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Determinant Factors of Service Quality for Green Logistics Service Providers of Cross-Border Trade In Thailand

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Abstract

Logistics service providers in Thailand provide transportation and warehousing services for cross-border trade activities between Thailand and neighbouring countries namely Malaysia, Laos, Cambodia and Myanmar. The objective of this research is to investigate the service quality of green logistics practices among the services of cross-border in Thailand. Environmental friendly in logistics is inevitable due to the global campaign in supporting on a sustainable cross-border logistics. Logistics service providers in

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Thailand need to put an effort in providing Green Logistics practices to their customers. Green logistics involves the uses of environmental friendly of transportation and warehousing in using biofuel, renewable energy sources in reduction of wastes, better atmospheric emissions, permissible noises and encouraged safety. The respondents of this research were 384 of logistics service providers located at cross border areas of Malaysia, Laos, Cambodia and Myanmar. Stratified random sampling is used on samples through the structured questionnaires and regression also applied for data analysis procedures. Finding of this research revealed that by practicing on green and service quality will improve on the logistics performance as well as quality of the overall logistics businesses. It also suggests that the logistics service providers should deliver on the Green Quality at cross-border trade activities. This research is able to support on logistics providers and understand on the importance of green logistics service quality for better business performance in future.

Keywords: Cross-border trade, Service Quality, Logistics Service Providers, transport and warehouse and performance

Grupos de lastre como método de prevención del estrés profesional en trabajadores de salud mental de nivel medio

Resumen

Los proveedores de servicios de logística en Tailandia proporcionan servicios de transporte y almacenamiento para actividades de comercio transfronterizo entre Tailandia y países vecinos, a saber, Malasia, Laos, Camboya y Myanmar. El objetivo de esta investigación es investigar la calidad del servicio de las prácticas de logística verde entre los servicios transfronterizos en Tailandia. La logística respetuosa con el medio ambiente es inevitable debido a la campaña mundial para apoyar una logística transfronteriza sostenible.

Los proveedores de servicios de logística en Tailandia deben esforzarse por proporcionar prácticas de logística verde a sus clientes. La logística ecológica implica el uso de transporte y almacenamiento amigables con el medio ambiente en el uso de biocombustibles, fuentes de energía renovables en la reducción de desechos, mejores emisiones atmosféricas, ruidos permisibles y seguridad alentada. Los encuestados de esta investigación fueron 384 proveedores de servicios de logística ubicados en áreas transfronterizas de Malasia, Laos, Camboya y Myanmar. El muestreo aleatorio estratificado se utiliza en muestras a través de cuestionarios estructurados y la regresión también se aplica a los procedimientos de análisis de datos. El hallazgo de esta investigación reveló que al practicar en verde y la calidad del servicio mejorará el desempeño logístico, así como la calidad de los negocios de logística en general. También sugiere que los proveedores de servicios logísticos deben cumplir con la Calidad Verde en las actividades comerciales transfronterizas. Esta investigación puede respaldar a los proveedores de logística y comprender la importancia de la calidad del servicio de logística ecológica para un mejor desempeño comercial en el futuro.

Palabras clave: comercio transfronterizo, calidad del servicio, proveedores de servicios de logística, transporte y almacén y rendimiento

1. INTRODUCTION

The service quality of green logistics service providers in Thailand is getting heightens international attention affecting cross-border trades in terms of transport and warehouses (Ansari & Kant, 2017). It also revealed on pollution problems created by cross-border trade logistics wastes had contributed to environmental pollution. The study also explored the framework development status for

sustainability in supply chain management involving logistics. Lakshmimeera & Palanisamy (2013) revealed on logistics service providers in developing the different types of solutions and plans to maintain and improve the sustainability at cross-border trade by applying green concepts in supply chain activities such as using renewable energy resources. Tufail et al (2019) refers as the Novel approach of quantifying energy security in terms of economic, environmental and supply risk factors.

Otherwise, pollution able to be transferred to another neighbouring nation through cross-border trade logistics services (Dorantes et al., 2019). It also revealed on the relevance of green practices worldwide and emphasized on the importance of cross-border pollution through cross-border trade logistics which involved in transportation and warehouses. Abaidullah (2017) suggests that green logistics service quality influences customer satisfaction and supported by Fernandes et al (2018); Fang & Zhang (2018). Cross-border trade growth involved logistics activities that facilitate import and export of cargo and also human mobility, accessibility and connectivity between the neighbouring nations (Zhou et al., 2018). Transportation need an appropriate infrastructure for vehicles' mobility and permissible emissions causing atmospheric pollution. Better infrastructure on specific mechanism for the vehicles are able to reduce pollution in future.

Thailand has trade agreement with other countries in the European Union, China and the Mekong river nations such as Laos, Myanmar and Cambodia involving logistics for economic

development to provide mobility, connectivity and accessibility (Kamalian, 2013). Kim (2012) refers to the ASEAN Economic Community (AEC) by 2020 will expand Thailand cross-border trade for the movement of goods, people and services. The increasing mobility of goods, people and services in Thailand will bring benefits to Thailand, and negatively with pollution issues such as CO^2, NO^2 emissions, waste management and other forms of pollution to Thailand (Lee, 2013; Ali et. al., 2020). Ensuring that, Thailand government had developed plans and policy to improve the environmental quality for sustainable development (Limbourg et al., 2016).

Thailand had formulated The National Economic and Social Development (NESD) Plan every 5 years to set up the direction for the society, cross-border trade and government policy (Jermsittiparsert et al., 2019). The latest NESD plan - 11th NESD plan had focused on green economy policy while the next plan until 2030 will focused on the sustainable development (IRENA, 2017). Logistics is important for cross-border trade in Thailand to connect Thailand to other trading countries in the world (Khan et al., 2019). Transport and logistics involve in various modes of transportation namely road, sea, rail, air and pipeline transport. Logistics Service Providers (LSP) either unimodal transport or multi-modal transport play an important role in Thailand's global supply chain especially in cross-border trade (Piyathanavong et al., 2019).

National Economic and Social Development Board (NESDB) classifies LSP in Thailand into several categories by service activities namely transportation, warehouses, packaging and materials handling

(Zhang et al., 2019). Competitive advantage of the LSP can be achieved by continuously improving the logistics service quality and following the new trend in logistics industry. Renewable energy resource for transport and warehouse is the new logistics trends that reduce energy cost and reduce pollution at the same time (Bhattacharya et al., 2016). The green logistics service quality is not only measured through speed, delivery time, cost and accuracy, but with the green performance and sustainability (Centobelli et al., 2020; Saifuddin & Yao, 2018; Hassan et al, 2015).

Green logistics service can be broadly interpreted to include green purchasing, green manufacturing, green materials management, green distribution, green marketing, and reverse logistics (Kim, 2012). The growing of green logistics service provider in Thailand is a good sign to achieve LSP's goal to deliver service to customers through environmentally friendly and efficient way (Dorantes et al., 2019). However, the integration of green logistics practices still in the early stage for the LSP in ASEAN countries including Thailand (Jozef et al., 2019). The use of light goods vehicles to deliver goods in urban areas is beneficial in reducing CO^2 emissions and other gaseous in the atmosphere (Fang & Zhang, 2018; Ali et al., 2020).

The renewable energy resource is another prospect for sustainable development of transportation and warehousing operations. Melan et al (2019) refers on the effectiveness on Drop Trailer Method (DTM) of Haulage Industry is one of the processes to maximize the movement of trailers to avoid waste and the usage of the machineries. The renewable energy resources are not only sustainable but also

environmentally friendly as compared to hydro-carbon fuel (Ali et al., 2020). However, the advantages of renewable energy resources are not fully exploited by the logistics providers in Thailand (Siriwan, 2015). The renewable energy resources can be integrated in logistics operation for transportation and warehouses. Transports and warehouses can be powered by solar energy for cross-border trade sustainability. The emergence of green logistics had made it imperative to study the performance of logistics service providers from environmental perspectives (Abidin et al., 2016; Siriwan, 2015). Tufail et al (2019) refers to the quantifying indicators of supply risk in power generation system and the techniques relating to reduction of supply of raw materials in order to save the energy costs and maximize the usage of power.

2. GREEN LOGISTICS SERVICE PROVIDERS IN THAILAND

A research has been done on Thailand green service quality (TGSQ), Thailand logistics service quality (TLSQ) and Thailand logistics performance (TLP). Thailand green service quality (TGSQ) is defined as environmental activities relevant to service quality in logistics services of transport and warehouses. Thailand logistics service quality is defined as logistics activities of order accuracy, order condition, order quality, order discrepancy handling, timeliness and ordering procedures. Thailand logistics performance (TLP) is defined as the overall performance of Thailand logistics activities. Siriwan

(2015), refers on the logistics service providers in Thailand and display little interest in social responsibility related to environmental issues such as climate change, pollution, environmental degradation and resource depletions (Govindasamy & Lan, 2011). Dorantes et al., (2019) refers on the most environmental issues originated from logistics industry as the logistics industry is the second largest carbon dioxide (CO^2) emitter. Although small and medium enterprises have awareness of the green concept, but only few large companies or multinational corporation (MNCs) in Thailand putting their effort in implementing on green concept at their businesses (Fang & Zhang, 2018). The adoption of green concepts amongst the logistics service providers can control the atmospheric pollution issues (Fang et al., 2020).

Global environmental legislations definitely affect Thailand cross-border trade logistics businesses and operations. Therefore, logistics in Thailand must meets the green logistics challenges and problems while maintaining the competitive edge over the multinational companies in the logistics industry. Melan & Prapinit (2019), refers on green logistics is a continuous and embedded process in Thailand logistics industry. Implementing green logistics is a built-in process and not a one-time occurrence. In other word, Thailand green logistics should support on the overall environmental mission for consumer awareness, environmentally friendly, compliance to government rules and regulations.

Besides reducing pollution, logistics service providers are able to reduce costs creating competitive advantage in terms of improving

customers' satisfaction with good service quality, positive image and reputation (Fernandes et al, 2018). Most of logistics service providers did not rank environmental issues as important parameters to their logistics service quality (Hua et al., 2020). Therefore, the purpose of this research is to study the perceptions of logistics service providers on Thailand green service quality, logistics service quality and logistics performance.

This study provides answers to the following questions (1) What are the relationship between Thailand green service quality and Thailand logistics performance? (2) What are the relationship between Thailand logistics service quality and Thailand logistics performance? (3) What are the relationship between Thailand green service quality and Thailand logistics service quality? Hence, the objectives of this study are (1) To determine the relationship between Thailand green service quality and Thailand logistics performance for logistics service providers (2) To examine the relationship between Thailand logistics service quality and Thailand logistics performance for logistics service providers and (3) To analyse the relationship between Thailand green service quality and Thailand logistics service quality.

3. ENVIRONMENTAL ISSUES AND THAILAND CROSS-BORDER TRADE

Environmental issues affect Thailand cross-border logistics business (Khan et al., 2019). Increase in cross-border trade had

resulted in demand upsurge for logistics services in Thailand (Jiang et al., 2020). The problem of competitive differentiation and competitive advantage occur in a competitive logistics scenario (Abaidullah, 2017). Hence, Thailand green logistics services can be cost-saving practices, enhancing logistics service quality and being globally accepted as socially responsible nation through education (Prapinit & Melan, 2019). Thailand cross-border trade connects neighbouring countries through land transport infrastructural network especially the Greater Mekong Sub-region (GMS). The GMS comprises of the Kingdom of Thailand, Yunan and Guangxi provinces of the Peoples' Republic of China, the Republic of the Union of Myanmar, Kingdom of Cambodia, the Lao Peoples' Democratic Republic and Vietnam. Therefore, Thailand cross-border logistics services have to provide logistics services for north-south, east-west cross-border trades in order to increase the volume of cross-border trade in goods and services. Omotayo & Melan, (2017) had mentioned on the factors influencing the information and communication technology (ICT) of third party logistics and involved in such a way controlling the green supply chain management.

However, the upsurge in Thailand logistics demand is causing atmospheric pollution through CO2 emission and other gaseous into the atmosphere (Ali et al., 2020). Atmospheric pollution is unavoidable and Thailand transport sector is the second largest contributors of atmospheric pollutants after the power generation sector (Siriwan, 2015). Hence, requires attention and warrant for this research. Furthermore, Thailand local logistics service providers have

to compete with foreign logistics providers in maritime cargo handling, freight transport and containerization services using unimodal and multimodal transportation. The stiff competition in Thailand logistics industry making this research inevitable. Jalil et al., (2019) referred as an adoption of business intelligence - technological, individual and supply chain efficiency in making competitive businesses.

4. THEORETICAL FRAMEWORK

The theoretical framework of this research is adapted from Logistics Service Quality Theory by Siriwan (2015). The adapted Logistics Service Quality Theory is depicted in Figure 1.

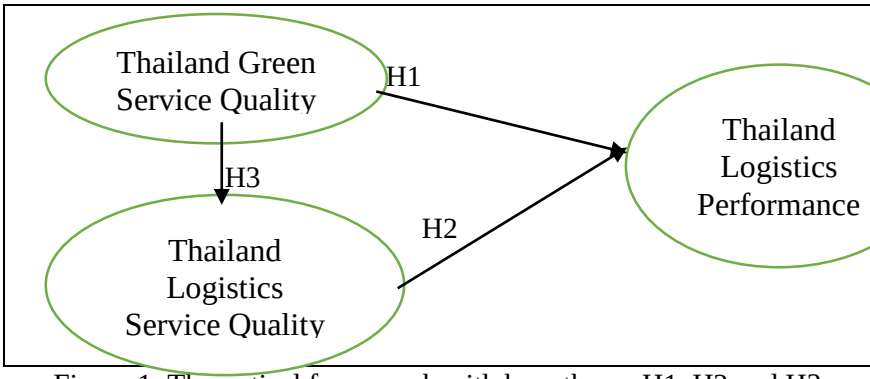

Figure 1: Theoretical framework with hypotheses H1, H2 and H3
Adapted from Siriwan (2015)

H1: Thailand green service quality has positive effect on Thailand logistics performance

H2: Thailand logistics service quality has positive effect on Thailand logistics

performance

H3: Thailand green service quality has positive effect on Thailand logistics quality

5. RESEARCH METHODOLOGY

The respondents for this research are Thailand logistics service providers (LSP) in several industries namely electronic components, automotive components, plastic moulding, textile production and food manufacturing. Validated questionnaire with 5-point Likert scale adapted from Siriwan (2015) has been used to collect data from 384 respondents as suggested by Krejcie & Morgan (1970). Stratified sampling technique has been used to sample respondents from the logistics service providers operating at North-South cross-border trade route and East-West cross-border trade route covering logistics services in Greater Mekong Sub-region and Malaysia border. The logistics service providers' list was prepared from Thai Transportation and Logistics Association and Export-Import Transportation Guide.

The questionnaires were divided into three (4) sections namely twenty-eight (28) scale items measuring Thailand Green Service Quality (TGSQ), twenty-four (24) scale items measuring Thailand Logistics Service Quality (TLSQ), five (5) scale items measuring Thailand Logistics Performance (TLP) and seven (7) questions about

their logistics company. The number of logistics service providers from the two sources was 470 companies. The self-completion questionnaire was conducted by self-administered, supervised and via email. The questionnaires distributed were in Thai language. Phone calls were made to the Logistics Managers or higher management positions requesting for research participations.

6. RESULTS AND FINDINGS

6.1. Response Rate and Respondent Demographic

Missing data and non-engaged responses were considered as not fit for analysis. Missing data and non-engaged responses were detected using Excel software functions. The response rates were depicted in Table 1.

Table 1: Questionnaires Response Rates

Items	**No. of distributed questionnaires**	**No. of returned questionnaires**	**Questionnaires fit for analysis**
Electronics	92	80 (86.96%)	70
Automotive	98	97 (98.98%)	85
Food	97	93 (95.88%)	81
Plastic	90	82 (91.11%)	72
Textile	93	88 (94.62%)	76

Total	470	440 (93.62%)	384

The response rate of 93.62% is consistent with other research using personal approach (Abaidullah, 2017). Respondents' demographic is depicted in Table 2.

Table 2: Respondents Demographic

Variables	**Stratified Sampling**	**Frequency**	**Percentage %**
Gender	Male	196	51.00
	Female	188	49.00
Age	25 – 34	96	25.00
	35 – 44	96	25.00
	45 – 54	96	25.00
	55 and above	96	25.00
Occupation	Director	145	37.80
	Logistic Manager	125	32.55
	Finance Manager	114	29.65
Types of Company using LSPs	Electronic	94	20.00
	Automotive	95	20.21
	Food	96	20.43

	Plastic	91	19.36
	Textile	94	20.00

6.2. Reliability Test

Reliability test for the scale items was reliable supported by satisfactory Cronbach's Alpha of 0.926 above the cut-off level of 0.70 as proposed by Abaidullah (2017).

6.3. Normality Test, Outlier and Multicollinearity

Normality test on the dataset was conducted using skewness and kurtosis tests. The dataset is normal because the critical ratios of skewness and kurtosis were in the range of ± 2.58 significant at p = 1% and ± 1.96 significant at p = 5% and also Kolmogorov-Smirnov and Shapiro-Wilk tests depict that p-value is within the suggested range indicating that the data were normally distributed (Abaidullah, 2017). The Normal Probability Plot (Normal Q-Q Plot) reveals that the dataset is normally distributed because most of the data was on the straight line except a few scattered away from the straight line. Mahalanobis d^2 test with cut-off value less than 0.05 was used to test outlier and outlier deletion has been conducted to improve the robustness of multivariate analysis (Hair, 2013). The determinant of the sample covariance matrix was 0.000 indicating the existence of

weak multicollinearity in the dataset which is expected for multivariate data weak correlations (Hair, 2013; Abaidullah, 2017).

6.4. Descriptive Statistics

Descriptive analyses were conducted on measuring scales of Thailand Green Service Quality (TGSQ), Thailand Logistics Service Quality (TLSQ) and Thailand Logistics Performance (TLP). Almost all items have median of 4 (Agree) and median of all items were above the midpoint of the Likert scale of 3 (Neutral). The result suggested that majority of the respondents agreed with the positive statements of all items. The mean and standard deviation of the measuring scale items are presented in Table 3.

Table 3: Mean and standard deviation of TGSQ with 28 items

TGSQ Code	**Measuring Scale Items**	**Mean**	**Standard Deviation**
GQ1	Fuel costs decreased by alternative fuels like bio-diesel, hybrid energy and NGV	3.85	0.63
GQ2	Improving the corporate image of your customers and company's reputation from using alternative fuels	3.50	0.45
GQ3	Decreasing product availability from using alternative fuels	2.40	0.38
GQ4	Decreasing CO_2 emissions from using environmental friendly vehicle	3.80	0.75

	technologies		
GQ5	Your company's technological innovation increased by implementing vehicle technologies	2.75	0.55
GQ6	Your company's fixed costs increased by implementing vehicle technologies	2.45	0.60
GQ7	Increasing product availability from alternative transportation modes	2.60	0.43
GQ8	Increasing the flexibility of product size from alternative transportation modes	2.85	0.67
GQ9	Transportation costs decreased by alternative transportation modes	4.00	0.56
GQ10	Your staff is fully trained on environmental and safety issues	3.45	0.32
GQ11	Reduction of accident rates due to staff trained in environmental and safety issues	3.95	0.74
GQ12	CO_2 emissions reduced by staff trained on environmental and safety issues	2.55	0.51
GQ13	Distribution network improved by implementing green logistics	2.30	0.68
GQ14	Lead times reduced by implementing a design of green logistics system	2.45	0.70
GQ15	Increasing product availability from implementing a design of green	2.75	0.53

	logistics system		
GQ16	Availability increased by implementing by implementing green logistics	2.60	0.65
GQ17	Effective transportation affecting consolidation	3.95	0.74
GQ18	Back haul is reduced by affective transportation	4.00	0.68
GQ19	Enhancing environmental knowledge sharing between your company and your customers	3.00	0.51
GQ20	Achieving environmental targets between your company and your customers	3.50	0.55
GQ21	Increasing environmental issues collaborate with your customers	3.60	0.73
GQ22	Back haul is reduced by collaborating with your customers	3.95	0.43
GQ23	Decreasing waste within your operations and processes	4.00	0.54
GQ24	Complying with environmental regulations	3.95	0.39
GQ25	Operational efficiency increased by implementing environmental management system	3.50	0.77
GQ26	CO_2 emissions reduced by awareness of	3.90	0.65

	your stakeholders		
GQ27	Environmental impacts in your company changed particularly staff environmental education and safety	3.50	0.53
GQ28	Increasing awareness of your stakeholders' green impact	3.65	0.68

Five-point scale: 1 = strongly disagree; 5 = strongly agree

The mean of TGSQ items were above the midpoint 3 which is mean = 3.31 and standard deviation = 0.584 suggested that on average respondents agreed with the positive TGSQ statements. However, there are TGSQ measuring scale items with mean below midpoint 3 suggesting respondents disagreed with the positive TGSQ statements to these items.

Table 4: Mean and standard deviation of TLSQ

TLSQ Code	**Measuring Scale Items**	**Mean**	**Standard Deviation**
LQ1	Flexible delivery according to customers' demand	3.95	0.74
LQ2	Mistake of delivery in terms of required quantities	3.00	0.32
LQ3	Rare case of wrong shipment in terms of items	3.50	0.55
LQ4	Rare case of wrong shipment in terms of	3.95	0.43

	quantities		
LQ5	Rare case of wrong shipment in terms of substituted items	3.80	0.78
LQ6	Substituted items sent to their customers work fine due to damage from their customers	3.00	0.85
LQ7	Products ordered from their customers meet their products specifications	3.90	0.45
LQ8	Our key contact personnel makes an effort to understand the situation	4.00	0.66
LQ9	Problems are resolved by our key contact personnel	3.85	0.70
LQ10	The knowledge/ experience of our key contact personnel is adequate	3.70	0.41
LQ11	Your customer received accurate information	3.30	0.48
LQ12	Your customer received adequate information	3.45	0.82
LQ13	Your customer received complete information	3.00	0.76
LQ14	Your receipt procedures are effective	2.45	0.63
LQ15	Your receipt procedures are easy to use	2.90	0.58
LQ16	Your receipt procedures are flexible	3.25	0.72
LQ17	Products received from our warehouse are undamaged	3.75	0.85

LQ18	The transportation or carrier does not make product damage	3.95	0.88
LQ19	Correction of wrong delivery is satisfactory	3.50	0.43
LQ20	Our reporting process of mistakes is adequate	2.45	0.66
LQ21	Response to quality of mistake reports is satisfactory	2.55	0.32
LQ22	Delivery on the promised date	3.00	0.53
LQ23	Time between receiving and delivery is short	3.75	0.74
LQ24	The amount of receiving time on back order is short	3.00	0.86

The mean of TLSQ items were above the midpoint 3 which is mean = 3.10 and standard deviation = 0.584 suggested that on average respondents agreed with the positive TLSQ statements. However, there are TLSQ measuring scale items with mean below midpoint 3 suggesting respondents disagreed with the positive TLSQ statements to these items.

Table 5: Mean and standard deviation of TLP

TLP Code	**Measuring Scale Items**	**Mean**	**Standard Deviation**
LP1	Satisfied with your company's transport	3.80	0.67

	costs per sale ratio		
LP2	Satisfied with your company's order cycle time	3.50	0.84
LP3	Satisfied with your company's delivered in full on time service	3.45	0.58
LP4	Satisfied with your company's rates of return on investment	3.00	0.45
LP5	Green logistic service is important to your company	3.75	0.76

The mean of TLP items were above the midpoint 3 which is mean = 3.50 and standard deviation = 0.660 suggested that on average respondents agreed with the positive TLP statements.

6.5. Results of multiple regression

Multiple regression analysis was conducted to test hypotheses H1, H2 and H3. Hypothesis H1: Thailand green service quality has positive effect on Thailand logistics performance. The results of multiple regression analysis between Thailand Green Service Quality (TGSQ) as an independent variable with Thailand Logistics Performance (TLP) as the dependent variable are presented in Table 6 and 7.

Table 6: Multiple Regression of TLP with TGSQ

Model	Variables Entered	Variables Removed	Method
1	CQ1, CQ2, CQ3, CQ4, CQ5, CQ6, CQ7, CQ8, CQ9, CQ10, CQ11, CQ12, CQ13, CQ14, CQ15, CQ16, CQ17, CQ18, CQ19, CQ20, CQ21, CQ22, CQ23, CQ24, CQ25, CQ26, CQ27, CQ28[b]	.	Enter

Variables Entered/Removed[a]

a. Dependent Variable: TLP

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.295[a]	.087	.086	.575

a. Predictors: (Constant), CQ1, CQ2, CQ3, CQ4, CQ5, CQ6, CQ7, CQ8, CQ9, CQ10, CQ11, CQ12, CQ13, CQ14, CQ15, CQ16, CQ17, CQ18, CQ19, CQ20, CQ21, CQ22, CQ23, CQ24, CQ25, CQ26, CQ27, CQ28

b. Dependent Variable: TLP

Table 7: Multiple Regression of TLP with TLSQ

Model	Variables Entered	Variables Removed	Method
2	LQ1, LQ2, LQ3, LQ4, LQ5, LQ6, LQ7, LQ8, LQ9, LQ10, LQ11, LQ12, LQ13, LQ14, LQ15, LQ16, LQ17, LQ18, LQ19, LQ20, LQ21, LQ22, LQ23, LQ24[b]	.	Enter

Variables Entered/Removed[a]

a. Dependent Variable: TLP

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
2	.259[a]	.067	.068	.625

a. Predictors: (Constant), LQ1, LQ2, LQ3, LQ4, LQ5, LQ6, LQ7, LQ8, LQ9, LQ10, LQ11, LQ12, LQ13, LQ14, LQ15, LQ16, LQ17, LQ18, LQ19, LQ20, LQ21, LQ22, LQ23, LQ24

b. Dependent Variable: TLP

Table 8: Multiple Regression of TGSQ with TLSQ

Model	Variables Entered	Variables Removed	Method
3	LQ1, LQ2, LQ3, LQ4, LQ5, LQ6, LQ7, LQ8, LQ9, LQ10, LQ11, LQ12, LQ13, LQ14, LQ15, LQ16, LQ17, LQ18, LQ19, LQ20, LQ21, LQ22, LQ23, LQ24[b]	.	Enter

Variables Entered/Removed[a]

a. Dependent Variable: TGSQ

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
3	.269[a]	.072	.074	.622

a. Predictors: (Constant), LQ1, LQ2, LQ3, LQ4, LQ5, LQ6, LQ7, LQ8, LQ9, LQ10, LQ11, LQ12, LQ13, LQ14, LQ15, LQ16, LQ17, LQ18, LQ19, LQ20, LQ21, LQ22, LQ23, LQ24

b. Dependent Variable: TGSQ

6.5.1. Results of Hypotheses Testing

The overall hypotheses were supported with positive responses towards service quality of green logistics as required by service providers at cross border activities in Thailand. The details are structured as Table 8.

Table 8; The results of hypotheses

Hypotheses	R/ R^2 /SE	Hypotheses result
H1: Thailand green service quality has positive effect on Thailand logistics performance	R = 0.295, R^2 = 0.087, SE = 0.575	Supported

H2: Thailand logistics service quality has positive effect on Thailand logistic performance	$R = 0.259$, $R^2 = 0.067$, SE = 0.625	Supported
H3: Thailand green service quality has positive effect on Thailand logistics quality	$R = 0.269$, $R^2 = 0.072$, SE = 0.622	Supported

7. CONCLUSION

The positive relationship between Thailand green service quality and Thailand logistics performance for logistics service providers in Thailand for cross-border trade is supported. Logistics service providers for cross-border trade in Thailand acknowledged the importance of green service quality concept that affects their logistics performance. Furthermore, other factors relevant to Thailand logistics service quality also affect Thailand logistics performance. Thailand logistics service providers perceived that Thailand green service quality is superior to normal logistics service quality. The relationship between Thailand green service quality, Thailand logistics service quality with Thailand logistics performance in the cross-border trade activities is well supported in this research. Establishing the relationship is important for Thailand logistics service providers in cross-border trade activities to enhance environmental related activities in providing cross-border trade logistics services. Cross-border trade is

an important economic activity in Thailand because Thailand borders Malaysia, Myanmar, Cambodia and Laos. Cross-border trade involving logistics of transportation, warehousing and other aspects of logistics plays important roles in the Greater Mekong Sub-region (GMS) involving China and Vietnam. Thailand green logistics services will not only benefit Thailand but also all cross-border trade partners of Thailand.

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