

Improving Performance, Logistics Service Quality to further enhance the create Competitive Advantage of Logistics Service Providers: Container Road Transportation

Hatairat Bandittayarak¹, Chattrarat Hotrawaisaya²

¹College of Logistics and Supply Chain, Suan Sunandha Rajabhat University, Thailand, arjankaew@hotmail.com, chattrarat.ho@ssru.ac.th

ABSTRACT

The objectives of this research are to study the casual structure relation off service competency of Logistics Service Competency (LSC) and service quality of Logistic Service Provider (LSQ) affected Logistics Service Efficiency (LSE) and Competitive Advantage (CA) of road-container transportation service provider. Population and sample are road-container transportation service provider total 363 companies. Research result found that logistic service competency, logistic service quality, logistic service efficiency and competitive advantage of road-container transportation service provider which were from all questionnaires were high level, Goodness of Fit Index of model after adjustment found that it was empirical suitability and suitable these values were very high. Analysis result of final model found that from study result shown all observation variables had relation with latent variable on statistically significant and error value of score model was lower than standard ± 2.58 (Standardized Residuals) which shown that latent variable aligned with inside and empirical data

Keywords

Logistics Service Quality/ Logistics Service Competency/ Logistics Service Efficiency/ Competitive Advantage

Introduction

Road transportation is the biggest portion of logistic market and goods transportation in the world particular Europe and Asia Pacific due to the trade quantity has increase in both regions. Logistic market around the world has growth and expected that it has tend to continue expand expectation from the revenue amount in year 2020 at 1,020 trillion US dollars and revenue in year 2021 is 1,094 trillion US dollars, revenue of logistic market in Asia Pacific expected that in year 2020 had revenue at 396 trillion US dollars and year 2021 at 430 trillion US dollars. Logistic sector is growing due to e-commerce requirement increases and expand the production to China because huge investment in business areas and upgrading facilities of modern logistic. Besides relocation of production to Southeast Asia caused the investment in infrastructure which is the catalyst of logistic growing in this region, under ASEAN Economic Community or "AEC". Transportation and Logistic sectors in ASEAN tend to high expand as a result the expansion of consumption in ASEAN.

When calculation from infrastructure, road transportation is biggest in the market because of expansion of consumption in ASEAN, expansion production in China and upgrading the facilities of logistic to be modern; moreover, relocation production to Southeast Asia become investment in an infrastructure which is the attraction of logistic sector the Twelfth Nation Economic and Social Development Plan (2017-2021) 20 years Nation Strategy (2018-2036) and Ministry of Transportation Strategy Plan to support The Third development of nation's logistic system (2017-2021) including state policy focusing on the development of logistic that is the industry New S-Curve that has the role to develop country's economic. Logistic system development is the important strategy to develop country including policy and strategy of Ministry Higher Education, Science,

Research, and Innovation 2021-2027, at the third platform opens the opportunity for stakeholders have the participation to plan, specific, operate and evaluate activities performance to develop strategy of increasing the competitiveness competency in country's targeted industry sustainable growth. It is interesting to study about the logistic service competency, logistic service quality and logistic service efficiency of road-container logistic service provider in Thailand how and whether effected competitive advantage or not including the guidance how to develop. This research focuses on studying the level of variable and the relation of logistic service competency, logistics service quality and logistics service efficiency of road-container logistic service provider affected competitive advantage.

Literature Review

Mentzer, Flint & Hult (2001) proposed logistic service quality (LSQ) variable which were mixed the concept between SERVQUAL of Parasuraman et al. (1988) and the components of service products Banomyoung (2016) based the concept of Mentzer, Flint & Hult (2001) to apply the evaluation efficiency of logistic service quality in Thailand Logistic service quality (LSQ) composed physical distribution from service perspective focusing on the service of entrepreneur, it is not client. However, it is trying to point the value of entrepreneur to create for their clients then evaluated the perception of clients about logistic service while Mentzer, Flint, and Hult (2001) identified the evaluating customer perception in relation to expectation. It made the new concept included the marketing customer service (MCS)

Feng, Zheng & Tan (2007) and Jian & Zhenpeng (2008) proposed the new model of logistic design for online purchasing products taht had 6 components which were Timeliness Quality, Personal Contact Quality, Order

Quality, Order Discrepancy Handling, Order Condition and Convenience. The studying in the part of Jian and Zhenpeng (2008) proposed the model that also had 6 components which were Personal's Quality, information quality, Order the course, intact intensity of the goods, the error is dealt with and timeliness which this model had limited that lack of acceptance to inspect and apply. In addition, the study of Ditkaew, K et al., 2020 found that the successful using enterprise resource planning system had direct influence and positive relationship to logistic service efficiency, warehouse management and delivery method. The quality of information technology system was the one part of enterprise resource planning system.

Logistics Service Competency: LSC

Logistic service competency assisted the customer to receipt the products in the suitable quantity at the right location, right time and suitable price. Which caused the customer satisfaction continuously with logistic service efficiency, logistic service competency leading to the result of customer satisfaction, loyalty and repeat purchase (Mentzer, Flint & Hult, 2001). Finally, it leads the market share and shareholder value. Logistic service competency can help organization really by reducing distribution cost and adjusting customer satisfaction by proposing product at the right time and suitable location (Chris et al., 2008) according to Sriyakul et al., (2019) found that logistic service competency become the key factors of competitive advantage of pharmaceutical industry through positive logistic activities with cost and service and delivery capacity. Evaluating tools have been studied and developed extensively the connection with the ability and create superior performance to achieve a competitive advantage. In the context of logistic service industry, in around the world market now has changed rapidly. Study logistic service competency by emphasizing the customer such as integration, knowledge, agile and competency to indicate which can indicate the competitive advantage sustainability included the study result of logistic service competency such as positioning order, distribution support and agile which are the factors affecting the competitive advantage (Ming Juan Ding, 2011).

Therefore, the important competency had 3 types that the logistic service provider was necessary development so that logistic service provider was difference from competitor 1) Positioning was the main ability that logistic service provider had to operate effectiveness and competitiveness in logistic market (Ming Juan Ding, 2011) 2). The context of distribution support was the organization competency to access wide area at distribution and delivery which were desirable feature for shippers (Qureshi, Dinesh & Pradeep 2008) extensive distribution performance, it was recognized as a distinguishing feature for shippers with a spatially defined economy. Competitive advantage of delivery meant the service ability. This meaning was the ability of effectively coverage the global distribution of products with competitive distribution costs (Kam & Rimmer 2011) from this distribution competency or distribution support made logistic service provider getting the benefit from service and higher profit in highly competitive (Wang et al., 2008).

Therefore, another core competency that logistic service provider had to have which was distribution support competency and service providing for customer covering distribution cost efficiency which was important service feature for logistic service provider (Liu, et al. 2010) and 3) Agility was specified to be the competency indicator of organization to specify and quick respond to changing market demands. Agility helped the organization to response in a timely manner and effective against market volatility and other uncertainly; therefore, it caused the organization could create superior competitive position (Swafford, Ghosh & Murthy 2006) including the urgent delivery service that response to customer need quickly or specified flexible delivery schedule was also the competitive advantage for logistic service provider (Cho, Ozment & Sink 2008). By concerning the agility which composed 6 subcomponents such as strategic awakening, ability to response strategy, work alertness, strategic responsiveness, preparation in principle, and ability to respond according to principle.

Logistics Key Performance Indicator

Wong and Karia (2010) suggested that the efficiency of logistic operation could audit through company's resource and pointing to the strategy of business, ability of procedure and resource management were the factors to create the competitive advantage of logistic service provider Banomyong (2016) said logistic key performance indicator used to evaluate the logistic activities had 3 dimensions which were 1). Cost dimensions shown the cost portion of logistic activity compared to annual sales of business, indicating performance of logistic cost reflected the logistic performance obviously. The most reflection of logistic was the real cost that made the operation successful particularly. (Bowersox et al, 2002) Total cost analysis was important to indicate the efficiency and performance of logistic cost also reflected the effectiveness (Coyle et al, 2003). 2). Time dimension composed the indicator that used time data for moving goods excepted the production process and moving period of data which started from receiving data and end delivery data to customer or user of products or services which related to Chienwattanasook et al (2019) found that the efficiency of time direct relationship with logistic business and 3). Reliability dimension Bowersox et al. (2002) found that reliability about the service and customer satisfaction composed the reliability of delivery and data indicator such as On-time delivery and delivery in-full amount.

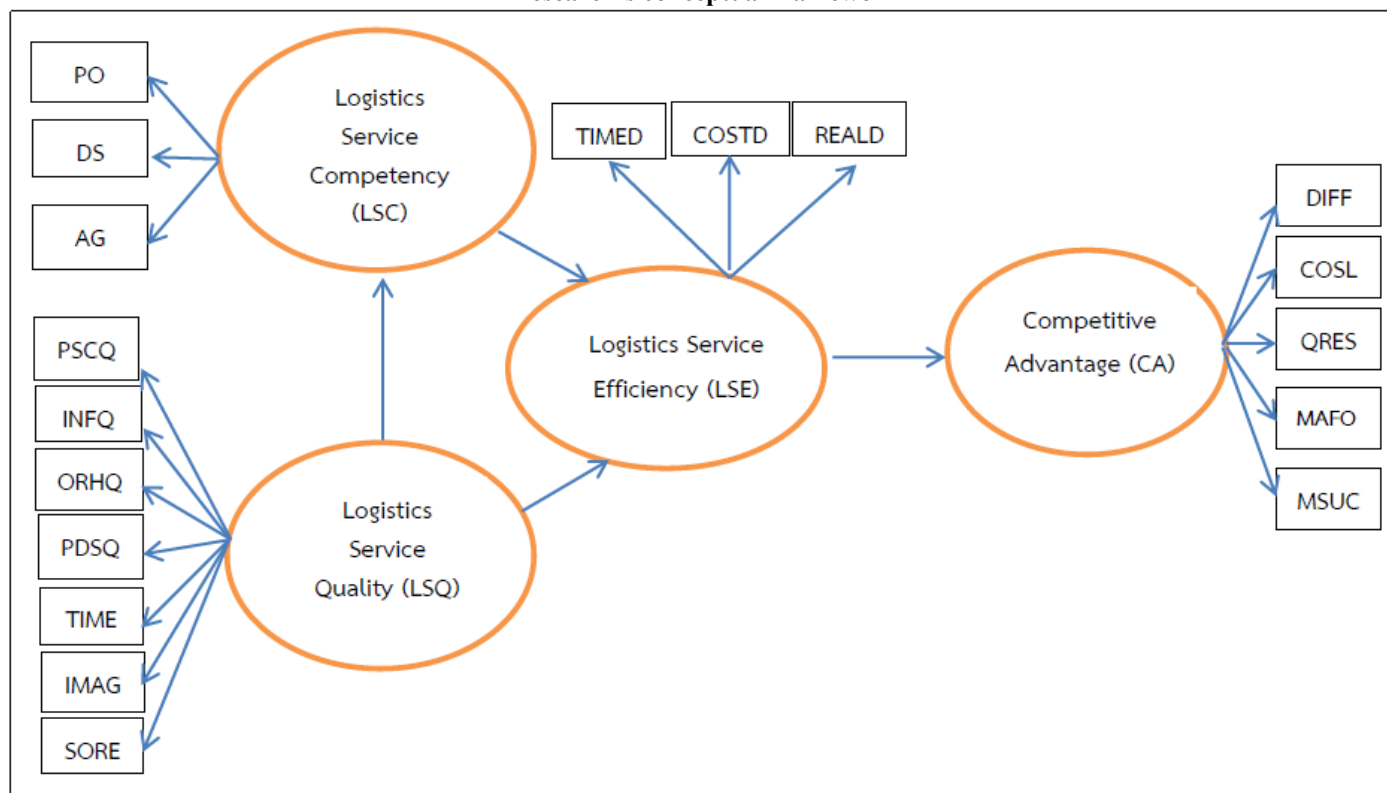
Research's Hypothesis

- H1: Logistics Service Quality has direct influence on Logistics Service Competency.
- H2: Logistics Service Quality has direct influence on Logistics Service Efficiency.
- H3: Logistics Service Quality has direct influence on Competitive Advantage.
- H4: Logistics Service Competency has direct influence on Logistics Service Efficiency.
- H5: Logistics Service Competency has direct influence on Competitive Advantage.

H6: Logistics Service Efficiency has direct influence on Competitive Advantage.

H7: Logistics Service Quality and Logistics Service Competency have direct influence on Logistics Service Efficiency.

Research's conceptual framework



Picture 1 Research Conceptual Framework

Methods

Research model is mixed method by using the explanatory design which has the characteristic to operate this research 2 phases by starting the quantitative research then using the research result considers to select the issue and informant for qualitative research next and at the same time theoretical conceptual framework was synthesized and tested with empirical data by structure equation modeling (SEM) used calculating sample size method according to Hair et al. (2010). For suitable and enough sample size for 360 samples, the samples selection according to the probability

sampling used sample random sampling. The tools are used data collection for this research. Researcher used questionnaires by 5 levels of rating scale (Best and Kahn 2006, p. 343) the tools using in quantitative research was in depth interview. Informant of questionnaires were the executive or manager division of logistic totally at 10 people using selecting samples methods was mainly for purposeful selection to get the sample group of qualification within the research study framework.

Results

Table 1 Data analysis result of opinion

Main Factors	Sub-Factors	Mean	Opinion Level
Logistics Service Competency	Agile	4.36	Highest
	Distribution Support	4.18	High
	Positioning Order	3.83	High
	Total	4.12	High
Logistics Service Quality	Personnel Contract Quality	4.31	Highest
	Time management ability	4.13	High
	Physical Distribution	4.06	High
	Ability to prepare Information for customer to make decision	4.05	High
	Order management quality	4.00	High
	Social responsibility	3.95	High
	Image	3.92	High

	Total	4.06	High
Logistics Service Efficiency	Trust	4.23	Highest
	Cost	4.17	High
	Time	3.90	High
	Total	4.10	High
Competitive Advantage	Creating Difference	4.28	Highest
	Marketing Focus	4.27	Highest
	Cost Leadership	4.07	High
	Marketing Success	4.03	High
	Quick Response	3.97	High
	Total	4.12	High

Table 2 Descriptive statistic of variable

Variables	MEAN	Variance	Skew value	Kurtosis	Comment level
Logistic Service Competency (LSC)					
Positioning Order (PO)	3.827	0.556	0.784	-0.052	High
Distribution Support (DS)	4.181	0.436	0.326	-0.521	High
Agile (AG)	4.358	0.413	0.059	-0.619	Highest
Total	4.122	0.395	0.816	0.002	High
Logistic Service Quality (LSQ)					
Personnel Contract Quality (PSCQ)	4.315	0.381	-0.425	0.222	Highest
Ability to prepare Information for customer to make decision (INFO)	4.046	0.458	0.212	-0.575	High
Ordering Hight Quality (ORHQ)	3.997	0.479	0.448	-0.324	High
Physical Distribution Service Quality (PDSQ)	4.061	0.488	0.333	-0.557	High
Time Management Ability (TIME)	4.129	0.487	0.310	-0.572	High
Image (IMAG)	3.919	0.505	0.584	-0.495	High
Social Responsibility (SORE)	3.949	0.465	0.608	-0.134	High
Total	4.059	0.381	0.606	-0.086	High
Logistic Service Efficiency (LSE)					
Cost Standard (COSTD)	4.168	0.531	-0.081	-0.847	High
Time (TIMED)	3.899	0.526	0.606	-0.712	High
Reliability (REALD)	4.226	0.423	-0.027	-0.657	Highest
Total	4.098	0.432	0.404	-0.890	High
Competitive Advantage (CA)					
Creating Difference (DIFF)	4.275	0.383	-0.196	0.382	Highest
Cost Leadership (COSL)	4.070	0.546	-0.036	-0.772	High
Quick Response (QRES)	3.968	0.585	0.222	-0.775	High
Marketing Focus (MAFO)	4.264	0.460	-0.353	-0.480	Highest
Marketing Success (MSUC)	4.031	0.404	0.526	-0.393	High
Total	4.122	0.401	0.169	-0.383	High

From above table found that the analysis result of logistic service competency in the overview at high level, Mean is 4.122 and Variance is 0.395 when considered many variables sorting by highest mean to lowest mean such as agile, distribution support and positioning order respectively also found that analysis result about the logistic service quality totally at high level, Mean is 4.059, Variance is 0.381 when consider each variable found that personnel contract quality, time management ability, physical distribution, ability to prepare information for customer to

make decision, order management quality, social responsibility and image respectively. Additional analysis result of logistic service efficiency totally at high level, Mean is 4.098 and Variance is 0.432 when considered variables found that the reliability, cost, and time respectively. Finally, analysis result of competitive advantage totally at high level, Mean is 4.122 and Variance is 0.401 when considered each variable found that creating difference, focusing targeted market, cost leadership, market successful and quick response respectively; moreover, data

collection had skew value and suitable kurtosis value Chopa (2018).
between -3 and +3 according to the suggestion of Gupta and

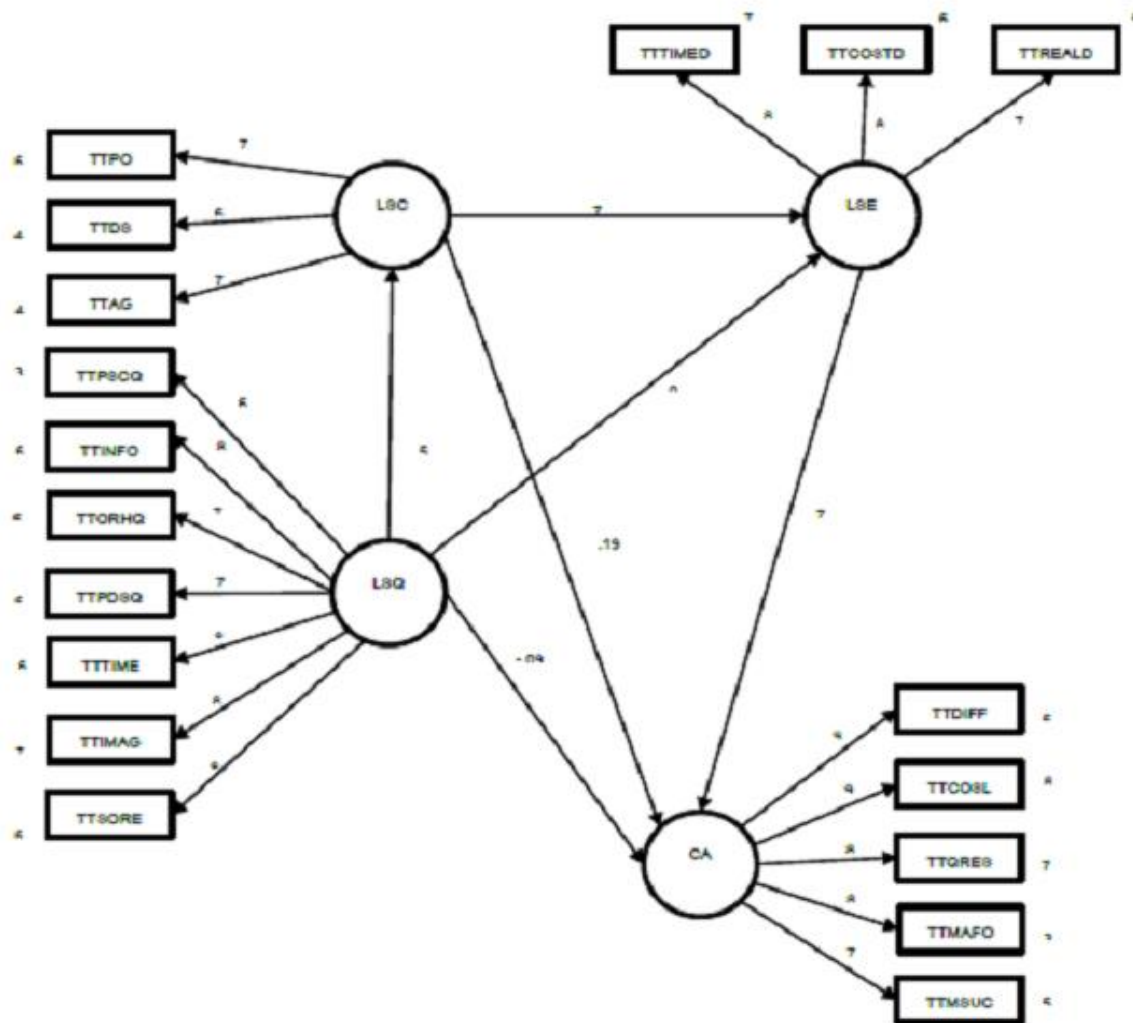
Table 3 The relation of variables

	PO	DS	AG	PSCQ	INFO	ORHQ	PDSQ	TIME	IMAG	SORE	COSTD	TIMED	REALD	DIFF	COSL	QRES	MAFO	MSUC
PO	1																	
DS	.526**	1																
AG	.554**	.628**	1															
PSCQ	.157**	.265**	.174**	1														
INFO	.371**	.277**	.294**	.600**	1													
ORHQ	.347**	.176**	.280**	.428**	.734**	1												
PDSQ	.392**	.365**	.348**	.516**	.660**	.566**	1											
TIME	.331**	.256**	.274**	.511**	.682**	.585**	.595**	1										
IMAG	.337**	.304**	.303**	.558**	.640**	.501**	.748**	.708**	1									
SORE	.359**	.353**	.295**	.511**	.662**	.478**	.635**	.695**	.723**	1								
COSTD	.461**	.410**	.413**	.186**	.230**	.233**	.316**	.367**	.384**	.377**	1							
TIMED	.560**	.462**	.500**	.190**	.233**	.269**	.379**	.291**	.331**	.314**	.706**	1						
REALD	.548**	.457**	.448**	.228**	.267**	.289**	.298**	.342**	.314**	.313**	.555**	.662**	1					
DIFF	.310**	.275**	.290**	.295**	.228**	.165**	.255**	.253**	.290**	.281**	.574**	.540**	.608**	1				
COSL	.576**	.513**	.523**	.198**	.267**	.177**	.328**	.297**	.323**	.318**	.701**	.736**	.665**	.701**	1			
QRES	.502**	.417**	.445**	.213**	.213**	.165**	.301**	.204**	.304**	.268**	.614**	.687**	.612**	.679**	.786**	1		
MAFO	0.063	0.018	.196**	.162**	.165**	.130*	0.093	.123*	.197**	0.085	.422**	.360**	.411**	.599**	.459**	.562**	1	
MSUC	.369**	.378**	.428**	.148**	.158**	.113*	.176**	.193**	.208**	.159**	.621**	.580**	.503**	.681**	.720**	.608**	.519**	1

Table 3 found that relationship of all variables had value not over 0.9 that Mean not found the relationship problem during internal variables.

Table 4 Model Test

Model Test	Cmin/df	df	p-value	GFI	AGFI	RMR	RMRSEA	TLI	CFI	NFI
1 ST	5.771	129	0.000	0.818	0.759	0.014	0.115	0.843	0.868	0.845
Improve	1.222	89	0.076	0.968	0.939	0.009	0.025	0.993	0.996	0.977



Picture 2 Final Model after adjustment

Remark: Logistic Service Quality (LSQ), Logistic Service Competency (LSC), Logistic Service Efficiency (LSE), Competitive Advantage (CA)

When did model analysis found that cmin/df value equal 5.771, P-value at 0.000, GFI was 0.818, AGFI at 0.759, RMR at 0.014, RMSEA at 0.115, ICO compared to Tucker & Lewis (1973) had value 0843, CFI at 0.898, NFI at 0.810 which was analysis found that had GFI model still had not enough empirical suitability so the adjustment of Modification indices.

When had the model adjustment according to the suggestion of Modification indices found that cmin/df value was 1.222, P-value was 0.076, GFI was 0.968, AGFI was 0.939, RMR was 0.009, RMSEA was 0.025, GFI compared to Tucker & Lewis (1973) was 0.993, CFI was 0.996, NFI was 0.977 that was from these analysis result found that the GFI of model had the empirical suitability and these values were highly reasonable (Sukortprommee, 2013)

Table 5 Estimate, Standard Estimate, S.E., C.R. and p-value of model according to conceptual framework

			Estimate	S.E.	t-value	P
Service Quality	--- >	Service Quality	0.489	0.055	7.513	***
Service Competency	--- >	Service Efficiency	0.726	0.119	9.672	***
Service Quality	--- >	Service Efficiency	0.082	0.077	1.431	0.152
Service Efficiency	--- >	Competitive Advantage	0.780	0.079	10.764	***
Service Quality	--- >	Competitive Advantage	0.188	0.127	2.560	0.010
Service Quality	--- >	Competitive Advantage	-0.087	0.059	-2.153	0.031

Table 5 The result from final analysis of model showed that factors loadings had the weight during -0.087 to - 0.780 and T-Value higher 1.96 which all observe variables had acceptable level of element weight and convergent validity and the result from this study shown that all observe variables had relationship to statistical significant latent

variables and error value in standard score model was lower ± 2.58 (Standardized Residuals) which shown that the talent variable related inside and related to empirical data so this simulation could be used for analysis hypothesis testing next, the detail as follows;

Table 6 The direct and indirect influence

Variables	Total influence			Direct influence			Indirect influence		
	LSC	LSE	CA	LSC	LSE	CA	LSC	LSE	CA
LSQ	0.489	0.436	0.345	0.489	0.082	-0.087		0.355	0.432
LSC		0.726	0.755		0.726	0.188			0.567
LSE			0.780			0.780			

Remark: Logistic Service Quality (LSQ), Logistic Service Competency (LSC), Logistic Service Efficiency (LSE), Competency Advantage (CA)

From above table when considered the logistic service quality found that it had total influence and direct influence of logistic service competency as statistical significant by path coefficient was 0.489 while totally influence, directly influence and indirectly influence logistic service efficiency no statistical significant by path coefficient were 0.436, 0.082 and 0.355 respectively besides totally, directly and indirectly influence of competitive advantage statistical significant by path coefficient were 0.345, -0.087 and 0.432 respectively when considered the influence of logistic service competency found that it had totally and directly influence of logistic service competency found that it had totally and directly influence of logistic service efficiency statistical significant by path coefficient was 0.726 while totally, directly, and indirectly influence to competitive advantage in statistic significant were 0.755, 0.188 and 0.567 respectively. Finally, when consider the influence of logistic service efficiency found that logistic service efficiency had the total influence and direct influence on statistically significant competitive advantage by the path coefficient is 0.780.

Banomyong et al. (2014). The result of study seems that logistic service efficiency of producer to export and import in Vietnam also gave the suggestion how to solve problem the coverage logistic service cost of exporting and importing producer in Vietnam also align with Buket ÖZOĞLU and Arzum BÜYÜKKEKLİK (2017) that found the logistic service efficiency is the cost efficient, operation and relationship has positive effect and significant to customer loyalty.

Study result in this research expand knowledge and confirm to encourage competitive advantage influenced by logistic service competency and the service quality of logistic service provider in Thailand because the researcher developed the research conceptual framework resulting from synthesis of theories related to this research creating from factors suitable with business operation of road-container transportation service provider in Thailand. The result of this research still got the empirical evidence to support the concept about the logistic service competency and service quality of logistic service provider affected the logistic service efficiency and competitive advantage.

Discussions

Logistic service quality had the influence competitive advantage statistically significant to align with Thai, V.V. (2013) found that the logistic service quality had accuracy and reliability and found that personnel contract quality was the most importance for increased perception of logistic service quality and still reputation. Sze Yin Ho, J et al. (2012) found that timeliness replaced by conditions/ Accuracy of Order which was the customer of logistic service provider interested in logistic service competency had total, direct and indirect influence on statistical significance of competitive advantage to align with the result of logistic service competency study such as specified positioning order, distribution support and agility which were the factors affecting to create competitive advantage (Ming Juan Ding, 2011) Logistic service efficiency had competitive advantage of total and direct influence statistically significant competitive advantage to relate to

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