

THE IMPACT OF RISK MITIGATION ON LOGISTICS SERVICE FROM THAI SHIPPER'S PERSPECTIVE

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Abstract

This research aims to analyze the impact of risk mitigation on logistics service. Risk, in general, is one of the critical pillars in business performance evaluation and is usually found in management related discipline. However, only a hand full of published research investigates on risk mitigation in the logistics service content. Therefore, this study focuses on the analysis of the impact of risk mitigation on logistics service. The main purpose of this study is to identify the dimensions of the risk mitigation and its impacts on logistics service, which consists of logistics service value, trust, customers' satisfaction and customer loyalty. This paper is aimed to propose a research framework based on the literature review and interviews. The output of the research framework is driven to assist risk mitigation strategy for Thai shippers and to identify the main impact factors related to risk mitigation on logistics service. Moreover, the theoretical model, developed from the research framework, can be used as a guideline in forming business strategies.

Keywords: Risk Mitigation, Logistics Service Value, Trust, Customer Satisfaction, Customer Loyalty, Structural Equation Modeling

Introduction

According to Department of Trade Negotiations (2012), the understanding of logistics in businesses are still lacking among business practitioner. The information from the World Bank (2013) stated that Logistics Performance Index (LPI), which is used to measure logistic performance, of Thailand is still hindering behind Malaysia and Singapore (Table 1). The information from ASEAN SME Regional Gateway (2013) stated that comparing the data to LPI World with countries in the region, we can see that Thailand is lagging behind and still need to develop in the area of logistic service. When comparing logistics performance between Thailand and other ASEAN states, Thailand out-performs Philippine, Vietnam and Indonesia except for Singapore and Malaysia. Thailand may have the advantage of financing opportunities, larger product markets and cost competitiveness. However, as stated by Manuj and Mentzer (2008), these may come with high level of risk. A considerable body of literature of risks and uncertainties has been revealed that there is a high relationship in between global supply chains and risk management and that most companies has developed plans to protect against them (Chopra and Sodhi, 2004; Christopher and Lee, 2004; Manuj and Mentzer, 2008). As to today's increasingly dynamic business environment, risk mitigation can be seen as a conceptual proof in gaining financial opportunity and competitive advantage. In the researchers' point of view, in order to improve the logistics score index, logistic are to be firstly identified and analyzed. Secondly, under the context of logistic, risk results from the uncertainty of future events are to be examined in relation to its impact to business performance (Wirtschaftslexikon, 2004). Therefore, this research is aimed to create a model for Risk Mitigation on Logistics Service. Moreover, a research model is proposed to improve the organization strategy through understanding of risk mitigation in logistics service.

Factor	Custom	Infrastructure	International shipment	Logistics quality and competence	Tracking and tracing	LPI
Countries						
Singapore	2	4	1	6	6	14
Malaysia	36	28	13	31	41	37
Thailand	39	36	30	39	37	48
Philippine	54	64	20	47	44	42
Vietnam	53	66	58	51	55	76
Indonesia	72	69	80	92	80	69

Table 1: Logistic Performance Index (LPI) of Southeast Asia countries in 2010 based on selected factors.

Risk Mitigation

There is a wide source of literature on risk and uncertainties in logistics. Risk is commonly identified as a combination of the chance of a particular event with the impact that the event would cause if it occurred. Therefore, risk is an expected outcome of an uncertain event (Manuj and Mentzer, 2008). In order to deal with the risks and achieve operational goal, it is important to manage and mitigate the risk. Miller (1992) mentioned that there are four general strategy for risk mitigations which is importance for adapting to the context of the supply chain including, avoidance, control, co-operative and flexibility.

Moreover, Sheffi (2002) has concluded that risk mitigation in supply chain can inhibit the negotiation from the customer, which will increase the value of the service and cause an overlapping when comparing to the efficiency. For example, a conflict between overcapacity in the supply chain and elimination or reduction of loss will lead to an impact to value of the service. Therefore, it can be hypothesized that Risk Mitigation has a positive effect on the Value of Logistics Services (H1). Povey (1999) stated that the concept of risk behaviors tend to be formed by predisposition and may occur from the decision depending on situations that affect trust. Thus, a second hypothesis (H2) hypothesized that Risk Mitigations have a positively influences on Trust in between shippers and service providers.

Logistic Service Value

Logistic Service Value is the convergence of the necessity of customer service when providing value and the profit for partners. Mentzer et al. (1997) stated that Logistic Service Value is an important component of logistic service which allows companies to obtain advantage in a competitive market. Kent and Flint (1997) mentioned that value created in logistics, for example, transport reliability, is one of the key advantages of a company in order to gain customer satisfaction. Sweeney and Soutar (2001), and Wang et al. (2004) mentioned that the other than monetary factors, Logistics Service Value are to be justified in order to meet the needs of both the service providers and shippers. LaLonde and Zinszer (1976) stated that the important elements from customer service, which can increase logistic value, must meet the needs of customers and the results of operations measures to the satisfaction of the client itself. Therefore, in this paper, the researcher hypothesized (H3) Logistic Service value that have a positively influences on Customer Satisfaction.

Trust

Morgan and Hunt (1994) mentioned that trust is gained when members in a group of people have reliability in the good moral and responsible for each other. Rousseau, et al. (1998) and Singh and Sirdeshmukh (2000) stated that trust in a business environment is seen as one of the most important variables in creating a positive relationships. A wide body of literature endeavor that trust is the key factor for building a long-term relationship (Moberg, et al. 2002; Lambert, et al. 1996).

Trust can be seen as the point of constancy and cooperation which is directly correlated with trustworthy and satisfaction (Morgan and Hunt, 1994). Similar to studies conducted by Christou (2010) and Yuksel, et al. (2008), the relationship between trustworthy and satisfaction in hospitality services concluded similar results to Morgan and Hunt (1994). Chiou and Pan (2009) have found that trust has a direct influence to customer satisfaction. This suggested that the trust is created by many different ways and these will lead to a great impact on the quality of business experience. Thus, in this research hypothesized that (H4) there is a positive correlation between trustworthy and customer satisfaction. Furthermore, as trust is considered as a foundation for customer loyalty (Moorman, et al. 1993), it can be hypothesized that (H5), trust will have a direct influence to Customer Loyalty.

Customer Satisfaction

Customer Satisfaction is defined as an evaluation of the product or service by the customer of whether or not it meets the customers' requirement. Kotler and Armstrong (1996) stated that Customer Satisfaction is foundation in marketing, along with consumer research, psychology and economics. Customer Satisfaction is driven by feelings, which is the result from expected valuating including the decision to purchase, owning and demanding associated with the purchase (Boeselie et al, 2002). Anderson and Sullivan (1993), Bolton and Drew (1991) and Fornell (1992) mentioned that the Customer Satisfaction can be seen as an influential result of Risk Mitigation on Logistics Services for shippers. Based on these research claims, this research hypothesized (H6) that Customer Satisfaction have a positively influences Customer Loyalty.

Customer Loyalty

Pearson (1996) claimed that loyalty of customer are inherited from the attitude of customer combined with behavioral from attitude customer which may generate an intention to purchase goods for many times or purchase that goods from the same company or recommendation for that goods to other company. Customer Loyalty initiates from the first contact between the shippers and service providers throughout the duration of the relationship. The ability to attract and retain customers is not only the product or services, which customers expect, but also giving them more than their expectations will Customer Loyalty to the firm. According to Wallenburg (2009), maintaining an existing customer and continuing business with them is far less expensive than finding a new customer which leads to a greater profitability. From the literature review, along with the stated hypothesis (Table 2), this paper proposed a model (Figure 1) which consists of Risk Mitigation on logistics service that affects Logistics Service Value, Trust, Customer Satisfaction and Customer Loyalty.

Table 2 : Research Hypotheses
H1: Risk mitigations have a positively influences Logistic Service value
H2: Risk mitigations have a positively influences trust
H3: Logistic Service value have a positively influences Customer Satisfaction
H4: Trust have a positively influences Customer Satisfaction
H5: Trust have a positively influences Customer Loyalty
H6: Customer Satisfaction have a positively influences Customer Loyalty

Table 2: Research hypotheses is created based on research model and designed to examine the causal effects of each factors

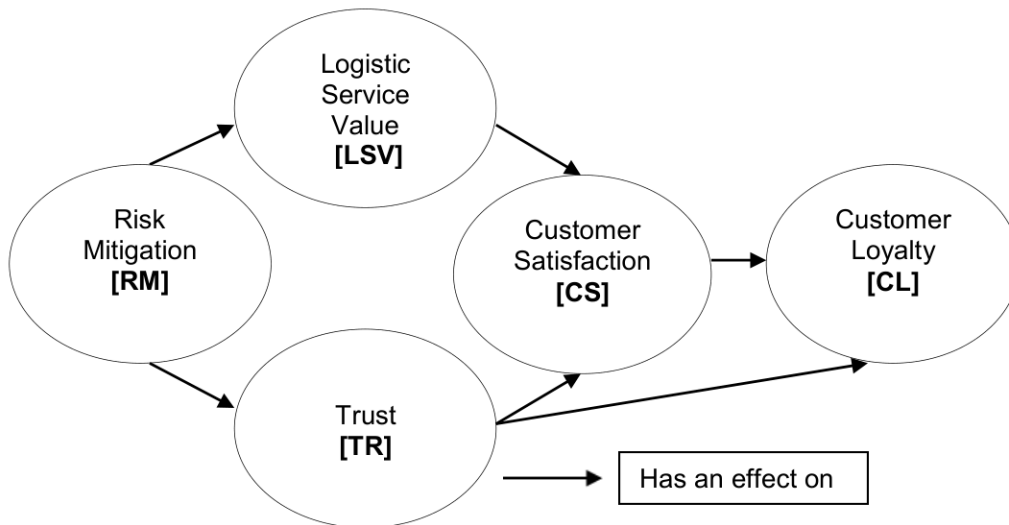


Figure 1: Proposed Model

Methodology

This study uses a questionnaire survey to collect the empirical data. The questionnaire was separated in to two sections. The first section are five-likert-scale subjective questions in measuring the level of satisfaction of each factors used in this study namely; RM, LSV, TR, CL, CS And respondents from Thai Shipper's Perspective in Thailand. The information will be gathered via online questionnaire. The factors in the questionnaire will be compiled from literature review and tested the validity by using Independent T-Test. Then, the researchers will use non-response bias to test if the answers of respondents differ from the potential answers of those who did not answer. The questionnaire web-link, along with a digital cover letter will be sent via E-mail to at least 2500 potential respondents.

Response Rate and Nonresponse Bias

In most survey-based research, the level of response rate generally affects the quality of research findings and level of generalizability (Maylor and Blackmon, 2005). A low response rate may reflect

participant's dislike of filling out the surveys or suggest problems with the questionnaire (Bryman and Bell, 2007). The pilot test was carried out to examine the feasibility of the completed questionnaire under actual conditions of data collection. This process is critical in observing potential error or ambiguities in wording, sequencing, layout and clarity. All research hypotheses are intended to be analyzed via SPSS and AMOS software packages version 21 with varimax rotation (Chao, 2011).

After data collection, the researcher must prepare the data to be analyzed. Organizing the data correctly can save a lot of time and prevent mistakes. Most researchers choose to use a database or statistical analysis program (SPSS) that they can format to fit their needs in order to organize their data effectively and to avoid non-response biases. The consequences of non-response can vary. As non-response increases, the potential for a biased sample increase. This would cause the data obtained from a large population to be invalid. In short, response bias can assist in validating the probability sample collected from potential respondents.

Reliability Test and Validity Test

Reliability is defined as the similarity of results provided by independent but comparable measures of the same object, trait, or construct (Chao, 2011). On the other hand, Churchill (1976) stated that validity is defined as the extent to which differences in scores on it reflect true differences among individuals on the characteristics we seek to measure, rather than constant or random errors. Instruments of reliability and validity are main part in quantitative research and it can prevent unstable and unreliable measures which may lead to obtrusive outcomes of the real world. It is important of Structural Equation Models (SEM) to only on the models with an overall fit and validity. After assessing the data for multivariate assumptions the fitness of each individual latent factor was evaluated using confirmatory factor Analysis (CFA). To detect miss specification in the hypothesis model, standard goodness-of-fit indices were used in order to assess the output of the measurement model. According to Hair et al.,(2010) , the χ^2 value and the associated degree of freedom with a ratio of 3:1 is to check the overall model fit and Unidimensionality. Divided by Absolute Fit Index ($\chi^2 / df < 3.0$) is recommended, with at least one absolute fit index and one incremental fit index. In this study, a combination of absolute fit indices are proposed (χ^2 / df ,GFI, RMSEA) , along with CFI and TLI as the increment fit index (Min and Mentzer ,2004). Thus, in this section, a proposed measurement model of validity is illustrated in Table 3.

Measurement Model of Validity		
Validity	Criteria	
Overall Model Fit/ Unidimensionality	Absolute Fit Index	$\chi^2 / df < 3.0$ GFI > 0.8 RMSEA < 0.08
	Increment fit index	CFI > 0.9 TLI > 0.9
	Convergent Validity	CR > 0.7 AVE > 0.5
	Scale Reliability	Cronbach's $\alpha > 0.7$
Validity / Reliability		

Table 3 : Measurement Model of Validity (Chao and Anantana, 2014)

Scale reliability may help clarify whether dimensional and non-dimensional variants of disorders constitute the same disorder as well as whether dimensional affects treatment outcome and prognosis. The central limit theorem states that the sampling distribution of any statistic will be normal or nearly normal, if the sample size is large enough (Chao and Anantana, 2014).

Structural Equation Modeling (SEM)

SEM uses standardized coefficients to indicate the relative strength of the statistical relationship. Through loadings from the instrument items to the construct, similar interpretation of the result can be utilized. In contrast to regression, SEM allows multiple variables to be observed when dealing with the development of more sophisticated theories. SEM involves with greater recognition given to the validity and reliability of observed scores from measurement instruments (Schumacher and Lomax, 2004). According to Hair, et al. (2010), SEM is considered as one of the most appropriate multivariate analytical technique, which allows researchers to estimate multiple and interrelated dependence relationships also to handle large number of endogenous and exogenous variables, as well as latent (unobserved) variables as linear combination (weighted averages) of the observed variables (Golob, 2003).

Other than SEM, another widely utilized analytical method can also be applied in analyzing the stated relationships in this paper. In (Table 4), both PLS (Partial Least Squares) and SEM are capable of examining multiple relationships in one single structural model which are response-based and provides overall model fitness. However, when examining a complicated model with interrelated relationships between multiple observed and latent variables in a confirmatory research approach, SEM is more suitable than PLS. While PLS shares similar characteristics with SEM, PLS approach is exploratory-driven rather than confirmatory-driven. Thus, with the examination of interrelated causal relationship between RM , LSV ,TR ,CS and CL, the use of SEM is strongly recommended as the most effective analytical instrument (Chao, 2011; Byrne, 2001; Hair, et al. 2010 and Chin, 1998).

Comparison in between PLS and SEM		
Criterion	PLS	SEM
<i>Objective</i>	Prediction orientated	Parameter orientated
<i>Analysis approach</i>	Variance based SEM	Covariance-based SEM
<i>Distributional assumptions</i>	Non-parametric	Multivariate normal distribution for maximum likelihood
<i>Required sample size</i>	Low (min 30-100)	High (min 200-800)
<i>Required theory base</i>	Does not necessarily require sound theory base. Supports both exploratory and confirmatory research.	Requires sound theory base. Supports confirmatory research.
<i>Parameter estimates</i>	Consistency at large	Consistent, given correctness and appropriateness
<i>Indicators per construct</i>	One or more	Can be as few as one if indicator's error is constrained
<i>Constructs per indicator</i>	Indicators can only relate to one construct	Indicators can related to one or more construct
<i>Correlation between constructs can be estimated as undirected ?</i>	No	Yes
<i>Correlation between measurement errors can be modeled ?</i>	No	Yes
<i>Statistical test for estimates</i>	Inference requires jackknifing or bootstrapping	Available and valid given model assumptions are tenable: inference by bootstrapping otherwise
<i>Goodness-of-fit measures</i>	Yes ,but limited global measures	Yes
<i>Epistemic relationship between latent variables and measures</i>	Formative and reflective indicators	Typically only with reflective indicators
<i>Examines interaction effect on the entire model</i>	Not readily supported	Supported
<i>Can constrain a path to a given value</i>	Not supported	Supported

Table 4: Comparison Between PLS and SEM (Chao, 2011)

Discussion

In discussion, this paper attempts to propose a systematic model of the impact of Risk Mitigation on Logistics Service. Through the literature review, a conceptual model was presented with guidance to allow it to be measured quantitatively. The proposed contribution of this paper can be presented in three ways. Firstly, the benefit is entrepreneur will know the level of importance of the Risk Mitigation and the impact that related to Mitigation on Logistics Service. In addition, it is able to help entrepreneur to have knowledge of Mitigation on Logistics Service. Moreover, the entrepreneur will know about the attitude of the exporter in Thailand toward using Logistics Service. Lastly, they can improve how to solve problems and create strategies to enhance the satisfaction of customers. Furthermore, the company can use the models to create the strategies of Risk Mitigation on Logistics Service and to make the benefits for the organization. It will be useful, if the organization try to use strategies in the process of service. In addition, it can decrease the risk and help the entrepreneur to know the importance of mitigations on Logistics Service.

Limitations

This paper focuses on research framework, where actual data collection will commence after the completion of this paper. This paper goes through a systematic method of creating a research framework which covers ground of model validity and data reliability. The main analysis of this paper uses quantitative data collected via questionnaire. Therefore, the number of questionnaire will determine the level of validity and reliability of the result. Nevertheless, the output of this research will

allow practitioners a better understanding of the importance of Risk Mitigation and its impact on business performances.

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