

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

PB Hettiarachchi[#] and LU Ranwala

Faculty of Humanities and Social Sciences, Colombo International Nautical & Engineering College (CINEC) Campus,
Malabe, Sri Lanka

[#]peshalabhagya@ymail.com

Abstract— Logistics outsourcing is an emerging trend. 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 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 aspect. Primary data gathering has been carried out from 50 companies embedded with 3PL, using stratified random sampling method. 203 valid questionnaires have been received. Descriptive analysis has been carried out to check the relationship between the customer satisfaction in third party logistics relationship and other explanatory variables. Due to the availability of collinearity between explanatory variables, factor analysis has been carried out using data reduction techniques. To check the reliability of extracted factors, reliability analysis has been carried out. Based on the reliable factors hypothesis testing has been carried out for ordinal data using Kruskal Wallis test. According to the study, 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. The study stated 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. Among 3PL customers, 25% of them are strongly satisfied about their 3PL providers. Approximately 41% of are somewhat satisfied about 3PL providers. Customer satisfaction in third party logistics relationship in Sri Lanka can be mainly categorized into four factors; "Tangible, image and trust", "Empathy and relationship", "Reliability and responsiveness", and "Assurance".

Keywords— Third Party Logistics (3PL), Outsourcing, Service Quality, Customer Satisfaction.

I. INTRODUCTION

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.

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.

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 China's 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 (Tianet 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, HayleysAdvantis, 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).

Core objectives of this research are to determine the factors affecting to the customer satisfaction in third party logistics relationship in Sri Lanka and to study the overall customer satisfaction of the third party logistics industry in Sri Lanka.

II.LITERATURE REVIEW

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 study has identified certain similarities in the results of both Rahman (2011) and this research (Customer satisfaction in 3PL outsourcing relationships in Sri Lanka).

III.METHODOLOGY

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.

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.

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. Descriptive analysis has been carried out to check the relationship between the response variable and other explanatory variables. Due to the availability of collinearity between explanatory variables and as those variables are very much related to the customer satisfaction, factor analysis has been carried out using data reduction techniques. To check the reliability of extracted factors, reliability analysis has been carried out. Based on the reliable factors hypothesis testing has been carried out for ordinal data using Kruskal Wallis test.

IV. ANALYSIS AND INTEPRETATIONS

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.

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. 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. 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.

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.

According to the 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.

It 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.

In this study factor analysis is used to determine factors affecting to customer satisfaction in third party logistics outsourcing relationships.

Table 1. KMO and Bartlett's test results

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.

Table 2: Communalities

Variable name	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

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 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.

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 (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.

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.

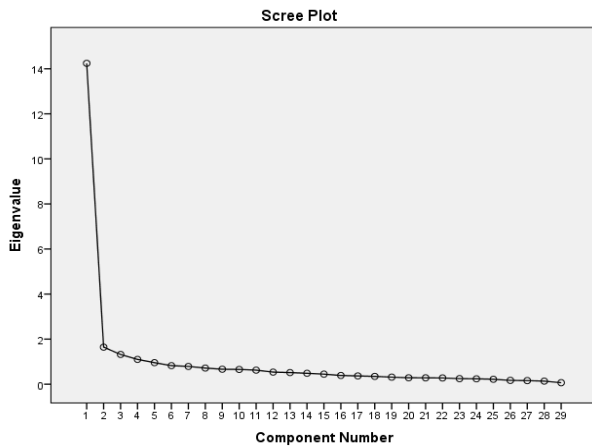


Figure 1. Scree plot

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.

Extracted four factors are as below:

- Tangible, Image and Trust
- Empathy and Relationship
- Reliability and Responsiveness
- Assurance

According to the Cronbach’s alpha value, it can be concluded that four extracted factors are reliable.

Hypothesis testing has been carried out to check the dependency between the extracted factors and the overall customer satisfaction in 3PL industry.

Table 3. Reliability analysis results

Rotated Factors	Value of Cronbach’s Alpha
Factor 1	0.941
Factor 2	0.869
Factor 3	0.868
Factor 4	0.788

Ho: overall customer satisfaction is independent from ith factor

H1: overall customer satisfaction is depending on ith factor

i = 1,2,3,4

Name of the factor	Test Statistic value	P- Value
1. Tangible, image and trust	356.389	0.000
2. Empathy and relationship	318.300	0.000
3. Reliability and responsiveness	244.520	0.000
4. Assurance	194.283	0.000

Overall customer satisfaction is highly depending on the

- Tangible, Image and Trust
- Empathy and Relationship
- Reliability and Responsiveness and
- Assurance factors

V.CONCLUSIONS

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.

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.

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.

REFERENCES

Field, A. (2005). *Factro Analysis Using SPSS*.

Perera, H. (2011, October). *CILT News*. Retrieved December 28, 2014, from Chartered Institute of Logistics Sri Lanka: <http://newsletter.ciltsl.com/2011/Q3/>

Rahman, S. (2011). An exploratory study of outsourcing 3PL services: an Australian perspective. *Benchmarking: An International Journal*, pp. 342-358

Saura, I. G., France's, D. S., Contri, G. B., & Blasco, M. F. (2008). Logistics service quality: a new way to loyalty. *Emerald*, 651-668.

Selnes, F. (1993). "An Examination of the Effect of Product Performance on Brand Reputation, Satisfaction and Loyalty,". *European Journal of Marketing*, Vol. 27, pp. 19-35.

Shet, N., & Virat, P. (2006). "A conceptual model for quality of service in the supply chain",. *International Journal of Physical Distribution & Logistics Management*, Vol. 36, pp. 547-75.

Sohail, M., Bhatnagar, R., & Sohal, A. (2006). A comparative study on the use of third party logistics services by Singaporean and Malaysian firms. *International Journal of Physical Distribution & Logistics Management*, Vol. 36, 690-701.

Stank, T., Goldsby, T., Vickery, & Savitskie, K. (2003). " Logistics service performance: estimating its influence on market share". *Journal of Business Logistics*, Vol 24(No1), PP 27-55.

Tian, Y., Lai, F., & Daniel, F. (2008). An examination of the nature of trust in logistics outsourcing relationship Empirical evidence from China. *Industrial Management & Data*, 346-367.

Tsai, Rang; Wang, Yao qiu;. (2013). Interrelation between Customer satisfaction and loyalty in third-party logistics distribution. *International Conference on Advances in Social Science, Humanities, and Management* (pp. 183-186). School of Economic and Management, Beijing Jiaotong University.

Vitasek, K. (2013). *Supply Chain Management Terms And Glossary*.

BIOGRAPHY OF AUTHORS

Lakshmi Udesika Ranwala is a statistics lecturer of Faculty of Humanities and Social Sciences, CINEC Maritime Campus. Her research interests include statistics modeling and Operational research.