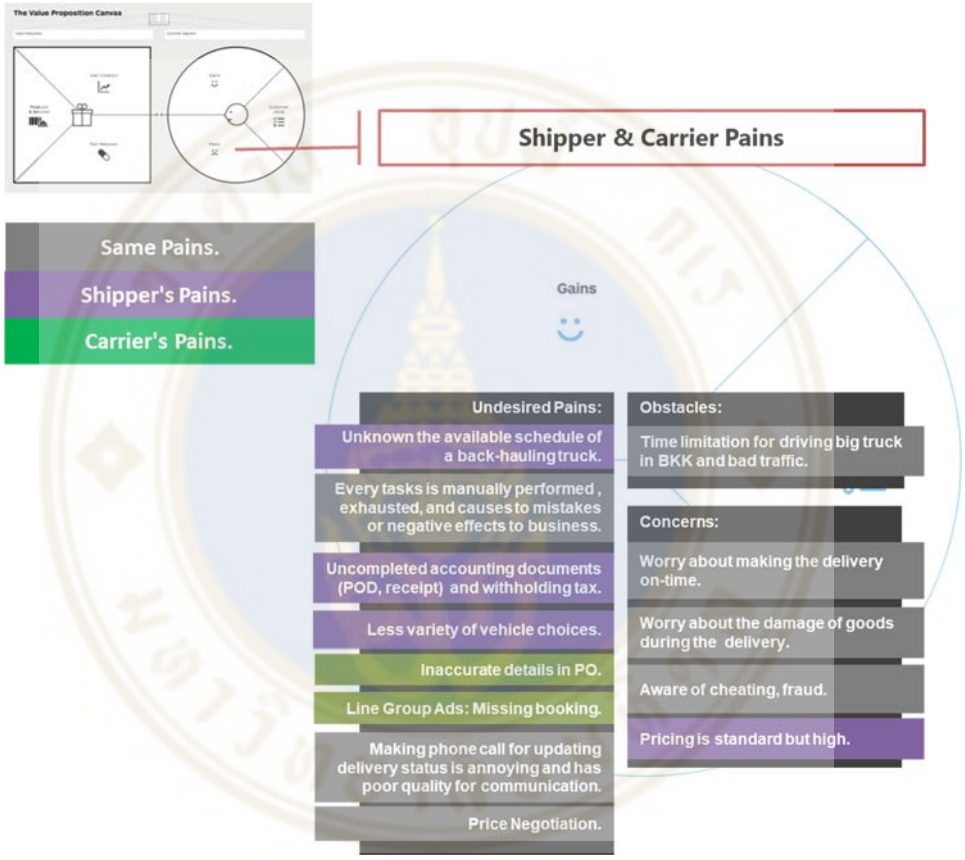


Figure 4.7 Jobs-to-be done of shippers and carriers

4.5.2 Pains

"Pains describe anything that annoys shippers and carriers before, during, and after trying to get a job done or simply prevents them from getting a job done" (Osterwalder et al., 2014). This part clarifies pains in three aspects which are the undesired characteristics, obstacles, and concerns of shippers and carriers during the process of truck transportation.



Remark 1: pains and gains are the aggregate of the answers which have been heard most frequently form the interviews. Even Though, the researcher asked them to set priority for their answers, some respondents neither could not provide the answers nor order their priority.

Remark 2: some pains and gains have come up with the experiences of the existing e-trucking platform. Despite some platforms use the Line official accounts as the touch points to access shippers and carriers, the way they deliver services and transportation management are as same as the Line group. Therefore these platforms are counted as Line group.

Figure 4.8 Pains of shippers and carriers

4.5.2.1 Undesired Characteristics

4.5.2.1.1 Shipper's pains

- Uncertainty of the available schedule of a back-hauling truck: Since the Line group is a vast community of shippers and carriers to advertise their shipment orders and the information keeps updating every minute, it is difficult to observe the available schedule of a back-hauling truck in the route, with the specified vehicle type that shippers need. This causes the unplanned schedule for product delivery of shippers which consequently delays a bill payment from the shippers' customers.

S1 mentioned that "Because I don't know when there will be a back-haul 6wheel-truck to send my product so I cannot confirm the date my customer have to pay for the rest of bill before I let the product deliver"

- Less variety of vehicle choices: Because of the nature of back-hauling trucks, it's difficult to know in advance which trucks are available. So the choices of trucks are limited under the required schedule. However, shippers fix this issue by posting the possible truck types on their requirement. Some shippers get trucks, some don't; particularly who require a truck with extra size or with a special equipment. This pain is also found on the existing marketplace platform where they limit a variety of truck categories and extra services provided.

S2 mentioned that "I need a 6wheel truck with a slide-on tray to carry a forklift to my customer because it's easy to unload the product. However, I can't find this truck in Giztix"

- Uncomplete accounting documents (POD, receipt) and withholding tax: For SME juristic-person shippers, it is difficult to get a delivery receipt from an ordinary back-haul trucker and some of them don't understand that it is legal for a company to subtract 1% of transportation fee for a withholding tax. So they don't provide the evidence for bill payment and negotiate for a not deducted fee.

4.5.2.1.2 Carrier's pains

- Inaccurate details in shipment order: This pain happens when shippers don't provide the exact information of their requirement and it causes a negative effect on the carrier. For example, C8 mentioned that "I got a catfished order. A shipper told me that she needs to transport only a sofa from bangkok to

Nongbua lamphu but when I arrived, she had lots of things to carry on and they didn't fit all to my truck within a trip. So I canceled my booking. Such a waste of time!”

- Missing to accept a requirement: It’s impossible for a carrier to keep an eye on the Line group all the time to find an order that meets their criterion.

4.5.2.1.3 Pains of both shippers and carriers

- Every task is manually performed, exhausted, and causes mistakes or negative effects to business.

S1 mentioned that “I copy my advertisement draft and post it on every Line group I join. Mostly there are a lot of calls to me asking for a job even though I deleted my advertisement on every group. It’s so annoying”.

C10 mentioned that “I used to miscalculate a distance for a customer that causes the price to be too low. This trip, I almost have zero profit”

- No category for extra capacity truck: This pain is found on an experienced e-trucking marketplace platform carrier. For some platforms, a truck with extra-long size tray or extra capacity is categorized to be in the same type of general size/capacity truck. This case causes unfair pricing for extra-size truck carriers. On the other side, it is the reason that shippers cannot find the right truck that matches their requirements.

C2 mentioned that “I stopped using the PT app because I can directly negotiate for a higher price on Line group since my truck can carry more weight.”

- Making a phone call for updating delivery status is annoying and has poor quality for communication on some occasions.
- Price negotiation is annoying and causes negative feelings to the one who loses on the bargaining.

4.5.2.2 Obstacles

4.5.2.2.1 Carrier’s pains

Delayed loading and unloading goods cause delay in picking up for the next order. This situation has a consequent potential to have a negative image; poor service and lose customers.

4.5.2.2.2 Pains of shippers and carriers

- Time limitation for driving a big truck in Bangkok and bad traffic

This causes the concern of being unable to make a delivery on-time. In addition, it makes trouble for shippers and carriers to reschedule for delivery in which it causes a lot of effects in consequence such as delayed bill payment or need to pay for the overtime fee to make delivery on-time.

4.5.2.3 Concerns

Pains of shippers and carries

- Worry about making the delivery on-time.
- Worry about the damage of goods during the delivery.
- Afraid of cheating, fraud - such as a carrier complete delivery but don’t get paid, a shipper's product is stolen by a trucker.

4.5.3 Gains

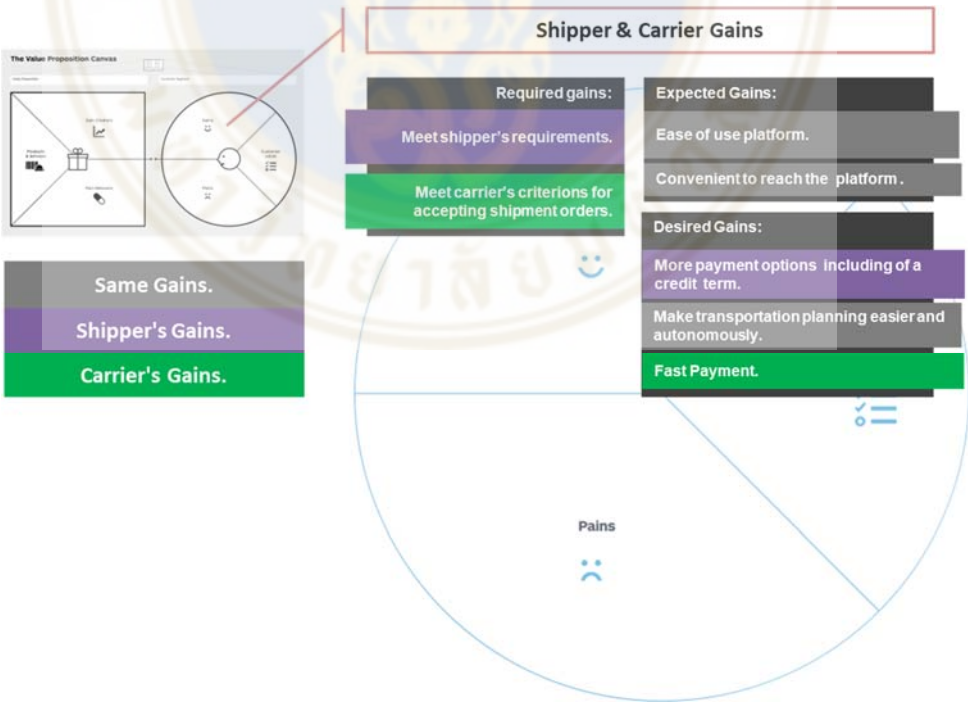


Figure 4.9 Gains for shippers and carriers

4.5.3.1 Required gains: is the most basic expectation that shippers and carriers need from the channels; they stop using the channels without them (Osterwalder et al., 2014). Thus, the shipper's required gain is that a channel needs to meet the entire of their shipment requirement. On the other hand, a carrier's required gain is to meet all of the criterions for accepting shipment order.

- Shippers: Meet the shipment requirements.
- Carriers: Meet the criterions for accepting shipment order

4.5.3.2 Expected gains: is the basic gains that we expect from the solution, even if it could work without them (Osterwalder et al., 2014).

Gains of shippers and carriers

- Ease of use platform: Shippers and carriers prefer a platform that is friendly, simple but well structured design to find the menu easily. They also require less steps to follow and for filling out the required data to complete a transaction.

S5 mentioned that "I don't like the app that is complicated to use- it has a lot of menus to select and fill out data. Just try Grab vs Food panda, you'll know what I mean."

C9 mentioned that "I'd like to try the platform but I'm afraid it will be complicated to use since I'm old and new to the technology."

- Convenient to reach the platform: From the observation and interviews, shippers and carriers prefer channels that are closed and cheap to them-they consider the channels convenient when they are able to access them on mobile phones since almost everyone has a smartphone. For example, Line is the basic application that everyone uses.

S3 mentioned that "I don't have a computer. I only use my phone for my work -to call and Line to order and manage everything.

C2 mentioned that "I like finding a shipment order in Line group, it is easy to access. I'm used to working on my smartphone. "

4.5.3.3 Desired gains: These are gains that shippers and carriers come up with from the interviews that they would love to have them.

4.5.3.3.1 Gains of shippers and carriers

- Transportation management is easier and autonomously: Shippers and carriers have the same agreement that they have a tool to

help them autonomously make decision and manage the process of transportation such as matching a requirement with the right supply, tracking delivery status, payment and verifying the completion of a delivery.

S2 mentioned that “I used to try the 360Truck platform for booking a truck. It was supposed to be autonomously matching my requirements but there was a staff member who kept calling me to quote the price for the available trucks and ping-pong calls for price negotiation until we finished the deal.”

C7 mentioned that “I think the concept of a marketplace platform is good if my customers can track my current location and notify the status of their shipment, autonomously. It will save me from their repeatedly annoying calls.”

4.5.3.3.2 Shipper’s gains

- More payment options includes credit term: For shippers, they would love to have more payment methods besides cash and money transfer, especially getting a credit term. However, they admit that it’s not usual to get a credit from hiring a new carrier since they are strangers.

S5 mentioned that “At that time I used a trucking app, I gave the truck driver cash for bill payment. However, I wanted to pay with my credit card because it’s convenient and I can get the card’s points”.

S6 mentioned that “Of course, I rank credit term as the priority wish-list for hiring a truck delivery. Payment with a credit term makes good cash flow for my business.”

S7 mentioned that “As a juristic-person company, it’s normal to make payment by cash or money transfer but it will be better if I can pay the bill with credit cards since it helps the company extend the time to spend cash and I can collect credit card’s points as well.”

S8 mentioned that “I think cash, money transfer, and a credit card are enough for payment choices. I don’t need the app’s wallet since it adds on too much process and password required to me.”

4.5.3.3.3 Carrier's gains

- Make transportation planning easier and autonomously: Carriers love to have a tool that helps them autonomously set a schedule and que for awaiting orders.

C10 mentioned that "It'll be great if the app can keep feeding orders to me and autonomously set them on my schedule and notify me for the incoming jobs."

- Receive fast payment

Getting a new customer is a method to receive fast payment. As carriers, they still want to collect the entire payment since they finished loading goods at the pick-up place, in order to have cash for fuel bills. However, they accept that it is difficult to do that because there is low trustworthiness among them since they are strangers to each other. At least, they'll be happy to receive a portion of advance payment for paying the fuel bill.

The analysis of shipper-and-carrier profile towards the usage of Line group and the existing e-trucking marketplace platforms as channels to manage transportation activities shows that the major root of pains for shippers and carriers is the inconvenience in manual managing activities within the transportation process. On the opposite side of a coin, Line group provides a variety of positive values such as a transportation cost saving solution for shippers who seek for a backhaul delivery and a quick way to access new customers and income in a form of cash for carriers.

4.6 The value proposition for e-trucking marketplace platform

4.6.1 Customer Segmentation: a budget truck delivery

The analysis of demographics and behaviors of shippers and carriers in selecting channels for managing the transportation activities shows that there are interesting points for selecting the customer segmentation. These points are described below.

The study shows that Line group is perceived to be a channel for getting a backhaul delivery with a cheaper price than a normal FTL trip by both shippers and carriers. In case of matching a general truck type without any special equipment required,

shippers and carriers also agree that they can meet trucks and shipment orders by using this channel. This can be implied that there is demand and supply for the low price FTL delivery.

The study result shows that the surveyed shippers have a higher budget for both a backhaul and a regular delivery over the carrier's willing price about 10-20%. This data is relative to the surveyed fact that carriers are willing to get a 10% of price subtraction as a commission to get a shipment order. Therefore, there is a gap for a platform to set pricing on this 10% margin as a service fee for managing the demand and supply for truck transportation.

In summary, this research proposes to develop the segment for a budget truck delivery. This segment benefits a shipper who seeks for a low price transportation to decrease their business's transportation cost and a carrier who seeks for a backhaul shipment order to utilize their vehicles.

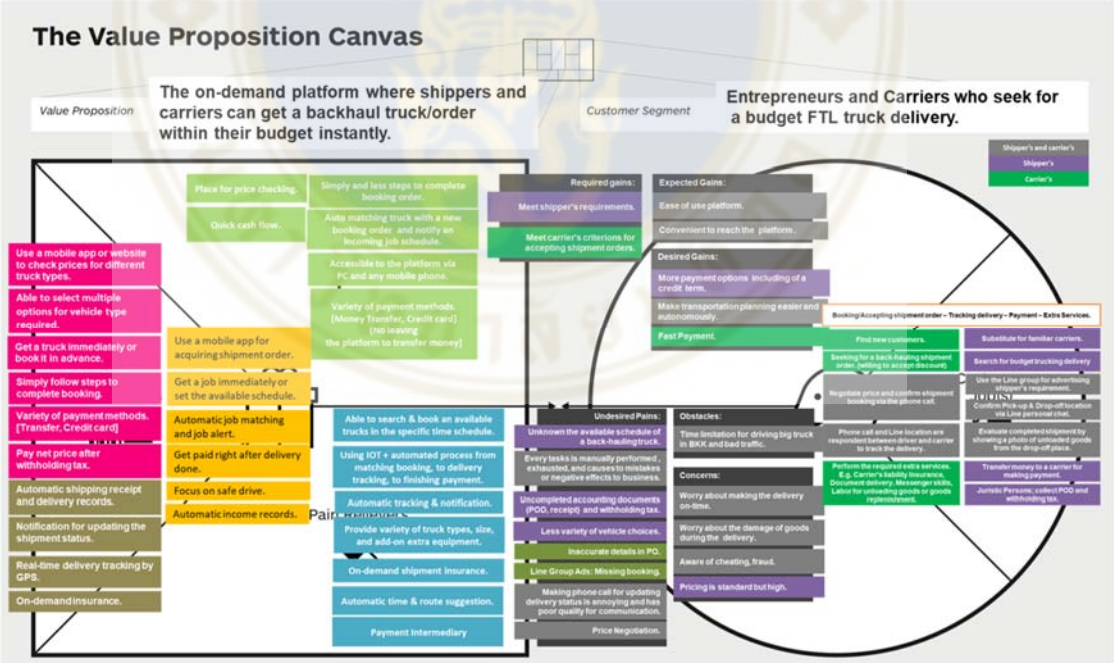
4.6.2 The value proposition

The value proposition is the aggregate of values (Osterwalder & Pigneur, Business Model Generation, 2010) that a platform delivers to its user. A platform is valued to its users when it is able to eliminate pains -pain relievers and fulfill gains -gain craters to shippers and carriers in a particular segment without the need to eliminate all pains and add all of the gains. Based on the previous analysis of shipper-and-carrier profile, the root of pains is the inconvenience in manual managing transportation activities. The selective gain is the cost saving of hiring an empty-backhaul delivery.

The analysis of the existing trucking platforms presents that the on-demand platform uses the automated system to demolish the inconvenience that human faces in managing transportation activities. Moreover, this platform type offers the confidence to shippers that they will get a certain truck by using the platform. Among the existing on-demand platforms, the 360Truck is the only one player which is positioning as "the king of backhaul truck" platform. However, the trial on this platform shows that its instant price is higher than other on-demand platforms and shipper needs to request for the backhaul price and wait up to 24 hours for quotation. These weaknesses contribute the opportunity for a new platform to improve the speed for matching backhaul orders and build a stronger position for the budget trucking platform.

Thus, this research proposes the value proposition design for the budget trucking segment that is the on-demand budget trucking platform where shippers and carriers can get a backhaul truck/order within their budget instantly and hassle free form managing the transportation activities. By this concept, the designed platform basically delivers two major values. First of all, it makes shippers' and carriers' life easier. Secondly, with targeting to the backhaul market, it provides cost saving for shippers as well as generate income to carrier. Furthermore, the proposed platform will improve unmet needs from other on-demand platforms. First, it will allow shippers to select multiple options for their required vehicles. Second, the platform's payment system will have seamless integration with the internet banking so shippers do not to leave the platform to transfer money. Lastly, it will provide electronic transportation receipt and withholding tax for the juristic shippers.

The whole package of the value proposition design is illustrated on the value map which is detailed in the following part.



Remark: See the appendix 6 for a large size of the canvas.

Figure 4.10 The value proposition design for the on-demand automatic marketplace for a budget truck delivery

4.6.3 The value map

The value (Proposition) map describes the feature of the proposed on-demand budget trucking marketplace platform in the structured way. It breaks the platform's value propositions into three parts; product and services, pain relievers and gain creators. The proposed platform will achieve solution-market fit when its product and services produce pain relievers and gains creators that match one or more of the jobs, pains and gains that are important to shippers and carriers.

4.6.3.1 Pain relievers: describe how the proposed platform alleviates shipper and carriers pains.

- Able to book the available trucks in the specific time schedule: This pain reliever eliminates the pains of unknowing the available schedule of an empty backhaul truck. The platform needs to allow shippers to fill out the information about their requirements. On the same page, it needs to allow carriers to fill out their schedule plan for a backhaul trip; the place to start and destination, date, and time.
- Automatically manage transportation activities from booking, to delivery tracking, to bill payment, and to verify the completeness of delivery: This pain reliever eliminates the manual activities in managing the transportation process by using the internet of things (IoT) (Ranger, 2020) and the automated system. With the automated process, the platform can set the auto subtract price after the withholding tax for the juristic-person shipper and autonomously send a set of supplementary accounting documents to their registered email. Furthermore, the platform is able to provide the auto-generated receipt and delivery records for every transaction.
- Automatic notification: This pain reliever eliminates phone calls for tracking shipment status. The platform needs to notify shippers when their shipment changes status such as when a carrier arrives at the pick-up place, goods is loaded, a carrier arrives at the destination, goods is completely unloaded, payment is successful, and the required extra services are done.
- Provide a variety of truck types, size, and add-on extra equipment: This pain reliever eliminates the pain of less variety of vehicle choices. The platform needs to provide a variety of truck categories including the option to add on the extra equipment such as the category of 6-wheel truck with the option to add on a mounted crane, a slide-on tray, a dumper tray, a low bed trailer.

- On-demand shipment insurance: This pain reliever eliminates the pain of concern on the damage of goods during the delivery. The platform should provide the option for shippers to buy shipment insurance for their booking because this pain happens, occasionally. The study results show that a shipper will have a high level of concern when the carried goods are important or have high value.
- Automatic time and route suggestion: This pain reliever eliminates two pains which are the concern of making the delivery on-time and time limitation for driving a big truck in Bangkok. The platform can apply the GPS system and automated technology (Hofmann & Osterwalder, Third-Party Logistics Providers in the Digital Age: Towards a New Competitive Arena?, 2017) to calculate distance and time usage to go to the destination. Then, the fastest route which avoids the limitation area is autonomously applied on the carrier's map.
- Payment intermediary: This pain reliever eliminates the pain of cheating and fraud. The platform needs to be the payment intermediary to collect payment from shippers right after they confirm a booking and pay to carriers when the completeness of delivery is verified.

4.6.3.2 Gain creators: describe how the proposed platform creates customer gains.

- Place for price checking: This gain creator fulfills the required gain for shippers that a booking meets their requirements in order to get a successful booking. The platform has to allow shippers to check for transportation price whether it is under their budget before they confirm booking.
- Simply and less step to complete booking order: This gain creator fulfills the required gain which is the ease of use platform. The platform has to design their user interface in a friendly way. It also needs to structure a simple and less steps activities flow for shippers and carriers to follow.
- Variety of payment methods: This gain creator fulfills a desired gain for shippers that they want to have a variety of payment channels including a credit term. The platform can provide the payment methods with a money transfer and a credit card. Normally, the value of transaction in truck transportation is over thousand baht and the entire surveyed shippers use the money transfer as a usual method to pay for the transportation fee therefore it is not necessarily to provide a cash method. In

addition, it is safer to let the platform be a payment intermediary to protect the fraud. However, the platform should facilitate the money transfer by applying the seamless online banking system that shippers don't need to switch the applications to transfer money. Moreover, the platform should provide the option to pay by credit card because it helps shippers to delay spending cash for their cash flow management.

- Quick cash flow: This gain creator fulfills a desired gain for the carrier that they need a fast payment after their job is done. The platform can allow the system to pay the transportation fee right after the delivery is done.
- Automatic matching truck with a new booking order and notify an incoming job schedule: This gain creator fulfills a desired gain for carriers that the platform can help them autonomously set a schedule and que for awaiting orders.
- Accessible to the platform with any smartphones: This gain creator fulfills a desired gain for both shippers and carriers that the platform is in the form of the mobile application and a mobile-friendly web based so it is convenient to access from their own smartphone.

4.6.3.3 Products and Services: This is a list of all the products and services a value proposition is built around.

4.6.3.3.1 Shipper's services:

- Use a mobile application or mobile-friendly website to see a price list for different truck types.
- Allow shippers to select multiple vehicle options to increase the opportunity to get a successful match for the lowest price backhaul truck.
- Get a truck immediately or book it in advance.
- Simply follow steps to complete booking.
- Variety of payment methods (cash, money transfer, credit card).
- Pay net price after withholding tax.

4.6.3.3.2 Carrier's services:

- Use a mobile application for acquiring shipment orders.

- Get an order immediately or set the available schedule.
- Automatic order matching and order alert.
- Get paid right after a delivery done.
- Automatic income records.

4.6.3.3.3 Services for both shippers and carriers:

- Automatic shipping receipt and delivery records.
- Notification for updating the shipment status.
- Real-time delivery tracking by GPS.
- On-demand transportation and goods insurances.

CHAPTER V
DISCUSSION

5.1 Interpretive Summary

This qualitative research is conducted with an objective to design a unique and feasible value propositions for a new trucking marketplace platform which is an online channel for searching and hiring a truck by using the concept of the Value Proposition Canvas that initially developed by Dr. Alexander Osterwalder (Osterwalder, Pigneur, Smith, Bernarda, & Papadakos, 2014) as a primary framework to unveil unmet needs of shippers and carriers which is yet to fulfill from the existing online marketplace channels.

The scope for research area focuses on domestic trucking service in a format of full-truck-load (FTL) with two sample groups. Firstly, shippers are the SME (Small to Medium Enterprise) who have a desire to provide transportation service in the form of a full-truck-load (FTL). Secondly, carriers are logistics or truck owners who offer availability and have willingness to provide full-truckload (FTL) service.

The Value Proposition Canvas is formed around two building blocks – the shipper and carrier profile and the value map. With the shippers-and-carriers profile, it helps to clarify the insights of shippers and carriers through jobs-to be done, pains, and gains of shippers and carriers when they use the existing online channels to match their transportation demand and supply. With the value map, this research identifies the values that should be delivered to shippers and carriers through pain relievers, gain creators, and the possible features as well as its services of the e-trucking marketplace platform.

The researcher interviewed a total of eleven shippers and nine carriers. The result revealed that shippers will often adopt transportation service from the familiar carriers as a top choice because shippers will receive a discounted rate which is lower than adopting service from new carriers. Shippers also can trust the quality of the delivery that the goods have a low rate to be damaged or broken in transit. Moreover, these

carriers are well familiarized with the person and process from the receiving-end which will make a smooth and finest delivery. These familiar carriers mostly accept credit term payment. In case that the familiar carrier is unable to reach shippers' requirements, the shipper will shift towards a new carrier whom is referred by shipper's acquaintance. At a later stage, if the referral carriers are still unable to reach shippers' requirements, shippers will use online channels to search for new carriers.

Carriers usually receive regular truck delivery orders from their regular customers and third-party logistics providers (3PLs) such as established transportation companies, transportation agents and distribution centers. The tragic flaw is that these shippers demand carriers to accept a long credit term. Therefore, carriers must work on a new customer acquisition that will proceed cash payment to balance cash flow.

Thus; the shippers and carriers' needs are drawn to each other in a scenario where shippers are looking for new carriers or carriers are looking for new customers. Both parties use the online marketplace channels to look for the available trucks and orders. The most popular marketplace channel among shippers and carriers is the Line Open Chat which contains abundant list of trucker communities in a format of chatting group. This platform is easily accessible and convenient since it is a basic function in the well-known chatting application-Line. By using this platform, shippers can contact carriers directly. Furthermore, this platform is perceived as the marketplace for low price backhaul transportation. Shippers and carriers indicate jobs-to be done, pains, and gains for using the Line Open Chat, in other words, Line Group as below.

5.1.1 Shippers-and-Carrier Profile

- Jobs-to be done: transportation activities that shippers and carriers are required to handle in order to complete every process of shipping management such as truck delivery booking, tracking a delivery status, making a payment, and after delivery service. The research revealed that shippers define a list of their trucking requirements which consists of; (1) details of items to be shipped, (2) vehicles type to use; types of truck and equipment required, (3) pick-up & arrival date and location (4) required extra services; returning of documents by mail post, labors for moving product, safety equipment, etc. (5) budget & payment term. To obtain a trucking carrier, shippers will advertise their list of requirements through the Line group channel and they will

be reached via a phone call by carrier who matches their requirements. Carriers will contact shippers to confirm or sometimes negotiate transportation fees. If both parties are agreed to close a deal, shippers will send a location to pick up and deliver through their private Line chat.

- Pains: undesired characteristics, obstacles, as well as concerns that shippers and carriers face in managing the transportation activities. There are seven significant pains which shippers and carriers are mutually agreed on toward the usage of the online marketplace channel.

Firstly, the truck delivery booking is done manually which is troublesome and often leads to a mistake which will increase a negative impact on business. For instance, manual locating the delivery's location can cause mistakes and an error in cost estimation and add an absurd cost to the budget.

Secondly, they have frustration from tracking by phone calling. In addition, poor signal make it impossible for them to update the delivery information.

Thirdly, the regulation and permitted time for trucks to transit in Bangkok and traffic jams are great obstacles for the transportation and leads to the anxiety of being on-time delivery.

Fourthly, they have anxiety that shipment will not arrive on time. It causes negative effects to both side of their business. For shippers, delayed delivery is delayed bill payment for carried products. For carrier, it causes the overtime cost of truck driver.

Fifthly, they have the anxiety that shipment will be damaged or broken during the transportation.

Sixthly, they concern of fraud. Carriers concern that they may not receive payment while shippers are worried whether there is stealing during the delivery.

Finally, price negotiation, the shippers negotiate to pay the lowest price while the carriers negotiate to gain the highest profit. Both parties do not want to lose their advantages in negotiation.

In addition, there are three pains which significantly found through shippers:

First of all, the uncertainty to obtain a backhaul truck: as a consequence, the shippers will be unable to inform their customers about the delivery date and therefore, they are forced to extend their sales closing period.

Second, less variety of vehicle options: shippers do not know ahead what types of vehicles are available for the job through the Line group channel. Thus, there are fewer options and sometimes shippers are unable to match the vehicle with their requirements.

Third, in the case of a juristic-person shipper, this mostly caused a problem with the carrier whereas a shipper who is an individual person will not fully understand the financial and payment method. Shippers will face this problem and cannot ask for an official receipt/tax invoice from the carriers.

On the other side, there are two pains significantly found through carriers which are:

Firstly, the inaccurate details of Purchase Order (PO): the common problem most carriers found is shippers provide them with the incorrect size of goods or shipment, wrong quantity, and wrong pictures which results in the goods or shipment cannot fit in the truck and carriers will have to cancel the order. There are a cost of time, fuel costs, etc. where the carriers will absorb.

Finally, the missing of a truck delivery order: carriers who inconsistently update order advertisement in the Line chatting group will miss the opportunity to accept new orders or will be left behind.

- Gains: the outcomes and benefits that shippers and carriers desire, or to make their life easier in managing the transportation activities. Gains of this research can be divided into:

1. Required gains: fundamental needs that are essential in order to find trucks or obtain jobs. Without these fundamental needs, the truck delivery will not work or cannot be implemented. The carriers will have to meet the entire requirements of a shipper. That being said, the job advertisement of the shippers needs to match the carrier's criteria.

2. Expected gains: basic gains that we expect from the outcome solution, even if it could work without them. For a platform or channel to use for managing truck delivery service, there are two expected gains which are the ease of use and the convenience to reach the platform.

3. Desired gains: these are gains that shippers and carriers revealed from the interviews that they would love to have them. The details are described as follow:

- Easier and autonomous transportation management - To establish a tool that will help to manage the truck delivery service including simplify booking process or establish automated booking system, delivery status tracking, payment system, and the examination of delivery completion.
- More payment options including a credit term - For shippers, they desire a variety of payment options in addition to cash or bank transfer, in particular a credit term. However; they realize that working with a new carrier whom they found through Line channel cannot provide them with a credit term but it would be more beneficial if they can make payment with a credit card option.
- Fast payment - For the carriers, they prefer to be paid at the beginning once the carrier agrees to use their service which they realize that it's impracticable with new customers because the trust level is still low but at least they prefer to receive advance payment to use for their expense.

5.1.2 The value map

The Values that a platform offers to its users originates from its ability to eliminate pains through pain relievers and fulfill gains with gain creators for the shippers and carriers in particular segments without having to eliminate the pains and fulfill gains entirely.

According to the shipper and carrier profile analysis toward the usage of the Line group as an e-trucking marketplace channel, there are compelling business points as follows:

- Line group is a channel to search for trucks or obtain jobs, in particular, a backhaul service which indicates that shippers and carriers of this group demand and supply budget truck delivery.
- Shipper's delivery budget for backhaul service is estimated 10% higher than the carrier's expected fee which is in relation with the data received from carriers that they can accept to be deducted a 10% commission. This is an opportunity for a platform to gain income from matching service between demand and supply of the delivery budget. Shippers and carriers do not want to negotiate the price, the platform can utilize this gap to indicate the price.

- The majority of shippers and carriers are millennials and Gen X which are accustomed to smartphones and able to adopt technology to enhance their work. For example, they use Line channel to send pictures, call and share locations but all the processes are still being done manually which is not the most convenient way and often leads to a mistake. The platform can eliminate these paints by integrating automated technology to help users manage it automatically. These include pricing indication, truck and order matching, routing management, schedule management, real-time notification and truck delivery tracking, payment system, financial documents forwarding and include the examination of delivery completion. The platform will make the life of shippers and carriers to be easier since it reduces human tasks and decision-making processes.

Therefore; this study aims to present a concept of an e-trucking platform development that can capture shippers and carriers who seek a budget truck delivery. The value proposition for this segment is the on-demand marketplace where shippers and carriers can obtain a backhaul delivery instantly and are hassle-free with autonomous transportation activities management.

5.2 Practical and Managerial Implications for Business Managers

This research is consisting of the suggested opportunities for beneficial business which details as follows:

More than 50% of shippers and carriers do not have the awareness or unaware of the platform and no trial experience. However, after explaining the concept and showing the examples of the e-trucking platform, there is an increase in the percentage of both shipper's and carrier's desire to use the platforms. This result is a positive sign that there is demand for the trucking platform but people don't know how it values to them. The platform developers need to create awareness and trail on the platforms by communicate their platform's values to its users via the media they regular use and trust. Unfortunately, this study does not scope on the media channels of shippers and carriers so it cannot provide a specific direction for generate the effective brand awareness and trial. Nevertheless, there are many ways to generate brand attentions such as advertising, create news or stories that inform how the platform helps or benefit to the business of shippers and carriers. Marketers of the platform can attach

the trial promotion such as a freemium code, a discount code or a referral program along with the advertising or stories that published on the media.

According to the shipper's criterions for comparing the suitable carrier, shippers do not set the lowest price as their first priority criteria. Likewise comparing the channels to find truck, shippers do not solely select a platform based on the lowest price point but they consider the one with price aligned with their budget. Therefore, the platform doesn't need to offer the lowest price but deliver a set of high prioritized values that shippers are looking for in the platform. For example, every shippers concern the damage of carried goods and the on-time delivery as their high priority so a platform can offer the value of being the best reliable transportation platform. Then, it include the extra service within the area of reliable services such as guarantee the low damage rate, the time usage of delivery, and allow users to claim fees if their shipment is damaged or broken.

The value proposition in this research is an alternative way to design a platform for truck delivery and if the market positioning of the platform is a backhaul trucking, each transaction within the platform tends to be low which makes the collected fee from using the platform becomes low. Therefore, the platform owner should design a business model with various options in the revenue stream, for example, set a price differentiation such as deduct a fee from the regular trip's booking but using a membership fee for the backhaul trip, or planning pricing strategy; Freemium, to allow the user to use the platform without fee for three times and pay for a monthly or yearly subscription fee if they would like to continue the service after that with no limitations or no additional fee deduction, and working with the insurance company to offer shipment insurance, etc.

5.3 Limitations and Opportunities

Samples in this research had been selected by snowballing, therefore its demographic, behavior, experience, and perspective are similar. In the next study, researchers should adopt previous interview questions and answers from samples as a primary model to develop further to Quantitative research to run a test with larger samples in order to obtain a different result or to run a test with samples from a different segment. This should provide a different value proposition.

Pain and gains of the shipper-and-carrier profile are aggregated answers received by the interviewing samples. Some respondents were able to give the priority of factor in order while some respondents were giving one answer, consequently unable to identify the priority. Thus pains and gains of this study are not in the priority order. In addition, the study result shows that more than a half of shippers and carriers are not aware of the online trucking platforms but unfortunately, the study areas do not include the media channels, the influencer and the effective marketing campaigns to encourage the awareness of new users to use the platform. In the next study, if the conduction is a form of quantitative research, these influent matters to use the platform should be developed further to become a question in the survey.

The value proposition in this research is a pure concept of platform development, without testing implementation. The concept needs to be conducted a test in order to verify if it will be a solution-market fit. The test will aim to see whether this concept will eliminate pains and deliver gains that really matter to shipper and carrier.

Value proposition from this research is an option for E-trucking marketplace platform development. Developers who are interested in the type of marketplace platform can utilize insights and analytic results from the shipper and carrier profile of this result to create a trial and design the different value proposition in a different format or for a different segment.

5.4 Conclusion

This study applies the Value Proposition Canvas as a primary framework to settle a question about jobs-to be done, pains and gains of shippers and carriers to explore the insights of the domestic full-truckload (FTL) shippers and carriers. It helps unveil the unmet needs in the existing channels -both offline and online platforms. This canvas is also use as a principle to create values via pain relievers and gain creators that the developing e-trucking platform should essentially deliver to its users and be able to captures a unique market position. Thus, this study reveals a development concept for the on-demand budget platform where shippers and carriers can get a backhauling truck delivery/order instantly. The proposed platform is differentiated from the other on-demand trucking platform since its transportation price is every day

low price with backhauling transportation. With the on-demand concept, it also eliminates the major pain of the marketplace platforms where shippers have uncertainty to get order matched and waiting time for a backhaul truck. It also improves some processes that lack in other on-demand platforms such as allowing shippers to select multiple options for vehicle type to increase the opportunity for successful matching backhaul truck, integrating internet banking with the system payment, and providing electronic receipts including withholding tax. Moreover, it is different from the existing marketplace platforms that it applies the automated system to manage transportation activities; decrease human duties on making decisions, delivery tracking, collecting transportation records as well as accounting documents.

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APPENDICES

Appendix A: Interview questions guideline for shippers

Part No.	Interview Objective	Interview Questions
1	**General information of participants**.	**Alias Name, job position, business informations such as business industry, location, activities related to the truck transportation.** - Could you please tell me your nickname/alias? - Could you please tell me what is your business about? - Can you tell me where your company is located and where it can provide products and service? - What are your responsibilities in your company/business? **Samples filterling questions:** - What modes of freight transportations do your company often use?, which one has the most frequency? - Have you ever send some non-parcel freights that cannot be packed into boxes? If yes, how many times a month do you send this kind of freights? - Have you ever hired a truck carrier to delivery your freights? If yes, how many times a month do you do that?
2	**Customer Jobs:** The things your clients try to get done in their work or life. A job can consist of the steps the client completes, the problem they're trying to solve or the needs they try to satisfy (Perrson, 2018).	To open the topic, the researcher wil ask a question to project the ideas of jobs related to the trucking service. - Please correct me if I'm wrong, but its' my understanding that the process of freight delivery comprises of 4 steps; searching and booking a truck, delivery tracking, making payment, and after-delivery-service (e.g. checking the quality of freights, COD, return documents, etc.). Is there any missing step in your opinion? **Functional jobs questions:** Think about the last time that you hire a truck carrier to transport your non-parcel freights, could you please describe how did you perform these following process? **- searching and booking a truck carrier.** (which channels are selected in order to find a carrier and why choosing them?, how to select the most suitatble carrier?,)

Part No.	Interview Objective	Interview Questions
		- tracking the delivery status. (how to track the shipment during the delivery?, how to assure the delivery is completed?) **- making payment for the tranportation fee.** (which channels are selected for making payment and why choosing them?, how to assure the payment is done?) **- managing the after-delivery-service.** (how to examine the quality of delivery that there is no loss or damage to the freights?, In case of bad quality shipment, how to manage this crisis? - Is there any extra services required such as cash on delivery (COD), or returning of documents or equipment? If yes, how to manage them?) **Question to explore social jobs and emotional jobs: questions:** - Is there any situation that you decide to use a truck transportation service for other reasons than the logical ones? Pleae explain this event and why did you making this decision? **Questions to explore jobs towards e-trucking marketplace.** - Have you ever heard of any hauling marketplace platform such as Deliveree, Giztix, or 360Truck? - Have you tried these platforms? Which one do you use the most and how often do you use it? - In case you notice them but never use once, why don't you try it?
3	**Pains:** Everything that irritates the customer before, during and after trying to do the work. Pains also describe risks that are potential undesirable outcomes resulting in poor performance or failure to perform in principle (Pavel, 2020).	**Questions towards pains according to the steps for hauling a truck.** Walk me through the workflow we discuss earlier, could you please describe your situation in the following topics? **Searching and booking a truck carrier.** **Undesired:** - What don't work well, or any problems that you've found, or the characteristics that you do not like for the method you use to search and book a truck carrier? Why do you think like that? Please rank the 3 things that you don't like the most?

Part No.	Interview Objective	Interview Questions
		Obstacles: - What are the obstacles have you found on the method you use to search and book a truck carrier? Please rank 3 obstacles that have the highest impact to you? - How do you rate their severity; extream or moderate? **Risks:** - What are 3 risks that have the highest impact to you if you cannot find any shipper? Why? - How do you rate their severity; extream or moderate? - How do you avoid these risks? (How much are you currently spending to avoid the undesired implications that will make you fail to complete your delivery? Let's say how much % of transportation fee that you will add on to your offer to get a shipper?) **Tracking the delivery status.** **Undesired:** - What don't work well, or any problems that you've found, or the characteristics that you do not like for the method you use track your shipment? Why do you think like that? Please rank 3 things that you don't like the most? **Obstacles:** - What are the obstacles have you found on the method you use to track your shipment? - Please rank 3 obstacles that have the highest impact to you? - How do you rate their severity; extream or moderate? **Risks:** - What are 3 risks that have the highest impact to you if you cannot track your shipment? - How do you rate their severity; extream or moderate? - How do you avoid these risks? **Making payment for the tranportation fee.** **Undesired:** - What don't work well, or any problems that you've found, or the characteristics that you do not like for the method you use for paying the transportation fee? Why do you think like that? Please rank 3 things that you don't like the most?

Part No.	Interview Objective	Interview Questions
		Obstacles: - What are the obstacles have you found on the method you use for making payment? - Please rank 3 obstacles that have the highest impact to you? Why do you place the ranking like that? How do you rate their severity; extream or moderate? **Risks:** - What are 3 risks that have the highest impact to you from using the mentioned payment methods? Why? - How do you rate their severity; extream or moderate? - How do you avoid these risks? **Managing the after-delivery-service.** **Undesired:** - What don't work well, or any problems that you've found, or the characteristics that you do not like for the method you use to manage the after-delivery-service? Why do you think like that? Please rank 3 things that you don't like the most? **Obstacles:** - What are the obstacles have you found on managing the after-delivery-service? - Please rank 3 obstacles that have the highest impact to you? - How do you rate their severity; extream or moderate? **Risks:** - What are 3 risks that have the highest impact to you if you don't receive the after-delivery-services? Why? How do you rate their severity; extream or moderate? - How do you avoid these risks? **Questions to explore pains towards e-trucking marketplace.** **Undesired:** - In case you have expererince to any e-trucking maretplace, what either undesired characteristics, or outcomes, or problems that you've found on it? Why do you think like that? Please rank 3 things that you don't like the most? **Obstacles:** - What are the obstacles have you found on the e-trucking marketplace?

Part No.	Interview Objective	Interview Questions
		- Please rank 3 obstacles that have the highest impact to you? Why? - How do you rate their severity; extream or moderate? **Risks:** - Do you think there are risks in using the e-trucking maketplace? If yes, please explain these rirsks.
4	**Gains:** These are the outcomes and benefits that your clients want (Perrson, 2018).	**Questions towards gains according to the steps for hauling a truck.** Walk me through the workflow we discuss earlier, could you please describe your situation in the following topics? **Searching and booking a truck carrier:** **Required gains:** - What are 3 basic features must have in finding and obtaining a trucking carrier? Why do you think like that? **Expected/desired gains:** - What are 3 features that you love the most from all the methods you use for obtaining a truck carrier? Why do you place them in that ranking? - What would you like to do but cannot be done during the process of searching and booking a truck carrier? Why? How do you rate its essential; must have or nice to have? **Tracking the delivery status:** Required gains: - What are 3 basic features must have in tracking your shipments? Why do you think like that? Expected/desired gains: - What are 3 features that you love the most from all the methods you use for tracking your shipments? Why do you place them in that ranking? - What would you like to do but cannot be done during the process of tracking your shipments? Why? How do you rate its essential; must have or nice to have?

Part No.	Interview Objective	Interview Questions
		Making payment for the tranportation fee: Required gains: - What are 3 basic features must have in making payment for the delivery feee? Why do you think like that? Expected/desired gains: - What are 3 features that you love the most from all the methods you use for making payment? Why do you place them in that ranking? - What would you like to do but cannot be done during the process of making payment? Why? How do you rate its essential; must have or nice to have? **Managing the after-delivery-service:** **Required gains:** - What are 3 basics feature that must have to assist you in managing the after-delivery-service? Why do you think like that? **Expected/desired gains:** - What are 3 features that you love the most from all the methods you use for managing the after-delivery-service? Why do you place them in that ranking? - What would you like to do but cannot be done during the process of managing the after-delivery-service? Why? How do you rate its essential; must have or nice to have?

Appendix B: Interview questions guideline for carriers

Part No.	Interview Objective	Interview Questions
1	**General information of participants**.	**Alias Name, job position, business informations such as business industry, location, activities related to the truck transportation.** - Could you please tell me your nickname/alias? - Could you please tell me what is the scope of your transportation service? - How many trucks owned by your company? - Can you please tell me where your company is located? - What are your responsibilities in your company/business? **Samples filterling questions:** - What types of freight trucking can you supply? (parcel, non-parcel, or both) - What types of trucking vehicle does your company? how many trucks for each type are?
2	**Customer Jobs:** The things your clients try to get done in their work or life. A job can consist of the steps the client completes, the problem they're trying to solve or the needs they try to satisfy (Perrson, 2018).	To open the topic, the researcher wil ask a question to project the ideas of jobs related to the trucking service. - Please correct me if I'm wrong, but its' my understanding that the process of freight delivery comprises of 4 steps; searching for a delivery order, updating delivery status, collecting payment, and after-delivery-service (e.g. checking the quality of freights, COD, return documents, etc.). Is there any missing step in your opinion?
		Functional jobs questions: Think about the last time that you accept an order to transport non-parcel freights, could you please describe how did you perform these following process? **- searching for a delivery order.** (which channels are selected in order to find an order and why choosing them?, how to select the most suitatble order?,)

Part No.	Interview Objective	Interview Questions
		- updating the delivery status. (how to update a shipment status to your customer during the delivery?, how to confirm with your customers that their delivery is completed?) **- collecting payment for the tranportation fee.** (which channels are selected for collecting payment and why choosing them?, how to confirm with your customers that the payment is done?) **- managing the after-delivery-service.** (how to assure your customers regarding the quality of delivery that there is no loss or damage to their freights?, In case of bad quality shipment, how to manage this crisis? - Is there any extra services required such as cash on delivery (COD), or returning of documents or equipment? If yes, how to manage them?) **Question to explore social jobs and emotional jobs: questions:** - Is there any situation that you decide to provide the trucking service for other reasons than making living? Pleae explain this event and why did you making this decision? **Questions to explore jobs towards e-trucking marketplace.** - Have you ever heard of any hauling marketplace platform such as Deliveree, Giztix, or 360Truck? - Have you tried these platforms? Which one do you use the most and how often do you use it? - In case you notice them but never use once, why don't you try it?
3	**Pains:** Everything that irritates the customer before, during and after trying to do the work. Pains also describe risks that are potential undesirable outcomes resulting in poor performance or failure to perform in principle (Pavel, 2020).	**Questions towards pains according to the steps for hauling a truck.** Walk me through the workflow we discuss earlier, could you please describe your situation in the following topics? **Searching for a delivery order.** **Undesired:** - What don't work well, or any problems that you've found, or the characteristics that you do not like for the method you use to search for a delivery order? Why do you think like that? Please rank the 3 things that you don't like the most?

Part No.	Interview Objective	Interview Questions
		Obstacles: - What are the obstacles have you found on the method you use to search for a delivery order? Please rank 3 obstacles that have the highest impact to you? How do rate their severity; extream or moderate? **Risks:** - What are 3 risks that have the highest impact to you if you cannot find any shipper? - How do you avoid these risks? (How much are you currently spending to avoid the undesired implications that will make you fail to obtain an order? Let's say how many % of discount on the transportation fee, or how many % of commision can you provide to the broker?) **Updating the delivery status.** **Undesired:** - What don't work well, or any problems that you've found, or the characteristics that you do not like for the method you use to update a shipment status for your customer? - Why do you think like that? Please rank 3 things that you don't like the most? **Obstacles:** - What are the obstacles have you found on the method you use to update a shipment status? - Please rank 3 obstacles that have the highest impact to you? - How do you rate their severity; extream or moderate? **Risks:** - What are 3 risks that have the highest impact to you if you cannot update a shipment status? - How do you rate their severity; extream or moderate? - How do you avoid these risks? **Collecting payment for the tranportation fee.** **Undesired:** - What don't work well, or any problems that you've found, or the characteristics that you do not like for the method you use for collecting the transportation fee? Why do you think like that? Please rank 3 things that you don't like the most?

Part No.	Interview Objective	Interview Questions
		Obstacles: - What are the obstacles have you found on the method you use for collcting payment? - Please rank 3 obstacles that have the highest impact to you? - How do you rate their severity; extream or moderate? **Risks:** - What are 3 risks that have the highest impact to you if you cannot collect the payment? - How do you rate their severity; extream or moderate? - How do you avoid these risks? **Providing the after-delivery-service.** **Undesired:** - What don't work well, or any problems that you've found, or the characteristics that you do not like for the method you use to provide the after-delivery-service? Why do you think like that? Please rank 3 things that you don't like the most? **Obstacles:** - What are the obstacles have you found on providing the after-delivery-service? - Please rank 3 obstacles that have the highest impact to you? - How do you rate their severity; extream or moderate? **Risks:** - What are 3 risks that have the highest impact to you if you don't provide the after-delivery-services? - How do you rate their severity; extream or moderate? - How do you avoid these risks? **Questions to explore pains towards e-trucking marketplace.** **Undesired:** - In case you have expererince to any e-trucking maretplace, what either undesired characteristics, or outcomes, or problems that you've found on it? Why do you think like that? Please rank 3 things that you don't like the most? **Obstacles:** - What are the obstacles have you found on the e-trucking marketplace? - Please rank 3 obstacles that have the highest impact to you? Why do you place the ranking like that?

Part No.	Interview Objective	Interview Questions
		Risks: - Do you think there are risks in using the e-trucking maketplace? If yes, please explain these rirsks.
4	**Gains:** These are the outcomes and benefits that your clients want (Perrson, 2018).	**Questions towards gains according to the steps for hauling a truck.** Walk me through the workflow we discuss earlier, could you please describe your situation in the following topics? **Searching for a delivery order** **Required gains:** - What are 3 basic features must have in searching for a delivery order? Why do you think like that? **Expected/desired gains:** - What are 3 features that you love the most from all the methods you use for obtaining an order? Why do you place them in that ranking? - What would you like to do but cannot be done during the process of searching and accepting an order? Why? How do you rate its essential; must have or nice to have? **Updating the delivery status** **Required gains:** - What are 3 basic features must have in tracking your shipments? Why do you think like that? **Expected/desired gains:** - What are 3 features that you love the most from all the methods you use for updating the delivery status? Why do you place them in that ranking? - What would you like to do but cannot be done during the process of updating the delivery status? Why? How do you rate its essential; must have or nice to have? **Collecting payment for the tranportation fee** **Required gains:** - What are 3 basic features must have in collecting payment for the delivery feee? Why do you think like that?

Part No.	Interview Objective	Interview Questions
		Expected/desired gains: - What are 3 features that you love the most from all the methods you use for collecting payment? Why do you place them in that ranking? - What would you like to do but cannot be done during the process of collecting payment? Why? How do you rate its essential; must have or nice to have? **Providing the after-delivery-service:** **Required gains:** - What are 3 basics feature that must have to assist you in providing the after-delivery-service? Why do you think like that? **Expected/desired gains:** - What are 3 features that you love the most from all the methods you use for providing the after-delivery-service? Why do you place them in that ranking? - What would you like to do but cannot be done during the process of providing the after-delivery-service? Why? How do you rate its essential; must have or nice to have?

Appendix C: Interview summary card for shipper

Part 1 : General information of participants.		
Alias: **Job position:** **Company profile:** **Business location:** **Business Industry:** **Samples filterling questions:** [ ] Non-parcel trucking shipper [ ] Demand for trucking transportation once a month		
Part 2 : Customer Jobs		
Functional jobs questions: **- searching and booking a truck carrier.** **- tracking the delivery** status. **- making payment for** the tranportation fee. **- manging the after-**delivery-service.	**Social Jobs** Emotional Jobs	**E-trucking marketplace**
Part 3 : Pains		
Searching for a delivery order. **Undesired:** **Obstacles:** **Risks:**	Tracking delivery status Undesired: Obstacles: Risks:	Making payment for the tranportation fee. Undesired: Obstacles: Risks:
Providing the after-delivery-service **Undesired:** **Obstacles:** **Risks:**	E-trucking marketplace Undesired: Obstacles: **Risks:**	
Part 4 : Gains		
Searching and booking a truck carrier. **Required gains:** **Expected/desired gains:**	**Tracking delivery status** **Required gains:** **Expected/desired gains:**	**Making payment for the tranportation fee** **Required gains:** **Expected/desired gains:**
Managing the after-delivery-service: **Required gains:** **Expected/desired gains:**		

Appendix D: Interview summary card for carrier

Part 1 : General information of participants.		
Alias: **Job position:** **Company profile:** **Business location:** **Provided services:** **Samples filterling questions:** [ ] Non-parcel trucking service provider [ ] Vehicles are suitable for non-parcel freights		
Part 2 : Customer Jobs		
Functional jobs questions: **- searching for a delivery order.** **- updating the delivery** status. **- collecting payment** for the tranportation fee. **- providing the after**-delivery-service.	**Social Jobs** Emotional Jobs	**E-trucking marketplace**
Part 3 : Pains		
Searching for a delivery order. **Undesired:** **Obstacles:** **Risks:**	Updating the delivery status Undesired: Obstacles: Risks:	Collecting payment for the tranportation fee. Undesired: Obstacles: Risks:
Providing the after-delivery-service **Undesired:** **Obstacles:** **Risks:**	E-trucking marketplace Undesired: Obstacles: **Risks:**	
Part 4 : Gains		
Searching for a delivery order **Required gains:** **Expected/desired gains:**	**Updating the delivery status** **Required gains:** **Expected/desired gains:**	**Collecting payment for the tranportation fee** **Required gains:** **Expected/desired gains:**
Providing the after-delivery-service: **Required gains:** **Expected/desired gains:**		

Appendix E: Public post for recruiting interview prospects

(Thai language)

สวัสดีค่ะ ดิฉัน น.ส.สุกานดา การดี กำลังศึกษาปริญญาโท หลักสูตรการจัดการมหาบัณฑิต (หลักสูตรนานาชาติ) วิทยาลัยการจัดการ มหาวิทยาลัยมหิดล **ขอเชิญอาสาสมัครเข้าร่วมการการสัมภาษณ์แบบรายบุคคล เพื่อเป็นข้อมูลในการทำสารนิพนธ์ในหัวข้อ** "การออกแบบการนำเสนอคุณค่าสำหรับแพลตฟอร์มตลาดรถบรรทุกขนส่งสินค้าออนไลน์โดยใช้แผนภาพการนำเสนอคุณค่า (Designing the Value Propositon for E-trucking Marketplace Platform by Applying the Value Proposition Canvas)"

จึงขอเชิญผู้ประกอบการทั่วไปซึ่งใช้บริการขนส่งสิ่งของด้วยรถบรรทุกแบบเหมาคัน จำนวน 20 ท่าน และผู้ประกอบการขนส่งด้วยรถบรรทุก จำนวน 20 ท่าน

ในแบบสัมภาษณ์จะเป็นการสอบถามเกี่ยวกับประสบการณ์, อุปสรรค และความคาดหวังในกระบวนการจองรถบรรทุกขนส่งสินค้า ทั้งแบบออฟไลน์และออนไลน์ ใช้เวลาในการสัมภาษณ์ประมาณ 45 นาที โดยเป็นการสัมภาษณ์ออนไลน์ หรือนัดสัมภาษณ์ในเขตกรุงเทพและปริมณฑล ทั้งนี้ ผู้เข้าร่วมการสัมภาษณ์จะได้รับค่าชดเชยเวลามูลค่า 100 บาท

หากท่านประสงค์เข้าร่วมการวิจัยนี้ โปรดติดต่อ

น.ส.สุกานดา การดี
โทร. 062-4459956
Line ID: chorchom

Appendix F: The value proposition design for the on-demand automatic marketplace for a budget truck delivery