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Determinants of Customer Satisfaction in Third Party Logistics Outsourcing Relationships in Sri Lanka

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By

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Here by I state and declare that this dissertation is product of my own and is based on a research that I conducted independently without the participation of any other person or authority. The reference made to other research is here have been acknowledge appropriately and with appreciation. The sources of data and information external to the dissertation and research have been acknowledged appropriately. In form or substance this research has never been submitted for any other degree, anywhere else. I hereby give my consent to making this dissertation available by photocopy for inter-library loans and for the title and summary of the dissertation to be made available for use by other institution of learning.

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ABSTRACT

Logistics outsourcing is an emerging trend in nowadays. Many companies are trying to outsource their logistics activities to outside parties to focus on their core competencies. Therefore, third party logistics industry is a strategic arm for today's companies. The ultimate objective of this research is to find the factors which are affecting to the customer satisfaction of third party logistics outsourcing relationships in Sri Lanka. When considering the service organization context, customer satisfaction is one of the most significant aspects. In order to attract new customers and retain the existing customers providing higher quality of service is needed.

After the comprehensive literature review, structured questionnaire was constructed with the 29 latent variables. A questionnaire base survey was conducted. The target sample of this research was recently 3PL used large scale public listed companies in Sri Lanka. The study collected data from 50 companies. Among these companies 203 valid responses was received. SPSS statistical software was used to analyze the data. Stratified random sampling technique was used in this study. Initially, descriptive analysis was carried out to screen the respondents' profile. Further factor analysis was carried out to reduce number of variables and grouping factors which have similar characteristics. Moreover hypothesis test has been done in order to check the hypothesis.

Finally the research findings were discussed. This research paper has been identified the main four factors which are affecting to the customer satisfaction in third party logistics outsourcing relationships. The recommendations are given to improve the service quality in order to increase the customer satisfaction which helps 3PLs to attract more customers in future.

Key Words: Third Party Logistics (3PL), Outsourcing, Service Quality, Customer Satisfaction.

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3PL-Third Party Logistics

4PL- Forth Party Logistics

LSP- Logistics Service Provider

LPI- Logistic Productivity Index

FMCG- Fast Moving Consumer Goods

GDP- Gross Domestic Production

B2B -Business to Business

SPSS -Statistical Package for Social Science

SD- Standard Deviation

CHAPTER 01

INTRODUCTION

1.1 Background of the Study

In the past many organizations were focusing on almost every function is required to run the business. Hence they had to specialize managing and operating each and every function. In fact, then successful business entity may defined by its capability to own manage and directly control all of its assets and processes. In search of more profits, companies began to diversify their businesses. This led to the rather bolted management structures which resulted higher cost and rigid flexibility.

Business environments have been rapidly changing over the up to date. Markets have been becoming very competitive & complex and customers have been demanding for more value form products and services at the lowest cost. As a result, logistics and supply chain management has become a strategic arm of today's companies, which allows them to win such markets by maximizing profit and reducing total cost across the entire trading process through focusing on speed and certainty of response to the market.

With the competition become global in early 1970's and 1980's businesses had to seek the new strategies to reduce risks, reduced total cost, manufacturing lead time and increasing customer responsiveness. Third party logistics companies are the best option to solve these circumstances. So that companies started to outsource their logistics function to the specified third party logistics companies (3PL). This meant sourcing the right materials and components at the most cost effective price and managing the processes to deliver the final goods and services to market. Outsourcing led companies to focus on their core businesses while their logistics provider dedicated to the logistics function. Outsourced enabled companies to move ahead of their competitors with greater flexibility, lower cost structures, and stronger customer satisfaction.

The annual global third party logistics survey by (Langley et al, 2009) indicates that over the 80 per cent of the companies have outsourced some of the logistics activities. Almost

90 per cent of the companies consider the outsourcing relationships to be successful and expect outsourcing expenditure to grow, despite challenging the economic condition (Juntunen et al, 2010). According to the global survey (Langley et al, 2009) indicates that majority of the clients of 3PL considered the performance of the 3PL services provided in a decent level and find it likely that the future use of 3PL services will increase (Juntunen et al, 2010).

Nowadays logistics is one the fastest emergent industry in the world. In China logistics contributed 845.9 billion RMB Yuan of added value, which is almost 6 per cent of GDP. And also literature highlighted that logistics expenditure accounted an average for 21.8 per cent of Chinas gross domestic production during 1992-2004. Therefore reducing logistics cost for critical to improving the competitiveness in the Chinese companies. The increasing competitiveness and mounting pressure for cost reduction in China's logistics industry is focusing on their 3PL providers to appliance the new strategies to attract new customers and hold existing customers (Tian et al, 2008).

When considering the Sri Lankan context there is small number of third party logistics companies dominated in the third party logistics industry in Sri Lanka. Logiwiz, Aitken Spence Logistics, Expo-freight , Freight Link International, DHL Sri Lanka, John Keels Logistics Lanka , Hayleys Advantis, MacLarence Logistics, APL Logistics, Toll Global Logistics emergent as key shareholders in the 3PL Market in Sri Lanka. Sri Lanka being recently ranked at 137 on the LPI (Logistics Productivity Index) by the World Bank clearly indicates that Sri Lanka have a long way to go (Perera, 2011).

Although the researches was regularly conducting to measure customer satisfaction in different industries however the very little research has been done in the third party logistics industry. This empirical study is going to be done to measure customer satisfaction in third party logistics outsourcing relationships in Sri Lanka. This study is mainly focusing on determining factors affecting to customer satisfaction in third party logistics outsourcing relationships.

Today companies have already identified the need to build loyal customer base and maintaining existing customers and prolonging the businesses with them unless acquiring new customers. With the global competition more than ever before, companies now ready

to use relationship marketing strategy to build, maintain and enhance the solid relationship with customers to secure their customer loyalty. Nowadays retain the existing customers is the most difficult question that companies have to face. It was cost more than five times as much as to get new customers. In addition reference highlighted that a five percent increase in customer loyalty would lead to 30 percent increase in profit (Chin et al, 2013). This fact clearly reveals that the importance of create decent loyal customer base. In order do so 3PL providers are keen to understand how customers perceive the service quality. That translates into the customer satisfaction and customer loyalty.

Customer satisfaction and customer loyalty are key factors which have to be considered in customer oriented organizations since customer satisfaction displays the level of expectations of customers that already fulfilled. The achievement of customer satisfaction is expected to lead the company loyalty & product repurchase. In a competitive business market place, customer satisfaction considered as the key element of business strategy. Satisfying the customer is the way to hold on to the customers and attract new customers. The companies recognized that providing higher customer satisfaction leads to the increasing market sale and profit. With the arising competitive market the companies are exploring the strategies to reduce risk, manufacturing lead time, total cost, and to increase market responsiveness (Fisher, 1997 et al). This would allow companies to outsource their logistics functions to the 3PL providers. 3PL Providers are specialized at the logistics activities. Hence company can concentrate on their key business practices while shift their logistics risk to the other outside party.

1.2 Significance of the Study

This study is significant in different aspects. First it is scientifically significant since this area of the study has not been very much focused on the academics in related to the field of logistics and transport. Still there is lack of research and surveys conducted for the third party logistics industry in Sri Lanka. Moreover these types of businesses are called "Business to Business" type service context (B2B). Researchers are reluctant to do this type of the researches since the complexity. Therefore this empirical study will complete this research gap.

Secondly this study has a higher significance to the third party logistics providers and their customers who are gain services from 3PL. Hence there are several companies in Sri Lanka which profit oriented mind set where as they go for customer oriented strategy. They should more focus on fulfilling customer expectations and satisfaction. That led the companies to the more profitable and sustainable in the long run. Third party logistics providers have enormous opportunity to measure their overall customer satisfaction from this study. Furthermore this study will also provide great opportunity for 3PL companies to ascertain their position and standard in a competitive environment. Along with third party logistics providers have prodigious chance to identify the factors which are affecting to the customer satisfaction and they can improve their performance while addressing the shortcomings according to the customer feedback.

This study will provide solid foundation to the customers to give their feedback to the 3PL providers. That will gain indirect benefits to the customers that they can highlighted the areas where their 3PL providers are good at and areas where they have to improve.

1.3 Objectives of the Research

Core objectives of this research are:

- To determine the factors affecting to the customer satisfaction in third party logistics relationship in Sri Lanka
- To study the overall customer satisfaction of the third party logistics industry in Sri Lanka.

1.4 Research Questions

In Sri Lanka, still Logistics and Transport industry is in a very preliminary stage. Though the transport and logistics industry has a little growth but development of third party logistics (3PL) has not seen the paralleled growth. There are lot of drawbacks can identified with in the industry of Transport and Logistics in Sri Lanka. For instance lack of infrastructures, lack of logistics professionals, and lack of value added services by logistics services providers. Therefore 3PL firms should address these shortcomings to improve their respective 3PL activities. 3PL providers must not only care and focus on the current customer expectations and satisfaction but also should develop the capability to motivate the customers to repurchase or to maintain long-term relationship with them (Chin et al, 2013).

The following research questions are intended to address in this study.

- What are the positively and negatively correlated factors that are affecting to the customer satisfaction in 3PL relationships in Sri Lanka?
- What is the current overall satisfaction level in third party logistics industry in Sri Lanka?

1.5 Key Terminology

Logistics: The process of planning, implementing, and controlling procedures for the efficient and effective transportation and storage of goods including services, and related information from the point of origin to the point of consumption for the purpose of conforming to customer requirements. This definition includes inbound, outbound, internal, and external movements. (Supply Chain Management Terms and Glossary, 2013)

Logistics Management: As defined by the Council of Supply Chain Management Professionals (CSCMP): "Logistics management is that part of supply chain management that plans, implements, and controls the efficient, effective forward and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customers' requirements. Logistics management activities typically include inbound and outbound transportation management, fleet management, warehousing, materials handling, order fulfillment, logistics network design, inventory management, supply/demand planning, and management of third party logistics services providers. To varying degrees, the logistics function also includes sourcing and procurement, production planning and scheduling, packaging and assembly, and customer service. It is involved in all levels of planning and execution-strategic, operational, and tactical. Logistics management is an integrating function which coordinates and optimizes all logistics activities, as well as integrates logistics activities with other functions, including marketing, sales, manufacturing, finance, and information technology." (Supply Chain Management Terms and Glossary, 2013)

Third-Party Logistics Provider: A firm which provides multiple logistics services for use by customers. Preferably, these services are integrated, or "bundled" together by the provider. These firms facilitate the movement of parts and materials from suppliers to manufacturers, and finished products from manufacturers to distributors and retailers. Among the services which they provide are transportation, warehousing, cross-docking, inventory management, packaging, and freight forwarding. (Supply Chain Management Terms and Glossary, 2013)

Satisfaction is a person's feelings of pleasure or disappointment that result from comparing a product's perceived performance (or outcome) to expectations. If the performance falls short of expectations, the customer is dissatisfied. If performance matches expectations, the customer is satisfied; if it exceeds expectations, the customer is highly satisfied or delighted. Customer assessments of product performance depend on many factors, especially the type of loyalty relationship the customer has with the brand. (Philip Kotler)

1.6 Outline of the Study

Chapter 01: Introduction

This chapter provides the research background relating to the subject of this dissertation, as well as the objectives of the research, significance of the research, research questions, key terminology are included in this chapter.

Chapter 02: Literature Review

Chapter two consists with comprehensive literature review based on this study. Mainly it has been examined logistics outsourcing related studies, logistics service quality related studies, and customer satisfaction in third party logistics outsourcing related studies. This chapter could be considered as a comprehensive guide as well as foundation to conduct this empirical research.

Chapter 03: Methodology

This chapter presented the methodological aspects of the research. Mainly this chapter contains research design, conceptual framework, Identification of variables, questionnaire design, measurements, population and sample design, justification of sampling approach, data collection methods and statistical methods of data analysis.

Chapter 04: Data Analysis

Comprehensive analysis of the research data set is presented in this chapter. Initially descriptive statistics has been done. Reliability test has been done in order to measure the reliability of the data set. Factor analysis carried out to reduce the number of variables. Finally Chi-Square test has been done to examine the hypothesis.

Chapter 05: Conclusion and Recommendation

This chapter is focused on the overall conclusions that can be drawn based on the findings and analysis done in preceding chapters. Suitable recommendations are also being discussed on how to improve customer satisfaction levels in third party logistics outsourcing relationships in Sri Lanka. In addition to that limitations of the research and future research have also been addressed.

CHAPTER 02

LITERATURE REVIEW

2.1 Introduction

Literature review is one of the most significant chapters in the research. In this empirical study, literatures have been used in various purposes. It could be considered as a comprehensive guide as well as foundation to conduct the empirical research on "Determinants of customer satisfaction in third party logistics relationships in Sri Lanka." Literature review has presented under several sub topics. First sub topic briefly explains the logistics outsourcing. It is essential to give a clear idea of logistics outsourcing. Under second sub topic, it describes logistics outsourcing related studies. It will help to address the current global trends in 3PL industry by reviewing the global studies. Further it analyzes the outsourcing related studies in other countries. Next sub topics briefly explain logistics service quality and customer satisfaction in 3PL industry respectively. Finally it explains similar studies related to customer satisfaction in third party logistics outsourcing relationships.

2.2 Logistics Outsourcing

2.2.1 Logistics

Logistics has become an important part in every business entity and every economy. Past logistics studies have given number of definitions for logistics. There are no specific definitions for logistics. Under key terminology it has mentioned particular definition for logistics. Usually there are two types of logistics process that can be identified in the industry. They are inbound logistics and outbound logistics. Inbound logistics is a preliminary process of logistics which focus on arranging inbound materials, parts, semi-finished goods or finished goods from supplier to manufacturing or assembly plants, manufacture's warehouse or retail stores. Outbound logistics process is concentrate on the process related to the storage and the movement of final products and related information flows from the end of the production line to the end user. Logistics can also be divided

into two specific functions such as business logistics and military logistics. Business logistics incorporates all industries with the aim of managing the fruition of supply chain management. In business logistics always try to speak of having the right item in the right quantity at the right place at the right time in the right condition for the right price to the right customer. Military have significant needs of logistics solutions. Logistics is one of the most crucial strategies used in military science. Military logistics manage how and when to move resources to the place where they need.

2.2.2 Outsourcing

Outsourcing is one of the emerging trends in the modern business era. With the globalization, business process is going to be more complex in nature. Therefore, companies are trying to transfer their logistics risk to the outside parties called the logistics service providers (LSP), so as to focus on their core competencies. Basically outsourcing is the decision of a company whether they going to buy goods or services or make in house. If the company operates some activities more expensively than operate through hire basis, company should outsource these expensive activities. However If company can operate their activities more cost effectively than it is hired for outsiders, they should insource. Therefore outsourcing is the decision to buy services from external parties rather than operate in-house.

The annual global third party logistics survey by (Langley et al, 2009) indicates that over the 80 per cent of the companies have outsourced some of the logistics activities. That shows the extent of growing 3PL industry. Consider the Toyota Motor Corporation which outsourced the design and manufacture of the electrical system for its automobiles. That enables Toyota to focus on their core competency. Not only that, Nike one of the prominent brand in athletic shoes and wear industry. They outsourced their almost all the manufacturing activities. That strategy allowed Nike to dominate the market. Apple is another protuberant brand in the computer and mobile phone industry. Apple computer also outsourced 70 percent of its components. Therefore Apple can focus on their disk operating system and supporting macro software as it brings unique features to Apple. Correct outsourcing decision leads to bring down unsolicited costs and reduce the non-core activities. (Cakir, 2009)

After introducing both the concepts of logistics and outsourcing, the very next question comes to the mind is how to organize the effective logistics outsourcing processes in the firms. Thus there are two options in the hand of the firms either operate logistic activities by themselves or partly or completely outsourced logistics activities from 3PL providers. Therefore logistics outsourcing is the decision to buy logistics services from external parties rather than operate in-house. Finally the extensive literature reviews will provide the basic foundation for identification of research needs which will be addressed in this study.

2.3 Logistics Outsourcing - Related Studies

2.3.1 Logistic Outsourcing - Related Global Studies

Capegemini consulting firm was caring out annual third party logistics survey. This study widely analyzed the global trends of the third party logistics industry. According to the latest study of 18th annual third party logistics study in 2014, the result was highlighted the positive overall nature of shipper and 3PL relationships. Both parties view them as successful. There are about 1400 respondents worldwide contributed to that survey. The web based survey has been carried out. The volume of cross border trade has been increased considerably that drives many shippers to review the outsourcing, and distribution decisions. There are multiple factors account for shippers to rethink about the outsourcing, for instance lead time, consumerism, continuity planning, portfolio differentiation and preferential trade agreement. This study also reflects the global 3PL revenue rise for 2011-2012

Region	2011 Global 3PL Revenues (US$Billions)	2012 Global 3PL Revenues (US$Billions)	Percent Change 2011 to 2012	Percent Change 2010 to 2011
North America	$ 159.9	$ 170.6	+ 6.7%	+ 7.2%
Europe	160.4	156.2	- 2.6%	- 2.8%
Asia-Pacific	191.1	236.2	+ 23.6%	+ 21.2%
Latin America	39.5	44.4	+ 12.4%	+ 43.6%
Other Regions	65.2	69.4	+ 6.4%	+ 54.0%
Total	$ 616.1	$ 676.9	+ 9.9%	+ 13.7%

Source: Armstrong & Associates, 2013.

Figure 2.1 Global 3PL Revenue Rises for 2011-2012 (Langley et al, 2014)

According to the figure 2.1 clearly reveals that highest revenue growth of 23.6% can be seen in the Asia –Pacific region. This figure reflects that 3PL market of the Asia-Pacific continue to expand. This result is more significant to Sri Lankan 3PL industry.

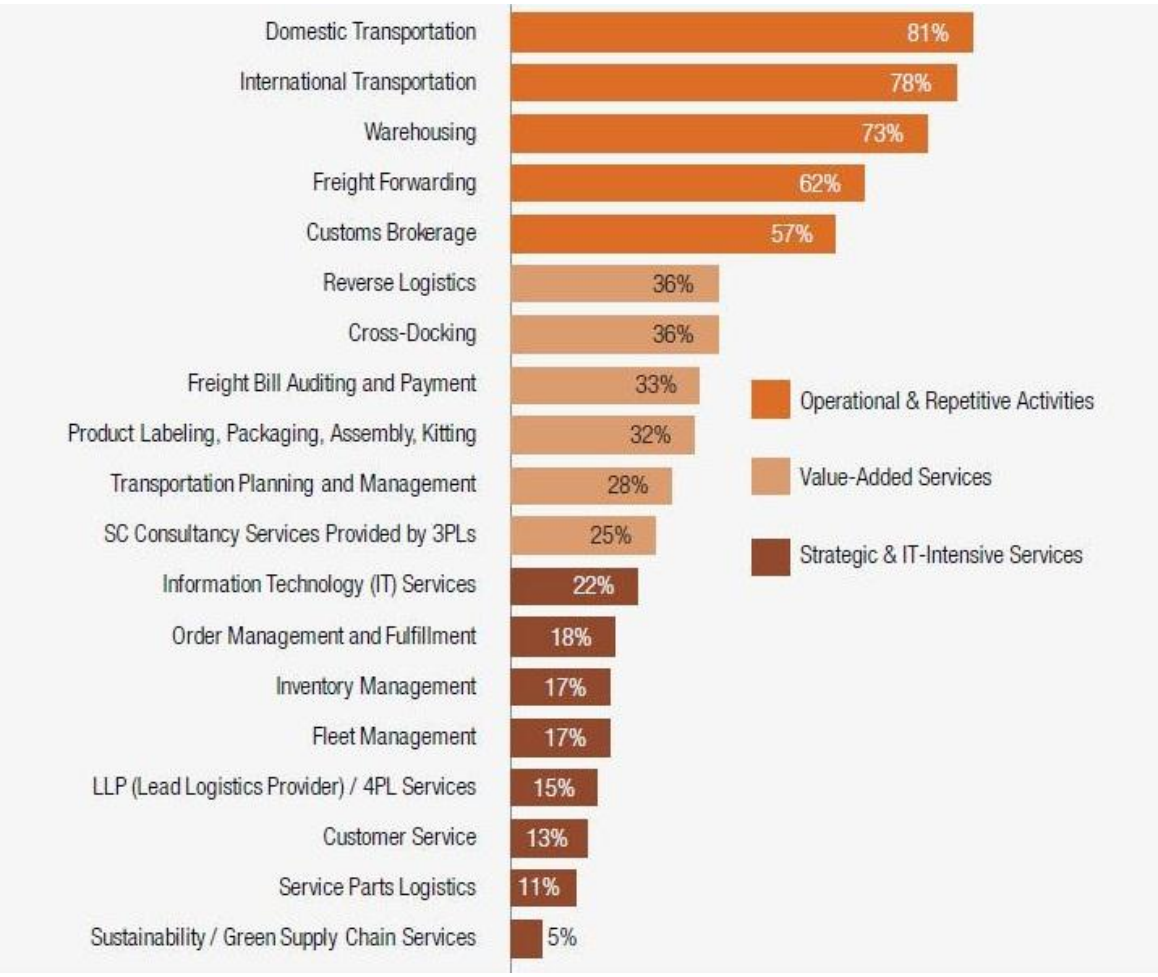

Figure 2.2 Trends of Global Outsourcing Activities (Langley et al, 2014)

The figure 2.2 highlighted that domestic and international transportation can be considered as the most preferred logistics services in globally. Warehousing, freight forwarding also play a crucial role in the industry.

2.3.2 Logistic Outsourcing in Different Countries - Related Studies

Over the last two decades, a large number of studies have been conducted in the field of third party logistics (3PL) outsourcing. (Sohail et al, 2006) carried out research on the use of third party logistics services by Singaporean and Malaysian manufacturing firms. This study is based on questionnaire survey conducted in Singapore and Malaysia. The significant fact of this research is, Sri Lanka also located in the same geographical

market. Therefore, these results would be more significant to Sri Lanka. The author of this study identified some of the factors for analyzing the profile of the respondents through this research. According to Sohail et al, (2006), it is used different elements to analyze their respondents (Manufacturing firms), for instance average length of the contracts, which functional manager involved in taking decisions on outsourcing logistics activities, profile of the used 3PL services in the industry, the purpose of outsourcing, and percentage of logistics budget spent on outsourcing. Hence researcher has used some of these elements to develop the questionnaire. According to the results of Sohail et al, (2006), majority of manufacturing companies in Singapore, marketing manager is responsible for undertaking decision on logistics outsourcing. However in this research, author identified that majority of the logistics managers were responsible for logistics outsourcing in Sri Lankan context. According to Sohail et al, (2006), In Singapore and Malaysia is more prevalent for shipment consolidation, freight payment, carrier selection and order fulfillment. However, comparing this result with Sri Lankan 3PL industry, warehouse operation, distribution, and shipment consolidation can be considered as the main 3PL services which are mainly used.

Rahman (2011) also carried out an exploratory research on outsourcing 3PL services: an Australian perspective. This study is based on a questionnaire survey conducted in Australia. Total number of 210 firms was identified as the sample of this research. The research of Rahman (2011) was also supported to construct the questionnaire for this empirical research (Customer satisfaction in 3PL outsourcing relationships in Sri Lanka). Rahman (2011) was structured his research framework as follows. First Rahman (2011) was identified the characteristics of the respondents firms through industry type, employment characteristics, and service coverage. Further, extent of current usage of 3PL was examined through number of 3PL providers used, logistics services outsourced, length of experience in 3PL providers, percentage allocation of the logistic budget to 3PL service provider. And finally Rahman (2011) evaluated the motivation factors for outsourcing. Cost reduction, reduction in capital investment, enhanced flexibility, access to new technology, access to new market, and focus on core business has been considered as the main stimulus factors for outsourcing. Similarly, some of these elements were used to construct the profile of the respondents' of this research. The researcher of this stydy has identified certain similarities in the results of both Rahman (2011) and this research (Customer satisfaction in 3PL outsourcing relationships in Sri Lanka).

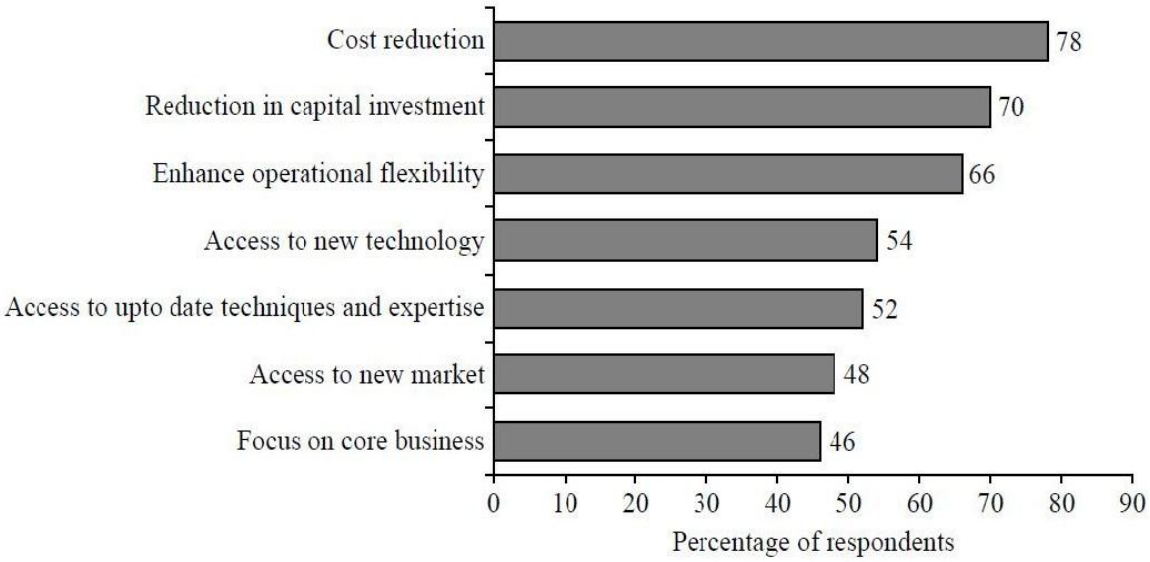

Figure 2.3 Preferred Reasons to Outsource Logistics Activities (Rahman, 2011)

According to Rahman (2011) results, in Australian context the most common factors for outsourcing are cost reduction, reduction in capital investment and enhanced operational flexibility where in Sri Lankan context also cost reduction, reduction in capital investment, enhanced operational flexibility are the main factors to motivate the outsourcing. Only slight difference between these two studies is focus on core business also take into account as the critical factor in Sri Lankan context.

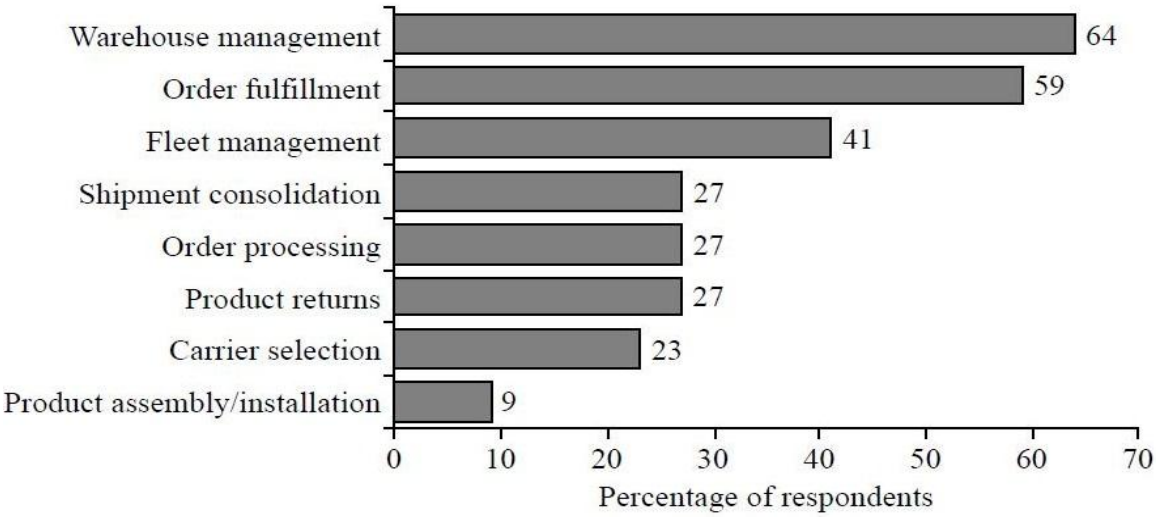

Figure 2.4 Profile of Used 3PL Services in the Industry (Rahman, 2011)

Rahman (2011) results highlighted that warehouse management is the most preferred outsourcing activity in Australia. Similarly, in Sri Lankan context warehouse management consider as the most vital logistics outsourcing activity.

2.4 Logistics Service Quality- Related Studies

Before come to the topic of customer satisfaction, it is very essential to obtain an idea on service quality since the service quality is highly significant on customer satisfaction. Since 1980s, service quality has been widely analyzed in both marketing and logistics research. It was running parallel to the interest in service quality, quality management and satisfaction in companies Fisk et al, (1993); Shet et al (2006). Research by Millen et al (1999) has identified that logistic service quality as the key element in customer satisfaction. The concept of service quality has been studied from different perspectives for instance objective and subjective quality. The industrial view of service recognizes, "quality" as an accurate evaluation of all the stages and operations necessary to deliver the services, associating the process to that of manufacturing a product by considering the service as physical object which can be evaluated. Garvin (1984) Subjective quality transfers evaluation of quality to the customer. From this perspective, service quality is global judgment or attitude, concerning the superior nature of the service Parasuraman et al, (1988). According to Juran, (father of quality) defined "quality" as the fitness for use. Those product features which meet customer needs, Moreover, it leads to the customer satisfaction (Juran et al, 1999).

Service quality is more than just a word. It is the secret to a higher customer satisfaction and a competitive tool which most of the service organizations use today. Achieving high levels of service quality is essential for the success of any organization or business. Most people concentrate on maintaining high service quality rather than focusing on their profit margins. It reveals that the service quality is the co-concern of the business. It is a broader concept which makes it hard to find an unique definition. Simply it can be known as the comparison of performance with expectations. But once study in depth can be found huge variations of definitions for service quality due to its perceptual aspect. Therefore, scholars evaluated and are still evaluating it from their point of view.

In this study, author is not going to evaluate each and every definition for service quality. Author is just trying to give a brief idea about service quality. Basically service quality is the gap between what customers expect and actually what they received. In brief when customer expectations are met with what is actually delivered, service quality is high and when it fails to meet customer expectations, the service quality can be considered as poor or low. Therefore it emphasizes that service quality is more over customer oriented. The level of service quality is decided by the customers. Customers are considered as the king of every business, either large or small it is the key to survival of any business in the world. When a service is illustrated as a customer process to create good customer outcome there should be a clear understanding since different customers will behave differently in the same service process and the same customer may behave differently in different occasions. Therefore the main task of improving service quality is to create the right prerequisites for a good customer process and a good customer outcome.

When it comes to logistics industry, the same theory should be applicable since logistics also accounted as a particular service. Third party logistics industry can be mainly categorized as B-2-B business type since maintaining higher service quality is vital aspect. This is only a technique to retain the existing customers and survive in the market. 3PL is totally competitive industry, whereas providing higher service quality firms can enjoy their profit margins while satisfying their customers. That creates win-win situation for both firms.

2.4.1 Logistics Service Quality Measurements

Traditional concepts and methods have been quizzed for measuring the service quality and customer satisfaction in business to business environment. SERVQUAL instrument is widely used and most popular method of evaluating service quality for service industries. Earlier Parasuraman et al (1988) have presented a model known as SEVQUAL to measure quality in service sector which has 10 determinants. Later he was modified and introduced broader fivefold model to measure service quality.

These dimensions can be defined as,

1. Tangible: Physical facilities, equipment and appearance of service firm's employees.

2. Reliability: The ability to performing the promised services dependably and accurately.
3. Responsiveness: Providing prompt services and willingness to help customers.
4. Assurance: Knowledge and courtesy of employees and their ability to inspire trust and confidence in the firm.
5. Empathy: Caring and personalized attention to its customers.

Parasuraman et al (1988)

According to the scope of the study, several authors used SERVQUAL model to identify the areas where the firms are underperforming as compared with customer expectations. Not only the third party logistics sector all other service related industries typically used this model to evaluate their service quality. In 3PL industry, Chin et al (2013), Juga et al (2012), Saura et al (2008), Junten et al (2010) have been referred SERVQUAL model to build their conceptual frame work. Hence in this empirical research (Customer Satisfaction in 3PL Outsourcing Relationship in Sri Lanka), author has used this model to build conceptual frame work. This was further explained in the methodology chapter under identification of variables. Finally author proceeds to analyze the main outcomes of quality service which are mainly satisfaction and loyalty.

2.5 Customer Satisfaction

With the globalization, today companies have to face their toughest competition more than ever before. Therefore, companies should focus on building the strong customer relationships unless firms couldn't survive in the market. It is timely important that, how companies could achieve the customer satisfaction and improving profits by doing better job of meeting or exceeding the customer expectation. It is clear that, there is no unique definition for customer satisfaction since as the years passes, many authors come up with different definitions. Author is not trying to evaluate all the definitions here, just try to stretch the idea on customer satisfaction. Generally, it is the difference between expected level and performed level. If the service provider's performance falls that of expectations, the customer is dissatisfied. If the service provider's performance matches the expectations, customer is satisfied. If the service provider exceeds the expectation, the customer is highly satisfied or delighted (Kotler et al 2009).

In today's competitive business environment, mangers have greater responsibility to achieve the customer expectations and meeting demands for satisfying customer is also a vital aspect. Customer satisfaction could not be defined by only the quality or the standard of the product or service. It's all about the relationship between customer and product or service. In marketing management "customer" consider as the king of the business since they can break or make the business. This fact reveals that customer is the most important stakeholder in every business entity. Therefore, in order to retain their customers in longer period of time, firms must think about maintaining strong relationship with customers.

2.6 Customer Satisfaction in Third Party Logistics Relationships-Related Studies

Service quality, customer satisfaction and customer loyalty is the sequence of network that widely analyzed the service related industries. In third party logistics industry also, some scholars have analyzed the relationship between these three notions. Jari Juga and Jouni Juntunen have carried out several studies to evaluate this relationship between service quality, customer satisfaction and customer loyalty. Juga et al 2012, Juga has examined the impact of service quality, image and relational aspects on satisfaction and loyalty in logistics outsourcing relationship. This study has been addressed the question of how perceived service quality impact on the 3PL customers satisfaction and loyalty in logistics outsourcing relationship. Besides the service quality this research was concerned on inter-firm relationship and service provider's image. After developing the theoretical model, the model is tested with the structural equation modeling (SEM) using the LISREL software package. The data for the study was collected from the industrial companies in Finland in 2008. Total of 235 companies were participated in this survey where comparatively low response rate of 22.5 per cent. This study was managed over the internet using the "Webropol" tool for internet survey. When comes to the theoretical background of this study, as mentioned in the above logistics service provider's service quality, logistics service provider's image, inter firm relationship were considered as the factors of customer satisfaction with parallel to the customer loyalty. Previously a concept of logistics service quality was described. In this study also SERVQUAL instrument was

referred to measure service quality. Besides the service quality concept, cooperate image and reputation, and inter firm relationship has been examined.

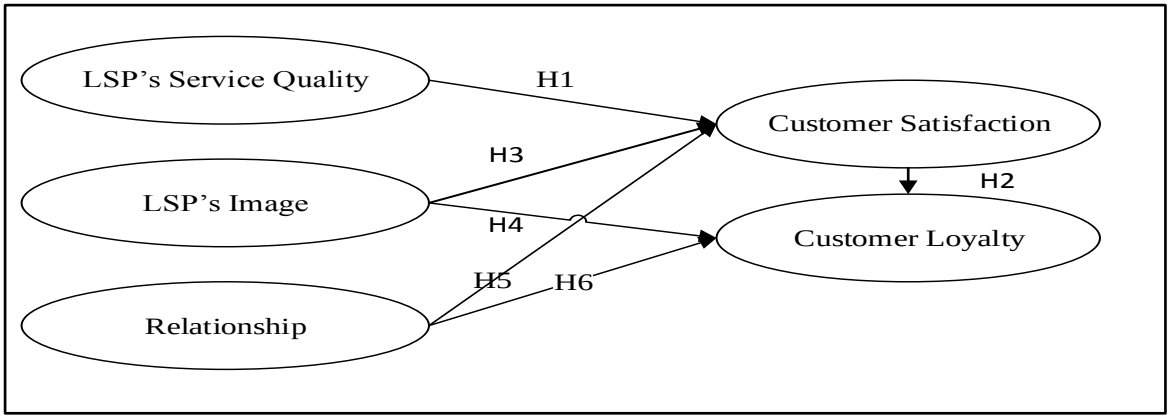

Figure 2.5 Theoretical Model (Juga et al, 2012)

According to his study, long term relationship was considered as the key aspects of customer satisfaction. Long term relationship increases the trust between two firms which were entered to the contract. A solid relationship increases the knowledge about their customer requirements and perceptions. Finally it creates strong mutual understanding among these two parties. This understanding is a critical factor when it comes to this type of business, especially in business to business type.

Corporate image and reputation of the service provider also considered as the vital factor. Customer's perception towards the company is highly depended on the brand or the image that has been made by the past experience. A brand or image involves perceptions of the quality and serves as an embodiment of the firm's credibility (Selnes, 1993). For retaining the existing customers and attracting new customers the image is highly important. That leads to the loyalty of the customers for particular brand.

According to the Juga et al (2012), it is proven that perceived service quality influences the customer's satisfaction and has parallel effect on customer loyalty. Inter firm relationship and logistics service provider's image affect loyalty directly and indirectly through satisfaction. This research has been used as a comprehensive guide as well as foundation to conduct the empirical research on "Determinants of customer satisfaction in third party logistics relationships in Sri Lanka."

Saura et al (2008) was carried out the extensive research on Logistics service quality: a new way to loyalty. Aim of this research is to analyze the quality, satisfaction and loyalty sequence in third party logistics context. This empirical research has been used sample of 194 Spanish manufacturing companies. Structural equation modeling was applied to these data to test the relationship among variables in this research. Data was collected through direct telephone interviews. Non probabilistic sampling method has been used in this study. When consider the theoretical framework of this study explore the sequence of relationship among service quality, customer satisfaction and customer loyalty. Logistics service quality considered as the main factor of customer satisfaction. In this research, logistics service quality was measured through personnel quality, information quality, order quality and timeliness. To evaluate each factor author constructed multi-dimensional variables. Finally satisfaction leads to the loyalty of the company. The results highlighted that service quality affects to the customer satisfaction and customer loyalty.

Yu Tian, (2008) has carried out an empirical research on "An examination of the nature of the trust in logistics outsourcing relationship". This study focused on how to build trust between logistics users and third party logistics providers. Yu Tian (2008) used surveyed data from 115 companies in China. Structural equation modeling (SEM) was used to measure relationship with variables. When consider the conceptual research model, trust was estimated by using several parameters for instance reputation, relationship specific investment, satisfaction, relationship length and information-sharing. The results highlighted that trust was highly significant on customer satisfaction and loyalty. The findings provided valuable managerial insights regarding how to cultivate trust and loyalty in logistics outsourcing relationships. Results highlighted that to cultivate trust of logistics services users towards third party logistics providers, 3PL provider should focus on creating and enhancing reputation in the industry, sharing appropriate information in quantity, quality, and timeliness with logistics users, improving logistics users' satisfaction level (Tian et al, 2008). This research was also a base to conduct the empirical research on "Determinants of customer satisfaction in third party logistics relationships in Sri Lanka."

Along with these above mentioned empirical researches, author referred several other studies as well. Grant et al (2013), Chin et al (2013), Juntunen et al (2010) can be shown as the example for it.

CHAPTER 03

METHODOLOGY

3.1 Introduction

In the methodology chapter researcher has presented the methodological aspects of the study. This chapter includes Research Design, Conceptual Framework, Identification of Variables, Questionnaire Design, Measurements, Population and Sample Design, Justification of Sampling Approach, Data Collection Methods and Statistical Methods of Data Analysis.

3.2 Research Design

This type of research design falls into the category of the causal research. The main objective of a causal research is to determine the extent and nature of cause-and-effect relationship between variables. Causal research assesses the impact of changes on one variable which is called the dependent variable, with the variations of the other variable which is called the independent variable. These types of researches are used for explanatory purposes as well as for prediction and testing of hypothesis which enables the researchers to forecast probable scenarios that would take place with particular changes.

The main objective of this research is to identify the factors affecting to the customer satisfaction in third party logistics outsourcing relationship in Sri Lanka. Customer satisfaction in 3PL outsourcing relationship considered as the dependent variable of this research where the factors which is affecting to the customer satisfaction considered as the independent variables. Hence it is justified to draw into the conclusion that this research takes the nature of a causal research.

3.3 Conceptual Framework

The framework of this research is constructed mainly based on the literature that has been reviewed in chapter 02. Figure 3.1 shows the conceptual frame work which holds together the concept, relationship and context of the research.

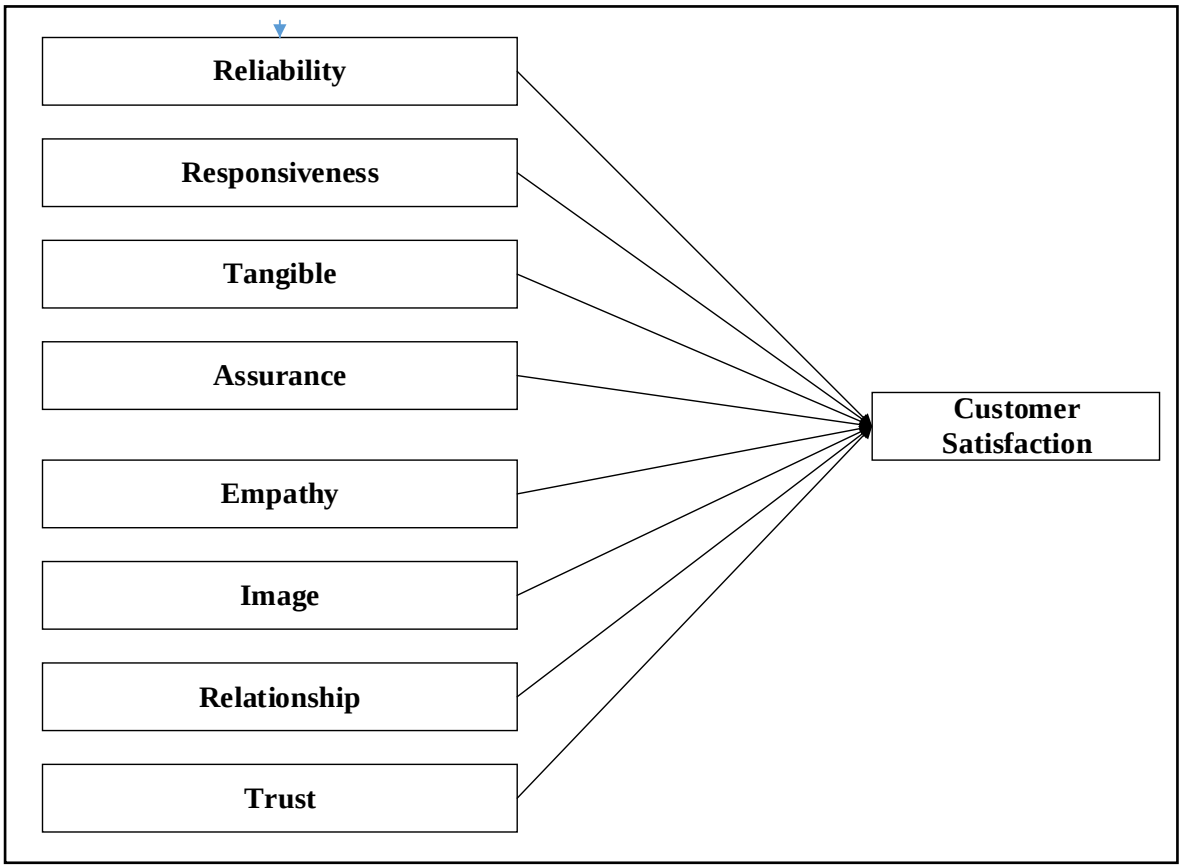

Figure 3.1 Conceptual Framework of the Study

3.4 Identification of Variables

The main objective of this research is to identify the factors affecting to the customer satisfaction in 3PLoutsoursing relationships. Keep that in mind, author identified particular dependent and impendent variables.

3.4.1 Dependent Variable

Customer satisfaction in third party logistics outsourcing relationship in Sri Lanka is identified as the dependent variable. Customer satisfaction is measured as an objective in this research and also the impact on the dependent variable i.e. customer satisfaction with the changes in independent variables will also be analysed.

3.4.2 Independent Variables

Factors have been identified through the intensive literature review. Service quality is one of the most crucial factors for customer satisfaction in third party logistics outsourcing relationship. Service quality was measured by using SERVQUAL model which consist of five factors (reliability, responsiveness, tangible, assurance and empathy). Besides service quality other three factors have been identified as the factors affecting 3PL outsourcing relationship (image, relationship and trust). Altogether there are eight factors have been recognized as the factors of affecting 3PL outsourcing relationship. Further description is available in the Chapter 02- Literature Review. A brief description for each factor is shown in the below,

I. **Tangible:** Tangibles refers to the physical evidence of the 3PL service which includes the appearance and condition of logistics facilities personnel and material.
II. **Reliability:** Reliability has been defined as the ability of 3PL employees' to performing the promised services dependably and accurately.
III. **Responsiveness:** Responsiveness is defined as the willingness of 3PL employees' to help customers and provide prompt service.
IV. **Assurance:** Knowledge and courtesy of 3PL employees and their ability to inspire trust and confidence in the firm.
V. **Empathy:** It refers to the courtesy of 3PL employees and their ability to convey trust and confidence.
VI. **Image:** Customer's perception towards the company is highly depended on the brand or the image that has been made by the past experience. A brand or image involves perceptions of the quality and serves as an embodiment of the firm's credibility (Salenes, 1993).
VII. **Relationship:** Long term relationship increases the trust between two firms which were entered to the contract. A solid relationship increases the knowledge about

their customer requirements and perceptions. Finally it creates strong mutual understanding among these two parties.

VIII. **Trust:** Mayer et al. (1995) define trust as the willingness of a party "trustor" to be vulnerable to the actions of another party "trustee" based on the expectation that the other will perform a particular action important to the "trustor" irrespective of the ability to monitor or control that other party.

3.4.3. Independent Variables: Demographics

Demographics refer to quantifiable statistical attributes of a given population. In this research they are of the sample of respondents from which the data were collected. Following demographic factors are used in this study.

i. Respondents' Position within the Organization
ii. Respondents' Industry Category
iii. Average Lengths of 3PL Contracts
iv. Purpose of Adopting 3PL Services
v. Authorized Person for Undertaking Decisions Regarding Outsourcing Logistics Services
vi. Preferred Reasons to Outsource Logistics Services
vii. Used 3PL Services in the Industry

3.5 Questionnaire Design

In order to collect the primary data required for the study, a survey questionnaire was constructed. There are eight factors have been identified as the factors affecting customer satisfaction in third party logistics outsourcing. 29 items were constructed among these 8 factors. Properly structured questions were included in the questionnaire asking the respondents to select an answer from a set of responses. Questionnaire was developed in English language and simple wording was used so that each respondent would be able to answer.

Questionnaire consists of three segments which are as follows and the questionnaire is presented in Appendix

- **Section 01**

  Section 01 of the questionnaire is related to the respondent's demographic data. This segment was observed these factors for instance respondents' position within the Organization, respondents' industry category, average lengths of 3PL contracts, purpose of adopting 3PL services, authorized person for undertaking decisions regarding outsourcing logistics services, preferred reasons to outsource logistics services, used 3PL services in the industry. Most importantly this segment also includes the screener question of whether the respondent has used 3PL services in Sri Lanka recently.

- **Section 02**

  This part of the questionnaire consists of the questions regarding the satisfaction of customer in third party logistics outsourcing relationship in Sri Lanka. Questionnaires were constructed among these eight factors. Each factor has been further divided into 29 latent variables since single question might lead to the weird answers. Thus multi-dimensional questions were constructed to get the reasonable response to the questions overall. The respondent is required to specify his/ her level of agreement with these 29 statements related to the customer satisfaction in third party logistics industry in Sri Lanka.

- **Section 03**

  Third and final segment relates to the overall customer satisfaction in third party logistics outsourcing relationship in Sri Lanka. This segment also provides the opportunity to the respondents to offer any suggestions to improve the quality of service and customer satisfaction of 3PL industry.

3.6 Measurement

Different types of scaling methods were applied in measuring different questions in the questionnaire. Nominal scaling method was used in the screener question where a set of two responses were given to the respondent to choose from, namely 'Yes' and 'No'. Similarly questions on demographic data were given a particular set of responses according to the question. Some questions in Segment 01 were used nominal scaling method while others were used interval scaling method. Respondents were asked to select the most appropriate response for them in respect of each enquiry.

Table 3.1 Nominal Scaling Method Used Questions

Question	Responses
Position within the organization	1. Manager 2. Executive 3. Other
Industrial category	1. Fast moving consumer goods 2. Chemical 3. Import and Export 4. Apparel 5. Agriculture 6. Cement 7. Telecommunication 8. Trading 9. Other
Purpose	1. International Purpose 2. Domestic Purpose 3. Both 4. Other
Authorized Functional Manager	1. Production 2. Logistics 3. Sales and Marketing 4. Operation 5. Supply chain 6. Other
Reason/s to outsource	1. Cost reduction 2. Reduction in capital investment 3. Enhanced operational flexibility 4. Access to new technology 5. Access to up to date technique and expertise 6. Access to new market 7. Focus on core business 8. Other
Outsourced logistics service/s	1. Warehouse operation 2. Fleet operation 3. Freight Forwarding 4. Distribution 5. Custom Clearance 6. Shipment Consolidation 7. Carrier selection 8. Consultancy 9. Reverse Logistics 10. Other

For the last two questions in the first segment of the questionnaire which are related to reason/s to outsource and outsourced logistics service/s, Respondents were asked to select the multiple answers according to their preferences.

Table 3.2 Interval Scaling Method Used Question;

Question	Responses
Average length of 3PL contact	1. 0-5 years 2. 6-10 years 3. 11-15 years 4. 16-20 years 5. 20-25 years

In the questionnaire respondents were asked to write the answers in given space for the above question. And after that contact period has been divided into five categories using nominal scaling method.

Scaling method used in Segment 02 of the questionnaire was Five-Point-Likert-Type-Scale. Liket scale is bipolar scaling method used for decide on either positive or negative feedback. Neutral is marked when the answer is undecided. Most preferred answers will be assigned five while least preferred answer will be one.
Respondents were asked to specify their level of agreement with the statements given in Segment 02 by ticking the most applicable cage designed according to the Likert-Type-Scale which is as follows;

1- Strongly Disagree
2- Somewhat Disagree
3- Neutral
4- Somewhat Agree
5- Strongly Agree

Same scaling method was used in designing the measurement for the sole question in Segment 03 which was relating to the overall customer satisfaction in 3PL outsourcing relationships in Sri Lanka. Respondents were asked to rate their satisfaction regarding the overall quality of service provided by their 3PL firms throughout the experience by ticking the most applicable response from the responses given which are as follows;

1- Strongly Dissatisfied

2- Somewhat Dissatisfied

3- Neutral

4- Somewhat Satisfied

5- Strongly Satisfied

3.7 Sample Design

3.7.1 Target Population

The large scale public listed companies (PLC) which were using third party logistics services in Sri Lanka considered as the target population of this research where it consist of 104 companies including 21-FMCG, 43-Apparel, 3-Agriculture, 4-Cement, 5-Chemical, 16-Import and Export, 8-Trading, 4- Telecommunication.

3.7.2 Sample

In view of all the constraints researcher has targeted sample of 50 companies including 10-FMCG, 20-Apparel, 7-Import and Export, 4-Trading, 2-Telecommunication, 3-Chemical, 2-Cement, and 2-Agriculture companies.

Because of the varieties in the industry type the stratified random sampling technique was used. Five questionnaires were distributed for each company to the purpose of avoiding the biasness.

3.7.3 Justification of Sampling Approach

In Sri Lanka there are thousands of companies are registered under the company registration of Sri Lanka. However with the limited time constraint and had been considered the other consequences researcher had to limit the population. Researcher identified 212 number of large scale companies spread around Sri Lanka. (36-FMCG companies, 74-Apparel companies, 5-Agriculture companies, 4-Rubber Related companies, 6-Cement companies, 9-Chemical companies, 3-Constuction companies, 42-Hotel and Tourism, 18-Import and Export, 9 Trading companies, and 6-Telecommunication companies). But the next question was arisen is all the above companies didn’t use 3PL services. Hence author contacted the personals of companies to

know whether they used 3PL or not. Industry experts also helped to identify the companies which were used 3PL services.

Through these information researchers identified 104 numbers of large scale public listed companies have been currently used 3PL services including 21-FMCG, 43-Apparel, 3-Agriculture, 4-Cement, 5-Chemical, 16-Import and Export, 8-Trading, and 4-Telecommunication companies. This can be considered as the target population of this research.

Researchers was randomly selected 50 companies from the above mentioned target population. It consists with 50 companies including 10-FMCG, 20-Apparel, 7-Import and Export, 4-Trading, 2-Telecommunication, 3-Chemical, 2-Cement, and 2-Agriculture companies. This sampling approach can be justified statistically since this sample represented approximately 50% of the total population.

3.8 Data Collection

3.8.1 Primary Data

The research is based on primary data collected through the structured questionnaire which was distributed among 150 respondents in the selected sample. Total numbers of 123 questionnaires were returned back. Eight questionnaires were rejected as researcher observed that those questionnaires have significant missing data. Further, in order to reach out to more respondents while attempting to breach the geographical restriction, a web-based survey was conducted using the same questionnaire. The online survey was available on the internet for a period of 95 days during which further 88 responses were collected. The response rate was comparatively low in web based survey thus the telephone reminder is made to retrieve the response rate high. Altogether 203 of valid responses were received finally. Due to the fact that the variables in the questionnaire fall into the type of categorical variables, primary data yielded were in categorical form. Primary data gathered was then used for the analysis of the study in order to achieve research objectives.

3.8.2 Secondary Data

Secondary data were used immensely for the conceptualization of the study. Data collected from secondary sources such as scholarly articles, journals, reports and web

pages based on customer satisfaction and service quality was applied to get a broader idea on the theoretical framework of this particular research. Apart of that, secondary data were also helpful in areas such as determining the sample size, construction of questionnaire, scaling questions and also in analysing data.

3.8.3 Reliability and Validity

Prior to make decisions based on the data, the pilot survey was carried out in order to check the validity of the data gathered. To measure the validity and reliability commonly used the value of Cronbach's alpha.

Cronbach's alpha is an index of the reliability and is generally used as a measure of reliability of a set of questions in a survey instrument. Alpha co-efficient ranges in value from 0-1 and it may be used to describe the reliability of the factors. Higher score of value indicates the higher reliability. The level of alpha indicates an acceptable level of reliability has usually been 0.6 or higher.

Table 3.3 Cronbach's Alpha Value Table (George et al, 2003)

Cronbach's Alpha	Internal consistency
$\alpha \geq 0.9$	Excellent (High-Stakes testing)
$0.7 \leq \alpha < 0.9$	Good (Low-Stakes testing)
$0.6 \leq \alpha < 0.7$	Acceptable
$0.5 \leq \alpha < 0.6$	Poor
$\alpha < 0.5$	Unacceptable

Cronbach's alpha can be written as a function of number of test items and the average inter co-relation among the items. Cronbach's alpha can be interpreted as the following standardized formula (1).

$$\alpha = \frac{N * \bar{C}}{\bar{V} + (N-1) * \bar{C}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(1)}$$

N = Number of items

C-bar is average inter-item covariance among the item

V-bar is equal to average variance.

3.9 Statistical Methods of Data Analysis

Data collected through the questionnaire survey were fed into SPSS 20.0 (a statistical software tool) in order to generate a comprehensive analysis of the study which is discussed in the next chapter. Following statistical data analysis methods were used in analysing the data set obtained.

3.9.1 Descriptive Analysis

Descriptive statics is the analytical tool that helps to describe, show and summarize data in a meaningful way. Descriptive statistic is vital since presenting raw data would be very hard to visualize. However, descriptive statistics enable to present data in more meaningful way. Statistics such as frequency distributions, measures of central tendency, measure of spread are used in this analysis. Measures of central tendency (mean, median. mode) and measures of spread (range, absolute deviation, variance, standard deviation.). Univariate analysis is commonly used in the descriptive stage of the research. Graphical and tableau representation was used in this study.

3.9.2 Factor Analysis

Factor analysis is a statistical tool is used to find factors among observed variables. In other words, if there are number of variables usually factor analysis is carried out to reduce the number of variables into grouping factors. In factor analysis variables which have similar characteristics group under one factor. Factor analysis can produce small number of factors from large number of variable which is capable of explaining in the observed variance in the larger number of variables. Multi-dimensional variables have been analysed in this factor analysis.

There are two types of factor analysis are available which are exploratory factor analysis and confirmatory factor analysis. In this study exploratory factor analysis has been carried out. Exploratory factor analysis is a statistical method used to uncover the underlying structure of comparatively large set of variables. Exploratory factor analysis is a method within the factor analysis whose deceiving goal is to identify the underlying relationships between measured variables (Norris et al, 2009). It commonly used by studies when

developing a scale and serves to recognize set of latent constructs underlying the battery of measured variables (Faiber et al, 1999).

There are number of advantages can be presented in factor analysis. Reduction in number of variables and identification of group's interrelated variables can be given as the example of advantages in factor analysis. The basic steps of the factor analysis are Correlation matrix is generated for all the variables, Secondly factors are extracted from correlation matrix based on correlation co efficient of the variables. Thirdly factor rotation is done in order to maximize the relationship between variables. Finally compute values for each factor.

Descriptive statistics, Bartlett's & Kaiser-Meyer-Olkin (KMO) test, Communalities, Total Variance, and Rotated Component Matrix is computed and analyzed using SPSS 20.0 software. The Bartlett's test compares the observed correlation matrix to the identity matrix. In other words, it checks if there is a particular redundancy between the variables that can be able to summarize with a small number of factors. If the variables are perfectly correlated, only one factor is sufficient.

The Bartlett's test checks if the observed correlation matrix **R= (rij) (p x p)** deviates significantly from the identity matrix.

Ho: Correlation matrix is an identity matrix.

H1: Correlation matrix is not an identity matrix.

The Bartlett's test statistic indicates to what extent deviate from the reference situation |R| = 1. It uses the following formula. (2)

$$X^2 = -\left(n - 1 - \frac{2p+5}{6}\right) * ln|R| \ldots\ldots\ldots\ldots\ldots \quad (2)$$

The KMO index compares the values of correlations between variables. The overall KMO index is computed as follows. (3)

$$KMO = \frac{\sum_i \sum_{j \neq i} r_{ij}^2}{\sum_i \sum_{j \neq i} r_{ij}^2 + \sum_i \sum_{j \neq i} a_{ij}^2} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (3)$$

KMO value measured the sampling adequacy. Normally KMO should be greater than 0.5 is to accept the factor analysis. Higher KMO values are good because higher correlations between pairs of variables. 0.5 is barely accepted value. Value between 0.7-0.8 is in acceptable level. Value of above 0.9 is superb.

Communalities are the proportion of variance accounted for the common factors of a variable. Communality scores range from 0 to 1. Zero value means that the common factors will not explain any variance. Value one means that the common factors will explain all the variance.

Total variance explained in the initial solution table. Eigenvalue is the total variance described by each factor. Eigenvalues that is less than one does not have enough total variance explained to represent a unique factor. Eigen values that are less than one are excluded from the analysis.

3.9.3 Chi-square Test of Independence

Chi-square test is conducted in order to determine whether there is a significant association between two categorical variables in a given population. Data collected from the questionnaire survey in this study are of data yielded in categorical manner which implies that Chi-square test of independence is viable test for this particular survey.

The first step of Chi-square test procedure is to state the hypotheses. In order test the hypothesis, first, an alternative hypothesis and a null hypothesis must be constructed.

H_a : alternative hypothesis state dependent ; dependency exists between two variables
H_b : null hypothesis state independent ; dependency does not exist between two variables

Once hypotheses are constructed, the next step involves testing of hypotheses using Chi-square test for independence using sample data available. This particular test concludes whether there is a significant relationship between the two variables in the particular hypothesis or not. It is important to state a significance level for this test beforehand which according to most researchers, is usually 0.5. Same significance level has been

used in this study when conducting the Chi-square test. Chi-square random variable (X^2) is defined by the equation (4) below.

$$X^2 = \Sigma \left(\frac{(O_{r,c} - E_{r,c})^2}{E_{r,c}} \right) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4)$$

X^2 = Chi-square random variable

$O_{r,c}$ = the observed frequency count at level *r* of Variable A and level *c* of Variable B

$E_{r,c}$ = the expected frequency count at level *r* of Variable A and level *c* of Variable B.

Significant variables can be identified by analysing the results of Chi-square test of independence. These significant variables can be used to further analysis.

CHAPTER 04

DATA ANALYSIS

4.1 Introduction

In this chapter describes results of the data analysis. Data collected through the questionnaire survey were fed into SPSS 20.0 (a statistical software tool) in order to generate a comprehensive analysis of the study which is discussed in this chapter. This chapter mainly consists with descriptive statistics and inferential statistics. Under inferential statistics factor analysis, reliability analysis and hypothesis testing has been done. Descriptive statistics used to represent analyzed data in a meaningful way and Factor analysis is used to find factors among observed variables. There are number of variables consist in the study. Therefore the most appropriate method to reduce number of variables is Factor analysis. Since factor analysis can be used to reduce number of variables by grouping variables with similar characteristics together. Reduced factors used for further analysis.

4.2 Descriptive Statistics

In this research descriptive statistics has been used to describe, show and summarize raw data in a meaningful way, which might emerge patterns from the raw data. Descriptive statistics are very crucial since presenting raw data are hard to visualize. In this study the author used different type of methods to summarize data such as tabulated description (tables), graphical description (graphs and charts), and statistical commentary (discussion of the results). Typically, there are two types of statistics are used to describe data. They are measures of central tendency (mean, median, and mode) and measures of spread (range, absolute deviation, variance and standard deviation).

4.2.1 Demographic Profile of the Respondent

Table 4.1 Profile of Respondents' Position within the Organization

	Frequency	Percent	Cumulative Percent
Executive	134	66.0	66.0
Manager	43	21.2	87.2
Other	26	12.8	100.0

According to table 4.1 majority of the respondents in this study are executives which counts 134. It illustrates 66% of the total respondents. There are 43 managers and 26 other employees who give responses respectively. Managers represent 21.2% while other employees represent 12.8% accordingly.

Table 4.2 Profile of Respondents' Industry Category

	Frequency	Percent	Cumulative Percent
Apparel	80	39.4	39.4
Fast Moving Consumer Goods (FMCG)	39	19.2	58.6
Import and Export	25	12.3	70.9
Trading	15	7.4	78.3
Chemical	13	6.4	84.7
Agriculture	10	4.9	89.7
Cement	10	4.9	94.6
Telecommunication	8	3.9	98.5
Other	3	1.5	100.0

According to table 4.2 majorities of the respondents are in the apparel industry which counts 80 responses. It indicates 39.4% from total sample. In Sri Lankan context apparel industry is the most vital industry in relation to the outsource logistics services. Apparel industry is highly interested to outsource logistics services. And second highest numbers of respondents are from FMCG industry which counts 39 responses and it denotes 19.2%. The extent of obtaining logistics services is highly growing in FMCG industry. Third largest respondents are from import and export industry where it amounts 25 responses while it represent 12.3% from the total sample. Altogether 70.9% contribute from these three industries. Responses from trading, chemical, agriculture, cement, telecommunication and other industries are ranked respectively. Sample selection of the study is also affects to this result because in this study author used the stratified sample

which consist of seventeen apparel companies, nine FMCG companies, eight import export companies, four trading companies, three chemical companies, two cement companies, two agricultural companies and two telecommunication companies.

Table 4.3 Profile of Average Lengths of 3PL Contracts

Years	Frequency	Percent	Cumulative Percent
0-5	53	26.1	26.1
6-10	81	39.9	66.0
11-15	35	17.2	83.3
16-20	27	13.3	96.6
21-25	7	3.4	100.0

According to the Table 4.3 majority of the companies enter into contracts for usage of the services range for a period between 6-10 years. This shows 39.9% from total sample where count 81 respondents. 26.1% of the respondents signed their agreement below the 5 years. 66% from the respondents signed their agreement between 0-10 years. That clearly reveals that in Sri Lankan third party logistics customers sign their contracts usually in shorter periods. Contract period between 11-15 years and 16-20 years illustrate the 17.2% and 13.3% from the total sample accordingly. Only 3.4 % signed their agreement above 20 years. That means companies are reluctant to signed contracts for large periods.

Table 4.4 Profile of Purpose of Adopting 3PL Services

	Frequency	Percent	Cumulative Percent
Both	131	64.5	64.5
Domestic	64	31.5	96.1
International	8	3.9	100.0

According to Table 4.4 in Sri Lankan 3PL industry, companies mostly use 3PL services for both domestic and international operations. That amount 65% of the total sample. These results clearly highlighted that companies have lesser amount of willingness to use 3PL services either domestic or international purpose only. 31% from the sample use 3PL services only for domestic operations. Only 4% use 3PL services for international operations.

Table 4.5 Profile of Authorized Person for Undertaking Decisions Regarding Outsourcing Logistics Services

	Frequency	Percent	Cumulative Percent
Logistics	99	48.8	48.8
Supply Chain	61	30.0	78.8
Operation	21	10.3	89.2
Other	12	5.9	95.1
Production	5	2.5	97.5
Sales and Marketing	5	2.5	100.0

According to the Table 4.5 mostly the logistics managers are responsible for undertaking strategic decisions to use outsourcing logistics services to originate within their companies. Almost half of the responses (49%) highlighted that logistics manager is responsible to outsource logistics services. 30% of the responses indicates that supply chain manager is responsible for undertaking decisions of logistics outsourcing within their companies. Third most preferred answer is operations manager. It accounts 10% from total sample.

Table 4.6 Profile of Preferred Reasons to Outsource Logistics Services

	Yes		No	
	Count	Row N %	Count	Row N %
Cost Reduction	**197**	**97.0%**	6	3.0%
Reduction in Capital investment	**172**	**84.7%**	31	15.3%
Enhanced Operational Flexibility	**110**	**54.2%**	93	45.8%
New Technology	14	6.9%	189	93.1%
Up to date Technique	15	7.4%	188	92.6%
Access to New Market	25	12.3%	178	87.7%
Focus on Core Business	**184**	**90.6%**	19	9.4%
Other	3	1.5%	200	98.5%

According to the table 4.6 respondents choose cost reduction is the most important reason to outsource logistics services. Therefore, cost reduction might be the motivating factor of outsourcing logistics services in Sri Lanka. 97% indicates that cost reduction would be one of the critical factors for taking decisions of outsourcing logistics services. 90.6% of the respondents are interested in outsourcing logistics services since they can focus on their core business while outsource their logistics function to outside party. About 85% use 3PL services because they can reduce their capital investment. 54.2% of the respondents used 3PL services since they seek to enhance flexibility by using 3PL providers. According to the result author observed that cost reduction, focus on core business, reduction in capital investment, and operational flexibility are the most preferred reasons for outsourcing logistics services in Sri Lanka. All other factors cannot be concerned as the major reasons for outsourcing logistics services.

Table 4.7 Profile of Used 3PL Services in the Industry

	Yes		No	
	Count	Row N %	Count	Row N %
Warehouse Operation	**152**	**74.9%**	51	25.1%
Fleet Operation	105	51.7%	98	48.3%
Freight Forwarding	113	55.7%	90	44.3%
Distribution	**134**	**66.0%**	69	34.0%
Custom Clearance	96	47.3%	107	52.7%
Shipment Consolidation	**133**	**65.5%**	70	34.5%
Carrier Selection	63	31.0%	140	69.0%
Consultancy	20	9.9%	183	90.1%
Reverse Logistics	41	20.2%	162	79.8%
Other	5	2.5%	198	97.5%

The table 4.7 indicates that warehouse operation is most common 3PL service that company used. Almost four third of the respondents (75%) are interested to use warehouse operations since warehouse operations yielded higher cost benefits. In Sri Lanka, apparel industry is highly motivated to outsource ware house operations. That clearly impact for this result. Distribution and shipment consolidation are second and third most preferred logistics services in Sri Lanka where it use 66% and 65.5% from all 203 respondents.

4.3 Factor Analysis

Factor analysis is a statistical tool is used to find factors among observed variables. Usually factor analysis is carried out when availability of number of variables. By factor analysis, variables which have similar characteristics are grouped into one factor. In this study factor analysis is used to determine factors affecting to customer satisfaction in third party logistics outsourcing relationships.

Table 4.8 Descriptive Statistics

	Mean	Std. Deviation	Analysis N
In-depth Knowledge	4.04	0.804	203
Cooperating Longtime	4	0.873	203
Mutual Understanding	3.99	0.823	203
Accurate Service	3.94	0.683	203
Long term Relationship	3.9	0.829	203
Understand Specific Need	3.89	0.789	203
Ethical	3.82	0.743	203
Respond to the Special Request	3.81	0.817	203
Safe Transaction	3.8	0.796	203
Prominent Brand Name	3.76	0.921	203
Consistently Courteous	3.73	0.803	203
Prompt Service	3.72	0.822	203
Highly Acceptable	3.71	0.89	203
Provide Suitable Equipment	3.69	0.87	203
On Time	3.67	0.799	203
Quick Problem Solving	3.65	0.902	203
Highly Reputed	3.64	0.962	203
Confidence in Clients	3.63	0.742	203
Follow Standards	3.63	0.836	203
Well maintained Equipment	3.57	0.861	203
Adequate Physical Facilities	3.56	0.906	203
Convenient to the clients	3.55	0.746	203
Problem Solving Techniques	3.37	1.028	203
Sharing Information	3.36	1.012	203
Never Makes You Wait	3.35	0.919	203
Modern Technological Equipment	3.3	0.955	203
Individual Attention	3.3	0.965	203
Tells You Exact Time	3.19	0.927	203
Maintain Error Free Record	3.16	0.911	203

Table of descriptive statistics is the first output of the factor analysis which helps to investigate the all variables. Typically mean value, standard deviation (S.D.), and number of respondents (N) are tested in this study. According to the table 4.8 in-depth knowledge of the 3PL service provider has the highest mean value of 4.04. Researcher can conclude that in-depth knowledge of the 3PL service provider is the most significant factor of the customer satisfaction on 3PL relationships in Sri Lanka. Co-operating long time, mutual understanding, long-term relationship and accurate service are also can be considered as most vital factors.

Table 4.9 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**.939**
Bartlett's Test of Sphericity	Approx. Chi-Square	4227.707
	df	406
	Sig.	**.000**

Kaiser-Meyer-Olkin (KMO) and Bartlett's test is used to measure the strength of the relationship among variables. KMO test statistic measure the sample adequacy. As KMO test statistic is greater than 0.6, it can be concluded that sample is adequate. According to the table 4.9 value of Kaiser-Meyer-Olkin is 0.939. The KMO value of this sample exceeds the recommended value of 0.5. Therefore, factor analysis can proceed further.

Following hypothesis has been checked during Bartlett's test,

Ho: Correlation matrix is an identity matrix.
H1: Correlation matrix is not an identity matrix.

According to the Table 4.9 p-value of the Bartlett's test is 0.000, null hypothesis is not accepted. It can be concluded that, correlation matrix is not an identity among variables used in factor analysis matrix which further supports the strength of the relationship.

Table 4.10 Communalities

	Extraction
On Time	.564
Accurate Service	.524
Quick Problem Solving	.574
Maintain Error Free Record	.684
Tells You Exact Time	.669
Prompt Service	.622
Respond to the Special Request	.533
Never Makes You Wait	.591
Modern Technological Equipment	.688
Adequate Physical Facilities	.691
Provide Suitable Equipment	.680
Well maintained Equipment	.560
Confidence in Clients	.439
Safe Transaction	.658
Consistently Courteous	.591
In-depth Knowledge	.573
Individual Attention	.562
Convenient to the clients	.617
Ethical	.503
Understand Specific Need	.584
Prominent Brand Name	**.804**
Highly Acceptable	**.813**
Follow Standards	.661
Cooperating Longtime	.637
Mutual Understanding	**.725**
Problem Solving Techniques	.696
Highly Reputed	**.785**
Sharing Information	.649
Long-term Relationship	.627

Extraction Method: Principal Component Analysis.

Communalities table shows how much of the variance in the variables has been accounted for by the extracted factors. In other words the amount of variance in each variable that can be explain by the retain factors is represented by communalities after exaction (Dr.Andy, 2005). Over the 80 per cent of the variance in accounted for both variables of highly acceptable and prominent brand name. Furthermore, 78.5% and 72.5% of the variance accounted for both variables of highly reputed and mutual understanding.

Table 4.11 Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	14.242	49.111	49.111	14.242	**49.111**	49.111	6.301	21.726	21.726
2	1.644	5.670	54.781	1.644	**5.670**	54.781	4.279	14.756	36.483
3	1.319	4.550	59.331	1.319	**4.550**	59.331	4.205	14.500	50.983
4	1.099	3.789	63.120	1.099	**3.789**	**63.120**	3.520	12.137	63.120
5	.956	3.295	66.415						
6	.822	2.833	69.248						
7	.789	2.720	71.968						
8	.715	2.465	74.433						
9	.665	2.292	76.725						
10	.655	2.257	78.983						
11	.622	2.146	81.128						
12	.536	1.847	82.975						
13	.514	1.774	84.749						
14	.484	1.667	86.417						
15	.447	1.541	87.958						
16	.389	1.340	89.298						
17	.367	1.267	90.565						
18	.347	1.197	91.762						
19	.312	1.076	92.838						
20	.286	.985	93.822						
21	.281	.971	94.793						
22	.276	.953	95.746						
23	.246	.850	96.596						
24	.238	.822	97.418						
25	.219	.756	98.173						
26	.170	.586	98.759						
27	.159	.548	99.307						
28	.135	.464	99.771						
29	.066	.229	100.000						

Extraction Method: Principal Component Analysis.

The table 4.11 list down the eigenvalues associated with each linear component (factor) before extraction, after extraction and after rotation. Before extraction, SPSS has identified 29 components (factors) within the data set. Eigenvalues associated with each factor represent the variance explained by that particular linear component. SPSS output also shows the eigenvalue in terms of the percentage variance explained. The extraction sums of squared loading part shows factors which met the criterions. SPSS exact all factors with eigenvalue greater than one. According to the table 4.10, there are four factors with eigenvalue greater than one. The '% of variance' column of the extraction sums of squared loadings part tells how much of the total variability can be accounted for by each of these factors. Factor 1 explains almost half of the total variance (49.11%). This figure reveals that the first few factors explained relatively large amount of variance while other subsequent factors explain only small amount of variance. Factor 2, factor 3 and factor 4 explain 5.67%, 4.55% and 3.78% of total variance respectively. Altogether these four factors explain the 63.12% of total variance.

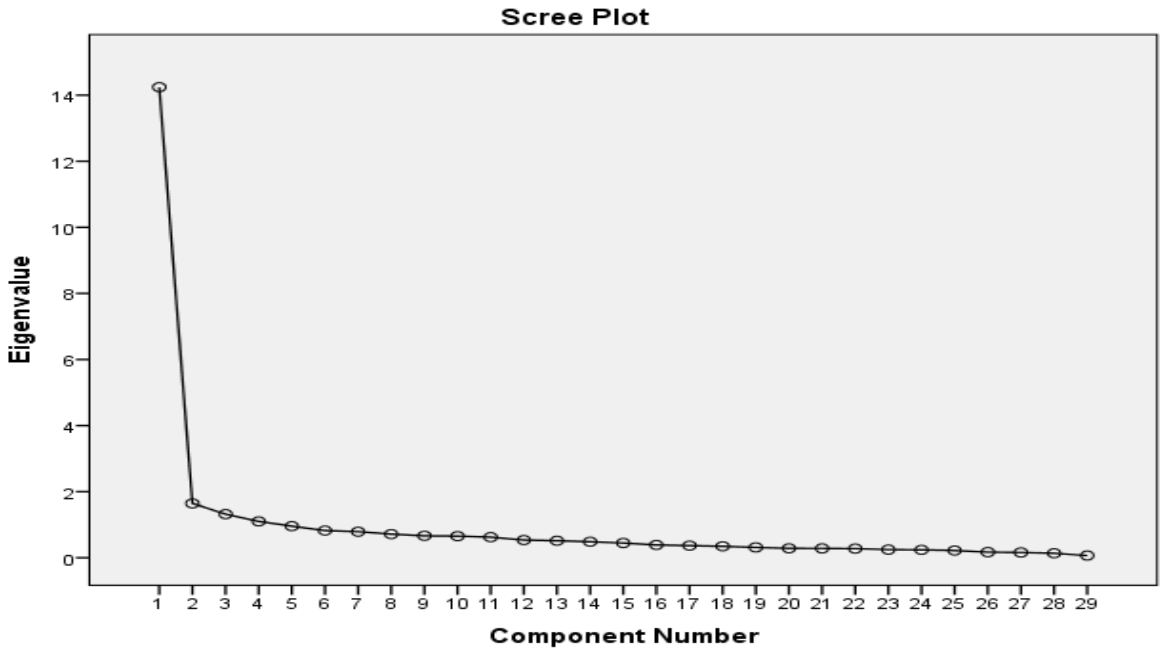

Figure 4.1 Screen Plot

It can be seen a sharp turn (elbow) after 4th Eigen value (figure 4.8). Therefore, it can be definite that 4 factors are enough to account total variation. It further confirmed under the Extraction Sums of Squared Loadings. According to that only four factors have been retained for further analysis.

Table 4.12 Component Matrix

Component Matrix				
	Component			
	1	2	3	4
On Time	.595	.215	.006	-.404
Accurate Service	.716	.101	-.026	-.036
Quick Problem Solving	.700	.119	-.110	.240
Maintain Error Free Record	.573	.542	-.124	-.216
Tells You Exact Time	.650	.400	-.292	.044
Prompt Service	.596	.455	.109	.219
Respond to the Special Request	.626	.337	.108	.125
Never Makes You Wait	.707	.107	-.276	.065
Modern Technological Equipment	.731	-.069	-.344	-.174
Adequate Physical Facilities	.760	-.062	-.315	-.102
Provide Suitable Equipment	.778	-.148	-.185	-.136
Well-maintained Equipment	.704	-.013	-.134	-.213
Confidence in Clients	.637	.158	.056	.071
Safe Transaction	.649	.004	-.039	.485
Consistently Courteous	.627	.090	.203	.386
In-depth Knowledge	.723	-.057	-.003	.216
Individual Attention	.701	.248	-.022	-.090
Convenient to the clients	.766	.125	.113	.034
Ethical	.614	-.076	.316	-.145
Understand Specific Need	.698	-.197	.242	-.021
Prominent Brand Name	.796	-.356	-.191	-.084
Highly Acceptable	.811	-.335	-.170	-.118
Follow Standards	.791	-.143	.099	-.068
Cooperating Longtime	.646	-.394	-.008	.255
Mutual Understanding	.714	-.190	.418	-.071
Problem Solving Techniques	.647	.012	.457	-.263
Highly Reputed	.818	-.319	-.097	.073
Sharing Information	.691	.093	.389	-.104
Long-term Relationship	.762	-.194	.010	.089
Extraction Method: Principal Component Analysis.				
a. 4 components extracted.				

Factor loading of 4- factor model is shown in table 4.12. Results of factor loadings in factor one is all most the same magnitude. It is difficult to identify factor loadings for each component. Thus factors are rotated to obtain meaningful factors. Factor rotation has been done according to Varimax method. Varimax Rotation is considered for further analysis.

Table 4.13 Rotated Component Matrix

Rotated Component Matrix				
	Component			
	1	2	3	4
On Time	.291	.398	**.562**	-.073
Accurate Service	.399	.323	**.425**	.284
Quick Problem-solving	.384	.154	.373	**.513**
Maintain Error Free Record	.127	.181	**.789**	.110
Tells You Exact Time	.308	.014	**.681**	.332
Prompt Service	.014	.246	**.536**	.523
Respond to the Special Request	.115	.305	**.486**	.437
Never Makes You Wait	**.503**	.083	.465	.339
Modern Technological Equipment	**.689**	.141	.427	.106
Adequate Physical Facilities	**.678**	.153	.417	.186
Provide Suitable Equipment	**.678**	.287	.331	.169
Well-maintained Equipment	**.537**	.303	.413	.094
Confidence in Clients	.260	.309	**.380**	.364
Safe Transaction	.350	.119	.165	**.703**
Consistently Courteous	.176	.325	.186	**.648**
In-depth Knowledge	.450	.280	.222	**.493**
Individual Attention	.308	.319	**.550**	.251
Convenient to the clients	.335	**.433**	.407	.390
Ethical	.279	**.606**	.176	.165
Understand Specific Need	.423	**.560**	.103	.285
Prominent Brand Name	**.806**	.300	.161	.194
Highly Acceptable	**.797**	.333	.189	.176
Follow Standards	**.528**	.499	.242	.273
Cooperating Longtime	**.597**	.267	-.090	.449
Mutual Understanding	.346	**.725**	.082	.271
Problem Solving Techniques	.193	**.763**	.257	.104
Highly Reputed	**.729**	.329	.127	.359
Sharing Information	.185	**.668**	.313	.266
Long-term Relationship	**.565**	.368	.166	.380
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.				
a. Rotation converged in 12 iterations.				

The purpose of factor rotation is to reduce number of factors on which the variable under investigation have high loading. Factor rotation not makes any significant changes. However, interpretation of the analysis may easier. Factors are rotated to obtain meaningful factors. Varimax Rotation method is used in this study. According to the rotated factor loadings, 29 variables can be categorized for extracted four factors as shown in the table 4.13.

According to table 4.13 never makes you wait, modern technological equipment, adequate physical facilities, provide suitable equipment, well-maintained equipment, prominent brand name, highly acceptable, follow standards, co-operating long time, highly reputed and long-term relationship have higher loadings compared to others within the component one. Therefore, factor1 is generated using the following variables.

Factor 1 can be defined as,

Factor 1 = f {never makes you wait, modern technological equipment, adequate physical facilities, provide suitable equipment, well-maintained equipment, prominent brand name, highly acceptable, follow standards, co-operating long time, highly reputed and long-term relationship}

To make further interpretation easier, factor one can be named as **Tangible, Image and Trust.**

Convenient to the client, ethical, understanding a specific need, mutual understanding, problem solving techniques, sharing information have higher loadings compared to other within the component two.

Therefore factor 2 can be define as,

Factor 2 = f {Convenient to the client, ethical, understanding a specific need, mutual understanding, problem solving techniques, sharing information}.

Factor 2 can be named as **Empathy and Relationship.**

On time, accurate service, maintain error free records, tells you exact time, prompt service, respond to the special request, confidence in clients and individual attention have higher loadings in the component three.

Therefore factor three can be defined as,

Factor 3 = f {on time, accurate service, maintain error free records, tells you exact time, prompt service, respond to the special request, confidence in clients and individual attention}
Factor 3 can be named as **Reliability and Responsiveness.**

Quick problem solving, safe transaction, consistently courteous, and in-depth knowledge have higher number of loading in component four. Therefore factor four can be defined as,

Factor 4 = f {quick problem solving, safe transaction, consistently courteous, and in-depth knowledge}

Factor 4 can be named as **Assurance.**

Table 4.14 Component Score Coefficient Matrix

Component Score Coefficient Matrix				
	Component			
	1	2	3	4
On Time	-.004	.129	**.231**	-.289
Accurate Service	.009	.012	**.087**	-.002
Quick Problem Solving	.001	-.124	.037	**.213**
Maintain Error Free Record	-.094	-.031	**.364**	-.125
Tells You Exact Time	-.007	-.199	**.262**	.059
Prompt Service	-.206	-.013	.155	**.241**
Respond to the Special Request	-.150	.024	.125	**.157**
Never Makes You Wait	.091	-.171	**.114**	.055
Modern Technological Equipment	**.211**	-.127	.110	-.157
Adequate Physical Facilities	**.189**	-.131	.089	-.095
Provide Suitable Equipment	**.175**	-.035	.030	-.116
Well-maintained Equipment	**.113**	.008	.102	-.164
Confidence in Clients	-.059	.023	.065	**.094**
Safe Transaction	-.018	-.148	-.101	**.407**
Consistently Courteous	-.131	.022	-.084	**.356**
In-depth Knowledge	.026	-.039	-.062	**.191**
Individual Attention	-.039	.019	**.171**	-.033
Convenient to the clients	-.060	**.075**	.051	.072
Ethical	-.051	**.262**	-.044	-.073
Understand Specific Need	.009	**.192**	-.117	.012
Prominent Brand Name	**.245**	-.038	-.083	-.091
Highly Acceptable	**.235**	-.016	-.067	-.115
Follow Standards	.055	**.118**	-.046	-.033
Cooperating Longtime	.140	-.031	-.237	**.192**
Mutual Understanding	-.055	**.314**	-.137	-.010
Problem Solving Techniques	-.121	**.378**	.002	-.147
Highly Reputed	**.178**	-.030	-.126	.048
Sharing Information	-.141	**.285**	.013	-.018
Long term Relationship	**.087**	.019	-.095	.080
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Component Scores.				

Component score coefficients are shown by the table 4.14 According to above table it can be derived factors as follow,

Factor 1 (Tangible, Image and Trust) = 0.211 modern technological equipment + 0.189 adequate physical facilities + 0.175 provide suitable equipment + 0.113 well-maintained equipment + 0.245 prominent brand name + 0.235 highly acceptable + 0.178 highly reputed + 0.087 long-term relationship

Factor 2 (Empathy and Relationship) = 0.075 convenient to the clients + 0.262 ethical + 0.192 understand specific need + 0.118 follow standards + 0.314 mutual understanding + 0.378 problem solving techniques + 0.285 sharing information

Factor 3 (Reliability and Responsiveness) = 0.231 on time + 0.087 accurate services + 0.364 maintain error free record + 0.262 tells you exact time + 0.114 never makes you wait + 0.171 individual attention

Factor 4 (Assurance) = 0.213 quick problem solving + 0.241 prompt service + 0.157 respond to the special request + 0.094 confidence in clients + 0.407 safe transaction + 0.356 consistently courteous+ 0.191 in-depth knowledge + 0.192 co-operating long time

4.4 Reliability Analysis

Reliability analysis allows the researcher to study the properties of measurements and scales and the items that compose scales. Reliability analysis calculates number of commonly used measures of scale reliability and also provides information about the relationships between individual items in the scale. Cronbach Alpha value is tested is tested under reliability analysis. If the value of Cronbach's alpha is higher than 0.6 it is in an acceptable level.

Table 4.15 Reliability in Full Dataset

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.922	.905	53

According to the table 4.15 the value of Cronbach's Alpha is 0.922. That illustrates higher Cronbach's Alpha value. Therefore, the reliability of the variables is in superb level since data set can be accepted.

Afterwards reliability analysis has been carried out to check the reliability of extracted four factors.

Table 4.16 Reliability Test for Factor 01 (Tangible, Image and Trust)

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.941	.941	11

According to the reliability test statistics, Cronbach's Alpha value is 0.941 meanwhile, Factor 1 (Tangible, image and trust) can be considered as a reliable factor.

Table 4.17 Reliability Test for Factor 02 (Empathy and Relationship)

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.869	.871	6

According to the table 4.16 it clearly reveals that Cronbach's alpha value is 0.869. That means factor 2 (Empathy and relationship) can be considered as reliable a factor.

Table 4.18 Reliability Test for Factor 03 (Reliability and Responsiveness)

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.868	.870	8

According to the table 4.18 it shows that Cronbach's Alpha value of factor 3 is 0.870. That means factor 3 (Reliability and responsiveness) can be considered as a reliable factor.

Table 4.19 Reliability Test for Factor 04 (Assurance)

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.788	.790	4

According to the table 4.19 it shows that Cronbach's Alpha value of factor 4 is 0.788. That means factor 4 (Assurance) can be considered as a reliable factor.

Table 4.20 Reliability Test for All Four Extracted Factors

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.962	.962	29

According to the table 4.20 it clearly reveals that Cronbach's Alpha value of all four extracted factors is 0.962. That means these 29 variables have higher reliability. Therefore, these four factors can be used to the further analysis.

4.5 Hypothesis Test

Hypothesis test has been carried out by using Chi-Square test. It is used to test the independence between two variables. (2-Tailed) or P-Value indicates if there is a statistically significant correlation between two variables. P-values for the research variables have been tested using SPSS software and the results obtained are presented below.

First hypothesis test has been done for extracted four factors with overall customer satisfaction.

Hypothesis Test for Factor 1(Tangible, image and trust)

H_0= Overall customer satisfaction is independent from factor1 (Tangible, image and trust)

H_1 = Overall customer satisfaction is dependent from factor1 (Tangible, image and trust)

Table 4.21 Chi-Square Test for Factor 01(Tangible, Image and Trust)

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	356.389[a]	99	**.000**
Likelihood Ratio	288.651	99	.000
Linear-by-Linear Association	129.451	1	.000
N of Valid Cases	203		

According to the above result, it clearly highlighted that 2-tailed or significant value is 0.000, since it cannot accept H_0 (0.05>0.000). That means overall customer satisfaction is dependent from factor 1(Tangible, image and trust).

Hypothesis Test for Factor 2 (Empathy and relationship)

H_0 = Overall customer satisfaction is independent from factor2 (Empathy and relationship)

H_1 = Overall customer satisfaction is dependent from factor 2 (Empathy and relationship)

Table 4.22 Chi-Square Test for Factor 02 (Empathy and Relationship)

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	318.300[a]	57	**.000**
Likelihood Ratio	209.649	57	.000
Linear-by-Linear Association	114.400	1	.000
N of Valid Cases	203		

According to the table 4.21 it clearly shows that 2-tailed or significant value is 0.000, since it cannot accept H_0 (0.05>0.000).That means overall customer satisfaction is dependent from factor 2 (Empathy and relationship).

Hypothesis Test for Factor 3 (Reliability and responsiveness)

H_0 = Overall customer satisfaction is independent from factor 3 (Reliability and responsiveness)

H_1 = Overall customer satisfaction is dependent from factor 3 (Reliability and responsiveness)

Table 4.23 Chi-Square Test for Factor 03 (Reliability and Responsiveness)

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	244.520[a]	72	**.000**
Likelihood Ratio	197.481	72	.000
Linear-by-Linear Association	95.089	1	.000
N of Valid Cases	203		

According to the table 4.23 it clearly shows that 2 tailed or significant value is 0.000, since it cannot accept H_0 (0.05>0.000).That means overall customer satisfaction is dependent from factor 3 (Reliability and responsiveness).

Hypothesis Test for Factor 04 (Assurance)

H_0 = Overall customer satisfaction is independent from factor 4 (Assurance).
H_1 = Overall customer satisfaction is dependent from factor 4 (Assurance).

Table 4.24 Chi-Square Test for Factor 4 (Assurance)

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	194.283[a]	36	**.000**
Likelihood Ratio	158.149	36	.000
Linear-by-Linear Association	94.452	1	.000
N of Valid Cases	203		

According to the table 4.24 it clearly shows that 2 tailed or significant value is 0.000, since it cannot accept H_0 (0.05>0.000).That means overall customer satisfaction is dependent from factor 4 (Assurance).
By reviewing the above results, researcher can be identified that all the extracted factors are highly significant over, overall customer satisfaction under 5% significant levels.

CHAPTER 05

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The objective of this chapter is to cover the areas of discussion of research findings, recommendations, contributions and implications of the research findings, limitations of the research, and capability of further research.

5.2 Discussion on Research Findings

At the beginning of the analysis chapter demographic data was analyzed using descriptive statistics. From the results of descriptive statistics, researcher could be able to find some of the characteristics in sample population. According to the results, majority of the respondents were executives in this research. In Sri Lankan 3PL context, apparel industry was emerged as the top customer since the majority of the respondents were from apparel industry. They were very enthusiastic to involve the logistics activities and many of the apparel companies were trying to outsource their logistics activities to focus on their core competencies. Majority of the Sri Lankan 3PL customers were interested to undertake contacts in shorter period. Typically it was below ten years due to the fact that may be to reduce the risk of uncertainty of inter firm relationship. In this study clearly indicates that the main purpose of the undertaking 3PL contract is for both domestic and international purposes. Majority of the logistics managers were authorized to take decisions on outsourcing logistics services. In Sri Lankan context most preferred reasons for logistics services outsourcing are cost reduction, focus on core business, reduction in capital investment. These results were mostly similar to the study of the Rahman (2011) which was based in Australian perspective. According to the results the most commonly used 3PL services in Sri Lanka are warehouse operations, distribution and shipment consolidation. Among them warehouse operation can be expressed as the most commonly used 3PL service. Significant effect of this result would be the most of the apparel firms were trying to outsource their logistics services to the 3PL providers.

Two main objectives were addressed throughout this empirical research. The first objective of this research is to determine the factors affecting to the customer satisfaction

in third party logistics relationship in Sri Lanka. In order to identify the factors of customer satisfaction, the structured questionnaire was constructed with 29 latent variables. Because of the large number of variables available in the research, factor analysis was carried out to reduce the number of variables. Four factors were extracted from the results of factor analysis. With the help of the comprehensive literature review these four factors were named for the ease of interpretation. They are "Tangible, image and trust", "Empathy and relationship", "Reliability and responsiveness", and "Assurance". According to the research findings these four factors were used for further analysis.

Further hypothesis test has been carried out by using Chi-Square test to find out the significant factors among these four extracted factors. The results were as follows,

Table 5.1 Chi-Square Test Results for Extracted Factors

Factor	Pearson Chi-Square Value	df	Asymp. Sig. (2-sided)
Factor 1 (Tangible, Image and Trust)	356.389[a]	99	**.000**
Factor 2 (Empathy and Relationship)	318.300[a]	57	**.000**
Factor 3 (Reliability and Responsiveness)	244.520[a]	72	**.000**
Factor 4 (Assurance)	194.283[a]	36	**.000**

According to the P value, it clearly reveals that all these four factors are highly significant on customer satisfaction of third party logistics outsourcing relationships. Moreover, these four factors can be considered as the main factors affecting to the customer satisfaction in third party logistics outsourcing relationships in Sri Lanka.

The second objective of the research is to study the overall customer satisfaction of the third party logistics industry in Sri Lanka. Throughout this research this objective also has been tried to accomplish. The following table shows the customer satisfaction levels of third party logistics industry in Sri Lanka.

Table 5.2 Overall Customer Satisfaction Levels

	Frequency	Percent	Cumulative Percent
Strongly Dissatisfied	5	2.5	2.5
Somewhat Dissatisfied	20	9.9	12.3
Neutral	45	22.2	34.5
Somewhat Satisfied	83	40.9	75.4
Strongly Satisfied	50	24.6	100.0
Total	203	100.0	

According to the Table 5.2 it clearly highlights that majority of the 3PL customers are somewhat satisfied about their 3PL providers where it amount 40.9%. 24.6% of the customers are strongly satisfied their customers. Altogether 65.5% customers are satisfied the services which they were served. Only 12.3% of customers are dissatisfied towards the services which they were served. All these figures highlight that Sri Lankan 3PL industry stands in a considerable stage. According to the above results it can be justified that main two objectives were clearly accomplished.

5.3 Recommendations

Respondents were asked to give their suggestions in the end of the questionnaire. It would be very crucial to identify the customer requirements and their suggestions to improve the service quality and the level of customer satisfaction in 3PL industry that needed to implement to achieve high level of customer satisfaction. Numbers of customer requirements and important suggestions have been found out from the feedback of the questionnaires. Majority of the respondents highlighted that importance of new technological appliance to the third party logistics industry. When considering the global context of the 3PL industry, they move towards the new technological services. Sri Lanka also should focus on these new ICT applications. If not they couldn't survive in the market because the competitor will take the competitive advantage over them.

Some customers emphasized the importance of initiate time to time customer satisfaction surveys. Through these types of surveys 3PL companies can understand their customer satiation level. These studies will help them to identify the shortcomings of the services which they provide. 3PL companies are able to increase the level of service quality based

on the customer feedback. Real time monitoring is also a vital aspect to increase the service quality. Monitoring the performance level and quality of logistics services are critical.

Some of the respondents point out the importance of information sharing and good communication between two parties. Both these two things are important, because to get aware of each other very well. This may reduce the misunderstanding of each other. Finally it will reach to a good inter firm relationship.

Some customers highlighted the importance of competition among 3PL firms, because the competition led to provide a higher service quality.

Respondents suggested that if all stakeholders consider on win-win operation, there may be high growth in 3PL industry. 3PL provider is no longer just a service provider but acts as a business partner where the organization culture, strategic plan, objectives and etc. concerned.

5.4 Contributions and Implications

This study is very important to the management of the 3PL firms since it is very important to find the satisfaction level of customers and to find the areas which should be improved to enhance customer satisfaction level high. Mostly the expected requirements of the customers can be assessed through the feedback of questionnaire. Finally format of the design of the questionnaire in the research can be used as a permanent instrument to measure the satisfaction level for the several years.

This study is also important in order to develop new theory on customer satisfaction in third party logistics outsourcing relationships. The format of the questionnaire can be used as the template to find the level of customer satisfaction in other countries which have the similar conditions in Sri Lanka.

5.5 Limitations

As other research studies, there are certain limitations to this study as well. This study was carried out for a sample of companies in Sri Lanka which use 3PL services and large scale public listed companies. Among these companies some were selected under the industrial category of FMCG, Chemical, Import and Export, Apparel, Agriculture, Cement, Telecommunication, Trading, and Other. This study is limited to Sri Lankan geographical context.

5.6 Future Research

For future research it is suggested to use medium and small scale companies as well. The data was collected from one country, which may cause country bias despite the empirical model (Stank et al, 2003). This survey was conducted in Sri Lanka, which is fairly small market for third party logistics services. Therefore, to validate and expand the results, a broader international survey is needed. In this research specific regression model was not developed. Therefore, it is expected to develop model through multinomial logistics regression in future research. This research only focuses on customer satisfaction. However customer loyalty and brand equity are also very much important aspects in service related industries which are also in the same pillar. Therefore, further research can be conducted to measure customer loyalty and brand equity.

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APPENDIX

Study on Customer Satisfation in Third Party Logistics Outsourcing Relationships in Sri Lanka

Dear Sir/Madam,

I am Peshala Bhagya Hettiarachchi, a student of CINEC Campus, following BSc. International Transportation Management and Logistics Degree programme. As a partial fulfillment of the aforesaid degree progamme requirement, I am carrying out a research on "Determinants of Customer Satisfaction in Third Party Logistics Outsourcing Relationships in Sri Lanka". This research is carried out to determine the factors affecting customer satisfaction in third party logistics relationships in Sri Lanka and to identify the overall customer satisfaction of the clients of the 3PL company and make recommendations to improve the service levels of 3PL.

All the information will be used only for academic purposes and treated as strictly confidential and will not be released under any circumstances. Your kind co-operation and genuine response is greatly appreciated in making this research success.

Thank you for taking the time to assist me in my educational endeavours. I recognise the value of your time and gratefully appreciate your efforts in completing this questionnaire.

Thank You.
Sincerely,
Peshala Bhagya Hettiarachchi

PART-A

1. Name of the organization
   .....……

Please tick (√) the appropriate cage representing the most appropriate responses for you in respect of the following items.

2. What is your position within your organization?

Manager		Executive	
Other			

If other, please specify……

3. Have you used third party logistics providers (3PL) for your operations in recent times?

Yes		No	

**** If Yes; please answer the following questions.

4. What's the industrial category your company belongs to?

Fast Moving Consumer Goods		Cement	
Chemical		Telecommunication	
Import and Export		Trading	
Apparel		Other	
Agriculture			

If other, please specify……

5. How long has the logistic service provider been contracted with your company?

(Years and Months)
(Please write the answer with in the above boxes.)

6. What is the purpose of adopting the third party logistics relationship?

International Purpose		Domestic Purpose	
Both		Other	

If other, please specify…….
7. Which functional manger is responsible for adopting 3PL services in your company?

Production		Operation	
Logistics		Supply Chain	
Sales and Marketing		Other	

If other, please specify……..

8. What are the reason/s to outsource logistics services?
(You can select more than one option.)

1. Cost reduction	
2. Reduction in capital investment	
3. Enhanced operational flexibility	
4. Access to new technology	
5. Access to up- to- date technique and expertise	
6. Access to new market	
7. Focus on core business	

8. Other	

If other, Please specify……

9. Which of the following service/s have been currently outsourced?

(You can select more than one option.)

1. Warehouse Operation	
2. Fleet Operation	
3. Freight Forwarding	
4. Distribution	
5. Custom Clearance	
6. Shipment Consolidation	
7. Carrier Selection	
8. Consultancy	
9. Reverse Logistics	
10. Other	

If other, please specify…….

PART-B

Please specify your level of agreement for each of the following statements. Please tick (√) the appropriate cage to indicate the most applicable response for you.

* LSP- Logistics Service Provider

Description	**Strongly Disagree**	**Somewhat Disagree**	**Neutral**	**Somewhat Agree**	**Strongly Agree**
	1	**2**	**3**	**4**	**5**
1. LSP provides services on time as promised.					
2. LSP provides services accurately.					
3. LSP has sincere interest in solving client's problems quickly.					
4. LSP maintains an error free record.					
5. LSP tells you exactly when the service will be performed.					
6. LSP provides you prompt service					
7. Efforts are taken quickly by LSP in responding to the special request.					
8. LSP never makes you wait in responding to your request.					

Description	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
	1	2	3	4	5
9. LSP possesses modern technological equipment to ease up the work.					
10. LSP has adequate physical facilities.					
11. LSP provides suitable equipment during the service.					
12. Equipment used in services is well-maintained.					
13. The behavioral of LSP instills confidence in clients.					
14. Transactions with 3PL are safe.					
15. LSP is consistently courteous.					
16. LSP has in-depth knowledge regarding the service they provide.					
17. LSP provides individual attention to its customers.					
18. LSP operates during the times that are convenient to the clients.					
19. Services provided by LSP are ethical in nature.					
20. LSP understand your specific need.					
21. Compared to other LSPs, our LSP has a prominent brand name in the industry regarding the service provided.					
22. Our LSP is highly acceptable company compared to other LSPs.					
23. LSP follow standards that are compatible to our reputation.					
24. We have been co-operating for a long time with our LSP.					
25. There is a mutual understanding with the LSP regarding services.					
26. Proper problem-solving techniques are adopted by LSP.					
27. Our LSP is highly reputed in the industry.					
28. LSP is willing to share necessary information regarding service providers.					
29. We maintain long-term relationship with LSP.					

PART-C

Please rate your overall satisfaction level of 3PL

Description	Strongly Dissatisfied	Somewhat Dissatisfied	Neutral	Somewhat Satisfied	Strongly Satisfied
	1	**2**	**3**	**4**	**5**
Overall Customer Satisfaction					

If you may, please provide any suggestions to improve the service quality, customer satisfaction and customer loyalty in third party logistics outsourcing relationships in Sri Lanka.

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Thank You for completing this questionnaire. We appreciate the time you have spent in providing us with feedback. For additional information about this survey, please do not hesitate contact me. (Peshala Bhagya Hettiarachchi, Department of Logistics and Transport, CINEC Campus Malabe, Email-peshalabhagya@ymail.com Mobile-0711994656)