

The Causal Factors Affecting The Competitiveness Of Ocean Freight Forwarder In Thailand*

ความสัมพันธ์เชิงสาเหตุของปัจจัยที่ส่งผลต่อความสามารถในการแข่งขันของผู้ให้บริการ
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Abstract

This research aimed 1) to study causal relationship of factors affecting the competitiveness of ocean freight forwarders in Thailand and 2) to examine the goodness-of-fit index of the structural equation model and analyze direct and indirect factors from structural equations modeling by using LISREL. The subjects of the study were 208 freight forwarders in Thailand. The research instrument was questionnaire. The validity and reliability of the questionnaire were examined by using content validity by experts, convergent validity, and construct reliability. The reliability of the questionnaire was at 0.97(Cronbach's Alpha) and Structural equations modeling was used for proving hypotheses.

The results of the study showed that the structural equations model of factors affecting the competitiveness of ocean freight forwarder in Thailand got Chi-Square (χ^2) = 112.13 ($p = 0.066$), Degrees of freedom (df) = 91, (χ^2)/df = 1.23, Comparative Fit Index (CFI) = 0.99, Goodness-of-Fit Index (GFI) = 0.94, Adjusted Goodness-of-Fit Index (AGFI) = 0.90, Normal Fit Index(NFI)= 0.98, Incremental Fit Index (IFI)= 0.99 and Root Mean Square Error of Approximation (RMSEA) = 0.03.

* The article aims to study causal relationship of factors affecting the competitiveness of ocean freight forwarders in Thailand.

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The results also showed that the structural equations model was consistent to the empirical evidences that can be used for describing the causal relationship of factors affecting the competitiveness of ocean freight forwarders in Thailand as follows: 1) Firm resource had direct positive effect on competitiveness with 0.32 effect size, 2) Firm resource had indirect positive effect on competitiveness via business networks with 0.49 and 0.50 effect size, respectively, 3) Firm resource had indirect positive effect on competitiveness via maritime logistics service quality with 0.39 and 0.35 effect size, respectively, and 4) Firm resource had indirect positive effect on competitiveness via business networks and maritime logistics service quality with 0.49, 0.18, and 0.35, respectively ($P < 0.01$).

Keywords: Ocean freight forwarder, Firm resource, Business networks, Maritime logistics service quality and Competitiveness

Introduction

According to the report published by United Nations Conference on Trade and Development, maritime logistics in 1970 was about 2.6 billion tons whereas in 2017 it had been increased dramatically to 10.7 billion tons that was 4-time amount higher than the numbers in 1970. Moreover, 41% of the logistics took place in Asia (UNCTAD, 2018). This indicated the rapid growth of maritime logistics especially in Asia. This growth results in the consideration of the ocean freight forwarders to adjust their procedure to respond their customers' needs and to be able to survive in the world market that always changes and has high competition. Ocean freight forwarders are considered the significant medium in maritime logistics because ocean freight forwarders are the representatives of both exporters and importers, and they can reduce the logistics cost for both of them (Yang, 2012). Additionally, ocean freight forwarders are the connector for distributing products around the world. Ocean freight forwarders able to provide services to customers including 1) Forwarding Business 2) Custom Broker 3) Multimodal Transport 4) Warehouse 5) Packing 6) Logistics Service 7) Business Consultant (Vachivivat, 2013). Nowadays, ocean freight forwarders are really popular for exporters and importers because they can reduce the cost of the business, and the users can receive 'door to door service' (Chen *et al.*, 2009; Fremont, 2009).

At the present time, ocean freight forwarders in Thailand have highly grown due to the growth in export sectors in Thailand that are continuously and rapidly growing (Kasikorn Research Center, 2018). This results in the strong competition among ocean freight forwarders in Thailand, and this competition seems to be stronger in the future. The competition can take a great impact on the ocean freight forwarders' operation plan, and as a result, ocean freight forwarders in Thailand have to develop their competitive capacities to satisfy their customers (Lai and Cheng, 2004). Moreover, they need to revise their business strategies to enhance more effective operation to respond customers' needs and gain advantages in the competition.

According to previous studies, there were three main factors that had significant positive effects on competitiveness that were 1) Firm resource (Kristandl & Bontis, 2007; Hsieh & Tsai, 2007; Barney & Hesterly, 2010; Bakar & Ahmad, 2010; Martín *et al.*, 2011) 2) Business networks (Huang & Wilkinson, 2013; Ramos *et al.*, 2013; Inoue & Liu, 2015; Dumitraşcu *et al.*, 2014) and 3) Maritime logistics service quality (Yang, 2012; Ducruet & Notteboom, 2012; Warraich *et al.*, 2013; Thai, 2014). Firm resource, business network, maritime logistics service quality, and competitiveness have also been studied in the ocean freight forwarder context. This study aimed to study the causal relationship of factors affecting the competitiveness of ocean freight forwarders particularly in Thailand context.

There are five sections in this study. After this first section which introduction and purpose of the research, Section 2 reviews the literature on firm resource, business networks, maritime logistics service quality, and competitiveness. Section 3 describes the research methodology, including population and samples of the study, instrument validity and reliability, data collection and data analysis. Section 4 presents the results of the study in two areas including 1) convergent validity, construct reliability, and multicollinearity and 2) hypotheses testing. Section 5 is the conclusion and discussion of the study together with the suggestion for future studies.

Literature review

Competitiveness

Competitiveness is considered as the overall indicator of the firm. At the present, competitiveness index is a predictive indicator for a firm's success or failure. When a firm gains higher profits than the others in the same type of business, it has high competitiveness (Baisya, 2010). Similarly, Em-ek (2014) pointed out that competitiveness had the positive effects on business success. Moreover, Fiscal Policy Office (2009) defined competitiveness as the capacity and profits of a firm's operation. Competitiveness is also the index that reflects strength and weakness of a firm when it is compared to the others. Moreover, the organization for Economic Cooperation and Development: OECD (1992) mentioned that micro-economic competitiveness refers to the capacity of a firm to get success based on the increasing profits, the growth of market share, and the growth of the firm itself. Additionally, OECD also gave the definition to a firm that can sustainably survive as a firm that can maintain its market position with quality products and be competitive in terms of price. All in all, firm competitiveness is the capacity of a firm to gain return both in terms of profits and better operation or better than the other firms. Firm competitiveness also refers to the capacity to maintain its strong market position in various successful aspects that can be measured by its performance indices such as Profitability, Expansion, and market share (Anukunwathaka, 2010). Wilden *et al.*, (2013) and Yang *et al.*, (2011) pointed out that performance indices could be operationalized as production capacity, different cost and price, variety of products, value effectiveness, and customers' satisfaction. Those indices could be categories in to Financial performance and Non-financial performance. According to the previous studies, the three main performance indices that were normally used and reflected a firm competitiveness were 1) Financial performance: COM_FIN, 2) Marketing performance: COM_MAR, and 3) Human resource performance: COM_HUM.

Firm resource

The concept of resources was raised by Penrose (1959) who wrote an article "The Theory of the Growth of the firm". Penrose mentioned that a firm was more than management because it was a place that collect effective and useful resources, and how the resources were used depended on the different users. Therefore, resource management can be measured by considering existing resources and how effective they could be used. Evered *et al.*, (1980) categorized resources into six main categories that were 1) Physical Resources, 2) Human Resources, 3) Technological Resources, 4) Organization Resources, 5) Financial

Resources, and 6) Reputation. Later, Wernerfelt (1984) who wrote an article “Resource-based view of the firm” raised a concept of resources concerning the advantage of having those resources in a firm. He categorized resources into two categories that were 1) Tangible resources refers to concrete resources including tools, machines, and buildings, and 2) Intangible resources refers to abstract resources including fame, brand, patentability, technological knowledge, marketing intelligence, customer relation, human resources, and staff’ experiences and knowledge (Barney & Hesterly, 2010; Saridvanich, 2011). Fahy (2000) studied the relationship between firm resources and management and figured out that firm resources were a significant factor that played an important role in management in order to gain the sustainable advantages in the competition. Therefore, researchers were interested in considering resources in to theoretical concepts and used the concepts to study other firm aspects including strategic management, marketing strategies, and competition strategies (Fahy & Smithee, 1999; Morgan *et al.*, 2006). Resource-based View Theory (RBV), therefore, became a new theory of the firm that were significantly applied into a firm to enhance its competitive capacity (Conner, 1991; Hunt & Morgan, 1995). Kristandl & Bontis (2007) described the qualifications of a firm that could enhance advantage in competition to consist of 1) Tangible resources that refers to concrete resources including technology, tools, machines, locations, raw materials, and 2) Intangible resources that refers to abstract resources that divided into 2.1) human resources such as skills, experiences, abilities to make decisions, intelligences, and relationship, and 2.2) organizational capital resources such as business structure, planning, controlling, and coordinating. Additionally, Bakar & Ahmad (2010) divided resources into six categories that were 1) Physical Resource such as machine, production tools, and raw materials accessibility, 2) Reputational Resource, 3) Organizational Resource such as organizational management resources, operation reports, planning, controlling, coordinating, and corporate culture, 4) Financial Resource that refers to the finance that a firm can spend on running and managing business such as the capital from the business owner, stakeholders, banks, and accumulated profits, 5) Human Intellectual Resource such as training, experiences, creativities and intelligences, and organizational relationship among management and staff, and 6) Technological Resource. According to the previous studies, there were five categories of resources that a firm should focus on that were 1) Financial capital: FIRM_FIN 2) Physical resources: FIRM_PHY 3) Human resources: FIRM_HUM 4) Technological resources: FIRM_TEC 5) Organization resources: FIRM_ORG

Business networks

Nanakun (2013) defined business networks as the cooperation between various businesses in various aspects while making relationship and running business together. The purpose of business networks was that all business in the network work together in what they could not do individually, so they became parts of a big business who ran together for mutual benefits. This procedure absolutely could work more effectively, more flexibly, and more creatively than working as individual. Kleymann & Seristo (2001) mentioned about the mutual benefits that they could be in forms of the use of mutual resources and the opportunity to learn about other organization operation as direct benefits. In addition, there were indirect benefits such as the benefits in terms of financial resources that was the indirect benefit from the use of mutual resources. Anderson & Reeb (2003) mentioned that strategic business networks referred to the business relationship between two or more firms, and there were exchanges (or without any exchanges) with other organizations within the relationship. Jarillo (2013) mentioned that business networks strategy referred to long term agreement between firms that were different but related, and they worked together with the purpose to gain advantages over competitors outside the network. Möller (2013) also mentioned about the key principle of strategic business networks that the key principle was to give inspiration between firms to drive the firms to the goal of freely sharing, particularly, knowledge sharing to connect each firm in the network together. Zorlu & Hacıoğlu, (2012) mentioned that the cooperation within the network relied on trust and respect to the mutual benefits. Sorensen *et al.*, (2011) mentioned that creating trust in business networks referred to the way the firms relied on each other and knew the mutual benefits fairly and honestly with clear and valid information exchanges within the network. Hahn *et al.*, (2015) supported that this could be considered as co-cultural organization or the way the firms created mutual values and mutual operation. Another related factor of business networks was knowledge sharing that referred to the knowledge management to increase capacity, creativity, innovation, and also the insight information in order to connect organizations together, exchange knowledge and experiences, and make interaction with the others to hold activities together (Eng *et al.*, 2014). According to the previous studies and synthesis, there were four components related to business networks that were 1) Joint operation of the business networks: BUS_JOI, 2) Creating trust in business networks: BUS_CRE, 3) Co-culture organization for promoting networking: BUS_CO, and 4) Knowledge sharing: BUS_KNO.

Maritime logistics service quality

As a result of the globalization in trading and transportation, ports were needed to enhance their effectiveness to support the increasing numbers of trading and to enhance value to logistics to respond customers (Mangan *et al.*, 2008). Ports, therefore, become the main part in supply chain to add more value in maritime logistics. Mangan & Christopher (2005) pointed out that competencies and specialized skills in logistics and supply chain were necessary for supply management of today business. In order to get success in business, Hong *et al.*, (2007) mentioned that previously logistic service providers focused on low cost strategies and high price without the emphasis on their service adjustment. However, at the present time, customers need the services that can add more value with higher level of services, and those customers are satisfied to pay for that. Bottani & Rizzi (2006) pointed out that logistics services became the main component in every business section in order to gain the advantages in strategic competitiveness by satisfying customers. Pirttila & Huiskenen (1996) mentioned that quality was the main criteria to differentiate a firm and its competitors. Previously, qualifications of maritime logistics service had been studied. Lu (2000) studied shipping business in Taiwan and found out that significant logistics strategies consisted of 1) Speed and Reliability, 2) Value-added Service, 3) Sales Representative Service, 4) Integrated Service, 5) Freight Rate, 6) Equipment and Facilities, 7) Corporate Image, and 8) Promotional Activity. Moreover, Lu (2003) studied characteristics of logistics services that exporters needed, and the results revealed that the factors that affected on customers' satisfaction consisted of 1) Timing related services, 2) Pricing services, 3) Warehousing services, 4) Sales services, 5) Door-to-door services, and 6) Information services. He also pointed out that freight forwarders' activities were related to maritime logistics. Bienstock *et al.*,(2008) studied the effectiveness of logistics providing process and pointed out that quality of logistics providing can be measured by 1) Tangibility, 2) Empathy, 3)Responsiveness, 4)Reliability, and 5) Assurance. Yang *et al.*, (2009), additionally, defined quality of logistics into four components that were 1) reliability that can be measured by correct and reasonable shipping cost, correct document, reliable shipping time table, sale service, and monitoring ability; 2) integration of information and quality of information transfer that was complete and flexible such as the integration of worldwide information systems to connect maritime logistics information to respond and deal with unexpected incidents, to manage special products, and to respond damage loss; 3) value added capacity such as the capacity to provide storage, customs service, container service, and door-to-door service; and 4) relation ability that refers to the ability to make connection with

the other freight forwarders. Banomyong & Supatn (2011) studied logistics provider selection in Thailand and freight forwarders' perspectives, and the results found that the factors that affected logistics provider selection consisted of 1) Reliability, 2) Assurance, 3) Tangibility, 4) Empathy, 5) Responsiveness, and 6) Service cost. According to the previous studies, Maritime logistics service quality consisted of 1) Reliability: MLSQ_REL 2) Responsiveness: MLSQ_RES 3) Assurance: MLSQ_ASS 4) Empathy: MLSQ_EMP 5) Service cost: MLSQ_SER

The researcher developed the following conceptual framework:

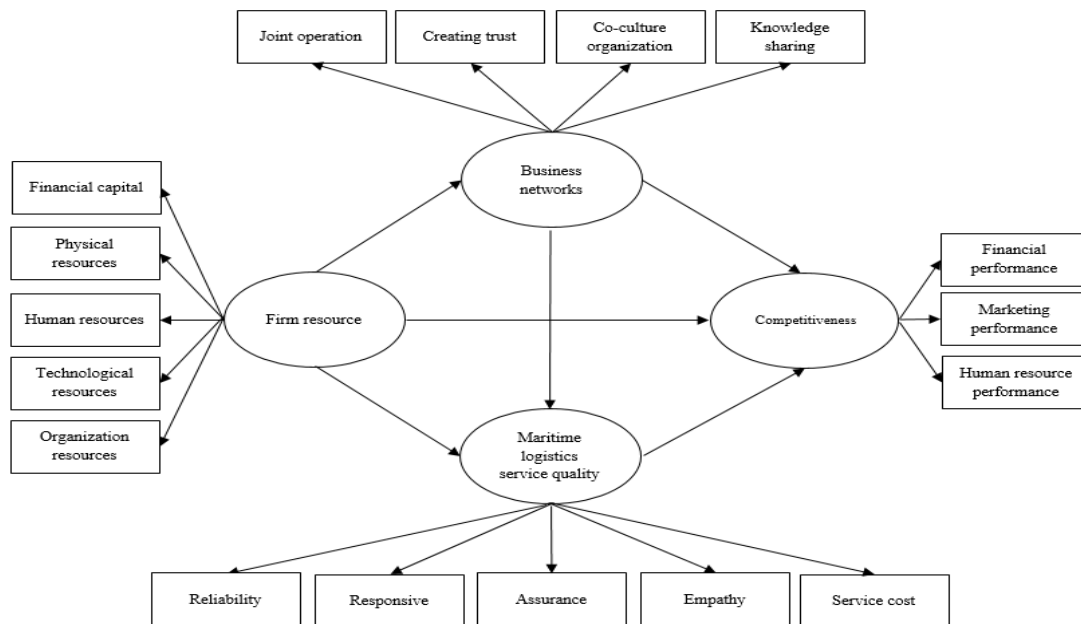


Figure 1. The causal relationship of factors affecting the competitiveness of ocean freight forwarders in Thailand research framework model

Source: Developed for this study

Research Methodology

The literature and key factors relations on firm resource, business networks, maritime logistics service quality and competitiveness. These causal relationships as stated in the literature can be verified by testing the hypothesis as follows.

Hypotheses:

H1: Firm resource has direct positive effect on competitiveness

H2: Firm resource has indirect positive effect on competitiveness via business networks

H3: Firm resource has indirect positive effect on competitiveness via maritime logistics service quality

H4: Firm resource has indirect positive effect on competitiveness via business networks and maritime logistics service quality

H5: Firm resource has direct positive effect on business networks

H6: Firm resource has direct positive effect on maritime logistics service quality

H7: Business networks has direct positive effect on competitiveness

H8: Maritime logistics service quality has direct positive effect on competitiveness

H9: Business networks has direct positive effect on maritime logistics service quality

Population and Samples of the Study

The population of the study were 368 ocean freight forwarders in Thailand (Thai international freight forwarders association, 2018; The customs broker and transportation association of Thailand, 2018). The samples of the study were 208 ocean freight forwarders in Thailand selected by using non-probability sampling and convenience sampling methods.

Instrument Validity and Reliability

The instrument, questionnaire, was proved by supervisor in language use and variables consistency aspects and was revised following the advices. Index of Item – Objective Congruence (IOC) was used for examining validity of the instrument by five experts to check the congruency between question items and the objectives of the questionnaire. All items got the indices between 0.60 - 1.00. The questionnaire was in Seven-Point Likert Scale that 1 refer to the lowest agreement and 7 refers to the strongest agreement. Firm resource part consisted of 21 items. Business networks part consisted of 16 items. Maritime logistics service quality part consisted of 18 items. Competitiveness as the results of performance part consisted of 11 items. Cronbach 's Alpha coefficient was used for examining reliability of the instrument. The

Cronbach 's Alpha coefficient index of the instrument was 0.97 that was more than 0.7, so it was considered in the highest reliability level (Peterson & Kim, 2013).

Data Collection

Questionnaires were collected from 208 ocean freight forwarders in Thailand. Sampling selection depended on the number of parameters/variables as 10:1 (Bentler & Chou, 1987; Worthington & Whittaker, 2006; Kline, 2015). The instruments in this study had 17 variables, hence the least number of sufficient subjects were 17 multiplied by 10 or 170 ocean freight forwarders. The researchers described the objectives of the studies to the subjects before collecting questionnaires. Data from questionnaire then were coded and analyzed by statistical analysis.

Data Analysis

Data were analyzed by analyzing Structure Equation Modeling: SEM by using LISREL statistical program to predict parameter by Maximum likelihood method. Structure Equation Modeling is a technique for analyzing various latent variables to confirm hypotheses and to analyze whether the relationship among variables are supported or rejected (Raengsunghoen, 2011).

The Results of the Study

1. Convergent validity, Construct reliability, and Multicollinearity

Convergent validity is the analysis to examine whether observed variables are the appropriate indicators of latent variables by considering standardized factor loading between observed variables and latent variables. Normally, the acceptable standardized factor loading index is ± 0.5 ($t > 1.96$) (Hair *et al.*, 2010), and the acceptable Average Variance Extracted (AVE) was more than 0.5 (Hair *et al.*, 2010). The AVE of the variables in this study were between 0.506-0.789 that were higher than 0.5; hence, the model created in this study had convergent validity.

Construct reliability was the index that showed the reliability of the instruments whether it is consistent to the purpose of the data collection. The acceptable Construct reliability (CR) index of each variable was higher than 0.7 (Hair *et al.*, 2010). The CR of the variables in this study were between 0.836-0.949 that were higher than 0.7; hence, the model created in this study had construct reliability.

Table 1 showed Cronbach 's alpha coefficient indices of all variables were higher than 0.7 (Hair *et al.*, 2010) that was all variable got acceptable reliability in high level. Multicollinearity, then, was used in the study to confirm that the observed variables didn't have too high inter-correlation that might cause overlapped prediction results and resulted in the invalid analysis. the results of the Multicollinearity showed that all variation inflation factor (VIF) of observed variables were lower than threshold 5.00 indicating that Multicollinearity is not a major concern (Hair *et al.*, 2010)

Table 1: Construct Reliability, Average variance extracted and Cronbach 's Alpha

Latent variable	CR	AVE	Cronbach's Alpha
Firm resource (FIRM)	0.949	0.789	0.941
Business networks (BUS)	0.875	0.640	0.957
Maritime logistics service quality (MLSQ)	0.836	0.506	0.959
Competitiveness (COMPET)	0.903	0.757	0.837

2. Hypotheses testing

Table 2:The results of effect size (Estimated factor loading) of variables in causal relationship of factors affecting the competitiveness of ocean freight forwarders in Thailand

Cause Variable Results Variable	Firm resource			Business networks			Maritime logistics service quality		
	TE	IE	DE	TE	IE	DE	TE	IE	DE
Business networks	0.49** (0.09)	-	0.49** (0.09)	-	-	-	-	-	-
Maritime logistics service quality	0.48** (0.06)	0.09** (0.03)	0.39** (0.06)	0.18** (0.04)	-	0.18** (0.04)	-	-	-
Competitiveness	0.74** (0.09)	0.42** (0.09)	0.32** (0.09)	0.57** (0.08)	0.07** (0.03)	0.50** (0.08)	0.35** (0.16)	-	0.35** (0.16)

Note: ** = p < 0.01, TE: Total effect, IE: Indirect effect, and DE: Direct effect

Table 3: Hypotheses testing results

Hypotheses	Relationship	Result	Hypotheses	Relationship	Result
H1	FIRM →→→ COMPET	Supported	H6	FIRM →→→MLSQ	Supported
H2	FIRM →→→BUS →→→ COMPET	Supported	H7	BUS →→→COMPET	Supported
H3	FIRM →→→MLSQ →→→ COMPET	Supported	H8	MLSQ →→→COMPET	Supported
H4	FIRM →→→BUS →→→ MLSQ →→→COMPET	Supported	H9	BUS →→→MLSQ	Supported
H5	FIRM →→→BUS	Supported			

Table 2 and 3 showed that firm resource had direct positive effect on competitiveness with 0.32 effect size. Firm resource had indirect positive effect on competitiveness via business networks with 0.49 and 0.50 effect size, respectively. Firm resource had indirect positive effect on competitiveness via maritime logistics service quality with 0.39 and 0.35 effect size, respectively. Firm resource had indirect positive effect on competitiveness via business networks and maritime logistics service quality with 0.49, 0.18, and 0.35, respectively ($P < 0.01$). Hence, all nine hypotheses were supported.

Table 4: Squared multiple correlations (R^2) of observed variables

Observed variable	FIRM_FIN	FIRM_PHY	FIRM_HUM	FIRM_TEC	FIRM_ORG	BUS_JOI	BUS_CRE	BUS_CO	BUS_KNO
Squared multiple correlation (R^2)	0.64	0.70	0.80	0.90	0.93	0.55	0.46	0.80	0.76
Observed variable	MLSQ_REL	MLSQ_RES	MLSQ_ASS	MLSQ_EMP	MLSQ_SER	COM_FIN	COM_MAR	COM_HUM	
Squared multiple correlation (R^2)	0.50	0.43	0.58	0.46	0.41	0.74	0.82	0.73	

Table 4 revealed that R^2 of all observed variables were between 0.41-0.93. The observed variables with the highest R^2 was Organization resource (FIRM_ORG) whose R^2 was at 0.93. The observed variables with the lowest R^2 was Service cost (MLSQ_SER) whose R^2 was at 0.41.

Table 5: Goodness of Fit Index

Goodness of Fit Index	Criteria	Statistical Model	Results
χ^2	Not Significant	$\chi^2 = 112.13$ ($p = 0.066$), $df = 91$	Passed
χ^2/df	<2.00	1.23	Passed
CFI	≥ 0.95	0.99	Passed
GFI	≥ 0.90	0.94	Passed
AGFI	≥ 0.90	0.90	Passed
NFI	≥ 0.90	0.98	Passed
IFI	≥ 0.90	0.99	Passed
RMSEA	<0.05	0.03	Passed

Table 5 showed the results of Goodness-of-Fit Index (GFI) in the structural equation model. The results showed that P-value, Comparative Fit Index (CFI), Goodness-of-Fit Index (GFI), Adjusted Goodness-of-Fit Index (AGFI), Normal Fit Index (NFI), Incremental Fit Index (IFI) and Root Mean Square Error of Approximation (RMSEA) passed the criteria; hence, the structural equation model created in this study was consistent to the empirical evidence.

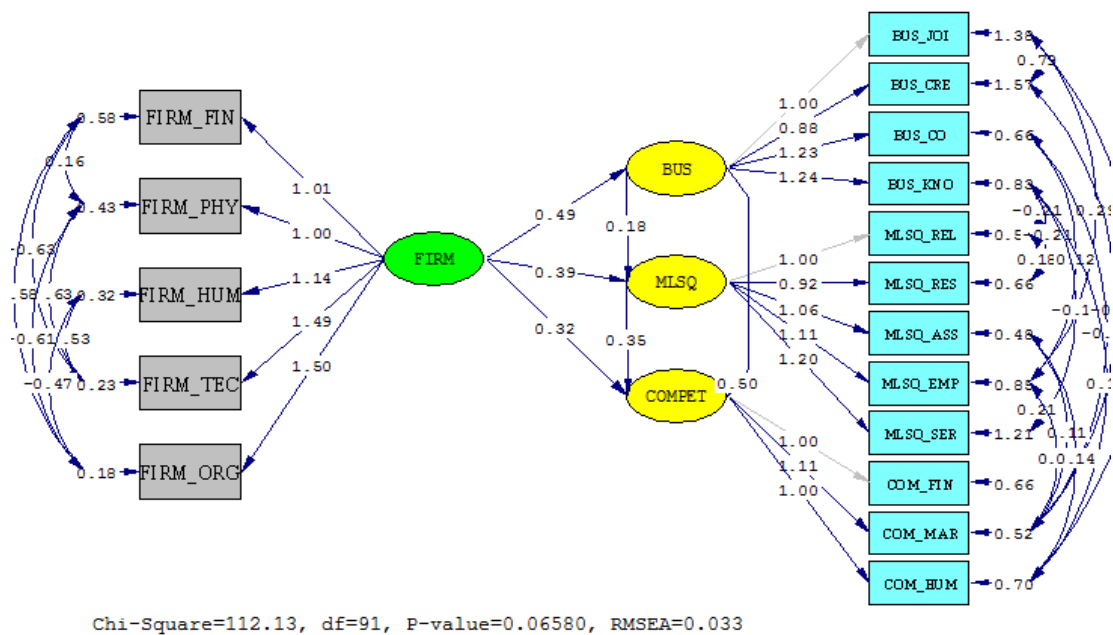


Figure 2. The structural equation model of causal relationship of factors affecting the competitiveness of ocean freight forwarders in Thailand

Conclusion and Discussion of the Study

This research aimed to study causal relationship of factors affecting the competitiveness of ocean freight forwarders in Thailand by developing causal relationship of firm resource, business networks, and maritime logistics service quality that were considered to have correlation to competitiveness of ocean freight forwarders. The main findings of this study were as follows:

H1: Firm resource had significantly direct positive effect on competitiveness with 0.32 effect size ($p < 0.01$). This confirmed that firm resource is the significant factor for gaining sustainable benefits and competitiveness (Fahy, 2000). Similar to Wernerfelt (1984) and Barney (1991) who proposed that competitive advantages was mainly from firm resources. In this study firm resource in five aspects consisting of 1) Financial capital 2) Physical resources 3) Human resources 4) Technological resources and 5) Organization resources.

H2: Firm resource had significantly indirect positive effect on competitiveness via business networks with 0.49 and 0.50 effect size, respectively ($p < 0.01$). This can be described that the readiness of firm resources can support business operation and lead to success. Particularly, in maritime logistics, products are shipped from port to port, having business network of ocean freight forwarders can make the shipping more comfortable and faster and bring competitive advantages over competitors. Similar to Jarillo (2013) who mentioned that

creating business network can support a firm to gain competitive advantages over other competitors outside the network.

H3: Firm resource had significantly indirect positive effect on competitiveness via maritime logistics service quality with 0.39 and 0.35, respectively ($P < 0.01$). This finding was similar to Teeratansirikool *et al.*, (2013) who found that firm resource and firm capacity were the main factors in successful operation to gain advantages in competition. Yang *et al.*, (2009) mentioned that firm resources and maritime logistics service capacity were the key factors to evaluate ocean freight forwarders' performance. Jenssen & Randoy (2006) pointed out that maritime logistics service quality had significantly direct effect on firm competitiveness in ocean freight forwarders context as well.

H4: Firm resource had significantly indirect positive effect on Competitiveness via business networks and maritime logistics service quality with 0.49, 0.18, and 0.35, respectively ($p < 0.01$). This finding showed that business networks and maritime logistics service quality were mediators between firm resource and competitiveness. Similar to Yang *et al.*, (2009) who claimed that Logistics service quality was the mediator between Resource and Firm performance.

H5: Firm resource had significantly direct positive effect on business networks with 0.49 effect size ($P < 0.01$). This finding indicated that Firm resource took effect on business networks as same as the study of Kleymann & Seristo (2001) who claimed that one of the major mutual benefit from joining business networks was the use of mutual firm resources.

H6: Firm resource had significantly direct positive effect on maritime logistics service quality with 0.39 effect size ($p < 0.01$). It was absolutely that firm resources were the key for developing maritime logistics service quality (Frankel, 1993; Stopford, 1997; Lu, 2000; Lu, 2003; Liang *et al.*, 2006)

H7: Business networks had significantly direct positive effect on competitiveness with 0.50 effect size ($p < 0.01$). This finding was similar to the concept of Jennings & Beaver (1997) who claimed that the successful firm was the firm who can gain benefits from business networks for financial support, market access, and marketing analysis. In ocean freight forwarders context, joining business networks will enhance more effective service capacity. Qiao *et al.*, (2014) pointed out that business networks took positive effect on firm performance, and joining business networks provided the opportunities to access information, resources, and knowledge. Moreover, Lalaeng *et al.*, (2018) mentioned that business networks could bring the sustainable development of competitive advantages.

H8: Maritime logistics service quality had significantly direct positive effect on competitiveness with 0.35 effect size ($p < 0.01$). This finding was similar to Bottani & Rizzi (2006) who claimed that logistics services became the main component in all business sections as it provided competitive advantages and more capacity to satisfy customers. Maritime logistics service quality, hence, took direct effect on competitiveness of ocean freight forwarders. The findings of this study was consistent with the previous studies (Lu, 2000; Lu, 2003; Lai *et al.*, 2004; Liang *et al.*, 2006; Song & Panayides, 2008).

H9: Business networks had significantly direct positive effect on maritime logistics service quality with 0.18 effect size ($p < 0.01$). The finding was consistent to the study of Ducruet & Notteboom, (2012) who claimed that globalization of international logistics and the revolution of industrial technology for ocean freight forwarder had resulted in the expanding of business networks that further affected on maritime logistics service quality.

One of the major contributions of this study was that it was the first attempt to identify the firm resources, business networks and maritime logistics service quality in the context of freight forwarder. Previously, many studies had been conducted to investigate qualifications of ocean freight forwarders and customers' needs. However, only a few studies worked on causal relationship of factors affecting the competitiveness of ocean freight forwarders by focusing on Resource-based View Theory. The second implication of this study was that this study supported that business networks and maritime logistics service quality not only took directly effect on competitiveness of ocean freight forwarders, but it also took mediator role between firm resources and competitiveness as well. Therefore, ocean freight forwarders have to adjust their resources and use them in the most effective way in order to develop business networks and maritime logistics service quality to increase competitive capacity and gain advantages over other competitors. This study also supported Resource-Based View (RBV) as it is the key basis for enhancing firm competitiveness. This approach can also describe the relationship between firm resource, business networks, maritime logistics service quality, and point out their effect on the competitiveness of ocean freight forwarders in Thailand.

Suggestion for Future Studies

1) The data were collected at a point of time, therefore, this research could be conducted again in the future as maritime logistics service quality always changes.

2) Data analysis of the future research may use Partial Least Squares Structural Equation Modeling (PLS-SEM) for hypotheses testing as it is suitable for the research with limited numbers of samples and has high flexibility. The results of the different analysis may use for comparing with the results of this study.

3) This study used questionnaire for collecting data, and the informants were asked to evaluate their own company. This may result in biases: over-estimation of their own company's firm resources, business networks, maritime logistics service quality and competitiveness. Therefore, the future research may use qualitative data collection together with quantitative method such as using a case study or focus group to reflect the results of the research.

4) The next study should be applied to international ocean freight forwarders to understand the factors that affect the competitiveness.

Reference

- Anderson, R. C., &Reeb, D. M. (2003). Foundingfamily ownership and firm performance:evidence from the S&P 500. *The journal of finance*, 58(3), 1301-1328.
- Anukunwathaka, Withada. (2010). *How competitive is important?*.Retrieved September 26, 2018 from http://www.prachachat.net/view_news.php?newsid=02edi05231152§ionid.
- Baisya, R. K. (2010). *Winning Strategies for Business*. SAGE Publications India.
- Bakar, L. J. A., & Ahmad, H. (2010). Assessing the relationship between firm resources and product innovation performance: A resource-based view. *Business Process Management Journal*, 16(3), 420-435.
- Banomyong, R., &Supatn, N. (2011). Selecting logistics providers in Thailand: a shippers' perspective. *European Journal of Marketing*, 45(3), 419-437.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of management*, 17(1), 99-120.
- Barney, J. B., &Hesterly, W. S. (2010). VRIO Framework//Strategic Management and Competitive Advantage.: 68-86.
- Bentler, P., & Chou, C. (1987). Practical issues in structural modeling. *Sociological Methods and Research*, 16(1), 78-117.
- Bienstock, C. C., Royne, M. B., Sherrell, D., & Stafford, T. F. (2008). An expanded model of logistics service quality: Incorporating logistics information technology. *International Journal of Production Economics*, 113, 205-222.
- Bottani, E., &Rizzi, A. (2006). Strategic management of logistics service: A fuzzy QFDapproach. *International Journal of Production Economics*, 103, 585-599.
- Burkovskis, R. (2008). Efficiency of freight forwarder's participation in the process of transportation. *Transport*, 23(3), 208-213.
- Chen, K. K., Chang, C. T., & Lai, C. S. (2009). Service quality gaps of business customers in the shipping industry. *Transportation Research Part E*, 45, 222-237.
- Conner, K. R. (1991). A historical comparison of resource-based theory and five schools of thought within industrial organization economics: do we have a new theory of the firm?. *Journal of management*, 17(1), 121-154.
- Ducruet, C., &Notteboom, T. (2012). The worldwide maritime network of container shipping: spatial structure and regional dynamics. *Global networks*, 12(3), 395-423.

- Dumitraşcu, V., Dumitraşcu, R. A., & Turdean, M. S. (2014). Evaluation of Business Networks: a New Methodological Perspective. *Procedia-Social and Behavioral Sciences*, 109, 120-124.
- Em-ek, N. (2014). Antecedents and Consequences of behavioral competencies for competitiveness and success of Thai – Malaysia border trade entrepreneurs to support the ASEAN Economic Community. *Veridian E-Journal, Silpakorn University* 7, 2 (May-August) :381-401.
- Eng, S. W. L., Chew, E. P., & Lee, L. H. (2014). Impacts of supplier knowledge sharing competences and production capacities on radical innovative product sourcing. *European Journal of Operational Research*, 232(1), 41-51.
- Evered, R., Schendel, D. E., & Hofer, C.W. (1980). Strategic Management: A new View of Business Policy and Planing. *Administrative Science Quarterly*, 25(3), 536-543.
- Fahy, J. (2000). The resource-based view of the firm: some stumbling-blocks on the road to understanding sustainable competitive advantage. *Journal of European industrial training*, 24(2/3/4), 94-104.
- Fahy, J., & Smithee, A. (1999). The strategic marketing and the resource-based view of the firm. *Academy of Marketing Science Review*, 10, 1-20.
- Fiscal Policy Office. (2009). *The development of Thai competitiveness in the crisis era World economy*. Retrieved November 27, 2017, from <http://www.fpo.go.th/main>
- Frankel, E. G. (1993). Total quality management in liner shipping. *Marine Policy*, 17(1), 58-63.
- Fremont, A. (2009). Shipping lines and logistics. *Transport Reviews*, 29(4), 537-554.
- Hahn, M. H., Lee, K. C., & Lee, D. S. (2015). Network structure, organizational learning culture, and employee creativity in system integration companies: The mediating effects of exploitation and exploration. *Computers in Human Behavior*, 42, 167-175.
- Hair Jr, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2010). SEM: An introduction. *Multivariate data analysis: A global perspective*, 629-686.
- Hong, J., Chin, A. T. H., & Liu, B. (2007). Logistics service providers in China: Current status and future prospects. *Asia Pacific Journal of Marketing and Logistics*, 19(2), 168-181.
- Hsieh, M. and K. Tsai. (2007). Technological Capability, Social Capital and the Launch Strategy for Innovative Products. *Industrial Marketing Management* 36, 493–502.
- Huang, Y., & Wilkinson, I. F. (2013). The dynamics and evolution of trust in business relationships. *Industrial Marketing Management*, 42(3), 455-465.

- Hunt, S. D., & Morgan, R. M. (1995). The comparative advantage theory of competition. *The Journal of Marketing*, 1-15.
- Inoue, H. & Liu, Y.Y. (2015). Revealing the Intricate Effect of Collaboration on Innovation Research Article p. 1-16.
- Jarillo, J. C. (2013). *Strategic networks*. Routledge.
- Jennings, P., & Beaver, G. (1997). The performance and competitive advantage of small firms: a management perspective. *International small business journal*, 15(2), 63-75.
- Jenssen, J.I. and Randoy, T., 2006. The performance effect of innovation in shipping companies. *Maritime Policy and Management*, 33 (4), 327–343.
- Kasikorn Research Center. (2018). *Business trend analysis*. Retrieved June 11, 2018 from <https://www.kasikornresearch.com/th/analysis/k-econ/business/Pages/3737.aspx>
- Kleymann, B., & Seristö, H. (2001). Levels of airline alliance membership: balancing risks and benefits. *Journal of Air Transport Management*, 7(5), 303-310.
- Kline, R. B. (2015). *Principles and practice of structural equation modeling*. Guilford publications.
- Kristandl, G., & Bontis, N. (2007). Constructing a definition for intangibles using the resource based view of the firm. *Management decision*, 45(9), 1510-1524.
- Lai, K.H., (2004). Service capability and performance of logistics service providers. *Transportation Research – Part E: Logistics and Transportation Review*, 40 (5), 385–399.
- Lai, K. H., Ngai, E. W. T., & Cheng, T. C. E. (2004). An empirical study of supply chain performance in transport logistics. *International Journal of Production Economics*, 87, 321-331.
- Lalaeng, C., Chaipheth, C., & Uea-aree, W. (2018). Business Networking Development and Competitive Advantage of Community Enterprise in Chumphon Province. *Veridian E-Journal, Silpakorn University* 11, 2 (May-August) :3447-3464.
- Liang, G. S., Chou, T. Y., & Kan, S. F. (2006). Applying fuzzy quality function deployment to identify service management requirements for an ocean freight forwarder. *Total Quality Management & Business Excellence*, 17(5), 539-554.
- Lu, C. S. (2000). Logistics services in Taiwanese maritime firms. *Transportation Research Part E*, 36, 79-96.

- Lu, C. S. (2003). The impact of carrier service attributes on shipper-carrier partnering relationships: a shipper's perspective. *Transportation Research Part E: Logistics and Transportation Review*, 39(5), 399-415.
- Lu, Y., & Dinwoodie, J. (2002). Comparative perspectives of international freight forwarder services in China. *Transportation Journal*, Winter, 17-27.
- Mangan, J., & Christopher, M. (2005). Management development and the supply chain manager of the future. *The International Journal of Logistics Management*, 16(2), 178-191.
- Mangan, J., Lalwani, C., & Fynes, B. (2008). Port-centric logistics. *International Journal of Logistics Management*, 19(1), 29-41.
- Martín-de-Castro, G., Delgado-Verde, M., López-Sáez, P., & Navas-López, J. E. (2011). Towards 'an intellectual capital-based view of the firm': origins and nature. *Journal of business ethics*, 98(4), 649-662
- Möller, K. (2013). Theory map of business marketing: Relationships and networks perspectives. *Industrial Marketing Management*, 42(3), 324-335.
- Morgan, N. A., Vorhies, D. W., & Schlegelmilch, B. B. (2006). Resource-performance relationships in industrial export ventures: The role of resource inimitability and substitutability. *Industrial marketing management*, 35(5), 621-633.
- Nanakun, Surasak. (2013). *Creating a business network*. Retrieved April 7, 2018 from https://www.novabizz.com/NovaAce/Relationship/Business_Networking.htm
- Organization for Economic Cooperation and Development. (1992). *Technology and the economy: The Key relationships* Paris: OECD
- Penrose, E.T. (1959). *The theory of the growth of the firm*. Basil Blackwell: Oxford.
- Peterson, R. A., & Kim, Y. (2013). On the relationship between coefficient alpha and composite reliability. *Journal of Applied Psychology*, 98(1), 194-198.
- Pirttila, T., & Huiskonen, J. (1996). A framework for cost-service analysis in differentiation of logistics services. *International Journal of Production Economics*, 45, 131-137.
- Qiao, P. H., Ju, X. F., & Fung, H. G. (2014). Industry association networks, innovations, and firm performance in Chinese small and medium-sized enterprises. *China Economic Review*, 29, 213-228.
- Raengsungnoen, Krit. (2011). *Factor analysis with SPSS and AMOS for research*. Bangkok :SE-ED Publisher.

- Ramos, C., Henneberg, S. C., & Naudé, P. (2012). Understanding network picture complexity: An empirical analysis of contextual factors. *Industrial Marketing Management*, 41(6), 951-972.
- Saridvanich, Supanee. (2011). *Strategic management, theoretical concepts*. Bangkok: Thammasat University Printing House.
- Song, D. W., & Panayides, P. M. (2008). Global supply chain and port/terminal: integration and competitiveness. *Maritime Policy & Management*, 35(1), 73-87.
- Sørensen, O. H., Hasle, P., & Pejtersen, J. H. (2011). Trust relations in management of change. *Scandinavian Journal of Management*, 27(4), 405-417.
- Stopford, M., 1997. *Maritime Economics*, second ed. Routledge & Kegan Paul, London.
- Teeratansirikool, L., Siengthai, S., Badir, Y., & Charoenngam, C. (2013). Competitive strategies and firm performance: the mediating role of performance measurement. *International Journal of Productivity and Performance Management*, 62(2), 168-184.
- Thai, V. V., Tay, W. J., Tan, R., & Lai, A. (2014). Defining service quality in tramp shipping: Conceptual model and empirical evidence. *The Asian Journal of Shipping and Logistics*, 30(1), 1-29.
- UNCTAD secretariat. (2018). *Review of Maritime Transport*. Retrieved January 16, 2019, from https://unctad.org/en/PublicationsLibrary/rmt2018_en.pdf
- Vachivivat, Suphot. (2013). *International shipping business*. Retrieved April 11, 2019 from <http://www.wice.co.th/2013/03/18/freight-forwarder-2/>
- Warraich, K. M., Warraich, I. A., & Asif, M. (2013). Achieving Sustainable Competitive Advantage through Service Quality: an Analysis of Pakistan's Telecom Sector. *Global Journal of Management And Business Research*.
- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2), 171-180.
- Wilden, R., Gudergan, S. P., Nielsen, B. B., & Lings, I. (2013). Dynamic capabilities and performance: strategy, structure and environment. *Long Range Planning*, 46(1-2), 72-96.
- Worthington, R., & Whittaker, T. (2006). Scale Development Research. A Content Analysis and Recommendations for Best Practices. *The Counseling Psychologist*, 34(6), 806-838.

- Yang, C. C. (2012). Assessing the moderating effect of innovation capability on the relationship between logistics service capability and firm performance for ocean freight forwarders. *International Journal of Logistics Research and Applications*, 15(1), 53-69.
- Yang, C. C. (2012). Assessing the moderating effect of innovation capability on the Relationship between logistics service capability and firm performance for ocean Freight forwarders. *International journal of logistics research and applications*, 15(1), 53-69.
- Yang, C. C., Marlow, P. B., & Lu, C. S. (2009). Assessing resources, logistics service apabilities, innovation capabilities and the performance of container shipping services in Taiwan. *International Journal of Production Economics*, 122(1), 4-20.
- Yang, M. G. M., Hong, P., & Modi, S. B. (2011). Impact of lean manufacturing and environmental management on business performance: An empirical study of manufacturing firms. *International Journal of Production Economics*, 129(2), 251-261.
- Zorlu, K., & Hacıoğlu, Ü. (2012). The conflict issue in international business and the global leadership. *Procedia-Social and Behavioral Sciences*, 41, 100-107.