2012

An analysis of the logistics service provider (LSP) industry in a developing country: a focus on Indonesia

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S.Si. in Geophysics and Meteorology,

M.T. in Industrial Engineering and Management

This thesis is presented as part of the requirements for the award of the Degree of Doctor Philosophy of the University of Wollongong

August 2012

ABSTRACT

This research focuses on the logistics service provider (LSP) sector in Indonesia. The desire of Indonesia to achieve an effective and efficient logistics system is influenced by geographical state of Indonesia which has 17,504 islands, 225 million population and abundant natural resources such as oil, gas, coal and palm oil. The geographical condition that the country only has 22% of the land means quality of logistics service is important for the country. In addition Indonesia is one of the countries in which LSP research has not been developed. This study aims to gain a better understanding of logistics service quality in Indonesia in relation to perceived logistics service value.

The research aims to identify main variables which influence logistics service value and to identify inter-relationship among the identified variables in influencing logistics service value. The research framework is inspired by the customer value-based theory of the firm and the resource-based value theory of the firm. In this framework, logistics service value is defined as an evaluative judgment or assessment of what customers of the LSP perceive they receive from the LSP compare to what they give in a commercial relationship between LSP and their customers.

Research paradigm utilized in this research is post-positivism. Quantitative approach and survey research design is used as research approach and strategy of inquiry. This research investigates LSP and their customers in Indonesia as the target population. The sample frame of this study consists of two source. For the population of LSP, the sample frame is identified from the GAFEKSI (Indonesian Forwarders and Logistics Service Providers Association) membership; while for the population of LSP's customers, the sample frame is identified from the information given by the respondents in the LSP organization. The hypotheses are examined in the business to business relationships context between LSPs and their customers at the firm level. The unit of analysis of this research were employees' perceptions in the LSP firm about quality management practice in their LSP; perceptions of LSP's customers about logistics service quality provided; and perceptions of LSP's customers about

benefit, cost and value of logistics services delivered by their LSP. The data of this research is analysed by descriptive statistics analysis and partial least square analysis. To perform a descriptive analysis, this study uses SPSS version 19 and to examine hypotheses sctructural equation modelling (SEM) technique by SmartPLS Program is used.

Result of descriptive analysis shows the LSP's customers perceive logistics service value that they receive from LSP is above average whilst the logistics service benefit is relatively high. They perceive that the LSP contributes mainly to improving their operational level and customer service. In terms of logistics service cost, the LSP's customers perceive logistics service cost that they should incur to obtain the service offered by the LSP is relatively below average in which the psychological cost has higher cost and financial risk shows lower mean score value. Logistics service process quality perceived by the LSP's customers is above average in which service order procedure shows higher mean score whilst emergency service shows lower mean score value. Regarding logistics service outcome quality, LSP's customers perceive this variable to be above average. Shipment quality shows higher mean score and timeliness shows lower mean score value. In relation to quality management practice in LSP organization, the mean score value shows above average value in which strategic quality planning shows higher mean score value while human resource management shows lower mean score value.

Results from the partial least square analysis shows that logistics service value is mainly derived from logistics service process quality, logistics service outcome quality and logistics service cost. The logistics service cost and logistics service benefit are mainly influenced by logistics service process quality. The role of logistics service process quality is significant because it influences logistics service outcome quality, logistics service benefit, logistics service cost and logistics service value. Quality management practice influences logistics service value indirectly through logistics service process and outcome quality. Quality management practice influences logistics service outcome quality and logistics service benefit positively and significantly.

In relation to theories used in this study, the research findings support the customer value-based theory of the firm and the resource-based value theory of the firm. Both theories are complementary to explain business developments of the LSP. By dividing logistics service quality into logistics service process and outcome, more in-depth analysis has been conducted. For each industry and country, the influence of logistics service process and outcome quality show different results. The results indicate that contextual condition influences the role of logistics service process and outcome quality. The results also show that logistics service directly influence logistics service value and indirectly influence logistics service value through logistics service cost.

In term of the implication of research model for the LSPs in Indonesia, they should continuously keep feedback from their customers so that they have the same point of view with their customers about their service. Practice of quality management should be aimed not only to increase logistics service outcome quality and logistics service benefit but also to increase logistics service process quality and to decrease logistics service cost. In term of the direct effect to logistics service value, LSP should focus on logistics service process and outcome quality and logistics service cost as well. In term of the indirect effect to logistics service value, logistics service process quality has a critical role to drive logistics service outcome quality, logistics service benefit and logistics service cost.

Based on the results in this study, it is desirable for the LSP industry in Indonesia to improve logistics service benefit and logistics service value for the import-export industry, especially for customers that have less than 100 employees and use LSP for more than 10 years. The LSP industry in Indonesia should also seek to improve logistics service cost, logistics service process quality and logistics service outcome quality for the chemical industry, especially for customers that have 5000 or more employees and use LSP for 1 to 5 years. This implication should be considered particularly for LSP that have 5000 or more employees.

ACKNOWLEDGEMENTS

I wish to thank my research thesis supervisor, Dr. Sim Kim Lau for her help, support, encouragement and her patience during this study. Her trust that I can pass the critical time is my spirit.

I would like to thank the staff members of SISAT have been very helpful throughout the entire of this study especially for A/Prof. Peter Hyland. I am deeply grateful for the comfort that I have received from the school.

I would like to thank logistics service professionals who complete my survey questionnaire. I would like to thank the DIKTI Indonesia and University of Brawijaya for the Scholarship.

I would also like to thank my family and friends for supporting me. I am especially appreciative to my parents and my daughter for all of their support and prayer. Their love and support are irreplaceable.

A final and especially thank to God that gives me the best people in my live, especially in the last four years.

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LIST OF DEFINITIONS

LSP: A company that provides some or all logistics services to create value for customers by developing a longer term and mutually beneficial relationship for the customers.

Quality management practice: A systematic and integrated approach to achieve and sustain quality goals throughout the organization.

Logistics service process quality: How the LSP's customers receive the service outcome, whether the service process transferred to customer as promised. The way of outcome quality is transferred to customer.

Logistics service outcome quality: What the LSP's customers receive as a result of their interactions with LSP's service, whether LSP delivers service outcome as these are promised.

Logistics service benefit: Benefit which the LSP's customers acquire from the service offered by the LSP.

Logistics service cost: What is given up or sacrificed by LSP's customers to acquire the service offered by the LSP.

Logistics service value: An evaluative judgment or assessment of what the customers of the LSP perceive they receive from the LSP compare to what they give in a commercial relationship between LSP and their customers.

LIST OF PUBLICATIONS

Sumantri, Y. & Lau, S.K. (2011). The current status of logistics performance drivers in Indonesia: an emphasis on potential contributions of logistics service providers (LSPs). *Progress in Business Innovation and Technology Management, 1* (1), 34-50.

Sumantri, Y. & Lau, S.K. (2011). Logistics performance drivers in Indonesia: an emphasis on identifying potential contributions of logistics service providers (LSPs) to their customer logistics performance. *2011 (Spring) APBITM International Conference on Asia Pacific Business Innovation & Technology Management* (pp. 1-5). Indonesia: Elsevier.

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1. CHAPTER 1 - INTRODUCTION

1. 1 Background to the Research

Indonesia is an emergent market with abundant wealth of natural resources such as oil, gas, coal and palm oil. It has 17,504 islands and 225 million populations. The geographical condition that it only has 22% of land means quality of logistics service is important to the country. Logistics service quality of a country has major impact on economic performance. It can influence economic growth and prosperity of a country (Hannigan et al. 2001). The more efficient the logistics service, the lower the logistics costs. Higher quality logistics service also enables a country to gain access to international markets and increase trade volume. When a country has superior logistics service quality, competitiveness of the country will increase too.

The Indonesian government establishes a national logistics strategy to enable higher quality logistics service to be achieved. The national strategy includes six major determinants: key commodities; laws and regulations; infrastructure; human resources and management; information and communication technology; and logistics service providers. The development of logistics service provider (LSP) industry as one of six major determinants of the national logistics strategy is influenced by increasing competitive business environment. The free trade agreement in regional and international areas not only creates new market opportunity, it also triggers competitive business among the LSPs. In a competitive market, customers require higher service levels with lower cost. In the current highly competitive market the LSPs are forced to develop logistics service strategy that not only enables them to maintain existing market share, but also be able to expand their market share at a global level. In order to develop a logistics service strategy, in-depth research needs to be investigated for the LSP industry which is the focus of this research.

1. 2 Research Question and Hypotheses

The growth of the LSP industry has resulted in an increase in LSP research conducted in recent years (Maloni et al. 2006; Marasco 2008; Selviaridis et al. 2007). Extensive literature review conducted has identified that research in this area is

lacking in terms of comprehensiveness of the study. As much as 69% of publications are lacking in development of theoretical model and hypothesis testing (Carter et al. 2003; Selviaridis et al. 2007) and only a few studies explore aspects of service providers and customers simultaneously (Maloni et al. 2006). Many research analysis is found not to distinguish research findings based on characteristics of LSPs and customers, such as size of LSP, duration of LSP usage and size of customers (Huo et al. 2008). In addition it is found that a number of studies do not distinguish requirements and characteristics of different industries although these industries have different requirements and characteristics (Maloni et al. 2006). This research aims to address the above gaps by classifying and evaluating mainstream research themes in LSP research. Completed process to evaluate research themes will be presented in Chapter 2. Through this method, the research has identified that logistics service value is becoming an area of important research (Khalifa 2004; Menon et al. 2005; Sirdeshmukh et al. 2002; Spiteri et al. 2004).

Market globalization and rapid growth of LSP businesses have created an intensively competitive LSP business environment. The LSPs have to work extremely hard to offer superior service levels to their customers. This situation is compounded by customers also becoming highly selective and sensitive toward service levels as their needs become increasingly complex. In order to survive in this highly competitive market, the LSPs must pursue changing needs of their customers. They need to develop various strategies to retain customers in the existing market as well as in the new market through provision of customized services to meet customer requirements (Aghazadeh 2003; Persson et al. 2001; Stefansson 2006).

In order to provide customized services, the LSPs need to understand aspects that are highly valued by their customers to establish long-term relationships with their customers. However research that systematically conceptualizes and empirically analyses customer value is limited and in its early stage (Gil-Saura et al. 2010; Kumar et al. 2004; Menon et al. 2005; Parasuraman 1997; Sinha et al. 1998; Ulaga 2001; Ulaga et al. 2001; Woodruff 1997). In addition there are diverse conclusions shown in different studies in different business context, different customer characteristics and different competitive environment (Menon et al. 2005). There is no consensus on how to define customer value, how to deliver value, how value is

perceived by the customers, how to measure customer value, what its antecedents and consequences are (Anderson et al. 1998a; Tzokas et al. 1999; Ulaga 2001). Thus this research aims to investigate customer value in the LSP business context.

In relation to location factor, customer value varies for different countries and different environmental situations (Maloni et al. 2006). Thus this research aims to focus on the LSP research in Indonesia as little research has been conducted in this country. The contextual situation of LSPs in Indonesia will be discussed in Chapter 3.

In order to increase the improvement of logistics service in Indonesia through the increase of LSP' role, information about customer perceived logistics service value is important to be investigated. In particular, a research framework that identifies variables influencing logistics service value will be a beneficial research for developing the body of knowledge in logistics service and improving logistics service practices in the LSP business scope. The idea to develop this framework will be discussed in Chapter 5. Thus this research aims to answer the following research questions:

What are the main variables influencing logistics service value based on theoretical framework?

This main research question can be detailed into two sub-questions below

a. How is the nature of each variable influence logistics service value in the Indonesian LSP industry?
b. What are the inter-relationships among the identified variables in influencing logistics service value?

The last research question will be examined using the following hypotheses:

H1: Logistics service benefit has a positive effect on logistics service value.

H2: Logistics service cost has a negative effect on logistics service value.

H3a: Logistics service process quality has a positive effect on logistics service outcome quality.

H3b: Logistics service process quality has a positive effect on logistics service benefit.

H3c: Logistics service process quality has a negative effect on logistics service cost.

H3d: Logistics service process quality has a positive effect on logistics service value.

H4a: Logistics service outcome quality has a positive effect on logistics service benefit.

H4b: Logistics service outcome quality has a negative effect on logistics service cost.

H4c: Logistics service outcome quality has a positive effect on logistics service value.

H5a: Quality management practice has a positive effect on logistics service process quality.

H5b: Quality management practice has a positive effect on logistics service outcome quality.

H5c: Quality management practice has a positive effect on logistics service benefit.

H5d: Quality management practice has a negative effect on logistics service cost.

1. 3 Justification for the Research

Knowledge on customer value has an important role in the development of the LSP business. It has become an inspiration source for developing and differentiating service (Lai 1995); improving service delivery (Olaru et al. 2008); managing appropriate resources and enhancing customer service level (Menon et al. 2005; Parasuraman 1997; Simpson et al. 2001; Wang et al. 2004). Information about customer value can also be used to identify the LSP position and develop value creation strategies (Smith et al. 2007); create competitive advantage, develop performance and support for LSP to be a winner in market competition (Jensen 2001; Lindgreen et al. 2005; Menon et al. 2005; Parasuraman 1997; Spiteri et al. 2004; Ulaga et al. 2001; Wang et al. 2004; Woodruff 1997). In addition customer value is strategically important to attract and retain customers (Kumar et al. 2004; Wang et al. 2004); create and maintain long term relationships (Eggert et al. 2006; Sharma et al. 2001) and is necessary to achieve customer loyalty (Sirdeshmukh et al. 2002). Customers are loyal to a LSP when they feel that they receive greater value than they receive from the competitors (Molinari et al. 2008). Understanding the value of target markets and delivering the desired customer value more effectively and efficiently enable the LSP to succeed (Kothandaraman et al. 2001; Kotler 2000). Benefits that organisation can achieve from customer value show the critical role of understanding it in business market management. On the other hand, customer value research in LSP business context has not been developed well. This condition results

in the needs to investigate customer value in business market setting, particularly in the LSP business context. This is particularly important for the LSP industry in Indonesia. Thus this research seeks to investigate and evaluate the LSPs in Indonesia in delivering value for their customers.

This research contributes to theory development as well as to practical concern. For theory development, this research contributes to identify variables that influence logistics service value. Literature has shown that current research has mainly focused on logistics service quality to create logistics service value and has disregarded other variables such as logistics service benefit, logistics service cost and quality management practice. In this research the customer value-based theory of the firm is combined with and the resource-based value theory of the firm to explain how to create logistics service value. The research findings can be used to evaluate theory about creating logistics service value and the role of logistics service quality in influencing logistics service value directly or indirectly through logistics service benefit and logistics service cost. The research findings also contribute to understanding the extent of quality management practice in influencing logistics service quality, logistics service benefit, logistics service cost and which in turn influence the logistics service value.

For practical concern, this research contributes to evaluation of the LSP industry in Indonesia in term of quality management practice in the LSP industry and contributes to understanding the perception of LSP's customers on logistics service quality, logistics service cost, logistics service benefit and logistics service value. From this research finding, the LSP industry in Indonesia can gain understanding on the variables and industries that require more attentions.

Through understanding main variables in influencing logistics service value and inter-relationships among the variables, the LSPs in Indonesia can manage these variables to optimally deliver value for their customers. By gaining insights into customer value, this research attempts to provide direction to support the Indonesian logistics vision statement: "By year 2025, Indonesia logistics that domestically integrated across archipelago and internationally connected to the major global economies, effectively and efficiently, would improve national competitiveness to

succeed in the world era of supply chain competition“ (Kementrian Koordinator Bidang Perekonomian Republik Indonesia 2008).

1. 4 Methodology

By considering the research purpose of this study, the research paradigm that will be utilized in this study is post-positivism. This research will employ quantitative approach in consideration that the research problem and research purpose match with this approach. The survey research design is used as strategy of inquiry of this study by considering that benefits and the conformity between the characteristics of survey research design and the purpose of this research.

The population of this study are LSP and LSP’s customers in Indonesia. The research questions will be examined in the business-to-business relationships context between LSP and their customers in the firm or organisational level. The unit of analysis of this research are employees’ perceptions in the LSP firm about the quality management practice in their LSP; perceptions of LSP’s customers about logistics service quality provided by their LSP; and perceptions of LSP’s customers about benefit, cost and value of logistics service delivered by their LSP.

The sample frame of this study consisted of two sources. For the population of LSP, the sample frame is identified from the GAFEKSI (Indonesian Forwarders and Logistics Providers Association) membership; while for the population of LSP’s customer, the sample frame is identified from the information given by respondents in the LSP organisations. The sampling techniques used to identify sample for the population of LSP are a combination of *cluster random sampling*, *purposive sampling* and *convenience sampling*. The sampling techniques used to identify sample for the population of LSP’ customers are the combination of *snowball sampling*, *purposive sampling* and *convenience sampling*. The target sample sizes of this survey are 480 for the LSP population and for the LSP’ customer population are 480 also.

According to questionnaire development, this study will adopt and adapt the measures previously developed for existing variables. For the variables that have not yet been developed, the researcher has developed the indicators sourcing from the

literature review. This study will use a rating scale question to collect data from respondent so that it is easy to use statistical technique to interpret the result of data. All indicators are measured on a 5 point Likert scale.

The form of data collection that will be used in this research is self-administered questionnaire. The self-administered questionnaire is chosen by considering the availability of time and budget of the researcher, the convenience of the respondent, the response rate, the coverage area and the interviewer bias. This research will use a post-mailed survey because it is very convenient for respondents; has a relatively simple and easy process; has high confidentiality and reduce variability in the result. Related to time horizon for data collection, this research uses a cross-sectional survey design. In a cross-sectional survey design, data are collected at a single point in time. For this study, a cross-sectional survey design is considered to be more suitable. The cross-sectional survey design is relative simple than the other time horizon of survey.

The data analysis involves non-response bias test, reliability and validity test, a descriptive analysis and hypotheses test. To perform a decriptive analysis, this research uses SPSS version 19. By considering the number of variables involved in this study and the hypothesized relationships among variables, this study will use structural equation modelling technique to examine the hypotheses by using SmartPLS Program. For more detail of research methodology will be presented in chapter 5.

1. 5 Outline of the Report

The thesis is organised into seven chapters. Outline of the remaining chapters are described as follow.

Chapter 2 presents identification of research gaps and opportunities in LSP research. This chapter aims to classify and evaluate mainstream research themes in LSP. Outcomes of this chapter are the research gaps and opportunities for further study in the research area of LSP. This chapter presents definition of LSP, current states of LSP research, mainstream themes in LSP research and evaluation of mainstream theme development.

Chapter 3 presents current status of logistics performance drivers in Indonesia. In particular, this chapter focuses on the current status of Indonesian LSP as one of the main drivers contributing to logistics performance in Indonesia. This chapter discusses challenges in the Indonesian logistics sector to gain understanding of nature of LSP business in Indonesia. Current status of key drivers of Indonesian logistics performance is also investigated to understand the position of LSP as one of the logistics performance drivers in Indonesia.

Chapter 4 investigates relationships between logistics service quality, benefit, cost, value and quality management practice. This chapter aims to develop a research framework to identify associations between logistics service quality provided by the LSP, logistics service benefits, cost and value perceived by LSP' customers and quality management practices in LSP. The chapter will discuss customer value, theory inspiring the framework development, logistics service value, logistics service benefit, logistics service cost and logistics service quality and quality management practice.

Chapter 5 presents research design. This chapter presents justifications of research design and explains various considerations affecting the choice of research design. The chapter discusses research design process, purpose of study, paradigm underlying research process, research approach, strategies of inquiry, description of population, sample and sampling design, questionnaire development, data collection strategy, broad plan of data analysis and ethical consideration.

Chapter 6 presents data analysis. The objectives of this chapter are to analyse the research data and to examine hypotheses of the study by applying the data analysis process described in chapter 5. The chapter describes data preparation process, analysis of non-response bias, reliability and validity analysis. This is followed by discussion of descriptive analysis of data and research model analysis.

Chapter 7 presents conclusions and implications of research. This chapter concludes presentations of this thesis by discussing results of research hypotheses, implications for theory and practice, research contribution, delimitations of scope and key assumptions and future research direction.

1. 6 Summary

This chapter describe briefs of the research. It introduces background to the research and research question and hypotheses. Justifications of research, research methodology and outline of the report are presented. The geographical condition of Indonesia that only has 22% of land means quality of logistics service is important to the country. The Indonesian government establishes a national logistics strategy to enable higher quality logistics service to be achieved. The development of logistics service provider (LSP) industry as one of six major determinants of the national logistics strategy is influenced by increasing competitive business environment. In order to survive in this highly competitive market, the LSP need to develop various strategies to retain customers in the existing market as well as in the new market through provision of customized services to meet customer requirements. In order to provide customized services, the LSPs need to understand aspects that highly valued by their customers to establish long-term relationships with their customers. However research that systematically conceptualises and empirically analyses customer value is limited and in its early stage. Thus this research aims to investigate customer value in the LSP business context in Indonesia. Particularly, this research investigates the main variables influencing logistics service value based on a theoretical framework. Through understanding main variables in influencing logistics service value and inter-relationships among the variables, the LSPs can manage these variables to optimally deliver value for their customers.

This research employs quantitative approach and survey research design is used as a strategy of inquiry. The hypotheses are examined in the business to business relationships context between LSPs and their customers at the firm or organisational level. The unit of analysis of this research are employees's perceptions in the LSP firm about quality management practice; perceptions of LSP's customers about logistics service quality provided; and perceptions of LSP's customers about benefit, cost and value of logistics services delivered by their LSP.

2 CHAPTER 2 – THE IDENTIFICATION OF RESEARCH GAPS AND OPPORTUNITIES IN LOGISTICS SERVICE PROVIDER (LSP) RESEARCH

2. 1 Introduction

The previous chapter indicates that growth of logistics service provider (LSP) industry has resulted in an increase of LSP research conducted in recent years. However there is a gap in identification of research gaps and opportunities in LSP business as it has not been analysed systematically and in depth. The aims of this chapter are to classify and evaluate the main themes in LSP research using content analysis. Expected outcomes of this chapter are the research gaps and opportunities for further study in the research area of LSP.

This rest of the chapter is organised as follow. Section 2.2 presents definition of logistics service provider. Section 2.3 identifies current states of LSP research and section 2.4 presents the main themes in LSP research. Evaluation for the main theme development follows in section 2.5 and finally, section 2.6 presents a summary of this chapter.

2. 2 Definition of Logistics Service Provider

Logistics service has a complex role in the expansion of business market through managing market demand, creating customer satisfaction, sales, market share and improving business performance (Bowersox et al. 2008; Sezen 2005; Stank et al. 2003). The important role of logistics motivates organisations to manage logistics well. Organisations have three alternatives to operate logistics effectively and efficiently (Razzaque et al. 1998). These include arranging the logistics function in house, through subsidiaries or outsourcing. Outsourcing logistics service means employing an external organisation to perform logistics services such as transportation and warehousing that were formerly performed within the organisation (Beaumont et al. 2004). Generally, organisations decide to outsource if extensive benefits can be acquired and realised from a provider. Evidently, expected benefit from outsourcing has stimulated the growth of logistics service provider (LSP) industry resulting in as increased demand of logistics service outsourcing (Aktas et al. 2005; Bolumole 2001; Maltz et al. 1997).

Services offered by the LSP are diverse, from standard services to integrated services, such as transportation management, warehouse management, logistics information systems, product assembly, product packaging, labelling, quality control, purchasing service and insurance service. In particular, transportation, warehousing, carrier selection, rate negotiation and freight payments are some of the examples of services mostly requested by companies (Boyson et al. 1999; Selviaridis et al. 2007). Various services offered by LSP resulted in a variety of terminologies used in the LSP industry. Table 2.1 shows the variety of definitions of LSP used in the literature.

Table 2.1 The Variety of Definitions about Logistics Service Provider

Papers	**Definition**
Sink et al. (1996, p.40)	"Third party logistics services are multiple distribution activities provided by an external party, assuming no ownership of inventory, to accomplish related functions that are not desired to be rendered and/not managed by the purchasing organisation."
Stank et al. (1996, p.46)	"A third party provider is defined as any firm providing a good or service that is not owned by the purchaser of the good or service."
Sink et al. (1997, p.170)	"An external supplier to perform some or all of a firm's logistics function."
Langley et al. (1999)	"A company that provides multiple logistics services for its customers, whereby the third party logistics provider is external to the customer company and is compensated for its services."
Bolumole (2003, p.93)	"Third party logistics is analogous to outsourcing or contract logistics and is broadly defined as the use of an external company to perform all or part of another company's operations. Contract logistics encompasses a broad number of functions and is characterised by longer term, more mutually beneficial relationships."
Aghazadeh (2003, p.50)	"A TPL provider is an independent economic entity that creates value for its client."

From Table 2.1, it appears that each author has its own definitions, however five elements can be identified in the overall definitions, namely "who the LSP is", "what

the LSP offers", "what kind of relationship between the LSP and customers is", "what the output of LSP service is", and "what the result for the LSP is". Table 2.2 shows elements of definitions with respect to the definitions of LSP offered by various authors. This research will use a definition that includes all the above five elements to make it simple and easy to understand. In this research, LSP is defined as "a company that provides some or all of logistics services to create value for customers by developing a longer-term and mutually beneficial relationship for the customers".

Table 2.2 The Elements of Logistics Service Provider Definition

Authors	**Elements of Definition**				
	Who	What offered	Kind of Relation-ship	Output of service	Result for LSP
Sink et al. (1996)	√	√			
Stank et al. (1996)	√	√			
Sink et al. (1997)	√	√			
Langley et al. (1999)	√	√			√
Bolumole (2003)	√	√	√		
Aghazadeh (2003)	√			√	

2. 3 The Current States of LSP Research

The expansion and growth of the LSP industry in recent years have encouraged researchers to develop research that explores knowledge in the LSP industry (Maloni et al. 2006; Marasco 2008; Selviaridis et al. 2007). The complexities of issues encountered by the LSP imply various research themes can be identified from this sector. However, a comprehensive research which investigates main themes in the literature is scarce. The aims of this chapter are to identify main themes in the LSP area, evaluate development of the main research themes in LSP and investigate potential research areas in the LSP sector.

The main themes are obtained through classifying LSP research based on similar research purposes and objectives. Content analysis method is employed to investigate content of literature in the LSP themes. Content analysis is "a research technique for systematic, qualitative and quantitative description of the manifest content of literature in an area" (Li et al. 1995, p. 252). It is a useful method to identify certain

concept and draw inference relating to message within the literature (Krippendorff 2004). The aim of content analysis is to attain a condensed and broad description of the phenomenon, and the outcome of the analysis is categories describing the phenomenon. Usually the purpose of those categories is to build up map of categories (Elo et al. 2008).

The first step of content analysis is to search pertinent articles that are relevant to the objective of study. The keywords used in the search are “logistics service provider” and the various terms that are similar to LSP terminologies which include “third party logistics” and “logistics service outsourcing”. The search was limited to academic journals. Table 2.3 shows the list of articles in various journals from 1995 to 2009 classified in the LSP themes.

Table 2.3 Distribution of Articles by Journal

Journals	**Number of articles**
International Journal of Physical Distribution & Logistics Management	9
Journal of Business Logistics	7
Transportation Journal	7
The International Journal of Logistics Management	4
Asia Pacific Journal of Marketing and Logistics	3
International Journal of Logistics Management	2
International Journal of Operations & Production Management	2
International Journal of Productivity and Performance Management	2
Management Research News	2
Transportation Research Part E: Logistics and Transportation Review	2
Others	9
Total	**49**

Content analysis can be used in an inductive or deductive way. This study use deductive way. In the deductive analysis process, the process is represented within three main phases, these are preparation, organizing and reporting. The preparation phase involves selecting the unit of analysis and making sense of the data to obtain a sense of whole. In this study, the unit of analysis used is the research theme in the LSP research. Through making sense of the research paper, this study identifies the research theme of each paper. The next phase is organizing phase. This phase

includes creating categories and abstraction. In this phase, the research theme is categorised based on the similarity of research purpose. Furthermore the lists of categories are grouped into broader higher order categories to reduce the number of categories. For creating abstraction, this study performs a general description of the generated categories. The last phase is reporting phase. In this phase the result of process is presented in a table that show the final categorisation.

Overall, current studies show that the importance of LSP research has not been supported by comprehensive investigations. As much as 69% of papers lack development of theoretical model and hypothesis testing although researchers agree that "theoretically-developed hypotheses" will contribute to advancement of theory in the field of logistics (Carter et al. 2003; Selviaridis et al. 2007). The other fact is that only 27% of the papers investigate relationships and interactions between LSP and customers (Selviaridis et al. 2007). This reality illustrates that only a few studies explore aspects of service providers and customers simultaneously (Maloni et al. 2006).

The other limitation identified is that many research analysis do not distinguish research findings based on the characteristics of LSP and buyers, such as the age of LSP, the size of LSP, the service offered, the length of service, the size of buyer, the level of decision maker in buyer companies (Huo et al. 2008), thus the conclusions reported are not focussed and can be confusing. For example, the age of LSP can influence customer assessment because the LSP's age relates to the level of experience and has impact on implementation and operational processes (Maloni et al. 2006). The size of the LSP can be a critical factor because it determines comprehensiveness of services offers, wider scope of services offers, extensiveness of geographical coverage and price of services.

A lot of researches have analysed over multiple industries even though each industry has different requirements and characteristics (Murphy et al. 2000; Panayides et al. 2005). For instance, the electronic industry focuses on cost while the pharmacy industry focuses on service (Maloni et al. 2006). It would be advantageous if research findings are analysed for individual industry so that the results can have significant implications. Therefore it is the intention of this paper to comprehensively

identify the main research themes, evaluate each main theme and investigate research gaps and opportunities in LSP research in a systematic manner.

2. 4 Main Research Themes in LSP Research

Based on literature review, research in LSP themes can be classified into nine broad categories as shown in Table 2.4. The main themes consist of logistics outsourcing decision; criteria and steps for selecting LSP; the LSP capability and role; performance of the LSP; relationship between LSP and their customers; growth strategy of the LSP; technology adoption in the LSP industry; usage level of LSP in some countries and literature reviews in LSP.

Table 2.4 The Main Themes in LSP Research

No.	Main Themes	Examples of Articles
1.	The logistics outsourcing decision	Stank et al. (1996), Maltz et al. (1997), Fernie (1999), Bolumole et al. (2007)
2.	The criteria and steps for selecting LSP	McGinnis et al. (1995), Sink et al. (1997), Menon et al. (1998), Aghazadeh (2003), Jharkharia et al. (2007), Qureshi et al. (2008)
3.	The LSP capability and role	Bolumole (2001), Bolumole (2003), Lai (2004), Lai et al. (2004), Lu et al. (2006), Stefansson (2006), Fabbe-Costes et al. (2009)
4.	The LSP performance	Choy et al. (2007), Power et al. (2007), Chen (2008), Ellinger et al. (2008), Huo et al. (2008), Zhou et al. (2008)
5.	The relationship between LSP and their customers	Leahy et al. (1995), Boyson et al. (1999), Murphy et al. (2000), Halldorsson et al. (2004), Panayides (2005), Knemeyer et al. (2005), Qureshi at al. (2007)
6.	The LSP growth strategy	Berglund et al. (1999), Persson et al. (2001), Hertz et al. (2003), Cheng et al. (2007b)
7.	The technology adoption in LSP industry	Delfmann et al. (2002), Lin (2007), Lin (2008a)
8.	The usage level of LSP in some countries	Lieb et al. (1996), Murphy et al. (1998), Bhatnagar et al. (1999), Larson et al. (2001), Sohal et al. (2002), Sohail et al. (2005), Sahay et al. (2006), Sohail et al. (2006), Hong et al. (2007), Lieb (2008), Saleh et al. (2009)
9.	The literature reviews in LSP field	Maloni et al. (2006), Selviaridis et al. (2007), Marasco (2008)

(a) The logistics outsourcing decision

This main involves articles which investigate logistics outsourcing decision, such as outsourcing driver, buying process and customer evaluation to LSP's performance. Specifically, this main involves reasons for outsourcing (Fernie 1999; Stank et al. 1996); theoretical framework to identify factors influencing outsourcing decision and strategic orientation (Bolumole et al. 2007) and analytical framework for logistics outsourcing decision (Maltz et al. 1997).

Reasons for outsourcing include access to expertise, facilities and market information; focus on core business; improve flexibility of system; improve specialist service; achieve cost effectiveness, minimize risk due to uncertainty in environment (Fernie 1999; Stank et al. 1996). Among these various reasons, the need to reduce cost and improve service have been identified as the most important drivers for outsourcing (Sink et al. 1997). Bolumole et al. (2007) enrich previous research by adding a theoretical framework to evaluate outsourcing decision. They use the resource-based theory of the firm, the transaction costs economics theory and the network theory as theoretical framework. Using each theory, reasons of outsourcing have respectively generalized as resource acquisition, cost reduction and value creation.

Logistics outsourcing impacts on cost and benefit. Consequently, companies need a comprehensive framework to analyse decisions which consists of identifying desired benefits for the companies, identifying functions that will be outsourced in relation to the desired benefit, analyse tools that the companies use for cost-benefit analysis, and identifying persons (or departments) who have the main responsibility to outsource (Maltz et al. 1997). After the companies have performed all the steps in the framework, they can evaluate outsourcing decision and decide whether to continue with the implementation. If the companies make decision to outsource then the next step is to develop selection criteria and selection process of outsourcer.

(b) Criteria and steps for selecting the LSP

This main comprises of articles that explore criteria for selecting the LSP. The research objectives in this main are many, such as to identify a comprehensive

methodology for the selection of a logistics service provider (Jharkharia et al. 2007); to investigate selection criteria and to examine relationship between selection criteria and company competitive strategy and external environment (McGinnis et al. 1995; Menon et al. 1998); to differentiate selection criteria based on driver power and dependence level among selection criteria (Qureshi et al. 2008); to develop conceptual model for LSP buying process (Sink et al. 1997) and to identify selection steps for choosing LSP (Aghazadeh 2003).

Performance is an important criterion to select LSP whilst price is a significant criterion when the LSP has met performance criteria (McGinnis et al. 1995). The findings of this research are enriched by Menon et al. (1998) who conclude that capability and responsiveness of the LSP should also be included as part of the essential selection criteria. The result of research clearly shows that customers prefer performance and capability rather than cost. In addition, selection criteria are affected by competitive strategy of customer (McGinnis et al. 1995) and external environment (McGinnis et al. 1995; Menon et al. 1998). Therefore LSP should be concerned with these factors especially in the competitive market condition.

Previous research investigating selection criteria does not consider interdependency between criteria. In fact, selection criteria are not independent. An integrated model was developed by Qureshi et al. (2008). They identify and classify key selection criteria based on shippers' logistics need. The selection criteria are divided into four categories; these are independent criteria, autonomous criteria, linkage criteria and dependent criteria. Independent criteria are criteria which have strong driver power but weak dependence, such as size and quality of fixed assets; quality of management; and IT capability. Autonomous criteria are criteria which have weak driving power and weak dependence, for instance flexibility in operation and delivery. Linkage criteria are criteria which have strong driving power and strong dependence, for example quality of service; information sharing and trust; geographical spread and range of services; optimum cost; delivery performance; operational performance; financial stability; and surge capacity. Dependent criteria are criteria which have weak driving power but strong dependence, such as compatibility; long-term relationship; and reputation.

Choosing LSP require careful consideration and is an important process. In order to select appropriate LSP, customer should develop selection process (Aghazadeh 2003). After the company has made decision to outsource the logistics function and identifying outsourcing objectives, selection criteria is developed and a feasible list of LSP is prepared. The company then sends letters of expression of interest and request for proposal (RFP) to each LSP. This is followed by the company setting up appointment to meet with the LSP and observes the LSP, makes a selection, implements the outsourcing program and assesses ongoing service provided by the LSP (Aghazadeh 2003; Sink et al. 1997). Both selection criteria and selection process enable the company to find the appropriate LSP.

(c) The LSP capability and role

This main encompasses articles that investigate the roles of the LSP, their capabilities and classifications. In detail, this part investigates the roles of the LSP in supporting customer performance and supply chain integration (Fabbe-Costes et al. 2009); investigates the important logistics capabilities for LSP which operate in distribution field (Lu et al. 2006); classifies the LSP based on service capabilities (Lai 2004; Lai et al. 2004; Stefansson 2006); identifies determinant of the roles of LSP (Bolumole 2001); and classifies various roles of the LSP in the supply chain based on the determinants of LSP' roles (Bolumole 2003).

LSP contribute to customer performance and supply chain integration in different ways or roles. From the point of view of customers, LSP probably have roles as a member of the customer's supply chain; an integrator of the customer's supply chain; a tool for improving customer's supply chain integration; an integrated solution proposed for customer's supply chain; a proactive actor for improving customer's supply chain integration; or concurrently hold both roles as a tool and as a proactive actor of customer's supply chain integration (Fabbe-Costes et al. 2009). These contributions or roles of LSP depend on their capabilities to support customer logistics functions.

There are some essential capabilities which should be possessed by the LSP. Customer response capability, flexible operation and logistics knowledge, innovation and economic of scale capability are some of the important logistics capabilities for

the LSP which operate in the distribution field (Lu et al. 2006). Based on some service capabilities perceived by customers, LSP can be categorized into four types (Lai 2004), these are traditional freight forwarders, transformers, full service providers and nichers. Traditional freight forwarders only focus on operations efficiency in freight forwarding services such as taking a small shipment and combining them into a larger shipment. Transformers expand their service capabilities from traditional freight forwarding into value-added logistics services and technology-enabled logistics services. Full service providers offer freight forwarding, value-added logistics services and technology-enabled logistics services. Nichers specialize in value-added logistics services and technology-enabled logistics services.

Moreover, LSP classifications have also been investigated by Stefansson (2006) based on scope of services and degree of customization. Referring to his framework, third party logistics can be classified into three groups, these are carriers, logistics service providers (LSP), and logistics service intermediaries (LSI). Carriers provide service in a point-to-point network setup whilst LSP provide diverse services more than carrier services. LSI administers different logistics services and do not physically handle the goods.

Different LSP service capabilities lead to different growth strategies. LSP which have better service capabilities tend to achieve higher service performance. The service capabilities are a critical resource to obtain a competitive advantage. The classifications of LSP based on service capabilities provide references for LSP to understand which market segments will be their target (Lai et al. 2004). The classifications support LSP to adjust their service capability and performance to the need of market segments and also to support LSP to develop strategies to improve their cost and service performance.

The contribution of LSP capabilities in facilitating supply chain solution is influenced by the customer outsourcing strategy; the customer perception on LSP roles; the relationship between LSP and customers; the extent of the logistics functions outsourced (Bolumole 2001; Bolumole 2003). The future trends of LSP roles are more information exchanges; more virtual networks; more comprehensive

and value-added service offered. LSP will grow if they can overcome obstacles such as high-level logistics process of customers; loss of control; trust and credibility. The obstacles prevent LSP to achieve the level of integration and to provide problem solution such as cost reduction, service improvement and core competence focus (Bolumole 2003).

(d) The LSP performance

This main contains articles which develop performance measurement (Chen 2008; Choy et al. 2007; Zhou et al. 2008), investigate relationship between performance and its driver, such as external and internal environment and operation strategy (Huo et al. 2008), market orientation, employee development practices and LSP performance (Ellinger et al. 2008), and examine contribution of LSP to customer performance (Power et al. 2007). There are various approaches which researchers use to develop performance measurement in LSP context. For instance, Choy et al. (2007) expand a performance measurement system as a tool for monitoring and evaluating performance of LSP. The measurement compares actual performance with stated performance in contract. The model compares performance among LSP to gain the most appropriate LSP. The measurement encourages companies to solve problem through improving supply chain and maintenance logistics.

On the other approach, performance measurement has also been developed by Chen (2008). He develops objective-based performance measurement to select the best LSP. The model integrates six performance indicators, which include “target price”, “lot reject rate”, “lot delay rate”, “line complaint”, “customer complaint”, “complaint service”. The model involves complex supply chain from vendors, LSP, manufacturers to customers. In a separate research, Zhou et al. (2008) measures efficiency by employing data envelopment analysis (DEA) which investigates factors that drive LSP’s efficiency and proposes ways to improve competitiveness. The finding shows that LSP sales revenue and level of technical expertise influence their operational efficiency because through sales revenue, they have opportunity to utilize resources and ultimately improve operational efficiency. Furthermore, a percentage of employees who have extensive logistics training and experience contributes to operational efficiency.

In order to maximize performance, LSP should identify relationships between performance and its determinant factors. Generally, researchers are concerned on two most important performances; these are cost performance and service performance. Cost performance and service performance are important for the LSP to achieve financial performance. The impact of cost performance on financial performance is lower than the impact of service performance on financial performance which implies if LSP wish to achieve good financial performance, it is very important to achieve good service performance first. Furthermore, cost performance is influenced by a low cost strategy whilst service performance is influenced by a differentiation strategy. Differentiation strategy has indirect influence on financial performance whilst a low cost strategy has a negative impact on financial performance. In some cases, a low cost strategy leads to low cost service and consequently impact on customer dissatisfaction and ultimately lead to low market share (Huo et al. 2008).

However, LSP should improve performance simultaneously. Customers expect that through adopting LSP which has excellent performance can contribute to their performance. It is proved that competitive priorities of LSP, service offered and technology used significantly support customer performance (Power et al. 2007). LSP contribute to innovative business model of customer. Due to the significant contribution of LSP' service to customer performance, customers prefer to focus on service provided by LSP than merely on cost. This fact implies that LSP should compete on multiple service performance simultaneously rather than merely on cost.

(e) The relationship between LSP and their customers

This main involves articles that explore relationships between LSP and their customers. In detail, this part involves researches which identify determinants of successful relationship (Leahy et al. 1995; Murphy et al. 2000); effect of relationship orientation of LSP on the relationship between LSP and their customers (Panayides et al. 2005); linkage between relationship outcomes, relationship characteristics and customer attributes (Knemeyer et al. 2005); key variables of relationship between LSP and shippers and their impact on shippers' productivity and competitiveness (Qureshi et al. 2007); investigate managing relationship from the point of view of customers (Boyson et al. 1999); and investigate dynamic aspects of relationship (Halldorsson et al. 2004).

In order to achieve successful relationship with customers, LSP should understand what determinants of the relationship are. There are twenty-five potential factors that influence successful LSP relationship (Leahy et al. 1995). Among the twenty-five potential factors influencing successful LSP relationship, customer orientation and dependability are the two most important factors. Some other important factors include change orientation, timeliness, convenience, control and performance appraisal, improved service, mutual trust and consideration.

Successful relationship can be viewed from two perspectives, from the standpoint of the LSP as well as that from the customer. Perhaps both standpoints have different assessments. For example in the case of offered services, occasionally there are mismatch between services offered by the LSP and services required by the customers (Murphy et al. 2000). In order to minimize mismatch, LSP and their customers should develop high quality communication. Communication is a critical way to maintain LSP-customers relationship. According to the key factors in achieving successful relationships, LSP and their customers have the same perception; that is the two most important factors are customer orientation and dependability.

LSP and their customers have the same view that customer orientation supports successful relationship (Leahy et al. 1995; Murphy et al. 2000). As part of customer orientation, relationship orientation influences supply chain performance. Specifically, relationship orientation has a positive impact on organisational capabilities, improve supply chain effectiveness and supply chain performance (Panayides et al. 2005). Result shows that relational capabilities are critical factors related to the development of LSP supply chain performance. For further research direction, it is beneficial to integrate organisational and operational factors when analyzing supply chain performance.

Furthermore, successful relationship has been reflected in relationship outcomes. In order to achieve outstanding relationship outcomes, LSP need to identify drivers of relationship outcomes. Relationship characteristics (e.g. communication, reputation) and customer attributes (e.g. firm size, number of outsourced logistics functions)

influence relationship outcomes (e.g. customer retention, service recovery) and relationship characteristics have more significant impacts on the relationship outcomes than customer attributes (Knemeyer et al. 2005).

The key variables of relationship between LSP and their customers can be classified by enabler and outcome variables (Qureshi et al. 2007). Enabler variables are variables that drive the relationship whilst outcome variables are resultant variables arising out of relationship. LSP and customer should focus on enabler variables such as trust or commitment, direct assistance or participation, long term contract, evaluation of supplier performance, practices of total quality management and just-in-time (Sinha et al. 1998), and top management support. Successful relationship between LSP and their customers should also be managed by customers (Boyson et al. 1999). Companies should identify appropriate LSP that are in line with the companies' objectives and rely on internal capabilities in improvement process. Companies should also use contracting agreement as a relationship guide, audit and monitor LSP, not lose control to evaluate outsourcing process.

Most logistics outsourcing research applies transaction cost theory, which focuses more on cost efficiency, when considering logistics outsourcing decisions. Currently, some researchers endeavour to use new approaches such as resource and competence-based approaches to explain LSP relationship (Halldorsson et al. 2004). These approaches can describe dynamic aspects of relationship. The typology of relationship in standpoint of these approaches consists of market exchange, customised logistics solutions, joint logistics solutions and in-house logistics solutions. In market exchange typology, relationships between LSP and their clients are short-term and adversarial. Customers focus on price and LSP offer standardised skills. In customised logistics solutions typology, duration of relationships is one year or less. Customers focus on cost efficiency and service improvement and LSP offer a broad range of standard services. In joint logistics solutions typology, LSP and their customers jointly develop logistics solutions. They focus on collaboration, sharing of information and problem solving and LSP provide complementary services. Benefit from the typologies is to encourage competence development in the relationship between LSP and their customers. These perspectives encourage customers to define objectives of outsourcing and choose LSP that are appropriate

for their objectives. Moreover, these perspectives encourage customers to maintain internal logistics competence in order to develop new competencies with LSP and to minimize risk.

(f) The LSP growth strategy

This main consists of researches which investigate growth strategy for the LSP. In particular, this main investigates values created by LSP (Berglund et al. 1999); growth strategy for each LSP category (Persson et al. 2001); relationship between LSP development and their strategies (Hertz et al. 2003); and the influence of external environment and internal resources on LSP's competitive advantage (Cheng et al. 2007b).

There are three waves of entrants into the LSP industry, namely traditional LSP, network-player LSP, and new entrant LSP. LSP generate different value creations which can be classified into four categories, namely operational efficiency; integration of customer operation; vertical or horizontal integration; and supply chain management and integration. The main driver in value creation through operational efficiency is cost. LSP should offer cost that is lower than their competitors and should provide outstanding operational skill. The major driver in value creation through integration of customer operation is economies of scale. LSP can share their resources between customers and they should provide excellent operational and IT skills. The key drivers in value creation through vertical and horizontal integration are cost, economies of scale and asset reduction. LSP can outsource some of the activities to other providers. They should provide excellent operational and IT skills although operational skills tend to be more managerial in nature. The main driver in value creation through supply chain management and integration is development of customer business process. LSP need operational, IT and conceptual skills, such as supply chain analysis, operations research, and innovative logistics concepts. By considering competitive level, new entrant LSP are more suitable for value creating through optimization of supply chain management (Berglund et al. 1999).

Characteristics of a LSP can determine its growth strategy. Persson et al. (2001) categorise LSP into third party logistics operators, third party logistics integrators, agent and consultant logistics services. The strategy selected by third party operators

are customizing services towards customer needs whilst strategy chosen by third party logistics integrators include improving customer services, adding new services, and building network with external resources. For agent and consultant, they prefer to choose improving and widening the scope of their services.

According to customization level, LSP should develop balance strategies between focus on problem solving capability and focus on customer adaptation (Hertz et al. 2003). The development of strategy is influenced by their existing business and network. In order to manage existing business, LSP should understand issues in standard service capability and internationalization of business whilst in order to understand and develop the business network, they should develop strategy alliances, mergers and acquisition.

In order to develop growth strategy it is important and valuable to managing the changes of external environment and limitation of internal resources and capabilities are important and valuable. In the case of LSP which provide freight forwarding services, resources, capabilities, logistics services and external environment significantly influence sustainable competitive advantage (Cheng et al. 2007b). The most essential dimension influencing sustainable competitive advantage is capabilities, in particular staff capability. Strategy alliances with partners are also the essential dimension of external environment to achieve sustainable competitive advantage.

(g) The technology adoption in LSP industry

This main embraces articles which identify the impact of technology development and the influence of innovative technology adoption on LSP. One of the impacts of technology development on LSP business is increasing e-marketplace and eliminating supply chain elements (Delfmann et al. 2002). Two strategies that can be used to overcome this challenge are flexible capacity management and global presence. The impact of technology encourages LSP to respond to the development of innovative technology. Logistics technologies can be categorized into data acquisition technologies, information technologies, warehousing technologies and transportation technologies. Currently, these technologies are developed into more

sophisticated technologies. In order to compete in the highly competitive business environment, LSP should consider adoption of innovative technology.

The adoption of innovative technology is significantly influenced by technological characteristics, quality of human resources, organisational encouragements, environmental uncertainty, and governmental support (Lin 2007; Lin 2008a). Moreover the adoption will improve supply chain performance (Lin 2008a). However in some cases, the influence of each factor varies. For instance, in a study conducted by Lin (2008b), the adoption of RFID technology is influenced by technological characteristics, quality of human resources, organisational encouragement and governmental support whilst environmental uncertainty does not have significant influence on adoption of technology.

(h) The usage level of LSP in some countries

This main investigates the usage of LSP in some countries in term of drivers of outsourcing; decision maker level; logistics service used; benefit and non-benefit; selection criteria; implementation problem and future opportunity. Table 2.5 shows the spread of research by countries. Generally, the usage level of LSP in each country has increased. Although each study shows different outsourcing drivers, cost reduction is one of the most popular reasons cited for outsourcing (Bhatnagar et al. 1999; Larson et al. 2001; Sahay et al. 2006; Saleh et al. 2009). In terms of decision making process, often corporate level determines outsourcing decision (Lieb et al. 1996; Sohail et al. 2005).

Table 2.5 The Spreading of Research by Country

Authors	**Country study**
Lieb et al. (1996)	The U.S.
Murphy et al. (1998)	The U.S.
Bhatnagar et al. (1999)	Singapore
Larson et al. (2001)	Denmark
Sohal et al. (2002)	Australia
Sohail et al. (2005)	Saudi Arabia
Sahay et al. (2006)	India
Sohail et al. (2006)	Singapore and Malaysia
Hong et al. (2007)	China
Lieb (2008)	Asia Pacific
Saleh et al. (2009)	Malaysia

Transportation and warehousing is the logistics service that is frequently used in almost in all countries. Specifically for the United States, warehouse management, shipment consolidation and carrier selection are frequently used (Lieb et al. 1996). For Saudi Arabia, carrier selection and shipment consolidation are often used (Sohail et al. 2005); for China and Denmark, transportation and warehousing (Hong et al. 2007; Larson et al. 2001) whilst for Malaysia it is transportation (Saleh et al. 2009). In terms of outsourcing benefits, nearly all countries choose cost reduction as the prominent benefit. In particular for the United States the benefits are cost, expertise and operational efficiency (Lieb et al. 1996) while for Denmark the benefits are cost and greater flexibility (Larson et al. 2001). For India the benefits are delivery and specialized expertise (Sahay et al. 2006) and for Saudi Arabia the benefits are cost reduction and improved expertise (Sohail et al. 2005). In the case of Singapore the benefits are cost reduction and focus on core business (Sohail et al. 2006) whilst for Malaysia the benefits are consistent service and cost reduction (Saleh et al. 2009).

In contrast, outsourcing also contains non-benefit. Nearly, all countries perceive potential loss of control as critical non-benefit. In order to minimize non-benefit, companies use specific selection criteria when choosing LSP. Almost all countries use service and cost performances as the most common criteria when selecting LSP. In particular, for the United States, the criteria are service, cost and expertise (Lieb et al. 1996), for China the criteria are rate level and information processing (Hong et al. 2007), while for Malaysia the criterion is service consistency (Saleh et al. 2009).

In relation to implementation, problems that exist in outsourcing implementation include resistance to change, understanding process of customer requirement (Lieb et al. 1996), lack of coordination between government authority (Hong et al. 2007). In particular for Asia Pacific, the LSP problems include complexity of regulations, transportation service, shortage of management ability, staffing and competitive price (Lieb 2008). However the Asia Pacific region also presents great opportunities for LSP business development, such as the increase of intra-Asia business, expansion of transportation service and enhancement of IT solution.

(i) The literature reviews in the LSP field

This main involves articles that explore the development of LSP research. In the last decade, the nature of research in logistics service provider topics is mostly a descriptive exploratory nature (Maloni et al. 2006; Selviaridis et al. 2007) and only a few papers employ theory-based hypotheses (Maloni et al. 2006; Marasco 2008; Selviaridis et al. 2007). In terms of actors involved, we need to develop research investigating the LSP's point of view and customer's point of view. This means research investigating from the point of view of business network is needed in order to develop a comprehensive research (Selviaridis et al. 2007). Some interesting topics for further research include dynamic behaviour of relationship between the LSP and their buyers (Marasco 2008), developing key performance index to measure LSP relationship (Selviaridis et al. 2007), contribution of LSP on buyer productivity, influence of cost analysis on outsourcing decision (Maloni et al. 2006), impact of e-commerce on creating LSP service demands and impact of organisational culture on LSP relationship (Marasco 2008).

Table 2.6 The Future Research Suggested by Authors

Topics suggested	**Papers**		
	Maloni et al. (2006)	Selviaridis et al. (2007)	Marasco (2008)
Behaviour in network analysis	√	√	√
Developing KPI for relationship		√	
Productivity in buying organisation	√		
Transaction cost analysis in outsourcing decision	√		
Implication of e-commerce			√
Organisation culture			√

2. 5 Evaluation for the Main Theme Development

The logistics outsourcing decision and the criteria and steps for selecting LSP main themes have been investigated extensively in the literature and are also well researched. Both main themes are interrelated which duly report outsourcing reasons that influence selection criteria. Currently, there is no research which investigates the compatibility between outsourcing reason and criteria used by companies to select LSP. The research opportunities for both main themes are to investigate how the relationship between outsourcing reasons and selection criteria exist; how to measure the compatibility and do companies which have high compatibility between

outsourcing reasons and selection criteria achieve higher success rate compare to companies which have lower compatibility.

In the LSP capability and role main theme, research which investigates fundamental capability in the LSP industry is limited. For future research, we need to explore key capability in each LSP category. We also need to know vital capability for each business segment because each business segment has its own unique characteristics. For instance, the capability needed for transportation sector is different from the capability required for warehousing. For further research, we need to find out what the contributions of LSP capability on customer performance are, what the impact of capability on LSP performance and on sustainable LSP business are.

For the LSP performance main theme, the efforts to identify performance drivers have been investigated sufficiently. In contrast, the development of performance measurement for each LSP classification has not shown satisfactory result. Key performance index for each LSP classification have not been extensively and intensively explored. Attempt to investigate contribution of LSP performance on customer performance has already been conducted although it is viewed as insufficient. For further research, we need to investigate how the impact of LSP performance for LSP and their customers are and we also need to develop a performance measurement model for each LSP classification.

The relationship between LSP and their customers main have developed extensively, starting from research which investigates determinant relationships, key variables of relationship, linkage between relationship characteristics and relationship outcomes. For further research, we need to investigate what actual effort of LSP and their customers are in order to develop the relationships, what determinants the relationship quality between LSP and their customers are and what the impact of relationship quality on LSP and customer performance are.

The LSP growth strategy main theme has been thoroughly investigated such as developing strategy based on LSP characteristics; developing balance strategy between focusing on problem solving capability and focusing on customer adaptation; managing internal resources, capability and external environment. For

future research, we suggest research to examine success level of each strategy be developed.

The technology adoption main theme has not been investigated extensively. Papers which discuss this main theme are very limited. The LSP industry needs high investment in technology adoption, such as expertise, expensive equipment as well as information and communication technology. For future research, we suggest further research that investigates what are the positive and negative impacts of technology on LSP; for positive impacts, what has been done by the LSP to optimize the impact; for negative impacts, what has been done by LSP to minimize the impact; do customers perceive technology adoption by the LSP will contribute to relationship outcome; do the technology adoption by the LSP contribute to customer performance?

For main theme on usage levels of the LSP in some countries, early publications in this main theme are mainly from the United States and Europe. However from the year 2005 onwards, research development in this area has extended to Asia Pacific region, especially India and China, ranging from the use of popular services, benefits and non-benefits of LSP' services, implementation problems and opportunities. This main theme can be extended to other countries which are yet to be investigated.

In the literature reviews into the LSP field main theme, papers which investigate research development in LSP area are scarce, which prompted this research to conduct a comprehensive analysis of identifying main themes in the area of LSP research. Examples of research opportunity identified in this main theme are behaviour in network analysis, developing key performance index in LSP performance, specifying relationship between LSP and their customers, contribution of LSP on buying organisation and impact of e-commerce on LSP business.

In the literature review main, behaviour research is one of the opportunities to develop LSP research. In particular, identifying customer value has become a research opportunity in a competitive business environment. Market globalization and rapid growth of LSP business have created an intensively competitive LSP business environment which leads to the LSP having to work extremely hard to offer

superior service levels to their customers. The situation is compounded by customers also becoming highly selective and sensitive toward service levels as their needs become increasingly complicated. In order to survive in a highly competition market, the LSP must pursue the changing needs of their customers. They develop various strategies to retain customers in the existing market and creating new market through provision of customized services to meet customer requirements as well as identifying relationship pattern within market segmentation (Aghazadeh 2003; Persson et al. 2001; Stefansson 2006). In order to provide customized services, LSP need to understand what customers value the most. Without understanding issues that the customers highly value, the relationship between LSP and their customers will be short-lived. Wilding et al. (2004) have investigated reasons of why firms do not use LSP services for a longer time period; their results show that as much as 68% is due to service issues which made customers hesitate to re-engage the same LSP for the next contract. This phenomenon shows that achieving the desired service levels as identified by the customers is an important issue that must be resolved in the LSP business context, especially in the current highly competitive market environment.

Knowledge on value is important in business market management. Customer value is one of the most significant factors in the success of an organisation and it is also an important source of competitive advantage for the firm (Spiteri et al. 2004; Woodruff 1997). The orientation toward customer has encouraged many companies to deliver superior customer value as the fundamental basis for their marketing activities (Holbrook 1996; Woodruff 1997). For long term goals, customer value is necessary to achieve customer loyalty (Sirdeshmukh et al. 2002). Customer value has become strategically important to attract and retain customers and is a significant factor in contributing to the success of companies (Khalifa 2004; Slater 1997; Wang et al. 2004). In order to deliver superior value, companies should understand what customer value is; how value is perceived by customers; which value does the customer values the most and how to translate value into performance measures. Customer value is needed in service development; knowledge of customer value can also be used for customer enhancement (Menon et al. 2005; Parasuraman 1997; Simpson et al. 2001).

However, companies and researchers have little knowledge on how to define, measure and deliver customer value (Anderson et al. 1998a; Tzokas et al. 1999). Literature review shows that only very limited researches have been conducted to investigate customer value as a focal construct (Sinha et al. 1998; Ulaga 2001). Limited research is also found in business-to-business relationship, in particular research investigating customer value empirically and in a systematic manner (Menon et al. 2005). Specifically, research investigating customer value in LSP business sector is limited. More importantly, customer value varies for different countries, different relationship context and different environmental situations (Menon et al. 2005). Thus customer value needs to be investigated in different context that include different business areas, different customer characteristics and different competitive environment. In conclusion no research investigating customer value is found in LSP business and this research direction is needed in the LSP area.

2. 6 Summary

The aims of this chapter are to identify main themes in the LSP area, evaluate development of the main research themes in LSP and investigate potential research areas in the LSP sector. Expected outcomes of this chapter are the research gaps and opportunities for further study in the research area of LSP. This chapter identifies nine research main themes in the LSP research area at various development levels. The literature reviews, technology adoption, LSP capability and LSP performance main themes have received fairly low attention in the LSP research. The development levels of different main theme have identified research gaps and opportunities for further study in the LSP discipline area. There are some research opportunities that worth investigating; these include investigating key capability for each LSP classification; developing performance measurement for each LSP classification; investigating the impact of technology adoption on LSP and customer performance; and investigating behaviour in network analysis, especially customer value. Moreover the LSP research needs to be conducted in countries that are yet to be investigated. Finally, the literature review main theme supports findings that indicate research in both LSP’s and customer’s point of view needs to be thoroughly investigated.

3 CHAPTER 3 – CURRENT STATUS OF LOGISTICS PERFORMANCE DRIVERS IN INDONESIA: A JUSTIFICATION FOR THE IMPORTANCE OF LSP RESEARCH IN INDONESIA

3. 1 Introduction

Chapter 2 has identified potential research opportunities in LSP research. One of the research opportunities is to conduct LSP research in countries that are yet investigated. Indonesia is one of the countries in which LSP research has not been developed in depth although the LSP industry in this country has potentially grown and developed. In particular, chapter 2 also identify that LSP performance mainstream themes have received fairly low attention in the LSP research. Hence this chapter aims to identify the current state of logistics performance drivers in Indonesia. In particular, this chapter focuses on the current status of Indonesian LSP as one of the main drivers that contributes to logistics performance in Indonesia.

The rest of the chapter is organized as follow. Section 3.2 discusses challenges in the Indonesian logistics sector to allow greater understanding of the nature of LSP business in Indonesia. Section 3.3 identifies current status of key drivers of Indonesian logistics performance in order to know the LSP position among other logistics performance drivers. Finally, a summary of this chapter is presented in section 3.4.

3. 2 The Challenges of Indonesia Logistics Sector

Logistics has a complex role in managing the flow of goods, services and related information. Currently, the role of logistics expands not only to move products and materials but also to create competitive advantage by providing services which meet customer demand (Chapman et al. 2002). Logistics influences market demand effectively by creating customer satisfaction, sales and market share. Stack et al. (2003) found logistics performance significantly influences customer satisfaction and in return customer satisfaction generates repurchase intention positively and significantly (Anderson et al. 1994a). It has been shown that repurchase intention increases volume and variety of purchasing (Reichheld et al. 2000). When logistics effectively integrates upstream operational function and downstream marketing function in the supply chain, the overall business performance also significantly

improves which encourages the sustainability of an existing market and the spread of a new market (Sezen 2005).

At the macro level, logistics performance of industries in a country has a major impact on economic performance of the country (Hilmola 2011). The logistics performance of all sectors influences on the economic growth and prosperity of a country (Hannigan et al. 2001). The more efficient the logistics management, the smaller margin logistics costs in the goods or services purchased by consumers. The quality of logistics performance will reduce margins costs in the product or service, improve operational efficiency, improve a country's access to international markets and increase the trade volume (Shepherd et al. 2011). When all sectors within a country have a superior logistics performance, the competitiveness of a country will increase which improves their bargaining power in regional and international levels (Fawcett et al. 1997). In a competitive supply chain world, effectiveness and efficiency of domestic logistics systems and their connectedness to global logistics are keys to the success of a country.

Indonesia's efforts to achieve an effective and efficient logistics system is influenced by the state of Indonesia which has 17,508 islands, 225 million population and abundant natural resources such as oil, gas, coal and palm oil (Sekretariat Negara Republik Indonesia 2010). The circumstances indicate that Indonesia is a promising market as well as consisting wealth of resources. The geographical condition of Indonesia means the supply and demand distribution has become a crucial issue and requires reliable distribution systems. Logistics sector also faces challenges internationally. Free trade agreement in the ASEAN region leads to more competitive market (The Nathan Associates Inc. 2007). Customer expectations of offered goods and services have increased. Similarly customers demand lower costs. To respond to this situation, Indonesia needs an outstanding logistics performance.

To observe how far the performance of Indonesian logistics sector is, a national logistics performance measurement is needed. The performance of a country's logistics sector compare to logistics sector in other countries in the world can be identified using the Logistics Performance Index (LPI). The LPI in 2010 shows the Indonesian logistics sector needs to be improved (see Table 3.1). LPI is the weighted

average of the country scores on six key dimensions which consist of efficiency of the clearance process; quality of trade and transport related infrastructure; ease of arranging shipments; competence and quality of logistics services; ability to track and trace consignments; and timeliness of shipments in reaching destination within the scheduled or expected delivery time. The scorecards demonstrate comparative performance using a scale from 1 to 5 in which 1 being the worst performance for the given dimension.

Table 3.1 The 2010 Logistics Performance Index of Indonesia Compare to World Average Score

	Indonesia		**World**	
			score	**difference**
Overall LPI	score	2.76	2.87	-0.11
	rank	75		
Customs	score	2.43	2.59	-0.16
	rank	72		
Infrastructure	score	2.54	2.64	-0.09
	rank	69		
International shipment	score	2.82	2.85	-0.02
	rank	80		
Logistics competence	score	2.47	2.76	-0.29
	rank	92		
Tracking & tracing	score	2.77	2.92	-0.15
	rank	80		
Timeliness	score	3.46	3.41	0.06
	rank	69		

Source: World Bank, http://info.worldbank.org, accessed 13-12-2010

Table 3.1 shows that overall the performance of Indonesia logistics sector below the average score of the world. If the score is specified on six dimensions, the timelines of Indonesia logistics sector rests on above the average score of world. This is a good point for Indonesia logistics sector. However for the rest five dimensions, the score shows below the average score of world therefore Indonesia logistics sector should improve on these dimensions. Sequentially, the improvement is most needed for

competence and quality of logistics service; efficiency of the clearance process; ability to track and trace consignments; quality of trade and transport related infrastructure; and ease of arranging shipments.

3. 3 Current Status of Key Drivers of Indonesia Logistics Performance

Support of government for the development of logistics sector has been published in the blueprint of the Indonesian logistics sector which includes a vision and a national logistics strategy. The goal of the Indonesian government is to have a strong network among urban region and industrial areas by 2025. Future goals are embodied in the vision headlines of 2025, that is “Locally Integrated, Globally Connected” and the vision statement states that “By year 2025, Indonesia logistics that domestically integrated across archipelago and internationally connected to the major global economies, effectively and efficiently, would improve national competitiveness to succeed in the world era of supply chain competition“ (Kementrian Koordinator Bidang Perekonomian Republik Indonesia 2008).

To achieve the goal, the Indonesian government establishes a national logistics strategy that encourages low-cost economy. Indonesian logistics strategy prioritizes strategies for the six major determinants of national logistics which consists of key commodities; laws and regulations; infrastructure; human resources and management; information and communication technology; and logistics service providers. Based on Kementrian’s Report, the Indonesian logistics strategy can be summarized in the following statement, that is “Through improvement and enforcement of laws and regulations; optimal investment and utilization of infrastructure; advancement of logistics information and communication technology, the government would provide a platform for professional logistics human resource management and world class logistics service provider to develop the strategic key commodities so that the country’s competitiveness can be achieved”. In order to understand the challenge of each driver, an overview of the current states of each driver of Indonesia logistics systems is needed.

(a) Laws and Regulations

The development of Indonesia logistics sector requires a strong regulatory protection. Currently, synchronization among regulations and laws is low. Regulations and laws should be prepared in the logistics perspective so that they do not overlap and can provide a clear direction for future development. In preparing for the regulations and laws, benchmarking with regulations and laws of other countries is necessary. For regulations and laws realization, the enforcement is needed so that laws and regulations can be implemented effectively.

(b) Infrastructure

The logistics sector depends on the condition of transportation infrastructure, roads, ports and airports. Factually, Indonesian logistics system needs a cheaper infrastructure to achieve efficient distribution. The increased of trading volume should be supported by the infrastructure capacity. Investment of infrastructure is very expensive and long term return on investment should be maximized to ensure full utilization of existing facilities. The comparison between the growth of trading volume and the infrastructure capacity can be seen from Table 3.2 to Table 3.12.

Table 3.2 The Number of Cargo of Railways Transportation, 2006-2009 (000 Tons)

Year	**(000 Tons)**
2006	17.275
2007	17.078
2008	19.444
2009	18.924

Source: BPS (recompiled), http://www.bps.go.id/, accessed 13-12-2010

Table 3.3 The Number of Domestic Cargo of Air Transportation at Main Airports in Indonesia, 2006-2009 (Tons)

Year	**Polonia (Tons)**	**Sukarno Hatta (Tons)**	**Juanda (Tons)**	**Ngurah Rai (Tons)**	**Hasanudin (Tons)**
2006	10.404	121.196	23.195	4.191	24.575
2007	10.809	133.663	23.441	5.144	27.375
2008	11.385	152.303	22.425	6.362	22.522
2009	12.096	146.134	27.276	6.433	21.815

Source: BPS (recompiled), http://www.bps.go.id/, accessed 13-12-2010

Table 3.4 The Number of International Cargo of Air Transportation at Main Airports in Indonesia, 2006-2009 (Tons)

Year	Polonia (Tons)	Sukarno Hatta (Tons)	Juanda (Tons)	Ngurah Rai (Tons)
2006	2.188	100.748	6.597	24.674
2007	1.888	106.132	7.455	26.784
2008	3.353	118.379	7.790	27.195
2009	2.308	110.467	8.150	28.839

Source: BPS (recompiled), http://www.bps.go.id/, accessed 13-12-2010

Table 3.5 Total of Loading Domestic Cargo at Main Ports in Indonesia, 2006-2009 (Tons)

Year	Belawan (Tons)	Tanjung Priok (Tons)	Tanjung Perak (Tons)	Balikpapan (Tons)	Makassar (Tons)
2006	538.602	5.948.414	10.486.872	10.123.854	2.552.865
2007	974.286	6.824.602	13.610.296	13.394.413	2.707.219
2008	1.186.819	7.351.121	9.463.008	11.642.516	3.294.072
2009	1.216.190	8.341.275	8.829.194	8.218.005	3.711.557

Source: BPS (recompiled), http://www.bps.go.id/, accessed 13-12-2010

Table 3.6 Total of Unloading Domestic Cargo at 5 Main Ports in Indonesia, 2006-2009 (Tons)

Year	Belawan (Tons)	Tanjung Priok (Tons)	Tanjung Perak (Tons)	Balikpapan (Tons)	Makassar (Tons)
2006	6.959.975	14.020.612	10.658.357	8.593.227	3.183.440
2007	7.242.572	15.808.737	11.803.339	8.783.094	3.461.109
2008	8.269.358	16.860.782	8.446.983	8.557.097	4.992.781
2009	7.527.212	15.152.551	7.765.622	7.601.787	6.673.336

Source: BPS (recompiled), http://www.bps.go.id/, accessed 13-12-2010

Table 3.7 International Cargo Loading and Unloading Indonesia, 2005-2008 (Tons)

Year	Loading (000 Tons)	Unloading (000 Tons)
2005	160.743	50.385
2006	145.891	45.173
2007	240.767	55.357
2008	145.120	44.925

Source: BPS (recompiled), http://www.bps.go.id/, accessed 13-12-2010

Table 3.8 The Condition of Road Assets, 2009 (%)

Condition	National Road	Province Road	Regional Road
Major damage	3.44	32.9	21.87
Minor damage	13.34	28.21	31.14
Fair	33.56	34.88	24.53
Good	49.67	5.85	22.46

Source: Ministry of Transportation Republic of Indonesia, Directorate General of Land Transportation, "Perhubungan Darat dalam Angka 2009", http://www.hubdat.web.id, accessed 13-12-2010

Table 3.9 The growth of Road in Indonesia, 2005-2008 (km)

	2005	2006	2007	2008
National Road	34.318	34.318	36.318	36.318
Province Road	46.771	46.771	50.044	50.044
Regional Road	229.208	229.208	245.253	245.253
Urban Road	21.934	21.934	23.469	23.469
Tol Road	772	772	772	772

Source: Ministry of Transportation Republic of Indonesia, Directorate General of Land Transportation, "Profil Data Perhubungan Darat Tahun 2009", http://www.hubdat.web.id, accessed 13-12-2010

Table 3.10 The Number of Construction and Rehabilitation of Railway, 2004-2007 (km)

Tahun	2004	2005	2006	2007	Total	Average growth (%)
Construction and Rehabilitation	124.67	158.78	181.89	324.60	789.94	
Growth (%)	-	27.36	114.55	78.46		40.12

Source: Ministry of Transportation Republic of Indonesia, Secretariate General of Data and Information, "Informasi Transportasi 2007", http://www.dephub.go.id, accessed 13-12-2010

Table 3.11 The Development of Airport Facility, 2003 - 2007

Year	Rehabilitation of Airport (m2)	Construction of Airport (m2)	Rehabilitation and Construction (m2)	Growth (%)
2003	4.450	6.634	11.084	-
2004	1.726	1.811	3.537	-68.09
2005	4.014	37.450	41.491	1073.06
2006	1.755	58.062	59.817	1591.18
2007	7.473	2.253	9.726	-83.74
Total	19.418	106.210	125.628	

Source: Ministry of Transportation Republic of Indonesia, Secretariate General of Data and Information, "Informasi Transportasi 2007", http://www.dephub.go.id, accessed 13-12-2010

Table 3.12 The Development of Port Facility, 2004-2007

Year	Construction (m)	Growth (%)
2004	1.703	-
2005	2.602	52.79
2006	1.748	-32.82
2007	1.550	-11.33

Source: Ministry of Transportation Republic of Indonesia, Secretariate General of Data and Information, "Informasi Transportasi 2007", http://www.dephub.go.id, accessed 13-12-2010

The numbers of cargo for railways transportation, air transportation and port have increased every year (Table 3.2 to Table 3.7). However the condition of road asset have damaged around 15-50% (Table 3.8) and the growth of road, railway and port is slowly (Table 3.9 to Table 3.12). The data show that the increasing of trading volume has not been balanced by the development of infrastructure capacity. This condition influences on the logistics performance index of Indonesia in particular for the infrastructure dimension. This information can be used to decide the priority improvement.

(c) Information and Communication Technology

Information and communication technology (ICT) supports delivery of information and improves logistics pipeline visibility. For instance, transportation management system (TMS) can provide information about location, direction of travel and speed of transportation in real time whilst warehouse management system (WMS) can

manage information about goods in the warehouse. Condition of ICT in Indonesia greatly influences the performance of logistics sector. In general, the development of Indonesia ICT has shown good progress (Table 3.13).

Table 3.13 The ICT Indonesia: at a Glance

ICT Performance	**Indonesia**		**East Asia & Pacific Region**
	2000	2008	2008
Access			
Telephone lines (per 100 people)	3.2	13.4	21.7
Mobile cellular subscriptions (per 100 people)	1.8	61.8	52.9
Fixed internet subscribers (per 100 people)	0.2	1.4	9.0
Personal computers (per 100 people)	1.0	2.0	5.6
Households with a television set (%)	62	65	-
Quality			
Population covered by mobile cellular network (%)	89	90	93
Fixed broadband subscribers (% of total internet subscribers)	1.0	9.4	41.9
Fixed internet bandwidth (bits/second/person)	1	120	470
Affordability			
Residential fixed line tariff (US$/month)	-	4.5	4.5
Mobile cellular prepaid tariff (US$/month)	-	5.3	5.0
Fixed broadband internet access tariff (US$/month)	-	21.7	21.7

Source: World Bank, http://web.worldbank.org, accessed 13-12-2010

(d) Human Resource Management

Efficient and integrated logistics systems need the availability of human resources. In fact, the growth of Indonesia logistics business is not supported by the growth of professional human resources. There is a gap between the availability of education and training with demands in the logistics sector and the level of competency. Human resource development has not been well planned. In general, only 6.5% of

labour has tertiary education (Table 3.14). Based on Kementrian's Report, the main challenge of the national logistics sector is the need to improve the quality and quantity of human resources in this sector.

Table 3.14 The 2007 Indonesia Education: at a Glance

Indicator	**Percentage**
Primary Gross Enrolment Ratio (%) (6 years)	117
Lower Secondary (%) (3 years)	91
Upper Secondary (%) (3 years)	57
Vocational and Technical (% of secondary enrolment)	12.8
Tertiary Gross Enrolment Ratio (%)	17.5
Labour Force with Secondary Education (% of labour force)	20.6
Labour Force with Tertiary Education (% of labour force)	6.5

Source: World Bank, http://web.worldbank.org, accessed 13-12-2010

(e) Key Commodities

The development of logistics sector should take into consideration the main commodities for international and domestics market. Each commodity has different production, marketing and material handling requirements. For the export market, Indonesia has priority commodities consisting of fuel, gas, crude palm oil (CPO), coal, agricultural product, forest products and containerized commodities such as textiles, pharmaceuticals, electronics, furniture, handicraft, processes food and office equipment. Based on Kementrian's Report, for domestics market the main commodities involve fuel and gas, agricultural products, cement, fertilizer and liquid commodities such as cooking oil and milk. Through understanding of these priority commodities, national logistics systems can focus on the need of the commodities. The production and marketing areas of the commodities should be mapped into the logistic strategy in order to understand the priority development area.

(f) Logistics Service Provider (LSP)

Time-based competition has become increasingly important for companies. New manufacturing methods such as just-in-time and flexible manufacturing system encourage companies to improve their logistics performance. Time-based competitiveness needs the flow of information, manufacturing and delivery of product on time to respond to the change in customer demand. Logistics has emerged as a key frontier of competition in the future (Sohail et al. 2006). Companies compete to offer excellent service performance through optimizing logistics supply chain inventory, lead times and economies of scale. In pursuing these efforts, companies have encountered several problems, such as lack of knowledge about customer, tax regulation and infrastructure of destination countries. These conditions prompt the company to use LSP to plan, implement and control forward and reverse flow and storage of goods, services and related information.

In the blueprint of Indonesian logistics sector, the government has supported the development of the Indonesian LSP industry. The role of the LSP is to improve customer service of the companies. High competitive market in the era of globalization has forced companies to develop a logistics strategy which not only maintains the existing market but also expands the market at a global level. Generally, the Indonesian LSPs have provided some form of basic services. Large scale and comprehensive services from upstream to downstream are mostly dominated by multinational LSP. The LSP in Indonesia are associated within different associations depending on the service type provided and are fostered within different departments or ministries. For instance, LSP which provide transportation service are fostered within Department or Ministry of Transportation whilst LSP which provide warehouse service are fostered within Department or Ministry of Trade. In this condition, developing the LSP industry requires coordination of inter departments or ministries.

The main goal of Indonesia LSP is to provide excellent service at low cost with a competitive spirit, commercial culture and capital access. Competitive spirit focuses on customer service, reliable management and information technology investment to monitor and regulate operations whilst commercial culture focuses on providing

attractive incentives for management (Kementrian Koordinator Bidang Perekonomian Republik Indonesia 2008).

The Indonesia domestic and the Association of Southeast Asian Nations (ASEAN) regional environment influence the growth of LSP in Indonesia. The improved infrastructure, the growing of plantation, oil, gas, mining, telecommunication and retail industry have encouraged the development of Indonesia LSP industry. The LSP growth is also influenced by the progress of trading among ASEAN countries. In a roadmap for the integration of the ASEAN logistics sector, ASEAN member countries are recommended to support the ASEAN logistics service providers through providing common standard services (The Nathan Associates Inc. 2007). The dynamic environment in the Asia Pacific region, such as the increased of companies' demand on LSP, the development of transport services and improvement of ICT service have enhanced the LSP industry development (Lieb 2008). The logistics service sector has become a promising business sector in Indonesia and the ASEAN region.

However, the free trade agreement in regional and international areas does not only create new market opportunity but also triggers competitive businesses among LSP. In a competitive market, customers require a high service level with efficient cost. In this state the price is more competitive which results in shrinking profit margin. The other problems are hiring of qualified staff, retraining them and minimizing turnover; lacking regulatory issues information about local market and running of transport operations. In order to optimize potential contribution of LSP to their customers, information on potential contribution and risk of the LSP usage is needed.

3. 4 Summary

Being focus on the six key drivers of Indonesia logistics performance is an appropriate first step to improve Indonesia logistics performance. The mapping result of the six key drivers of Indonesia logistics performance show that each driver needs to be improved continuously. There are four ways to improve the six key drivers; these are improvement of policy (for laws and regulations); optimization and utilization of investment (for infrastructure and information and communication technology); development, training and business opportunity (for human resource

management and LSP) and development of production and marketing (for key commodities). In regards to the role of LSP as one of the key drivers in Indonesia logistics performance, their role has demonstrated a significant contribution to customer logistics performance. Information about customer perceived risks and contributions is important to contribute to the improvement of Indonesia logistics performance.

4 CHAPTER 4 – THE LINKAGE BETWEEN LOGISTICS SERVICE QUALITY, BENEFIT, COST, VALUE AND QUALITY MANAGEMENT PRACTICE: A RESEARCH FRAMEWORK

4. 1 Introduction

In order to improve Indonesia logistics performance, information about logistics service value perceived by customers is important and needs to be investigated. This chapter aims to develop a research framework in the LSP business scope. Sspecifically, this chapter identify the relationships between logistics service quality provided by the LSP, logistics service benefits, logistics service cost and logistics service value perceived by LSP' customers, and quality management practices in LSP.

The rest of the chapter is organized as follow. Section 4.2 discusses customer value consisting of importance of understanding customer value in the LSP business, various definitions and dimensions of value concept. Section 4.3 describes theory inspiring the framework development. This is followed by discussion of logistics service value in section 4.4. Section 4.5 presents logistics service benefits, section 4.6 investigates logistics service cost and section 4.7 presents logistics service quality. Section 4.8 discusses how quality management practices as one of the valuable resources owned by LSP can influence the relationships of the above variables. Lastly, section 4.9 presents a summary of this chapter.

4. 2 Customer Value

Market globalization and rapid growth of the LSP business have created an intensively competitive LSP business environment which leads to the LSP having to work extremely hard to offer superior service levels to their customers. The situation is compounded by customers also becoming highly selective and sensitive toward service levels as their needs become increasingly complex. In order to survive in a highly competitive market, the LSP must pursue the changing needs of their customers. They develop various strategies to retain customers in the existing market and in the new market through provision of customized services to meet customer requirements as well as identifying relationship patterns within each market segment (Aghazadeh 2003; Persson et al. 2001; Stefansson 2006).

In order to provide customized services, LSP need to understand what customer value. Without understanding customer value, the relationships between LSP and their customers will be short-lived. Wilding et al. (2004) have investigated reasons of why firms do not use LSP services for a longer time period; their results show that as much as 68% is due to service issues which made customers hesitate to re-engage the same LSP for the next contract. This phenomenon shows that achieving the desired service levels as identified by the customers is an important issue that must be resolved in the LSP business context, especially in the current highly competitive market environment.

Knowledge on customer value has an important role in the development of the LSP business. It has become an inspiration source for improving service delivery (Olaru et al. 2008); managing appropriate resources and enhancing customer service level (Menon et al. 2005; Simpson et al. 2001; Wang et al. 2004). Information about customer value can also be used to identify the LSP position and develop value creation strategies (Smith et al. 2007); create competitive advantage, develop the LSP performance and support the LSP to be a winner in the market competition (Jensen 2001; Lindgreen et al. 2005; Menon et al. 2005; Spiteri et al. 2004; Ulaga et al. 2001; Wang et al. 2004).

Customer value has become strategically important to attract and retain customers (Kumar et al. 2004; Wang et al. 2004); create and maintain long term relationships (Eggert et al. 2006; Sharma et al. 2001) and necessary to achieve customer loyalty (Sirdeshmukh et al. 2002). Customers loyal to a LSP when they feel that they receive greater value than they receive from competitors (Molinari et al. 2008). Understanding value of target markets and delivering the desired customer value more effectively and efficiently than competitors support the LSP to achieve marketing success (Kothandaraman et al. 2001; Kotler 2000).

Benefits that organisation can achieve from customer value show the critical role of understanding it in business market management. Although customer value research is important in the business-to-business relationship, research that systematically conceptualize and empirically analyse customer value is limited and in its early stage

(Gil-Saura et al. 2010; Kumar et al. 2004; Menon et al. 2005; Ulaga 2001; Ulaga et al. 2001). Methodology utilized to investigate vary (Smith et al. 2007). Conclusions obtained are also diverse in different business context, different customer characteristics and different competitive environment (Menon et al. 2005). On the other hand, customer value research in LSP business context has not been developed well (Mentzer et al. 2004a; Mentzer et al. 2004b; Rutner et al. 2000). This condition results in the needs to investigate customer value in business market setting, particularly in the LSP business context.

Customer value research can be classified into three major domains, these are theory development, measurement techniques, and marketing strategy development and implementation (Ulaga 2001). In theory development, there is no agreement on how value should be conceptualized (Kumar et al. 2004). Value can be investigated in four major meanings: *values*, *desired value*, *value to the customer* (value judgment), and *value of the customer* (Flint et al. 1997; Ulaga et al. 2005). In the first meaning, "*values"* is implicit belief or higher order goal of customer that guides behaviour. It refers to the rules or norms that act as the basis for evaluative judgment (Holbrook 1999). *Values* is implicit criteria used to make a preference judgment, guide behaviour and reflect ultimate end-states of existence (Flint et al. 1997). In the second meaning, *desired value* refers to customers' perceptions of what they want to have occurred in a specific use situation to accomplish a desired purpose or goal. *Values* and *desired value* describe people's valuation of product or service possession or consumption (Lai 1995).

In the third meaning, *value to the customer* or outcome of an evaluative judgment (Holbrook 1996) is the customer's assessment of trade off between benefits and sacrifices in a specific use situation. In this meaning, value is a result of interaction between customers and products or services (Payne et al. 2001). The fourth meaning, *value of the customer* or customer lifetime value describes the seller's perspective about net value from certain customers (Smith et al. 2007). The fourth concept describes the seller's point of view about the net value of customers for the seller. This meaning does not relate directly to understanding of value from the customer perspective. This research focuses on the third category of meaning; that is *value to the customer*.

Value in the context of *value to the customer* or customer perceived value has multiple and complex meaning (Woodall 2003). Zeithaml (1988, p.14) defines customer value as "the consumer's overall assessment of the utility of a product based on perceptions on what is received and what is given" while Anderson and Narus (1998a, p.54) define customer value as "the perceived worth in monetary terms of the technical, economic, service and social benefits received by a customer company in exchange for the price paid for a market offering". On the other hand, Ulaga and Chacour (2001, p.530) define value as "the trade-off between the multiple benefits and sacrifices of a supplier's offering, as perceived by key decision makers in the customer's organisation, and taking into consideration the available alternative suppliers' offerings in a specific-use situation". Although definitions proposed by researchers are various, researchers agree that *value to the customer* is a subjective concept and relative to competitors (Ulaga et al. 2005).

Generally, the different meanings of *value to the customer* can be classified into four categories (Sanchez Fernandez et al. 2006), these are *value as low price; value as whatever the customers want in a product or service; value as the quality that the customers get for the price that they pay; and value as what the customers get for what they give* (Zeithaml 1988). However, the concept that is widely used is one that describes *value as what the customers get for what they give* (Zeithaml 1988). In this meaning, the perception of value consists of the trade off between what the customers receive, such as quality, benefits, worth or utilities and what the customers give up (price and other sacrifices) to acquire a product or service (Spiteri et al. 2004). At this point, benefits and sacrifices are defined in consumers' perception context in the activities of acquisition, consumption, and maintenance (Huber et al. 2001). This perspective is a cognitive or rational model of decision making in which researchers assume that customers view a product or service as a bundle of quality, benefits, worth and utilities (Day 1990).

Customers are more attracted in what benefits they can obtained from a product or service rather than features of a product or service (Hooley 2008). Consumers buy a product or service for the benefits that will satisfy their needs. However, benefits alone do not fully explain customer choice. From economic perspective, customers

may apply cost-benefit evaluation to the purchase decision (Huber et al. 2001) in which their decision was determined by what benefits that they can obtain for the sacrifices that they incur (Flint et al. 1997; Lapierre 2000; Mazumdar 1993; Ravald et al. 1996; Zeithaml 1988). Customers may find desirable products or services however they do not have adequate financial capacity so they do not purchase these products or services.

Increasing customer value can be done by increasing benefits and decreasing sacrifice or cost (Ravald et al. 1996; Teas et al. 2000). Company should focus on both benefits and sacrifices to increase customer value (Cannon et al. 2001). Operationally, increasing customer value can be performed through cost efficiency or market efficiency. Cost efficiency is creating value through minimizing cost while market efficiency is creating value through increasing added value for customers. In strategic firm terminology, it was known as a cost leadership strategy or a differentiation strategy. The optimal strategy can be a combination between cost leadership and differentiation strategies, that is providing value on the right customers who promise profitability for company (Ravald et al. 1996). This means in creating added value to the customer, organisation should consider a competitive price so that the company profitability is maintained.

The facts that customer value is important for the growing and sustaining of companies, no agreement among researchers on the customer value concept and the lack of customer value research in the LSP business result in the need to investigate customer value in the LSP business context. The customer value concept describes in this section will form the basis to identify logistics service value that is how logistics services delivered by LSP create value for their customers. The next section will identify theoretical framework which inspires the development of this research framework.

4. 3 The Theoretical Framework

This research aims to identify the main variables influencing logistics service value based on theoretical framework. This research framework is inspired by *the customer value-based theory of the firm* (Slater 1997) and *the resource-based value theory of the firm* (Barney 1991; Wernerfelt 1984). The foundation of *the customer value-*

based theory of the firm was laid decades ago, these are the neoclassical theory of the firm, the behavioural theory of the firm, the transactions cost economies theory of the firm and resource-based theory of the firm. Although the customer value-based theory of the firm proposed by Slater is not the development of a new theory of the firm, it gives a foundation that a firm will exist when it provides a superior value for its customers. The creation of customer value must be the reason for the firm's existence and success.

In changing business environment, firms face a turbulent and complex competitive environment while customers seek excellent service with lower costs and technologies change rapidly. All of those results in sustainable of competitive advantage depend on the extent of firm capability to deliver the best value for their customers (Day 1994). The purpose of every business is to satisfy the customer (Drucker 1973). Customer satisfaction is reached when firm delivers products or services that provide value for their customers (Anderson et al. 1994a). Customer receiving value from a firm will continue to repurchase firm's products or service and ultimately firm's market share will increase (Kotler 2000). Through developing and implementing customer value strategies, firms will exist and be profitable (Slater 1997).

Customer value strategy also can be used to establish market objectives select the market segments, develop capabilities and deliver the promised value and ultimately increase firm performance (Day 1994). Firms with strong performance can generate or attract capital for the expansion of their activities. Superior performance can be achieved when the firm possesses a competitive advantage (Barney 1991). A firm has a competitive advantage when it possesses resources that enable firm to deliver customer value. Superior performance is reached by firm learning about customers and their changing needs, managing the innovation process and organizing resources in customer value delivery processes (Slater 1997).

The central organisational challenge in the customer value-based theory of the firm is to maximize the effectiveness of the firm's customer value creation activities. These activities are most appropriately viewed as processes involving across multiple functions in the organisation. In this theory, the customer's perspective becomes a

central perspective on a business in which firm starts from what customer wants from firm and work backward from there.

Indeed value is perceived by customer perspective, however firm should perform the transformation process to deliver products or services which customer wants in order to successfully compete in the marketplace. Consequently, *the customer value-based theory of the firm* needs to be complemented by *the resource-based value theory of the firm*. Value can be created for customers through firm capabilities (Zubac et al. 2010). Value creating is determined by the intervention of management in transformation process of acquired resources (Bowman et al. 2000). Firms invest resources in order to attract customers. In this context, source of differential profit between firms rests on the firm's transformation processes. Managers should understand customer needs to invest resources so that the invested resources can create greatest customer value. In such, understanding which resources should be invested is a fundamental decision (Zubac et al. 2010).

The resource-based value theory of the firm (RBV) explains high performing firm has bundles of resources creating advantages in the marketplace (Barney 1991). This theory regards firm as a collection of productive resources in which some resources become source of competitive advantage. High performing firms have valuable, rare, inimitable and non-substitutable resources. In RBV perspective, if firms want to create customer value, customer value should be linked to firm resources. If firms want to create customer value through firm's resources, they need to understand customer value and map the firm specific resources delivering optimal products or service over time. In particular, firm should understand product or service attributes creating customers value and resources transforming them to customer value (Srivastava et al. 2001).

When firms know how much customer value of their firm is influenced by their resources, firms have capacity to create performance enhancing customer value. Specifically, firm should understand how firm's resources can be employed to create customer value and ultimately satisfy customers (Zubac et al. 2010). There has been less empirical investigation on how customers perceive value in a firm's resource,

hence an understanding of the customer's perspective of firm's resources is critical research to be advanced (Clulow 2007).

Resources are the unique combination of capabilities and assets that allow firm to develop and implement strategies and ultimately to improve firm's overall performance. Firm's assets involve tangible and intangible assets such as financial, physical, human, technological and organisational inputs (Barney 1991) whilst capabilities are defined as the ability to perform a particular task or activity. Resources give the firm the ability to integrate and build internal competence (Zubac et al. 2010). The resource-based value theory identifies characteristics of resources creating advantage are value, rareness, inimitability and non-substitutability (Barney 1991). More recently, these characteristics creating advantage have been subsumed into the three key criteria, these are value, barriers to duplication and appropriateness (Fahy 2000). *Value* means key resources enable strategies to satisfy the needs of customers and improve firm performance. *Barrier to duplication* refers to key resources should be unable to be duplicated by competitors. *Appropriateness* means the resources will only be key resources if their value can be captured within the firm (Clulow et al. 2003).

Quality management as one of the significant resources owned by an organisation contributes to determine organisation's capability. Contribution of quality management depends on how far the level of their implementation in an organisation. The contribution of quality management is hindered by the organisational commitment in implementing them. On the other hand, controversial facts stated by Powell (1995) which found that not all quality management practices impact on business performance excellence. If non-essential practices are attached to quality improvement planning, they will disillusion employees (Su et al. 2008). Thus, organisation should focus on the quality management practices influencing organisational objectives only. By selecting the priorities of quality management practices and implementing them in an integrated way, the quality management practices support the achievement of objectives of organisations; that is developing and sustaining business through creating value for their customers.

In order to achieve the business development and sustainability, organisations should provide products or services that meet the customer demands. In the high level of competition, organisations that are capable of keeping existing customers and attract new customers will succeed in the competition. Quality management practices as significant part of company's resources can be directed to support provision of products or services. Ultimately these products and service can be used to deliver value and improve firm's position in the market place (Samat et al. 2006). While several researchers investigate the link between quality management practices and service quality, there is a dearth of empirical research evidence investigating the influence of quality management practice on logistics service value. Thus quality management practices as valuable resources need to be investigated in creating logistics service value for LSP's customers.

4. 4 Logistics Service Value

The customer value concept described in the previous section will form the basis to identify logistics service value, which is how logistics services delivered by LSP create value for their customers. In the early development of the logistics study, researchers believe logistics create value for customers through the ability of companies to deliver the right product in the right amount at the right place at the right time for the right customer in the right condition at the right price (Stock et al. 1992). Logistics creates customer value when its attributes are delivered efficiently, effectively, differentially and relevantly (Langley et al. 1992; Manrodt et al. 1992), in which the company does not only perform internal operations *efficiently* but also meet customer performance standards *effectively*, offer *unique* products or service compared to the competitors and deliver *relevant* service to the needs of the customers (Bowersox et al. 2000; Stank et al. 2003).

The changing of business environment results in the attribute-based definitions of logistics value to evolve. In further developments, companies grow to be more market-oriented, focus more on core competency and competitive advantage to improve customer service (Mentzer et al. 1997b). In such conditions, the basic concept of utility creation is inadequate to represent the value created by logistics. The concept of utility creation should be enriched by value-added concept. The value-added concept expands the traditional time and place utility to include forms

and information utility. Thus the value-added concept complements the concept of utility creation with service exceeding customer expectations (Rutner et al. 2000).

In addition, time and place utility and value-added concept have continuously developed into a trade-off concept between service and financial aspect (Novack et al. 1994). All of these developments turn logistics value concept into more customer-oriented through delivering the relevant attributes. Logistics value concept moves from simply logistics service attributes into value from the customer perspective. Logistics value concept progresses from what the company provides to what the customer perceives, that is customer-based definition of logistics value (Mentzer et al. 1997b).

The customer-based definition of logistics value modifies the logistics service research trend from focusing on the physically observable attributes into one that is more in-line with marketing which explores the understanding of unobservable variables such as customer's perceived value. Recent research shows that customers are not only motivated by the attributes of the products or services in a purchase decision but also are motivated by the consequence of logistics service attributes (Anderson 1995). This knowledge gives awareness for the companies that they do not emphasize logistics attributes that do not result in customer value. This knowledge inspires companies to emphasize only on logistics attributes that result in customer value.

Logistics service value concept developed in this research is based on customer perceived value concept, that is value experienced by the customer (Woodruff 1997). In this concept, the nature of logistics service value is subjective and an evaluative judgment or assessment of what customers perceive they receive from LSP compare to what customers give in a specific use situation (Flint et al. 1997; Gil-Saura et al. 2010). Logistics service can create value for customers when logistics service delivered meet customer needs or requirements at low cost (Novack et al. 1992; Rutner et al. 2000; Stank et al. 2003). LSP can improve logistics service value by increasing logistics service quality and its benefits for their customer and reducing cost or sacrifices associated with the service delivery process (Mentzer et al. 1997b). In this concept, cost is not only monetary sacrifices, but also includes non-monetary

sacrifices. Thus, in a broader sense, logistics service value is defined as a trade-off between logistics service quality, its benefits and cost perceived by the customers in a commercial relationship between LSP and their buyers.

The information regards how logistics service value is affected by logistics service quality, its benefits and costs will be important knowledge for the LSP in determining a strategy to improve the logistics service value for their customers. However, that information is not enough to understand what and how to increase logistics service value, LSP also need to know what and how their potential resources should be synergized with logistics service quality, its benefits and cost in creating logistics service value. As mentioned in the previous section, quality management practice is one of valuable resources owned by a firm. It has potential influence to create value for customers. Hence, this research will investigate its role in influencing the linkage of logistics service quality, benefits, cost and value.

4. 5 Logistics Service Benefit

In evaluating logistics service value, customers not only focus on service attributes but also consider benefits which they acquire from service offered by LSP (Lai 1995). This study identifies there are eight categories of logistics service benefits that can be provided by LSP, these are improving operational level; improving customer service; accessing resources; reducing cost; focusing on core business; increasing market share; improving business performance and developing business network.

By using LSP, companies expect to improve their customer service (Fernie 1999; Lau et al. 2006; Razzaque et al. 1998; Selviaridis et al. 2007). Through increasing customer service of companies, LSP fulfil expectation of companies' customers (Qureshi et al. 2008) and enhance satisfaction of companies' customers (Embleton et al. 1998; Qureshi et al. 2008; Selviaridis et al. 2007). Thus, LSP efficiently manage demand of companies' customers (Razzaque et al. 1998), increase repeat purchase of companies' customers and ultimately increase market share and revenue of companies (Elmuti 2003).

In order to enhance customer service level, companies should respond to the needs of customers quickly (Harland et al. 2005) as well as offer minimum cost (Bolumole et

al. 2007; Cho et al. 2008; Selviaridis et al. 2007). To be responsive, companies should improve their system operations (e.g. improving delivery time) (Elmuti 2003) and recover availability of resources (e.g. raw material) (Persson et al. 2001; Schniederjans et al. 2004). Companies also need to upgrade customer data (Razzaque et al. 1998), advanced equipments, information and communication systems (Cho et al. 2008; Razzaque et al. 1998) and adopt latest technology (Kremic et al. 2006; Schniederjans et al. 2004). Furthermore, companies need to enhance expertise, skill (Bolumole 2001; Kakabadse et al. 2005) and innovative knowledge (Fill et al. 2000). By using LSP, the companies can improve their responsiveness without incurring significant cost and they can focus on their core business. By concentrating on core business, companies can deliver competitive advantage to their customers (Qureshi et al. 2008) through creating superior and unique quality of products or service.

LSP also contribute to minimize cost of the companies through improving companies' operational level, such as improving flexibility in delivery (Daugherty et al. 1996; Maloni et al. 2006; Selviaridis et al. 2007), improving operational efficiency (Aghazadeh 2003; Bolumole 2001) and supply chain process (Aghazadeh 2003; Razzaque et al. 1998). Additionally, LSP support in developing supply chain partners, accessing international distribution network and risk sharing. Finally, the long-term outcome of the cooperation between LSP and the companies can be seen on financial performance of the companies. Studies have shown a direct positive relationship between logistics service benefits and logistics service value (Langley et al. 1992; Ravald et al. 1996; Rutner et al. 2000). Based on the literature review, this study will investigate the following hypotheses:

H1: Logistics service benefit has a positive effect on logistics service value

The benefits of logistics service provided by LSP and research papers supporting the data can be seen in Table 4.1 and Table 4.2.

Table 4.1 The Benefits of Logistics Service provided by LSP

The Logistics Service Benefits	**Item of Benefits**	**Codes used for Table 4.2**
Improving operational level	Improving productivity	1
	Improving flexibility of operation	2
	Improving speedy of operation	3
	Improving efficiency of operation	4
	Improving quality of operation	5
	Improving reliability of operation	6
Improving customer service	Improving customer service	7
	Improving customer relationship	8
	Increasing responsiveness to market	9
Accessing resources	Accessing latest technology	10
	Accessing expertise, skill, and knowledge	11
	Accessing material resources	12
	Accessing data	13
Reducing Cost	Reducing cost	14
	Reducing asset	15
	Reducing inventory level	16
Focusing on core business	Focusing on core business	17
Increasing market share	Increasing customer demand	18
	Spreading market	19
Improving business performance	Improving outcome of contract	20
	Increasing financial strength	21
	Decreasing business risk	22
	Increasing competitive advantage	23
Developing business network	Developing business network	24

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Table 4.2 The Papers Supporting Item of Benefits

Code of Item of Benefits																								Papers
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
	√												√											(Daugherty et al. 1996)
	√					√			√	√			√	√		√		√						(Sink et al. 1996)
	√					√			√	√			√			√								(Sink et al. 1997)
√	√		√	√		√			√	√			√			√				√				(Embleton et al. 1998)
√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√	√	√	√		√	√	(Razzaque et al. 1998)
						√							√							√		√		(Boyson et al. 1999)
	√					√				√			√			√		√		√			√	(Fernie 1999)
√			√			√			√	√			√			√			√			√		(Lankford et al. 1999)
	√								√	√			√	√		√				√				(Fill et al. 2000)
	√		√			√				√			√								√	√		(Bolumole 2001)
	√	√	√			√		√	√	√	√		√	√		√		√		√	√			(Ehie 2001)
				√					√	√	√		√	√		√				√	√			(Persson et al. 2001)
	√		√			√				√		√	√			√		√						(Aghazadeh 2003)
√	√	√	√	√	√	√		√	√	√			√			√		√	√	√	√	√		(Elmuti 2003)
													√			√								(Beaumont et al. 2004)
					√	√	√																	(Hong et al. 2004)

Table 4.2 The Papers Supporting Item of Benefits (continued)

Code of Item of Benefits																								Papers
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
	√			√		√			√	√	√		√	√		√					√			(Schniederjans et al. 2004)
	√					√				√			√	√		√		√						(Wilding et al. 2004)
	√			√	√	√	√						√			√		√						(Clegg et al. 2005)
	√							√	√	√	√		√			√								(Harland et al. 2005)
						√			√	√			√			√								(Kakabadse et al. 2005)
	√	√		√					√	√			√	√		√								(Kremic et al. 2006)
	√					√			√				√	√		√						√		(Lau et al. 2006)
	√												√			√								(Maloni et al. 2006)
√	√					√			√				√	√		√		√					√	(Sahay et al. 2006)
√	√					√			√				√			√		√						(Sohail et al. 2006)
									√	√	√		√			√							√	(Bolumole et al. 2007)
	√	√				√							√	√	√	√							√	(Selviaridis et al. 2007)
√	√			√		√			√	√	√		√	√		√	√	√						(Ghodeswar et al. 2008)
	√								√	√			√	√										(Cho et al. 2008)
		√	√			√																		(Qureshi et al. 2008)
	√					√							√										√	(Fabbe-Costes et al. 2009)

4. 6 Logistics Service Cost

In a purchase decision, LSP' customers consider not only benefits acquired from LSP' service but also cost incurred to get the service of the LSP (Fabbe-Costes et al. 2009; Maloni et al. 2006; Sahay et al. 2006; Selviaridis et al. 2007; Sohail et al. 2006). Cost is one of the components considered by companies in assessing the value given by LSP (Ravald et al. 1996). Cost is defined as what is given up or sacrificed to acquire a service (Cronin et al. 2000; Zeithaml 1988). Researchers classify costs into various categories however most of them classify costs into monetary and non-monetary costs (Bolton et al. 1991; Zeithaml 1988). Monetary cost comes from the price that customers pay to purchase products or service (Huber et al. 2001; Lai 1995; Ravald et al. 1996) and cost for possessing products or service involving acquisition cost (Blocker 2010; Cannon et al. 2001; Menon et al. 2005; Ravald et al. 1996) and operation cost (Cannon et al. 2001; Menon et al. 2005).

The purchase price refers to the monetary sacrifice which buyers should pay to purchase the product or service at the time of transactional exchange (Menon et al. 2005; Zeithaml 1988). The purchase price is the main cost of LSP's logistics service because they impact on cost saving, profitability and efficiency (Gil-Saura et al. 2010). Acquisition costs appear when companies in processes to obtain service from LSP (Cannon et al. 2001). Acquisition costs involve expenditure to order handling (Ravald et al. 1996) and administrative cost to set up service (Menon et al. 2005). Furthermore, operation costs appear when companies use the service of the LSP (Cannon et al. 2001). Operating costs involve cost for maintaining service, monitoring LSP performance, coordinating and communicating with the LSP (Cannon et al. 2001).

The effect of non-monetary cost should also be considered on logistics service value, such as time cost (Cronin et al. 1997; Huber et al. 2001; Lai 1995; Lapierre 2000), human effort cost (Cronin et al. 1997; Huber et al. 2001; Lai 1995; Lapierre 2000; Ravald et al. 1996), and psychological cost (Cronin et al. 1997; Gronroos 1997; Huber et al. 2001; Lai 1995; Ravald et al. 1996). The time cost refers to the amount of time required for the service acquisition or consumption. The human effort cost refers to physical effort, the degree of difficulty of operation and cognitive energy

(Lai 1995), effort in dealing with complex relationship (Dwyer et al. 1987), and effort in dealing with customer complaints (Sink et al. 1997). Psychological costs appear when companies worry about the quality of service delivered by the LSP. Psychological costs also appear when customers encounter uncertainty or potential negative consequences of LSP usage. This situation occurs when LSP's service performance is poor, such as delayed delivery, invoice or billing problem (Ravald et al. 1996) or conflict in service process (Lapierre 2000).

The other non-monetary costs are losing capability, dealing with information risk, and dealing with supply product risk (Selviaridis et al. 2007). Losing capability is derived from craving on provider expertise (Vissak 2008), lacking great effort to fight (Dwyer et al. 1987), losing control in operation (Dwyer et al. 1987) and losing professional knowledge (Sink et al. 1996). Dealing with information risk involves lacking market information, losing of secured information (Hong et al. 2004; Svensson 2001) and losing of customer feedback (Selviaridis et al. 2007). Dealing with supply product risk involves increasing inventory risk (Hong et al. 2004; Svensson 2001) and disrupting inbound and outbound flows (Selviaridis et al. 2007).

Studies have shown that when customers perceive a high cost they will perceive less value whilst when customers perceive reducing cost they will perceive increased value (Rutner et al. 2000; Sweeney et al. 2001; Zeithaml 1988). Based on the literature review, this study will investigate the following hypotheses:

H2: Logistics service cost has a negative effect on logistics service value.

4. 7 Logistics service quality

Generally, service quality is studied in two different perspectives, namely objective and subjective service qualities (Gronroos 1984; Parasuraman et al. 1988; Stock et al. 1992). In the first perspective, service quality is perceived by service provider. In this perspective, service quality is perceived as an accurate evaluation of all operation stages. Service is regarded as a physical object that can be observed and as attributes that can be evaluated. This approach views the service quality as the capacity to deliver products, materials and service without defects to the customer (Morash et al. 1996). The second approach, service quality is perceived in customer perspective

based on their subjective evaluations of service delivered by providers. In the second perspective, service quality is a customer judgment of service attributes that describes the nature of service (Crosby 1979; Parasuraman et al. 1988). In the increasing competitive environment, service quality has become the primary determinant for creating overall value for customers. The need to achieve service excellent in the market has created a powerful challenge for logistics management. The challenge is to balance operational realities with the need for quality customer service. It is suggested that service quality can be effectively managed even though market condition is difficult and resources are limited (Harding 1998).

The service quality approach is an effort to understand customer assessment from the perspective of differences between expected and perceived service (Parasuraman et al. 1985). The popular instrument to measure service quality is SERVQUAL developed by Parasuraman *et al.* (1988). SERVQUAL dimensions consist of tangibles, responsiveness, reliability, assurance and empathy. In its development, the scale has revised by rejecting measurement of expectation and considers only the perception measurement scale (SERVPERF). On the other hand, Gronroos (1984) propose two dimensions of service quality consisting of *technical* and *functional service quality*. *Technical or outcome service quality* describes whether providers deliver the promised service outcomes whilst *functional or process service quality* addresses whether providers provide the quality of service delivery process. If Parasuraman *et al.* (1988) and Gronroos (1984) models are compared, Parasuraman *et al.* (1988) model is similar to the functional or process aspect of Gronroos' model (Gronroos 1984; Parasuraman et al. 1988).

One of problems in service quality research is the adjustment of the dimensions of SERVQUAL instruments for specific industrial service context. Most of the service quality researches are applied to end-use consumers. Research objects of service quality need to extend to an industrial marketing context. One of them is the development of service quality research in the logistics service industry. For physical distribution service context, SERVQUAL instrument developed by Parasuraman *et al.* (1988) showed the poor predictive validity. Functional service quality or process dimensions of SERVQUAL instrument has not adequately addressed the content validity of the service quality construct. This condition motivates researchers to

develop continually the service quality model that can be used to measure logistics service. Modifications are performed by developing logistics service attributes appropriate to the service quality concept and fulfilling the gaps of service quality in the logistics service context. The usage of customer-based definitions of logistics service quality shoves the logistics service research from focusing on the physically observable operation attributes or operational-based approaches into a customer-based approach or namely more in line with marketing. This step provides additional information about what truly motivates customers to buy logistics services.

In line with the second perspective, Stock and Lambert (1992) developed the relative importance of logistics service attributes from various industries based on the importance of all relevant marketing mix attributes such as product, price, promotion and logistics service components. Their study found 13 logistics service attributes are important for various industries. The eight attributes are common across all industries while the other five attributes are not. This indicates that certain logistics service attributes are uniformly important in all industries whilst others are unique to one or more industries. The eight attributes perceived uniformly important in across all industries are accuracy in filling orders; consistent lead times; ability to expedite emergency orders; advance notice of shipping delays; action on complaints; shipping date provided at time order is placed; accuracy in forecasting and committing to shipping date and length of promised lead time. The finding indicates that conducting research on customer perception of the importance of logistics service attributes needs to be developed for each industry.

Bienstock *et al.* (1997) further developed a specific model to measure industrial customer's perceptions of logistics service on the basis of service quality. The model developed by Bienstock *et al.* (1997) measures physical distribution service quality based on the basis of technical service quality or outcome dimensions consisting of timeliness, availability and order condition. These constructs significantly influence purchasing managers' perceptions of physical distribution service quality with timeliness being the most important compare to other components. They argue that technical service quality or outcome dimensions are more appropriate for developing service quality measurement in the distribution service context. Limitation of this study is that, although outcome dimensions showed a significant effect on the

industrial purchasing decision to explain the industrial customers' purchasing pattern completely, companies need to combine technical service quality or outcome dimensions with the functional service quality or process dimensions of service quality.

Furthermore, Mentzer *et al.* (1999) confirmed the accuracy of the model developed by Bienstock *et al.* (1997) who found that timeliness, availability and order condition are the critical aspects of logistics service. However, the logistics service involves people who take orders, deliver products, do procedure for placing order and handle discrepancies. The interaction between customers and employees and procedures affects their perception of overall logistics service. Thus these effects need to be considered in the logistics service components. Two elements exist in delivery service, these are the physical distribution service and customer service elements (Mentzer et al. 1989). Both are complementary and need to be integrated in the customer service framework. The physical distribution service element has three crucial components consisting of availability, timelines and order quality whilst customer service element is built on the service quality literature prevalent in marketing. This proposal is in-line with the Gronroos's model (2001) which considers service delivery as technical and functional service characteristic. Their model provides a multidimensional model called logistics service quality (LSQ). Mentzer *et al.* (1999) conceptualized LSQ as a second order model with nine constructs consists of quality information, ordering procedures, order release quantities, timeliness, order accuracy, order quality, order condition, order discrepancy handling, and personnel contact quality. The scale is derived from the internal customer perceptions toward logistics service provided by in-house logistics function.

Mentzer's model (1999) has not yet represented all types of customers of logistics service and has not yet assessed its predictive validity. For further research, it needs to be tested for customers from various industries and its predictive validity also needs to be tested by relating LSQ with other variables in a research framework. Even so, the LSQ scale is a significant step to measure the impact of logistics service on customer perception.

The most detailed and relevant identification of the components of LSQ is developed by Mentzer *et al.* (2001). They conceptualize nine components of LSQ in terms of a logical process rather than a single concept or second order construct. The conceptualization of the nine dimensions of LSQ as first order dimensions of a second order LSQ construct has limitations. In a second order construct, researchers assume all dimensions have equal weight and occur simultaneously. This conceptualization ignores the logistics service as logical processes. By conceptualizing LSQ in a logical process, drivers of various LSQ perceptions can be identified.

The logical process used in Mentzer's model (2001) is based on the general process of logistics service. The process begins from the customer places an order, orders are processed, orders are shipped until orders are received (Mentzer et al. 1989). When the order received does not match with the expected, customers stay engaged in the logistics process through discrepancy handling. Customers evaluate logistics service quality start from they place orders, receive complete and accurate orders until the discrepancies addressed. Mentzer' study (2001) identify the interrelationship among LSQ components.

The nine constructs of Mentzer' study (2001) are reliable and valid across customer segments but the priority constructs are different for each segment. The implication of this finding is companies should customize their logistics service for each customer segment. This study can be improved by connecting the conceptualization with other constructs in the relationship context such as value. The other limitation of this study is the data is obtained from the customer segment of one organisation only.

The model of Mentzer et al. (1999) was tested by Rafiq and Jaafar (2007) in the context of the logistics service provider industry in the UK. They selected LSP as a research object with a consideration that logistics service quality affects significantly on the performance of the LSP. In addition, the LSP also serve inbound and outbound logistics service for various industry. In such, their efforts to create excellent logistics service quality are more complex and challenging. In Mentzer's model (1999), there are two constructs having only two items (quality information and ordering procedures construct). In order to improve reliability of both constructs,

Rafiq and Jaafar (2007) developed items for quality information and ordering procedures constructs different from Mentzer et al. (1999).

There are several different findings from Mentzer et al. (1999) and Rafiq and Jaafar (2007). Mentzer et al. (1999) conclude that the technical logistics service quality such as order quality, order release quantities and order accuracy are more appropriate than functional logistics service quality. On the other hand, Rafiq and Jaafar (2007) conclude that functional logistics quality such as personnel contact quality, ordering procedures, order discrepancy handling and information quality are more suitable for measuring logistics service quality. This finding raises the question whether the Mentzer's model (1999) can be generalized for customers across different industries. For further research, researchers also need to examine both the functional and technical logistics service quality and which construct is more necessary for customers. Although LSQ modeled by Mentzer et al. (1999) shows strong external validity for the logistics business environment in both the U.S. and the UK, the model needs to be examined for its validity for cases in developing countries.

On the other hand, Bienstock *et al.* (2008) extended the model of Mentzer et al. (2001) by examining how customer perceptions of service quality are created through evaluating the process and outcome dimension of LSQ. Separation of the process and outcomes of service quality dimension is a significant step to enrich the earlier service quality literature (Gronroos 1984; Parasuraman et al. 1988) which states that the service quality concept incorporates the functional or process dimensions and technical or outcome dimension. The conceptualization is significant for the context validity of service quality for industrial service, especially in logistics services. However this paper does not assess non-response bias and the findings need to be examined for across all industrial customer segment.

Several other researchers also continually modify logistics service quality construct. Gil-Saura et al. (2008a) examine service quality from two basic components, the first dimension is timeliness as the most significant dimension and the second dimension is personnel, information and order quality. Moreover Gil-Saura *et al.* (2008b) identified reliability and empathy as the main components of logistics service

quality. This finding is in-line with previous literature that proposes service quality within two main dimensions, these are functional or process service quality and technical or outcome service quality (Gronroos 1984).

Developments in the logistics service quality research show that logistics service quality construct was adapted on the basis of service quality construct adjusted for logistics service context (Gil-Saura et al. 2008a). Thus, in order to examine how the influence of logistics service quality to customer value, researcher should know how service quality influence the formation of customer value. Service quality is an antecedent of customer perceived value and has a significant influence on customer perceived value (Bolton et al. 1991; Ostrom et al. 1995). This finding is also supported by Cronin *et al.* (2000) and Parasuraman & Grewal (2000) who indicate that service quality is an important driver of perceived customer value. Customers perceive higher value in the service when they perceive the quality of service and the benefits of service as greatly exceeding the cost that they sacrifice to obtain the service. Quality and benefits are positively related to perceived value and perceived sacrifice is negatively related to perceived value (Teas et al. 2000).

In particular, logistics service quality measure how well the delivered logistics service matches with customer expectations regarding the structure, process and outcome of logistics service. It includes a comprehensive process which starts from sourcing of raw materials to the location of the final customer. All the involved process potentially create significant value for customers (Langley et al. 1992). LSP are expected to perform all of the processes in logistics service meeting customer requirements. The influence of logistics service quality to logistics service value is contextual. For instance, different market segments show different influences (Mentzer et al. 2001) as well as different countries show different influences (Zavrsnik et al. 2006). Although the influence of logistics service quality on logistics service value is contextual, in general logistics service quality offered by the LSP can improve customer value (Innis et al. 1994; Lambert et al. 2000; Novack et al. 1996; Parasuraman et al. 2000; Rutner et al. 2000; Tracey 1998). The congruence between logistics service delivered and customer expectations generate high perceived logistics service quality and therefore positively influences customer value (Mentzer et al. 1997b).

Logistics service quality provided by LSP also has a positive impact on customer's perception of logistics service benefits. The more quality services delivered by the LSP, the more benefits the customers get (Bolumole 2001; Elmuti 2003; Fabbe-Costes et al. 2009; Harland et al. 2005; Kremic et al. 2006; Razzaque et al. 1998; Wilding et al. 2004; Yeung 2006). Conversely, the more quality services delivered by the LSP, the lower cost incurred in using the LSP's services. In addition, high level of service quality will reduce customer's operation costs (Aghazadeh 2003; Bolumole 2001; Daugherty et al. 1996; Maloni et al. 2006; Selviaridis et al. 2007).

In order to investigate logistics service quality in depth, this research will divide logistics service quality concept into logistics service process quality and logistics service outcome quality. This conceptualization is in line with the conceptualization of Gronroos (1984) and Bienstock et al. (2008). Both elements of logistics service quality are interrelated in which logistics service process quality influence positively logistics service outcome quality (Bienstock et al. 2008). Based on the literature review, this study will investigate the following hypotheses:

H3a: Logistics service process quality has a positive effect on logistics service outcome quality

H3b: Logistics service process quality has a positive effect on logistics service benefit

H3c: Logistics service process quality has a negative effect on logistics service cost

H3d: Logistics service process quality has a positive effect on logistics service value

H4a: Logistics service outcome quality has a positive effect on logistics service benefit

H4b: Logistics service outcome quality has a negative effect on logistics service cost

H4c: Logistics service outcome quality has a positive effect on logistics service value

The relations between logistics service quality, benefits, cost and value need to be enriched by organisations resources. As discussed previously, quality management practice is one of the valuable resources owned by organisations; it can be aimed to

optimize the role of logistics service quality to influence logistics service value. Thus the next section will investigate how quality management practices influence the relationships between logistics service quality, benefit, cost and value.

4. 8 Quality Management Practice

4.8.1 Components of quality management practice

Quality management is a systematic and an integrated approach to achieve and sustain quality goals throughout the organisation (Flynn et al. 1994; Juran 1989). As a set of mutually reinforcing *principles*, it is implemented through *a set of practices* and its practices are supported by *a set of techniques*. Its *principles* involve customer focus, continuous improvement and teamwork whilst *a set of practices* involve activities supporting the achievement of quality goals. In addition, *a set of techniques* as step by step methods is addressed to make *a set of practices* effective.

Quality management aims to meet and exceed customer' needs by improving process and output through involving management, workforce and customer (Dean et al. 1994). As long as it is practiced effectively within an organisation, many benefits can be achieved such as understanding customer' needs, improving problem solving and increasing productivity (Powell 1995). Its practices also can improve quality and reduce cost of poor quality caused by rework, late deliveries, warranty and replacement. In turn, its practices can increase sales and grow business (Antony et al. 2002; Brah et al. 2002; Powell 1995). Ultimately, effective quality management practice improves overall effectiveness and performance and can be a source of competitive advantage towards achieving world-class status (Anderson et al. 1994b; Dean et al. 1994).

Quality management practice refers to quality management program and plans that can improve product, service, reduce cost, satisfy customer, and improve financial performance. It consists of not only traditional quality management method but also a set of quality programs (Su et al. 2008). The effective quality management practice ensures that all activities meet the needs and expectations of the customers and the community. It also ensure the goals of an organisation are achieved efficiently and

effectively by maximizing the possibility of all employees to improve their job (Sivabrovornvatana et al. 2005).

The components of quality management practice in literature vary from one author to another (Claver et al. 2003). An extensive literature review reveals that although quality management practice is not identical across different studies, a similar set of practices have been identified (Kristal et al. 2010). The key elements of quality management practice are the integration of resources and efforts towards the common interest of the stakeholders (Brah et al. 2006). A review of relevant empirical literature shows that top management commitment, strategic quality planning, process management, human resource management, training and development, customer focus, quality data and information and performance evaluation are the most often extracted factors.

(a) Top management commitment

Top management commitment for quality is defined as the ability of top management to establish, practice and lead a long term vision for organisation. It not only refers to responsibility as an internal management control but also responds to the changing of customer requirements (Anderson et al. 1995). The definition means that top management should formulate a long range vision for development of organisation; communicate a shared vision throughout the organisation towards a common objective; has a strong commitment and support through a plan of action and stimulate organisation to implement quality management towards achieving a shared vision (Kristal et al. 2010; Sureshchandar et al. 2003b).

Top management commitment is a key factor for quality improvement in teamwork (Douglas et al. 2004; Zhang et al. 2000). Top managements need to explain quality management principles to employees and explain their responsibility. They are not only actively involved in quality management and improvement process but also encourage employees to involve in quality management and improvement process (Azar et al. 2010). Employees should be encouraged to learn and take risk and overcome the problem and thus enhance their creativity and innovation. Quality management can be implemented effectively when the entire organisation accept responsibility and commitment (Talib et al. 2010).

Top management commitment is a preliminary requirement for effective and successful quality management implementation. It is important in the implementation of quality management (Azar et al. 2010) and drives other quality constructs (Ahire et al. 1996). Top management commitment affects strategic quality planning, human resource management and customer focus (Azar et al. 2010). It supports organisations to engage in continuous improvement by influencing other quality management practices as well as directly affecting quality performance. Top management commitment is a critical factor to achieve organisation objectives, guide and sustain organisations (Akdere 2009; Azar et al. 2010; Brah et al. 2006; Lee et al. 2003b). Table 4.3 shows various terms used to reflect top management commitment construct and related literature.

Table 4.3 Various Terms Used to Reflect *Top Management Commitment*

Various term used to reflect Top Management Commitment	**Literature**
Leadership	Zhang, Waszink et al. (2000); Cook (2002); Claver, Tari et al. (2003); Conca, Llopis et al. (2004); Sila and Ebrahimpour (2005); Prajogo and Sohal (2006); Terziovski (2006); Cheng and Choy (2007a); Tari, Molina et al. (2007); Arumugam, Ooi et al. (2008); Su, Li et al. (2008); Azar, Kahnali et al. (2010); Kuruppuarachchi and Perera (2010)
Visionary leadership	Anderson, Rungtusanatham et al. (1995); Samson and Terziovski (1999); Sureshchandar, Rajendran et al. (2003a); Rungtusanatham, Forza et al. (2005)
Top management commitment	Ahire, Golhar et al. (1996); Sureshchandar, Rajendran et al. (2001b); Saravanan and Rao (2006); Su, Li et al. (2008); Hoang, Igel et al. (2010); Talib and Rahman (2010); Talib and Rahman (2011)
Top management support	Flynn, Schroeder et al. (1994); Flynn, Schroeder et al. (1995); Brah and Wong (2000)
Management leadership	Kaynak (2003); Kaynak and Hartley (2008)
Commitment leadership	Powell (1995); Kersten and Koch (2010)
Top management commitment and visionary leadership	Sureshchandar, Rajendran et al. (2001a)
Supervisory leadership	Tsang and Antony (2001)
Management commitment & leadership	Kumar, Garg et al. (2009)
Top management commitment and recognition	Tsang et al. (2001)

(b) Strategic quality planning

Strategic quality planning focuses on how an organisation develops strategic quality objectives and expands it into action plans (Akdere 2009; Lee et al. 2003b). It focuses on the organisational planning process and integrates the key requirement within the organisational plans. Strategic quality planning emphasis on customer-driven quality and excellence operational performance as key strategic business issues and is an integral part of overall business planning (Lee et al. 2003b). It plays a vital role in an organisation to evaluate and modify plans, responds to market changes and customer preferences (Brah et al. 2006). It is required to manage quality because it is fundamental in order to survive in the market (Azar et al. 2010).

As a basis for initiating quality management, organisations need a vision, mission and goal. A vision statement reflects the standards, values and beliefs. It encourages companies to battle and win the competition. To realize a vision statement, organisations should transform it into mission statements and organisational goals. Vision, mission and goals are aimed to satisfy customer expectations and improve organisational performance (Ahire et al. 1996). Furthermore, vision, mission and organisational goals are reflected in business plans, quality policies, quality goals and quality improvement plans. The plans are communicated to all employees and they are encouraged to implement the quality programs. To create those processes, employees from various levels should be involved (Zhang et al. 2000). Table 4.4 shows various terms used to reflect strategic quality planning construct and related literature.

Table 4.4 Various Terms Used to Reflect *Strategic Quality Planning*

Various term used to reflect Strategic Quality Planning	**Literature**
Strategic planning	Samson and Terziovski (1999); Sila and Ebrahimpour (2005); Brah and Lim (2006); Prajogo and Sohal (2006); Terziovski (2006); Azar, Kahnali et al. (2010); Hoang, Igel et al. (2010)
Quality policy	Badri, Davis et al. (1995); Quazi, Jemangin et al. (1998); Joseph, Rajendran et al. (1999); Antony, Leung et al. (2002)
Quality planning	Claver, Tari et al. (2003); Conca, Llopis et al. (2004); Tari, Molina et al. (2007)

(c) Process management

Process management focuses on how an organisation designs, manages and improves its works and key processes, provides customer value in order to achieve organisational success and sustainability (Akdere 2009). It involves the set of methodological and behavioural practices emphasizing the management of process rather than results (Anderson et al. 1994b). Process management aims to manage and reduce process variation so that variation processes occurred are within acceptable limits and continuous quality improvement can be achieved (Azar et al. 2010; Tari et al. 2007).

The core idea behind process management is that organisations are a set of interlinked processes and improvement of these processes is the foundation of performance improvement. Redesign and reengineering process will support the organisation to achieve extraordinary performance improvement (Samson et al. 1999). Thus management should integrate all of the quality processes in the organisation effectively to enhance quality performance (Kaynak et al. 2008). Table 4.5 shows various terms used to reflect process management construct and related literature.

Table 4.5 Various Terms Used to Reflect *Process Management*

Various term used to reflect Process Management	**Literature**
Process management	Flynn, Schroeder et al. (1994); Anderson, Rungtusanatham et al. (1995); Badri, Davis et al. (1995); Forker, Mendez et al. (1997); Quazi, Jemangin et al. (1998); Samson and Terziovski (1999); Cook (2002); Claver, Tari et al. (2003); Kaynak (2003); Conca, Llopis et al. (2004); Rungtusanatham, Forza et al. (2005); Sila and Ebrahimpour (2005); Brah and Lim (2006); Prajogo and Sohal (2006); Terziovski (2006); Cheng and Choy (2007a); Tari, Molina et al. (2007); Arumugam, Ooi et al. (2008); Kaynak and Hartley (2008); Azar, Kahnali et al. (2010); Hoang, Igel et al. (2010); Kersten and Koch (2010), Kristal, Huang et al. (2010); Kuruppuarachchi and Perera (2010)
Process improvement	Powell (1995); Brah and Wong (2000)
Process control and improvement	Zhang, Waszink et al. (2000)
Process focus	Brah, Tee et al. (2002)
Process flow management	Flynn, Schroeder et al. (1995)

(d) Human resource management

Human resource management focuses on how an organisation engages, manages and develops workforce so that it aligns with the overall organisational mission, strategy and action plans. It is the core of quality management because it is essential for quality management implementation. Management and employee support can overcome barriers of implementation of quality management to get better results than their competitors (Azar et al. 2010). Hence organisations should focus on human resource management starting from selection, recruitment, employee satisfaction, employee empowerment to employee involvement so that employees have a sense of belonging in the organisation (Tsang et al. 2001).

Selection and recruitment procedures are useful to hire the right person for the right job (Lee et al. 2003b). Selection and recruitment are vital to deliver service quality because if the company hires the wrong person, it will impact on poor service quality (Ueno 2008). After the selection and recruitment process, the company also needs to pay attention on employee satisfaction. Employee satisfaction measures how far the employees of a company are satisfied by the management. When employees feel satisfied to their organisation, they will satisfy customers (Saravanan et al. 2006). Hence management should understand how to keep them happy (Azar et al. 2010).

Employee empowerment involves systematic redistribution of power, knowledge, information and rewards from top to bottom management in the organisation (Ahire et al. 1996; Sureshchandar et al. 2001b). It authorizes employees to identify and solve the problems (Saravanan et al. 2006). However, employee empowerment is not enough. It should be followed by employee involvement. Employee involvement refers to participation of employees in quality management practices. Participation in quality programs encourages employees to improve personnel capabilities, gain new knowledge to solve quality problems and increase employee responsibility towards success of the organisation (Sureshchandar et al. 2001b; Zhang et al. 2000). Through employee involvement, they will have a sense of belonging and feel to be part of the company (Talib et al. 2010). Table 4.6 shows various terms used to reflect human resource management construct and related literature.

Table 4.6 Various Terms Used to Reflect *Human Resource Management*

Various term used to reflect Human Resource Management	**Literature**
Human resource management	Joseph, Rajendran et al. (1999); Sureshchandar, Rajendran et al. (2001a); Sila and Ebrahimpour (2005); Brah and Lim (2006); Saravanan and Rao (2006); Tari, Molina et al. (2007); (Azar et al. 2010)
People management	Samson and Terziovski (1999); Flynn, Schroeder et al. (1994); Black and Porter (1995); Terziovski (2006); Prajogo and Sohal (2006); Kuruppuarachchi and Perera (2010)
Employee empowerment	Powell (1995); Ahire, Golhar et al. (1996); Brah and Wong (2000); Samat, Ramayah et al. (2006); Hoang, Igel et al. (2010)
Human resource focus	Brah, Tee et al. (2002); Cook (2002)
Employee management	Claver, Tari et al. (2003); Conca, Llopis et al. (2004)
Employee development	Kersten and Koch (2010)
Employee encouragement	Talib and Rahman (2010)
Workforce management	Flynn, Schroeder et al. (1995)

(e) Education and training

Education and training are important elements in a successful implementation of quality management (Zhang et al. 2000). They are the key for organisational growth and advancement (Cheng et al. 2007a). An organisation is a learning centre thus its employees should continually adopt new works, roles and tasks (Tsang et al. 2001). Through education and training, employees' skill can be advanced so that employees can transform their motivation into competency (Sureshchandar et al. 2001b).

In particular, education and training are addressed to improve employee's confidence, improve personal development and develop specific skills to carry out principles of quality. Employee can be trained in two aspects; these are personal development and job-related skills (Saravanan et al. 2006). Personal development involves leadership skill development, communication skills and interpersonal skills while training associated with job-related skills includes technical job, the quality concept and tool associated with the specific job.

The core of education and training are to maintain a high level of quality. Through education and training, knowledge about principles and core concepts of quality management can be disseminated to employees. They can minimize the risk of service failure and positively influence quality performance (Talib et al. 2010). Hence organisations should commit to provide adequate resources for employee education and training (Ahire et al. 1996; Zhang et al. 2000). Table 4.7 shows various terms used to reflect education and training construct and related literature.

Table 4.7 Various Terms Used to Reflect *Education and Training*

Various term used to reflect Education and Training	**Literature**
Learning	Anderson, Rungtusanatham et al. (1995); Claver, Tari et al. (2003); Conca, Llopis et al. (2004); Rungtusanatham, Forza et al. (2005); Tari, Molina et al. (2007)
Training	Badri, Davis et al. (1995); Powell (1995); Forker, Mendez et al. (1997); Dow, Samson et al. (1998); Quazi, Jemangin et al. (1998); Joseph, Rajendran et al. (1999); Zhang, Waszink et al. (2000); Behara (2001); Antony, Leung et al. (2002); Hasan and Kerr (2003); Kaynak (2003); Douglas and Fredendall (2004); Samat, Ramayah et al. (2006); Cheng and Choy (2007a); Kaynak and Hartley (2008); Ueno (2009); Hoang, Igel et al. (2010); Talib and Rahman (2010); Talib, Rahman et al. (2011)
Training & development	Tsang and Antony (2001)
Employee training	Ahire, Golhar et al. (1996); Brah and Wong (2000); Lakhal (2006)

(f) Customer focus

Customer focus addresses how well the organisation builds a customer focus culture; identify customer requirements and expectations; listens to voice of customers and uses this information to improve and identifies opportunities for innovation; provides effective customer relationship management and satisfy the customer (Akdere 2009; Samson et al. 1999). Customer focus is an important component of quality management practices because an organisation can compete successfully when they effectively address customer needs and demands and responds to the development of customer interests and wants. In condition where customer expectations are highly dynamic and complex, organisations need to think differentially about their business by positioning their customers as a source of information. Success of organisation needs input from its customer thus management should maintain a close relationship

with the customers to obtain information about the customer's needs. They should be involved in the product or service design and process development by collecting customer feedback and complaint information (Flynn et al. 1994; Powell 1995; Saravanan et al. 2006). Organisations that view their customers just as end-user consumers of their service will lose the opportunity to be a winner (Sureshchandar et al. 2001b). By focusing on customer needs and wants, organisations are more market-oriented and enhance their business performance. Table 4.8 shows various terms used to reflect customer focus construct and related literature.

Table 4.8 Various Terms Used to Reflect *Customer Focus*

Various term used to reflect Customer Focus	**Literature**
Customer satisfaction orientation	Black and Porter (1995); Antony, Leung et al. (2002)
Customer satisfaction	Anderson, Rungtusanatham et al. (1995); Hasan and Kerr (2003); Rungtusanatham, Forza et al. (2005); Saravanan and Rao (2006); Kumar, Garg et al. (2009)
Customer focus	Ahire, Golhar et al. (1996); Dow, Samson et al. (1998); Samson and Terziovski (1999); Brah and Wong (2000); Zhang, Waszink et al. (2000); Sureshchandar, Rajendran et al. (2001a); Sureshchandar, Rajendran et al. (2001b); Tsang and Antony (2001); Brah, Tee et al. (2002); Sureshchandar, Rajendran et al. (2002a); Sureshchandar, Rajendran et al. (2002b); Claver, Tari et al. (2003); Conca, Llopis et al. (2004); Sila and Ebrahimpour (2005); Brah and Lim (2006); Lakhal (2006); Prajogo and Sohal (2006); Samat, Ramayah et al. (2006); Saravanan and Rao (2006); Terziovski (2006); Cheng and Choy (2007a); Tari, Molina et al. (2007); Arumugam, Ooi et al. (2008); Su, Li et al. (2008); Kaynak and Hartley (2008); Kumar, Garg et al. (2009); Azar, Kahnali et al. (2010); Fotopoulos, Psomas et al. (2010); Hoang, Igel et al. (2010); Kaynak and Hartley (2008); Kersten and Koch (2010); Kuruppuarachchi and Perera (2010); Kristal, Huang et al. (2010); Talib and Rahman (2010); Talib, Rahman et al. (2011)
Customer cooperation	Molina, Llorens-Montes et al. (2007)
Customer & market focus	Cook (2002)
Customer relationship	Powell (1995); Flynn, Schroeder et al. (1995)
Customer involvement	Flynn, Schroeder et al. (1994)

Customer focus is also essential for the success of business. Organisations that understand what customer wants and provide services that meet their requirements can achieve competitive advantage. Organisations can outperform in customer service if they respond quickly to customer's demands with new ideas; deliver

services that satisfy customer expectations and anticipate and respond to evolving customer needs and wants. Identifying customer needs and expectations should be in the mind of all employees and thus customer focus is reflected in the overall quality planning and implementation (Talib et al. 2010; Tsang et al. 2001).

(g) Quality data and information

This quality management practice evaluates the extent of the availability, accuracy and timeliness of quality data and information for all users, such as employees, partners and customers. The managing and usage of data and information is useful to maintain a customer focus, drive excellent quality and improve organisational performance. Data and information is also useful to increase decentralization (Ahire et al. 1996) and support critical decision making required (Brah et al. 2006; Lee et al. 2003a). Decision making based on analysis of data and information about customer requirements, operational problems and success of improvements is emphasized in the quality management philosophy (Samson et al. 1999).

Furthermore, organisations need to communicate data and information across organisational levels, functions and locations to solve problems that arise during the service (Sureshchandar et al. 2001b). Without effective dissemination of data, information and feedback, opportunity of continuous improvement and benefit from other quality management practices will be lost (Kristal et al. 2010). In the next process, available data and information should be compared with organisational goals (Ahire et al. 1996). The quality management literature suggests that organisations which consistently collect, analyse and disseminate data and information will be more successful than organisations which do not (Samson et al. 1999). Table 4.9 shows various terms used to reflect quality data and information construct and related literature.

Table 4.9 Various Terms Used to Reflect *Quality Data and Information*

Various term used to reflect Quality Data & Information	**Literature**
Information and analysis	Samson and Terziovski (1999); Brah, Tee et al. (2002); Cook (2002); Sureshchandar, Rajendran et al. (2002b); Sila and Ebrahimpour (2005); Lakhal (2006); Prajogo and Sohal (2006); Saravanan and Rao (2006); Terziovski (2006); Arumugam, Ooi et al. (2008); Kuruppuarachchi and Perera (2010);
Information and analysis system	Sureshchandar, Rajendran et al. (2001a); Sureshchandar, Rajendran et al. (2003a); Hoang, Igel et al. (2010)
Quality data and reporting	Badri, Davis et al. (1995); Forker, Mendez et al. (1997); Quazi, Jemaning et al. (1998); Antony, Leung et al. (2002); Kaynak (2003); Cheng and Choy (2007a); Kaynak and Hartley (2008)
Quality information	Flynn, Schroeder et al. (1994); Su, Li et al. (2008); Talib and Rahman (2010)
Information system & analysis	Brah and Lim (2006)
Information and feedback	Kristal, Huang et al. (2010)
Process and data quality management	Fotopoulos, Psomas et al. (2010)
Quality data and measurement	Kersten and Koch (2010)

(h) Performance evaluation

Performance evaluation is a continuous systematic process to measure products, services or processes provided by the organisation so that it ultimately improves quality performance. Feedback can be obtained from internal and external organisations. For internal sources, management can evaluate job performance of their employees in providing the products, services or processes. That performance evaluation gives the right direction for employees to perform. When performance evaluation and reward are carefully and appropriately designed, they will have a positive effect on quality. With the same objective, performance evaluation can also be obtained from external organisation; these are organisation's customers. Evaluation of their customers enables the company to understand the customer needs and expectations. Organisational performance evaluation enables an organisation to achieve market-oriented and financial goals (Azar et al. 2010).

Performance evaluation is a starting point to understand the quality issues and identifies areas that require attention and improvement (Badri et al. 1995; Cheng et al. 2007a). Performance evaluation should be comprehensively conducted including policies and strategies, quality cost, performance of department as well as performance of each employee. Performance evaluation is done not only to measure internal organisation performance but also to compare with other organisations, which is known as benchmarking (Tsang et al. 2001). Benchmarking is an important approach in quality management. Benchmarking is a comparison that analyzes the best product, service or process of leading competitors in the same industry or the leading organizations in other industries. The purpose of benchmarking is to identify a target for improving performance in order to achieve superiority in the market place. Benchmarking aims to find gaps in performance and solve the problem continuously.

The result of performance evaluation should be communicated to all employees to enable employees to work toward an improved performance direction and use that information to improve the products, services and processes. Performance evaluations should be conducted with a clear focus on goal of quality (Ahire et al. 1996). However, organisation should ensure that the purpose of evaluation is for improvement and not for criticism (Sureshchandar et al. 2003b; Talib et al. 2010; Zhang et al. 2000). Table 4.10 shows the various terms used to reflect performance evaluation construct and related literature.

Table 4.10 Various Terms Used to Reflect *Performance Evaluation*

Various term used to reflect Performance Evaluation	**Literature**
Measurement	Powell (1995)
Measurement & feedback	Tsang and Antony (2001)
Evaluation	Zhang, Waszink et al. (2000)
Assessment	Behara (2001)
Performance measurement	Su, Li et al. (2008); Talib and Rahman (2010)
Quality improvement measurement system	Black and Porter (1995)

4.8.2 Quality management in logistics service sector

Service sectors play an important role in the economy but the quality management study in this sector is limited. Quality management practice research in service organisations are lagging behind manufacturing organisations (Gupta et al. 2005; Samat et al. 2006). Implementation of quality management in service organisations remains a challenging task (Hasan et al. 2003). There are several reasons why research and studies in quality management for service industries is less developed compare to manufacturing industries. These reasons are the difficulty to measure service quality defect and the difficulty to create a quality culture in service sector compare to manufacturing sector (Cheng et al. 2007a).

In particular, the increased complexity of logistics system requires the role of quality management practices to regulate the systems. However, quality management study in recent logistics system has received low attention. There are several studies that explore implementation of quality management in the logistics system. Rahman (2008) examines the status of quality management practices in logistics systems in Australian companies and compares the finding between manufacturing and logistics firms. The results showed that the most important logistics quality component is time delivery. The primary obstacles for not implementing quality were corporate culture and training and education of employees. For further improvement in the implementation, managers should integrate quality programs with corporate strategy, develop accurate inventory information system and acquire quality management skills through training and education. Furthermore, a significant relationship exists between level of quality practices and logistics outcomes, especially logistics operational performance (Anderson et al. 1998b; Brah et al. 2006; Forker et al. 1997). Lack of management support and financial resources is the major obstacle to implement quality program in logistics sector (Millen et al. 1997; Read et al. 1991; Sohal et al. 1999).

Among the various service sectors, logistics service is one of the developing service types. The expansion and growth of LSP industry in recent years have encouraged researchers to develop research that explores knowledge in the LSP industry. Complexities of issues encountered by the LSP imply various research themes can be

identified from this sector. The impact of quality management practice on logistics service value for LSP's customers is one of the themes that need to be investigated in the LSP business context.

The increased competition, customer expectation and industrial regulatory encourage LSP to improve the quality level of their services. For that reason, LSP need to design and implement comprehensive quality practices. LSP also need to assess and improve strategies to increase quality performance, competitiveness and business result (Cheng et al. 2007a). Although quality management is critical for value-added process from product creation to delivery, the importance of quality management practices for the logistics system has not been widely explored. The poor quality management will result in a lot of rework due to process errors so the actual cost is more than the cost of proper delivery. In this situation, quality management is to perform the right activity in the right way at the first time (Rahman 2006). Improving quality of all logistics operations result in reduced costs, improved resources utilization and improved system efficiency and ultimately can improve a company's ability to meet customer expectation and provide value for their customers (Choi et al. 1999; Rahman 2006).

Thus we propose following hypotheses:

H5a: Quality management practice has a positive effect on logistics service process quality

H5b: Quality management practice has a positive effect on logistics service outcome quality

H5c: Quality management practice has a positive effect on logistics service benefit

H5d: Quality management practice has a negative effect on logistics service cost

All hypotheses can be displayed in the Figure 4.1.

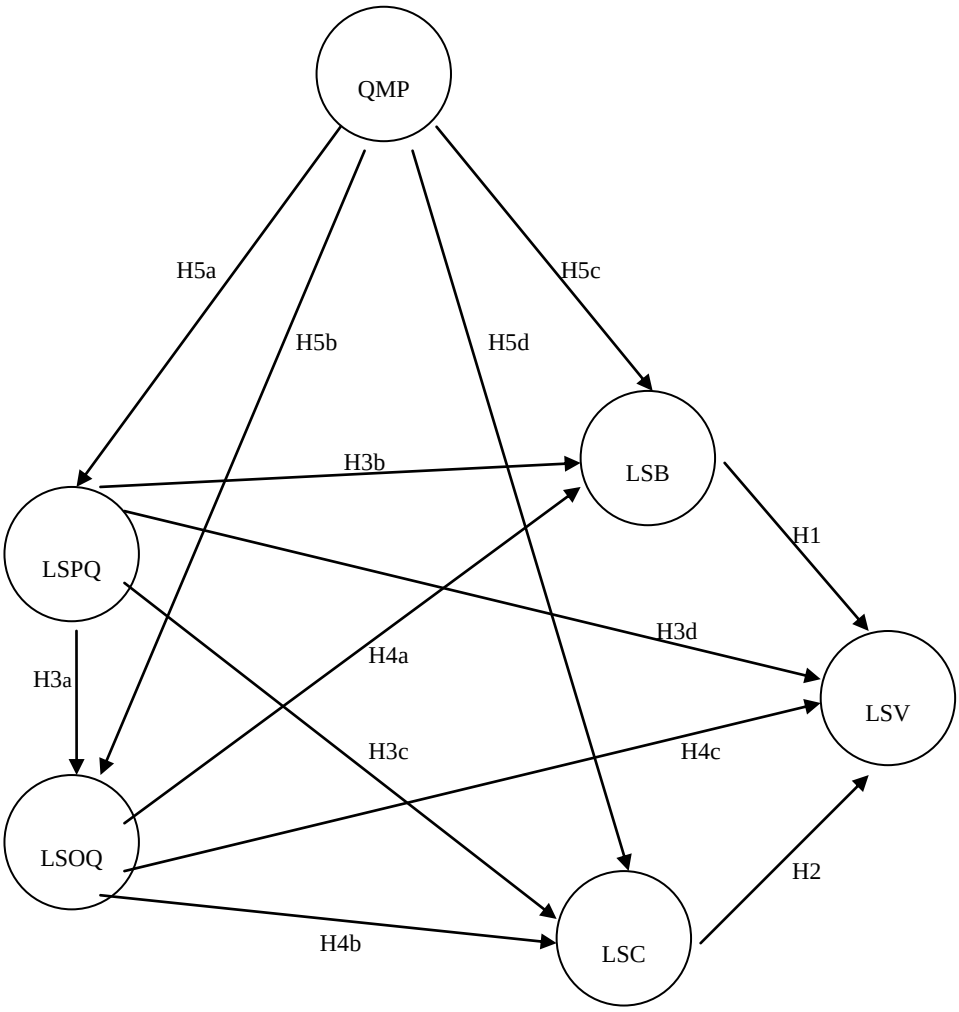

Figure 4.1 The Research Hypotheses

The abbreviations used consisted of

QMP: Quality Management Practice

LSPQ: Logistics Service Process Quality

LSOQ: Logistics Service Outcome Quality

LSB: Logistics Service Benefit

LSC: Logistics Service Cost

LSV: Logistics Service Value

4. 9 Summary

Market globalization and rapid growth of LSP business have created an intensively competitive LSP business environment which leads to the LSP having to work extremely hard to offer superior service levels to their customers. In order to provide

superior services, LSP need to understand what customers value the most. Achieving the desired service levels as identified by the customers is an important issue that must be resolved in the LSP business context, especially in the current highly competitive market environment. Although customer value research is important in the business-to-business relationship, research that systematically conceptualizes and empirically analyse customer value is limited and in its early stage. This condition results in the needs to investigate customer value in business market setting, particularly in LSP business context.

The customer value concept is used as a basis to identify logistics service value, which is how the logistics services delivered by the LSP create value for their customers. In evaluating the logistics service value, customers not only focus on service attributes but also consider benefits which they acquire from the services offered by LSP and costs that they should sacrifice to acquire the service. Therefore LSP can improve logistics service value by increasing logistics service quality and its benefits for their customers and reducing costs or sacrifices associated with the service delivery process.

The knowledge about how much and in what way logistics service value is influenced by logistics service quality, its benefits and costs will be important for the LSP to determine a strategy to improve the logistics service value for their customers. However, that knowledge is not enough to understand what and how to increase logistics service value, LSP also need to know what and how their potential resources should be synergized with logistics service quality, its benefits and costs in creating logistics service value. Quality management practices as one of the valuable resources owned by a firm have potential influence to create value for customers.

Quality management practices refer to quality management program and plans that can improve product, service, reduce cost, satisfy customer and improve financial performance. An extensive literature review reveals that although quality management practices are not identical across different studies, a similar set of practices have been identified. Top management commitment for quality, strategic quality planning, process management, human resource management, training and

development, customer focus, quality data and information and performance evaluation are the factors that have been identified.

This chapter provides a research framework in LSP business scope identifying the relationships between logistics service quality provided by LSP, logistics service benefits, costs and values perceived by LSP's customers and quality management practices in LSP business. This research framework is inspired by *the customer value-based theory of the firm* and *the resource-based value theory of the firm*. In *the customer value-based theory of the firm*, the customer's perspective becomes a central perspective in which firm starts from what customer wants from firm. In *the resource-based value theory of the firm*, if firms want to create customer value, customer value should be linked to the firm's resources. Quality management as one of the significant resources owned by an organisation contributes to determine organisation's capability. Contribution of quality management depends on how far the level of their implementation in an organisation.

5 CHAPTER 5 – RESEARCH DESIGN

5. 1 Introduction

Chapter 4 provides relevant literature in relation to the development of theoretical research framework and formulated research hypotheses to be conducted in this research. The aims of this chapter are to present and justify the research design which was conducted in this research and to explain various considerations affecting it.

The rest of the chapter is organised as follows. Section 5.2 describes the research design process. Section 5.3 restates the purpose of study. The paradigm underlying research process is presented in section 5.4 and the research approach is presented in section 5.5. Section 5.6 explains strategies of inquiry. Section 5.7 describes the population, sample and sampling design. Section 5.8 explains the questionnaire development and section 5.9 present the data collection strategy. Broad plan of data analysis is presented in section 5.10 and ethical consideration is explained in section 5.11. The final section provides a summary of this chapter.

5. 2 The Research Design Process

Research is a systematic and careful examination or inquiry to discover new relationships or information and to expand or verify existing knowledge for some specified purpose (Smith et al. 1991). Before undertaking research, the researcher is expected to perform the research design. A research design constitutes a preparation process to decide how to collect, analyse and interpret research data and presents an answer to the research problem (Sekaran et al. 2010). In designing a research, the researcher should consider what epistemology or theory of knowledge entrenched in the theoretical perspective; what theoretical perspective or philosophical point of view supporting the methodology; what methodology or strategy or plan of action which links the selected methods to the desired outcomes; and what methods or techniques and procedures used in the research (Crotty 1998).

Based on the ground work of Crotty (1998), Creswell (2009) addresses three questions in designing a research, these are what knowledge claims are being made by the researcher; what strategies of inquiry enlighten the research procedure; and what methods are being used for data collection and analysis. On the other hand

Sarantakos (2005) recommends three steps for designing a research, these are decide what paradigm, methodology and method will be utilized.

Based on the steps proposed by experts in research methodology literature, the research design processes of this study consist of the following steps. The steps are reviewing research purpose; determining research paradigm; choosing research approach; selecting strategy of inquiry or methodology; and choosing method of data collection and analysis.

5. 3 The Purpose of Study

Generally, the purpose of research can be classified into three common classifications; these are exploratory, descriptive and explanatory (Cohen et al. 2000; Jackson 2003; Saunders et al. 2003). Exploratory studies is utilized when the researcher conducts research to clarify understanding of a problem, narrow the research scope and transforms the problem into distinct and clear one. Exploratory research is conducted when there are very few studies addressing the research problem (Hussey et al. 1997). The objective of exploratory research is to search hypotheses rather than testing hypothesis. Furthermore when researcher conducts to describe characteristics of a phenomenon or a population, a descriptive study is more appropriate to be used. When a researcher likes to investigate and explain relationships between variables, an explanatory study is preferred (Jackson 2003; Zikmund 2010). In explanatory research, researchers refer to previous theory to address the problem (Hussey et al. 1997; Jackson 2003). The objective of explanatory research is to find out that theory is supported by empirical evidence. In explanatory research, the researcher begins from a theory and then tests it with the empirical data and ultimately decides to accept or reject the theory based on empirical data.

The purpose of this study is to understand the nature of the relationship among the logistics service quality provided by the LSP, logistics service benefits, logistics service cost and logistics service value perceived by customers of the LSP and quality management practices in LSP. That purpose is conceptualized within a research framework in chapter 4 and resulted in 13 hypotheses.

5. 4 The Paradigm of Research

In doing research, researchers begin with some assumptions about what knowledge claim that they will perform (Veal 2005). The claim is known as paradigm or philosophical assumption. The paradigms used by researchers determine the perspective of researchers about what knowledge is; how they know the knowledge; how they perform the research process (Gravetter et al. 2006; Lee et al. 2008). Therefore the paradigm plays a critical role in guiding the research development process. Based on underlying assumptions about how knowledge can be obtained, there are some paradigms exist in research design, such as post-positivism, constructivism, advocacy/participatory, pragmatism (Creswell 2009), interpretive and critical (Neuman 2011; Veal 2005).

By considering the research purpose of this study, the research paradigm that will be utilized in this study is post-positivism. This paradigm is also called the scientific method, quantitative research, positivist or post-positivist research, or empirical science (Lee et al. 2008; Veal 2005). Post-positivism has some characteristics such as determination; reductionism; empirical observation and measurement; and theory verification. Determination means that the paradigm assumes the research outcomes are determined by causes. Thus researchers need to investigate what the cause of their research problems. Reductionism denotes that researchers need to reduce the ideas into specific and small ones. It means researchers need to break the research problems into hypotheses or research questions that ready to be tested. Empirical observation and measurement reflects that the knowledge developed in this paradigm is based on empirical observation and measurement of the objective reality. Lastly, this paradigm assumes that theories govern the world therefore researchers need to verify the theory developed to understand the real world (Creswell 2009).

5. 5 The Research Approach

Research approaches are generally categorized as either quantitative, qualitative or mixed approach (Creswell 2009; Neuman 2011). Some factors affecting the chosen approach are the research problem, personal experience of the researcher and audience of the study (Creswell 2009). This research will employ quantitative approach in consideration that the research problem and research purpose are matched with this approach. As presented in the previous chapter, the purpose of this

study to understand the nature of relationships among logistics service quality provided by the LSP, logistics service benefit, logistics service cost and logistics service value perceived by LSP's customers and quality management practice in LSP.

Most of quantitative research relies on a positivism paradigm in social science. It is a deductive approach and emphasizes detailed planning prior to data collection and analysis (Creswell 2009). According to the nature of data, quantitative research emphasizes on measuring variables and testing hypotheses which are linked to causal explanations. The other characteristics of quantitative approach are reconstructed logic, linear paths, objectivity and pre-planned research questions. Reconstructed logic reflects the logic of how to do research. In quantitative approach, the logic is organized and restated in idealized, formal and systematic form. Linear paths mean researchers follow a path reflecting the steps of research. Quantitative approach consists of a fixed sequence of steps, direct, narrow, straightforward and more linear steps than qualitative approach. Related to objectivity, quantitative approach emphasizes the objectivity and more mechanical techniques to ensure the unbiased research issue. This approach also uses the standardized methodological procedures, measure with numbers and analyse the data with statistics to control or eliminate the human factor error. According to research questions, quantitative approach perform research question before finalizing study design. Researchers use research questions to develop hypotheses and guide the research design before data collection (Neuman 2011).

5. 6 The Strategy of Inquiry

Strategy of inquiry presents procedures in a research design. Broadly speaking, strategy of inquiry associated with quantitative approach includes experiment and the survey design. A survey design provides a numeric description of characteristics studied from a population by investigating a sample of that population. From the findings of sample characteristics, researchers infer or generalize about the population (Creswell 2009). In case the variables involved are difficult to be investigated in any other ways, survey can be used to get information about the variety of those variables. Survey also provide an easy and efficiency to gather a large amount of information (Gravetter et al. 2006). Data in the survey design is easy

to be quantified and researchers are able to use and modify the existing measures developed in previous survey research (Kerlinger et al. 2000). This research will use survey research design as the strategy of inquiry by considering the above benefits and the conformity between the characteristics of survey research design and the purpose of this research; that is to examine the research hypotheses by collecting the perceptual data from a population. To give an overview of the research design, Table 5.1 presents the considered and performed study dimension.

Table 5.1 The Study Dimensions

Study Dimensions	Description
Research purpose	Explanatory study or hypothesis testing
Research paradigm	Positivist
Research approach	Quantitative
Strategy of inquiry	Survey
Unit of analysis	Organisational level
Data collection method	Mail-out survey questionnaire
Time horizon	One-shot, cross-sectional study

5. 7 The Population, Sample and Sampling Design

In a survey research, researchers want to examine research hypotheses or find out answer of research question about a population through studying a sample of that population and then generalise the survey findings from the sample to the population (Dooley 1995; Neuman 2011). To generalize the research finding from a sample back to the population, representativeness become a valuable issue (Punch 2003). Therefore the sample should represent true population. This section will identify the population, sample and sampling design.

5.7.1 The population

The first step in sample selection process is to define the population of interest accurately and clearly (Fowler 1993; Punch 2003). The population is the large group of interest to a researcher. It involves the entire set of individuals of interest. It is important to identify the target population before taking samples so that the data source from the pertinent information to the research objectives.

This research will investigate LSP and their customers in Indonesia as the target population by considering reasons justified in chapter 3. In this research, LSP is defined as "a company that provides some or all of logistics services to create value for customers by developing a longer-term and mutually beneficial relationship for the customers". The Indonesian LSPs have provided some form of basic services. Large scale and comprehensive services from upstream to downstream are mostly dominated by multinational LSP. The LSP in Indonesia are associated within different associations depending on the service type provided and are fostered within different departments or ministries.

In detail, the hypotheses mentioned in the purpose of research will be examined in the business-to-business relationships context between LSP and their customers in the firm or organisational level. The unit of analysis of this research were employees' perceptions in the LSP firm about the quality management practice in their LSP; perceptions of LSP's customers about logistics service quality provided by their LSP; and perceptions of LSP's customers about benefit, cost and value of logistics services delivered by their LSP.

5.7.2 The sample and the sampling design

A sample is a set of individuals selected from a population and is intended to represent the population in a research study. In a research process, a sample will be tested and the results will be generalised for the population. How accurately the generalization depends on the representativeness of the sample. A representative sample is a sample that has the same characteristics with the population (Gravetter et al. 2006). A perfectly representative sample would enable inferences to be made about any aspect of the population (Hussey et al. 1997). The representativeness of sample depends on which sampling design used.

Sampling design is the process of selecting a sufficient number of elements from the population. By understanding the characteristics of the sample, the researcher can generalize these characteristics to the nature of population (Sekaran et al. 2010). The collection of sample data is used to calculate sample statistics and to estimate the

unknown population parameters (Sapsford et al. 2006). Thus it is important to design the sample so that it represents the attribute studied.

The sampling should be done correctly to represent the population and avoid bias in the result. Three aspects for sample selection involve the sample frame, sampling technique and the detail of sampling design (Fowler 1993). The sample frame is the set of people that has the probability to be selected. Only the set of individuals that meet the sample frame criteria will be used to represent the population. Sampling procedure refers to the kind of sampling procedure used. It reflects how to select the individual to be included in a sample. Generally, it involves probability and non-probability sampling procedure. The details of the sample design involve sample size and the specific procedures used to select the sample. All of them determine how closely a sample to approximate the characteristics of the population.

The sample frame

The population consist of sampling units. In a survey process, the sampling units are organized into a sampling frame. A sampling frame is whatever is being used to identify elements in the sampling units (Sapsford et al. 2006). The sample frame of this study consists of two sources. For the population of LSP, the sample frame is identified from the GAFEKSI (Indonesian Forwarders and Logistics Providers Association) membership; while for the population of LSP's customer, the sample frame is identified from the information given by the respondents in the LSP organization. The LSPs give information about their customers from their database and furthermore the respondents are selected from these database randomly.

GAFEKSI is an independent non-government organization and it is a professional association of international and domestic freight forwarders and logistics service providers in Indonesia and it has 1400 members. The central organization of GAFEKSI is located in Jakarta and the regional organization is located in the province which includes the province of East Java, DKI Jakarta, West Java, Central Java, Bali, Nusa Tenggara Timur, Maluku, Irian Jaya, North Sulawesi, Central Sulawesi, South Sulawesi, West Kalimantan, East Kalimantan, North Sumatra, Lampung, Riau, South Sumatra, West Sumatra and Jambi.

The sampling technique

Before describing the detail of sampling technique used in this study, this section will present its concept briefly. Whatever sampling techniques being used, it should meet certain criteria involving goal orientation, measurability, practicality and economy (Kish 1965). Goal orientation means the sampling technique used should be based on the objectives of study. The criterion of measurability means it should provide the data for analysis. The criterion of practicality means that it is feasible in the real situation whilst the criterion of economy means that it should consider the availability of resources such as time, financial, personnel and other resources (Wiersma et al. 2009).

Generally, sampling technique can be classified into two categories, probability sampling and non-probability sampling. In probability sampling, the entire population is known. Each individual in population has a specifiable probability of selection and the sampling occurs by a random process. Obtaining a random sample may be relatively complex procedure especially if the populations are large and diverse (Wiersma et al. 2009). Probability sampling technique involves simple random sampling, systematic sampling, stratified random sampling and cluster random sampling (Gravetter et al. 2006; Johnson et al. 2012; Sapsford et al. 2006). In non-probability sampling, the population is not completely known and individual probabilities cannot be known. The sampling technique is based on factors such as common sense or ease (Gravetter et al. 2006). The widely non-probabilistic sampling technique used involves convenience sampling, quota sampling, purposive sampling and snowball sampling (Gravetter et al. 2006; Johnson et al. 2012; Sapsford et al. 2006).

The sample frame for the population of LSP is identified from the GAFEKSI membership. For the population of LSP's customers, the sample frame is identified from the information given by the respondents in the LSP organizations. The sampling techniques used to identify sample for the population LSP are the combination between *cluster random sampling*, *purposive sampling* and *convenience sampling*. Specifically, cluster random sampling is used to select province; purposive sampling is used to identify group of management in the LSP organizations in the province and convenience sampling is used to select individual in the group of

management. The sampling techniques used to identify sample for the population of LSP'customers are the combination between *snowball sampling, purposive sampling* and *convenience sampling*. In detail, snowball sampling is used to identify the name of the firm of the LSP's customers; purposive sampling is used to identify group of management in the LSP's customers and convenience sampling is used to select individual in the group of management. The following will describe briefly the sampling technique used.

Cluster random sampling is a procedure of selection sample in which the unit of selection contains two or more population members. Cluster random sampling is useful in situations where the population members are naturally grouped in clusters. The clusters are randomly selected from the larger population of clusters. Once a cluster is selected for the sample, all the population members in that cluster are included in the sample. In cluster sampling, the exact sample size may not be known until after the sample is selected (Wiersma et al. 2009). Cluster random sampling is often used when the elements in the population are geographically spread out (Johnson et al. 2012). The cost of conducting the survey will increase by the distance separating the elements (Sapsford et al. 2006).

In *purposive sampling* the researcher selects a sample to meet the purpose of the research. The logic of purposive sampling is based on a sample that has rich information (Wiersma et al. 2009). In purposive sampling, the researcher specifies the characteristics of a population of interest and then tries to look for individuals who have those characteristics. Purposive sampling is a non-random sampling technique in which the researcher persuades persons with specific characteristics to participate in a research study (Johnson et al. 2012). In *convenience sampling* the researcher selects individuals who can be "conveniently selected". (Johnson et al. 2012). In *snowball sampling*, each research participant in a research study is asked to identify one or more people who meet certain characteristics and may be willing to participate in the research study (Johnson et al. 2012). These sampling techniques will be operationalized in the following paragraph.

Indonesia has two major areas which configure the basis of GAFEKSI and have a lot of members, namely in Jakarta and Surabaya (East Java). Almost all of GAFEKSI

members has representatives in both the regions. East Java was selected because it has the emerging potential markets and research that focus in that area is low. East Java province has the completed information about GAFEKSI members. The information can be accessed through www.gafeksi.or.id and from the board in that region. On the basis of the completeness of the information in the East Java province, that province is used as a sample frame to represent the population of Indonesian LSP. The number of LSP in that province is a third of the number of LSP in Indonesia (Jatim 2010).

The other reason why this study uses East Java Province as the sample frame is the circumstance of LSP's customers in this region. The development of non-oil exports and imports of East Java has increased significantly from 2006 until 2008. Although in the year 2009 it has declined 13.32% for non-oil exports and 22.79% for non-oil imports, it has significantly increased again in 2010. The decreasing in 2009 was due to the financial crisis occurred in Europe.

Table 5.2 The Value of Non-oil Export and Import of East Java (Thousand US$)

No.	**Activity**	**Year**				
		2006	2007	2008	2009	2010
1.	Export	8.740.725	11.492.270	11.978.039	10.382.013	13.805.530
2.	Import	8.304.492	11.147.451	11.703.257	9.035.209	12.389.757

Source: (Jatim 2010)

There are 480 LSP identified in East Java Province. Each LSP is represented by a single key informant (*convenience sampling technique*). The targeted respondent in a LSP is a middle manager in the operational department of his or her LSP organization (*purposive sampling technique*). This decision is based the fact that middle managers have an interface with upper management, lower management and LSP's customers so that they know how the quality management is practiced in that LSP and they also have information related to customer's organization. The respondent is asked to assess quality management practice in his or her LSP.

The data about quality management practice obtained from the LSP will be paired with the data about logistics service quality, benefits, cost and value obtained from the LSP's customer. As stated in the previous paragraph, for the population of LSP's customer, the sample frame is identified from the information given by respondent in the LSP organisation. The respondent in the LSP organization is asked to identify customers that buy LSP service intensively (*snowball sampling technique*). From a LSP's customer, this study will also take a single key informant also (*convenience sampling technique*). The targeted respondent in LSP's customer is a manager of logistics, transportation or distribution by considering that he or she is involved directly in logistics service process provided by the LSP (*purposive sampling technique*). He or she is asked to identify logistics service quality and evaluate the benefits, cost and value of logistics service provided by LSP. All of variables of interest were assessed through perceptual evaluations of respondents.

This research only uses a single informant from a LSP and a LSP's customer by considering it is difficult to find two or more informants who are knowledgeable; data collected from multiple informants have failed to demonstrate perceptual agreement; and the methodology to combine multiple responses into an organizational response is an unresolved issue (Moore et al. 1999). Collecting information from a single informant of an organization leads to an informant bias. In order to overcome this error, this study requires the informant competency as proposed by Kumar (1993). As mentioned before, all of respondents in both LSP and LSP's customers are at the manager level, thus they have sufficient organisational and functional experience, possess the necessary information to evaluate the variables and qualify to complete the questionnaire (Finkelstein 1992).

The target sample size

Sample size depends on the number of variables to be examined simultaneously, the precision of estimation and the nature of the analysis to be performed and the resources available (Sekaran et al. 2010). The larger the size of the sample the less of the variance of population and the sample estimates will be close to the true population (Fowler 1993; Gravetter et al. 2006; Johnson et al. 2012). In addition, the variation around true value will be small and the sampling error will be less (Sapsford et al. 2006; Wiersma et al. 2009). As discussed the sampling technique

used in this study is dominantly cluster sampling in which the number of the target sample size will be known after detecting the number of members in the cluster. From the information obtained from the GAFEKSI website, it is known that the numbers of GAFEKSI members of the East Java province are 480 (Jatim 2010). Thus the target sample sizes of this survey are 480 for LSP population. Due to the data searched is a pair data in which the data from a LSP will be paired with data from its customer, thus the target sample size of LSP's customer population will also be 480.

5. 8 The Questionnaire Development

The objective of data collection process is to obtain relevant data with minimum measurement error. It can be achieved through appropriate questionnaire. The questionnaire development involves several stages such as determining variables through literature review; developing indicators supporting the definition of each variable; doing pre-test scale; and purifying the scale through reliability and validity test (Gerbing et al. 1988; Mentzer et al. 1997a).

5.8.1 The scale development

Variables measured in this study can be seen in the research hypothesis presented in the previous chapter (section 4.5 to section 4.8). The variables involve quality management practices in LSP organization, logistics service quality, logistics service benefits, logistics service cost and logistics service value perceived by the LSP's customers. The conceptual definition of each variable is presented in Table 5.3. Logistics service value variable is measured by first order concept whilst other variables are measured by second order concept. In first order concept, variable is reflected by indicators directly. In second order concept, each variable is arranged by dimensions and each dimension is reflected by indicators.

Table 5.3 The Conceptual Definition of Variables

Variable	The definition
Quality management practice	A systematic and integrated approach to achieve and sustain quality goals throughout the organization.
Logistics service process quality	How the LSP's customers receive the service outcome, whether the service process transferred to customer as promised. The way of outcome quality is transferred to customer.
Logistics service outcome quality	What the LSP's customers receive as a result of their interactions with LSP's service, whether LSP delivers service outcome as these are promised.
Logistics service benefits	Benefits which LSP's customers acquire from the service offered by LSP.
Logistics service cost	What is given up or sacrificed by LSP's customers to acquire the service offered by the LSP.
Logistics service value	An evaluative judgment or assessment of what the customers of the LSP perceive they receive from the LSP compare to what they give in a commercial relationship between LSP and their customers.

After the researcher identifies variables to be investigated, the next stage is developing indicators supporting the definition of each variable (Fowler 1993; Punch 2003). Researchers have two alternatives to develop indicators of variables. Researchers can develop their own measures or adopt a measures previously developed. It is preferable to adopt existing measures except inadequacy of previous measures (Churchill 1979). This study will adopt and adapt measures previously developed for the existing variables. For the variables that have not yet been developed, this study will develop their indicators sourcing from the literature review.

The definition of variable at operational level can be seen from the questions in the questionnaire. Each dimension of variables is developed into multiple indicators because it is more convenient for respondents to rate their degree of approval

towards multiple indicators of observation (Malhotra 2006). Besides, multiple indicators are more reliable and have less systematic error (Hair et al. 1998). Each indicator can assess different aspects of a dimension of variables therefore it can improve validity (Kline 2005).

This study uses two bundles of questionnaire. Questionnaire I is aimed for respondents from the LSP sample whilst Questionnaire II is for respondents from the LSP's customers sample. Questionnaire I consists of questions about quality management practice while Questionnaire II consists of questions about logistics service process and outcome quality; logistics service benefit; logistics service cost; and logistics service value. Table 5.4 to Table 5.15 present the indicators developed to represent the variables.

Table 5.4 Indicators Developed for Questionnaire I

Second Order Variable	First Order Variable	Indicators	Number of Question	Source (created, adopted or adapted from)
Quality Management Practice (QMP)	Top management commitment (CL)	To what extent your top management stimulates organization to implement quality management towards achieving a shared vision?	1	Created by the researcher in this research
		To what extent your top management has a commitment and supports to quality management through a plan of action?	2	
		To what extent your top management responsible to control quality management process?	3	
		To what extent your top management responds to the change of customer requirement?	4	
	Strategic quality planning (SP)	To what extent an organizational mission statement has been communicated throughout the company and is supported by employees?	5	(Prajogo et al. 2006) and (Samson et al. 1999)
		To what extent your organization has a comprehensive and structured planning process for short and long-term goals?	6	
		To what extent your organization incorporates the needs of all stakeholders in developing organization objectives, plans, and policies?	7	
		To what extent your organization has a written statement of strategy covering all business operations?	8	

Table 5.5 Indicators Developed for Questionnaire I (continued 1)

Second Order Variable	First Order Variable	Indicators	Number of Question	Source (created, adopted or adapted from)
	Process management (Chapman et al.)	To what extent your organization has clear, standardized and documented service procedures which are well understood by employees?	9	(Prajogo et al. 2006)
		To what extent your organization continually audits delivered service quality?	10	Created by the researcher in this research
		To what extent your organization encourages innovation in all aspects?	11	(Sila et al. 2005)
		To what extent your organization emphasizes the continuous improvement of quality in all work processes?	12	
	Human Resource Management (HR)	To what extent your organization has an organizational selection, recruitment and development process, including career path planning for all employees?	13	(Prajogo et al. 2006) and (Samson et al. 1999)
		To what extent your organization has empowered and involved employees in workplace?	14	Created by the researcher in this research
		To what extent employee satisfaction is formally and regularly measured in your organization?	15	(Prajogo et al. 2006) and (Samson et al. 1999)
		To what extent your organization maintains a work environment that contributes to the health, safety and well-being of all employees?	16	(Prajogo et al. 2006)

Table 5.6 Indicators Developed for Questionnaire I (continued 2)

Second Order Variable	First Order Variable	Indicators	Number of Question	Source (created, adopted or adapted from)
	Education and training (ET)	To what extent your organization encourages employees to improve knowledge and skill through education and training?	17	(Zhang et al. 2000)
		To what extent resources in your organization are available for employee education and training?	18	
		To what extent your organization gives quality awareness education to employees?	19	
		To what extent your organization gives specific work-skills training to employees?	20	
	Customer focus (McFarland et al.)	To what extent your organization actively and regularly seeks customer inputs to identify their needs and expectations?	21	(Prajogo et al. 2006)
		To what extent your organization maintains a close relationship with customers and provides them an easy channel to communicate their aspirations?	22	
		To what extent your organization has an effective process for resolving customers' complaints?	23	
		To what extent your organization systematically and regularly measure customer satisfaction?	24	

Table 5.7 Indicators Developed for Questionnaire I (continued 3)

Second Order Variable	First Order Variable	Indicators	Number of Question	Source (created, adopted or adapted from)
	Quality data and information (DI)	To what extent your organisation harnesses information to improve its services?	25	(Lakhal 2006)
		To what extent your organization has precise data about the competition used to identify areas of improvement?	26	
		To what extent your organization's decisions regarding quality improvement are always based on objective data?	27	(Brah et al. 2002)
		To what extent up-to-date data and information of your organization is available for who need it?	28	(Prajogo et al. 2006)
	Performance evaluation (PE)	To what extent your organization analyses organizational performance to identify and develop improvements?	29	(Sila et al. 2005),
		To what extent your organization has an effective performance measurement system to track overall organizational performance?	30	(Prajogo et al. 2006)
		To what extent senior managements in your organization regularly have a meeting to review company's performance and use it as a basis for decision-making?	31	
		To what extent your organisation engages in an active competitive benchmarking program to measure your organization performance against the best practice in industry?	32	

Table 5.8 Indicators Developed for Questionnaire II Part 1

Second Order Variable	First Order Variable	Indicators	Number of Question	Source (created, adopted or adapted from)
Logistics service process quality (LSPQ)	Personnel contact quality (PCQ)	The LSP contact person makes an effort to understand the need of your organisation	1	(Mentzer et al. 2001)
		Problems in services are resolved by the LSP contact person	2	
		The service knowledge or experience of LSP personnel is adequate	3	
	Information quality (INQ)	The information communicated by the LSP is timely	4	(Rafiq et al. 2007)
		The information communicated by the LSP is accurate	5	
		The information communicated by the LSP is complete	6	
	Service order procedure (SOQ)	Service order procedures in the LSP are effective	7	(Rafiq et al. 2007)
		Service order procedures in the LSP are easy to use	8	
		Service order procedures in the LSP do not take much time	9	
	Shipment complaint handling (SCQ)	Correction of delivered quality complaint is satisfactory	10	(Mentzer et al. 2001)
		The service complaint procedures in the LSP is effective	11	
		Response to delivered quantity complaint is satisfactory	12	
	Emergency service (ESQ)	The LSP responsive to unforeseen problem and unexpected events	13	(McGinnis et al. 1995)
		The LSP make effort to help in emergencies	14	(Lai 2004)
		The LSP recommend alternative actions when unforeseen problems arise	15	

Table 5.9 Indicators Developed for Questionnaire II Part 1 (continued)

Second Order Variable	First Order Variable	Indicators	Number of Question	Source (created, adopted or adapted from)
Logistics service outcome quality (LSOQ)	Shipment quantities (SQN)	Shipment quantities are not challenged	16	(Mentzer et al. 2001)
		Difficulties never occur due to maximum shipment quantities	17	
		Difficulties never occur due to minimum shipment quantities	18	
	Shipment quality (SQL)	Shipments rarely contain the wrong items	19	(Mentzer et al. 2001)
		Shipments rarely contain an incorrect quantity	20	
		Damage rarely occurs as a result of the transport mode or carrier	21	
	Shipment security (SSQ)	The LSP secure confidentiality of order data and information from your organisation	22	(Trappey et al. 2010)
		The LSP protect cargo safety and risk	23	(Lu et al. 2010)
		The LSP is capable to handle hazardous material	24	(Aktas et al. 2005)
	Timeliness (TLQ)	Time between shipping and receiving delivery is short	25	(Mentzer et al. 2001)
		Deliveries arrive on the date promised	26	
		Time required to deliver returned shipment is short	27	Created by the researcher in this research
	Innovative service (ISQ)	The LSP provide modern cargo tracing system	28	(Lu et al. 2010)
		The LSP has modern vehicles, machinery equipment and pick up system	29	(Lu et al. 2006)
		The LSP has good techniques in cargo movement and distribution	30	
	Operational coverage area (OCQ)	The LSP has a wide service network	31	(Trappey et al. 2010)
		The branch office of LSP is easy to access	32	(Baki et al. 2009)
		The LSP' service reach isolated area	33	Created by the researcher in this research

Table 5.10 Indicators Developed for Questionnaire II Part 2

Second Order Variable	First Order Variable	Indicators	Number of Question	Source (created, adopted or adapted from)
Logistics service cost (LSC)	Direct cost (Stone et al.)	To what extent the service price of this LSP?	1	(Blocker 2010)
		To what extent the flexibility of payment period in this LSP?	2	(Trappey et al. 2010)
		To what extent the price discounts of this LSP?	3	(Callarisa Fiol et al. 2009)
	Cost of time (TC)	To what extent the time required to order this LSP' service?	4	(Cronin et al. 2000)
		To what extent the time required to coordinate and communicate between your organization and this LSP?	5	Created by the researcher in this research
		To what extent the time required to monitor LSP performance?	6	
	Cost of effort (EC)	To what extent the effort which should be performed to receive the LSP' service?	7	(Cronin et al. 2000)
		To what extent the effort which we should be performed to reach an agreement with this LSP's employees?	8	(Callarisa Fiol et al. 2009)
		To what extent the effort which we should be performed to monitor LSP performance?	9	Created by the researcher in this research

Table 5.11 Indicators Developed for Questionnaire II Part 2 (continued 1)

Second Order Variable	First Oder Variable	Indicators	Number of Question	Source (created, adopted or adapted from)
Logistics service cost (LSC)	Psychological cost (PC)	To what extent the psychological discomfort due to received poor service performance?	10	Created by the researcher in this research
		To what extent the psychological discomfort due to delay delivery?	11	
		To what extent the psychological discomfort due to unforeseen problem and unexpected events?	12	
	Conflict (CC)	To what extent the complaints occur during your organization uses this LSP' service?	13	(Lapierre 2000)
		To what extent your organization has the disagreements with this LSP within solving the problems?	14	
		During using this LSP' service, to what extent your organization should defend argument in order to achieve your organization objectives?	15	Created by the researcher in this research
	Financial risk (FR)	By using this LSP' service, to what extent the financial risk associated with the lost or damaged shipment?	16	(Cronin et al. 1997)
		By using this LSP' service, to what extent the financial risk is due to delay product inbound and outbound flows?	17	
		To what extent this LSP provides the financial warranty of the lost or damaged shipment?	18	

Table 5.12 Indicators Developed for Questionnaire II Part 2 (continued 2)

Second Order Variable	First Order Variable	Indicators	Number of Question	Source (created, adopted or adapted from)
Logistics service cost (LSC)	Supply product risk (SR)	By using this LSP' service, to what extent the supply product risk?	19	Created by the researcher in this research
		By using this LSP' service, to what extent the increasing inventory risk?	20	
		By using this LSP' service, to what extent the disruption of inbound and outbound flows?	21	
	Capability risk (CR)	By using this LSP' service, to what extent the risk of losing distribution capability?	22	Created by the researcher in this research
		By using this LSP' service, to what extent the risk of losing control in operational delivery?	23	
		By using this LSP' service, to what extent the risk of losing professional knowledge in supply product?	24	
	Information risk (IR)	By using this LSP' service, to what extent this risk of lacking market information?	25	Created by the researcher in this research
		By using this LSP' service, to what extent the risk of losing confidential information?	26	
		By using this LSP' service, to what extent the risk of losing of customer feedback?	27	

Table 5.13 Indicators Developed for Questionnaire II Part 3

Second Order Variable	**First Order Variable**	**Indicators**	**Number of Question**	**Source (created, adopted or adapted from)**
Logistics service benefit (LSB)	First order variable will be identified through SPSS	Improving organization's productivity	1	Created by the researcher in this research
		Improving flexibility of organization's operation	2	
		Improving speedy of organization's operation	3	
		Improving efficiency of organization's operation	4	
		Improving quality of organization's operation	5	
		Improving reliability of organization's operation	6	
		Improving organization's customer service	7	
		Improving organization's relationship with customers	8	
		Increasing organization's responsiveness to market	9	
		Improving latest technology access	10	
		Improving expertise, skill and knowledge access	11	
		Improving material resources access	12	

Table 5.14 Indicators Developed for Questionnaire II Part 3 (continued)

Second Order Variable	First Order Variable	Indicators	Number of Question	Source (created, adopted or adapted from)
		Improving market data access	13	Created by the researcher in this research
		Reducing organization's delivery cost	14	
		Reducing organization's asset investment	15	
		Reducing organization's inventory level	16	
		Focusing on organization's core business	17	
		Increasing organization's customer demand	18	
		Increasing organization's market share	19	
		Increasing organization's revenue	20	
		Increasing organization's financial strength	21	
		Decreasing organization's business risk	22	
		Increasing organization's competitive advantage	23	
		Developing organization's business network	24	

Table 5.15 Indicators Developed for Questionnaire II Part 4

Variable	**Indicators**	**Number of Question**	**Source (created, adopted or adapted from)**
Logistics service value (LSV)	This LSP creates superior value for us when comparing all the costs versus benefits in the relationship	1	(Blocker 2010)
	Considering the costs of doing business with this LSP, we gain a lot of benefits in our overall relationship with them	2	
	The benefits we gain in our relationship with this LSP far outweigh the costs	3	
	Our organization gets significant customer value from this LSP relationship	4	

There are three general types of questions in the questionnaire; these are open-ended questions, restricted questions and rating scale questions. In the open-ended question, participants are permitted to respond in their own words. In the restricted question, participants deal with a limited number of response alternatives such as a multiple-choice question while in the rating scale question participants select a range of response from very positive to very negative (Burke 2008; Dooley 1995; Fowler 1993; Johnson et al. 2012; Veal 2005). This study will use a rating scale question to collect data from respondent by considering the rating scale question produce numerical value so that it is easy to use statistical technique to interpret the result of data processing. Besides, participants will feel it is easy to answer the question by indicating the degree of approval answer (Gravetter et al. 2006). The type of rating scale question used is a Likert scale in which the rating scale is presented as a horizontal line and participant can mark at the location corresponding to their response. All indicators are measured on a 5 point Likert scale.

The organization of questionnaire also plays an important role to determine the quality of data collected. A poor structured questionnaire leads to interpretive error and thus results in bias in the data. In order to avoid interpretive error, the questionnaire in this study is organized as follow. Question with the same topic is grouped together; demographic question is placed at the end of the survey; format each page is made simple; and the language style is made easy for participant to be understand. Details of the survey questionnaire can be seen in the Appendix A section.

The questionnaire used in this study is in English, while the respondents are Indonesians with the national language being Indonesian. Thus the original questionnaire is translated into Indonesian. In order to maintain the same meaning of the questions, the researcher adapts the wording of an existing questionnaire to Indonesia condition by considering cross cultural research. Back translation to English was performed to ensure that the meaning of each question is as consistent as possible across languages (Huff et al. 2005).

5.8.2 Pre-test and purify the questionnaire

An empirical research should strive to obtain the qualified data because the quality of data determines the research findings and conclusion. The quality of data depends on the reliability and validity of questionnaire (Punch 2003). In order to obtain the qualified data, pre-test will be conducted in this study. Pre-test is needed to know the comprehension, clarity and difficulty of questionnaire; to know the comment of respondent about the length of questionnaire and time needed to complete the questionnaire. A pre-test also is conducted to detect limitation of the questionnaire; to eliminate confusion in the questionnaire; to evaluate the structure of questionnaire; to evaluate the format and question wording; to know the interpretation of respondent and to discuss the limitations of the survey with the respondents. Creswell (2009) stated that pre-test will improve the questions, instrument format and scale. Cooper et al. (2006) suggest a minimum of 25 participants for the pre-test and the participants should be selected from the same sample frame that would be used for the study. Pre-test should be done before administering the instrument to a large number of respondents.

Pre-test in this study involves the use of a small number of respondents to test the appropriateness of the questions. To evaluate the questionnaire, this research uses 25 respondents in pre-test. They were selected by using random sampling from GEFEKSI members and their customers. Each respondent is asked about their interpretation to the questionnaire. It is conducted to assure that their interpretation is in the same manner with the researcher. They are asked to give comment to questionnaire and identify problems in the questionnaire. If they identify the problems, they are asked to give opinion how to overcome the problem. From that several problems are corrected. The pre-test results confirm that the questionnaire is acceptable.

After evaluating the clarity of the questions, duration for the completion of the survey and the feasibility of the survey instrument, the next stage is to purify the scale in order to obtain reliable and valid questionnaire. Reliability and validity are the two most important psychometric properties to evaluate a test or an assessment procedure (Johnson et al. 2012). Reliability of a measurement procedure refers to the

consistency or stability of that measurement (Johnson et al. 2012). Reliability describes the degree to which observed data are free from errors of measurement. It also reflects agreement parallel forms of a test or between different indicators of the same questionnaire (Dooley 1995). If a test or a measurement procedure provides reliable scores, the scores will be similar on every occasion. Thus if the same individuals are measured under the same conditions, a reliable measurement procedure will produce nearly identical measurements (Punch 2003). Researchers have developed several methods to evaluate the validity of measurement such as Composite Reliability and Cronbachs Alpha. Furthermore validity concern on whether a measurement procedure actually measures the variable that it claims to measure. It refers to the appropriateness, usefulness and meaningfulness of the measurement (Dooley 1995). Researchers have developed several methods to evaluate the validity of measurement. One of them is construct validity. It demonstrates whether scores obtained from a measure are directly related to the variable itself (Gravetter et al. 2006). In order to purify the questionnaire, this research analyses reliability and validity of the questionnaire prior to the further data processing. This step will be implemented in the next chapter.

5. 9 The Data Collection Strategy

The credibility of research finding depends on the quality of data whilst the quality of data depends on how the data are collected. Thus, the way of data collection holds an important position. For that reasons, data collection should be well planned. It involves the type of self-administered questionnaire used and the data collection procedure.

5.9.1 The type of self-administered questionnaire

The form of data collection that will be used in this research is self-administered questionnaire. Self-administered questionnaire means that the researcher does not actually meet respondents face to face. The self-administered questionnaire is chosen by considering the availability of time and budget of the researcher, the convenience of respondent, the response rate, the interviewer bias and the coverage area. Self-administered questionnaire is the cheapest; it can be conducted by a single researcher and respondents have the flexibility of time and place to complete it. A self-administered questionnaire is also expected to increase the convenience of

respondent to participate in the survey and ultimately increasing the response rate. Besides, self-administered questionnaire avoids interviewer bias and researcher can send questionnaire to a wide geographical area.

The self-administered questionnaire involves face-to-face administration (in person); by telephone; post-mail and by email or Internet (Punch 2003). Each of these methods has advantages and disadvantages (Gravetter et al. 2006). This research will use a post-mailed survey. A post-mailed survey is very convenient for the respondents. Respondents can complete the survey at their own convenience and they can be relatively confident that responses are anonymous and confidential.

5.9.2 Data collection procedure

The objective of data collection process is to obtain data that has minimum measurement error. Data collection procedure used in this study follows the recommendation suggested by Dillman (2000). From the list of potential survey respondents, the researcher sends a letter that introducing the researcher, explaining the purpose of study, the importance and the benefits of the research and suggesting the importance of each response received. An invitation letter, a participant information sheet and consent form are attached with this letter.

The letter also informs potential respondents that the questionnaire will be posted to the respondents one week later. Potential respondents are convinced that their responses will be kept confidential and the results will be published only in aggregate form. Instruction on how to complete the survey is described and approximate amount of time needed to complete the questionnaire is stated. If the potential respondent is willing to participate in the study, they are asked to sign an informed consent form and return to the researcher.

Contact information of researcher and the researcher’s committee was also provided in the invitation letter including name, address and telephone number. The researcher’ contact information is included to anticipate respondent’s questions. Respondents can clarify the questionnaire or ask for more information about the questionnaire by contacting the contact number provided in the invitation letter. A

good cover letter can increase response rate (Gravetter et al. 2006) and thus increasing response rate to make the sample representative of the population and the researcher can generalize conclusions from sample to population.

A week after the cover letter is sent, the researcher sends the actual mail survey and a postage-paid return envelope. Approximately two weeks after the actual mail survey have been sent, a follow-up postcard is sent to remind each potential respondent to complete and return the survey and to thank them for participating in the study. The advance notice, reminder and thank you postcard to participate in the survey process can significantly increase the response rate. The advance notice makes the individuals feel special and helps to ensure that they are watching for the survey in the mail (Gravetter et al. 2006). A month after the advance notice, the researcher sends the cover letter, questionnaire and returned envelope with postage again to all non-respondents and followed by a reminder letter two weeks after the last mailing.

The quality of data also depends on the frame of mind of the respondent and the response rate (Punch 2003). When the respondents answer the questionnaire, the researcher wants the respondent's frame of mind to be cooperative and the respondents answer the questions honestly and conscientiously. This situation depends on careful planning and preparation by the researcher. Thus researcher aim to make sure the approach to respondents is professional; takes ethical consideration; make sure that the questionnaire is attractive and appropriate. The more cooperative the respondents in answering the questionnaire, the higher reliability and validity of the data and response rate (Punch 2003).

Response bias also will influence quality of data. Sometimes, the respondents who return the questionnaire are not represent of the sample. This phenomenon is called a non-response bias in the sample. Non-response bias can limit the ability to generalise survey results (Gravetter et al. 2006). In order to overcome response bias, the researcher carries out appropriate process in collecting data as presented in the previous paragraph. The appropriate process of collecting data can increase the response rate, the representativeness of sample and reduce biases (Punch 2003). The common procedure for testing the representativeness of sample was developed by Armstrong et al. (1977). By comparing early and late respondents, researcher can

evaluate whether the sample has a non-response bias or not. This method assumes that participants answering very late are similar to those not responding. This study will use this method to evaluate response bias. The result of this evaluation will be presented in the next chapter.

Related to time horizon for data collection, there are two broad types of design; a cross-sectional design and a longitudinal design. In a cross-sectional design, data are collected at a single point in time; whilst in a longitudinal design, data are collected at one point in time. For this study, a cross-sectional survey design is considered to be more suitable. The cross-sectional survey design is relative simple than the other time horizon of survey.

5. 10 Broad Plan of Data Analysis

After the data collection is completed, the next step in this study is to analyse the collected data set and to test the research model. This step requires careful planning due to the multiple variables involved in this study. The data analysis involves the following steps. First step, the researcher prepares, inputs and checks the completed data. This is followed by accounting of the number of members of the sample, the number of potential sample who return the questionnaire and calculating response rate. After the researcher ensures that no response bias occurred in this study, the researcher investigates the reliability and validity data obtained from the questionnaire. This stage is followed by a descriptive analysis of data for all variables such as mean, standards deviation and range of score and hypotheses testing. To perform a descriptive analysis, this study uses SPSS version 19 and to examine hypotheses structural equation modelling (SEM) technique by SmartPLS Program is used. Brief justification why this research uses SEM technique by SmartPLS Program will be presented in following paragraph whilst details of the data analysis steps and the implementations will be presented in the next chapter.

Structural equation modelling (SEM) technique is a second generation data analysis technique used to examine research hypotheses. With SEM, the researchers are able to answer a set of research questions in a single, systematic and comprehensive analysis by modelling the relationships among multiple independent and dependent variables simultaneously (Gerbing et al. 1988). Researchers are also able to present a

complete picture of complicated variable relationships (Bullock et al. 1994). A complex real-world process can be presented in a network of mathematical model. SEM can evaluate not only the structural model but also the measurement model. The structural model is the assumed causation among a set of dependent and independent variables whilst the measurement model is loadings of observed indicators on their expected latent variables (Gefen et al. 2000).

A number of algorithms and software programs are available to estimate structural equation model. These techniques can be classified into covariance-based techniques and partial least square techniques (Chin 1998). Among these algorithms, the partial least square (PLS) algorithm has become popular. PLS can be regarded as a complimentary technique to covariance-based SEM techniques. PLS as the second major SEM technique is aimed to explain variance thus PLS more appropriate for predictive applications and theory building. It especially suites for the analysis of small data samples. Although PLS is less affected by small sample size and deviations from multivariate normal distribution, the sample should have at least ten times more than the number of items in the most complex construct in the model (Gefen et al. 2000).

The main motivations for using PLS are it needs fewer sample size than other methods; does not require normal-distributed input data; can be applied for a large number of variables; able to handle reflective and formative construct; appropriate for theory development and useful for prediction (Urbach et al. 2010). The following steps can be used for researcher before utilizing PLS model 1) propose a model that consistent with theoretical knowledge; 2) perform data screening; 3) examine the psychometric properties of variables; 4) examine the magnitude of the relationships between variables; 5) examine the magnitude of the standard errors and confidence interval and 6) assess and report the power of study (Marcoulides et al. 2006).

5. 11 Ethical Consideration

The ethics approval of this study was obtained from the University of Wollongong. In order to meet the requirement of ethical principles, several stages are performed. Prior to beginning the survey process, potential participants accept the cover letter explaining the objectives and benefits of the study, a brief overview of the study and

invitation letter. No social pressure was used to influence individuals to participate in the research. The potential respondents were encouraged to participate in the study but informed that participation is voluntary. Participants were assured that there are no consequences as a result of not completing the survey. Participants were able to withdraw or refuse to answer the questions at any time. The consents form has been obtained from the participant prior to collecting data. The privacy of the participants and the confidentiality of data were maintained hence the participants are not identifiable in related publication or the reports. The data were stored in a secure area where only the researcher can access to the raw data. Finally, the participants are assured that results of the study will only be published as aggregate result.

5. 12 Summary

This chapter presents the research design. The purpose of this study is used as a reference to design a research process. That purpose is to understand the nature of the relationships among the logistics service quality provided by the LSP, logistics service benefits, logistics service cost and logistics service value perceived by LSP's customers and quality management practices in LSP. By considering the research purpose of this study, the research paradigm that will be utilized in this study is post-positivism. This research will employ quantitative approach in consideration that the research problem and research purpose match with this approach. The survey research design is used as strategy of inquiry of this study by considering that benefits and the conformity between the characteristics of survey research design and the purpose of this research.

The population of this study are LSP and LSP's customers in Indonesia. The sample frame of this study consisted of two sources. For the population of LSP, the sample frame is identified from the GAFEKSI (Indonesian Forwarders and Logistics Providers Association) membership; while for the population of LSP's customer, the sample frame is identified from the information given by respondents in the LSP organisations. The sampling techniques used to identify sample for the population of LSP are a combination of *cluster random sampling*, *purposive sampling* and *convenience sampling*. The sampling techniques used to identify sample for the population of LSP' customers are the combination of *snowball sampling*, *purposive*

sampling and *convenience sampling*. The target sample sizes of this survey are 480 for the LSP population and for the LSP' customer population are 480 also.

According to questionnaire development, this study will adopt and adapt the measures previously developed for existing variables. For the variables that have not yet been developed, the researcher has developed the indicators sourcing from the literature review. This study will use a rating scale question to collect data from respondent so that it is easy to use statistical technique to interpret the result of data. All indicators are measured on a 5 point Likert scale.

The form of data collection that will be used in this research is self-administered questionnaire. The self-administered questionnaire is chosen by considering the availability of time and budget of the researcher, the convenience of the respondent, the response rate, the coverage area and interviewer bias. This research will use a post-mailed survey because it is very convenient for respondents; has a relatively simple and easy process; has high confidentiality and reduce variability in the result.

By considering the number of variables involved in this study and the hypothesized relationships among these variables, this study will use structural equation modelling technique to examine the hypotheses. In order to meet the requirement of ethical principles, the ethics approval of this study is obtained from the University of Wollongong. The next chapter will present application of the above research design for the data analysis in which the processes described above will be used to investigate the data and to address the hypotheses.

6 CHAPTER 6 – DESCRIPTIVE STATISTICS ANALYSIS

6. 1 Introduction

The objectives of this chapter are to analyse the research data by using decriptive statistics. The analysis involves the type of respondents, the number of employees, the availability of quality program, the score of each variable and its relationship with other variables. The rest of the chapter is organized as follow. Section 6.2 describes the data preparation process. Section 6.3 analyses non-response bias. Section 6.4 presents reliability and validity analysis and section 6.5 describes the descriptive analysis of data. Finally, section 6.6 provides a summary of this chapter

6. 2 Data Preparation Process

In data preparation stage, each returned questionnaire was inspected to assess its appropriateness to be used in this study. From the LSP sample, 137 LSP have completed and returned the questionnaire (137/480 = 28.5% response rate) while 132 responses were received from the LSP's customers sample (132/480 = 27.5% response rate). As data from the LSP will be paired with data from its customer therefore questionnaire of LSP that does not have a pair is not included in further analysis. Hence, the numbers of questionnaire used in this study are 132 from LSP sample and 132 from LSP's customer sample.

The next process is to enter the data into workbook of **SPSS 19** to process descriptive analysis and enter the data into Microsoft Excel by CSV (comma delimited) format to process the data using **SmartPLS 2.0 M3**. Prior to entering the data into the software, the respondents' answers were coded. The answers of the main question section are coded by referring to the number selected by the respondents. For demographic questions, a code for each selection (expressed as A, B, C etc.) is converted to a number. For example, A is converted to 1; B is converted to 2 and so on. For negatively worded questions, answers were re-coded so that their scale orientation was consistent with other questions. Negatively worded questions are question number 2, 3 and 18 of Questionnaire II Part 2.

6. 3 Analysis of Non-response Bias

Non-response bias can exist when using a survey methodology. In this research, non-response bias was estimated by using procedures recommended by Armstrong et al. (1977). The method compares early and late groups of returned questionnaires. This method assumes that late respondents who participate after an extensive follow-up effort can be regarded as similar to *non-respondents* (Armstrong et al. 1977). The sample was split into three equal parts on the basis of response date. The last one-third of responses received was assumed similar to non-respondents as their responses took the longest time and most efforts to obtain. The last one-third of responses was compared to the first two-third.

An independent samples t-test was used to compare the average score of each question between the early group (n = 88) and late groups (n = 44). Levene's test was non-significant for almost all questions, thus equal variances can be assumed. The t-test was non-significant for almost all indicators at 95% confidence interval (CI). Thus, there is no difference between the average score of each question between early and late groups.

For question related to the type of industry of LSP's customer and question on the number of employees of LSP's customers, Levene's test was significant at 95% CI. Thus for these questions, the analysis used is "equal variances not assumed". Consequently, Welch's t-test is used to compare the groups. For question about the number of employees of LSP's customers, the t-test for equal variances not assumed (Welch's t test) is non-significant at 95% CI. Thus, there is no difference between the average score of the two groups. For question on the type of industry, the t-test for equal variances not assumed (Welch's t test) is significant at 95% CI. Thus, there is difference between the average score of two groups. In summary, only question on the type of industry shows difference between two groups. For general conclusion, there is no statistical difference between early and late respondents suggesting there was no non-response bias in this study (Table 6.1). The process to examine non-response bias is presented in Appendix C.

Table 6.1 Summary of Non-response Bias Analysis

Question	**Result of Levene's test**	**Conclusion**	**Result of t-test**	**Conclusion**	**General Conclusion**
All questions except demographic question no. 1 and 2 of Questionnaire II	Non-significant	The assumption of homogeneity of variance has not been violated. Therefore use the t-test for equal variance assumed	Non-significant	There is no difference between the means of the two groups	Generally, no statistical difference between early and late respondents suggesting there was no non-response bias in this study
Demographic question no.2 of Questionnaire II	Significant	The assumption of homogeneity of variance is violated. Therefore use the t-test for equal variance not assumed	Non-significant	There is no difference between the means of the two groups	
Demographic question no. 1 of Questionnaire II	Significant	The assumption of homogeneity of variance is violated. Therefore use the t-test for equal variance not assumed	Significant	There is a difference between the means of the two groups	

6. 4 Reliability and Validity Analysis

After analysing non-response bias, the next step is to perform reliability and validity analysis. The objective of this stage is to identify the underlying dimension of each variable and to identify indicators that reflect each dimension. For that objective, this stage will purify the scale involving test for unidimensionality, internal consistency and construct validity (convergent and discriminant validity) (Garver et al. 1999). In evaluating reliability and validity of the questionnaire, this research uses the structural equation modelling technique by SmartPLS program.

In these analyses, indicators were grouped into a priori conceptualized scales. Then these indicators are examined within the theoretical context of each scale and deleted indicators on substantive and statistical grounds if they do not theorise (Gerbing et al. 1988). The loading of indicators of each measurement model is used to identify inter-correlations among indicators and to identify whether these indicators demonstrate uni-dimensionality for each dimension. The loading of indicators of each measurement model is also used to identify construct validity. The construct validity is showed when indicators performing a dimension have higher loading in that dimension and lower loading in other dimensions. As a result of this process, a few indicators were dropped due to poor fit. Based on this finding, these indicators were deleted from the questionnaire for further data analyse. Results of reliability and validity examination are presented in Table 6.2. The acronyms used in this table refer to Table 4.4 to Table 4.15 in the second column. The process to evaluate reliability and validity is shown in Appendix D.

Table 6.2 Summary of Reliability and Validity Examination

Variables	Indicator deleted
Quality management practice	-
Logistics service process quality	-
Logistics service outcome quality	SSQ3
Logistics service benefit	LSB2, LSB5, LSB6, LSB14, LSB15, LSB16, LSB18, LSB22, LSB23, LSB24
Logistics service cost	CC2, IR1, IR2, IR3, DC1, DC2, DC3, EC1, EC2, EC3, TC1, TC2, TC3
Logistics service value	-

6. 5 Descriptive Analysis

This section presents characteristics of demographic data of sample and describes the nature of each variable. Characteristics of demographic data of the sample involve frequency and percent whilst the nature of each variable involves mean and standard deviation.

6.5.1 Demographic data of sample

LSP's Customer Sample

Total sample of this research are 132 respondents for the LSP's customer sample and 132 respondents for the LSP sample. For the LSP's customer sample, majority of respondents are from the manufacturing industry (36.4%). The rest of respondents involves import-export industry, chemical industry, textile industry and finance industry. Chemical industry (9.1%) and finance industry (9.1%) are the minority of the sample (see Figure 6.1 and Table 6.3).

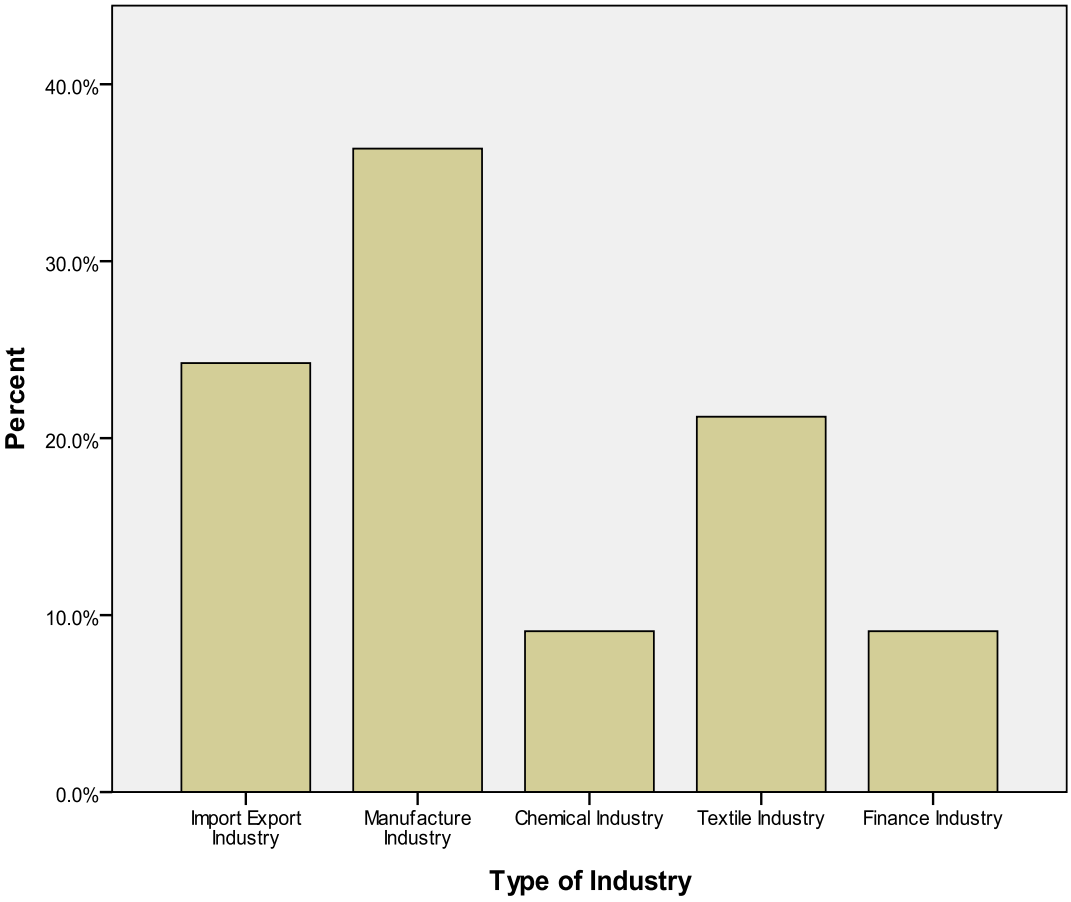

Figure 6.1 Percentage of Respondents of LSP's customers by Type of Industry

Table 6.3 Percentage of Respondents of LSP's customers by Type of Industry

Type of Industry

	Frequency	Percent	Valid Percent	Cumulative Percent
Import Export Industry	32	24.2	24.2	24.2
Manufacture Industry	48	36.4	36.4	60.6
Chemical Industry	12	9.1	9.1	69.7
Textile Industry	28	21.2	21.2	90.9
Finance Industry	12	9.1	9.1	100.0
Total	132	100.0	100.0	

Regarding the number of employees of LSP's customers, the majority of respondents have less than 100 employees (39.4%) and a minority of respondents have 5000 or more employees (9.1%) (see Figure 6.2 and Table 6.4). The majority of sample has used the LSP for more than 10 years (66.7%) (see Figure 6.3 and Table 6.5).

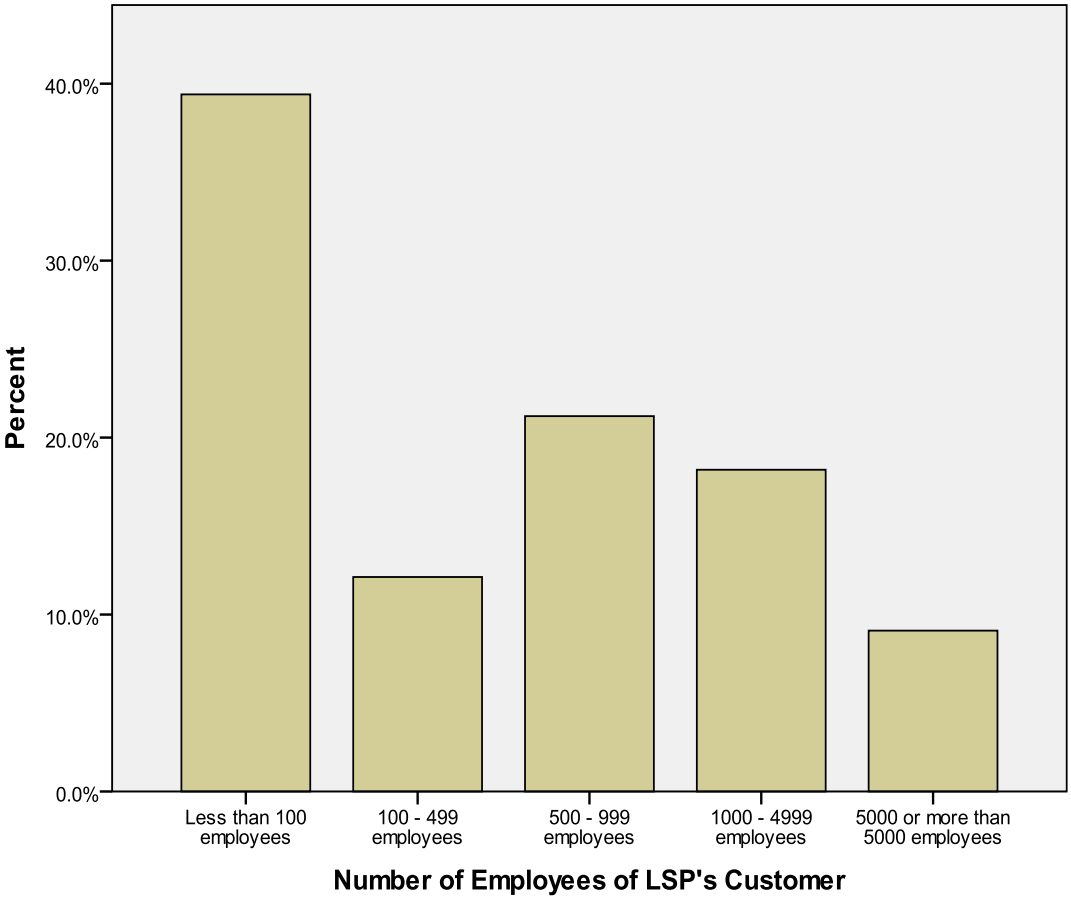

Figure 6.2 Percentage of Respondents of LSP's customers by the Number of Employees

Table 6.4 Percentage of Respondents of LSP's customers by the Number of Employees

Number of Employees of LSP's Customer

	Frequency	Percent	Valid Percent	Cumulative Percent
Less than 100 employees	52	39.4	39.4	39.4
100 - 499 employees	16	12.1	12.1	51.5
500 - 999 employees	28	21.2	21.2	72.7
1000 - 4999 employees	24	18.2	18.2	90.9
5000 or more than 5000 employees	12	9.1	9.1	100.0
Total	132	100.0	100.0	

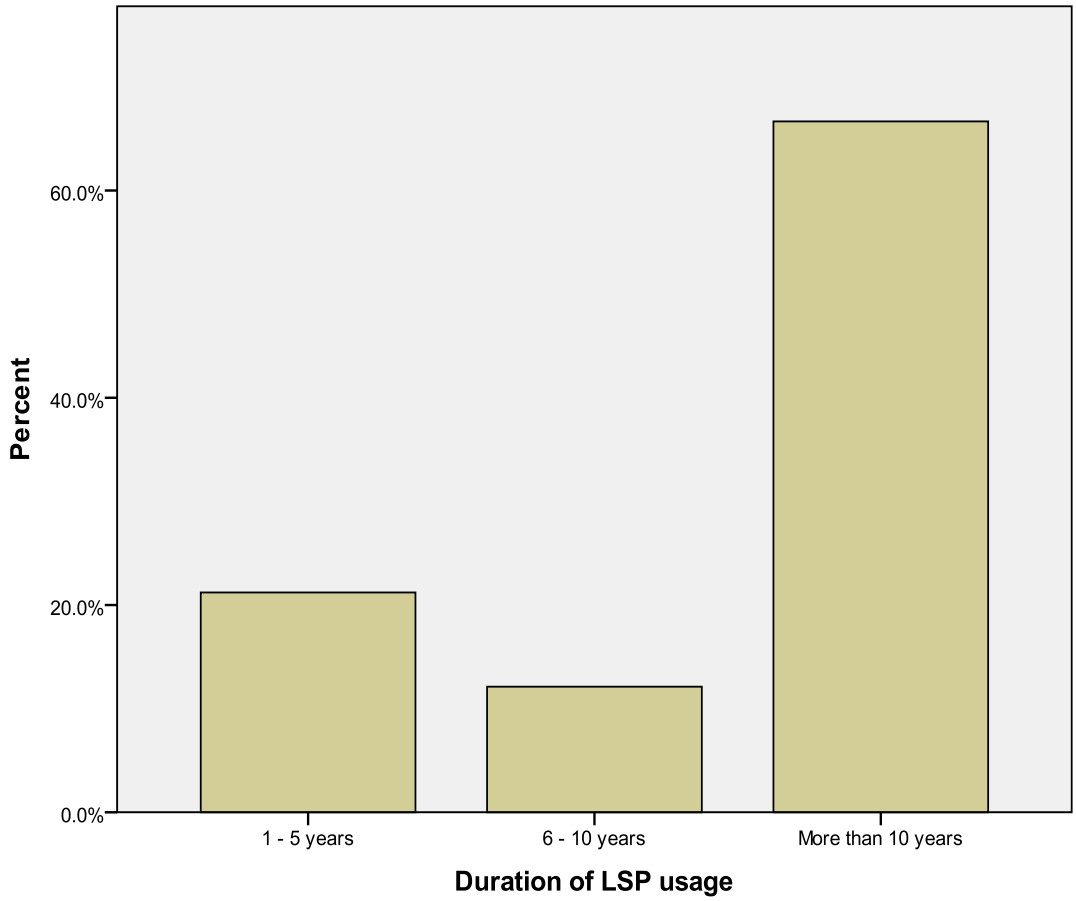

Figure 6.3 Percentage of Respondents of LSP's customers by Duration of LSP Usage

Table 6.5 Percentage of Respondents of LSP's customers by Duration of LSP Usage

Duration of LSP usage

	Frequency	Percent	Valid Percent	Cumulative Percent
1 - 5 years	28	21.2	21.2	21.2
6 - 10 years	16	12.1	12.1	33.3
More than 10 years	88	66.7	66.7	100.0
Total	132	100.0	100.0	

LSP Sample

For the LSP sample, 72.7% of respondents have quality management program whilst the rest do not have one (see Figure 6.4 and Table 6.6). According to the number of LSP's employees, the majority of respondents have less than 100 employees (57.6%) and 12.1% of respondents have 5000 or more employees (see Figure 6.5 and Table 6.7).

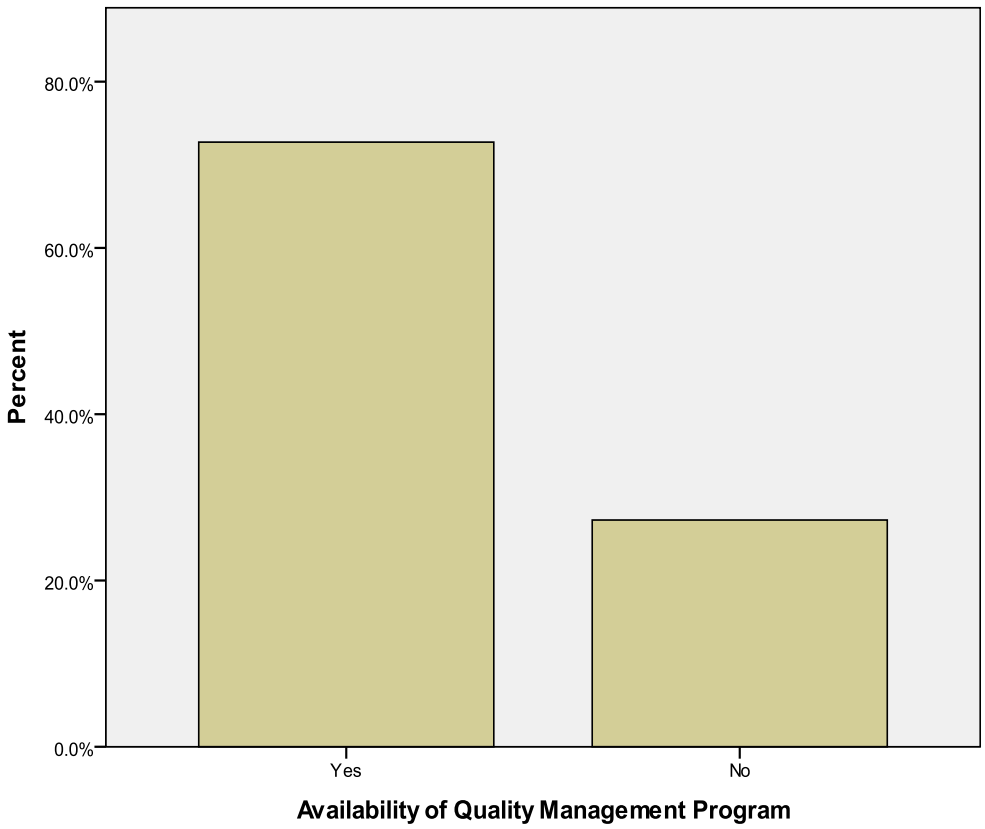

Figure 6.4 Percentage of Respondents of LSP by Availability of Quality Management Program

Table 6.6 Percentage of Respondents of LSP by Availability of Quality Management Program

Availability of Quality Management Program

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	96	72.7	72.7	72.7
No	36	27.3	27.3	100.0
Total	132	100.0	100.0	

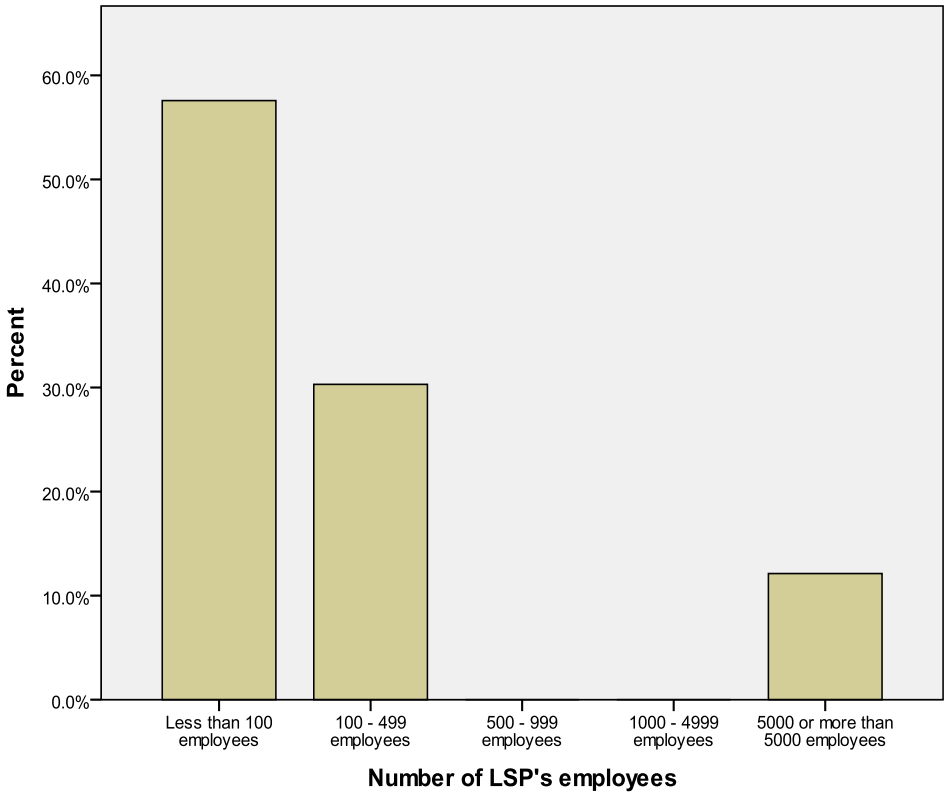

Figure 6.5 Percentage of Respondents of LSP by Number of LSP's employees

Table 6.7 Percentage of Respondents of LSP by Number of LSP's employees

Number of LSP's employees

	Frequency	Percent	Valid Percent	Cumulative Percent
Less than 100 employees	76	57.6	57.6	57.6
100 - 499 employees	40	30.3	30.3	87.9
5000 or more than 5000 employees	16	12.1	12.1	100.0
Total	132	100.0	100.0	

6.5.2 Descriptive statistics of variables

Logistics service value

The mean score of logistics service value is 3.34 with standard deviation 0.68. This means that the LSP's customers perceive value that they receive from the LSP is above average (see Table 6.8). For classification based on the type of industry, the chemical industry perceives higher logistics service value (4.00) while the import-export industry and textile industry perceive low logistics service value, 3.12 and 3.14 respectively (see Figure 6.6 and Table 6.9).

Table 6.8 The Descriptive Statistics of Logistics Service Value Variable

	N	Minimum	Maximum	Mean	Std. Deviation
Logistics Service Value	132	1.000	5.000	3.34848	.687787
Valid N (listwise)	132				

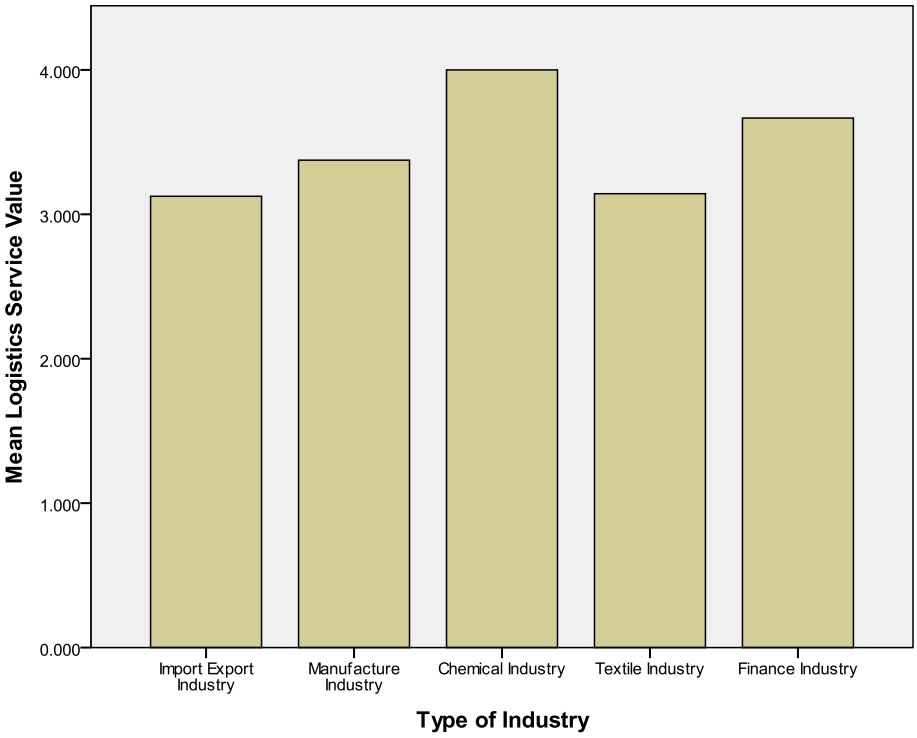

Figure 6.6 The Mean Score of Logistics Service Value by the Type of Industry

Table 6.9 The Mean Score of Logistics Service Value by the Type of Industry

Logistics Service Value

Type of Industry	Mean	N	Std. Deviation
Import Export Industry	3.12500	32	1.023908
Manufacture Industry	3.37500	48	.364662
Chemical Industry	4.00000	12	.000000
Textile Industry	3.14286	28	.356348
Finance Industry	3.66667	12	.984732
Total	3.34848	132	.687787

If logistics service value is classified by number of employees of LSP's customer, customers which have 5000 or more employees perceive higher logistics service value (4.00) while customers that have less than 100 employees and that have 500 to 999 employees perceive logistics service value that are slightly above average, 3.15 and 3.14 respectively (see Figure 6.7 and Table 6.10).

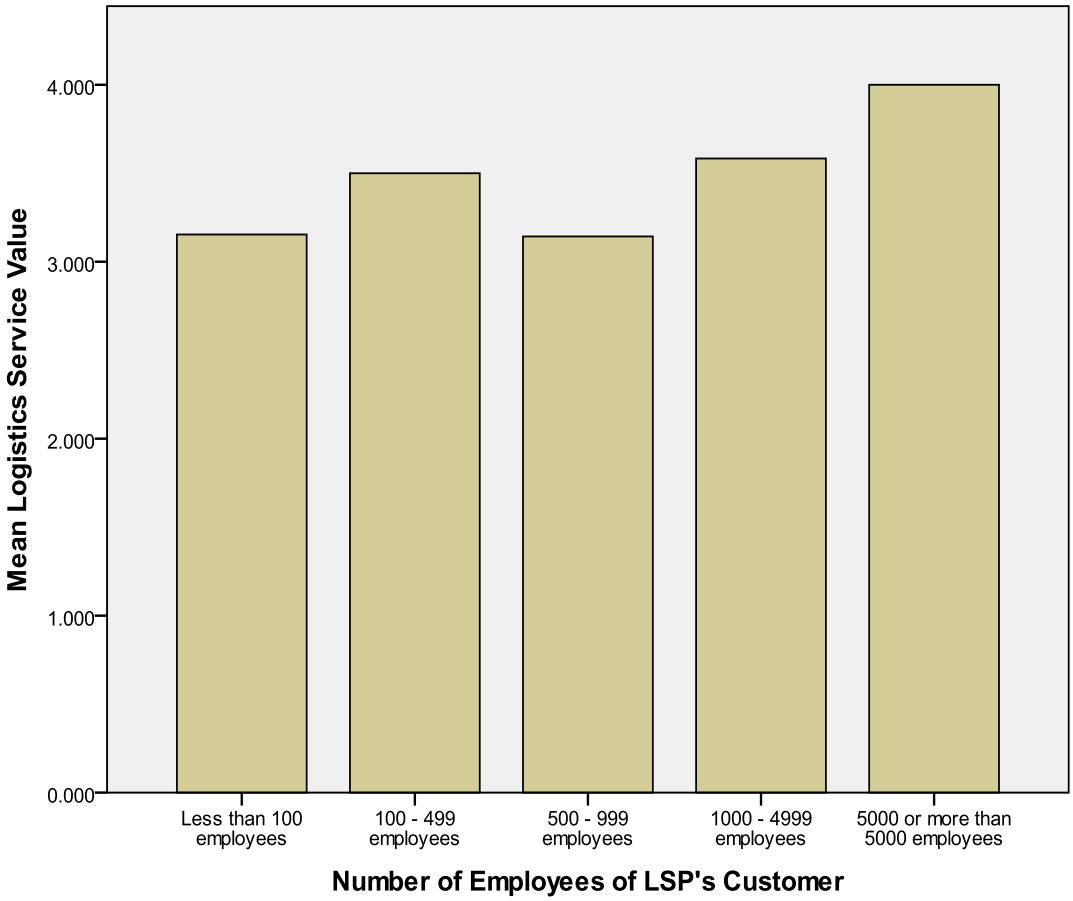

Figure 6.7 The Mean Score of Logistics Service Value by the Number of Employees of LSP's customer

Table 6.10 The Mean Score of Logistics Service Value by the Number of Employees of LSP's customer

Logistics Service Value

Number of Employees of LSP's Customer	Mean	N	Std. Deviation
Less than 100 employees	3.15385	52	.837471
100 - 499 employees	3.50000	16	.894427
500 - 999 employees	3.14286	28	.356348
1000 - 4999 employees	3.58333	24	.190347
5000 or more than 5000 employees	4.00000	12	.000000
Total	3.34848	132	.687787

In relation to duration of LSP usage, the difference of perceived logistics service value among groups is slight. The results show that the mean score for all of the perceptions are above average, 3.42 for 1 to 5 years, 3.56 for 6 to 10 years and 3.28 for more than 10 years (see Figure 6.8 and Table 6.11).

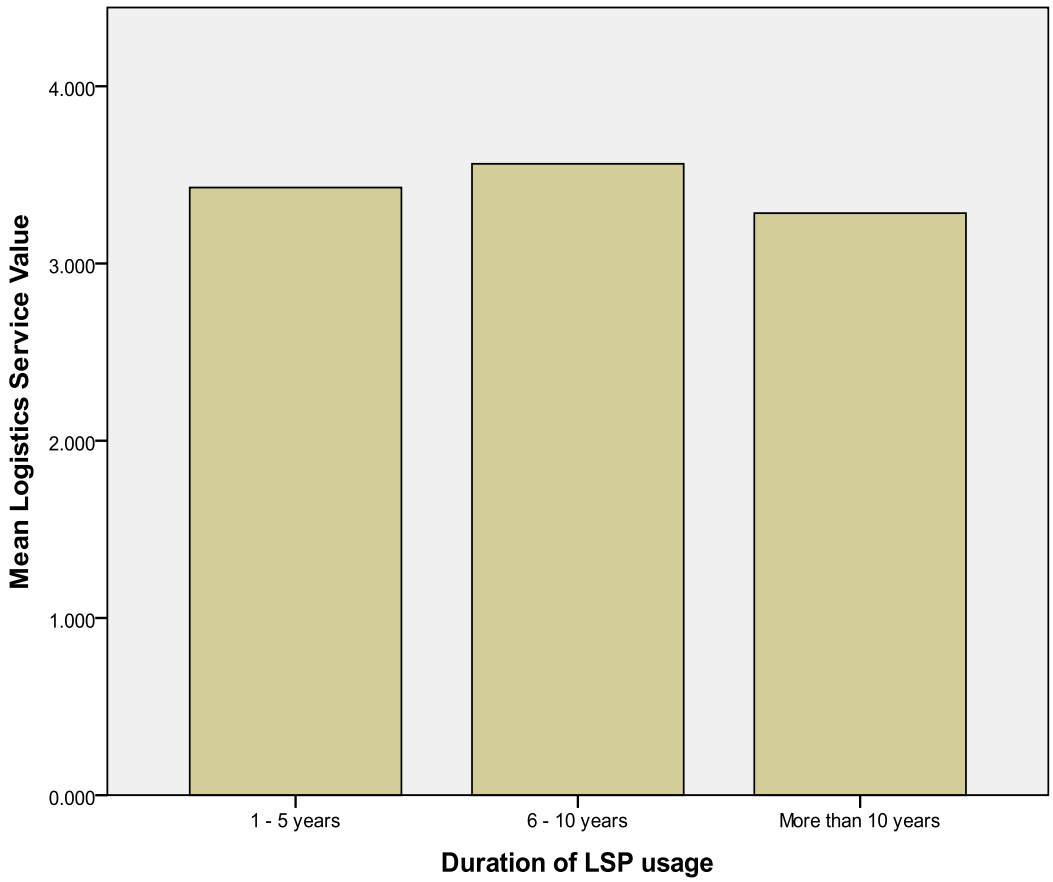

Figure 6.8 The Mean Score of Logistics Service Value by the Duration of LSP Usage

Table 6.11 The Mean Score of Logistics Service Value by the Duration of LSP Usage

Logistics Service Value

Duration of LSP usage	Mean	N	Std. Deviation
1 - 5 years	3.42857	28	.648564
6 - 10 years	3.56250	16	.460977
More than 10 years	3.28409	88	.728309
Total	3.34848	132	.687787

There is no significant difference of mean score of logistics service value between customers of LSP that have quality management program and customers of LSP that do not have one. The mean scores of logistics service value for customers of LSP that have quality management program is 3.33 while for customers of LSP that do not have one is 3.38 (see Figure 6.9 and Table 6.12).

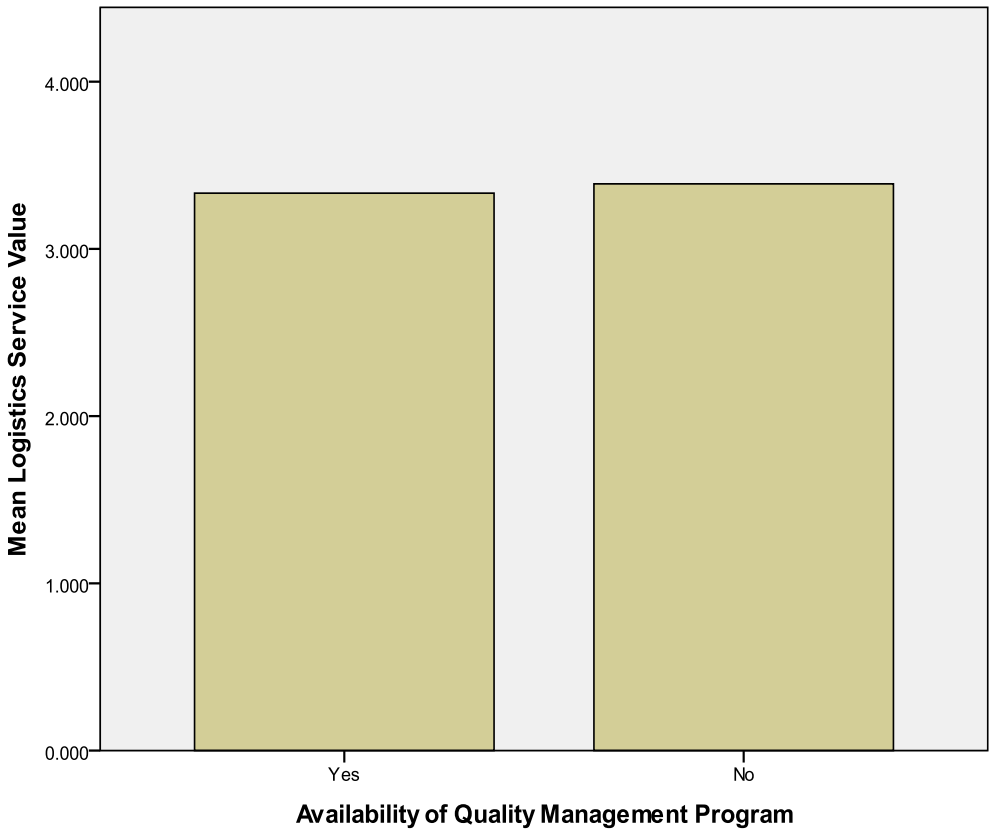

Figure 6.9 The Mean Score of Logistics Service Value by the Availability of Quality Management Program in LSP

Table 6.12 The Mean Score of Logistics Service Value by the Availability of Quality Management Program in LSP

Logistics Service Value

Availability of Quality Management Program	Mean	N	Std. Deviation
Yes	3.33333	96	.724266
No	3.38889	36	.586894
Total	3.34848	132	.687787

If logistics service value is classified by the number of LSP's employees, customers of LSP that have 5000 or more employees perceive lower logistics service value (2.81) compare to customers of LSP that have less than 100 employees perceive higher logistics service value (3.52). Customers of LSP that have 100 to 499 employees also perceive relatively higher logistics service value of 3.22 (see Figure 6.10 and Table 6.13).

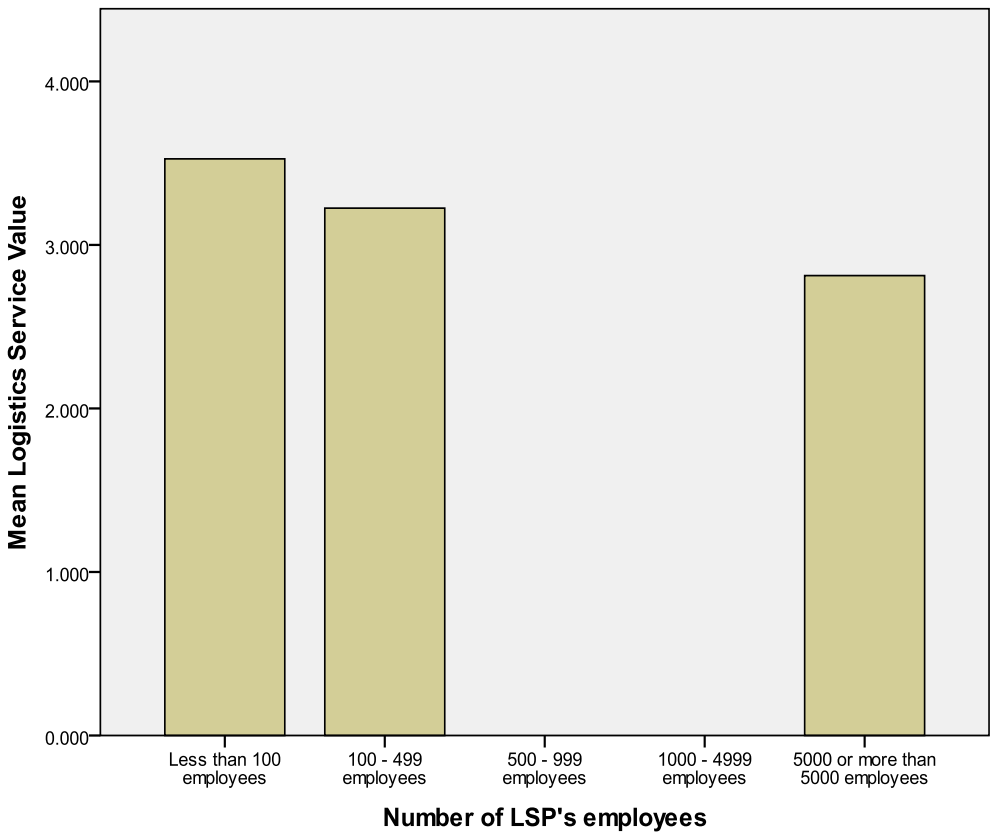

Figure 6.10 The Mean Score of Logistics Service Value by the Number of LSP's employees

Table 6.13 The Mean Score of Logistics Service Value by the Number of LSP's employees

Logistics Service Value

Number of LSP's employees	Mean	N	Std. Deviation
Less than 100 employees	3.52632	76	.509213
100 - 499 employees	3.22500	40	.603940
5000 or more than 5000 employees	2.81250	16	1.174379
Total	3.34848	132	.687787

Logistics service benefit

The mean score of logistics service benefit is 3.62 with standard deviation 0.66. This means that the LSP's customers perceive logistics service benefit that they receive from LSP as relative high. In detail, the mean score of LSP's customers perceive improving operational level is 3.81; improving customer service is 3.68; accessing resources is 3.45 and improving business performance is 3.55. From this result, customers perceive LSP contribute mainly to improving operational level and customer service (see Table 6.14).

Table 6.14 The Descriptive Statistics of Logistics Service Benefit Variable

	N	Minimum	Maximum	Mean	Std. Deviation
Improving Operational Level	132	1.00	5.00	3.8182	.83637
Improving Customer Service	132	1.00	5.00	3.6869	.74109
Accessing Resources	132	1.00	5.00	3.4545	.79946
Improving Business Performance	132	1.00	5.00	3.5530	.82600
Logistics Service Benefit	132	1.00	5.00	3.6277	.66881
Valid N (listwise)	132				

For classification based on the type of industry, the finance industry and chemical industry perceive high logistics service benefit. The score are 4.11 and 4.08 respectively. The import-export industry perceives lower logistics service benefit 3.34 (see Table 6.15 and Figure 6.11).

Table 6.15 The Mean Score of Logistics Service Benefit by the Type of Industry

Logistics Service Benefit

Type of Industry	Mean	N	Std. Deviation
Import Export Industry	3.3494	32	1.05615
Manufacture Industry	3.5858	48	.30369
Chemical Industry	4.0825	12	.00000
Textile Industry	3.6154	28	.23786
Finance Industry	4.1108	12	.96789
Total	3.6277	132	.66881

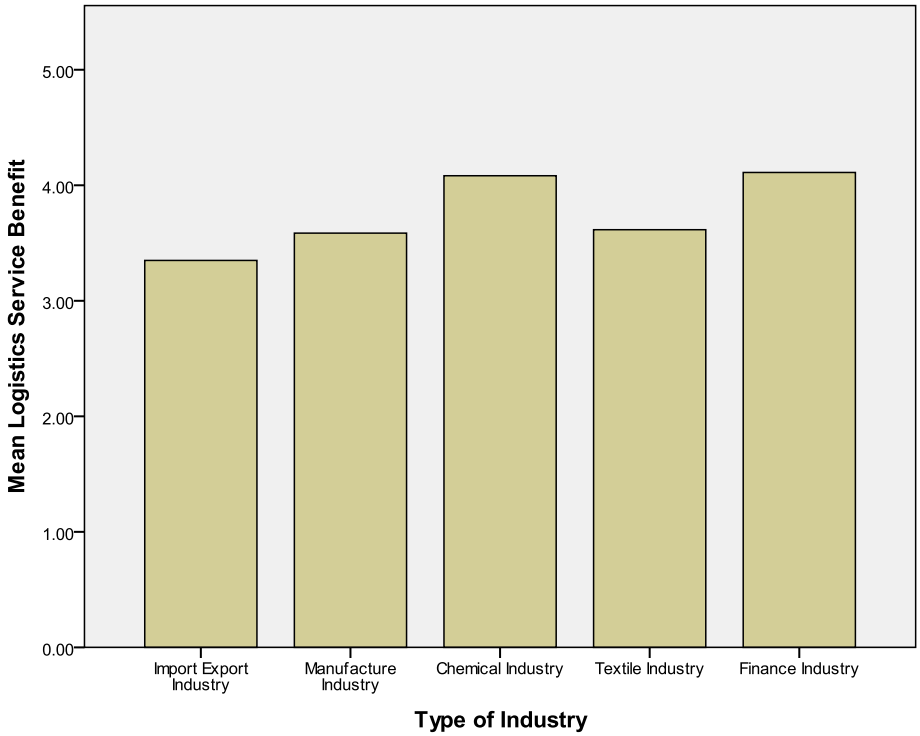

Figure 6.11 The Mean Score of Logistics Service Benefit by the Type of Industry

If the logistics service benefit is classified by the number of employees of LSP's customer, customers that have 5000 or more employees perceive higher logistics service benefit (4.08). Customers that have less than 100 employees perceive lower logistics service benefit (3.33) (see Table 6.16 and Figure 6.12).

Table 6.16 The Mean Score of Logistics Service Benefit by the Number of Employees of LSP's customer

Logistics Service Benefit

Number of Employees of LSP's Customer	Mean	N	Std. Deviation
Less than 100 employees	3.3333	52	.83852
100 - 499 employees	3.9688	16	.86694
500 - 999 employees	3.6154	28	.23786
1000 - 4999 employees	3.8250	24	.07995
5000 or more than 5000 employees	4.0825	12	.00000
Total	3.6277	132	.66881

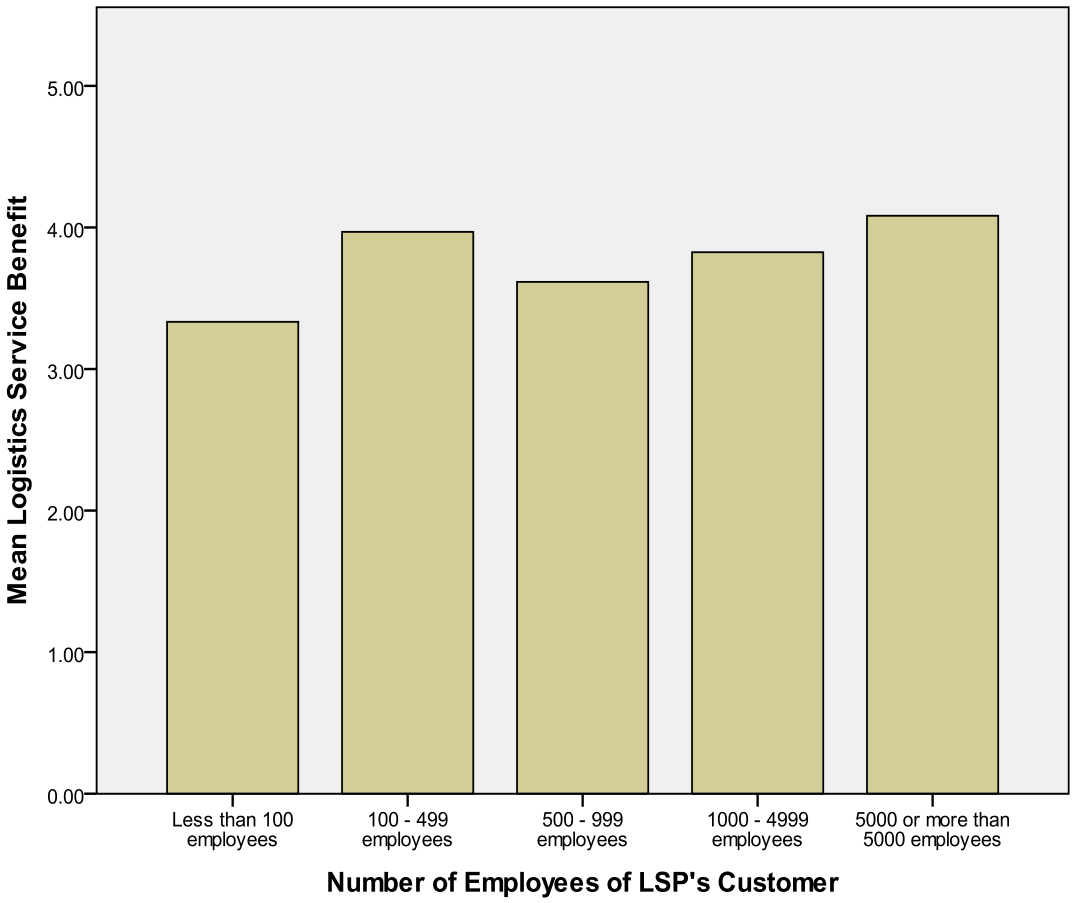

Figure 6.12 The Mean Score of Logistics Service Benefit by the Number of Employees of LSP's customer

In relation to duration of LSP usage, the difference of perceived logistics service benefit among groups is slightly. The mean score of the groups are considered high, 3.684 for 1 to 5 years, 3.687 for 6 to 10 years and 3.598 for more than 10 years (see Table 6.17 and Figure 6.13).

Table 6.17 The Mean Score of Logistics Service Benefit by the Duration of LSP Usage

Logistics Service Benefit

Duration of LSP usage	Mean	N	Std. Deviation
1 - 5 years	3.6843	28	.38127
6 - 10 years	3.6875	16	.47214
More than 10 years	3.5988	88	.76645
Total	3.6277	132	.66881

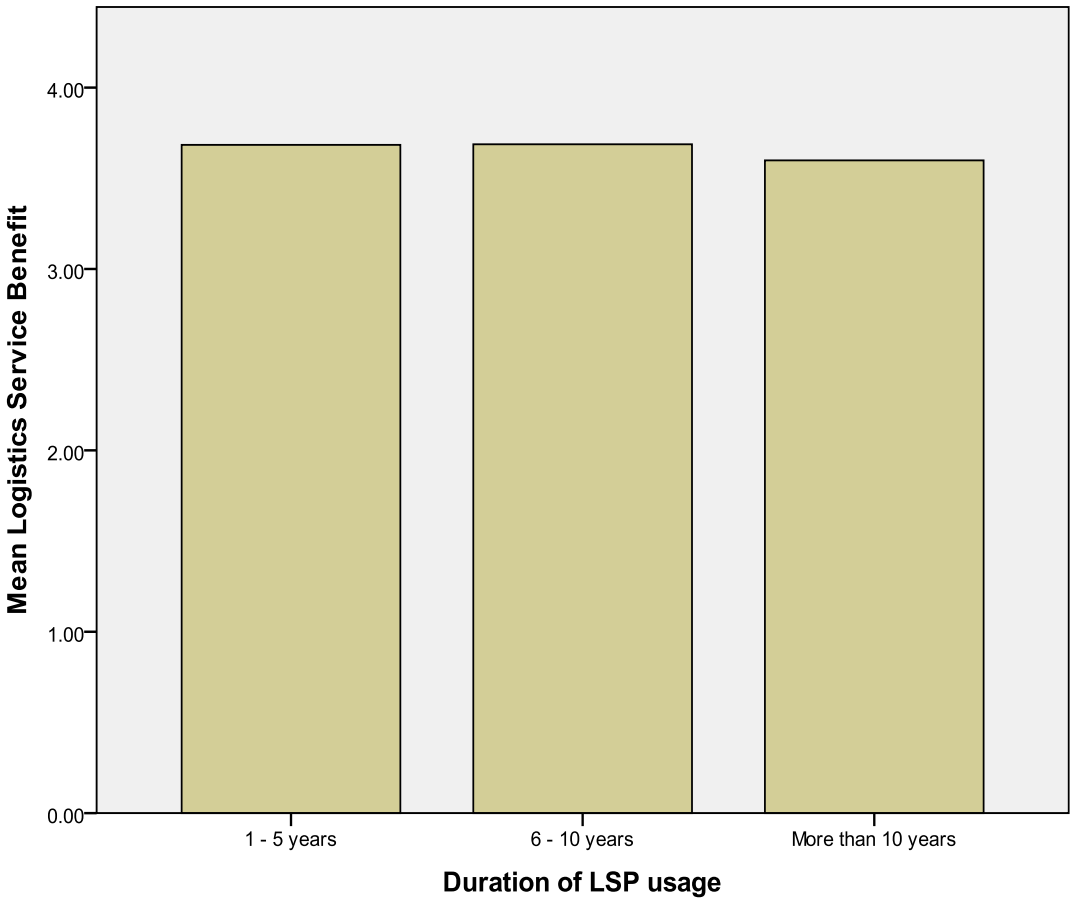

Figure 6.13 The Mean Score of Logistics Service Benefit by the Duration of LSP Usage

There is no significant difference of the mean score of logistics service benefit between customers of LSP that have quality management program and customers of LSP that do not have one. The mean score are relatively high, 3.60 for customers of LSP that have quality management program and 3.67 for customers of LSP that do not have quality management program (see Table 6.18 and Figure 6.14).

Table 6.18 The Mean Score of Logistics Service Benefit by the Availability of Quality Management Program in LSP

Logistics Service Benefit

Availability of Quality Management Program	Mean	N	Std. Deviation
Yes	3.6088	96	.72495
No	3.6781	36	.49406
Total	3.6277	132	.66881

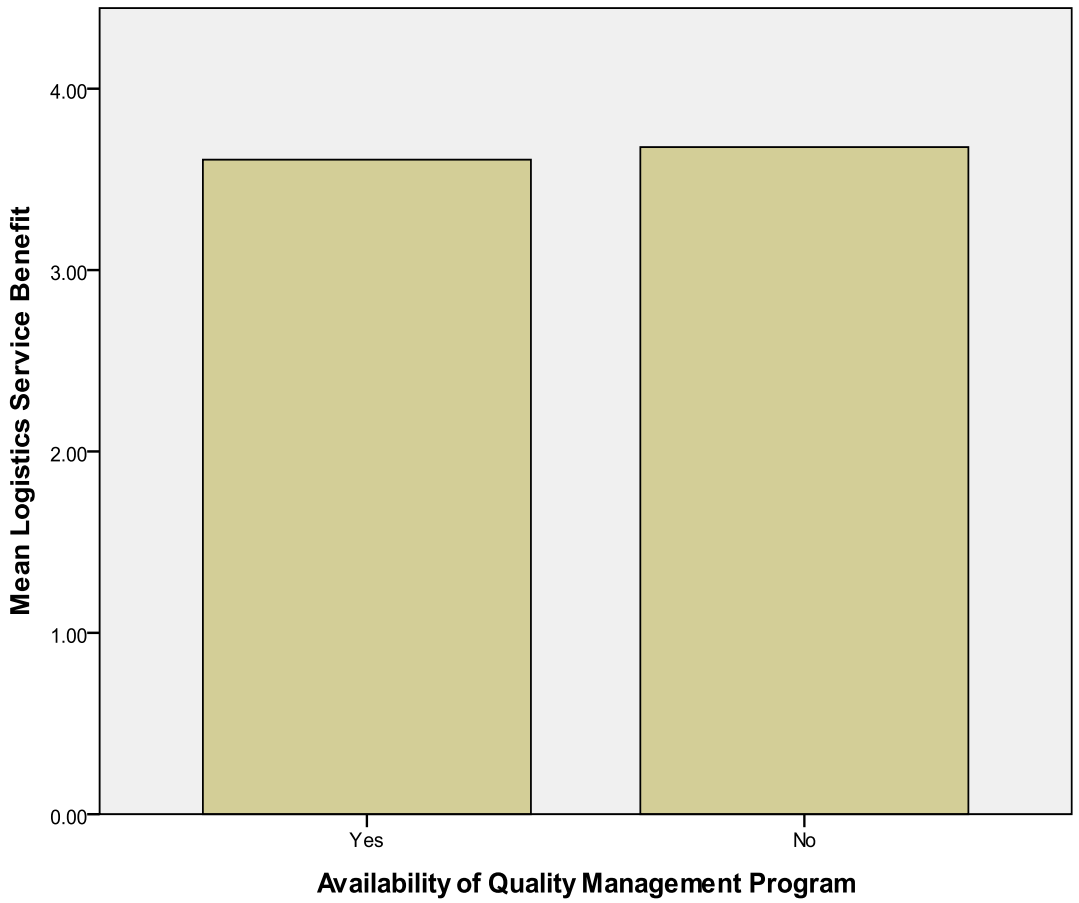

Figure 6.14 The Mean Score of Logistics Service Benefit by the Availability of Quality Management Program in LSP

If logistics service benefit is classified by the number of LSP's employees, customers of LSP that have 5000 or more employees perceive lower logistics service benefit (2.88). Customers of LSP that have less than 100 employees has a mean score of 3.74 and customers of LSP that have 100 to 499 employees has 3.70 (see Table 6.19 and Figure 6.15).

Table 6.19 The Mean Score of Logistics Service Benefit by the Number of LSP's employees

Logistics Service Benefit

Number of LSP's employees	Mean	N	Std. Deviation
Less than 100 employees	3.7451	76	.39846
100 - 499 employees	3.7015	40	.58141
5000 or more than 5000 employees	2.8850	16	1.24938
Total	3.6277	132	.66881

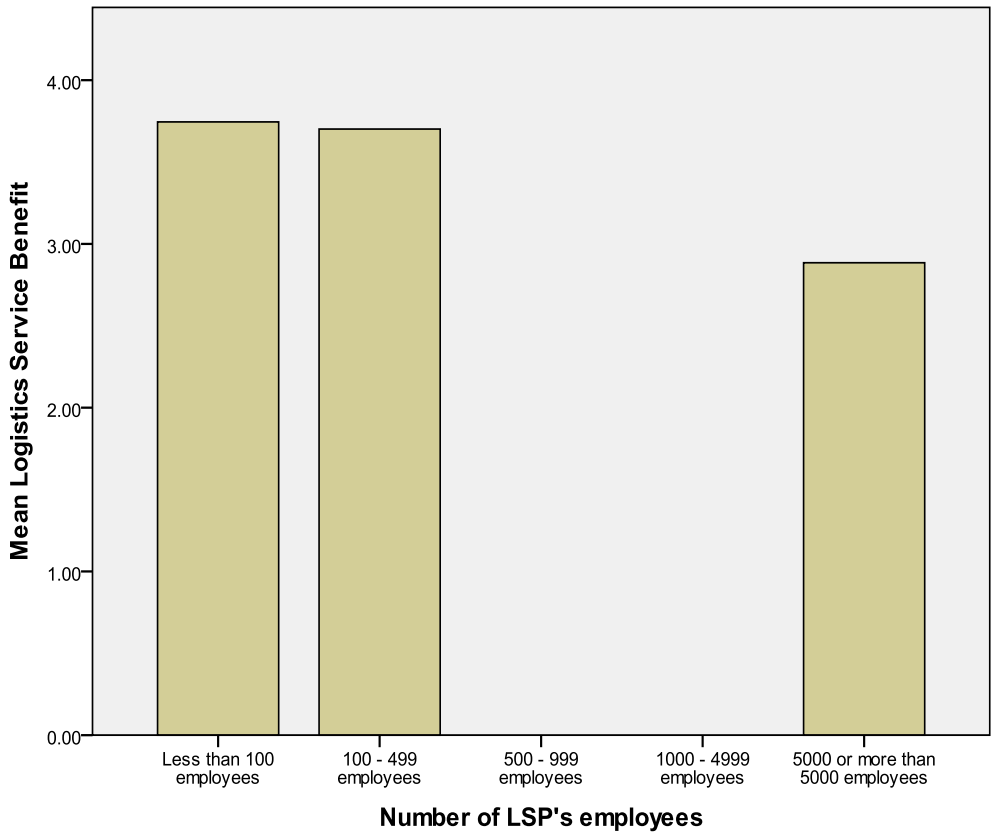

Figure 6.15 The Mean Score of Logistics Service Benefit by the Number of LSP's employees

Logistics service cost

The mean score of logistics service cost is 2.73 with standard deviation 0.61. This means that the LSP's customers perceive logistics service cost that they should incur to get the LSP's service is relatively below average. In detail, the mean score for psychological cost is 2.94; conflict is 2.84; financial risk is 2.55; supply product risk is 2.63 and capability risk is 2.69. It appears that psychological cost is the higher cost perceived by customers while financial risk shows lower mean score value (see Table 20).

Table 6.20 The Descriptive Statistics of Logistics Service Cost Variable

	N	Minimum	Maximum	Mean	Std. Deviation
Psychological Cost	132	1.00	5.00	2.9495	.93239
Conflict	132	1.00	4.00	2.8485	.70424
Financial Risk	132	1.00	3.33	2.5556	.64160
Supply Product Risk	132	1.00	4.00	2.6364	.79166
Capability Risk	132	1.00	4.00	2.6970	.73844
Logistics Service Cost	132	1.33	3.53	2.7370	.61924
Valid N (listwise)	132				

For classification based on industry type, the mean score of logistics service cost shows various perceptions. The mean score for chemical industry and manufacture industry are 3.53 and 3.14 respectively. The financial industry is 2.06, the import-export industry and textile industry are 2.49 and 2.25 respectively (see Table 6.21 and Figure 6.16).

Table 6.21 The Mean Score of Logistics Service Cost by the Type of Industry

Logistics Service Cost

Type of Industry	Mean	N	Std. Deviation
Import Export Industry	2.4958	32	.68270
Manufacture Industry	3.1465	48	.08681
Chemical Industry	3.5320	12	.00000
Textile Industry	2.2571	28	.35635
Finance Industry	2.0667	12	.49237
Total	2.7370	132	.61924

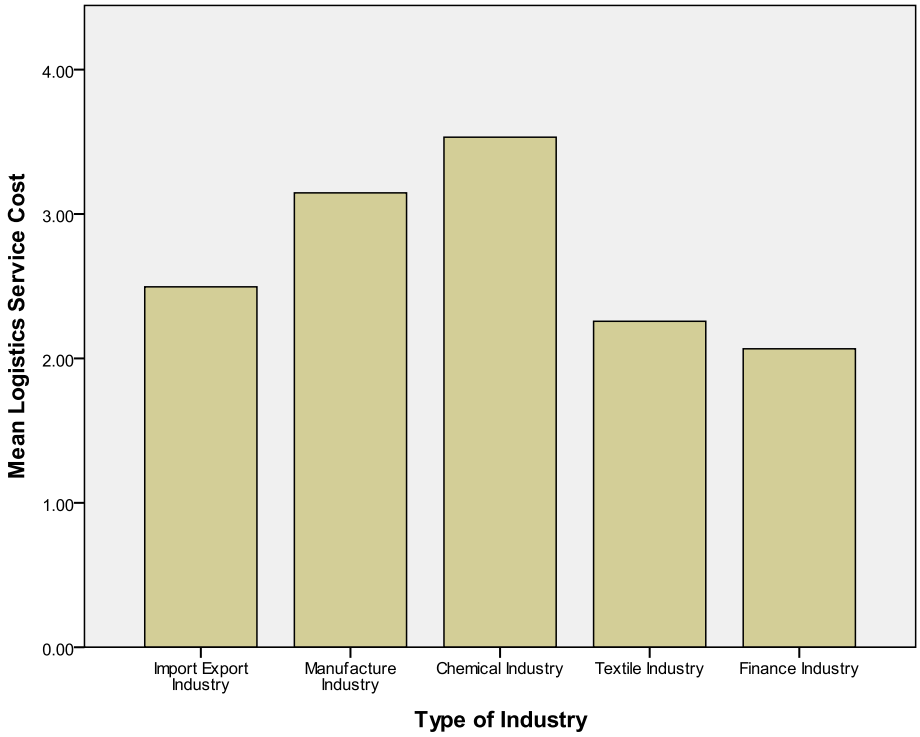

Figure 6.16 The Mean Score of Logistics Service Cost by the Type of Industry

For classification based on number of employees of LSP's customer, the mean score of logistics service cost show various perceptions too. Customers that have 5000 or more employees perceive higher logistics service cost (3.53) while customers that have 100 to 499 employees perceive lower logistics service cost (2.12). Customers that have less than 100 employees perceive logistics service cost below average (2.80). Generally, the trend is that the lower the customer size the lower the perceived logistics service cost (see Table 6.22 and Figure 6.17).

Table 6.22 The Mean Score of Logistics Service Cost by the Number of Employees of LSP's Customer

Logistics Service Cost

Number of Employees of LSP's Customer	Mean	N	Std. Deviation
Less than 100 employees	2.8051	52	.61539
100 - 499 employees	2.1245	16	.43414
500 - 999 employees	2.2571	28	.35635
1000 - 4999 employees	3.1600	24	.06396
5000 or more than 5000 employees	3.5320	12	.00000
Total	2.7370	132	.61924

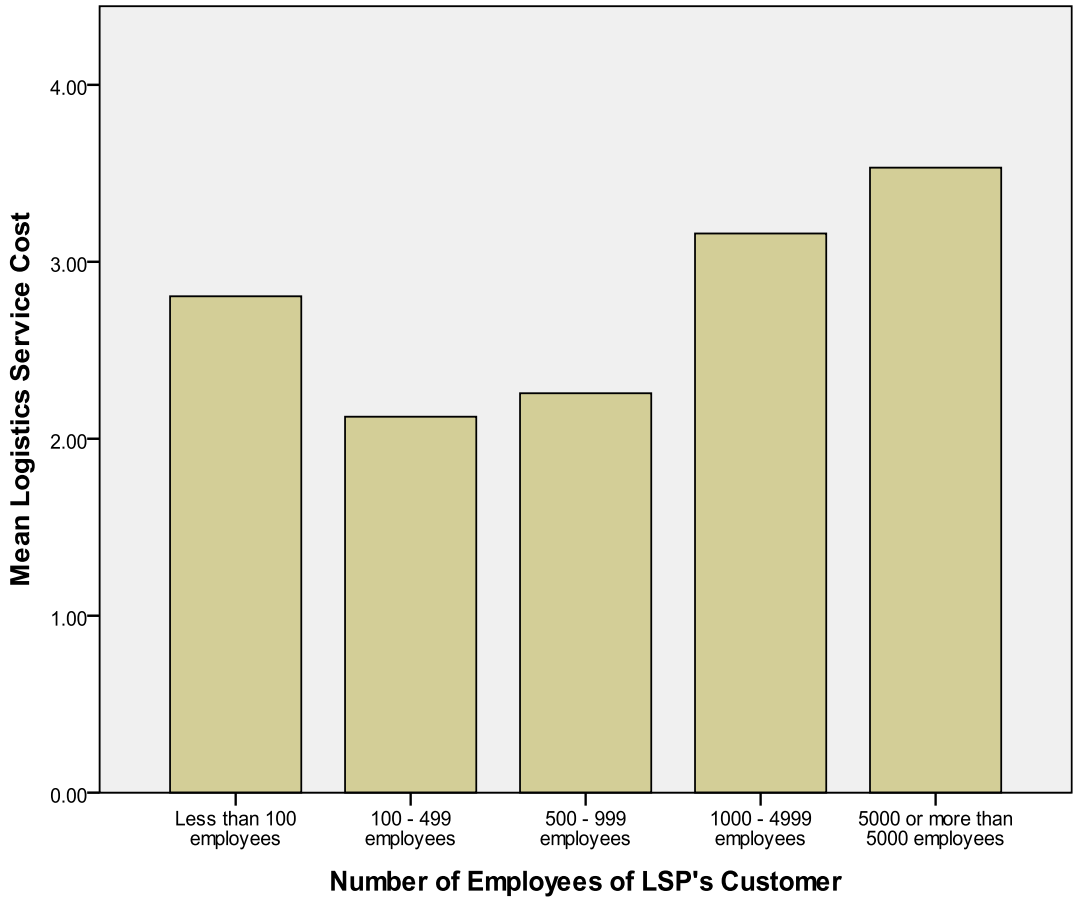

Figure 6.17 The Mean Score of Logistics Service Cost by the Number of Employees of LSP's Customer

For classification based on duration of LSP usage, customers perceive logistics service cost below average, 2.77 for 1 to 5 years, 2.39 for 6 to 10 years and 2.76 for more than 10 years (see Table 6.23 and Figure 6.18).

Table 6.23 The Mean Score of Logistics Service Cost by the Duration of LSP Usage

Logistics Service Cost

Duration of LSP usage	Mean	N	Std. Deviation
1 - 5 years	2.7760	28	.61131
6 - 10 years	2.3920	16	.95667
More than 10 years	2.7873	88	.52791
Total	2.7370	132	.61924

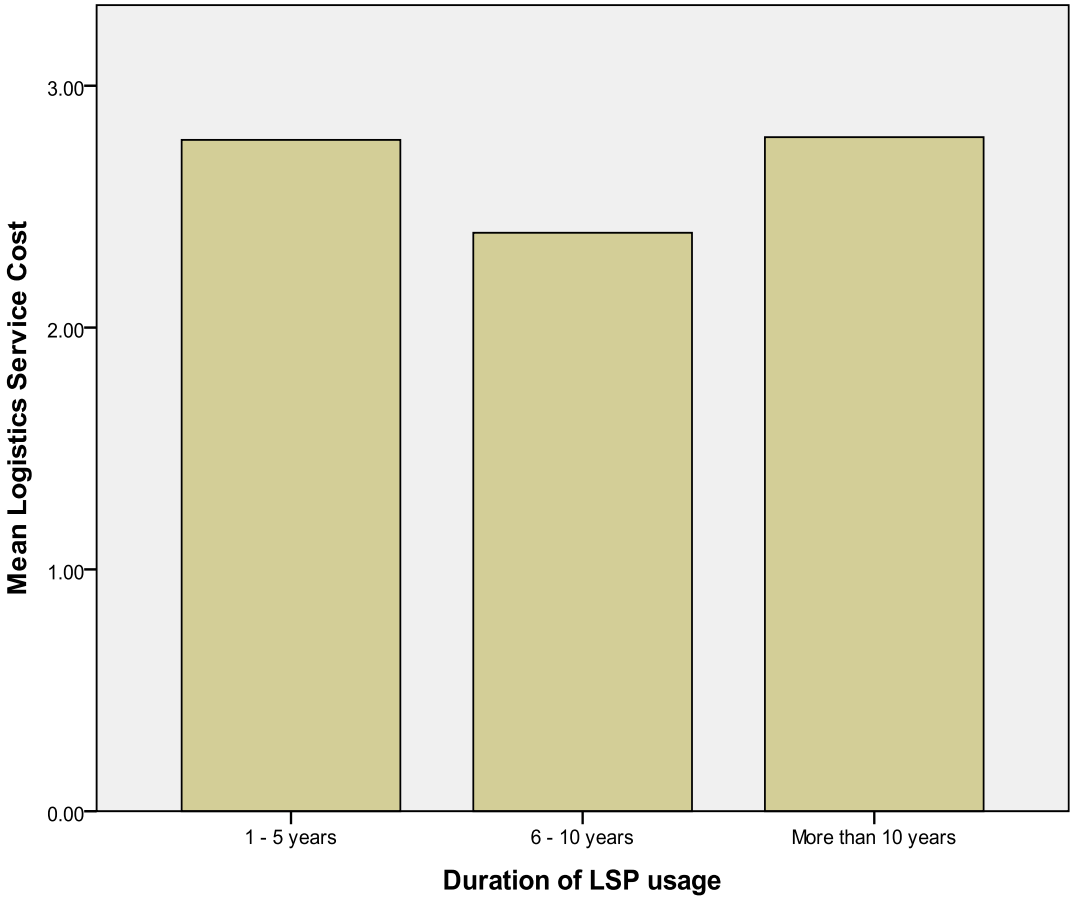

Figure 6.18 The Mean Score of Logistics Service Cost by the Duration of LSP Usage

There is no significant difference of mean score of logistics service cost between customers of LSP that have quality management program and customers of LSP that do not have one. Results show that the mean score are below average, 2.70 and 2.82 respectively (see Table 6.24 and Figure 6.19).

Table 6.24 The Mean Score of Logistics Service Cost by the Availability of Quality Management Program in LSP

Logistics Service Cost

Availability of Quality Management Program	Mean	N	Std. Deviation
Yes	2.7023	96	.61927
No	2.8293	36	.61826
Total	2.7370	132	.61924

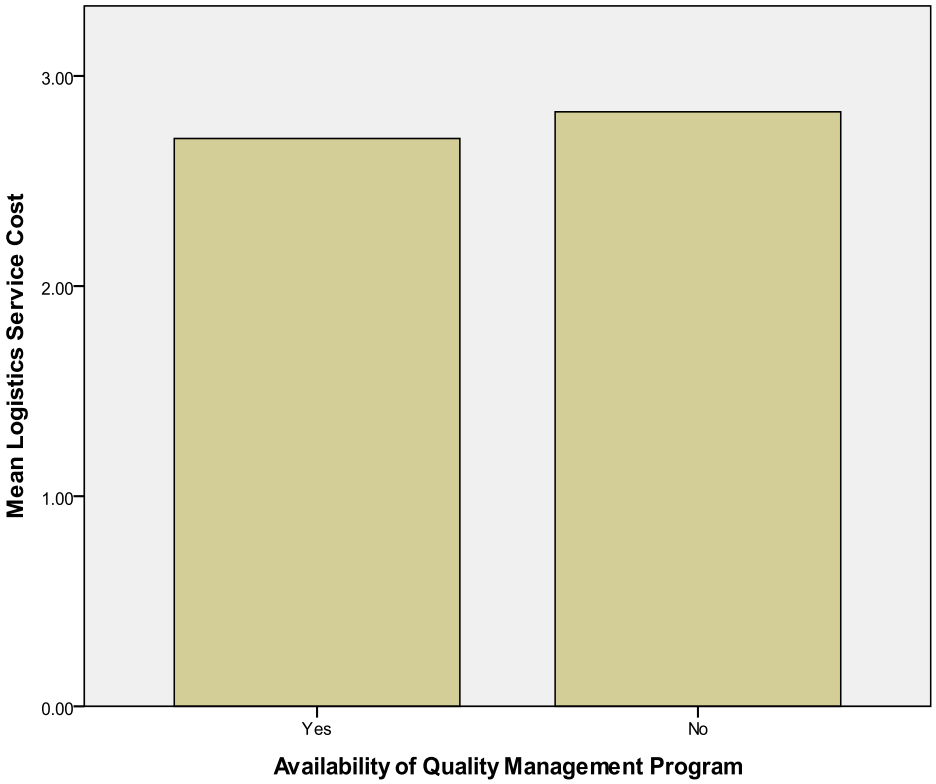

Figure 6.19 The Mean Score of Logistics Service Cost by the Availability of Quality Management Program in LSP

If logistics service cost is classified by the number of LSP's employees, customers of LSP that have 5000 or more employees perceive logistics service cost slightly above average (3.08). Customers of LSP that have less than 100 employees have a mean score slightly below average (2.93) while customers of LSP that have 100 to 499 employees perceive logistics service cost lower (2.21) (see Table 6.25 and Figure 6.20).

Table 6.25 The Mean Score of Logistics Service Cost by the Number of LSP's employees

Logistics Service Cost

Number of LSP's employees	Mean	N	Std. Deviation
Less than 100 employees	2.9398	76	.60332
100 - 499 employees	2.2134	40	.37917
5000 or more than 5000 employees	3.0825	16	.29718
Total	2.7370	132	.61924

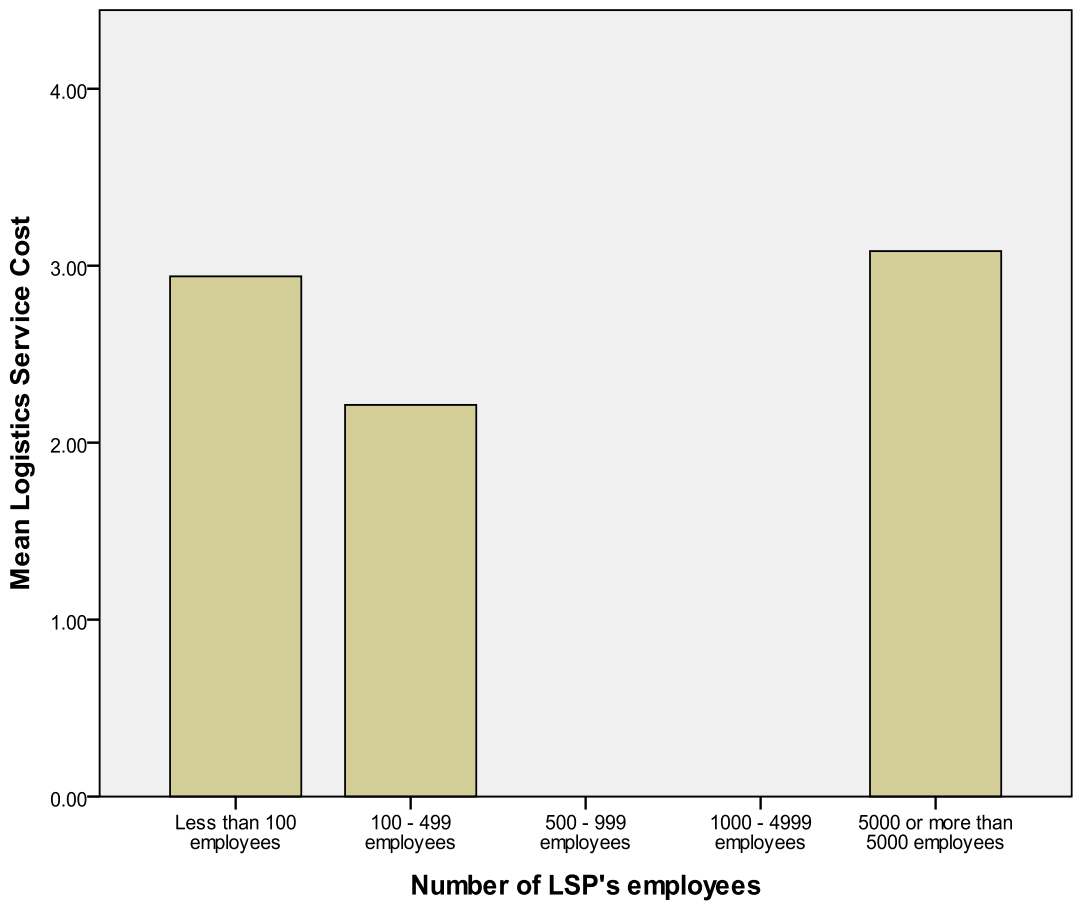

Figure 6.20 The Mean Score of Logistics Service Cost by the Number of LSP's employees

Logistics service process quality

The mean score of logistics service process quality is 3.41 with standard deviation 0.58. This means that the LSP's customers perceive above average logistics service process quality provided by the LSP. In detail, the mean score for personnel contact quality is 3.54; information quality is 3.45; service order procedure is 3.83; shipment complaint handling is 3.28 and emergency service is 2.95. It appears that service order procedure is the higher logistics service process quality perceived by customers whilst emergency service shows lower mean score value (see Table 6.26). This result shows that the LSP should improve their emergency service.

Table 6.26 The Descriptive Statistics of Logistics Service Process Quality Variable

	N	Minimum	Maximum	Mean	Std. Deviation
Personnel Contact Quality	132	1.00	5.00	3.5455	.71251
Information Quality	132	2.33	5.00	3.4545	.71726
Service Order Procedure	132	1.67	5.00	3.8384	.89905
Shipment Complaint Handling	132	1.00	5.00	3.2828	.74648
Emergency Service	132	2.00	5.00	2.9596	.78475
Logistics Service Process Quality	132	1.80	4.73	3.4162	.58334
Valid N (listwise)	132				

For classification based on industry type, the mean score of logistics service process quality shows various perceptions. The mean score for finance industry is higher (4.06) compare to the chemical industry that perceives lower logistics service process quality (2.72). The mean score for import-export industry is 3.45, for the manufacture industry is 3.33 and for the textile industry is 3.51. This means the groups perceive logistics service process quality above average (see Table 6.27 and Figure 6.21). This result indicates that LSP should improve logistics service process quality for chemical industry.

Table 6.27 The Mean Score of Logistics Service Process Quality by the Type of Industry

Logistics Service Process Quality

Type of Industry	Mean	N	Std. Deviation
Import Export Industry	3.4585	32	.92650
Manufacture Industry	3.3388	48	.28245
Chemical Industry	2.7340	12	.00000
Textile Industry	3.5143	28	.28508
Finance Industry	4.0667	12	.26054
Total	3.4162	132	.58334

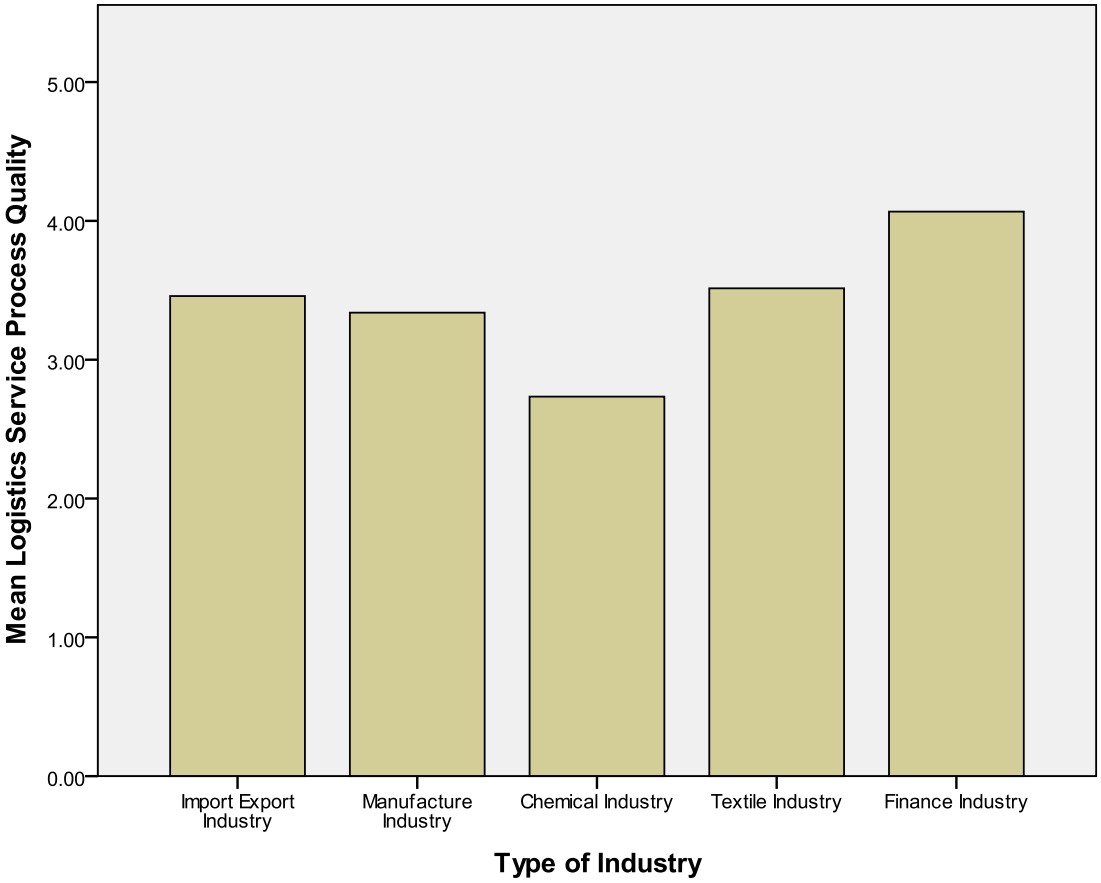

Figure 6.21 The Mean Score of Logistics Service Process Quality by the Type of Industry

For classification based on number of employees of LSP's customer, the mean score of logistics service process quality show above average value except for LSP's customers that have 5000 or more employees. Customers that have 5000 or more employees perceive lower logistics service process quality (2.73) while customers that have 100 to 499 employees perceive higher logistics service process quality (3.83). The mean score for customers that have less than 100 employees is 3.37, for customers that have 500 to 999 employees is 3.51 and for customers that have 1000 to 4999 employees is 3.45 (see Table 6.28 and Figure 6.22). This result indicates that LSP should be encouraged to improve logistics service process quality for customers that have 5000 or more employees.

Table 6.28 The Mean Score of Logistics Service Proces Quality by the Number of Employees of LSP's customer

Logistics Service Process Quality

Number of Employees of LSP's Customer	Mean	N	Std. Deviation
Less than 100 employees	3.3742	52	.74715
100 - 499 employees	3.8335	16	.47302
500 - 999 employees	3.5143	28	.28508
1000 - 4999 employees	3.4560	24	.27867
5000 or more than 5000 employees	2.7340	12	.00000
Total	3.4162	132	.58334

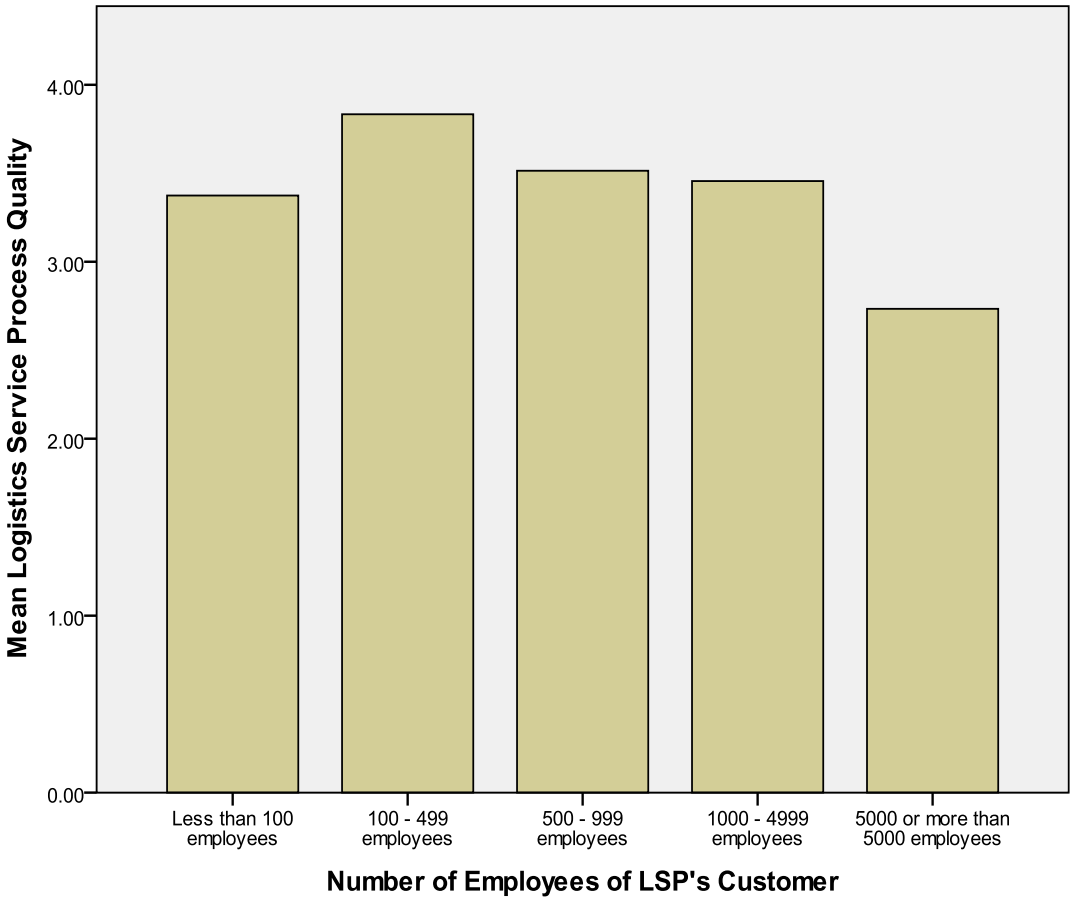

Figure 6.22 The Mean Score of Logistics Service Process Quality by the Number of Employees of LSP's customer

For classification based on duration of LSP usage, customers perceive logistics service process quality to be above average. Customers that use LSP for 6 to 10 years

perceive higher logistics service process quality (4.11). The mean score for other groups also show above average, 3.39 for 1 to 5 years and 3.29 for more than 10 years (see Table 6.29 and Figure 6.23).

Table 6.29 The Mean Score of Logistics Service Process Quality by the Duration of LSP Usage

Logistics Service Process Quality

Duration of LSP usage	Mean	N	Std. Deviation
1 - 5 years	3.3906	28	.59718
6 - 10 years	4.1160	16	.32046
More than 10 years	3.2972	88	.52858
Total	3.4162	132	.58334

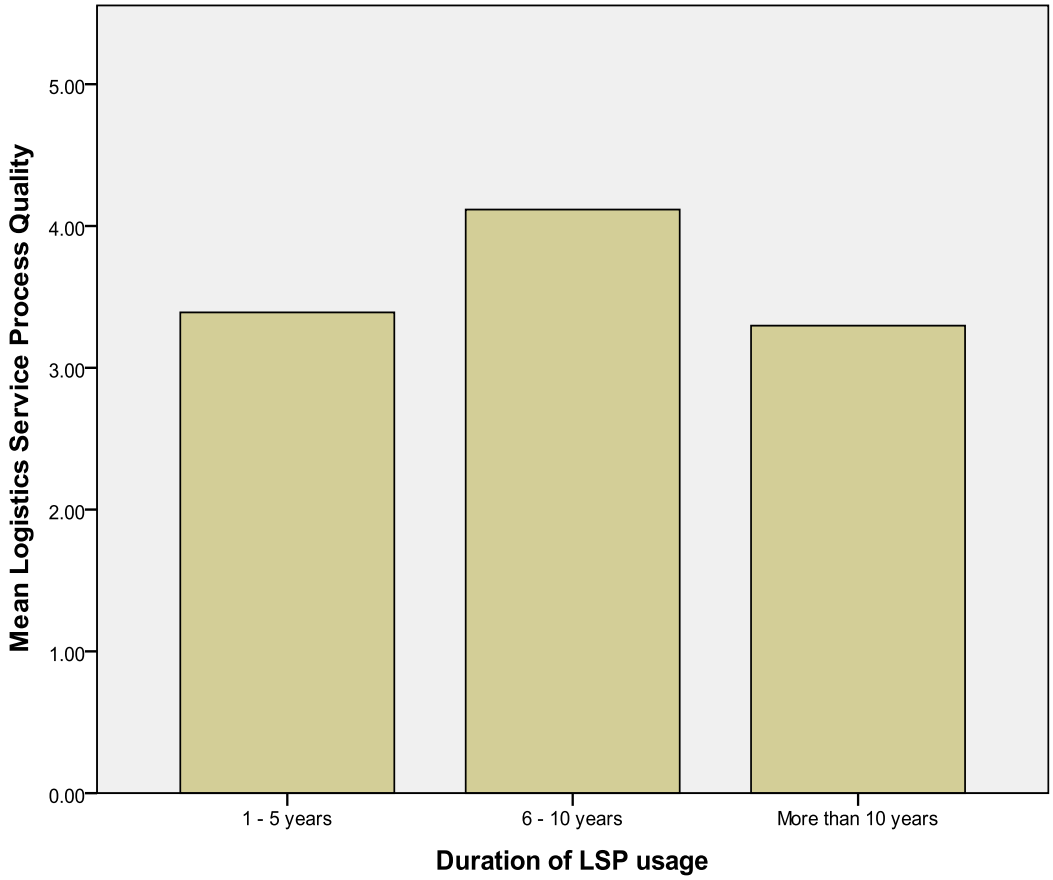

Figure 6.23 The Mean Score of Logistics Service Process Quality by the Duration of LSP Usage

For classification logistics service process quality based on availability of quality management program in LSP, customers of LSP that have quality management program is lower than LSP that do not have one. However, both show above average

value, 3.36 for customers of LSP that have quality management program and 3.56 for customers of LSP that do not have quality management program (see Table 6.30 and Figure 6.24). This result indicates that the availability of quality management program is not an assurance for higher logistics service process quality.

Table 6.30 The Mean Score of Logistics Service Process Quality by the Availability of Quality Management Program in LSP

Logistics Service Process Quality

Availability of Quality Management Program	Mean	N	Std. Deviation
Yes	3.3612	96	.59952
No	3.5631	36	.51724
Total	3.4162	132	.58334

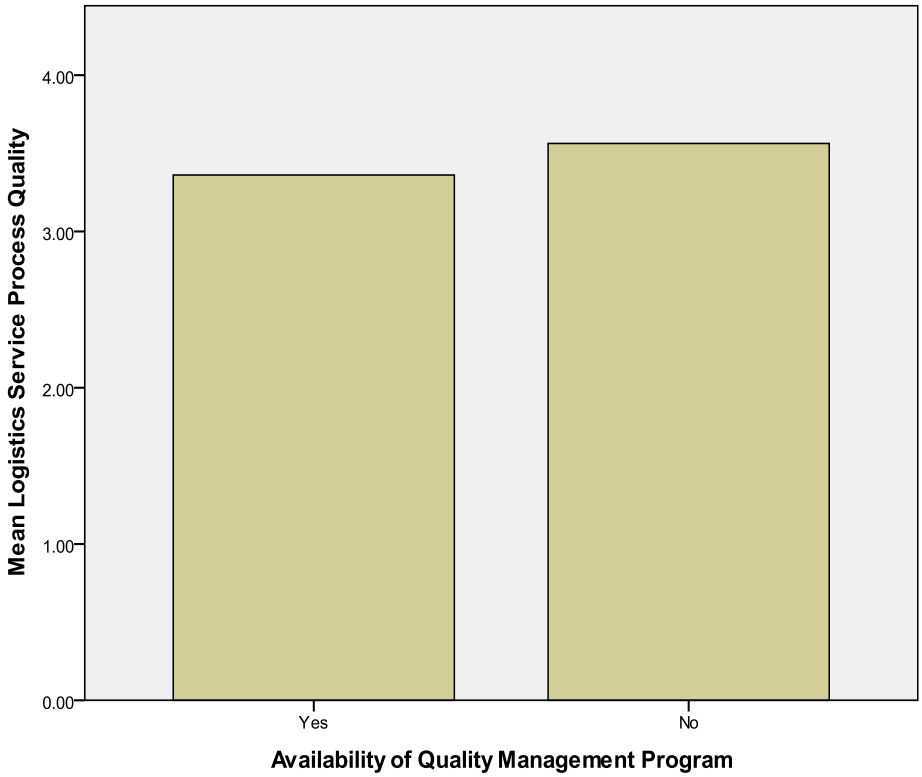

Figure 6.24 The Mean Score of Logistics Service Process Quality by the Availability of Quality Management Program in LSP

If logistics service process quality is classified by the number of LSP's employees, customers of LSP that have 5000 or more employees perceive logistics service process quality below average and the value is lower than others (2.65). Customers

of LSP that have 100 to 499 employees have a higher mean score (3.71) whilst customers of LSP that have less than 100 employees have a mean score of 3.42 (see Table 6.31 and Figure 6.25). This result shows that LSP that have 5000 or more employees should be encouraged to improve their logistics service process quality.

Table 6.31 The Mean Score of Logistics Service Process Quality by the Number of LSP's employees

Logistics Service Process Quality

Number of LSP's employees	Mean	N	Std. Deviation
Less than 100 employees	3.4213	76	.51063
100 - 499 employees	3.7132	40	.43211
5000 or more than 5000 employees	2.6500	16	.56666
Total	3.4162	132	.58334

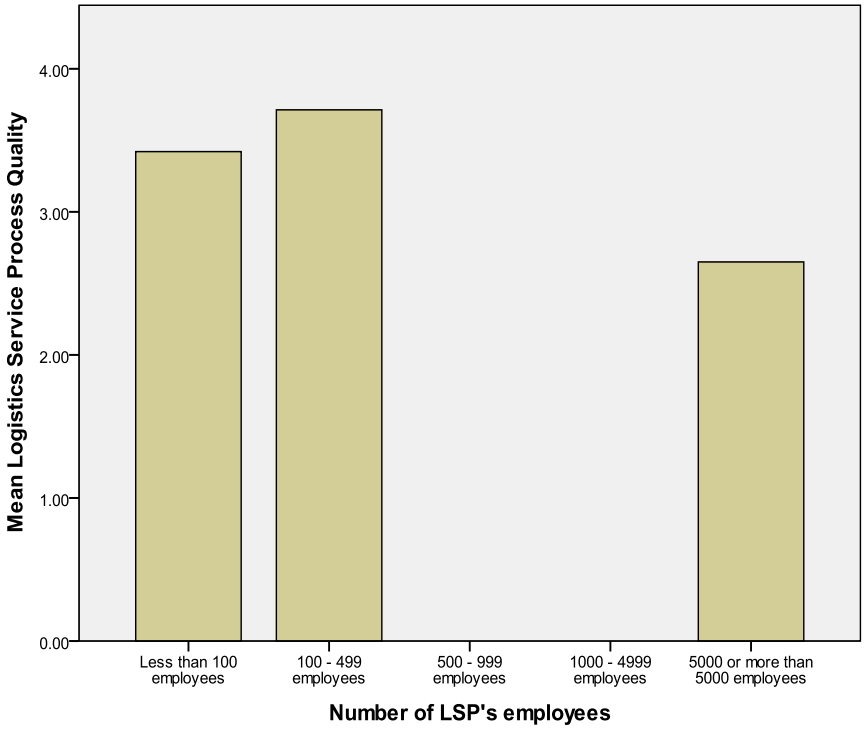

Figure 6.25 The Mean Score of Logistics Service Process Quality by the Number of LSP's employees

Logistics service outcome quality

The mean score of logistics service outcome quality is 3.59 with standard deviation 0.54. This means that the LSP's customers perceive logistics service outcome quality provided by LSP to be above average. In detail, the mean score for shipment quantity

is 3.45; shipment quality is 3.89; shipment security is 3.75; timeliness is 3.17; innovative service is 3.61 and operational coverage area is 3.68. It appears that shipment quality is the higher logistics service outcome quality perceived by customers while timeliness shows lower mean score value although its value is above average (see Table 6.32). This result shows that LSP should improve their timeliness.

Table 6.32 The Descriptive Statistics of Logistics Service Outcome Quality Variable

	N	Minimum	Maximum	Mean	Std. Deviation
Shipment Quantity	132	1.67	5.00	3.4545	.74510
Shipment Quality	132	2.33	5.00	3.8990	.60243
Shipment Security	132	2.50	5.00	3.7576	.70029
Timeliness	132	1.00	5.00	3.1717	.93239
Innovative Service	132	2.00	5.00	3.6162	.77326
Operational Coverage Area	132	2.33	5.00	3.6869	.84785
Logistics Service Outcome Quality	132	2.22	4.78	3.5978	.54171
Valid N (listwise)	132				

For classification based on industry type, the mean score of logistics service outcome quality shows above average value. The finance industry perceives higher logistics service outcome quality (4.11) compare to the chemical industry that perceives lower logistics service outcome (3.22). The mean score for import-export industry is 3.48, for manufacture industry is 3.68 and for textile industry is 3.62. All of the mean score show above average value (Table 6.33 and Figure 6.26). This result shows that LSP should improve logistics service outcome quality for the chemical industry.

Table 6.33 The Mean Score of Logistics Service Outcome Quality by the Type of Industry

Logistics Service Outcome Quality

Type of Industry	Mean	N	Std. Deviation
Import Export Industry	3.4860	32	.84010
Manufacture Industry	3.6807	48	.22807
Chemical Industry	3.2233	12	.00000
Textile Industry	3.5238	28	.47513
Finance Industry	4.1111	12	.45690
Total	3.5978	132	.54171

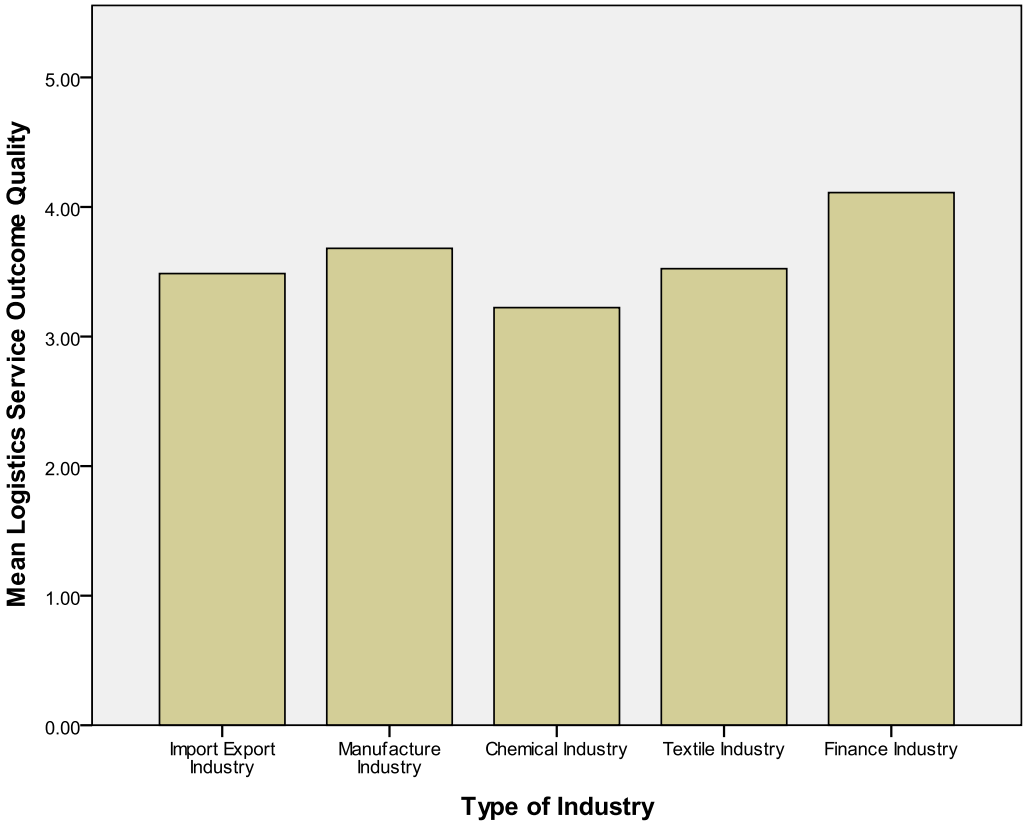

Figure 6.26 The Mean Score of Logistics Service Outcome Quality by the Type of Industry

For classification based on the number of employees of LSP's customer, the mean score of logistics service outcome quality shows above average value. Customers that have 5000 or more employees have a lower mean score (2.73) while customers that have 1000 to 4999 employees have a higher mean score (3.80). For customers that have less than 100 employees, the mean score of logistics service outcome quality is 3.57; for customers that have 100 to 499 employees is 3.76 and for customers that have 500 to 999 employees is 3.52. This result show that LSP should be encouraged to improve logistics service outcome quality for customers that have 5000 or more employees (see Table 6.34 and Figure 6.27).

Table 6.34 The Mean Score of Logistics Service Outcome Quality by the Number of Employees of LSP's customer

Logistics Service Outcome Quality

Number of Employees of LSP's Customer	Mean	N	Std. Deviation
Less than 100 employees	3.5791	52	.64007
100 - 499 employees	3.7633	16	.73493
500 - 999 employees	3.5238	28	.47513
1000 - 4999 employees	3.8014	24	.05266
5000 or more than 5000 employees	3.2233	12	.00000
Total	3.5978	132	.54171

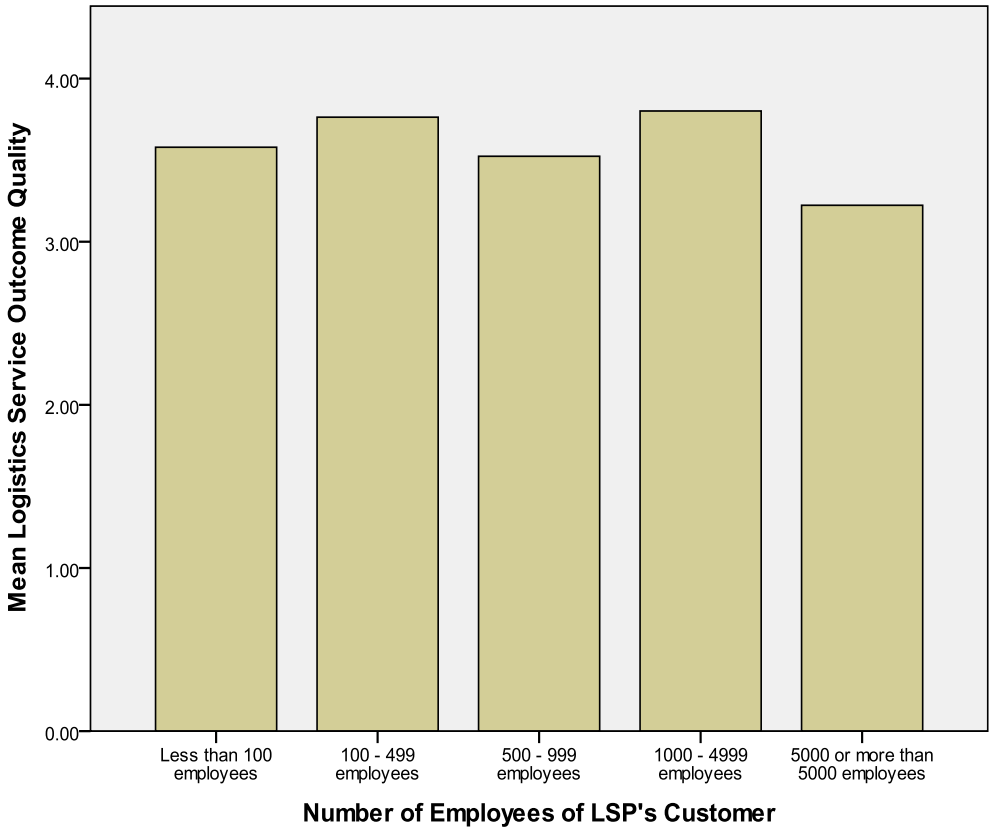

Figure 6.27 The Mean Score of Logistics Service Outcome Quality by the Number of Employees of LSP's customer

For classification based on duration of LSP usage, customers perceive logistics service outcome quality to be above average. Customers that use LSP for 6 to 10 years have a higher mean score value (3.93). The mean score of customers that use LSP for 1 to 5 years is 3.69 while the mean score of customers that use LSP for more than 10 years is 3.50 (see Table 6.35 and Figure 6.28). This result indicates that LSP

should maintain their logistics service outcome quality continuously because it will prevent service saturation.

Table 6.35 The Mean Score of Logistics Service Outcome Quality by the Duration of LSP Usage

Logistics Service Outcome Quality

Duration of LSP usage	Mean	N	Std. Deviation
1 - 5 years	3.6902	28	.48608
6 - 10 years	3.9379	16	.57232
More than 10 years	3.5065	88	.52878
Total	3.5978	132	.54171

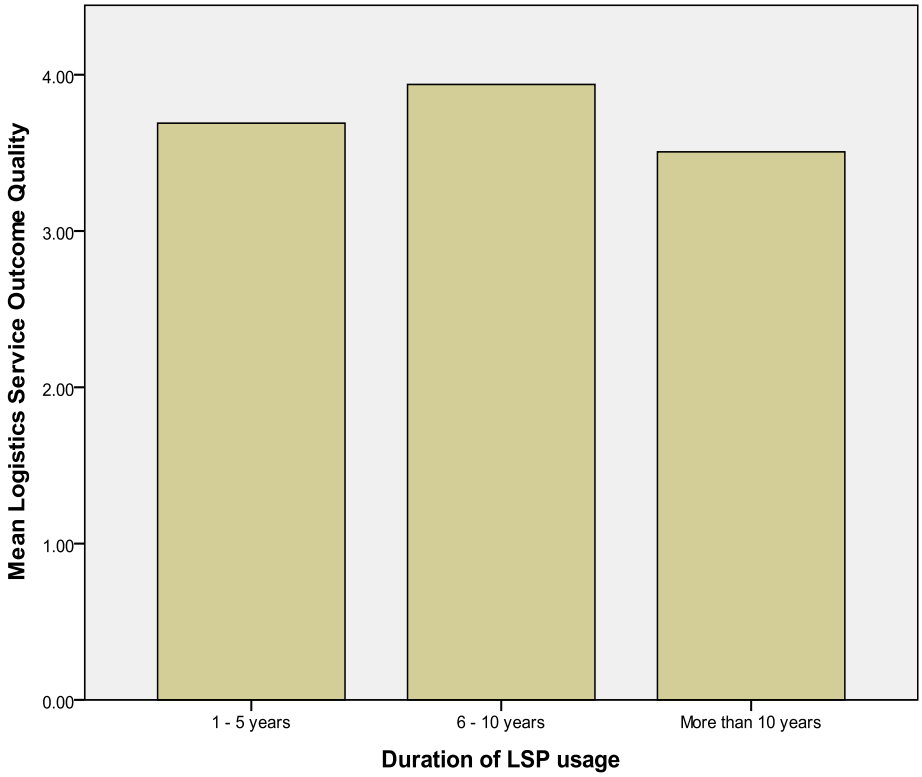

Figure 6.28 The Mean Score of Logistics Service Outcome Quality by the Duration of LSP Usage

For classification logistics service outcome quality based on availability of quality management program in LSP, the mean score for customers of LSP that have quality management program is lower than LSP that do not have one. However both score show above average values, 3.54 for customers of LSP that have quality management program and 3.73 for customers of LSP that do not have quality management

program (see Table 6.36 and Figure 6.29). This result indicates the availability of quality management program is not an assurance for higher logistics service outcome quality.

Table 6.36 The Mean Score of Logistics Service Outcome Quality by the Availability of Quality Management Program in LSP

Logistics Service Outcome Quality

Availability of Quality Management Program	Mean	N	Std. Deviation
Yes	3.5465	96	.51610
No	3.7346	36	.59068
Total	3.5978	132	.54171

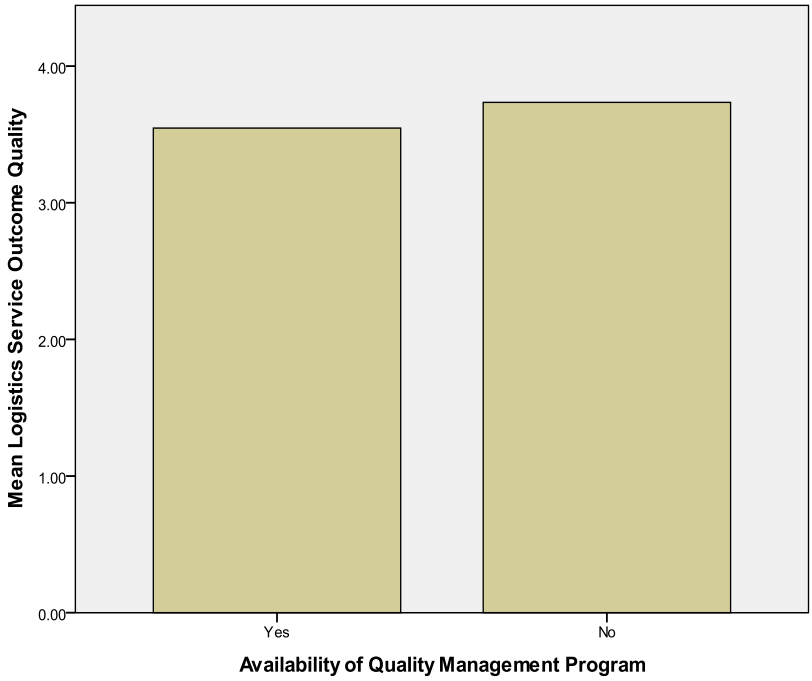

Figure 6.29 The Mean Score of Logistics Service Outcome Quality by the Availability of Quality Management Program in LSP

If logistics service outcome quality is classified by the number of LSP's employees, customers of LSP that have 5000 or more employees perceive logistics service outcome quality is slightly above average and lower than the others (3.03). Customers of LSP that have less than 100 employees have a higher mean score (3.69) compare to customers of LSP that have 100 to 499 employees (3.63) (see Table 6.37 and Figure 6.30). This result shows that LSP that have 5000 or more

employees are encouraged to improve their logistics service outcome quality for customers.

Table 6.37 The Mean Score of Logistics Service Outcome Quality by the Number of LSP's employees

Logistics Service Outcome Quality

Number of LSP's employees	Mean	N	Std. Deviation
Less than 100 employees	3.6946	76	.51160
100 - 499 employees	3.6390	40	.45039
5000 or more than 5000 employees	3.0350	16	.58047
Total	3.5978	132	.54171

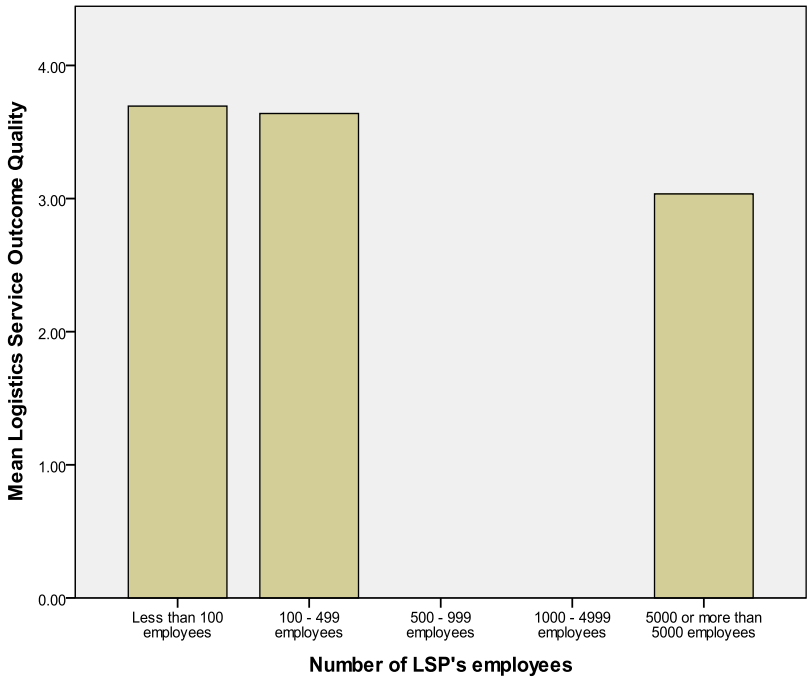

Figure 6.30 The Mean Score of Logistics Service Outcome Quality by the Number of LSP's employees

Quality management practice

The mean score of quality management practice is 3.52 with standard deviation 0.60. This means that the practice of quality management in LSP is above average. In detail, the mean score of commitment leadership is 3.51; strategic quality planning is 3.93; process management is 3.64; human resource management is 3.28; education and training is 3.33; customer focus is 3.47; data and information is 3.52 and performance evaluation is 3.49. It appears that strategic quality planning is the higher quality management practice while human resource management is the lower quality

management practice although its value is above average (see Table 6.38). This result indicates that LSP should improve their human resource management.

Table 6.38 The Descriptive Statistics of Quality Management Practice Variable

	N	Minimum	Maximum	Mean	Std. Deviation
Commitment Leadership	132	1.50	4.50	3.5152	.60827
Strategic Quality Planning	132	1.25	5.00	3.9318	.64581
Process Management	132	1.00	5.00	3.6439	.84941
Human Resource Management	132	1.75	4.75	3.2803	.68728
Education & Training	132	1.00	4.75	3.3333	1.00697
Customer Focus	132	1.00	4.75	3.4773	.76509
Data & Information	132	1.00	4.75	3.5227	.94377
Performance Evaluation	132	1.50	4.75	3.4924	.79234
Quality Management Practice	132	1.66	4.59	3.5246	.60723
Valid N (listwise)	132				

For classification of quality management practice based on the availability of quality management program in LSP, quality management practice in LSP that have quality management program are higher than LSP that do not have quality management program. However both mean scores are above average, 3.61 and 3.29 respectively (see Table 6.39 and Figure 6.31). This result indicates that the availability of quality management program support quality management practice.

Table 6.39 The Mean Score of Quality Management Practice by the Availability of Quality Management Program

Report

Quality Management Practice

Availability of Quality Management Program	Mean	N	Std. Deviation
Yes	3.6120	96	.54251
No	3.2917	36	.71026
Total	3.5246	132	.60723

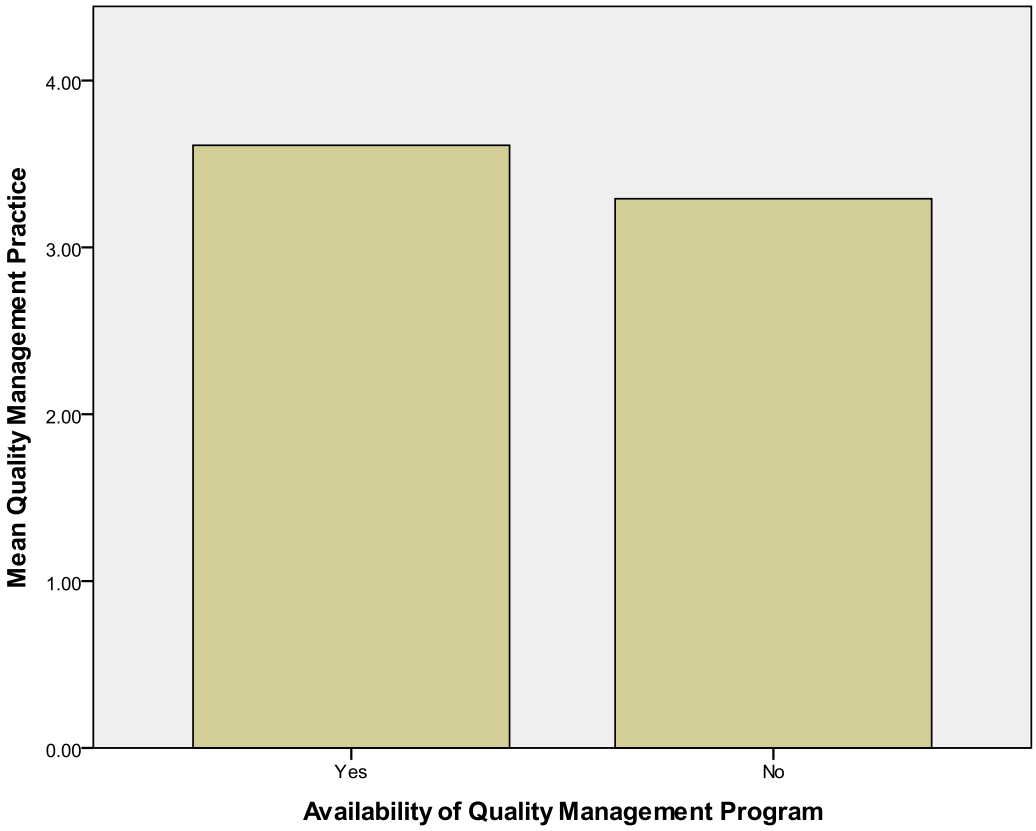

Figure 6.31 The Mean Score of Quality Management Practice by the Type of Industry

If quality management practice is classified by the number of LSP's employees, LSP that have 5000 or more employees have higher quality management practice while LSP that have 100 to 499 employees have lower quality management practice although both mean scores show above average value. LSP that have less than 100 employees have mean score of 3.58 (see Table 6.40 and Figure 6.32). These results indicate that LSP that have 100 to 499 employees are encouraged to improve their quality management practice.

Table 6.40 The Mean Score of Quality Management Practice by the Number of LSP's employees

Quality Management Practice

Number of LSP's employees	Mean	N	Std. Deviation
Less than 100 employees	3.5872	76	.64279
100 - 499 employees	3.2031	40	.47435
5000 or more than 5000 employees	4.0313	16	.00000
Total	3.5246	132	.60723

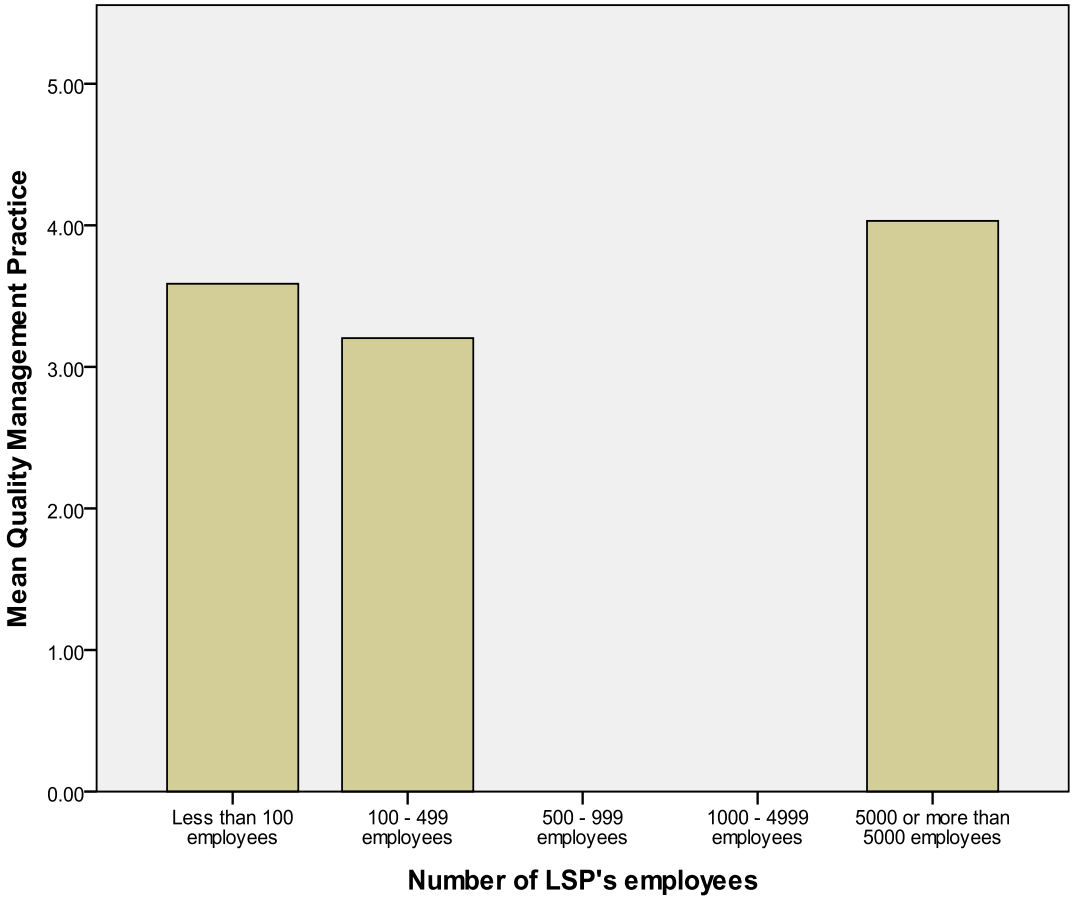

Figure 6.32 The Mean Score of Quality Management Practice by the Number of LSP's employees

Related to quality management practice, the LSP should improve human resource management. The fact that the availability of quality management program support quality management practice, it encourages the LSP to have the quality management program. Quality management is practiced mostly by the big LSP whilst the small and medium LSP should be encouraged to practice it.

6. 6 Summary

Sample

Total sample of this research are 132 respondents for the LSP's customer sample and 132 respondents for the LSP sample. For the LSP's customer sample, majority of respondents are from the manufacturing industry (36.4%). The rest of respondents involves import-export industry, chemical industry, textile industry and finance industry.

Regarding the number of employees of LSP's customers, the majority of respondents have less than 100 employees (39.4%) and a minority of respondents have 5000 or more employees (9.1%). The majority of sample has used the LSP for more than 10 years (66.7%)

For the LSP sample, 72.7% of respondents have quality management program whilst the rest do not have one. According to the number of LSP's employees, the majority of respondents have less than 100 employees (57.6%) and 12.1% of respondents have 5000 or more employees.

Logistics service value

The mean score of logistics service value is 3.34 with standard deviation 0.68. This means that the LSP's customers perceive value that they receive from the LSP is above average. For classification based on the type of industry, the chemical industry perceives higher logistics service value (4.00) while the import-export industry and textile industry perceive low logistics service value.

If logistics service value is classified by number of employees of LSP's customer, customers which have 5000 or more employees perceive higher logistics service value (4.00) while customers that have less than 100 employees and that have 500 to 999 employees perceive logistics service value that are slightly above average, 3.15 and 3.14 respectively.

In relation to duration of LSP usage, the difference of perceived logistics service value among groups is slight. The results show that the mean score for all of the perceptions are above average, 3.42 for 1 to 5 years, 3.56 for 6 to 10 years and 3.28 for more than 10 years.

There is no significant difference of mean score of logistics service value between customers of LSP that have quality management program and customers of LSP that do not have one. The mean scores of logistics service value for customers of LSP that have quality management program is 3.33 while for customers of LSP that do not have one is 3.38.

If logistics service value is classified by the number of LSP's employees, customers of LSP that have 5000 or more employees perceive lower logistics service value (2.81) compare to customers of LSP that have less than 100 employees perceive higher logistics service value (3.52).

Logistics service benefit

The mean score of logistics service benefit is 3.62 with standard deviation 0.66. This means that the LSP's customers perceive logistics service benefit that they receive from LSP as relative high. In detail, the mean score of LSP's customers perceive improving operational level is 3.81; improving customer service is 3.68; accessing resources is 3.45 and improving business performance is 3.55. From this result, customers perceive LSP contribute mainly to improving operational level and customer service.

For classification based on the type of industry, the finance industry and chemical industry perceive high logistics service benefit, 4.11 and 4.08 respectively. The import-export industry perceives lower logistics service benefit 3.34.

If the logistics service benefit is classified by the number of employees of LSP's customer, customers that have 5000 or more employees perceive higher logistics service benefit (4.08) while customers that have less than 100 employees perceive lower logistics service benefit (3.33).

In relation to duration of LSP usage, the difference of perceived logistics service benefit among groups is slightly. The mean score of the groups are considered high, 3.684 for 1 to 5 years, 3.687 for 6 to 10 years and 3.598 for more than 10 years.

There is no significant difference of the mean score of logistics service benefit between customers of LSP that have quality management program and customers of LSP that do not have one. The mean score are relatively high, 3.60 for customers of LSP that have quality management program and 3.67 for customers of LSP that do not have quality management program.

If logistics service benefit is classified by the number of LSP's employees, customers of LSP that have 5000 or more employees perceive lower logistics service benefit (2.88). Customers of LSP that have less than 100 employees has a mean score of 3.74 compare to customers of LSP that have 100 to 499 employees 3.70.

Logistics service cost

The mean score of logistics service cost is 2.73 with standard deviation 0.61. This means that the LSP's customers perceive logistics service cost that they should incur to get the LSP's service is relatively below average. In detail, the mean score for psychological cost is 2.94; conflict is 2.84; financial risk is 2.55; supply product risk is 2.63 and capability risk is 2.69. It appears that psychological cost is the higher cost perceived by customers while financial risk shows lower mean score value.

For classification based on industry type, the mean score of logistics service cost shows various perceptions. The mean score for chemical industry and manufacture industry are 3.53 and 3.14 respectively. The financial industry is 2.06, the import-export industry and textile industry are 2.49 and 2.25 respectively.

For classification based on number of employees of LSP's customer, the mean score of logistics service cost show various perceptions too. Customers that have 5000 or more employees perceive higher logistics service cost (3.53) while customers that have 100 to 499 employees perceive lower logistics service cost (2.12). Customers that have less than 100 employees perceive logistics service cost below average (2.80). Generally, the trend is the lower the customer size the lower perceived logistics service cost.

For classification based on duration of LSP usage, customers perceive logistics service cost below average, 2.77 for 1 to 5 years, 2.39 for 6 to 10 years and 2.76 for more than 10 years.

There is no significant difference of mean score of logistics service cost between customers of LSP that have quality management program and customers of LSP that do not have one. Results show that the mean score are below average, 2.70 and 2.82 respectively.

If logistics service cost is classified by the number of LSP's employees, customers of LSP that have 5000 or more employees perceive logistics service cost slightly above average (3.08). Customers of LSP that have less than 100 employees have a mean score slightly below average (2.93) while customers of LSP that have 100 to 499 employees perceive logistics service cost lower (2.21).

Logistics service process quality

The mean score of logistics service process quality is 3.41 with standard deviation 0.58. This means that the LSP's customers perceive logistics service process quality provided by the LSP is above average. In detail, the mean score for personnel contact quality is 3.54; information quality is 3.45; service order procedure is 3.83; shipment complaint handling is 3.28 and emergency service is 2.95. It appears that service order procedure is the higher logistics service process quality perceived by customers whilst emergency service is the lower mean score value. This result shows that the LSP should improve their emergency service.

For classification based on industry type, the mean score of logistics service process quality shows various perceptions. The mean score for finance industry is higher (4.06) compare to the chemical industry that perceives lower logistics service process quality (2.72). The mean score for import-export industry is 3.45, for the manufacture industry is 3.33 and for the textile industry is 3.51. This means the groups perceive logistics service process quality above average. This result indicates that LSP should improve logistics service process quality for chemical industry.

For classification based on number of employees of LSP's customer, the mean score of logistics service process quality show above average value except for LSP's customers that have 5000 or more employees. Customers that have 5000 or more employees perceive lower logistics service process quality (2.73) while customers that have 100 to 499 employees perceive higher logistics service process quality (3.83). The mean score for customers that have less than 100 employees is 3.37, for customers that have 500 to 999 employees is 3.51 and for customers that have 1000 to 4999 employees is 3.45. This result indicates that LSP should be encouraged to

improve logistics service process quality for customers that have 5000 or more employees.

For classification based on duration of LSP usage, customers perceive logistics service process quality to be above average. Customers that use LSP for 6 to 10 years perceive higher logistics service process quality (4.11). The mean score for other groups also show above average, 3.39 for 1 to 5 years and 3.29 for more than 10 years.

For classification logistics service process quality based on availability of quality management program in LSP, customers of LSP that have quality management program is lower than LSP that do not have one. However, both show above average value, 3.36 for customers of LSP that have quality management program and 3.56 for customers of LSP that do not have quality management program. This result indicates that the availability of quality management program is not an assurance for higher logistics service process quality.

If logistics service process quality is classified by the number of LSP's employees, customers of LSP that have 5000 or more employees perceive logistics service process quality below average and the value is lower than others (2.65). Customers of LSP that have 100 to 499 employees have a higher mean score (3.71) whilst customers of LSP that have less than 100 employees have a mean score of 3.42. This result shows that LSP that have 5000 or more employees should be encouraged to improve their logistics service process quality.

Logistics service outcome quality

The mean score of logistics service outcome quality is 3.59 with standard deviation 0.54. This means that the LSP's customers perceive logistics service outcome quality provided by LSP to be above average. In detail, the mean score for shipment quantity is 3.45; shipment quality is 3.89; shipment security is 3.75; timeliness is 3.17; innovative service is 3.61 and operational coverage area is 3.68. It appears that shipment quality is the higher logistics service outcome quality perceived by customers while timeliness shows lower mean score value although its value is above average. This result shows that LSP should improve their timeliness.

For classification based on industry type, the mean score of logistics service outcome quality shows above average value. The finance industry perceives higher logistics service outcome quality (4.11) compare to the chemical industry that perceives lower logistics service outcome (3.22). The mean score for import-export industry is 3.48, for manufacture industry is 3.68 and for textile industry is 3.62. All of the mean score show above average value. This result shows that LSP should improve logistics service outcome quality for the chemical industry.

For classification based on the number of employees of LSP's customer, the mean score of logistics service outcome quality shows above average value. Customers that have 5000 or more employees have a lower mean score (2.73) while customers that have 1000 to 4999 employees have a higher mean score (3.80). The mean score of logistics service outcome quality for customers that have less than 100 employees is 3.57 and for customers that have 100 to 499 employees is 3.76 and for customers that have 500 to 999 employees is 3.52. This result shows that LSP are encouraged to improve logistics service outcome quality for customers that have 5000 or more employees.

For classification based on duration of LSP usage, customers perceive logistics service outcome quality to be above average. Customers that use LSP for 6 to 10 years have a higher mean score value (3.93). The mean score of customers that use LSP for 1 to 5 years is 3.69 while the mean score of customers that use LSP for more than 10 years is 3.50. This result indicates that LSP should maintain their logistics service outcome quality continuously because it will prevent service saturation.

For classification logistics service outcome quality based on availability of quality management program in LSP, the mean score for customers of LSP that have quality management program is lower than LSP that do not have one. However both score show above average values, 3.54 for customers of LSP that have quality management program and 3.73 for customers of LSP that do not have quality management program. This result indicates the availability of quality management program is not an assurance for higher logistics service outcome quality.

If logistics service outcome quality is classified by the number of LSP's employees, customers of LSP that have 5000 or more employees perceive logistics service outcome quality is slightly above average and lower than the others (3.03). Customers of LSP that have less than 100 employees have a higher mean score (3.69) compare to customers of LSP that have 100 to 499 employees (3.63). This result shows that LSP that have 5000 or more employees are encouraged to improve their logistics service outcome quality for customers.

Quality management practice

The mean score of quality management practice is 3.52 with standard deviation 0.60. This means that the practice of quality management in LSP is above average. In detail, the mean score of commitment leadership is 3.51; strategic quality planning is 3.93; process management is 3.64; human resource management is 3.28; education and training is 3.33; customer focus is 3.47; data and information is 3.52 and performance evaluation is 3.49. It appears that strategic quality planning is the higher quality management practice while human resource management is the lower quality management practice although its value is above average. This result indicates that LSP should improve their human resource management.

For classification of quality management practice based on the availability of quality management program in LSP, quality management practice in LSP that have quality management program are higher than LSP that do not have quality management program. However both mean scores are above average, 3.61 and 3.29 respectively. This result indicates that the availability of quality management program support quality management practice.

If quality management practice is classified by the number of LSP's employees, LSP that have 5000 or more employees have higher quality management practice while LSP that have 100 to 499 employees have lower quality management practice although both mean scores show above average value. LSP that have less than 100 employees have mean score of 3.58. These results indicate that LSP that have 100 to 499 employees are encouraged to improve their quality management practice.

7 CHAPTER 7 - RESEARCH MODEL ANALYSIS

7. 1 Introduction

The objectives of this chapter are to analyse the research model by using partial least square program. The analysis involves the relationships between first order variables and second order variables and the relationships among first order variables. The rest of the chapter is organized as follow. Section 7.2 presents the partial least square analysis and section 7.3 provides a summary of this chapter.

7. 2 Partial Least Square Analysis

This study involves simultaneous relationships with more than one independent variables and it needs statistical tool that can examine these interrelationships simultaneously. For this reason, the study uses structural equation modelling technique to identify the structural relationship. SEM examines a relationship between dependent and independent variables simultaneously in which a dependent variable in a relationship becomes an independent variable in another relationship (Hair et al. 1998). SEM is a multivariate statistical technique that combines multiple regression and factor analysis techniques to estimate structural interrelationship.

A number of algorithms and software programs are available to estimate structural equation model. These techniques can be classified into covariance-based techniques and partial least square techniques (Chin 1998). PLS is selected over covariance-based SEM for two reasons. First, the sample size is below the recommended minimum for covariance-based methods. Second, observations are not truly independent because the same respondent answered questions for both the independent and dependent variables.

To identify the underlying dimension of each variable and to identify indicators that reflect each dimension, this research perform reliability and validity analysis. These processes is presented in Appendix D whilst the summary of reliability of validity analysis is presented in Table 7.1. This table shows that the research model has high reliability and validity scores.

Table 7.1 Composite Reliability and Cronbachs Alpha of Research Model

	Composite Reliability	Cronbachs Alpha
QMP (Quality Management Practice)	0.955863	0.951398
LSPQ (Logistics Service Process Quality)	0.932531	0.919178
LSOQ (Logistics Service Outcome Quality)	0.907653	0.890080
LSB (Logistics Service Benefit)	0.951672	0.944093
LSC (Logistics Service Cost)	0.937514	0.924244
LSV (Logistics Service Value)	0.970877	0.960004

The research hypotheses of this study are visualized in Figure 7.1. Output of PLS Program in examining the hypotheses is presented in Figure 7.2. This figure shows the interrelationships among the variables. The significance of relationship is presented in Figure 7.3. This figure shows the bootstrapping of the relationships. A relationship is significant when the bootstrapping value is more than 1.96 ($\alpha = 0.05$). The optimal inter-relationship is achieved by deleting the relationships that are not significant. The optimal interrelationship is presented in Figure 7.4 and its bootstrapping is presented in Figure 7.5.

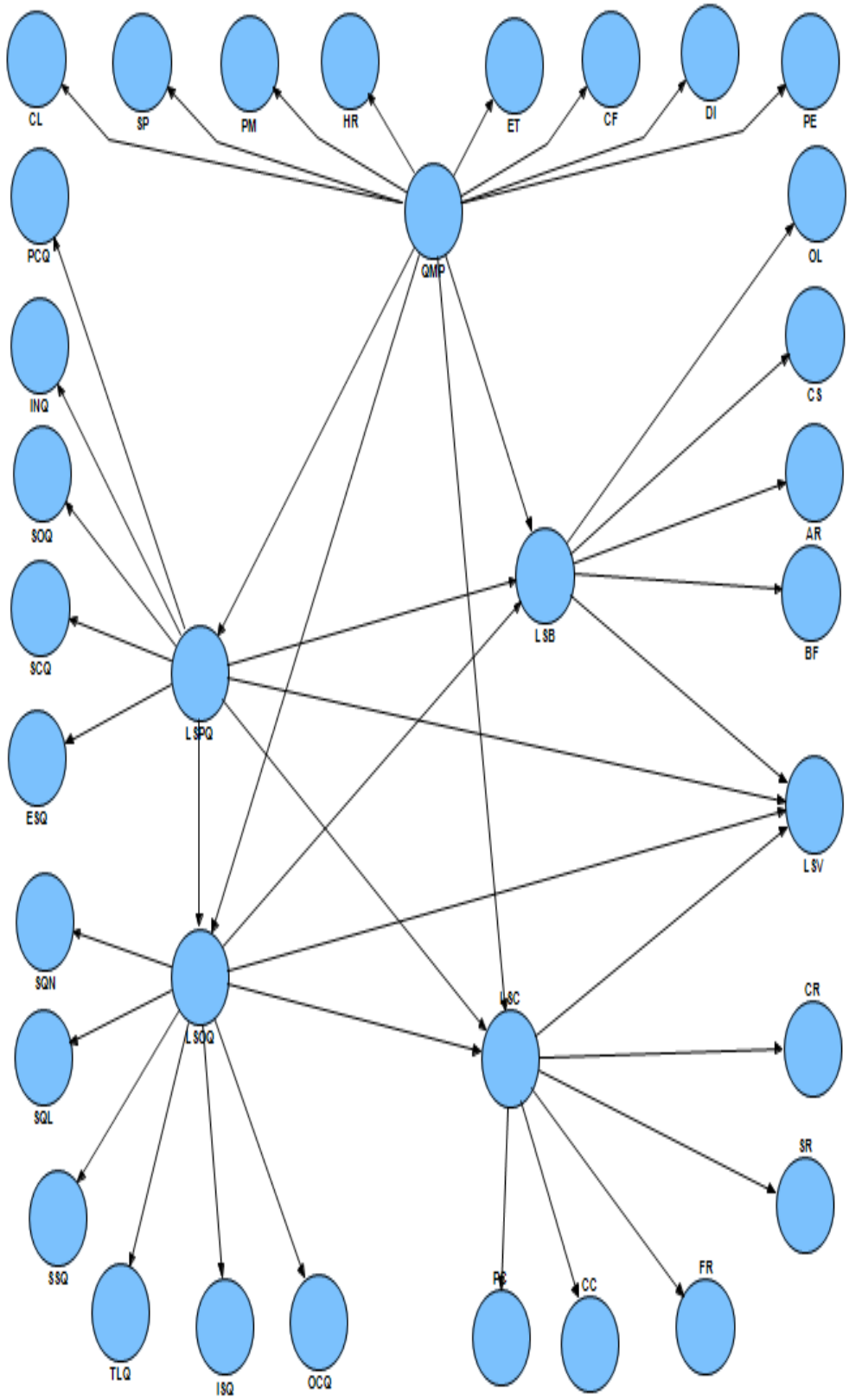

Figure 7.1 The Research Model

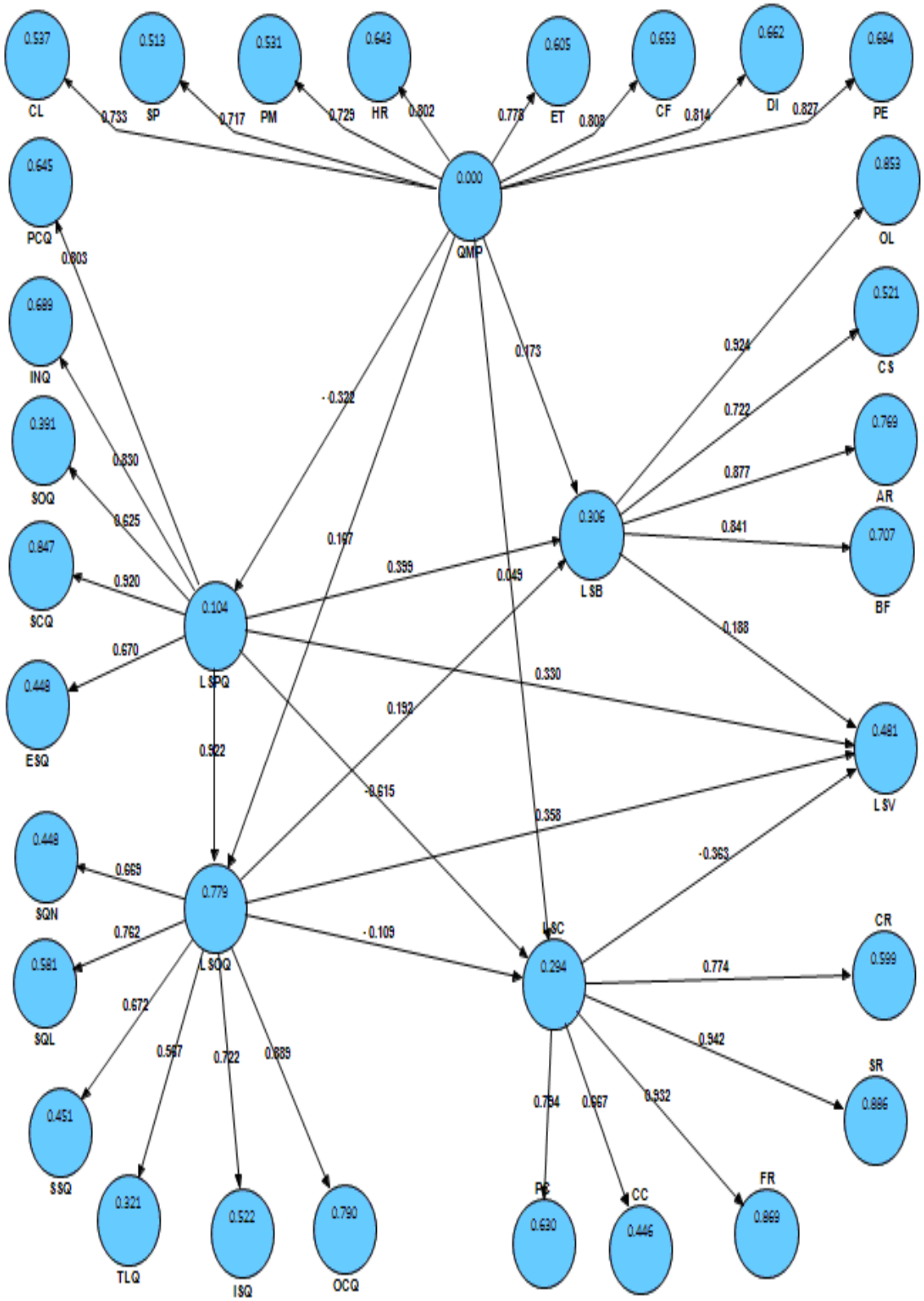

Figure 7.2 Interrelationship of Research Model

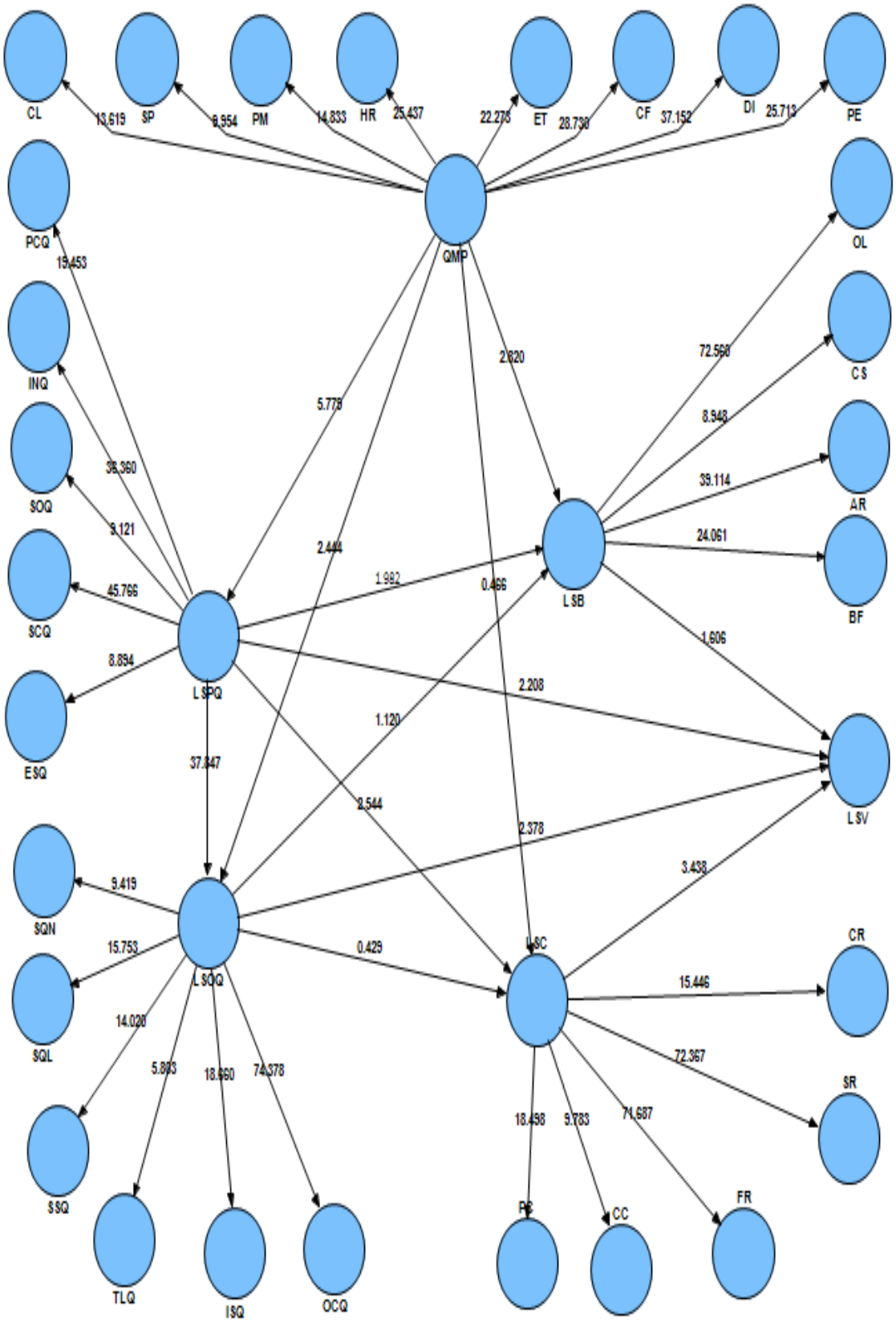

Figure 7.3 Bootstrapping of Research Model

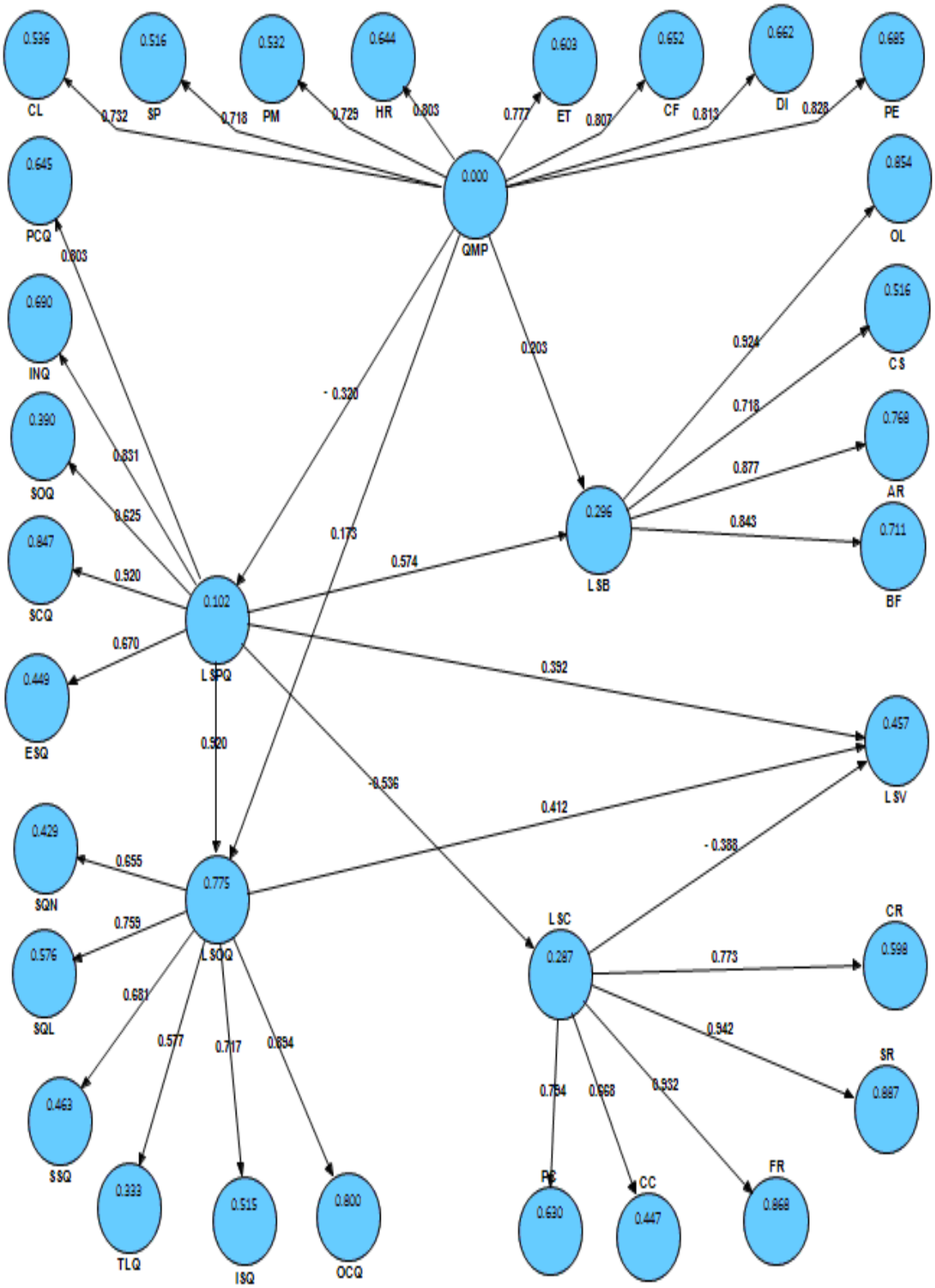

Figure 7.4 Optimal Interrelationship of Research Model

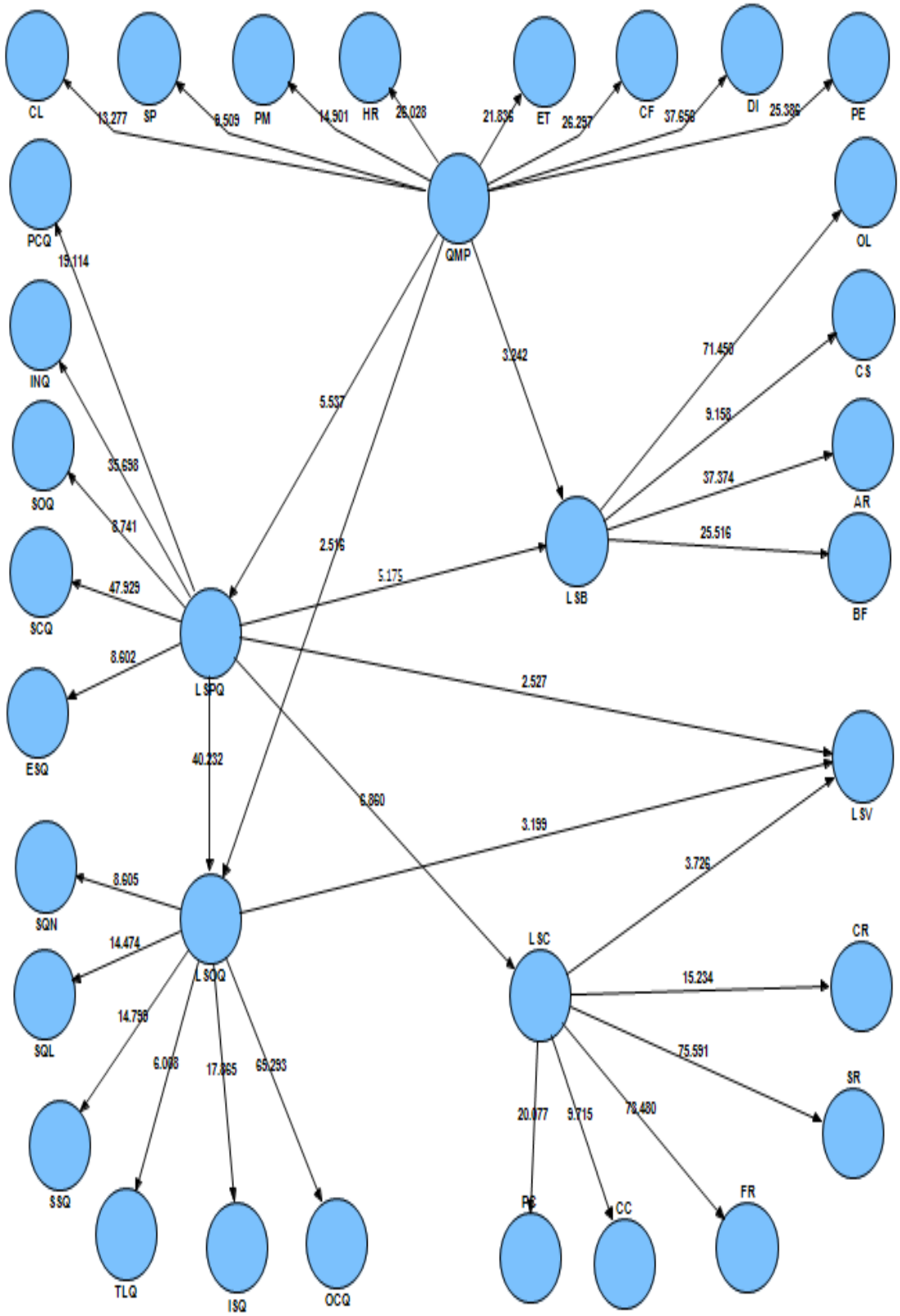

Figure 7.5 Bootstrapping of Optimal Interrelationship of Structural Research Model

The loading factor of first order variable to second order variable in Figure 7.4 is re-presented in Table 7.2. Each loading factor of first order variable has a high value to its second order variable. Path coefficients and their bootstrapping of each relationship are presented in Table 7.3.

Table 7.2 The Loading Factors of First Order Variable to Second Order Variables

First Order Variable	Second Order Variable				
	PM	LSPQ	LSOQ	LSB	LSC
CL (Top management commitment)	0.732	-	-	-	-
SP (Strategic quality planning)	0.718	-	-	-	-
PM (Process management)	0.729	-	-	-	-
HR (Human resources management)	0.803	-	-	-	-
ET (Education and training)	0.777	-	-	-	-
CF (Customer focus)	0.807	-	-	-	-
DI (Quality data and information)	0.813	-	-	-	-
PE (Performance evaluation)	0.828	-	-	-	-
PCQ (Personnel contact quality)	-	0.803	-	-	-
INQ (Information quality)	-	0.831	-	-	-
SOQ (Service order procedure)	-	0.625	-	-	-
SCQ (Shipment complaint handling)	-	0.920	-	-	-
ESQ (Emergency service)	-	0.670	-	-	-
SQN (Shipment quantities)	-	-	0.655	-	-
SQL (Shipment quality)	-	-	0.759	-	-
SSQ (Shipment security)	-	-	0.681	-	-
TLQ (Timeliness)	-	-	0.577	-	-
ISQ (Innovative service)	-	-	0.717	-	-
OCQ (Operational coverage area)	-	-	0.634	-	-
OL (Operational level)	-	-	-	0.924	-
CS (Customer service)	-	-	-	0.718	-
AR (Accessing resources)	-	-	-	0.877	-
BF (Business performance)	-	-	-	0.843	-
PC (Psychological cost)	-	-	-	-	0.784
CC (Conflict)	-	-	-	-	0.668
FR (Financial risk)	-	-	-	-	0.932
SR (Supply product risk)	-	-	-	-	0.942
CR (Capability risk)	-	-	-	-	0.773

Table 7.3 Path Coefficients and Their Bootstrapping of Each Relationship

Independent	Dependent	Path Coefficient	T Statistics
LSC	**LSV**	**-0.387520**	**3.725667**
LSOQ	**LSV**	**0.412479**	**3.198806**
LSPQ	**LSB**	**0.573585**	**5.175240**
LSPQ	**LSC**	**-0.535594**	**6.860239**
LSPQ	**LSOQ**	**0.920401**	**40.232115**
LSPQ	**LSV**	**0.392102**	**2.527016**
QMP	**LSB**	**0.203018**	**3.241832**
QMP	**LSOQ**	**0.172646**	**2.516014**
QMP	**LSPQ**	**-0.322035**	**5.537315**

Figure 7.1 visualize how the second order variables are reflected by their first order variables and visualize how the relationships among the second order variables. That table shows this research investigates the relationships among 6 second order variables consisted of quality management practice (QMP); logistics service process quality (LSPQ); logistics service output quality (LSOQ); logistics service benefit (LSB); logistics service cost (LSC) and logistics service value (LSV).

After PLS program is run, the program shows score of each relation (Figure 7.2) and its significance (Figure 7.3). For the relations which are not significant, they are not involved in the next processes. For instance, score of relation between LSB and LSV in Figure 7.3 is 1,906 and it is below the requirement score (for alpha 0,05 the minimum score of bootstrapping is 1,96) so that for the next process the relation between LSB and LSV is deleted.

After all of processes is performed, optimal interrelationship of research model (Figure 7.4) and its bootstrapping (Figure 7.5) are achieved. In order to enhance the score visualized in Figure 7.4 and Figure 7.5, the score is rewritten in Table 7.2 and Table 7.3. Table 7.2 shows that quality management practice (QMP) has 8 first order variables and each first order variable has score above 0,7. Logistics service benefit (LSB) has 4 first order variables and each score is above 0,7. However logistics service cost (LSC) has 4 first order variables above 0,7 and 1 first order variable above 0,66. These results mean their first order variables can be accepted to reflect second order variables. For logistics service process quality (LSPQ) and logistics service outcome quality (LSOQ) variable, these variables are need to further

developed because these variables have some first order variables below 0,7. Researcher need to investigate what first order variables reflecting LSPQ and LSOQ.

Table 7.3 shows score of relationship among second order variables investigated. There are 3 relationships having negative score; these are the relationship between LSC and LSV; between LSPQ and LSC; and between QMP and LSPQ. The first and second relationships are fit with theory in which the lower cost incurred by customers results in the higher value that customer perceived and the lower logistics service process quality delivered by LSP results in the higher logistics service cost perceived by customer. The relationship between QMP and LSPQ is different from theory. According to theory, the relationship is positive while the result shows negative. The analysis why it is happen and the interpretation of Table 7.3 will be summarized in Table 7.4 and the following explanation.

The results of hypotheses examination show that logistics service value is primarily derived from logistics service process quality, logistics service outcome quality and logistics service cost. In particular, logistics service process quality and logistics service outcome quality has a positive effect while logistics service cost has a negative effect on logistics service value. Customers perceive higher logistics service value when they perceive the logistics service process quality and logistics service outcome quality greatly exceed the cost they sacrifice to obtain the service. This study shows that customers evaluate LSP in term of logistics service process quality, logistics service outcome quality as well as logistics service cost.

The above results show that logistics service cost is one of the components considered by the LSP's customers in assessing the logistics service value. When customers perceive high logistics service process quality and high logistics service outcome quality but perceive high logistics service cost, they will perceive low logistics service value. Logistics service can create value for customers when logistics service delivered meet customer needs or requirements at low cost. LSP can improve logistics service value by increasing logistics service process quality and logistics service outcome quality and reducing cost or sacrifices associated with the service delivery process. This finding encourages the LSP to focus on logistics

service process quality, logistics service outcome quality and logistics service cost to increase logistics service value.

Table 7.4 Result of Examination of Hypotheses

Hypotheses		Results
H1	Logistics service benefit has a positive effect on logistics service value.	Partially supported (positive but not significant)
H2	Logistics service cost has a negative effect on logistics service value.	Supported
H3a	Logistics service process quality has a positive effect on logistics service outcome quality.	Supported
H3b	Logistics service process quality has a positive effect on logistics service benefit.	Supported
H3c	Logistics service process quality has a negative effect on logistics service cost.	Supported
H3d	Logistics service process quality has a positive effect on logistics service value	Supported
H4a	Logistics service outcome quality has a positive effect on logistics service benefit.	Partially supported (Positive but not significant)
H4b	Logistics service outcome quality has a negative effect on logistics service cost.	Partially supported (Negative but not significant)
H4c	Logistics service outcome quality has a positive effect on logistics service value.	Supported
H5a	Quality management practice has a positive effect on logistics service process quality.	Not supported (Negative and significant)
H5b	Quality management practice has a positive effect on logistics service outcome quality	Supported
H5c	Quality management practice has a positive effect on logistics service benefit	Supported
H5d	Quality management practice has a negative effect on logistics service cost	Not supported (Positive but not significant)

Separation of the process and outcome of logistics service quality dimension is a significant step to enrich service quality literature which states that the service quality concept incorporates functional or process dimension and technical or outcome dimension. The conceptualization is significant for the context validity service quality for industrial service, especially in logistics service. This condition occurs because logistics service involves people who take orders, deliver products and perform procedure for placing order and handling discrepancies. The interaction between customers, employees and procedures affects perception of the overall logistics service. These effects should be taken into consideration in the logistics service components. Thus, there are two elements that can exist in delivering service, they are logistics service process quality and logistics service outcome quality. Both are complementary and need to be integrated in the customer service. Findings of this study are inline with results reported in the Gronroos's study (2001) that considers service delivery having process and outcome characteristics.

This study identifies that logistics service process quality holds an important role to impact on logistics service outcome quality, logistics service benefit and logistics service cost. Logistics service process quality provided by the LSP has a positive impact on logistics service outcome quality and logistics service benefit and has a negative impact on logistics service cost. The higher the quality logistics service process delivered by the LSP, the better the quality logistics service outcome and benefit obtained by the customers. Conversely, the higher the quality of logistics services process delivered by the LSP, the lower the cost incurs in using LSP's service. This finding supports study of Aghazadeh (2003), Bienstock et al. (2008), Bolumole (2001), Daugherty et al. (1996), Elmuti (2003), Fabbe-Costes et al. (2009), Harland et al. (2005), Kremic et al. (2006), Maloni et al. (2006), Razzaque et al. (1998), Selviaridis et al. (2007), Wilding et al. (2004) and Yeung (2006).

This study also shows that logistics service outcome quality has a positive impact on logistics service value but its role is not significant to influence logistics service benefit and logistics service cost. This is a sign for the LSP that logistics service benefit and logistics service cost is dominantly influenced by the logistics service process quality. In order to increase logistics service benefit and logistics service value and decrease logistics service cost, LSP should more focus on the first order

variables of logistics service process quality consisted of personnel contact quality; information quality; service order procedure; shipment complaint handling and emergency service. These first order variables drive logistics service benefit, logistics service cost and as well as logistics service value.

In term of the direct effect of logistics service quality on logistics service value, logistics service outcome quality has higher effect on logistics service value. This results shows that LSP should develop logistics service process quality and logistics service outcome quality as well. If they focus on the direct effect to logistics service value, they should develop logistics service outcome quality. If they focus on the multi roles of logistics service quality, they should focus on logistics service process quality because it influences logistics service outcome quality, logistics service benefit, logistics service cost and logistics service value. This finding complement the previous research conducted by Rafiq et al. (2007) which shows that functional logistics service process quality is more significant than logistics outcome. This finding also support the study of Bienstock et al. (1997) which shows that in the distribution service context, logistics service outcome quality is more appropriate. This results shows that the LSP should focus both logistics service process and outcome quality depend on their goal. The finding also shows that the effect of logistics service quality to logistics service value is contextual. In fact different countries show different effects. This finding is in-line with studies conducted by Innis et al (1994); Novack et al. (1996); Tracey (1998); Lambert et al. (2000); Parasuraman et al (2000) and Rutner et al. (2000).

In term of the relation of logistics service outcome quality and logistics service cost and benefit, the results show the relations support the previous research but they are not significant. It means logistics service benefit and cost are more influenced by logistics service process quality than logistics service outcome quality. Thus if LSPs want to increase logistics service benefit and decrease logistics service cost, they should improve logistics service process quality prior to focus on logistics service outcome quality.

In term of logistics service benefit, it is not significant to impact logistics service value. The reason may be due to that its influence is lower than logistics service

process quality, logistics service outcome quality and logistics service cost. In particular, customers more focus on logistics service quality than logistics service benefit consisted of improving operational level; improving customer service; accessing resources; reducing cost; focusing on core business; increasing market share; improving business performance and developing business network. Customers may perceive logistics service benefit is a consequence of logistics service process quality. If logistics service process quality is high then the logistics service benefit will be high too. Thus logistics service value is more influenced by logistics service quality and cost than logistics service benefit. This finding can motivate the LSP to be more focus on the process of logistics service and cost.

The finding shows that quality management practice positively influences logistics service outcome quality and logistics service benefit. This result shows that quality management practice of LSP in Indonesia is more focus on logistics service outcome quality and logistics service benefit. Their quality management goals are to increase logistics service outcome and logistics service benefits. They give low attention on logistics service process quality.

The anomaly occurs in the effect of quality management practice on logistics service process quality. Theoretically quality management practice positively influences logistics service process quality; however the result shows that its effect is negative. This result needs further investigation in different business context and in different countries in order to identify the source of anomaly, as it is unknown at this stage whether this finding is only applicable in the Indonesian LSP context or whether it is applicable for general situation.

A provisional estimate why the relationship between quality management practice and logistics service process quality is negative comes from the difference of point of view between the LSP and its customers. QMP is assessed by the LSP whilst LSPQ is evaluated by LSP's customers. In point of view of the LSP, their QMP is high while in point of view of LSP's customers, LSPQ that LSP deliver is low. This result is an indicator that the LSP perception is different from the LSP's customer perception. Thus LSP should always keep feedback from their customers in term of their service. This result also means that the LSP should increase their logistics

service process quality. The LSP is more oriented towards logistics service outcome quality and logistics service benefit. However to improve logistics service outcome quality and logistics service benefit, LSP also need to improve logistics service process quality so that their process improvement is continuously.

The anomaly is also in-line with the results of descriptive analysis that identify the mean score of logistics service process quality is lower in LSP that have quality management program compare to in LSP that do not have one. Human resource management has been identified as one of quality management practice component that has a lower mean score. Logistics service process quality requires a well managed human resource management, thus it can be inferred that human resource management has a significant impact on logistics service process quality. The better the human resource management the higher quality the logistics service process will be.

In relation to logistics service cost, the role of quality management practice to influence logistics service cost is positive, but not significant. Theoretically the relationship should be positive. The result is different from theory because probably in the shorter term the practice of quality management incurs higher cost for the customers although its effect is low and not significant. However it is expected that for the longer term, quality management practice will increase efficiency of service and ultimately decrease logistics service cost. To summarize, this research identify the role of quality management practice to influence logistics service value is indirect through logistics service process quality and logistics service outcome quality.

In relation to theories used in this study, the findings support the customer value-based theory of the firm (Slater 1997) and the resource-based value theory of the firm (Barney 1991; Wernerfelt 1984). Both theories are complementary to explain the business development of LSP. The customer value-based theory of the firm needs to be complemented by the resource-based value theory of the firm because the LSP should perform the transformation process to deliver products or service which the customers wants. The LSP will succeed when it can provide superior value for its customers. The creation of customer value is the reason for its existence. The customer’s perspective should be a central perspective for the LSP. Value should be

created through transformation process of acquired resources. Quality management as one of the significant resources owned by the LSP contributes to create value to customers. Contribution of quality management depends on how far the level of their implementation in the organizations. To conclude, the LSP should focus on implementing quality management practice, increase logistics service process quality and logistics outcome quality and reduce logistics service cost in order to deliver value for their customers.

In term of the implication of research model for the LSPs in Indonesia, they should continuously keep feedback from their customers so that they have the same point of view with their customers about their service. Practice of quality management should be aimed not only to increase logistics service outcome quality and logistics service benefit but also to increase logistics service process quality and to decrease logistics service cost. In term of the direct effect to logistics service value, LSP should focus on logistics service outcome quality, logistics service process quality and logistics service cost as well. In term of the indirect effect to logistics service value, logistics service process quality has a critical role to drive logistics service outcome quality, logistics service benefit and logistics service cost. In term of the role of logistics service benefit, LSP's customers in Indonesia focus more on logistics service outcome quality, logistics service process quality and logistics service cost than on logistics service benefit.

7. 3 Summary

The results of hypotheses examination shows that logistics service value are primary derived from logistics service process quality, logistics service outcome quality and logistics service cost. In detail, logistics service process quality and logistics service outcome quality positively influence logistics service value and logistics service cost negatively influences logistics service value.

Logistics service process quality has an important role in positively influences logistics service outcome quality and logistics service benefit and negatively influences logistics service cost and thus positively impact on logistics service value.

Logistics service outcome quality has a positive effect on logistics service value but its role is not significant to influence logistics service benefit and logistics service cost. This is a sign for the LSP that logistics service benefit and logistics service cost is dominantly influenced by logistics service process quality.

Logistics service benefit is not significant to impact logistics service value. Its effect is lower than logistics service process quality, logistics service outcome quality and logistics service cost.

Quality management practice influences logistics service value indirectly through logistics service process and outcome quality. In detail, quality management practice positively influences logistics service outcome quality and logistics service benefit. The anomaly occurs in the effect of quality management practice on logistics service process quality. The negative effect of quality management practice to logistics service process quality is influenced by the lower of mean score value of human resource management in LSP. In relation to logistics service cost, the role of quality management practice to influence logistics service cost is positive but not significant. In the short term, the practice of quality management impacts on the higher cost that incurs by the customers.

In relation to theories used in this study, the findings support the customer value based theory of the firm and the resource-based value theory of the firm. Both theories are complementary to explain business developments of the LSP.

In term of the implication of research model for the LSPs in Indonesia, they should continuously keep feedback from their customers so that they have the same point of view with their customers about their service. Practice of quality management should be aimed not only to increase logistics service outcome quality and logistics service benefit but also to increase logistics service process quality and to decrease logistics service cost. In term of the direct effect to logistics service value, LSP should focus on logistics service outcome quality, logistics service process quality and logistics service cost as well. In term of the indirect effect to logistics service value, logistics service process quality has a critical role to drive logistics service outcome quality, logistics service benefit and logistics service cost. In term of the role of logistics

service benefit, LSP's customers in Indonesia focus more on logistics service outcome quality, logistics service process quality and logistics service cost than on logistics service benefit.

8 CHAPTER 8 - CONCLUSIONS

8. 1 Introduction

This chapter concludes presentation of the thesis. The chapter is organized as follow. Section 8.2 presents conclusions of research hypotheses. Section 8.3 discusses implication for theory and section 8.4 discusses implication for practice. The research contribution is presented in section 8.5 and the delimitations of scope and key assumptions are presented in section 8.6. Section 8.7 presents future research directions.

8. 2 Conclusions about Research Questions and Hypotheses

The majority of respondents for the LSP' customer sample are from manufacturing industry. The respondents have less than 100 employees and have used LSP for more than 10 years. The majority of respondents for the LSP sample have quality management program and have less than 100 employees (see Table 8.1).

Table 8.1 Nature of Respondents Profiles

Classification based on	Majority of Respondents	Minority of Respondents
The type of industry	Manufacturing industry	Chemical and finance industry
The number of employees of LSP's customers	Less than 100 employees	5000 or more than 5000 employees
The duration of LSP usage	More than 10 years	6 - 10 years
The availability of quality management program in LSP	Have quality management program	Do not have quality management program
The number of employees of LSP	Less than 100 employees	5000 or more than 5000 employees

By using the customer value-based theory of the firm and the resource-based value theory of the firm, this research has identified five variables that influence logistics service value, these are logistics service process quality, logistics service outcome quality, logistics service benefit, logistics service cost and quality management practice.

The LSP's customers perceive logistics service value that they receive from LSP is above average whilst the logistics service benefit is relatively high. They perceive

that the LSP contributes mainly to improving their operational level and customer service. In terms of logistics service cost, the LSP's customers perceive logistics service cost that they should incur to obtain the service offered by the LSP is relatively below average in which the psychological cost has higher cost and financial risk shows lower mean score value. Logistics service process quality perceived by the LSP's customers is above average in which service order procedure shows higher mean score whilst emergency service shows lower mean score value. Regarding logistics service outcome quality, LSP's customers perceive this variable to be above average. Shipment quality shows higher mean score and timeliness shows lower mean score value (see Table 8.2).

Table 8.2 The Nature of Components of Each Variable Measured in LSP's Customers

	The Mean Score	
Component of Variable	Higher	Lower
LSB	Improving Operational Level	Accessing Resources
LSC	Psychological Cost	Financial Risk
LSPQ	Service Order Procedure	Emergency Service
LSOQ	Shipment Quality	Timeliness

In relation to quality management practice in LSP organization, the mean score value shows above average value in which strategic quality planning shows higher mean score value while human resource management shows lower mean score value. Thus the LSPs in Indonesia should improve their human resource management and maintain strategic quality planning (Table 8.3).

Table 8.3 The Nature of Component of Quality Management Practice Variable

	High	**Low**
Component of Quality Management Practice	Strategic Quality Planning	Human Resource Management

From the thirteen research hypotheses presented in Chapter 1, the research findings support H2, H3a, H3b, H3c, H3d, H4c, H5b and H5c; partially support H1, H4a and H4b; and cannot support H5a and H5d. Findings from this research show that

logistics service value is mainly derived from logistics service process quality, logistics service outcome quality and logistics service cost. The logistics service cost and logistics service benefit are mainly influenced by logistics service process quality. The role of logistics service process quality is significant because it influences logistics service outcome quality, logistics service benefit, logistics service cost and logistics service value. Quality management practice influences logistics service value indirectly through logistics service process and outcome quality. Quality management practice influences logistics service outcome quality and logistics service benefit positively and significantly.

8. 3 Implication for Theory

The results of hypotheses examination shows that logistics service value are primary derived from logistics service process quality, logistics service outcome quality and logistics service cost. In detail, logistics service process quality and logistics service outcome quality positively influence logistics service value and logistics service cost negatively influences logistics service value.

Logistics service process quality has an important role in positively influences logistics service outcome quality and logistics service benefit and negatively influences logistics service cost and thus positively impact on logistics service value.

Logistics service outcome quality has a positive effect on logistics service value but its role is not significant to influence logistics service benefit and logistics service cost. This is a sign for the LSP that logistics service benefit and logistics service cost is dominantly influenced by logistics service process quality.

Logistics service benefit is not significant to impact logistics service value. Its effect is lower than logistics service process quality, logistics service outcome quality and logistics service cost.

Quality management practice influences logistics service value indirectly through logistics service process and outcome quality. In detail, quality management practice positively influences logistics service outcome quality and logistics service benefit. The anomaly occurs in the effect of quality management practice on logistics service

process quality. The negative effect of quality management practice to logistics service process quality is influenced by the lower of mean score value of human resource management in LSP. In relation to logistics service cost, the role of quality management practice to influence logistics service cost is positive but not significant. In the short term, the practice of quality management impacts on the higher cost that incurs by the customers.

In relation to theories used in this study, the research findings support the customer value-based theory of the firm and the resource-based value theory of the firm. Both theories are complementary to explain business developments of the LSP. By dividing logistics service quality into logistics service process and outcome, more in-depth analysis has been conducted. For each industry and country, the influence of logistics service process and outcome quality show different results. The results indicate that contextual condition influences the role of logistics service process and outcome quality. The results also show that logistics service directly influence logistics service value and indirectly influence logistics service value through logistics service cost.

8. 4 Implication for Practice

For classification mean score based on industry type, the logistics service value perceived by customers has above average value. However, LSP should focus more on the import-export industry and textile industry because both industries have mean score of logistics service value that is lower than other industries. Similarly with the logistics service value, logistics service benefit perceived by the import-export industry is lower than other industries. Thus the LSP should investigate benefit expected by this industry. According to the logistics service cost, LSP should decrease their cost especially for chemical and manufacturing industries. Logistics service cost incurs by both industries shows above average mean score value and is higher than other industries. In relation to logistics service process quality and logistics service outcome quality, the LSP should focus more on the chemical industry. This industry has lower mean score in these variables.

For classification mean score based on the number of employees of LSP’s customers, logistics service value perceived by customers show above average mean score

value. The LSP should focus more on customers that have less than 100 employees and customers that have 500 to 999 employees because both groups show mean score of logistics service value lower than other groups. Logistics service benefit perceived by customers that have less than 100 employees is also lower than other industry. Thus the LSP should investigate benefit expected for this group. According to the logistics service cost, the LSP should decrease their cost especially for customers that have 5000 or more employees and customers that have 1000 to 4999 employees. Logistics service cost incurs by both groups shows above average mean score value and is higher than other groups. Customers that are bigger in size (in term of employee) require more diverse services resulting in higher cost incurs by the customers. The LSP should investigate solutions to increase service efficiency so that the complexity and the number of services that can be delivered do not have an impact on cost. In relation to logistics service process quality and logistics service outcome quality, the LSP should focus more on customers that have 5000 or more employees. This group of customers has lower mean score value in these variables. The bigger the size of customers (in terms of number of employee) usually leads to higher expectation for their LSP.

The difference of mean score of logistics service value and logistics service benefit based on duration of LSP usage is not significant. However, customers that use LSP for 6 to 10 years show decreasing mean score value for these variables. Thus, LSP should focus more on this group. The reason can be explained by service saturation. The LSP should improve their service continuously so that longer service usage does not impact on service saturation. According to logistics service cost, the LSP should decrease their cost especially for customers that use the LSP for 1 to 5 years and customers that use LSP for more than 10 years. Logistics service cost incurs by both groups are higher than the rest of the group although the mean score value shows below average value. Similarly with the logistics service cost, the LSP should improve logistics service process quality and logistics service outcome quality for customers that use LSP for 1 to 5 years and customers that use LSP for more than 10 years. These groups have lower mean score value on these variables.

The anomaly of findings compare to theory appears in classification based on availability of quality management program. The mean score of logistics service

value, logistics service benefit, logistics service process quality and logistics service outcome quality of customers of LSP that do not have quality management program are higher than LSP that have quality management program although the difference in mean score of these variables between groups is not significant. These results show that the availability of quality management program does not ensure higher mean score of logistics service value, logistics service benefit, logistics service process quality and logistics service outcome quality. The LSP should optimize the role of quality management program to support delivering high value for their customers. Aligning research finding and theory rests on the logistics service cost variable. The LSP that has quality management program has lower cost compare to LSP that does not have one.

For classification of mean score based on the number of employees of LSP, logistics service value, logistics service benefit, logistics service process quality and logistics service outcome quality perceived by customers indicate above average value except for customers of LSP that have 5000 or more employees. Thus LSP that have 5000 or more employees should improve their service because their customers perceive these variables to be lower and have below average value. Larger size LSP does not ensure that they can provide logistics service value, logistics service benefit, logistics service process quality and logistics service cost better than the smaller LSP. According to logistics service cost, customers of LSP that have 5000 or more employees perceive higher mean score value for this variable. Thus, the LSP should decrease the logistics service cost for their customers and investigate causes and sources of higher cost. For example questions can be asked whether higher cost is a result of high base cost or is it due to inefficiency in their services.

The nature of each variable measured in LSP’s customers is summarized in Table 8.4 and 8.5. The variables that need improvement and innovation of LSP are presented in Table 8.6.

Table 8.4 The Nature of Each Variable Measured in LSP's Customers

Classification based on	**LSV**		**LSB**		**LSC**		**LSPQ**		**LSOQ**	
	High	**Low**	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**	**Low**
The Type of Industry	Chemical industry	Import-Export Industry Textile Industry	Finance industry Chemical industry	Import-Export Industry	Chemical Industry Manufacturing Industry	Finance industry	Finance industry	Chemical Industry	Finance industry	Chemical Industry
The Number of Employees of LSP's Customers	Customers that have 5000 or more than 5000 employees	Customers that have less than 100 employees Customers that have 500-999 employees	Customers that have 5000 or more than 5000 employees	Customers that have less than 100 employees	Customers that have 5000 or more than 5000 employees Customers that have 1000 to 4999 employees	Customers that have 100 to 499 employees	Customers that have 100 to 499 employees	Customers that have 5000 or more than 5000 employees	Customers that have 100 to 499 employees Customers that have 1000 to 4999 employees	Customers that have 5000 or more than 5000 employees

Table 8.5 The Nature of Each Variable Measured in LSP's Customers (continued)

Classification based on	**LSV**		**LSB**		**LSC**		**LSPQ**		**LSOQ**	
	High	**Low**	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**	**Low**
The Duration of LSP usage	Customers that use LSP for 6 to 10 years	Customers that use LSP for more than 10 years	Customers that use LSP for 6 to 10 years	Customers that use LSP for more than 10 years	Customers that use LSP for 1-5 years Customers that use LSP for more than 10 years	Customers that use LSP for 6 to 10 years	Customers that use LSP for 6 to 10 years	Customers that use LSP for 1-5 years Customers that use LSP for more than 10 years	Customers that use LSP for 6 to 10 years	Customers that use LSP for 1-5 years Customers that use LSP for more than 10 years
The Availability of Quality Management Program in LSP	LSP that do not have QMP	LSP that have QMP	LSP that do not have QMP	LSP that have QMP	LSP that do not have QMP	LSP that have QMP	LSP that do not have QMP	LSP that have QMP	LSP that do not have QMP	LSP that have QMP
The Number of Employees of LSP	Customers of LSP that have less than 100 employees	Customers of LSP that have 5000 or more than 5000 employees	Customers of LSP that have less than 100 employees	Customers of LSP that have 5000 or more than 5000 employees	Customers of LSP that have 5000 or more than 5000 employees	Customers of LSP that have 100 to 499 employees	Customers of LSP that have 100 to 499 employees	Customers of LSP that have 5000 or more than 5000 employees	Customers of LSP that have less than 100 employees	Customers of LSP that have 5000 or more than 5000 employees

Table 8.6 Focus of LSP to Improve Their Service for Their Customers

Classification based on	**LSP should improve**				
	LSV for	**LSB for**	**LSC for**	**LSPQ for**	**LSOQ for**
The Type of Industry	Import-Export Industry Textile Industry	Import-Export Industry	Chemical Industry Manufacturing Industry	Chemical Industry	Chemical Industry
The Number of Employees of LSP's Customers	Customers that have less than 100 employees Customers that have 500-999 employees	Customers that have less than 100 employees	Customers that have 5000 or more than 5000 employees Customers that have 1000 to 4999 employees	Customers that have 5000 or more than 5000 employees	Customers that have 5000 or more than 5000 employees
The Duration of LSP usage	Customers that use LSP for more than 10 years	Customers that use LSP for more than 10 years	Customers that use LSP for 1-5 years Customers that use LSP for more than 10 years	Customers that use LSP for 1-5 years Customers that use LSP for more than 10 years	Customers that use LSP for 1-5 years Customers that use LSP for more than 10 years
The Availability of Quality Management Program in LSP	LSP that have QMP	LSP that have QMP	LSP that do not have QMP	LSP that have QMP	LSP that have QMP
The Number of Employees of LSP	Customers of LSP that have 5000 or more than 5000 employees	Customers of LSP that have 5000 or more than 5000 employees	Customers of LSP that have 5000 or more than 5000 employees	Customers of LSP that have 5000 or more than 5000 employees	Customers of LSP that have 5000 or more than 5000 employees

In relation to quality management practice in LSP organization, the mean score value shows above average value in which strategic quality planning shows higher mean score value while human resource management shows lower mean score value. Thus the LSPs in Indonesia should improve their human resource management. However, the results indicate that the LSPs in Indonesia have high strategic quality planning. This result encourages the LSPs in Indonesian to maintain that component of quality management practice.

Quality management practice in LSP that has quality management program is higher than LSP that does not have quality management program. This result shows that the availability of quality management program supports the implementation and practice of quality management.

Factually quality management is mainly implemented or practiced by LSPs that have 5000 or more employees. The result shows lower implementation of quality management in LSPs that have 100 to 499 employees. Thus this group of LSPs should consider having quality management program and implements it in the organization practice. The nature of quality management practice is presented in Table 8.7.

Table 8.7 The Nature of Quality Management Practice Variable

	High	**Low**
The mean score of quality management practice	In LSP that have quality management program	In LSP that do not have quality management program
	In LSP that have 5000 or more than 5000 employees	In LSP that have 100 to 499 employees

In term of the implication of research model for the LSPs in Indonesia, they should continuously keep feedback from their customers so that they have the same point of view with their customers about their service. Practice of quality management should be aimed not only to increase logistics service outcome quality and logistics service benefit but also to increase logistics service process quality and to decrease logistics

service cost. In term of the direct effect to logistics service value, LSP should focus on logistics service outcome quality, logistics service process quality and logistics service cost as well. In term of the indirect effect to logistics service value, logistics service process quality has a critical role to drive logistics service outcome quality, logistics service benefit and logistics service cost. In term of the role of logistics service benefit, LSP's customers in Indonesia focus more on logistics service outcome quality, logistics service process quality and logistics service cost than on logistics service benefit.

Based on the results in this study, it is desirable for the LSP industry in Indonesia to improve logistics service benefit and logistics service value for the import-export industry, especially for customers that have less than 100 employees and use LSP for more than 10 years. The LSP industry in Indonesia should also seek to improve logistics service cost, logistics service process quality and logistics service outcome quality for the chemical industry, especially for customers that have 5000 or more employees and use LSP for 1 to 5 years. This implication should be considered particularly for LSP that have 5000 or more employees.

8. 5 Research Contributions

This research contributes to theory development as well as to practical concern. For theory development, this research contributes to identify variables that influence logistics service value. The research findings can be used to evaluate theory about creating logistics service value and the role of logistics service quality in influencing logistics service value directly or indirectly through logistics service benefit and logistics service cost. The research findings also contribute to understanding the extent of quality management practice in influencing logistics service quality, logistics service benefit, logistics service cost and which in turn influence the logistics service value.

Literature has shown that current research has mainly focused on how logistics service quality can create logistics service value and has disregarded other variables such as logistics service benefit, logistics service cost and quality management practices. The research findings show that in creating logistics service value, logistics service process and outcome quality and logistics service cost should be emphasized.

In relation to theory enrichment, it is desirable to use other theories to investigate logistics service value. In this research the customer value-based theory of the firm and the resource-based value theory of the firm are used to explain how to create logistics service value. The result of this research shows that although quality management practice do not directly influence the logistics service value, its role is significant to influence logistics service outcome quality in which logistics service outcome quality positively and significantly influence logistics service value.

For practical concern, this research contributes to evaluation of the LSP industry in Indonesia in term of quality management practice in the LSP industry and contributes to understanding the perception of LSP's customers on logistics service quality, logistics service cost, logistics service benefit and logistics service value. From this research finding, the LSP industry in Indonesia has information in term of the variables and industries that require more attentions.

8. 6 Delimitations of Scope and Key Assumptions

The scope of this work is limited for identifying the main variables influencing logistics service value based on the customer value-based theory of the firm and the resource-based value theory of the firm. The research framework identified is used to investigate LSPs and their customers in Indonesia as the target population. The sample frame of this study consists of two sources. For the population of LSP, the sample frame is identified from the Indonesian Forwarder and Logistics Providers Association membership; while for the population of LSP's customers, the sample frame is identified from the information given by the respondents in the LSP organisation. Analysis of demographic data is limited by frequency and percentage analysis while analysis of the nature of variables influencing logistics service value in LSP industry in Indonesia is limited based on the mean score and standard deviation of each variables.

The scope of this work is limited by several key assumptions. The theoretical framework identified from literature review is sourced from valid and reliable prior research and represents the field or practical condition. The sample frame used is representative of the population and the respondents have sufficient organizational

and functional experience, possess necessary information to evaluate the variables and are qualified to complete the questionnaire.

8. 7 Future Research Directions

For future research, the extensive literature review indicates several research opportunities that require in-depth study. Current research shows that little or no research has been conducted to investigate the compatibility between outsourcing reason and criteria used by companies to select LSP. Thus research that investigates relationship between outsourcing reasons and selection criteria can be conducted.

In term of capability and performance, research which investigates fundamental capability in the LSP industry is limited. Thus further research can be conducted to investigate key capability required in the LSP industry for each business segment of customers. In addition, research on identifying contributions of LSP capability on performance of LSPs and their customers can be pursued. In fact the development of performance measurement for the LSP has not shown satisfactory result and a performance measurement model for the LSP can be developed to investigate impact of LSP performance for LSP and their customers.

In relation to growth strategy, LSPs have developed various growth strategies such as balance strategy between focusing on problem solving capability and focusing on customer adaptation; balance strategy between managing internal resources, capability and external environment. For future research, investigations that examine success level of each strategy can be developed.

Finally the LSP industry requires high investment in technology adoption. Thus research that investigates positive and negative impacts of technology on the performance of LSP can be conducted; for example perception of customers in technology adoption by the LSP and its impact on relationship outcome.

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APPENDIX A QUESTIONNAIRE IN ENGLISH VERSION

Questionnaire I
Quality Management Practice Questionnaire

This study investigates the role of quality management practices in influencing logistics service quality and customer value. This questionnaire consists of two sections. Section 1 measures quality management practice in your organization. Section 2 focuses on the general information of your organization.

Section 1

This section asks you some questions about quality management practice in your organization. Please tick the number which reflects your feelings towards the implementation level of the following quality management practices in your organization. For example, if you feel the implementation level of the quality management practice is very low, please tick 1. If you feel the implementation level of the quality management practice is very high, please tick 5. If your feeling is in the middle, please tick the appropriate number.

		Very Low		Me-dium		Very High
1.	To what extent your top management stimulates organization to implement quality management towards achieving a shared vision?	1	2	3	4	5
2.	To what extent your top management has a commitment and supports to quality management through a plan of action?	1	2	3	4	5
3.	To what extent your top management is responsible to control quality management process?	1	2	3	4	5
4.	To what extent your top management responds to the change of customer requirement?	1	2	3	4	5
5.	To what extent an organizational mission statement has been communicated throughout the company and is supported by employees?	1	2	3	4	5
6.	To what extent your organization has a comprehensive and structured planning process for short and long-term goals?	1	2	3	4	5
7.	To what extent your organization incorporates the needs of all stakeholders in developing organization objectives, plans and policies?	1	2	3	4	5
8.	To what extent your organization has a written statement of strategy covering all business operations?	1	2	3	4	5

		Very Low		Me-dium		Very High
9.	To what extent your organization has clear, standardized and documented service procedures which are well understood by employees?	1	2	3	4	5
10.	To what extent your organization continually audits delivered service quality?	1	2	3	4	5
11.	To what extent your organization encourages innovation in all aspects?	1	2	3	4	5
12.	To what extent your organization emphasizes the continuous improvement of quality in all work processes?	1	2	3	4	5
13.	To what extent your organization has an organizational selection, recruitment and development process, including career path planning for all employees?	1	2	3	4	5
14.	To what extent your organization has empowered and involved employees in workplace?	1	2	3	4	5
15.	To what extent employee satisfaction is formally and regularly measured in your organization?	1	2	3	4	5
16.	To what extent your organization maintains a work environment that contributes to the health, safety and well-being of all employees?	1	2	3	4	5
17.	To what extent your organization encourages employees to improve knowledge and skill through education and training?	1	2	3	4	5
18.	To what extent resources in your organization are available for employee education and training?	1	2	3	4	5
19.	To what extent your organization gives quality awareness education to employees?	1	2	3	4	5
20.	To what extent your organization gives specific work-skills training to employees?	1	2	3	4	5
21.	To what extent your organization actively and regularly seeks customer inputs to identify their needs and expectations?	1	2	3	4	5

		Very Low		Me-dium		Very High
22.	To what extent your organization maintains a close relationship with customers and provides them an easy channel to communicate their aspirations?	1	2	3	4	5
23.	To what extent your organization has an effective process for resolving customers' complaints?	1	2	3	4	5
24.	To what extent your organization systematically and regularly measure customer satisfaction?	1	2	3	4	5
25.	To what extent your organization harnesses information to improve its services?	1	2	3	4	5
26.	To what extent your organization has precise data about the competition used to identify areas of improvement?	1	2	3	4	5
27.	To what extent your organization's decisions regarding quality improvement are always based on objective data?	1	2	3	4	5
28.	To what extent up-to-date data and information of your organization is available for who need it?	1	2	3	4	5
29.	To what extent your organization analyses organizational performance to identify and develop improvements?	1	2	3	4	5
30.	To what extent your organization has an effective performance measurement system to track overall organizational performance?	1	2	3	4	5
31.	To what extent senior managements in your organization regularly have a meeting to review company's performance and use it as a basis for decision-making?	1	2	3	4	5
32.	To what extent your organization engages in an active competitive benchmarking program to measure your organization performance against the best practice in industry?	1	2	3	4	5

Section 2

This section aims to know more about you and your organization. Your answer will be kept strictly confidential and used for classification purpose only

1. The name of your organization:

2. Does your organization have a formal quality program?

3. The number of employees in your organization (approximately)?
   a) Below 100
   b) 100-499
   c) 500-999
   d) 1000-4999
   e) 5000 or above

4. Please indicate the five company names using your organization' services on the contract basis

   a) ……

   b) ……

   c) ……

   d) ……

   e) ……

Thank you for your participation in this study

Questionnaire II

This study investigates the role of logistics service quality in influencing customer perceived logistics service value. This questionnaire consists of five sections. Section 1 measures logistics service quality provided by LSP. Section 2 measures cost of logistics service. Section 3 measures benefits of logistics service. Section 4 measures customer perceived value towards LSP's logistics service. Section 5 focuses on the general information of your organization.

Section 1
Logistics service quality

This section confirm to you some statements about the logistics service quality that you receive from this LSP:
……..
Please tick the number that best reflects your feelings towards that LSP. For example, if you are strongly disagree with the statement, please tick 1. If you are strongly agree with the statement, please tick 5. If your feeling is in the middle, please tick the appropriate number.

		Strongly Disagree		Me-dium		Strongly Agree
1.	The LSP contact person makes an effort to understand the need of your organization	1	2	3	4	5
2.	Problems in services are resolved by the LSP contact person	1	2	3	4	5
3.	The service knowledge or experience of LSP personnel is adequate	1	2	3	4	5
4.	The information communicated by the LSP is timely	1	2	3	4	5
5.	The information communicated by the LSP is accurate	1	2	3	4	5
6.	The information communicated by the LSP is complete	1	2	3	4	5
7.	Service order procedures in the LSP are effective	1	2	3	4	5
8.	Service order procedures in the LSP are easy to use	1	2	3	4	5
9.	Service order procedures in the LSP do not take much time	1	2	3	4	5

		Strongly Disagree		Me-dium		Strongly Agree
10.	Correction of delivered quality complaint is satisfactory	1	2	3	4	5
11.	The service complaint procedures in the LSP is effective	1	2	3	4	5
12.	Response to delivered quantity complaint is satisfactory	1	2	3	4	5
13.	The LSP responsive to unforeseen problem and unexpected events	1	2	3	4	5
14.	The LSP make effort to help in emergencies	1	2	3	4	5
15.	The LSP recommend alternative actions when unforeseen problems arise	1	2	3	4	5
16.	Shipment quantities are not challenged	1	2	3	4	5
17.	Difficulties never occur due to maximum shipment quantities	1	2	3	4	5
18.	Difficulties never occur due to minimum shipment quantities	1	2	3	4	5
19.	Shipment rarely contain the wrong items	1	2	3	4	5
20.	Shipments rarely contain an correct quantity	1	2	3	4	5
21.	Damage rarely occurs as a result of the transport mode or carrier	1	2	3	4	5
22.	The LSP secure confidentiality of order data and information from your organization	1	2	3	4	5
23.	The LSP protect cargo safety and risk	1	2	3	4	5
24.	The LSP is capable to handle hazardous material	1	2	3	4	5
25.	Time between shipping and receiving delivery is short	1	2	3	4	5
26.	Deliveries arrive on the date promised	1	2	3	4	5

		Strongly Disagree		Me-dium		Strongly Agree
27.	Time required to deliver returned shipment is short	1	2	3	4	5
28.	The LSP provide modern cargo tracing system	1	2	3	4	5
29.	The LSP has modern vehicles, machinery equipment and pick up system	1	2	3	4	5
30.	The LSP has good techniques in cargo movement and distribution	1	2	3	4	5
31.	The LSP has a wide service network	1	2	3	4	5
32.	The branch office of LSP is easy to access	1	2	3	4	5
33.	The LSP' service reach isolated area	1	2	3	4	5

Section 2
Logistics Service Cost

This section asks you some questions about cost of logistics service that you receive from this LSP:
…….....
Please tick the number that best reflects your feelings towards the level of the following sacrifice that must be spent to utilize that LSP' service. For example, if you feel the following sacrifice is very low, please tick 1. If you feel the following sacrifice is very high, please tick 5. If your feeling is in the middle, please tick the appropriate number.

		Very Low		Me-dium		Very High
1.	To what extent the service price of this LSP	1	2	3	4	5
2.	To what extent the flexibility of payment period in this LSP	1	2	3	4	5
3.	To what extent the price discounts of this LSP	1	2	3	4	5
4.	To what extent the time required to order this LSP' service	1	2	3	4	5
5.	To what extent the time required to coordinate and communicate between your organization and this LSP	1	2	3	4	5
6.	To what extent the time required to monitor LSP performance	1	2	3	4	5

		Very Low		Me-dium		Very High
7.	To what extent the effort which should be performed to receive the LSP' service	1	2	3	4	5
8.	To what extent the effort which we should be performed to reach an agreement with this LSP's employees	1	2	3	4	5
9.	To what extent the effort which we should be performed to monitor LSP performance	1	2	3	4	5
10.	To what extent the psychological discomfort due to received poor service performance	1	2	3	4	5
11.	To what extent the psychological discomfort due to delay delivery	1	2	3	4	5
12.	To what extent the psychological discomfort due to unforeseen problem and unexpected events	1	2	3	4	5
13.	To what extent the complaints occur during your organization uses this LSP' service	1	2	3	4	5
14.	To what extent your organization has the disagreements with this LSP within solving the problems	1	2	3	4	5
15.	During using this LSP' service, to what extent your organization should defend argument in order to achieve your organization objectives	1	2	3	4	5
16.	By using this LSP' service, to what extent the financial risk associated with the lost or damaged shipment	1	2	3	4	5
17.	By using this LSP' service, to what extent the financial risk due to delay product inbound and outbound flow	1	2	3	4	5
18.	To what extent this LSP provides the financial warranty of the lost or damaged shipment	1	2	3	4	5
19.	By using this LSP' service, to what extent the supply product risk	1	2	3	4	5
20.	By using this LSP' service, to what extent the increasing inventory risk	1	2	3	4	5

		Very Low		Me-dium		Very High
21.	By using this LSP' service, to what extent the disruption of inbound and outbound flows	1	2	3	4	5
22.	By using this LSP' service, to what extent the risk of losing distribution capability	1	2	3	4	5
23.	By using this LSP' service, to what extent the risk of losing control in operational delivery	1	2	3	4	5
24.	By using this LSP' service, to what extent the risk of losing professional knowledge in supply product	1	2	3	4	5
25.	By using this LSP' service, to what extent this risk of lacking market information	1	2	3	4	5
26.	By using this LSP' service, to what extent the risk of losing confidential information	1	2	3	4	5
27.	By using this LSP' service, to what extent the risk of losing of customer feedback	1	2	3	4	5

Section 3
Logistics Service Benefits

This section confirms to you some statements about benefits of logistics service that you receive from this LSP:

…….....

Please tick the number that best reflects your feelings towards the benefits of logistics service that you receive from that LSP. For example, if you are strongly disagree with the statement, please tick 1. If you are strongly agree with the statement, please tick 5. If your feeling is in the middle, please tick the appropriate number.

	Benefits of this LSP' service:	Strongly Disagree		Me-dium		Strongly Agree
1.	Improving organization's productivity	1	2	3	4	5
2.	Improving flexibility of organization's operation	1	2	3	4	5
3.	Improving speedy of organization's operation	1	2	3	4	5
4.	Improving efficiency of organization's operation	1	2	3	4	5
5.	Improving quality of organization's operation	1	2	3	4	5
6.	Improving reliability of organization's operation	1	2	3	4	5

		Strongly Disagree		Me-dium		Strongly Agree
7.	Improving organization's customer service	1	2	3	4	5
8.	Improving organization's relationship with customers	1	2	3	4	5
9.	Increasing organization's responsiveness to market	1	2	3	4	5
10.	Improving latest technology access	1	2	3	4	5
11.	Improving expertise, skill, and knowledge access	1	2	3	4	5
12.	Improving material resources access	1	2	3	4	5
13.	Improving market data access	1	2	3	4	5
14.	Reducing organization's delivery cost	1	2	3	4	5
15.	Reducing organization's asset investment	1	2	3	4	5
16.	Reducing organization's inventory level	1	2	3	4	5
17.	Focusing on organization's core business	1	2	3	4	5
18.	Increasing organization's customer demand	1	2	3	4	5
19.	Increasing organization's market share	1	2	3	4	5
20.	Increasing organization's revenue	1	2	3	4	5
21.	Increasing organization's financial strength	1	2	3	4	5
22.	Decreasing organization's business risk	1	2	3	4	5
23.	Increasing organization's competitive advantage	1	2	3	4	5
24.	Developing organization's business network	1	2	3	4	5

Section 4
Logistics Service Value

This section confirms to you some statements about value of logistics service that you receive from this LSP:
…….....
Please tick the number that best reflects your feelings towards the value of logistics service that you receive from that LSP. For example, if you are strongly disagree with the statement, please tick 1. If you are strongly agree with the statement, please tick 5. If your feelings are in the middle, please tick the appropriate number.

	Compared to other LSP	Strongly Disagree		Me-dium		Strongly Agree
1.	This LSP creates superior value for us when comparing all the costs versus benefits in the relationship	1	2	3	4	5
2.	Considering the costs of doing business with this LSP, we gain a lot of benefits in our overall relationship with them	1	2	3	4	5
3.	The benefits we gain in our relationship with this LSP far outweigh the costs	1	2	3	4	5
4.	Our organization gets significant customer value from this LSP relationship	1	2	3	4	5

Section 5

This section aims to know more about you and your organization. Your answer will be kept strictly confidential and used for classification purpose only.

1. The nature of your business:

2. The number of employees in your organization (approximately) are
   a. Below 100
   b. 100-499
   c. 500-999
   d. 1000-4999
   e. 5000 or above

3. How long have your company been a customer of this LSP
   a. 1 year – 4 years
   b. 5 years – 9 years
   c. 10 years or more

Thank you for your participation in this study

APPENDIX B QUESTIONNAIRE IN INDONESIAN VERSION

Questionnaire I

Studi ini mempelajari peran praktek manajemen kualitas dalam mempengaruhi kualitas pelayanan logistik dan *customer value*. Kuesioner ini terdiri dari dua bagian. Bagian 1 mengukur praktek manajemen kualitas di organisasi anda. Bagian 2 fokus pada informasi umum tentang organisasi anda.

Bagian 1
Quality Management Practice

Bagian ini menanyakan kepada anda beberapa pertanyaan mengenai praktek manajemen kualitas di organisasai anda. Silakan centang angka yang mencerminkan penilaian anda mengenai sejauhmana praktek manajemen kualitas berikut ini diimplementasikan di organisasi anda. Sebagai contoh, jika anda merasa praktek manajemen kualitas tersebut sangat rendah (SR) diimplementasikan, silakan centang 1. Jika anda merasa praktek manajemen kualitas tersebut sangat tinggi (ST) diimplementasikan, silakan centang 5. Jika penilaian anda berada ditengah, silakan centang angka yang sesuai.

		SR		Me-dium		ST
1.	Sejauhmana *top management* di organisasi anda menstimulasi organisasi untuk mengimplementasikan quality management menuju tercapainya *a shared vision*?	1	2	3	4	5
2.	Sejauhmana *top management* di organisasi anda memiliki komitmen dan mendukung *quality management* melalui sebuah perencanaan?	1	2	3	4	5
3.	Sejauhmana *top management* di organisasi anda bertanggungjawab untuk mengontrol proses *quality management*?	1	2	3	4	5
4.	Sejauhmana *top management* di organisasi anda merespon perubahan pada kebutuhan customer?	1	2	3	4	5
5.	Sejauhmana misi organisasi dikomunikasikan keseluruh organisasi dan didukung oleh seluruh karyawan?	1	2	3	4	5
6.	Sejauhmana organisasi memiliki proses perencanaan yang terstruktur dan komprehensif baik untuk jangka pendek maupun jangka panjang?	1	2	3	4	5
7.	Sejauhmana organisasi anda melibatkan seluruh *stakeholders* atau pemegang kepentingan dalam mengembangkan tujuan, perencanaan, dan kebijakan organisasi?	1	2	3	4	5

		SR		Me-dium		ST
8.	Sejauhmana organisasi anda memiliki pernyataan tertulis yang memuat strategi operasional bisnis?	1	2	3	4	5
9.	Sejauhmana organisasi anda memiliki prosedur pelayanan yang jelas, terstandardisasi dan terdokumentasi serta dapat dipahami dengan baik oleh karyawan?	1	2	3	4	5
10.	Sejauhmana organisasi anda secara kontinu melakukan audit untuk mengetahui kualitas pelayanan yang diberikan?	1	2	3	4	5
11.	Sejauhmana organisasi anda mendorong inovasi di semua aspek?	1	2	3	4	5
12.	Sejauhmana organisasi anda menekankan perbaikan kualitas yang berkesinambungan dalam semua proses kerja?	1	2	3	4	5
13.	Sejauhmana organisasi anda memiliki proses pengembangan organisasi termasuk perencanaan jalur karir untuk semua karyawan?	1	2	3	4	5
14.	Sejauhmana organisasi anda memberdayakan dan melibatkan karyawan di tempat kerja?	1	2	3	4	5
15.	Sejauhmana kepuasan karyawan diukur secara formal dan regular di organisasi anda?	1	2	3	4	5
16.	Sejauhmana organisasi anda memelihara lingkungan kerja yang berkontribusi pada kesehatan, keselamatan dan kesejahteraan karyawan?	1	2	3	4	5
17.	Sejauhmana organisasi anda mendorong karyawan untuk meningkatkan pengetahuan dan keterampilan melalui melalui pendidikan dan training?	1	2	3	4	5
18.	Sejauhmana sumberdaya di organisasi anda menopang atau mendukung pendidikan dan training karyawan?	1	2	3	4	5
19.	Sejauhmana organisasi anda memberi pendidikan tentang kualitas untuk karyawan?	1	2	3	4	5
20.	Sejauhmana organisasi anda memberi training yang berkaitan tentang keahlian kerja yang spesifik untuk karyawan?	1	2	3	4	5
21.	Sejauhmana organisasi anda secara aktif dan berkala mencari input dari *customer* untuk mengidentifikasi kebutuhan dan harapannya?	1	2	3	4	5

		SR		Me-dium		ST
22.	Sejauhmana organisasi anda menjaga hubungan dengan *customer* dan memudahkan mereka untuk menyampaikan aspirasi?	1	2	3	4	5
23.	Sejauhmana organisasi anda memiliki proses yang efektif untuk menyelesaikan keluhan *customer?*	1	2	3	4	5
24.	Sejauhmana organisasi anda mengukur *customer satisfaction* secara sistematik dan berkala?	1	2	3	4	5
25.	Sejauhmana organisasi anda telah memanfaatkan informasi untuk mengoptimalkan pelayanan?	1	2	3	4	5
26.	Sejauhmana organisasi anda memiliki data tingkat persaingan yang akurat yang digunakan untuk perbaikan?	1	2	3	4	5
27.	Sejauhmana keputusan organisasi anda yang terkait dengan perbaikan atau *improvement* selalu berdasarkan data yang obyektif?	1	2	3	4	5
28.	Sejauhmana data dan informasi organisasi yang *up-to-date* tersedia?	1	2	3	4	5
29.	Sejauhmana organisasi anda menganalisa kinerja organisasi untuk mengidentifikasi dan mengembangkan perbaikan atau *improvement?*	1	2	3	4	5
30.	Sejauhmana organisasi anda memiliki sistem pengukuran kinerja yang efektif untuk melacak kinerja organisasi?	1	2	3	4	5
31.	Sejauhmana *senior manager* di organisasi anda secara rutin bertemu untuk mengulas kinerja organisasi dan menggunakannya sebagai dasar dalam pembuatan keputusan?	1	2	3	4	5
32.	Sejauhmana organisasi anda melakukan program benchmarking untuk mengukur kinerja organisasi anda dibandingkan dengan organisasi yang terbaik di industri?	1	2	3	4	5

Bagian 2

Bagian ini bertujuan untuk mengetahui informasi tentang anda dan organisasi anda. Jawaban anda akan disimpan secara rahasia dan hanya digunakan untuk tujuan klasifikasi saja dalam penelitian ini.

1. Nama organisasi anda :

2. Apakah organisasi anda memiliki program kualitas secara formal ?

3. Jumlah karyawan di organisasi anda (pendekatan) ?

a) Dibawah 100
b) 100-499
c) 500-999
d) 1000-4999
e) 5000 lebih

4. Lima organisasi yang menggunakan jasa organisasi anda dalam bentuk kontrak

a) ……
b) ……
c) ……
d) ……
e) ……

Terimakasih atas partisipasi anda dalam studi ini

Questionnaire II

Studi ini menyelidiki peran kualitas pelayanan logistik yang diberikan oleh LSP (*logistics service provider*) atau penyedia jasa logistik dalam menciptakan *value* untuk customer. Kuesioner ini terdiri dari 5 bagian. Bagian 1 mengukur kualitas pelayanan logistik yang disediakan oleh LSP. Bagian 2 mengukur *cost* dari pelayanan logistik yang disediakan oleh LSP. Bagian 3 mengukur manfaat yang diperoleh dari pelayanan logistik yang disediakan oleh LSP. Bagian 4 mengukur persepsi *customer* terhadap *value* yang akan diperoleh dari pelayanan logistik yang disediakan oleh LSP. Bagian 5 memfokuskan pada informasi umum tentang organisasi anda.

Bagian 1
Logistics Service Quality

Bagian ini mengkonfirmasi kepada anda beberapa pernyataan mengenai kualitas pelayanan logistik yang organisasi anda terima dari LSP berikut :
……..
Silakan centang angka yang mencerminkan penilaian anda terhadap LSP tersebut. Sebagai contoh, jika anda merasa sangat tidak setuju (STS) dengan pernyataan berikut, silakan centang 1. Jika anda merasa sangat setuju (SS) dengan pernyataan berikut, silakan centang 5. Jika penilaian anda berada ditengah, silakan centang angka yang sesuai.

		STS		Me-dium		SS
1.	*Contact person* di LSP tersebut berusaha untuk memahami kebutuhan organisasi anda	1	2	3	4	5
2.	Masalah yang muncul dalam pelayanan diselesaikan dengan baik oleh *contact person* di LSP tersebut	1	2	3	4	5
3.	Pengetahuan atau pengalaman pelayanan dari karyawan LSP tersebut cukup baik	1	2	3	4	5
4.	Informasi yang diberikan oleh LSP tersebut tepat waktu	1	2	3	4	5
5.	Informasi yang diberikan oleh LSP tersebut akurat	1	2	3	4	5
6.	Informasi yang diberikan oleh LSP tersebut komplit	1	2	3	4	5
7.	Prosedur pemesanan jasa logistik di LSP tersebut efektif	1	2	3	4	5
8.	Prosedur pemesanan jasa logistik di LSP tersebut mudah digunakan	1	2	3	4	5
9.	Prosedur pemesanan jasa logistik di LSP tersebut tidak memakan waktu banyak	1	2	3	4	5

		STS		Me-dium		SS
10.	Pengaduan terhadap kualitas paket yang diterima direspon dengan memuaskan	1	2	3	4	5
11.	Prosedur pengaduan pelayanan di LSP tersebut cukup efektif	1	2	3	4	5
12.	Upaya perbaikan terhadap pengaduan kuantitas paket yang diterima dilakukan dengan memuaskan	1	2	3	4	5
13.	LSP tersebut tanggap terhadap munculnya kejadian yang tidak diharapkan	1	2	3	4	5
14.	LSP tersebut berusaha mengatasi permasalahan yang muncul dalam kondisi darurat	1	2	3	4	5
15.	LSP tersebut merekomendasikan alternatif tindakan ketika muncul masalah yang takteduga	1	2	3	4	5
16.	Kuantitas pengiriman tidak merupakan kendala di LSP tersebut	1	2	3	4	5
17.	Kesulitan tidak pernah terjadi karena adanya batas maksimum pengiriman	1	2	3	4	5
18.	Kesulitan tidak pernah terjadi karena adanya batas minimum pengiriman	1	2	3	4	5
19.	Kesalahan dalam pengiriman barang jarang terjadi	1	2	3	4	5
20.	Pengiriman sampai dalam kuantitas yang sesuai	1	2	3	4	5
21.	Kerusakan pengiriman karena mode transportasi jarang terjadi	1	2	3	4	5
22.	LSP tersebut mengamankan kerahasiaan data dan informasi yang terkait dengan order dari organisasi anda	1	2	3	4	5
23.	LSP tersebut memberi perlindungan keamanan dan resiko *cargo*	1	2	3	4	5
24.	LSP tersebut *capable* atau mampu untuk menangani material yang berbahaya	1	2	3	4	5
25.	Rentang waktu dari pengiriman dengan penerimaan barang cukup singkat	1	2	3	4	5
26.	Pengiriman datang pada hari yang dijanjikan	1	2	3	4	5

		STS		Me-dium		SS
27.	Pengiriman kembali paket yang dikembalikan membutuhkan waktu yang singkat	1	2	3	4	5
28.	LSP tersebut memiliki sistem *tracing cargo* yang modern	1	2	3	4	5
29	LSP tersebut menyediakan kendaraan, peralatan mesin dan *pick up* sistem yang modern	1	2	3	4	5
30.	LSP tersebut memiliki teknik distribusi *cargo* yang baik	1	2	3	4	5
31.	LSP tersebut memiliki jaringan pelayanan yang luas	1	2	3	4	5
32.	Kantor cabang LSP tersebut mudah diakses	1	2	3	4	5
33.	Pelayanan LSP tersebut mencakup daerah yang sulit terjangkau	1	2	3	4	5

Bagian 2
Logistics Service Cost

Bagian ini menanyakan kepada anda tentang *cost* dan resiko dari pelayanan logistik yang organisasi anda terima dari LSP berikut :
…….....
Silakan centang angka yang mencerminkan penilaian anda mengenai sejauhmana *cost* dan resiko berikut harus organisasi anda tanggung untuk mendapatkan pelayanan logistik dari LSP tersebut. Sebagai contoh, jika anda merasa *cost* atau resiko berikut sangat rendah (SR), silakan centang 1. Jika anda merasa *cost* atau resiko berikut sangat tinggi (ST), silakan centang 5. Jika penilaian anda berada ditengah, silakan centang angka yang sesuai.

		SR		Me-dium		ST
1.	Sejauhmana harga *service* dari LSP tersebut ?	1	2	3	4	5
2.	Sejauhmana fleksibilitas pembayaran di LSP tersebut ?	1	2	3	4	5
3.	Sejauhman diskon harga di LSP tersebut ?	1	2	3	4	5
4.	Sejauhmana waktu yang diperlukan untuk order *service* di LSP tersebut ?	1	2	3	4	5
5.	Sejauhmana waktu yang diperlukan untuk berkoordinasi dan berkomunikasi antara organisasi anda dan LSP tersebut ?	1	2	3	4	5

		SR		Me-dium		ST
6.	Sejauhmana waktu yang diperlukan untuk memonitor performansi LSP tersebut ?	1	2	3	4	5
7.	Sejauhmana upaya yang diperlukan untuk mendapatkan *service* dari LSP tersebut ?	1	2	3	4	5
8.	Sejauhmana upaya yang diperlukan untuk mencapai kesepakatan dengan karyawan di LSP tersebut ?	1	2	3	4	5
9.	Sejauhmana upaya yang diperlukan untuk memonitor performansi LSP tersebut ?	1	2	3	4	5
10.	Sejauhmana ketidaknyamanan psikologis yang diakibatkan rendahnya performansi pelayanan LSP tersebut ?	1	2	3	4	5
11.	Sejauhmana ketidaknyamanan psikologis yang diakibatkan oleh keterlambatan LSP tersebut dalam melakukan pengiriman ?	1	2	3	4	5
12.	Sejauhmanan ketidaknyamanan psikologis yang diakibatkan oleh munculnya masalah yang takterduga dalam pelayanan ?	1	2	3	4	5
13.	Sejauhmana keluhan yang organisasi anda miliki ketika menggunakan jasa LSP tersebut ?	1	2	3	4	5
14.	Sejauhmana perbedaan pendapat yang terjadi antara organisasi anda dengan LSP tersebut dalam menyelesaikan masalah yang muncul ?	1	2	3	4	5
15.	Selama menjalin kerjasama dengan LSP tersebut, sejauhmana frekuensi argumen yang harus organisasi anda sampaikan ke LSP agar tujuan organisasi anda tercapai ?	1	2	3	4	5
16.	Dengan menggunakan jasa LSP tersebut, sejauhmana *financial risk* atau kerugian financial yang diakibatkan oleh kehilangan atau kerusakan pengiriman ?	1	2	3	4	5
17.	Dengan menggunakan jasa LSP tersebut, sejauhmana *financial risk* atau kerugian financial yang terjadi karena keterlambatan aliran barang masuk dan keluar?	1	2	3	4	5

		SR		Me-dium		ST
18.	Sejauhmana jaminan *financial* yang diberikan oleh LSP tersebut pada saat terjadinya kehilangan atau kerusakan pengiriman ?	1	2	3	4	5
19.	Dengan menggunakan jasa LSP tersebut, sejauhmana resiko *supply* produk terjadi ?	1	2	3	4	5
20.	Dengan menggunakan jasa LSP tersebut, sejauhmana resiko yang terkait dengan *inventory* terjadi ?	1	2	3	4	5
21.	Dengan menggunakan jasa LSP tersebut, sejauhmana resiko gangguan aliran barang keluar dan masuk ?	1	2	3	4	5
22.	Dengan menggunakan jasa LSP tersebut, sejauhmana resiko kehilangan kapabilitas atau kemampuan dalam distribusi?	1	2	3	4	5
23.	Dengan menggunakan jasa LSP tersebut, sejauhmana resiko kehilangan kontrol dalam *operational delivery*	1	2	3	4	5
24.	Dengan menggunakan jasa LSP tersebut, sejauhmana resiko kehilangan pengetahuan tentang *supply* produk ?	1	2	3	4	5
25.	Dengan menggunakan jasa LSP tersebut, sejauhmana resiko kehilangan informasi tentang pasar ?	1	2	3	4	5
26.	Dengan menggunakan jasa LSP tersebut, sejauhmana resiko kebocoran informasi organisasi yang bersifat rahasia?	1	2	3	4	5
27.	Dengan menggunakan jasa LSP tersebut, sejauh mana resiko kehilangan *feedback* dari *customer* ?	1	2	3	4	5

Bagian 3
Logistics Service Benefits

Bagian ini mengkonfirmasi kepada anda beberapa pernyataan mengenai manfaat dari pelayanan logistik yang organisasi anda terima dari LSP berikut:
…….....
Silakan centang angka yang mencerminkan penilaian anda terhadap manfaat dari pelayanan logistik yang organisasi anda terima dari LSP tersebut. Sebagai contoh, jika anda merasa sangat tidak setuju (STS) dengan pernyataan berikut, silakan centang 1. Jika anda merasa sangat setuju (SS) dengan pernyataan berikut, silakan centang 5. Jika penilaian anda berada ditengah, silakan centang angka yang sesuai.

	Manfaat yang organisasi kami terima dari pelayanan logistik LSP tersebut adalah :	STS		Me-dium		SS
1.	Meningkatkan produktivitas organisasi	1	2	3	4	5
2.	Meningkatkan fleksibilitas operational organisasi	1	2	3	4	5
3.	Meningkatkan kecepatan operational organisasi	1	2	3	4	5
4.	Meningkatkan effisiensi operasional organisasi	1	2	3	4	5
5.	Meningkatkan kualitas operasional organisasi	1	2	3	4	5
6.	Meningkatkan kehandalan operasional organisasi	1	2	3	4	5
7.	Meningkatkan *customer service* organisasi	1	2	3	4	5
8.	Meningkatkan *relationship* organisasi dengan *customers*	1	2	3	4	5
9.	Meningkatkan respon organisasi terhadap pasar	1	2	3	4	5
10.	Meningkatkan akses organisasi terhadap teknologi terkini	1	2	3	4	5
11.	Meningkatkan akses organisasi terhadap keahlian, keterampilan dan pengetahuan	1	2	3	4	5
12.	Meningkatkan akses organisasi terhadap sumber *material*	1	2	3	4	5
13.	Meningkatkan akses organisasi terhadap data pasar	1	2	3	4	5
14.	Mengurangi *cost* organisasi untuk *delivery*	1	2	3	4	5
15.	Mengurangi investasi asset organisasi	1	2	3	4	5

	Manfaat yang organisasi kami terima dari pelayanan logistik LSP tersebut adalah :	STS		Me-dium		SS
16.	Mengurangi *inventory level* dari organisasi	1	2	3	4	5
17.	Fokus terhadap bisnis utama organisasi	1	2	3	4	5
18.	Meningkatkan permintaan pelanggan	1	2	3	4	5
19.	Meningkatkan *market share* organisasi	1	2	3	4	5
20.	Meningkatkan pendapatan atau *revenue* organisasi	1	2	3	4	5
21.	Meningkatkan kekuatan *financial* organisasi	1	2	3	4	5
22.	Mengurangi resiko bisnis organisasi	1	2	3	4	5
23.	Meningkatkan keunggulan kompetitif dari organisasi	1	2	3	4	5
24.	Mengembangkan jaringan bisnis organisasi	1	2	3	4	5

Bagian 4
Logistics Service Value

Bagian ini mengkonfirmasi kepada anda beberapa pernyataan mengenai value dari pelayanan logistik yang organisasi anda terima dari LSP berikut :
…….
Silakan centang angka yang mencerminkan penilaian anda terhadap value dari pelayanan logistik yang organisasi anda terima dari LSP tersebut. Sebagai contoh, jika anda merasa sangat tidak setuju (STS) dengan pernyataan berikut, silakan centang 1. Jika anda merasa sangat setuju (SS) dengan pernyataan berikut, silakan centang 5. Jika penilaian anda berada ditengah, silakan centang angka yang sesuai.

	Dibandingkan dengan LSP lain :	STS		Me-dium		SS
1.	LSP tersebut menciptakan superior *value* untuk organisasi kami ketika kami bandingkan antara *cost* dan *benefit* yang muncul dalam menjalin kerjasama dengan mereka	1	2	3	4	5
2.	Dibandingkan dengan *cost* yang ditimbulkan, organisasi kami mendapatkan banyak manfaat dalam bekerjasama dengan LSP tersebut	1	2	3	4	5
3.	Manfaat yang kami peroleh dalam bekerjasama dengan LSP tersebut jauh melebihi *cost* yang ditimbulkannya	1	2	3	4	5
4.	Organisasi kami mendapatkan *value* yang signifikan dalam bekerjasama dengan LSP tersebut	1	2	3	4	5

Bagian 5
General Information

Bagian ini bertujuan untuk mengetahui informasi tentang anda dan organisasi anda. Jawaban anda akan disimpan secara rahasia dan hanya digunakan untuk tujuan klasifikasi saja dalam penelitian ini.

1. Nama organisasi :

2. Jenis bisnis organisasi anda :

3. Jumlah karyawan di organisasi anda (pendekatan)
   a. Dibawah 100
   b. 100-499
   c. 500-999
   d. 1000-4999
   e. 5000 atau lebih

4. Berapa lama organisasi anda telah menjadi *customer* dari LSP tersebut
   a. 1 tahun – 4 tahun
   b. 5 tahun – 9 tahun
   c. 10 tahun lebih

Terimakasih atas partisipasi anda dalam studi ini

APPENDIX C OUTPUT OF NON-RESPONSE BIAS EXAMINATION

Group Statistics for Non-response Bias Examination of Logistics Service Value Variable

	Group	N	Mean	Std. Deviation	Std. Error Mean
Logistics Service Value 1	the early respondents	88	3.41	.705	.075
	the late respondents	44	3.36	.685	.103
Logistics Service Value 2	the early respondents	88	3.31	.733	.078
	the late respondents	44	3.30	.701	.106
Logistics Service Value 3	the early respondents	88	3.26	.766	.082
	the late respondents	44	3.30	.734	.111
Logistics Service Value 4	the early respondents	88	3.44	.756	.081
	the late respondents	44	3.39	.722	.109

Independent Sample Test of Non-response Bias Examination of Logistics Service Value Variable

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Logistics Service Value 1	Equal variances assumed	.159	.691	.352	130	.725	.045	.129	-.210	.301
	Equal variances not assumed			.356	88.378	.723	.045	.128	-.208	.299
Logistics Service Value 2	Equal variances assumed	.154	.696	.085	130	.932	.011	.133	-.253	.275
	Equal variances not assumed			.086	89.548	.931	.011	.131	-.250	.273
Logistics Service Value 3	Equal variances assumed	.024	.878	-.244	130	.807	-.034	.139	-.310	.242
	Equal variances not assumed			-.248	89.435	.805	-.034	.137	-.307	.239
Logistics Service Value 4	Equal variances assumed	.225	.636	.413	130	.680	.057	.138	-.215	.329
	Equal variances not assumed			.419	89.702	.676	.057	.135	-.212	.326

Group Statistics for Non-response Bias Examination of Logistics Service Benefit Variable

	Group	N	Mean	Std. Deviation	Std. Error Mean
Logistics Service Benefit 1	the early respondents	88	3.84	.993	.106
	the late respondents	44	3.77	1.031	.155
Logistics Service Benefit 2	the early respondents	88	3.68	.824	.088
	the late respondents	44	3.64	.892	.134
Logistics Service Benefit 3	the early respondents	88	3.74	.877	.094
	the late respondents	44	3.70	.954	.144
Logistics Service Benefit 4	the early respondents	88	3.88	.770	.082
	the late respondents	44	3.98	.731	.110
Logistics Service Benefit 5	the early respondents	88	3.91	.753	.080
	the late respondents	44	4.00	.715	.108
Logistics Service Benefit 6	the early respondents	88	4.02	.897	.096
	the late respondents	44	4.05	.834	.126
Logistics Service Benefit 7	the early respondents	88	3.88	.920	.098
	the late respondents	44	3.89	.813	.123
Logistics Service Benefit 8	the early respondents	88	3.50	.758	.081
	the late respondents	44	3.64	.718	.108
Logistics Service Benefit 9	the early respondents	88	3.60	.838	.089
	the late respondents	44	3.70	.765	.115
Logistics Service Benefit 10	the early respondents	88	3.15	.781	.083
	the late respondents	44	3.25	.839	.126

Group Statistics for Non-response Bias Examination of Logistics Service Benefit Variable (continued 1)

	Group	N	Mean	Std. Deviation	Std. Error Mean
Logistics Service Benefit 11	the early respondents	88	3.69	.876	.093
	the late respondents	44	3.61	.895	.135
Logistics Service Benefit 12	the early respondents	88	3.43	.907	.097
	the late respondents	44	3.41	.871	.131
Logistics Service Benefit 13	the early respondents	88	3.58	.906	.097
	the late respondents	44	3.48	.876	.132
Logistics Service Benefit 14	the early respondents	88	3.45	1.027	.110
	the late respondents	44	3.27	1.086	.164
Logistics Service Benefit 15	the early respondents	88	3.26	1.067	.114
	the late respondents	44	3.20	1.025	.154
Logistics Service Benefit 16	the early respondents	88	3.43	1.091	.116
	the late respondents	44	3.32	1.052	.159
Logistics Service Benefit 17	the early respondents	88	3.80	.949	.101
	the late respondents	44	3.95	.888	.134
Logistics Service Benefit 18	the early respondents	88	3.11	.850	.091
	the late respondents	44	3.32	.909	.137
Logistics Service Benefit 19	the early respondents	88	3.42	.854	.091
	the late respondents	44	3.52	.876	.132
Logistics Service Benefit 20	the early respondents	88	3.28	1.082	.115
	the late respondents	44	3.52	1.131	.170

Group Statistics for Non-response Bias Examination of Logistics Service Benefit Variable (continued 2)

	Group	N	Mean	Std. Deviation	Std. Error Mean
Logistics Service Benefit 21	the early respondents	88	3.49	.897	.096
	the late respondents	44	3.66	.987	.149
Logistics Service Benefit 22	the early respondents	88	3.89	1.055	.112
	the late respondents	44	3.95	1.077	.162
Logistics Service Benefit 23	the early respondents	88	3.93	1.015	.108
	the late respondents	44	3.95	1.033	.156
Logistics Service Benefit 24	the early respondents	88	3.82	.766	.082
	the late respondents	44	3.91	.709	.107

Independent Sample Test of Non-response Bias Examination of Logistics Service Benefit Variable

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Logistics Service Benefit 1	Equal variances assumed	.756	.386	.367	130	.714	.068	.186	-.299	.436
	Equal variances not assumed			.363	83.262	.718	.068	.188	-.306	.442
Logistics Service Benefit 2	Equal variances assumed	1.104	.295	.291	130	.772	.045	.156	-.264	.355
	Equal variances not assumed			.283	80.341	.778	.045	.161	-.274	.365
Logistics Service Benefit 3	Equal variances assumed	1.435	.233	.204	130	.838	.034	.167	-.296	.364
	Equal variances not assumed			.199	79.977	.843	.034	.172	-.307	.376
Logistics Service Benefit 4	Equal variances assumed	.421	.518	-.731	130	.466	-.102	.140	-.379	.174
	Equal variances not assumed			-.744	90.255	.459	-.102	.137	-.375	.171

Independent Sample Test of Non-response Bias Examination of Logistics Service Benefit Variable (continued 1)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Logistics Service Benefit 5	Equal variances assumed	.296	.587	-.665	130	.507	-.091	.137	-.361	.180
	Equal variances not assumed			-.676	90.126	.501	-.091	.134	-.358	.176
Logistics Service Benefit 6	Equal variances assumed	.089	.765	-.140	130	.889	-.023	.162	-.343	.297
	Equal variances not assumed			-.144	91.899	.886	-.023	.158	-.336	.291
Logistics Service Benefit 7	Equal variances assumed	1.189	.278	-.069	130	.945	-.011	.164	-.335	.312
	Equal variances not assumed			-.072	96.177	.942	-.011	.157	-.323	.300
Logistics Service Benefit 8	Equal variances assumed	.299	.585	-.991	130	.323	-.136	.138	-.409	.136
	Equal variances not assumed			-1.009	90.387	.316	-.136	.135	-.405	.132

Independent Sample Test of Non-response Bias Examination of Logistics Service Benefit Variable (continued 2)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Logistics Service Benefit 9	Equal variances assumed	.874	.352	-.680	130	.498	-.102	.150	-.400	.195
	Equal variances not assumed			-.701	93.449	.485	-.102	.146	-.392	.187
Logistics Service Benefit 10	Equal variances assumed	.733	.393	-.692	130	.490	-.102	.148	-.395	.190
	Equal variances not assumed			-.676	80.863	.501	-.102	.151	-.404	.199
Logistics Service Benefit 11	Equal variances assumed	.309	.580	.488	130	.626	.080	.163	-.243	.402
	Equal variances not assumed			.485	84.467	.629	.080	.164	-.247	.406
Logistics Service Benefit 12	Equal variances assumed	.101	.751	.137	130	.891	.023	.165	-.304	.350
	Equal variances not assumed			.139	89.288	.889	.023	.163	-.301	.347

Independent Sample Test of Non-response Bias Examination of Logistics Service Benefit Variable (continued 3)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Logistics Service Benefit 13	Equal variances assumed	.014	.906	.618	130	.538	.102	.165	-.225	.430
	Equal variances not assumed			.625	88.789	.533	.102	.164	-.223	.427
Logistics Service Benefit 14	Equal variances assumed	.000	.986	.940	130	.349	.182	.193	-.201	.564
	Equal variances not assumed			.923	81.966	.359	.182	.197	-.210	.574
Logistics Service Benefit 15	Equal variances assumed	.475	.492	.292	130	.771	.057	.194	-.328	.441
	Equal variances not assumed			.296	89.259	.768	.057	.192	-.324	.438
Logistics Service Benefit 16	Equal variances assumed	.318	.574	.571	130	.569	.114	.199	-.280	.507
	Equal variances not assumed			.578	89.016	.565	.114	.197	-.277	.504

Independent Sample Test of Non-response Bias Examination of Logistics Service Benefit Variable (continued 4)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Logistics Service Benefit 17	Equal variances assumed	1.203	.275	-.927	130	.355	-.159	.172	-.498	.180
	Equal variances not assumed			-.948	91.381	.346	-.159	.168	-.492	.174
Logistics Service Benefit 18	Equal variances assumed	1.313	.254	-1.273	130	.205	-.205	.161	-.522	.113
	Equal variances not assumed			-1.245	81.140	.217	-.205	.164	-.531	.122
Logistics Service Benefit 19	Equal variances assumed	.183	.669	-.643	130	.521	-.102	.159	-.417	.212
	Equal variances not assumed			-.638	84.200	.525	-.102	.160	-.421	.217
Logistics Service Benefit 20	Equal variances assumed	.002	.962	-1.177	130	.242	-.239	.203	-.640	.163
	Equal variances not assumed			-1.159	82.824	.250	-.239	.206	-.648	.171

Independent Sample Test of Non-response Bias Examination of Logistics Service Benefit Variable (continued 5)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Logistics Service Benefit 21	Equal variances assumed	.119	.731	-.995	130	.322	-.170	.171	-.509	.168
	Equal variances not assumed			-.964	79.172	.338	-.170	.177	-.522	.182
Logistics Service Benefit 22	Equal variances assumed	.129	.720	-.348	130	.729	-.068	.196	-.456	.320
	Equal variances not assumed			-.345	84.529	.731	-.068	.198	-.461	.325
Logistics Service Benefit 23	Equal variances assumed	.140	.709	-.121	130	.904	-.023	.189	-.396	.350
	Equal variances not assumed			-.120	84.735	.905	-.023	.190	-.400	.354
Logistics Service Benefit 24	Equal variances assumed	.681	.411	-.658	130	.512	-.091	.138	-.364	.182
	Equal variances not assumed			-.676	92.294	.501	-.091	.135	-.358	.176

Group Statistics for Non-response Bias Examination of Logistics Service Cost Variable

	Group	N	Mean	Std. Deviation	Std. Error Mean
Direct Cost 1	the early respondents	88	3.13	.785	.084
	the late respondents	44	2.93	.873	.132
Direct Cost 2	the early respondents	88	2.56	.933	.099
	the late respondents	44	2.52	.927	.140
Direct Cost 3	the early respondents	88	2.70	1.136	.121
	the late respondents	44	2.68	1.095	.165
Cost of Time 1	the early respondents	88	3.10	.728	.078
	the late respondents	44	3.07	.695	.105
Cost of Time 2	the early respondents	88	3.15	.796	.085
	the late respondents	44	3.07	.728	.110
Cost of Time 3	the early respondents	88	3.31	.717	.076
	the late respondents	44	3.20	.701	.106
Cost of Effort 1	the early respondents	88	3.49	1.006	.107
	the late respondents	44	3.75	1.123	.169
Cost of Effort 2	the early respondents	88	3.47	1.072	.114
	the late respondents	44	3.70	1.173	.177
Cost of Effort 3	the early respondents	88	3.59	.811	.086
	the late respondents	44	3.82	.995	.150
Psychological Cost 1	the early respondents	88	2.98	1.083	.115
	the late respondents	44	2.68	1.029	.155

Group Statistics for Non-response Bias Examination of Logistics Service Cost Variable (continued 1)

	Group	N	Mean	Std. Deviation	Std. Error Mean
Psychological Cost 2	the early respondents	88	3.20	1.052	.112
	the late respondents	44	2.86	1.047	.158
Psychological Cost 3	the early respondents	88	2.97	.952	.102
	the late respondents	44	2.70	.930	.140
Conflict 1	the early respondents	88	2.74	.851	.091
	the late respondents	44	2.70	.795	.120
Conflict 2	the early respondents	88	2.72	.816	.087
	the late respondents	44	2.66	.776	.117
Conflict 3	the early respondents	88	3.01	.669	.071
	the late respondents	44	2.89	.689	.104
Financial Risk 1	the early respondents	88	2.66	.771	.082
	the late respondents	44	2.41	.787	.119
Financial Risk 2	the early respondents	88	2.82	.989	.105
	the late respondents	44	2.55	.999	.151
Financial Risk 3	the early respondents	88	2.42	.638	.068
	the late respondents	44	2.25	.651	.098
Supply Product Risk 1	the early respondents	88	2.64	.730	.078
	the late respondents	44	2.45	.761	.115
Supply Product Risk 2	the early respondents	88	2.70	.846	.090
	the late respondents	44	2.50	.849	.128

Group Statistics for Non-response Bias Examination of Logistics Service Cost Variable (continued 2)

	Group	N	Mean	Std. Deviation	Std. Error Mean
Supply Product Risk 3	the early respondents	88	2.78	.940	.100
	the late respondents	44	2.52	.927	.140
Capability Risk 1	the early respondents	88	2.82	.904	.096
	the late respondents	44	2.73	.845	.127
Capability Risk 2	the early respondents	88	2.91	.967	.103
	the late respondents	44	2.73	.949	.143
Capability Risk 3	the early respondents	88	2.45	1.027	.110
	the late respondents	44	2.45	.926	.140
Information Risk 1	the early respondents	88	2.11	.749	.080
	the late respondents	44	2.23	.743	.112
Information Risk 2	the early respondents	88	2.33	.673	.072
	the late respondents	44	2.34	.713	.108
Information Risk 3	the early respondents	88	2.17	.973	.104
	the late respondents	44	2.30	.904	.136

Independent Sample Test of Non-response Bias Examination of Logistics Service Cost Variable

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Direct Cost 1	Equal variances assumed	.432	.512	1.283	130	.202	.193	.151	-.105	.491
	Equal variances not assumed			1.238	78.442	.219	.193	.156	-.117	.504
Direct Cost 2	Equal variances assumed	.015	.903	.198	130	.843	.034	.172	-.306	.374
	Equal variances not assumed			.199	86.572	.843	.034	.172	-.307	.375
Direct Cost 3	Equal variances assumed	.056	.813	.110	130	.913	.023	.207	-.387	.433
	Equal variances not assumed			.111	89.021	.912	.023	.205	-.384	.430
Cost of Time 1	Equal variances assumed	.080	.778	.257	130	.797	.034	.132	-.228	.296
	Equal variances not assumed			.261	89.694	.794	.034	.130	-.225	.293

Independent Sample Test of Non-response Bias Examination of Logistics Service Cost Variable (continued 1)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Cost of Time 2	Equal variances assumed	1.022	.314	.557	130	.579	.080	.143	-.203	.362
	Equal variances not assumed			.573	93.251	.568	.080	.139	-.196	.355
Cost of Time 3	Equal variances assumed	.434	.511	.778	130	.438	.102	.131	-.158	.362
	Equal variances not assumed			.784	87.806	.435	.102	.130	-.157	.362
Cost of Effort 1	Equal variances assumed	.513	.475	-1.353	130	.178	-.261	.193	-.643	.121
	Equal variances not assumed			-1.304	78.171	.196	-.261	.200	-.660	.138
Cost of Effort 2	Equal variances assumed	.539	.464	-1.168	130	.245	-.239	.204	-.643	.165
	Equal variances not assumed			-1.134	79.531	.260	-.239	.211	-.658	.180

Independent Sample Test of Non-response Bias Examination of Logistics Service Cost Variable (continued 2)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Cost of Effort 3	Equal variances assumed	1.065	.304	-1.405	130	.162	-.227	.162	-.547	.093
	Equal variances not assumed			-1.313	72.408	.193	-.227	.173	-.572	.118
Psychological Cost 1	Equal variances assumed	.104	.747	1.502	130	.135	.295	.197	-.094	.685
	Equal variances not assumed			1.528	90.105	.130	.295	.193	-.089	.680
Psychological Cost 2	Equal variances assumed	.018	.894	1.757	130	.081	.341	.194	-.043	.725
	Equal variances not assumed			1.760	86.455	.082	.341	.194	-.044	.726
Psychological Cost 3	Equal variances assumed	.643	.424	1.498	130	.137	.261	.174	-.084	.607
	Equal variances not assumed			1.510	87.990	.135	.261	.173	-.083	.605

Independent Sample Test of Non-response Bias Examination of Logistics Service Cost Variable (continued 3)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Conflict 1	Equal variances assumed	.180	.672	.222	130	.825	.034	.154	-.270	.338
	Equal variances not assumed			.227	91.552	.821	.034	.150	-.264	.333
Conflict 2	Equal variances assumed	.001	.970	.383	130	.702	.057	.148	-.236	.350
	Equal variances not assumed			.390	90.071	.698	.057	.146	-.233	.346
Conflict 3	Equal variances assumed	.605	.438	1.001	130	.319	.125	.125	-.122	.372
	Equal variances not assumed			.992	83.897	.324	.125	.126	-.126	.376
Financial Risk 1	Equal variances assumed	.208	.649	1.743	130	.084	.250	.143	-.034	.534
	Equal variances not assumed			1.732	84.584	.087	.250	.144	-.037	.537

Independent Sample Test of Non-response Bias Examination of Logistics Service Cost Variable (continued 4)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Financial Risk 2	Equal variances assumed	.223	.638	1.489	130	.139	.273	.183	-.090	.635
	Equal variances not assumed			1.484	85.342	.142	.273	.184	-.093	.638
Financial Risk 3	Equal variances assumed	.610	.436	1.436	130	.153	.170	.119	-.064	.405
	Equal variances not assumed			1.427	84.554	.157	.170	.119	-.067	.408
Supply Product Risk 1	Equal variances assumed	1.047	.308	1.330	130	.186	.182	.137	-.089	.452
	Equal variances not assumed			1.311	82.979	.193	.182	.139	-.094	.458
Supply Product Risk 2	Equal variances assumed	.341	.561	1.308	130	.193	.205	.156	-.105	.514
	Equal variances not assumed			1.306	85.863	.195	.205	.157	-.107	.516

Independent Sample Test of Non-response Bias Examination of Logistics Service Cost Variable (continued 5)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Supply Product Risk 3	Equal variances assumed	.123	.726	1.512	130	.133	.261	.173	-.081	.603
	Equal variances not assumed			1.519	87.175	.132	.261	.172	-.081	.603
Capability Risk 1	Equal variances assumed	.038	.845	.556	130	.579	.091	.163	-.232	.414
	Equal variances not assumed			.569	91.452	.571	.091	.160	-.226	.408
Capability Risk 2	Equal variances assumed	.052	.820	1.025	130	.307	.182	.177	-.169	.533
	Equal variances not assumed			1.031	87.531	.305	.182	.176	-.169	.532
Capability Risk 3	Equal variances assumed	1.434	.233	.000	130	1.000	.000	.184	-.363	.363
	Equal variances not assumed			.000	94.474	1.000	.000	.177	-.352	.352

Independent Sample Test of Non-response Bias Examination of Logistics Service Cost Variable (continued 6)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Information Risk 1	Equal variances assumed	.130	.719	-.824	130	.412	-.114	.138	-.387	.159
	Equal variances not assumed			-.826	86.794	.411	-.114	.138	-.387	.160
Information Risk 2	Equal variances assumed	.361	.549	-.090	130	.929	-.011	.127	-.262	.240
	Equal variances not assumed			-.088	81.810	.930	-.011	.129	-.269	.246
Information Risk 3	Equal variances assumed	.109	.742	-.712	130	.478	-.125	.176	-.472	.222
	Equal variances not assumed			-.730	92.004	.467	-.125	.171	-.465	.215

Group Statistics for Non-response Bias Examination of Logistics Service Process Quality Variable

	Group	N	Mean	Std. Deviation	Std. Error Mean
Personnel Contact Quality 1	the early respondents	88	3.38	.835	.089
	the late respondents	44	3.61	.784	.118
Personnel Contact Quality 2	the early respondents	88	3.44	.957	.102
	the late respondents	44	3.66	.861	.130
Personnel Contact Quality 3	the early respondents	88	3.63	.835	.089
	the late respondents	44	3.75	.751	.113
Information Quality 1	the early respondents	88	3.24	.830	.089
	the late respondents	44	3.34	.834	.126
Information Quality 2	the early respondents	88	3.38	.732	.078
	the late respondents	44	3.43	.759	.114
Information Quality 3	the early respondents	88	3.72	.757	.081
	the late respondents	44	3.66	.776	.117
Service Order Procedure 1	the early respondents	88	3.77	1.014	.108
	the late respondents	44	4.09	.984	.148
Service Order Procedure 2	the early respondents	88	3.77	1.080	.115
	the late respondents	44	4.09	1.030	.155
Service Order Procedure 3	the early respondents	88	3.65	.983	.105
	the late respondents	44	3.98	.976	.147
Shipment Complaint Handling 1	the early respondents	88	3.26	.809	.086
	the late respondents	44	3.30	.765	.115

Group Statistics for Non-response Bias Examination of Logistics Service Process Quality Variable (continued)

	Group	N	Mean	Std. Deviation	Std. Error Mean
Shipment Complaint Handling 2	the early respondents	88	3.33	.827	.088
	the late respondents	44	3.34	.776	.117
Shipment Complaint Handling 3	the early respondents	88	3.22	.750	.080
	the late respondents	44	3.30	.734	.111
Emergency Service 1	the early respondents	88	3.03	.890	.095
	the late respondents	44	2.93	.900	.136
Emergency Service 2	the early respondents	88	3.01	.877	.094
	the late respondents	44	2.89	.868	.131
Emergency Service 3	the early respondents	88	2.93	.828	.088
	the late respondents	44	2.86	.852	.128

Independent Sample Test of Non-response Bias Examination of Logistics Service Process Quality Variable

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Personnel Contact Quality 1	Equal variances assumed	.360	.550	-1.579	130	.117	-.239	.151	-.538	.060
	Equal variances not assumed			-1.613	91.096	.110	-.239	.148	-.533	.055
Personnel Contact Quality 2	Equal variances assumed	2.084	.151	-1.262	130	.209	-.216	.171	-.554	.123
	Equal variances not assumed			-1.308	94.683	.194	-.216	.165	-.544	.112
Personnel Contact Quality 3	Equal variances assumed	1.460	.229	-.838	130	.404	-.125	.149	-.420	.170
	Equal variances not assumed			-.868	94.683	.388	-.125	.144	-.411	.161
Information Quality 1	Equal variances assumed	.140	.709	-.666	130	.506	-.102	.154	-.406	.201
	Equal variances not assumed			-.665	85.805	.508	-.102	.154	-.408	.203

Independent Sample Test of Non-response Bias Examination of Logistics Service Process Quality Variable (continued 1)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Information Quality 2	Equal variances assumed	.242	.624	-.415	130	.679	-.057	.137	-.328	.214
	Equal variances not assumed			-.410	83.353	.683	-.057	.139	-.332	.219
Information Quality 3	Equal variances assumed	.260	.611	.403	130	.688	.057	.141	-.222	.336
	Equal variances not assumed			.400	84.272	.690	.057	.142	-.226	.339
Service Order Procedure 1	Equal variances assumed	.429	.513	-1.716	130	.089	-.318	.185	-.685	.049
	Equal variances not assumed			-1.733	88.458	.086	-.318	.184	-.683	.047
Service Order Procedure 2	Equal variances assumed	.485	.487	-1.620	130	.108	-.318	.196	-.707	.070
	Equal variances not assumed			-1.646	89.826	.103	-.318	.193	-.702	.066

Independent Sample Test of Non-response Bias Examination of Logistics Service Process Quality Variable (continued 2)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Service Order Procedure 3	Equal variances assumed	.396	.530	-1.820	130	.071	-.330	.181	-.688	.029
	Equal variances not assumed			-1.824	86.652	.072	-.330	.181	-.689	.030
Shipment Complaint Handling 1	Equal variances assumed	.035	.852	-.232	130	.817	-.034	.147	-.324	.256
	Equal variances not assumed			-.237	90.585	.813	-.034	.144	-.320	.252
Shipment Complaint Handling 2	Equal variances assumed	.087	.769	-.076	130	.940	-.011	.150	-.307	.285
	Equal variances not assumed			-.078	91.144	.938	-.011	.146	-.302	.280
Shipment Complaint Handling 3	Equal variances assumed	.094	.759	-.579	130	.564	-.080	.137	-.351	.192
	Equal variances not assumed			-.583	87.769	.562	-.080	.136	-.351	.192

Independent Sample Test of Non-response Bias Examination of Logistics Service Process Quality Variable (continued 3)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Emergency Service 1	Equal variances assumed	.292	.590	.620	130	.536	.102	.165	-.224	.429
	Equal variances not assumed			.618	85.285	.538	.102	.165	-.227	.431
Emergency Service 2	Equal variances assumed	.256	.614	.774	130	.440	.125	.161	-.194	.444
	Equal variances not assumed			.777	86.910	.439	.125	.161	-.195	.445
Emergency Service 3	Equal variances assumed	.821	.367	.442	130	.659	.068	.154	-.237	.373
	Equal variances not assumed			.438	83.952	.663	.068	.156	-.242	.378

Group Statistics for Non-response Bias Examination of Logistics Service Outcome Quality Variable

	Group	N	Mean	Std. Deviation	Std. Error Mean
Shipment Quantity 1	the early respondents	88	3.84	.604	.064
	the late respondents	44	3.95	.569	.086
Shipment Quantity 2	the early respondents	88	3.08	.985	.105
	the late respondents	44	3.39	1.017	.153
Shipment Quantity 3	the early respondents	88	3.22	.928	.099
	the late respondents	44	3.48	.952	.144
Shipment Quality 1	the early respondents	88	4.07	1.048	.112
	the late respondents	44	4.05	.963	.145
Shipment Quality 2	the early respondents	88	4.05	.677	.072
	the late respondents	44	4.09	.603	.091
Shipment Quality 3	the early respondents	88	3.51	.910	.097
	the late respondents	44	3.70	.851	.128
Shipment Security 1	the early respondents	88	3.65	.774	.082
	the late respondents	44	3.61	.784	.118
Shipment Security 2	the early respondents	88	3.92	.847	.090
	the late respondents	44	3.80	.851	.128
Shipment Security 3	the early respondents	88	3.39	.749	.080
	the late respondents	44	3.41	.726	.109
Timeliness 1	the early respondents	88	3.06	.849	.091
	the late respondents	44	2.98	.927	.140

Group Statistics for Non-response Bias Examination of Logistics Service Outcome Quality Variable (continued)

	Group	N	Mean	Std. Deviation	Std. Error Mean
Timeliness 2	the early respondents	88	3.61	1.169	.125
	the late respondents	44	3.41	1.226	.185
Timeliness 3	the early respondents	88	2.95	.982	.105
	the late respondents	44	2.91	1.007	.152
Innovative Service 1	the early respondents	88	3.78	.864	.092
	the late respondents	44	3.89	.784	.118
Innovative Service 2	the early respondents	88	3.28	.934	.100
	the late respondents	44	3.52	.876	.132
Innovative Service 3	the early respondents	88	3.63	.835	.089
	the late respondents	44	3.75	.751	.113
Operational Coverage Area 1	the early respondents	88	3.86	.847	.090
	the late respondents	44	3.82	.896	.135
Operational Coverage Area 2	the early respondents	88	3.94	.902	.096
	the late respondents	44	3.84	.914	.138
Operational Coverage Area 3	the early respondents	88	3.28	1.164	.124
	the late respondents	44	3.34	1.119	.169

Independent Sample Test of Non-response Bias Examination of Logistics Service Outcome Quality Variable

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Shipment Quantity 1	Equal variances assumed	2.171	.143	-1.038	130	.301	-.114	.109	-.330	.103
	Equal variances not assumed			-1.060	90.929	.292	-.114	.107	-.327	.099
Shipment Quantity 2	Equal variances assumed	.340	.561	-1.669	130	.098	-.307	.184	-.671	.057
	Equal variances not assumed			-1.652	83.746	.102	-.307	.186	-.676	.063
Shipment Quantity 3	Equal variances assumed	.454	.502	-1.512	130	.133	-.261	.173	-.603	.081
	Equal variances not assumed			-1.499	84.156	.138	-.261	.174	-.608	.085
Shipment Quality 1	Equal variances assumed	1.070	.303	.121	130	.904	.023	.189	-.350	.396
	Equal variances not assumed			.124	92.886	.902	.023	.183	-.341	.387

Independent Sample Test of Non-response Bias Examination of Logistics Service Outcome Quality Variable (continued 1)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Shipment Quality 2	Equal variances assumed	.180	.672	-.377	130	.707	-.045	.121	-.284	.193
	Equal variances not assumed			-.392	95.464	.696	-.045	.116	-.276	.185
Shipment Quality 3	Equal variances assumed	.838	.362	-1.175	130	.242	-.193	.164	-.519	.132
	Equal variances not assumed			-1.201	91.394	.233	-.193	.161	-.513	.126
Shipment Security 1	Equal variances assumed	.007	.931	.238	130	.813	.034	.143	-.250	.318
	Equal variances not assumed			.237	85.098	.814	.034	.144	-.252	.321
Shipment Security 2	Equal variances assumed	.423	.517	.798	130	.426	.125	.157	-.185	.435
	Equal variances not assumed			.797	85.743	.428	.125	.157	-.187	.437

Independent Sample Test of Non-response Bias Examination of Logistics Service Outcome Quality Variable (continued 2)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Shipment Security 3	Equal variances assumed	.012	.912	-.166	130	.868	-.023	.137	-.294	.248
	Equal variances not assumed			-.168	88.646	.867	-.023	.135	-.292	.246
Timeliness 1	Equal variances assumed	.785	.377	.492	130	.624	.080	.162	-.240	.399
	Equal variances not assumed			.478	79.682	.634	.080	.167	-.252	.411
Timeliness 2	Equal variances assumed	1.005	.318	.932	130	.353	.205	.219	-.229	.639
	Equal variances not assumed			.918	82.539	.361	.205	.223	-.239	.648
Timeliness 3	Equal variances assumed	.360	.550	.249	130	.804	.045	.183	-.316	.407
	Equal variances not assumed			.246	84.142	.806	.045	.184	-.321	.412

Independent Sample Test of Non-response Bias Examination of Logistics Service Outcome Quality Variable (continued 3)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Innovative Service 1	Equal variances assumed	1.315	.254	-.661	130	.510	-.102	.155	-.408	.204
	Equal variances not assumed			-.683	93.922	.497	-.102	.150	-.400	.195
Innovative Service 2	Equal variances assumed	.078	.781	-1.412	130	.160	-.239	.169	-.573	.096
	Equal variances not assumed			-1.443	91.236	.152	-.239	.165	-.567	.090
Innovative Service 3	Equal variances assumed	2.126	.147	-.838	130	.404	-.125	.149	-.420	.170
	Equal variances not assumed			-.868	94.683	.388	-.125	.144	-.411	.161
Operational Coverage Area 1	Equal variances assumed	1.228	.270	.285	130	.776	.045	.159	-.270	.361
	Equal variances not assumed			.280	81.872	.780	.045	.162	-.278	.369

Independent Sample Test of Non-response Bias Examination of Logistics Service Outcome Quality Variable (continued 4)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Operational Coverage Area 2	Equal variances assumed	.155	.695	.612	130	.542	.102	.167	-.229	.433
	Equal variances not assumed			.609	85.102	.544	.102	.168	-.232	.436
Operational Coverage Area 3	Equal variances assumed	.118	.731	-.268	130	.789	-.057	.212	-.477	.363
	Equal variances not assumed			-.271	89.184	.787	-.057	.209	-.473	.359

Group Statistics for Non-response Bias Examination of Quality Management Practice Variable

	Group	N	Mean	Std. Deviation	Std. Error Mean
Commitment Leadership 1	the early respondents	88	3.57	.992	.106
	the late respondents	44	3.50	1.000	.151
Commitment Leadership 2	the early respondents	88	3.66	.756	.081
	the late respondents	44	3.59	.693	.104
Commitment Leadership 3	the early respondents	88	3.45	.921	.098
	the late respondents	44	3.45	.951	.143
Commitment Leadership 4	the early respondents	88	3.43	.563	.060
	the late respondents	44	3.41	.542	.082
Strategic Quality Planning 1	the early respondents	88	3.91	.879	.094
	the late respondents	44	4.00	.807	.122
Strategic Quality Planning 2	the early respondents	88	3.81	.641	.068
	the late respondents	44	3.75	.651	.098
Strategic Quality Planning 3	the early respondents	88	4.08	1.008	.107
	the late respondents	44	4.11	.895	.135
Strategic Quality Planning 4	the early respondents	88	3.94	.998	.106
	the late respondents	44	3.84	.914	.138
Process Management 1	the early respondents	88	4.03	.850	.091
	the late respondents	44	3.93	.974	.147
Process Management 2	the early respondents	88	3.76	1.114	.119
	the late respondents	44	3.66	1.119	.169

Group Statistics for Non-response Bias Examination of Quality Management Practice Variable (continued 1)

	Group	N	Mean	Std. Deviation	Std. Error Mean
Process Management 3	the early respondents	88	3.25	.925	.099
	the late respondents	44	3.32	1.052	.159
Process Management 4	the early respondents	88	3.59	.905	.096
	the late respondents	44	3.55	.975	.147
Human Resource Management 1	the early respondents	88	2.98	.830	.088
	the late respondents	44	2.95	.746	.112
Human Resource Management 2	the early respondents	88	3.44	.969	.103
	the late respondents	44	3.30	1.025	.154
Human Resource Management 3	the early respondents	88	3.14	.973	.104
	the late respondents	44	3.00	.863	.130
Human Resource Management 4	the early respondents	88	3.73	.881	.094
	the late respondents	44	3.55	.975	.147
Education & Training 1	the early respondents	88	3.55	1.212	.129
	the late respondents	44	3.27	1.208	.182
Education & Training 2	the early respondents	88	3.42	1.132	.121
	the late respondents	44	3.16	1.098	.166
Education & Training 3	the early respondents	88	3.25	.962	.103
	the late respondents	44	3.14	.930	.140
Education & Training 4	the early respondents	88	3.39	1.066	.114
	the late respondents	44	3.23	.985	.149

Group Statistics for Non-response Bias Examination of Quality Management Practice Variable (continued 2)

	Group	N	Mean	Std. Deviation	Std. Error Mean
Customer Focus 1	the early respondents	88	3.43	1.091	.116
	the late respondents	44	3.23	1.031	.155
Customer Focus 2	the early respondents	88	3.82	.796	.085
	the late respondents	44	3.64	.967	.146
Customer Focus 3	the early respondents	88	3.88	.869	.093
	the late respondents	44	3.61	.993	.150
Customer Focus 4	the early respondents	88	2.99	.877	.094
	the late respondents	44	3.02	.927	.140
Data & Information 1	the early respondents	88	3.74	1.067	.114
	the late respondents	44	3.43	1.228	.185
Data & Information 2	the early respondents	88	3.36	1.205	.128
	the late respondents	44	3.18	1.263	.190
Data & Information 3	the early respondents	88	3.56	.945	.101
	the late respondents	44	3.34	.987	.149
Data & Information 4	the early respondents	88	3.75	1.053	.112
	the late respondents	44	3.50	1.089	.164

Group Statistics for Non-response Bias Examination of Quality Management Practice Variable (continued 3)

	Group	N	Mean	Std. Deviation	Std. Error Mean
Performance Evaluation 1	the early respondents	88	3.61	.903	.096
	the late respondents	44	3.50	.976	.147
Performance Evaluation 2	the early respondents	88	3.43	.770	.082
	the late respondents	44	3.32	.800	.121
Performance Evaluation 3	the early respondents	88	3.67	.968	.103
	the late respondents	44	3.57	1.021	.154
Performance Evaluation 4	the early respondents	88	3.41	.990	.106
	the late respondents	44	3.27	.973	.147

Independent Sample Test of Non-response Bias Examination of Quality Management Practice Variable

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Commitment Leadership 1	Equal variances assumed	.034	.854	.371	130	.711	.068	.184	-.295	.431
	Equal variances not assumed			.370	85.485	.712	.068	.184	-.298	.434
Commitment Leadership 2	Equal variances assumed	.019	.890	.502	130	.617	.068	.136	-.201	.337
	Equal variances not assumed			.517	93.175	.607	.068	.132	-.194	.330
Commitment Leadership 3	Equal variances assumed	.020	.889	.000	130	1.000	.000	.172	-.340	.340
	Equal variances not assumed			.000	83.681	1.000	.000	.174	-.346	.346
Commitment Leadership 4	Equal variances assumed	.234	.629	.221	130	.825	.023	.103	-.180	.226
	Equal variances not assumed			.224	89.102	.823	.023	.101	-.179	.224

Independent Sample Test of Non-response Bias Examination of Quality Management Practice Variable (continued 1)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Strategic Quality Planning 1	Equal variances assumed	.924	.338	-.575	130	.566	-.091	.158	-.404	.222
	Equal variances not assumed			-.592	93.014	.555	-.091	.154	-.396	.214
Strategic Quality Planning 2	Equal variances assumed	.446	.506	.478	130	.634	.057	.119	-.179	.292
	Equal variances not assumed			.475	84.842	.636	.057	.120	-.181	.295
Strategic Quality Planning 3	Equal variances assumed	1.498	.223	-.190	130	.850	-.034	.180	-.389	.321
	Equal variances not assumed			-.198	95.832	.844	-.034	.172	-.376	.308
Strategic Quality Planning 4	Equal variances assumed	.329	.567	.570	130	.569	.102	.179	-.252	.457
	Equal variances not assumed			.588	93.253	.558	.102	.174	-.243	.448

Independent Sample Test of Non-response Bias Examination of Quality Management Practice Variable (continued 2)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Process Management 1	Equal variances assumed	.967	.327	.620	130	.536	.102	.165	-.224	.429
	Equal variances not assumed			.593	76.519	.555	.102	.173	-.241	.446
Process Management 2	Equal variances assumed	.000	.993	.496	130	.620	.102	.206	-.305	.510
	Equal variances not assumed			.496	85.743	.621	.102	.206	-.308	.513
Process Management 3	Equal variances assumed	1.076	.301	-.381	130	.704	-.068	.179	-.422	.286
	Equal variances not assumed			-.365	77.040	.716	-.068	.187	-.440	.304
Process Management 4	Equal variances assumed	.306	.581	.265	130	.791	.045	.172	-.294	.385
	Equal variances not assumed			.258	80.612	.797	.045	.176	-.305	.395

Independent Sample Test of Non-response Bias Examination of Quality Management Practice Variable (continued 3)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Human Resource Management 1	Equal variances assumed	.200	.655	.153	130	.878	.023	.148	-.271	.316
	Equal variances not assumed			.159	94.811	.874	.023	.143	-.261	.307
Human Resource Management 2	Equal variances assumed	.099	.754	.810	130	.419	.148	.182	-.213	.509
	Equal variances not assumed			.795	81.956	.429	.148	.186	-.222	.517
Human Resource Management 3	Equal variances assumed	2.793	.097	.787	130	.432	.136	.173	-.206	.479
	Equal variances not assumed			.820	95.919	.414	.136	.166	-.194	.467
Human Resource Management 4	Equal variances assumed	.659	.419	1.079	130	.283	.182	.169	-.152	.515
	Equal variances not assumed			1.042	78.723	.300	.182	.174	-.165	.529

Independent Sample Test of Non-response Bias Examination of Quality Management Practice Variable (continued 4)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Education & Training 1	Equal variances assumed	.089	.767	1.220	130	.225	.273	.224	-.170	.715
	Equal variances not assumed			1.222	86.384	.225	.273	.223	-.171	.717
Education & Training 2	Equal variances assumed	.439	.509	1.263	130	.209	.261	.207	-.148	.671
	Equal variances not assumed			1.276	88.446	.205	.261	.205	-.146	.669
Education & Training 3	Equal variances assumed	.101	.751	.647	130	.519	.114	.176	-.234	.461
	Equal variances not assumed			.654	88.764	.515	.114	.174	-.231	.459
Education & Training 4	Equal variances assumed	.791	.375	.829	130	.409	.159	.192	-.221	.539
	Equal variances not assumed			.851	92.433	.397	.159	.187	-.212	.530

Independent Sample Test of Non-response Bias Examination of Quality Management Practice Variable (continued 5)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Customer Focus 1	Equal variances assumed	1.686	.196	1.034	130	.303	.205	.198	-.187	.596
	Equal variances not assumed			1.053	90.590	.295	.205	.194	-.181	.590
Customer Focus 2	Equal variances assumed	3.685	.057	1.150	130	.252	.182	.158	-.131	.495
	Equal variances not assumed			1.078	72.937	.284	.182	.169	-.154	.518
Customer Focus 3	Equal variances assumed	2.458	.119	1.553	130	.123	.261	.168	-.072	.594
	Equal variances not assumed			1.484	76.619	.142	.261	.176	-.089	.612
Customer Focus 4	Equal variances assumed	.018	.893	-.206	130	.837	-.034	.165	-.361	.293
	Equal variances not assumed			-.203	81.998	.840	-.034	.168	-.369	.301

Independent Sample Test of Non-response Bias Examination of Quality Management Practice Variable (continued 6)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Data & Information 1	Equal variances assumed	3.012	.085	1.480	130	.141	.307	.207	-.103	.717
	Equal variances not assumed			1.413	76.227	.162	.307	.217	-.126	.739
Data & Information 2	Equal variances assumed	.054	.817	.804	130	.423	.182	.226	-.265	.629
	Equal variances not assumed			.792	82.628	.431	.182	.230	-.275	.639
Data & Information 3	Equal variances assumed	.001	.981	1.219	130	.225	.216	.177	-.134	.566
	Equal variances not assumed			1.202	82.862	.233	.216	.180	-.142	.573
Data & Information 4	Equal variances assumed	.173	.678	1.271	130	.206	.250	.197	-.139	.639
	Equal variances not assumed			1.257	83.583	.212	.250	.199	-.146	.646

Independent Sample Test of Non-response Bias Examination of Quality Management Practice Variable (continued 6)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Performance Evaluation 1	Equal variances assumed	.405	.525	.663	130	.508	.114	.171	-.225	.452
	Equal variances not assumed			.646	80.334	.520	.114	.176	-.236	.464
Performance Evaluation 2	Equal variances assumed	.006	.938	.789	130	.432	.114	.144	-.171	.399
	Equal variances not assumed			.779	83.207	.438	.114	.146	-.177	.404
Performance Evaluation 3	Equal variances assumed	.258	.612	.562	130	.575	.102	.182	-.258	.462
	Equal variances not assumed			.552	82.126	.582	.102	.185	-.266	.471
Performance Evaluation 4	Equal variances assumed	.020	.888	.750	130	.455	.136	.182	-.223	.496
	Equal variances not assumed			.755	87.440	.453	.136	.181	-.223	.496

Group Statistics for Non-response Bias Examination of Customer Attributes

	Group	N	Mean	Std. Deviation	Std. Error Mean
Type of Industry	the early respondents	88	2.36	1.224	.130
	the late respondents	44	2.91	1.411	.213
Number of Employees of LSP's Customer	the early respondents	88	2.44	1.469	.157
	the late respondents	44	2.48	1.267	.191
Duration of LSP usage	the early respondents	88	2.42	.840	.090
	the late respondents	44	2.52	.792	.119

Independent Sample Test of Non-response Bias Examination of Customer Attributes

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Type of Industry	Equal variances assumed	4.976	.027	-2.292	130	.024	-.545	.238	-1.016	-.075
	Equal variances not assumed			-2.185	76.115	.032	-.545	.250	-1.043	-.048
Number of Employees of LSP's Customer	Equal variances assumed	4.883	.029	-.131	130	.896	-.034	.259	-.547	.479
	Equal variances not assumed			-.138	98.310	.890	-.034	.247	-.524	.456
Duration of LSP usage	Equal variances assumed	1.234	.269	-.672	130	.503	-.102	.152	-.404	.199
	Equal variances not assumed			-.685	90.809	.495	-.102	.149	-.399	.194

Group Statistics for Non-response Bias Examination of LSP Attributes

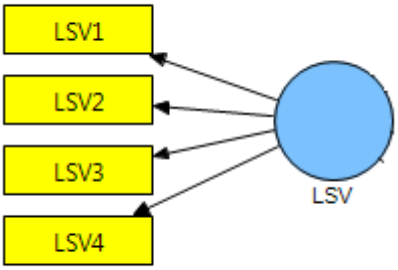
	Group	N	Mean	Std. Deviation	Std. Error Mean
Availability of Quality Management Program	the early respondents	88	1.30	.459	.049
	the late respondents	44	1.23	.424	.064
Number of LSP's employees	the early respondents	88	1.78	1.351	.144
	the late respondents	44	1.80	1.133	.171

Independent Sample Test of Non-response Bias Examination of LSP Attributes

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Availability of Quality Management Program	Equal variances assumed	3.011	.085	.825	130	.411	.068	.083	-.095	.232
	Equal variances not assumed			.847	92.456	.399	.068	.080	-.092	.228
Number of LSP's employees	Equal variances assumed	1.785	.184	-.048	130	.962	-.011	.237	-.480	.457
	Equal variances not assumed			-.051	100.773	.960	-.011	.223	-.455	.432

APPENDIX D OUTPUT OF RELIABILITY AND VALIDITY EXAMINATION

The examination of reliability and validity of logistics service value variable



Measurement Model of Logistics Service Value Variable

Reliability of Logistics Service Value Variable

Variable	**Composite Reliability**	**Cronbachs Alpha**
Logistics service value (LSV)	0.970913	0.960004

Conclusion: The variable is reliable because it has composite reliability and Cronbachs alpha above 0.7

Bootstrapping of Outer Loading of Indicators of Logistics Service Value Variable

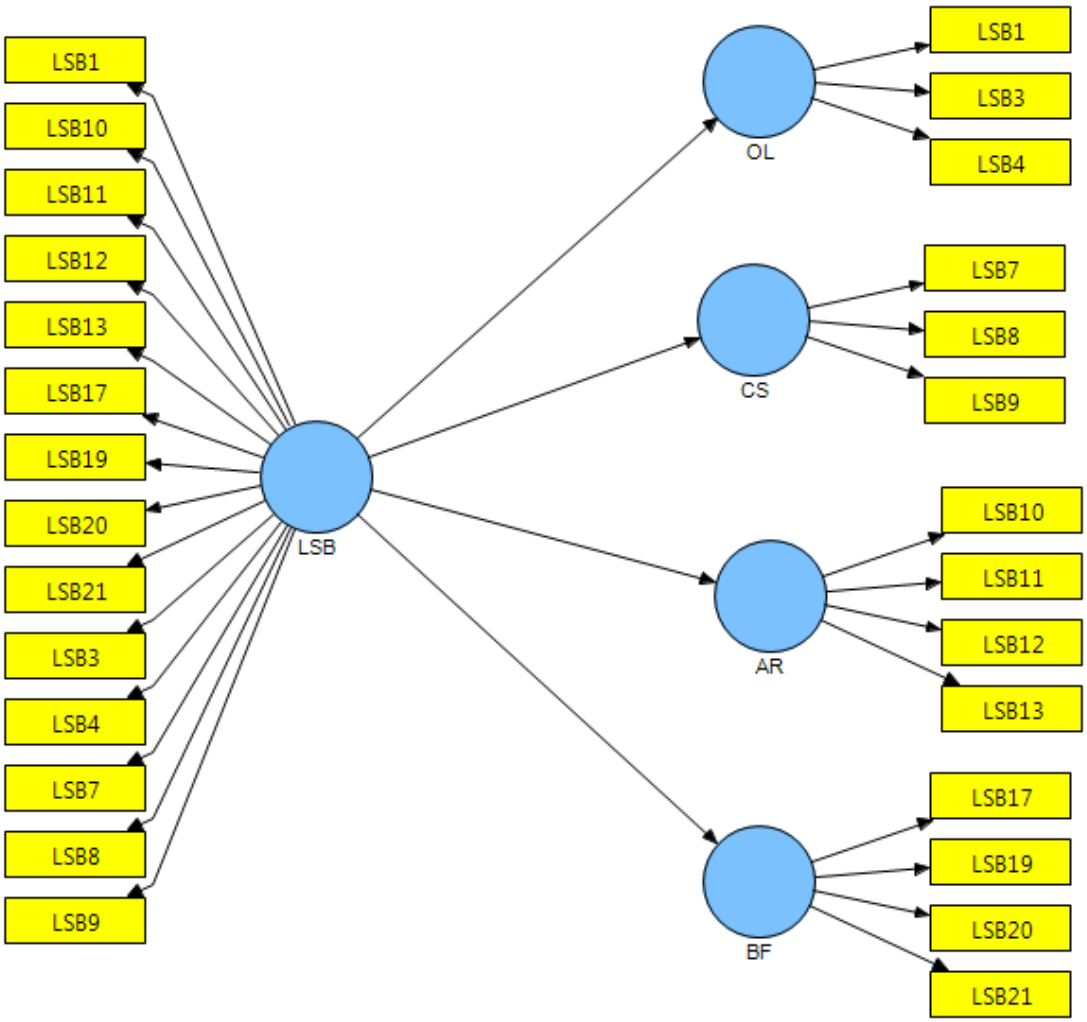
	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STERR|)
LSV -> LSV1	0.940724	0.938819	0.016224	57.982616
LSV -> LSV2	0.940258	0.936986	0.018027	52.157796
LSV -> LSV3	0.933417	0.930519	0.019015	49.089102
LSV -> LSV4	0.965253	0.963891	0.008617	112.018296

Conclusion: All indicators are significant (t above 1.96)

General conclusion: The measurement model examined has good reliability and validity

The examination of reliability and validity of logistics service benefit variable

First step to identify dimension of logistics service benefit is by using SPSS. Through choosing hierarchical cluster analyses with label analyses by variables, these indicators are clustered. After running the program several times, LSB1, LSB3 and LSB4 are grouped in one group as well as LSB7, LSB8, LSB9; LSB10, LSB11, LSB12, LSB13; and LSB17, LSB19, LSB20 and LSB21, these indicators are grouped in following figure. Other indicators are not grouped consistently therefore the other indicators are eliminated from the logistics service benefit variable. These groups have become a basic to examine validity and reliability of logistics service benefit variable using SmartPLS.



Measurement Model of Logistics Service Benefit Variable

Reliability of Logistics Service Benefit Variable

Variable and Its Fist Order	Composite Reliability	Cronbachs Alpha
Logistics service benefit (LSB)	0.951667	0.944093
• Improving operational level (OL)	0.959648	0.936890
• Improving customer service (CS)	0.935116	0.897633
• Accessing resources (AR)	0.957890	0.940868
• Improving business performance (BF)	0.921169	0.885479

Conclusion: The variable and its first order variables are reliable because they have composite reliability and Cronbach alpha above 0.7

Cross Loadings of Logistics Service Benefit Variable

	AR	BF	CS	**LSB**	OL
LSB1	0.778547	0.400947	0.528479	**0.790493**	**0.924820**
LSB3	0.800305	0.672213	0.469544	**0.881643**	**0.973239**
LSB4	0.702342	0.817802	0.721600	**0.931998**	**0.928241**
LSB7	0.301715	0.254867	**0.900077**	**0.558036**	0.593276
LSB8	0.299383	0.410948	**0.914418**	**0.569649**	0.467138
LSB9	0.539918	0.652872	**0.914793**	**0.767847**	0.599709
LSB10	**0.869303**	0.712276	0.331231	**0.814245**	0.726446
LSB11	**0.953371**	0.504531	0.332763	**0.788867**	0.749122
LSB12	**0.958577**	0.578498	0.499959	**0.849707**	0.750331
LSB13	**0.905064**	0.526636	0.440344	**0.799626**	0.742101
LSB17	0.547083	**0.851452**	0.480881	**0.717507**	0.537594
LSB19	0.523974	**0.819604**	0.521807	**0.719769**	0.574925
LSB20	0.504091	**0.907196**	0.297220	**0.682685**	0.550349
LSB21	0.594071	**0.872495**	0.446586	**0.775058**	0.677705

Conclusion: Discriminant validity is assessed though cross loading between indicators and variable. Correlation of variable and its indicators is higher than correlation of its indicators and other variables therefore the variable predicts indicators in its block well than predict indicators in other blocks.

Bootstrapping of Path Coefficients between Logistics Service Benefit Variable and Its Dimension

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STERR|)
LSB -> AR	0.882786	0.882376	0.020895	42.249298
LSB -> BF	0.841071	0.836639	0.036352	23.137008
LSB -> CS	0.710185	0.696879	0.079254	8.960919
LSB -> OL	0.925256	0.924086	0.013125	70.495275

Conclusion: All paths are significant (t above 1.96)

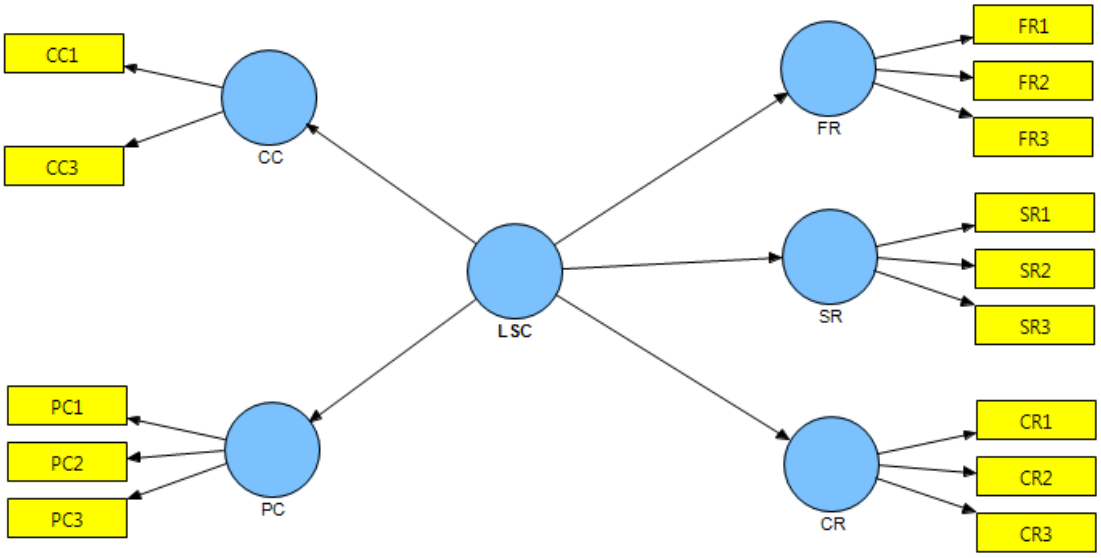
Bootstrapping of Outer Loading of Indicators of Logistics Service Benefit Variable

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STERR|)
LSB1 <- OL	0.924820	0.922560	0.015573	59.386679
LSB1 <- LSB	0.790493	0.786921	0.032308	24.467653
LSB10 <- AR	0.869303	0.866400	0.025208	34.484978
LSB10 <- LSB	0.814245	0.811844	0.038209	21.310517
LSB11 <- AR	0.953371	0.952294	0.011759	81.079247
LSB11 <- LSB	0.788867	0.786235	0.040211	19.618317
LSB12 <- AR	0.958577	0.957940	0.007617	125.844553
LSB12 <- LSB	0.849707	0.849096	0.023905	35.545126
LSB13 <- AR	0.905064	0.903036	0.026281	34.437812
LSB13 <- LSB	0.799626	0.797387	0.034696	23.046386
LSB17 <- LSB	0.717507	0.708312	0.072356	9.916382
LSB17 <- BF	0.851452	0.845003	0.041775	20.381637
LSB19 <- LSB	0.719769	0.711693	0.084063	8.562221
LSB19 <- BF	0.819604	0.812688	0.057559	14.239245
LSB20 <- LSB	0.682685	0.679878	0.043799	15.586610
LSB20 <- BF	0.907196	0.910332	0.012061	75.219880
LSB21 <- LSB	0.775058	0.772479	0.037333	20.760405
LSB21 <- BF	0.872495	0.876122	0.027507	31.719581
LSB3 <- OL	0.973239	0.972686	0.004761	204.420468
LSB3 <- LSB	0.881643	0.881567	0.016239	54.291796
LSB4 <- OL	0.928241	0.926473	0.013242	70.095761
LSB4 <- LSB	0.931998	0.928197	0.019026	48.986658
LSB7 <- CS	0.900077	0.892231	0.033324	27.009681
LSB7 <- LSB	0.558036	0.537835	0.112606	4.955636
LSB8 <- CS	0.914418	0.906793	0.037347	24.484667
LSB8 <- LSB	0.569649	0.546169	0.118003	4.827429
LSB9 <- CS	0.914793	0.918135	0.011060	82.713901
LSB9 <- LSB	0.767847	0.756214	0.065779	11.673189

Conclusion: Convergen validity is assessed through correlation between score of indicator and score of variable. All of indicators achieve convergent validity because all of loading factors above 0.5 and significant.

General conclusion: The measurement model examined has good reliability and validity

The examination of reliability and validity of logistics service cost quality variable



Measurement Model of Logistics Service Cost Variable

Reliability of Logistics Service Cost Variable

Variable and Its First Order	Composite Reliability	Cronbachs Alpha
Logistics service cost (LSC)	0.854286	0.822583
• Direct cost (Stone et al.)	0.790580	0.630600
• Cost of time (TC)	0.793608	0.793020
• Cost of effort (EC)	0.963053	0.950928
• Psychological cost (PC)	0.934299	0.894884
• Conflict (CC)	0.767869	0.507827
• Financial risk (FR)	0.823773	0.665802
• Supply product risk (SR)	0.956529	0.931753
• Capability risk (CR)	0.832615	0.686263
• Information risk (IR)	0.786901	0.648007

Conclusion: The variable and its first order variables are fair reliable because they have composite reliability and Cronbach alpha above 0.7 except DC, CC, FR, CR, and IR.

Cross Loadings of Logistics Service Cost Variable

	CC	CR	DC	EC	FR	IR	**LSC**	PC	SR	TC
CC1	**0.922982**	0.635709	-0.483085	0.254356	0.564465	0.436309	**0.692765**	0.266084	0.629826	-0.017573
CC2	**0.419261**	0.537043	0.114098	-0.024685	0.312551	0.515470	**0.493515**	0.361407	0.460924	-0.012303
CC3	**0.780831**	0.431566	-0.463135	0.262304	0.513140	0.245320	**0.531217**	0.148320	0.441357	0.304775
CR1	0.575100	**0.882328**	-0.207634	0.127327	0.628072	0.437414	**0.704700**	0.322089	0.603196	0.334734
CR2	0.707891	**0.940118**	-0.414122	0.163928	0.621949	0.515372	**0.760743**	0.394724	0.597917	0.149778
CR3	0.482914	**0.501725**	-0.142139	-0.105093	0.308194	0.635825	**0.424238**	0.268645	0.211069	-0.291201
DC1	-0.242059	-0.167986	**0.425935**	-0.436941	0.130122	-0.344844	**-0.056270**	0.079308	-0.010482	0.068329
DC2	-0.180431	-0.064938	**0.775250**	-0.228053	-0.109354	-0.105575	**-0.081331**	0.162747	-0.010303	-0.263792
DC3	-0.436872	-0.384504	**0.979010**	-0.396965	-0.164836	-0.183298	**-0.264788**	0.148644	-0.223210	-0.093059
EC1	0.259166	0.141603	-0.388031	**0.974633**	-0.251873	0.274257	**-0.166998**	-0.558679	-0.216786	0.304127
EC2	0.204200	0.052939	-0.470385	**0.975616**	-0.338811	0.189236	**-0.279015**	-0.700869	-0.300698	0.124045
EC3	0.268822	0.213811	-0.256830	**0.888337**	-0.197695	0.515112	**-0.079446**	-0.445287	-0.149502	0.252718
FR1	0.683108	0.710075	-0.214205	-0.338472	**0.967225**	0.253710	**0.927208**	0.704896	0.852416	0.215351
FR2	0.495846	0.690140	-0.154789	-0.155982	**0.903193**	0.173713	**0.781247**	0.561434	0.683190	0.321783
FR3	0.307148	-0.066037	0.264488	-0.252820	**0.392037**	-0.060151	**0.349302**	0.472797	0.413287	0.165530
IR1	0.381095	0.239624	-0.144006	0.181406	0.025559	**0.743773**	**0.152538**	0.020965	-0.062091	-0.335075
IR2	0.426153	0.596899	-0.084015	0.312112	0.167695	**0.753164**	**0.392100**	0.145363	0.292257	0.038003
IR3	0.388910	0.403057	-0.293167	0.063634	0.193868	**0.731364**	**0.269409**	-0.001136	0.050109	-0.155208
PC1	0.135176	0.274538	0.301361	-0.451092	0.486348	-0.035412	**0.547393**	**0.833685**	0.588938	0.110220
PC2	0.325416	0.413525	0.161374	-0.700133	0.740502	0.070195	**0.745855**	**0.952328**	0.700199	-0.037101
PC3	0.445472	0.418208	0.034897	-0.573730	0.708740	0.198242	**0.779415**	**0.936402**	0.734492	0.017467
SR1	0.676187	0.448307	-0.055419	-0.267819	0.772843	0.201862	**0.846055**	0.741445	**0.938234**	0.134737
SR2	0.719480	0.631609	-0.240433	-0.299567	0.861842	0.234248	**0.924099**	0.707247	**0.956297**	0.216816
SR3	0.605185	0.677064	-0.189270	-0.162775	0.736056	0.110684	**0.847654**	0.654693	**0.919431**	0.361716
TC1	0.222349	-0.034595	-0.424536	0.360404	0.180827	-0.193299	**0.039198**	-0.220615	0.026961	**0.574432**
TC2	0.163829	0.084449	-0.425406	0.520012	0.091603	-0.352769	**0.014621**	-0.271925	0.074199	**0.652439**
TC3	0.079928	0.164723	-0.038110	0.140413	0.292471	-0.089627	**0.230666**	0.082168	0.274939	**0.985570**

Conclusion: Discriminant validity is assessed through cross loading between indicators and variable. Correlation of variable and its indicators is higher than correlation of its indicators and other variables therefore thr variable predicts indicators in its block well than predict indicators in other blocks.

Bootstrapping of Outer Loading of Indicators of Logistics Service Cost Variable

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STERR|)
CC1 <- CC	0.922982	0.876495	0.186721	4.943096
CC1 <- LSC	0.692765	0.649811	0.157592	4.395948
CC2 <- CC	**0.419261**	**0.453166**	**0.218314**	**1.920444**
CC2 <- LSC	0.493515	0.489675	0.133344	3.701078
CC3 <- CC	0.780831	0.712255	0.244982	3.187301
CC3 <- LSC	0.531217	0.488513	0.193510	2.745172
CR1 <- CR	0.882328	0.884797	0.035983	24.520391
CR1 <- LSC	0.704700	0.681011	0.102583	6.869552
CR2 <- CR	0.940118	0.938818	0.017422	53.962824
CR2 <- LSC	0.760743	0.724558	0.118507	6.419398
CR3 <- CR	0.501725	0.479995	0.155194	3.232898
CR3 <- LSC	0.424238	0.400530	0.139156	3.048656
DC1 <- DC	**0.425935**	**0.317597**	**0.451104**	**0.944205**
DC1 <- LSC	**-0.056270**	**-0.028440**	**0.180586**	**0.311598**
DC2 <- DC	**0.775250**	**0.438206**	**0.597632**	**1.297202**
DC2 <- LSC	**-0.081331**	**-0.032461**	**0.218615**	**0.372027**
DC3 <- DC	**0.979010**	**0.631850**	**0.550761**	**1.777560**
DC3 <- LSC	**-0.264788**	**-0.216523**	**0.196408**	**1.348158**
EC1 <- EC	**0.974633**	**0.465218**	**0.842486**	**1.156853**
EC1 <- LSC	**-0.166998**	**-0.197050**	**0.261126**	**0.639528**
EC2 <- EC	**0.975616**	**0.420097**	**0.841418**	**1.159490**
EC2 <- LSC	**-0.279015**	**-0.299337**	**0.252517**	**1.104934**
EC3 <- EC	**0.888337**	**0.469428**	**0.772076**	**1.150582**
EC3 <- LSC	**-0.079446**	**-0.105734**	**0.247206**	**0.321375**
FR1 <- FR	0.967225	0.966965	0.006309	153.310977
FR1 <- LSC	0.927208	0.906112	0.037183	24.936461
FR2 <- FR	0.903193	0.898791	0.038111	23.699244
FR2 <- LSC	0.781247	0.762294	0.067460	11.580974
FR3 <- FR	0.392037	0.382949	0.121738	3.220342
FR3 <- LSC	0.349302	0.343421	0.093817	3.723222

Bootstrapping of Outer Loading of Indicators of Logistics Service Cost Variable (continued)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STERR|)
IR1 <- IR	**0.743773**	**0.563783**	**0.440486**	**1.688529**
IR1 <- LSC	**0.152538**	**0.137305**	**0.164408**	**0.927801**
IR2 <- IR	0.753164	0.714649	0.254286	2.961875
IR2 <- LSC	0.392100	0.377529	0.155470	2.522024
IR3 <- IR	**0.731364**	**0.557092**	**0.423663**	**1.726288**
IR3 <- LSC	**0.269409**	**0.238843**	**0.161174**	**1.671545**
PC1 <- PC	0.833685	0.830036	0.047669	17.489014
PC1 <- LSC	0.547393	0.554600	0.142406	3.843898
PC2 <- PC	0.952328	0.951461	0.007888	120.733513
PC2 <- LSC	0.745855	0.739524	0.119539	6.239420
PC3 <- PC	0.936402	0.935143	0.014631	63.999748
PC3 <- LSC	0.779415	0.761394	0.097643	7.982263
SR1 <- SR	0.938234	0.937195	0.017271	54.323004
SR1 <- LSC	0.846055	0.832192	0.040094	21.101919
SR2 <- SR	0.956297	0.955721	0.007710	124.031269
SR2 <- LSC	0.924099	0.900131	0.038533	23.982211
SR3 <- SR	0.919431	0.917980	0.014640	62.804113
SR3 <- LSC	0.847654	0.829118	0.045662	18.563742
TC1 <- TC	**0.574432**	**0.296939**	**0.710481**	**0.808512**
TC1 <- LSC	**0.039198**	**0.011935**	**0.259551**	**0.151024**
TC2 <- TC	**0.652439**	**0.341326**	**0.728572**	**0.895503**
TC2 <- LSC	**0.014621**	**-0.005296**	**0.247785**	**0.059007**
TC3 <- TC	**0.985570**	**0.552072**	**0.513013**	**1.921140**
TC3 <- LSC	**0.230666**	**0.213334**	**0.197844**	**1.165901**

Conclusion: indicator CC2, IR1, IR3, DC1, DC2, DC3, EC1, EC2, EC3, TC1, TC2, TC3 are not significant

Bootstrapping of Path Coefficients between Logistics Service Cost Variable and Its Dimension

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STERR|)
LSC -> CC	0.797448	0.777972	0.102589	7.773238
LSC -> CR	0.809974	0.778903	0.109444	7.400818
LSC -> DC	**-0.230741**	**-0.248719**	**0.236318**	**0.976399**
LSC -> EC	**-0.221639**	**-0.089728**	**0.355377**	**0.623674**
LSC -> FR	0.915314	0.898682	0.030092	30.417701
LSC -> IR	0.411999	0.428143	0.129055	3.192423
LSC -> PC	0.771647	0.767786	0.113435	6.802551
LSC -> SR	0.931382	0.912727	0.030533	30.504491
LSC -> TC	**0.211867**	**0.248090**	**0.258851**	**0.818489**

Conclusion: DC, EC, and TC path are not significant

Based on these conclusion, next step is examining reliability and validity of logistics service cost by deleting indicators suggested (round 2)

Round 2

Reliability of Logistics Service Cost Variable (round 2)

Variable and Its First Order	Composite Reliability	Cronbachs Alpha
Logistics service cost (LSC)	0.937521	0.924244
• Psychological cost (PC)	0.934346	0.894884
• Conflict (CC)	0.931606	0.855324
• Financial risk (FR)	0.824349	0.665802
• Supply product risk (SR)	0.956531	0.931753
• Capability risk (CR)	0.831883	0.686263

Conclusion: The variable and its first order variables are reliable becaue they have composite reliability and Cronbacjs alpha above 0.7

Cross Loadings of Logistics Service Cost Variable

	CC	CR	FR	**LSC**	PC	SR
CC1	**0.950153**	0.634011	0.563293	**0.692674**	0.265371	0.629958
CC3	**0.917177**	0.429398	0.513854	**0.541970**	0.147513	0.441395
CR1	0.392201	**0.887718**	0.624996	**0.673430**	0.322372	0.602591
CR2	0.599167	**0.943258**	0.618044	**0.733870**	0.394651	0.597366
CR3	0.406221	**0.486584**	0.308181	**0.377055**	0.267510	0.211187
FR1	0.630890	0.708867	**0.966263**	**0.937408**	0.704359	0.852278
FR2	0.441939	0.694456	**0.900623**	**0.795938**	0.561305	0.682991
FR3	0.221004	-0.070364	**0.400142**	**0.372253**	0.472741	0.414001
PC1	-0.063665	0.280252	0.488261	**0.568141**	**0.834625**	0.588928
PC2	0.203914	0.409051	0.742172	**0.766206**	**0.952085**	0.700301
PC3	0.407099	0.415528	0.709936	**0.800195**	**0.935971**	0.734769
SR1	0.549594	0.449090	0.775404	**0.862568**	0.741340	**0.938674**
SR2	0.648841	0.630195	0.861632	**0.934010**	0.706726	**0.956266**
SR3	0.438810	0.683414	0.735415	**0.854352**	0.655045	**0.919023**

Conclusion: Discriminant validity is assessed through cross loading between indicators and variable. Correlation of variable and its indicators is higher than correlation of its indicators and other variables therefore the variable predicts indicators in its block well than predict indicators in other blocks.

Bootstrapping of Outer Loading of Indicators of Logistics Service Cost Variable

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STERR|)
CC1 <- CC	0.950153	0.951168	0.008697	109.253779
CC1 <- LSC	0.692674	0.689255	0.065175	10.627890
CC3 <- CC	0.917177	0.915199	0.023936	38.317777
CC3 <- LSC	0.541970	0.539553	0.087061	6.225202
CR1 <- CR	0.887718	0.889507	0.026540	33.448736
CR1 <- LSC	0.673430	0.673708	0.056382	11.944020
CR2 <- CR	0.943258	0.944024	0.011602	81.300759
CR2 <- LSC	0.733870	0.732115	0.052193	14.060687
CR3 <- CR	0.486584	0.479369	0.130796	3.720160
CR3 <- LSC	0.377055	0.377883	0.094698	3.981664
FR1 <- FR	0.966263	0.966807	0.004662	207.278619
FR1 <- LSC	0.937408	0.938185	0.011236	83.430377
FR2 <- FR	0.900623	0.899137	0.035922	25.071460
FR2 <- LSC	0.795938	0.796899	0.057472	13.849132
FR3 <- FR	0.400142	0.394363	0.127024	3.150125
FR3 <- LSC	0.372253	0.370394	0.103612	3.592747
PC1 <- PC	0.834625	0.830755	0.041604	20.061170
PC1 <- LSC	0.568141	0.566561	0.074416	7.634671
PC2 <- PC	0.952085	0.951960	0.006361	149.675878
PC2 <- LSC	0.766206	0.765578	0.039826	19.238780
PC3 <- PC	0.935971	0.935865	0.011164	83.838439
PC3 <- LSC	0.800195	0.798216	0.044931	17.809571
SR1 <- SR	0.938674	0.938623	0.016215	57.889260
SR1 <- LSC	0.862568	0.862198	0.027524	31.338580
SR2 <- SR	0.956266	0.956289	0.007256	131.781567
SR2 <- LSC	0.934010	0.934356	0.011889	78.560764
SR3 <- SR	0.919023	0.919586	0.013987	65.705117
SR3 <- LSC	0.854352	0.854892	0.020933	40.813908

Conclusion: Convergent validity is assessed through correlation between score of indicator and score of variable. All of indicators achieve convergent validity because all of loading factors above 0.50 and significant.

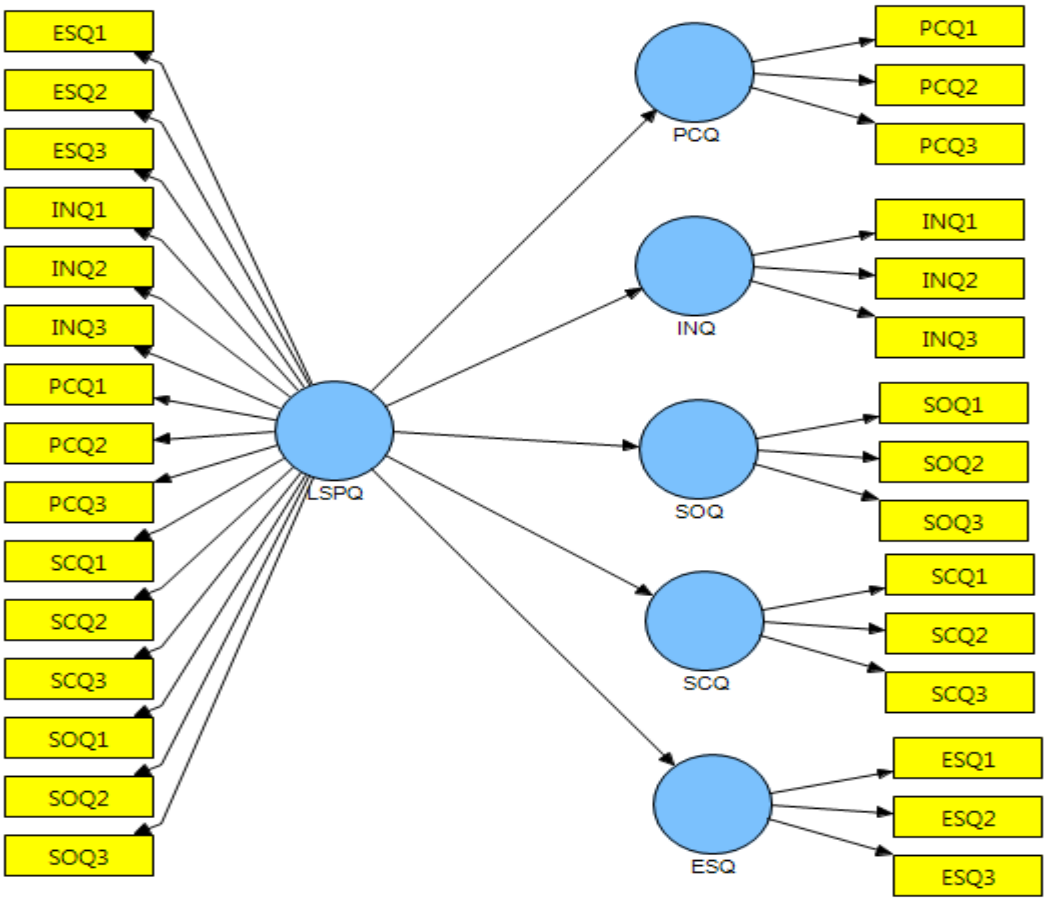
Bootstrapping of Path Coefficients between Logistics Service Cost Variable and Its Dimension

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STERR|)
LSC -> CC	0.669589	0.669076	0.068068	9.836987
LSC -> CR	0.769754	0.768837	0.050449	15.258166
LSC -> FR	0.931839	0.933646	0.012323	75.617004
LSC -> PC	0.793884	0.794334	0.041638	19.066423
LSC -> SR	0.943053	0.943155	0.011978	78.731719

Conclusion: All paths are significant

General conclusion: The measurement model examined has higher reliability and validity after deleting CC2, IR1, IR3, DC1, DC2, DC3, EC1, EC2, EC3, TC1, TC2, TC3 indicators.

The examination of reliability and validity of logistics service process quality variable



Measurement Model of Logistics Service Process Quality Variable

Reliability of Logistics Service Process Quality Variable

Variable and Its First Order	Composite Reliability	Cronbachs Alpha
Logistics service process quality (LSPQ)	0.932442	0.919178
• Personnel contact quality (PCQ)	0.866312	0.778333
• Information quality (INQ)	0.945736	0.913822
• Service order procedure (SOQ)	0.908471	0.848960
• Shipment complaint handling (SCQ)	0.969607	0.952918
• Emergency service (ESQ)	0.932451	0.890745

Conclusion: The variable and its first order variables are reliable because they have composite reliability and Cronbachs alpha above 0.7

Cross Loadings of Logistics Service Process Quality Variable

	ESQ	INQ	**LSPQ**	PCQ	SCQ	SOQ
ESQ1	**0.895394**	0.681856	**0.604814**	0.114536	0.506613	0.060716
ESQ2	**0.949274**	0.649892	**0.645781**	0.206339	0.544881	0.083123
ESQ3	**0.872993**	0.557955	**0.627335**	0.332446	0.532439	0.089058
INQ1	0.530872	**0.940913**	**0.857302**	0.571542	0.810688	0.350998
INQ2	0.673837	**0.949841**	**0.765897**	0.365442	0.663203	0.193299
INQ3	0.745953	**0.878842**	**0.694199**	0.317388	0.582847	0.041501
PCQ1	-0.153425	0.070692	**0.336484**	**0.635775**	0.353936	0.460682
PCQ2	0.324885	0.427912	**0.732036**	**0.924840**	0.537547	0.770316
PCQ3	0.254213	0.510603	**0.777666**	**0.898482**	0.697780	0.719721
SCQ1	0.560851	0.750378	**0.888122**	0.641912	**0.969834**	0.397617
SCQ2	0.536349	0.707893	**0.869818**	0.626089	**0.954889**	0.438977
SCQ3	0.574543	0.691581	**0.877861**	0.635763	**0.943280**	0.468594
SOQ1	0.223261	0.304249	**0.596586**	0.695252	0.370311	**0.926011**
SOQ2	0.103314	0.209743	**0.600474**	0.787103	0.463667	**0.957248**
SOQ3	-0.205121	0.009855	**0.366937**	0.641784	0.369884	**0.732633**

Conclusion: Discriminant validity is assessed through cross loading between indicators and variable. Correlation of variable and its indicators is higher than correlation of its indicators and other variables therefore the variable predicts indicators in its block well than predict indicators in other blocks.

Bootstrapping of Path Coefficients between Logistics Service Process Quality Variable and Its First Order

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STERR|)
LSPQ -> ESQ	0.691084	0.688010	0.073695	9.377617
LSPQ -> INQ	0.841089	0.844308	0.022416	37.522567
LSPQ -> PCQ	0.788759	0.790505	0.043482	18.140053
LSPQ -> SCQ	0.919049	0.919975	0.019404	47.363278
LSPQ -> SOQ	0.609655	0.610388	0.066581	9.156546

Conclusion: All of paths are significant (t above 1.96)

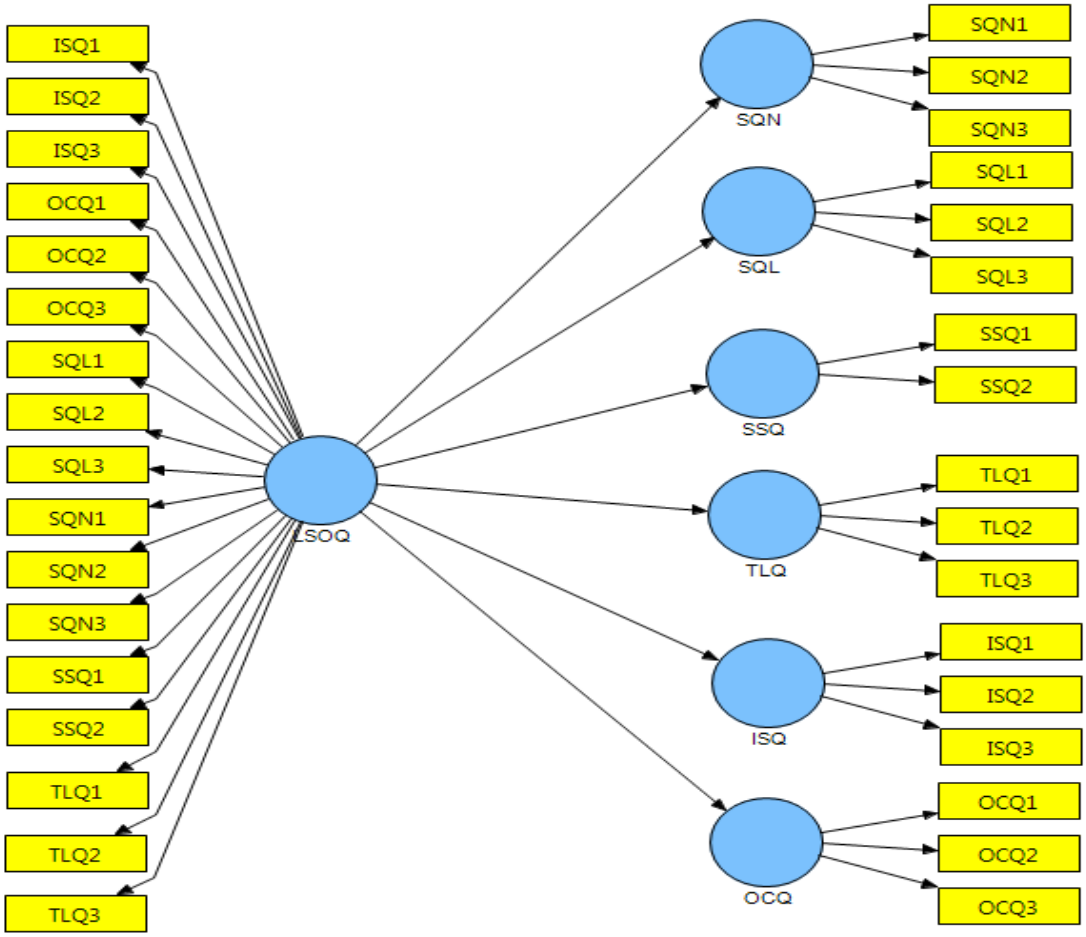
Bootstrapping of Outer Loading of Indicators of Logistics Service Process Quality Variable

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STERR|)
ESQ1 <- LSPQ	0.604814	0.599960	0.080837	7.481887
ESQ1 <- ESQ	0.895394	0.895120	0.028637	31.267158
ESQ2 <- LSPQ	0.645781	0.641694	0.073488	8.787527
ESQ2 <- ESQ	0.949274	0.949107	0.010645	89.177020
ESQ3 <- LSPQ	0.627335	0.624666	0.070570	8.889532
ESQ3 <- ESQ	0.872993	0.872961	0.031061	28.105437
INQ1 <- LSPQ	0.857302	0.859511	0.022330	38.391890
INQ1 <- INQ	0.940913	0.941272	0.008937	105.285683
INQ2 <- LSPQ	0.765897	0.767240	0.038012	20.148671
INQ2 <- INQ	0.949841	0.949023	0.009872	96.216453
INQ3 <- LSPQ	0.694199	0.694692	0.048387	14.346722
INQ3 <- INQ	0.878842	0.876407	0.020759	42.335371
PCQ1 <- PCQ	0.635775	0.616601	0.152947	4.156836
PCQ1 <- LSPQ	0.336484	0.339683	0.161610	2.082073
PCQ2 <- PCQ	0.924840	0.919529	0.016660	55.513260
PCQ2 <- LSPQ	0.732036	0.725991	0.061516	11.899950
PCQ3 <- PCQ	0.898482	0.904511	0.016826	53.397920
PCQ3 <- LSPQ	0.777666	0.774213	0.051553	15.084809
SCQ1 <- LSPQ	0.888122	0.888392	0.024059	36.913766
SCQ1 <- SCQ	0.969834	0.969401	0.009495	102.142366
SCQ2 <- LSPQ	0.869818	0.870143	0.030151	28.848317
SCQ2 <- SCQ	0.954889	0.953898	0.014696	64.974452
SCQ3 <- LSPQ	0.877861	0.877217	0.025007	35.105237
SCQ3 <- SCQ	0.943280	0.941544	0.017099	55.165917
SOQ1 <- LSPQ	0.596586	0.591168	0.048139	12.393073
SOQ1 <- SOQ	0.926011	0.927687	0.023688	39.091836
SOQ2 <- LSPQ	0.600474	0.595303	0.075932	7.908025
SOQ2 <- SOQ	0.957248	0.958674	0.010878	87.996484
SOQ3 <- LSPQ	0.366937	0.362771	0.134108	2.736132
SOQ3 <- SOQ	0.732633	0.722774	0.095018	7.710492

Conclusion: Convergen validity is assessed through correlation between score of indicator and score of variable. Indicators achieve convergent validity because almost all of loading factors above 0.5 and significant. Although PCQ1 and SOQ3 are below 0.50, they are not deleted because they are significant (t above 1.96).

General conclusion: The measurement model examined has good reliability and validity.

The examination of reliability and validity of logistics service outcome quality variable



Measurement Model of Logistics Service Outcome Quality Variable

Reliability of Logistics Service Outcome Quality Variable

Variable and Its First Order	Composite Reliability	Cronbachs Alpha
Logistics service outcome quality (LSOQ)	0.903609	0.885401
• Shipment quantities (SQN)	0.898306	0.830113
• Shipment quality (SQL)	0.745929	0.502100
• Shipment security (SSQ)	0.735090	0.487561
• Timeliness(TLQ)	0.943749	0.910136
• Innovative service (ISQ)	0.932337	0.891001
• Operational coverage area (OCQ)	0.905277	0.842735

Conclusion: The variable and its first order variable are medium reliable because they have composite reliability and cronbachs alpha above 0.7 except SQL and SSQ

Cross Loadings of Logistics Service Outcome Quality Variable

	ISQ	**LSOQ**	OCQ	SQL	SQN	SSQ	TLQ
ISQ1	**0.876702**	**0.597913**	0.659023	0.143480	0.448192	0.260444	-0.084500
ISQ2	**0.896987**	**0.673322**	0.488613	0.490712	0.584037	0.316427	0.005241
ISQ3	**0.943848**	**0.715944**	0.691398	0.530344	0.480795	0.258437	-0.021221
OCQ1	0.494300	**0.588168**	**0.749838**	0.103189	0.142228	0.588143	0.330175
OCQ2	0.578637	**0.816719**	**0.954296**	0.400766	0.276142	0.690804	0.524218
OCQ3	0.677626	**0.896281**	**0.903185**	0.693033	0.628807	0.458931	0.398157
SQL1	0.454445	**0.580154**	0.535308	**0.682153**	0.274358	0.193325	0.343643
SQL2	0.097001	**0.380251**	0.156308	**0.663786**	0.460693	0.192924	0.218086
SQL3	0.310992	**0.577731**	0.296122	**0.761980**	0.659973	0.244438	0.326392
SQN1	0.585076	**0.626318**	0.548268	0.456817	**0.805761**	0.270174	-0.079457
SQN2	0.322967	**0.446264**	0.116560	0.602799	**0.834836**	0.019665	0.076006
SQN3	0.494291	**0.649158**	0.378889	0.655801	**0.946597**	0.177349	0.139572
SSQ1	0.286872	**0.556371**	0.422956	0.303463	0.272494	**0.863507**	0.391173
SSQ2	0.287577	**0.601452**	0.694648	0.225606	-0.010501	**0.832066**	0.611294
SSQ3	-0.056090	**0.204545**	0.135648	0.046230	0.294424	**0.317884**	0.216519
TLQ1	-0.027269	**0.533159**	0.451657	0.436355	0.106378	0.559276	**0.946812**
TLQ2	-0.000723	**0.500803**	0.517368	0.351253	-0.050234	0.603374	**0.878623**
TLQ3	-0.070050	**0.467888**	0.357372	0.405548	0.080678	0.496131	**0.936436**

Conclusion: Discriminant validity is assessed through cross loading between indicators and variable. Correlation of variable and its indicators is higher than correlation of its indicators and other variables therefore the variable predicts indicators in its block well than predict indicators in other blocks.

Bootstrapping of Path Coefficients between Logistics Service Outcome Quality Variable and Its First Order

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STERR|)
LSOQ -> ISQ	0.733656	0.741988	0.038358	19.126411
LSOQ -> OCQ	0.894755	0.898899	0.011379	78.632227
LSOQ -> SQL	0.748768	0.750482	0.053388	14.024887
LSOQ -> SQN	0.678973	0.671005	0.072618	9.349880
LSOQ -> SSQ	0.681835	0.689317	0.045113	15.113859
LSOQ -> TLQ	0.545192	0.542089	0.108288	5.034626

Conclusion: All of paths are significant (t above 1.96)

Bootstrapping of Outer Loading of Indicators of Logistics Service Outcome Quality Variable

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STERR|)
ISQ1 <- LSOQ	0.597913	0.603666	0.051774	11.548483
ISQ1 <- ISQ	0.876702	0.873553	0.023821	36.803330
ISQ2 <- LSOQ	0.673322	0.679215	0.049418	13.624958
ISQ2 <- ISQ	0.896987	0.896952	0.016439	54.565265
ISQ3 <- LSOQ	0.715944	0.722808	0.038532	18.580685
ISQ3 <- ISQ	0.943848	0.943626	0.013157	71.739239
OCQ1 <- LSOQ	0.588168	0.592993	0.084169	6.987938
OCQ1 <- OCQ	0.749838	0.749210	0.068084	11.013402
OCQ2 <- LSOQ	0.816719	0.822347	0.021903	37.287585
OCQ2 <- OCQ	0.954296	0.955025	0.004611	206.973126
OCQ3 <- LSOQ	0.896281	0.897180	0.017824	50.285189
OCQ3 <- OCQ	0.903185	0.904820	0.012256	73.692783
SQL1 <- LSOQ	0.580154	0.582670	0.057585	10.074743
SQL1 <- SQL	0.682153	0.699786	0.050534	13.499013
SQL2 <- LSOQ	0.380251	0.370116	0.139576	2.724331
SQL2 <- SQL	0.663786	0.631655	0.151935	4.368884
SQL3 <- LSOQ	0.577731	0.566035	0.087279	6.619394
SQL3 <- SQL	0.761980	0.747265	0.071848	10.605514
SQN1 <- LSOQ	0.626318	0.615409	0.092060	6.803359
SQN1 <- SQN	0.805761	0.805752	0.042759	18.844286
SQN2 <- LSOQ	0.446264	0.433944	0.100757	4.429099
SQN2 <- SQN	0.834836	0.827025	0.053337	15.652071
SQN3 <- LSOQ	0.649158	0.637655	0.081884	7.927811
SQN3 <- SQN	0.946597	0.944376	0.018925	50.017573

Conclusion: Convergent validity is assessed through correlation between score of indicator and score of variable. Indicators achieve convergent validity because almost all of loading factors above 0.50 and significant. Although SQN2 and SQL2 are below 0.50, they are not deleted because they are significant (t above 1.96)

Bootstrapping of Outer Loading of Indicators of Logistics Service Outcome Quality Variable (continued)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STERR|)
SSQ1 <- LSOQ	0.556371	0.561768	0.059194	9.399116
SSQ1 <- SSQ	0.863507	0.861352	0.033121	26.071539
SSQ2 <- LSOQ	0.601452	0.606412	0.051222	11.742001
SSQ2 <- SSQ	0.832066	0.830647	0.052636	15.807812
SSQ3 <- LSOQ	**0.204545**	**0.202637**	**0.131362**	**1.557109**
SSQ3 <- SSQ	**0.317884**	**0.301226**	**0.219755**	**1.446540**
TLQ1 <- LSOQ	0.533159	0.526632	0.111076	4.799938
TLQ1 <- TLQ	0.946812	0.946157	0.016333	57.968212
TLQ2 <- LSOQ	0.500803	0.495160	0.089743	5.580434
TLQ2 <- TLQ	0.878623	0.882543	0.018910	46.463007
TLQ3 <- LSOQ	0.467888	0.460917	0.144497	3.238044
TLQ3 <- TLQ	0.936436	0.932144	0.024751	37.833864

Conclusion: Indicator SSQ3 is not significant therefore reliability and validity of logistics service outcome quality will be examined for second round by deleting indicator SSQ3

Round 2

Reliability of Logistics Service Outcome Quality Variable (round 2)

Variable and Its First Order	Composite Reliability	Cronbachs Alpha
Logistics service outcome quality (LSOQ)	0.907511	0.890080
• Shipment quantities (SQN)	0.898033	0.830113
• Shipment quality (SQL)	0.744704	0.502100
• Shipment security (SSQ)	0.853783	0.658394
• Timeliness(TLQ)	0.943726	0.910136
• Innovative service (ISQ)	0.932347	0.891001
• Operational coverage area (OCQ)	0.905153	0.842735

Conclusion: The variable and its first order variables are medium reliable because they have composite reliability and Cronbach alpha above 0.7 except SQL and SSQ. The reliability is higher than round 1.

Cross Loadings of Logistics Service Outcome Quality Variable (round 2)

	ISQ	**LSOQ**	OCQ	SQL	SQN	SSQ	TLQ
ISQ1	**0.877182**	**0.607373**	0.658468	0.146034	0.450859	0.289236	-0.083911
ISQ2	**0.896418**	**0.678299**	0.489077	0.495116	0.583555	0.327355	0.004751
ISQ3	**0.943979**	**0.726156**	0.691436	0.533983	0.482470	0.288488	-0.020922
OCQ1	0.494840	**0.581709**	**0.747605**	0.102042	0.144885	0.546703	0.329927
OCQ2	0.578957	**0.823416**	**0.954687**	0.406479	0.278480	0.714600	0.525450
OCQ3	0.677728	**0.901877**	**0.904282**	0.698037	0.629780	0.473702	0.398338
SQL1	0.454190	**0.591503**	0.536950	**0.691368**	0.273638	0.236670	0.344513
SQL2	0.096995	**0.367218**	0.155925	**0.654255**	0.461748	0.131678	0.218075
SQL3	0.310564	**0.576450**	0.297139	**0.758797**	0.658730	0.248253	0.325027
SQN1	0.585407	**0.625554**	0.548337	0.452327	**0.808999**	0.258997	-0.078904
SQN2	0.322285	**0.433876**	0.117589	0.601618	**0.831983**	-0.047244	0.074273
SQN3	0.493902	**0.638196**	0.379927	0.655505	**0.945399**	0.111666	0.138535
SSQ1	0.286601	**0.549389**	0.422198	0.299948	0.273119	**0.847740**	0.390639
SSQ2	0.287698	**0.609205**	0.694986	0.230573	-0.008591	**0.878177**	0.612972
TLQ1	-0.027536	**0.521742**	0.451488	0.436896	0.104689	0.511546	**0.945790**
TLQ2	-0.000611	**0.502593**	0.517967	0.353840	-0.049518	0.620970	**0.880271**
TLQ3	-0.070218	**0.462921**	0.357527	0.405983	0.079138	0.487120	**0.935817**

Conclusion: Discriminant validity is assessed through cross loading between indicators and variable. Correlation of variable and its indicators is higher than correlation of its indicators and other variables therefore the variable predicts indicators in its block well than predict indicators in other blocks.

Bootstrapping of Outer Loading of Indicators of Logistics Service Outcome Quality Variable (round 2)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STERR|)
ISQ1 <- LSOQ	0.607373	0.609396	0.053406	11.372704
ISQ1 <- ISQ	0.877182	0.877601	0.023590	37.184227
ISQ2 <- LSOQ	0.678299	0.674124	0.055280	12.270257
ISQ2 <- ISQ	0.896418	0.896005	0.017054	52.563585
ISQ3 <- LSOQ	0.726156	0.724700	0.040938	17.738054
ISQ3 <- ISQ	0.943979	0.943469	0.013246	71.267252
OCQ1 <- LSOQ	0.581709	0.579639	0.083743	6.946348
OCQ1 <- OCQ	0.747605	0.741369	0.067757	11.033663
OCQ2 <- LSOQ	0.823416	0.826346	0.021552	38.205570
OCQ2 <- OCQ	0.954687	0.955222	0.004568	209.007922
OCQ3 <- LSOQ	0.901877	0.902014	0.019776	45.604581
OCQ3 <- OCQ	0.904282	0.905325	0.012306	73.480195
SQL1 <- LSOQ	0.591503	0.594452	0.056989	10.379291
SQL1 <- SQL	0.691368	0.708350	0.047479	14.561676
SQL2 <- LSOQ	0.367218	0.360324	0.134019	2.740057
SQL2 <- SQL	0.654255	0.627287	0.151863	4.308186
SQL3 <- LSOQ	0.576450	0.562071	0.095004	6.067643
SQL3 <- SQL	0.758797	0.740411	0.096648	7.851150
SQN1 <- LSOQ	0.625554	0.622655	0.093650	6.679730
SQN1 <- SQN	0.808999	0.809273	0.057723	14.015246
SQN2 <- LSOQ	0.433876	0.424143	0.108077	4.014518
SQN2 <- SQN	0.831983	0.821739	0.100300	8.294985
SQN3 <- LSOQ	0.638196	0.629449	0.085946	7.425586
SQN3 <- SQN	0.945399	0.939121	0.083891	11.269339

Bootstrapping of Outer Loading of Indicators of Logistics Service Outcome Quality Variable (round 2 continued)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STERR|)
SSQ1 <- LSOQ	0.549389	0.540737	0.057190	9.606353
SSQ1 <- SSQ	0.847740	0.843128	0.036618	23.151015
SSQ2 <- LSOQ	0.609205	0.610852	0.053363	11.416243
SSQ2 <- SSQ	0.878177	0.881190	0.021033	41.751661
TLQ1 <- LSOQ	0.521742	0.509918	0.101764	5.126992
TLQ1 <- TLQ	0.945790	0.944301	0.015478	61.104422
TLQ2 <- LSOQ	0.502593	0.501401	0.085138	5.903262
TLQ2 <- TLQ	0.880271	0.882538	0.019304	45.599279
TLQ3 <- LSOQ	0.462921	0.461248	0.132980	3.481123
TLQ3 <- TLQ	0.935817	0.933754	0.021962	42.610612

Conclusion: Convergent validity is assessed through correlation between score of indicator and score of variable. Indicators achieve convergent validity because almost all of loading factors above 0.50 and significant. Although SQL2 is below 0.50, it is not deleted because it is significant (t above 1.96)

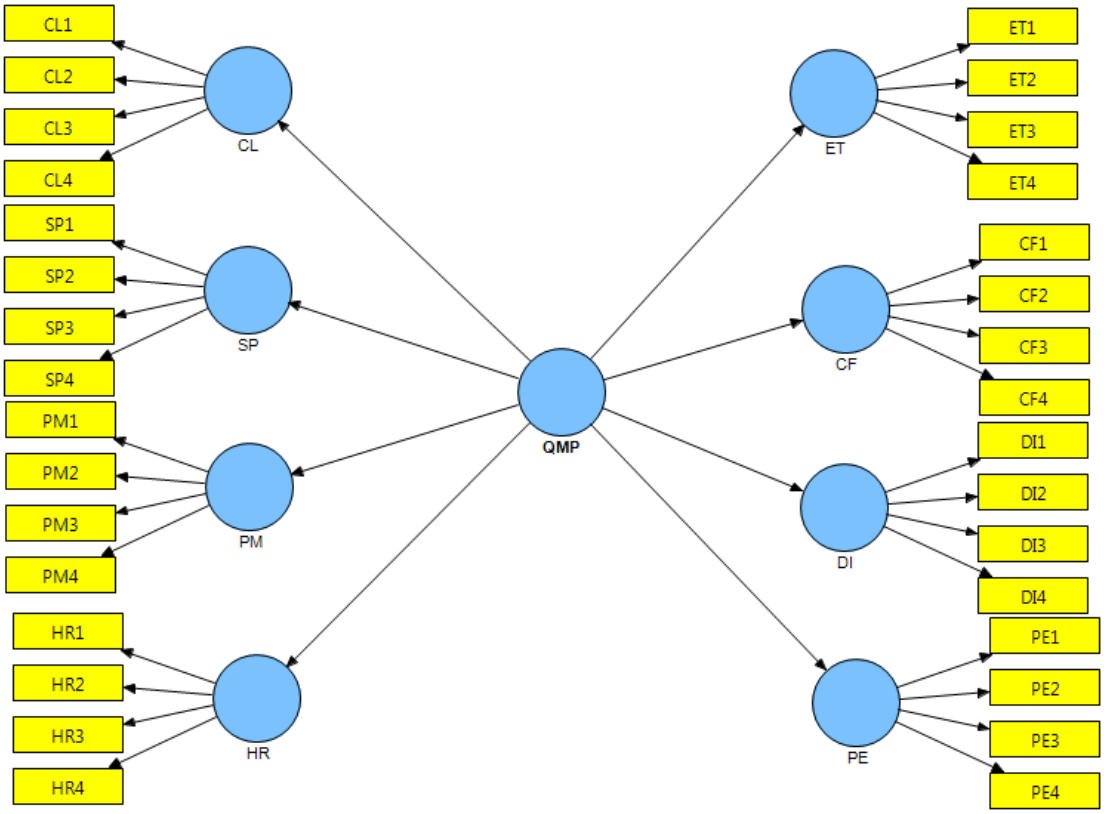
Bootstrapping of Path Coefficients between Logistics Service Outcome Quality Variable and Its First Order (round2)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STERR|)
LSOQ -> ISQ	0.742649	0.741974	0.041083	18.076989
LSOQ -> OCQ	0.898474	0.901199	0.011795	76.173366
LSOQ -> SQL	0.751898	0.752502	0.054175	13.879154
LSOQ -> SQN	0.671151	0.669092	0.071349	9.406523
LSOQ -> SSQ	0.672469	0.670564	0.047015	14.303428
LSOQ -> TLQ	0.539856	0.537530	0.101210	5.334020

Conclusion: All of paths are significant (t above 1.96)

General conclusion: For logistics service outcome quality variable, indicator SSQ3 shoul be deleted to achieve higher reliability and validity

The examination of reliability and validity of quality management practice variable



Measurement Model of Quality Management Practice Variable

Reliability of Quality Management Practice Variable

Variable and Its First Order	Composite Reliability	Cronbachs Alpha
Quality management practice (QMP)	0.955870	0.951398
• Top management commitment (CL)	0.824377	0.717139
• Strategic quality planning (SP)	0.842224	0.749914
• Process management (Chapman et al.)	0.925427	0.893461
• Human resource management (HR)	0.842020	0.749550
• Education and training (ET)	0.961812	0.946823
• Customer focus (McFarland et al.)	0.895096	0.841838
• Data and information (DI)	0.919931	0.884150
• Performance evaluation (PE)	0.921463	0.887071

Conclusion: The variable and its first order variables are reliable because they have composite reliability and Cronbach alpha above 0.7

Cross Loadings of Quality Management Practice Variable

	CF	CL	DI	ET	HR	PE	PM	**QMP**	SP
CF1	**0.749778**	0.548662	0.598778	0.631735	0.454949	0.645435	0.325994	**0.698346**	0.295981
CF2	**0.934022**	0.515891	0.555207	0.649805	0.461947	0.566312	0.399794	**0.722525**	0.323744
CF3	**0.808246**	0.224111	0.632076	0.477725	0.516631	0.517897	0.285461	**0.638875**	0.423143
CF4	**0.800854**	0.338056	0.433132	0.414584	0.388034	0.569551	0.358213	**0.593823**	0.325151
CL1	0.546322	**0.822026**	0.229585	0.734458	0.315496	0.549779	0.308256	**0.622948**	0.387678
CL2	0.351417	**0.798696**	0.442802	0.543309	0.521367	0.505845	0.555841	**0.676603**	0.598180
CL3	0.428895	**0.813942**	0.047514	0.538606	0.157714	0.492895	0.163690	**0.576394**	0.402256
CL4	0.022962	**0.672544**	0.219655	0.176012	0.239074	0.143263	0.364578	**0.576503**	0.166228
DI1	0.685246	0.203964	**0.856133**	0.331946	0.707638	0.518334	0.455696	**0.670004**	0.326692
DI2	0.688711	0.341815	**0.875360**	0.343883	0.651215	0.717216	0.471698	**0.733145**	0.392696
DI3	0.482754	0.447351	**0.864206**	0.497831	0.681766	0.520283	0.646265	**0.734530**	0.375270
DI4	0.469578	0.137086	**0.849148**	0.276897	0.752565	0.515792	0.576934	**0.654354**	0.440167
ET1	0.712135	0.680888	0.463681	**0.964934**	0.461320	0.481996	0.408150	**0.748088**	0.406027
ET2	0.673681	0.627804	0.467342	**0.949828**	0.445569	0.518478	0.395370	**0.735089**	0.403546
ET3	0.592321	0.712073	0.364155	**0.895753**	0.494338	0.474124	0.623201	**0.751741**	0.507332
ET4	0.484934	0.650652	0.266145	**0.903671**	0.394361	0.373878	0.504492	**0.641620**	0.376789
HR1	0.334729	0.164499	0.498368	0.287134	**0.718123**	0.465089	0.307197	**0.543095**	0.654056
HR2	0.402088	0.550679	0.649834	0.548924	**0.709349**	0.360908	0.652102	**0.656778**	0.191780
HR3	0.471573	0.299531	0.601459	0.355422	**0.811008**	0.530691	0.406244	**0.646400**	0.582009
HR4	0.455626	0.276609	0.684242	0.244207	**0.782057**	0.293210	0.570611	**0.565018**	0.208359
PE1	0.731372	0.551841	0.666088	0.447153	0.478953	**0.878355**	0.400790	**0.751950**	0.468783
PE2	0.465560	0.470936	0.445689	0.349635	0.328529	**0.863981**	0.097729	**0.588455**	0.644181
PE3	0.708552	0.503897	0.698038	0.437987	0.514496	**0.866907**	0.513981	**0.787656**	0.625492
PE4	0.461724	0.575420	0.434787	0.479867	0.542873	**0.844790**	0.305833	**0.698751**	0.751612
PM1	0.342449	0.196388	0.517438	0.440128	0.580832	0.250547	**0.833470**	**0.565651**	0.314372
PM2	0.441702	0.408617	0.656755	0.419392	0.705818	0.398379	**0.906955**	**0.708181**	0.492021
PM3	0.159786	0.419320	0.317718	0.336830	0.420915	0.204334	**0.854029**	**0.576132**	0.299799
PM4	0.436326	0.588467	0.607942	0.572663	0.511157	0.473454	**0.882680**	**0.727354**	0.446853
SP1	0.109893	0.324162	0.089721	0.300010	0.463029	0.252777	0.356446	**0.580141**	**0.601994**
SP2	0.362364	0.457635	0.318688	0.291342	0.244349	0.638513	0.237969	**0.530743**	**0.851674**
SP3	0.175038	0.417565	0.245682	0.419829	0.212928	0.435329	0.320381	**0.555871**	**0.673760**
SP4	0.489892	0.492269	0.559755	0.390380	0.641056	0.729372	0.466112	**0.732379**	**0.876374**

Conclusion: Discriminant validity is assessed through cross loading between indicators and variable. Correlation of variable and its indicators is higher than correlation of its indicators and other variables therefore the variable predicts indicators in its block well than predict indicators in other blocks.

Bootstrapping of Outer Loading of Indicators of Quality Management Practice Variable

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	**T Statistics (|O/STERR|)**
CF1 <- CF	**0.749778**	0.747370	0.038367	**19.542008**
CF1 <- QMP	**0.698346**	0.700594	0.050894	**13.721622**
CF2 <- CF	**0.934022**	0.933142	0.013042	**71.613954**
CF2 <- QMP	**0.722525**	0.726470	0.029588	**24.419820**
CF3 <- CF	**0.808246**	0.807509	0.034194	**23.637000**
CF3 <- QMP	**0.638875**	0.644065	0.035000	**18.253748**
CF4 <- CF	**0.800854**	0.799166	0.048129	**16.639858**
CF4 <- QMP	**0.593823**	0.596287	0.071494	**8.305907**
CL1 <- CL	**0.822026**	0.820188	0.046985	**17.495358**
CL1 <- QMP	**0.622948**	0.619503	0.072498	**8.592626**
CL2 <- CL	**0.798696**	0.796238	0.058288	**13.702552**
CL2 <- QMP	**0.676603**	0.669059	0.075592	**8.950728**
CL3 <- CL	**0.813942**	0.805655	0.057819	**14.077369**
CL3 <- QMP	**0.476394**	0.469283	0.104263	**4.569155**
CL4 <- CL	**0.472544**	0.471982	0.089864	**5.258435**
CL4 <- QMP	**0.276503**	0.275634	0.082033	**3.370627**
DI1 <- DI	**0.856133**	0.855001	0.020144	**42.500900**
DI1 <- QMP	**0.670004**	0.674633	0.043579	**15.374526**
DI2 <- DI	**0.875360**	0.875707	0.015667	**55.874034**
DI2 <- QMP	**0.733145**	0.737220	0.028349	**25.861728**
DI3 <- DI	**0.864206**	0.862402	0.018711	**46.188293**
DI3 <- QMP	**0.734530**	0.736736	0.023090	**31.811224**
DI4 <- DI	**0.849148**	0.847029	0.022909	**37.066428**
DI4 <- QMP	**0.654354**	0.655811	0.030830	**21.224672**
ET1 <- ET	**0.964934**	0.965273	0.006606	**146.069261**
ET1 <- QMP	**0.748088**	0.749180	0.035117	**21.302760**
ET2 <- ET	**0.949828**	0.949764	0.008198	**115.864086**
ET2 <- QMP	**0.735089**	0.735256	0.036233	**20.287735**
ET3 <- ET	**0.895753**	0.894011	0.021798	**41.094090**
ET3 <- QMP	**0.751741**	0.748599	0.040506	**18.558645**
ET4 <- ET	**0.903671**	0.900974	0.021470	**42.090825**
ET4 <- QMP	**0.641620**	0.636944	0.055922	**11.473469**

Bootstrapping of Outer Loading of Indicators of Quality Management Practice Variable (continued)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	**T Statistics (|O/STERR|)**
HR1 <- HR	**0.718123**	0.716025	0.051065	**14.062992**
HR1 <- QMP	**0.543095**	0.538424	0.066666	**8.146515**
HR2 <- HR	**0.709349**	0.710772	0.036847	**19.251238**
HR2 <- QMP	**0.656778**	0.657902	0.032745	**20.057561**
HR3 <- HR	**0.811008**	0.808967	0.039261	**20.656612**
HR3 <- QMP	**0.646400**	0.644216	0.056437	**11.453399**
HR4 <- HR	**0.782057**	0.783634	0.030113	**25.970991**
HR4 <- QMP	**0.565018**	0.566440	0.040763	**13.861172**
PE1 <- PE	**0.878355**	0.879396	0.014675	**59.855000**
PE1 <- QMP	**0.751950**	0.754756	0.031329	**24.001671**
PE2 <- PE	**0.863981**	0.862504	0.030290	**28.523846**
PE2 <- QMP	**0.588455**	0.591269	0.076629	**7.679285**
PE3 <- PE	**0.866907**	0.868177	0.016114	**53.799431**
PE3 <- QMP	**0.787656**	0.787991	0.034744	**22.670381**
PE4 <- PE	**0.844790**	0.841932	0.031920	**26.465931**
PE4 <- QMP	**0.698751**	0.697397	0.069549	**10.046848**
PM1 <- PM	**0.833470**	0.824970	0.041331	**20.165688**
PM1 <- QMP	**0.565651**	0.562154	0.079986	**7.071885**
PM2 <- PM	**0.906955**	0.906193	0.014382	**63.063192**
PM2 <- QMP	**0.708181**	0.705277	0.044236	**16.008985**
PM3 <- PM	**0.854029**	0.845262	0.042905	**19.905228**
PM3 <- QMP	**0.476132**	0.468576	0.108667	**4.381582**
PM4 <- PM	**0.882680**	0.880175	0.025730	**34.306060**
PM4 <- QMP	**0.727354**	0.726036	0.048719	**14.929579**
SP1 <- SP	**0.601994**	0.568476	0.155762	**3.864836**
SP1 <- QMP	**0.380141**	0.360530	0.146010	**2.603532**
SP2 <- SP	**0.851674**	0.850984	0.035793	**23.794110**
SP2 <- QMP	**0.530743**	0.535183	0.107111	**4.955060**
SP3 <- SP	**0.673760**	0.652801	0.099785	**6.752099**
SP3 <- QMP	**0.455871**	0.447390	0.114016	**3.998294**
SP4 <- SP	**0.876374**	0.882297	0.017161	**51.068837**
SP4 <- QMP	**0.732379**	0.728556	0.060359	**12.133787**

Conclusion: Convergent validity is assessed through correlation between score of indicator and score of variable. Indicators achieve convergent validity because almost all of loading factors above 0.50 and significant. Although CL3, CL4, PM3 and SP1 are below 0.50, they are not deleted because they are significant (t above 1.96)

Bootstrapping of Path Coefficients between Quality Management Practice Variable and Its First Order

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	**T Statistics (|O/STERR|)**
QMP -> CF	**0.808310**	0.814978	0.027881	**28.991439**
QMP -> CL	**0.731596**	0.730906	0.054149	**13.510818**
QMP -> DI	**0.812251**	0.817851	0.022305	**36.415093**
QMP -> ET	**0.776875**	0.776864	0.033272	**23.348992**
QMP -> HR	**0.803174**	0.803459	0.031424	**25.558991**
QMP -> PE	**0.827334**	0.830542	0.031295	**26.436866**
QMP -> PM	**0.729390**	0.732752	0.050859	**14.341330**
QMP -> SP	**0.718099**	0.722041	0.072525	**9.901362**

Conclusion: All of paths are significant (t above 1.96)

General conclusion: The measurement model examined has good reliability and validity

APPENDIX E ETHICS DOCUMENTS

University of Wollongong

INVITATION: A DOCTORAL RESEARCH

[INSERT DATE]

Dear
[INSERT POSITION IN DEPARTMENT] [INSERT COMPANY NAME]
[INSERT COMPANY ADDRESS]

We would like to invite you to participate in a doctoral research study that investigates logistics service provider (LSP) industry in a developing country. You have received this invitation because your company has an important role in the LSP industry. We would like to stress that your participation in this research is completely voluntary.

We have attached 2 sheets.
1. The participation information sheet
2. The consent form
To participate in this study, you can sign the consent form and send it to my mail address. By participating in this study, you can help me to understand the LSP industry in Indonesia. It is expected that such understanding will lead to more improve the LSP industry.

Thank you for your interest in this study.

Kind regards,

Ms Yeni Sumantri (Ph.D student)
Faculty of Informatics
University of Wollongong
Australia

ys487@uow.edu.au

Dr Sim Kim Lau (Team Leader)
Faculty of Informatics
University of Wollongong
Australia

sim_lau@uow.edu.au

University of Wollongong

PARTICIPATION INFORMATION SHEET
[FOR LSP]

AN ANALYSIS OF LOGISTICS SERVICE PROVIDER (LSP) INDUSTRY IN A DEVELOPING COUNTRY: A FOCUS ON INDONESIA

This is an invitation to participate in a doctoral research study conducted by Ms Yeni Sumantri as part of a *Ph.D degree* being supervised by Dr. Sim Kim Lau at the School of Information Systems and Technology at the University of Wollongong. The purpose of the research is to analyze logistics service provider (LSP) industry in a developing country: a focus on Indonesia. This study is supported by a research scholarship from the Ministry of National Education, Republic of Indonesia. The findings from this study will assist the LSP to improve their services and to help position Indonesian industry to compete globally.

We would like to ask that you take 15 minutes to complete a survey that will ask for information about quality management practice in your organization. Your involvement is voluntary, and you may withdraw at any time without reason. The global logistics industry has the potential to seriously impact on Indonesia's economy. Your feedback will assist us to better understand the LSP industry in Indonesia. We would also like to stress that neither your decision to participate or not in this research, nor the information provided by you, will not be shared with any other firm or government agency.

While the outcomes of the research will be published in the student's doctoral thesis and academic journals, we would like to emphasize that your confidentiality is assured. Neither you nor your company will be identified in any published material emanating from this research. Furthermore, this study has been reviewed by the Human Research Ethics Committee (Social Science, Humanities and Behavioural Science) of the University of Wollongong. If you have any concerns or complaints regarding the way this research has been conducted, you can contact any of the investigators listed above, or contact the University's Ethics Officer on +61 2 4221 4457 or eves@uow.edu.au .

Thank you for your interest in this study.

Kind regards,

Ms Yeni Sumantri (Ph.D student)	Dr Sim Kim Lau (Team Leader)
Faculty of Informatics	Faculty of Informatics
University of Wollongong	University of Wollongong
Australia	Australia
ys487@uow.edu.au	sim_lau@uow.edu.au

University of Wollongong

PARTICIPATION INFORMATION SHEET
[for LSP's customers]

AN ANALYSIS OF LOGISTICS SERVICE PROVIDER (LSP) INDUSTRY IN A DEVELOPING COUNTRY: A FOCUS ON INDONESIA

This is an invitation to participate in a doctoral research study conducted by Ms Yeni Sumantri as part of a *Ph.D degree* being supervised by Dr. Sim Kim Lau at the School of Information Systems and Technology at the University of Wollongong. The purpose of the research is to analyze logistics service provider (LSP) industry in a developing country: a focus on Indonesia. This study is supported by a research scholarship from the Ministry of National Education, Republic of Indonesia. The findings from this study will assist the LSP to improve their services and to help position Indonesian industry to compete globally.

We would like to ask that you take 30 minutes to complete a survey that will ask for information about logistics service quality, logistics service cost, logistics service benefit provided by [INSERT LSP NAME] has influenced logistics service value of your organization. Your involvement is voluntary, and you may withdraw at any time without reason. The global logistics industry has the potential to seriously impact on Indonesia's economy. Your feedback will assist us to better understand the LSP industry in Indonesia. We would also like to stress that neither your decision to participate or not in this research, nor the information provided by you, will not be shared with any other firm or government agency.

While the outcomes of the research will be published in the student's doctoral thesis and academic journals, we would like to emphasize that your confidentiality is assured. Neither you nor your company will be identified in any published material emanating from this research. Furthermore, this study has been reviewed by the Human Research Ethics Committee (Social Science, Humanities and Behavioural Science) of the University of Wollongong. If you have any concerns or complaints regarding the way this research has been conducted, you can contact any of the investigators listed above, or contact the University's Ethics Officer on +61 2 4221 4457 or eves@uow.edu.au.

Thank you for your interest in this study.

Kind regards,

Ms Yeni Sumantri (Ph.D student)	Dr Sim Kim Lau (Team Leader)
Faculty of Informatics	Faculty of Informatics
University of Wollongong	University of Wollongong
Australia	Australia
ys487@uow.edu.au	sim_lau@uow.edu.au

University of Wollongong

CONSENT FORM

AN ANALYSIS OF LOGISTICS SERVICE PROVIDER (LSP) INDUSTRY IN A DEVELOPING COUNTRY: A FOCUS ON INDONESIA

I have received information about the above title research project to be conducted by Ms Yeni Sumantri as part of a *Ph.D degree* being supervised by Dr. Sim Kim Lau at the School of Information Systems and Technology at the University of Wollongong.

I understand that my participation in this research is voluntary and that I am free to refuse and/or withdraw from the study at any time. I also understand that neither my decision to participate in this research, nor the information provided by me, will be shared with any other firm or government agency.

If I have any enquiries about the research, or concerns or complaints regarding the way the research is or has been conducted, I can contact any of the listed investigators, or the Ethics Officer at the University of Wollongong.

By signing below I am indicating my consent to participate in the research. I understand that the data collected from my participation will be used for a PhD thesis, and that aggregated, summary data may be included in academic publications. I consent for it to be used in that manner.

Signed Date

..../...../.....

Name (please print)

.....

University of Wollongong

AMENDMENT APPROVAL
In reply please quote: HE09/377
Further Enquiries Phone: 4221 4457

5 October 2010

Ms Yeni Sumantri
5/34 Matthews Street
Wollongong NSW 2500

Dear Ms Sumantri

I am pleased to advise that the amendment request dated 28 September 2010 to the following Human Research Ethics application has been approved. The University of Wollongong/SE Sydney and Illawarra Area Health Service Humanities, Social Science and Behavioural HREC is constituted and functions in accordance with the NHMRC *National Statement on Ethical Conduct in Human Research.*

Ethics Number:	HE09/377
Project Title:	Modelling triadic relationships in the logistics service provider context in Indonesia.
Name of Researchers:	Ms Yeni Sumantri, Dr Sim Kim Lau
Amendment/s:	1. Change of address 2. Change of supervisors from Dr Byron Keating and Dr Tim Coltman to Dr Sim Kim Lau
Amendment Approval Date:	30 September 2010
Expiry Date:	13 January 2011

Please remember that in addition to reporting proposed changes to your research protocol the HREC requires that researchers immediately report:

- serious or unexpected adverse effects on participants
- unforseen events that might affect continued ethical acceptability of the project.

You are also required to complete monitoring reports annually and at the end of your project. These reports are sent out approximately 6 weeks prior to the date your ethics approval expires. The reports must be completed, signed by the appropriate Head of School, and returned to the Research Services Office prior to the expiry date.

Yours sincerely

A/Professor Steven Roodenrys
Chair, Human Research Ethics Committee

Cc: Dr Sim Kim Lau, SISAT, Building 39.220

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