

THE IMPACT OF 3PL SERVICE ON TOTAL QUALITY MANAGEMENT OF APPAREL INDUSTRY IN SRI LANKA

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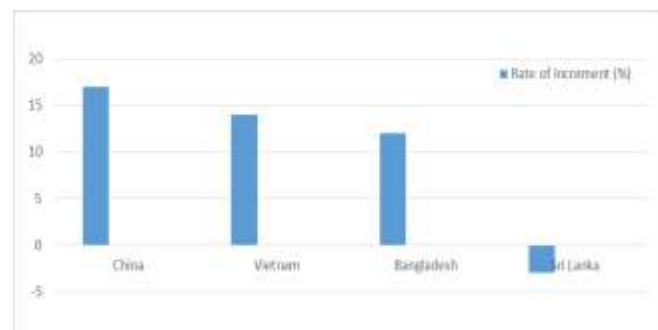
Abstract— Total Quality Management (TQM) is one of the key approaches towards realizing the goal of meeting customer satisfaction, hence it is extensively adapted by organizations and, among them apparel industry occupies a prominent position. Many companies are trying to outsource their logistics activities to outside parties to focus on their core competencies. Therefore, third party logistics industry is a strategic arm for today's companies. The objective of this research is to identify the relationship and impact between Third Party Logistics (3PL) services which are currently an uprising trend in Sri Lankan apparel industry with the hypothesis of "There is a negative relationship between current Third Party Logistics service and Total Quality". Further, it investigated whether practice of TQM and 3PL are significantly different among medium scale and large scale garment factories. A structured questionnaire was used in gathering data from sample of 26 garment factories. The simple random sampling method is used in case of sampling accuracy. The literature review revealed that there is a correlation between Total Quality Management and Third Party Logistics usage, Quality Standards usage and Outsourcing Proportion that can be either negative or positive. Cronbach Alpha test which obtained 0.71 used to check the reliability of extracted factors and reliability analysis has been carried out, ANOVA test obtained 0.25 and independent sample test were used for data analysis purposes. Among the respondents 73 percent accepted that they are currently using 3PL and 73 percent accepted that they are also currently using TQM services but extremely few respondents accepted that they are hardly using 3PL service as a TQM practise. It is proved that within the Sri Lankan apparel sector the medium scale apparel companies does not apply 3PL service as a TQM practise frequently. Further, large scale and extra-large scale company mentioned that 3PL is highly essential as a TQM practise to remain constant in the international market. A significant difference in 3PL usage, outsourcing proportion, and quality service usage and percentage change in profit due to 3PL was identified among medium scale apparel companies. Similarly a significant difference between practising 3PL and TQM was identified

among medium scale and large scale apparel companies as well.

Keywords— Quality, Outsourcing, Apparel, Services, Challenges

I. BACKGROUND OF THE STUDY

Apparel industry has an important place in Sri Lanka's economy since 1980's where it is an international trading node which can effect on a raw result in country's Gross Domestic Production (GDP). This industry provides more than 330,000 direct employment or 5 percent of country's total employment in more than 1,060 garment factories. (Central Bank of Sri Lanka, 2009). According to the statistics of Central Bank (2013) the world market share of apparel and its share of Sri Lanka's exports are on the decline. The sector is losing the comparative and competitive advantage it originally had in the 80s. For example, the apparel market share has increased from China to USA by 17 percent, Vietnam by 14 percent, Bangladesh by 12 percent while imports from Sri Lanka was declined by 3 percent during the



period of 2000 – 2012 as shown in Figure 1. However, statistics (Central Bank Sri Lanka, 2013) clearly show that the decline in Sri Lanka's rate of growth was much more severe than the rest of Asia.

Figure1: Apparel imports to USA fluctuations during 2000 – 2012

Source: Developed by the author (2015) based on Central Bank Statistics. (2013)

Sri Lankan apparel sector run with several quotas on importations such as GSP+ and MFA (Multi-Fibre Arrangement) as a result Sri Lanka’s garment exports have been largely governed by the Multi-fibre Arrangement (MFA) since 1978. To enter to international market there are four phases to fulfil under MFA while completing normal WTO (World Trade Organization) rules and regulations. Even though Sri Lanka has already committed to two phases of MFA, the future of apparel industry depends on the ability to compete with the developed and developing countries with high quality and maximum competitive advantage.

Table 1: Distribution of factories

Category	No. of employees	No. of factories in percentage %	
		1998	2002
Small	0-100	32.8	25.5
Medium	101 – 500	49.3	51.5
Large	501 – 1000	15.9	17.2
Extra Large	Over 1000	1.9	5.7

Source: Dheerasinghe, 2009

Table 1 shows the distribution of factories based on 4 categories of apparel industry in Sri Lanka during the process of implementing phase 1 to phase 2 of MFA in 1998 and 2002 respectively. As per the above information it is clear that, it is essential to maintain total quality via an advanced quality service

II. IDENTIFICATION OF THE RESEARCH PROBLEM

As there is a vast impact on economy by the apparel industry it should be continued and maintained to get a uniform flow of benefits. Besides that with the development of the small scale and the medium scale apparel businesses it is highly important to maintain the quality standards to meet the desired level. The factors result in quality level has a major gap as the relevancy of quality maintaining services are not using in the proper channel. Third Party Logistics is one of the key elements which use to bridge the gap for effective and efficient path to reach total quality. Identifying the necessity of the 3PL service and Total Quality management will lay the foundation for a better research result.

According to Dheerasinghe (2009) total quality is paramount important in apparel industry and key to a successful profit layout. In Sri Lanka several apparel companies use outsourcing to maintain the quality level but the question

arises when it is not used in an orderly manner. Basically this situation can be seen very frequently in middle level apparel industries. Even they use outsourcing they are not specifically aware of which is the correct service to be used according to the operational function. Regarding the outsourcing elements every element cannot be applicable in any operation but for a better profit it should be noted to apply the most suitable outsourcing element. Hence, the problem arises whether there is impact from the 3PL service to the total quality management and to identify whether it is a positive or negative impact.

III. RESEARCH QUESTION AND HYPOTHESIS

H1: There is a negative relationship between current 3PL service and perception on Total Quality

Although the quality is important in each and every scale apparel companies, it was hardly found any study related to medium scale apparel companies to analyse the application of 3rd Party Logistics as a Total Quality Management service in the context of Sri Lanka.

IV. OBJECTIVES

The core objective of the study is to find out whether there is a positive or negative relationship between the impacts of third party logistics service over the total quality management in the medium scale apparel companies.

The secondary objectives are;

- i. To explore the current usage of 3PL services
- ii. To assess the relationship between the current 3PL service and total quality
- iii. To make recommendation to enhance the efficiency of 3PL service to improve TQM

V. LITERATURE REVIEW

i. Challenges in Sri Lankan Apparel Sector Deerasinghe (2005), carried out a research on Garment Industry in Sri Lanka Challenges, Prospects and Strategies. The apparel industry is a relevant sector for Sri Lankan economy, which was a spot light since 1986 and still continuing the place in the economy while accounted for more than 52 per cent of total export earnings of the country. However, currently to compete in the international market it is needed to achieve certain quality measures which is globally accepted. To adhere such standards the garment industry plans to transform itself into a fashion industry. Earlier the apparel sector concentrated on manufacturing but now the industry

demands much more, now manufacturing has become only a small part and it concern on quality in higher levels, which also knows as a greater value added point.

According to Deerasinghe (2005) Sri Lanka's textiles and garments industry is negatively affected by many of the upcoming regional blocks which reduce Sri Lanka's market share in the world market. The situation will be more adverse if Sri Lanka fails to apply the correct strategy to increase the demand in international market. USA and other countries expect much quality products to a lower price where there are several other countries which ready to provide it cheaper. Apparently it needs a value addition to the products to increase the market share.

In present situations, the industries face challenges of promptly changing technologies, globalization, uncertainty and turbulence. If the organization can focus on a complete different unique strategy that would create greater opportunities. The author has not identified the types of innovations that actually can implement to avoid certain turbulences. Even though Ranaweera (2014) convinced that rapidly rising international competition in the post MFA era is forcing apparel manufacturing companies in Sri Lanka to seek ways to become more innovative, there is no such innovative strategy has identified yet to practise in island-wide. Further, there is no ideal strategic direction to uplift current industry performances have discovered yet. However, at the same time each apparel company face several issues and challenges in their practises (Ranaweera, 2014). Hence to fill the gap between the need of innovation and the need of maintaining the market share of international market with the quotas is to implement total quality management within the companies. Further, if third party logistics providers can intervene the quality aspect and this might be easier to implement as there is no need to allocate in-house resources.

ii. Tactical Importance in Quality Services

Total Quality Management (TQM) has been an important theme in management and business research, on the other hand TQM is a management philosophy that helps managing organizations to improve its overall effectiveness and performance towards achieving world-class standards which make the customer feel satisfied (Ooi et al, 2006). For the purpose of examine the effects of TQM practices Ooi et al (2006) conducted a research on the topic, "TQM Practices and Affective Commitment: A case of Malaysian

Semiconductor Packaging Organizations" including 377 samples. Regression analysis were used to identify the relationship between the variable of TQM practices and affective commitment. Hence Malaysia is geographically sound similar the same where Sri Lanka located, it make the study results better in application. The ranking method used to explore TQM applications which effect on greater market share and return on investment.

Dassanayake (2014), concluded the study by presenting that leadership is the most accepted principle of TQM while involvement of people is the least accepted principle in apparel industry in Sri Lanka. Moreover, the effect of leadership affects upon small scale, medium scale and large scale in the same manner. However, the inconsistency between the findings and the practicability of the implementation of TQM develop a gap, "How to implement TQM inside the organization" besides that the study boundaries have not covered the current service which used to implement TQM or what are the further services which can be used in the Sri Lankan context.

When it comes to the results of the study of Syduzzaman et.al. (2014) it was considered that the rate of Defects, Rework, Scrap, Quality, Efficiency, Team approach, Reward system and TQM Knowledge of workers to measure the improvement before implementing TQM and after implementing TQM. In spite of the results of the study, the author has discovered why TQM efforts fail. Yet there are still no adequate knowledge to involve with TQM and some common causes for TQM failures are, lack of genuine quality culture, lack of top management support and commitment and over- and under-reliance on statistical process protocol methods.

Accordingly, the study has not pointed out how a company can implement TQM efficiently while passing over the causes that author has identified results in failures as whether to outsource using third party logistic provider or enhance the commitment through the organization. As Syduzzaman et.al. (2014) mentioned the quality depends on the role of the people defining hence, there is a gap to identify in which way to achieve TQM while maintaining the core focus by applying 3PL.

iii. Challenges in Third Party Logistics

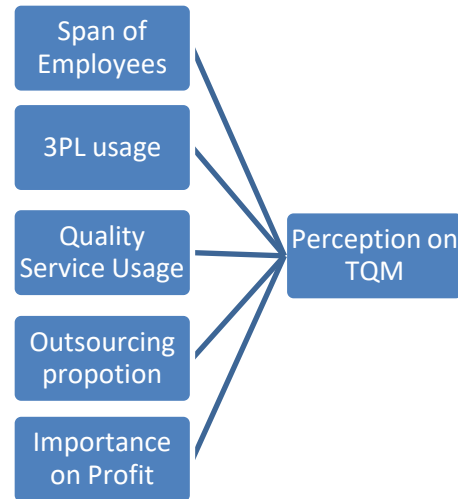
Cheong (2003) stated that logistics outsourcing can be identified as a rapidly growing business globally. Further, the author mentioned that the overall trend in logistics outsourcing is leading in two directions namely increase in the number of buyers of logistics services and increase in the extent of usage of logistics services. This indicates that there

is a gap between the demand for 3PL providers and supply of 3PL services which leads to several directions and mostly highlighting that the extent of usage includes number of activities or business process outsourced, geographical coverage, nature and length of contract, percentage of total logistics budget allocated to 3PL companies and level of commitment (Cheong, 2003).

Premarathna (2012) stated that up-to-date logistics management systems cater more effectiveness to companies which use the service. Besides that, further improvement and proper utilization will also increase the effectiveness of logistics management systems. According to Premarathna (2012), logistics outsourcing affects in reduction of excess stock, cost of production, lead time, resource shortages, overhead costs and increase production flexibility quality and leads to better concentration on the core business. The utmost objective of the study was to figure out the third party logistics market in Sri Lanka. The primary data gathered from several leading logistics companies in Sri Lanka using as the samples. The significant fact of this research is, it conducted in the same geographical location and intended market. Therefore, the result would be significant in greater context. The variables of the study can be identified as the competitive advantages, trends and issues of the third party logistics market in Sri Lanka.

According to the study conducted by Tahir et al, (2009) with the recent development, the companies have identified that there is a gap which they need to bridge via using any method which can bring up uncertainty associated in their services. On the other hand, logistics outsourcing will help to reduce the risk or to minimize the delays which can occur any catastrophe. Further, the study should include the how to bridge this gap which cause with the globalization to achieve competitive advantage. A strategic implementation could be a better solution and as the strategic solution Total Quality Management can be identified as it is the current concern within the international market where customers seek quality products to fulfil their desires. Hence, Logistics outsourcing can be done to pursue customer expectations by implementing Total Quality where a 3PL service provider can play a big role to bridge the gap.

After a rigorous literature review the main findings of this literature are summarized below as, there is a correlation between Total Quality Management and Third Party Logistics usage, Quality Standards usage and Outsourcing Proportion that can be either negative or positive. And better co-ordination between public sector and private sector can be achieved by using a hybrid system, which could be implementing outsourcing or third party logistics service



providing by the government for the private sector organizations.

Based on the Literature Review, it is seen that there is an extreme gap between the 3PL service usage and the total quality of the apparel products and yet to find out the exact relationship between the factors effecting 3PL and Total Quality of the products. Besides there is a lack of literature regarding this topic as 3PL service is not widely used in Sri Lankan apparel sector and due to the unawareness of the service as well. The literature regarding the topic is hardly found in international reviews and even if it found the studies were out of the boundaries which can practically apply in local context and in present scenario. The literature was not focused on Third Party Logistics as a TQM practice which creates a research gap.

VI. METHODOLOGY

Figure 2: Relationship between dependent variable and independent variables

Source Developed by author, 2015

i. Conceptual Framework

The conceptual framework is based on the relationship between independent and dependent variables. In the current study, the dependent variable is total quality while six independent variables are shown in Figure 2. The following independent variables were selected to bridge the gap which discussed in Chapter one under objectives with the basis of relevant literature.

The conceptual framework which shown in Figure 2 consists of the variables which derive from previous literature to increase the generalizability. Ranaweera (2014) stated the percentage change in profit due to implementing 3PL may cause an effect to the Total Quality of apparel companies. Since Ranaweera (2014) discovered that apparel industry as the single largest employer in Sri Lankan manufacturing sector which tend to earn a significant amount of profit for each company that depend on the order quantity and market share. Hence, the variable “Percentage change in profit due to 3PL” was derived according to the findings of Ranaweera (2014). Tahir et al (2009) identified that outsourcing proportion of certain business processes includes the modernistic means of transportation and other related operations. Further, the author describes the advantages of outsourcing as it elevated the opportunities for global business, minimizing the uncertainties and reduced the risk for the core business. Hence, the variable “outsourcing proportion” was derived according to the findings of Tahir et al (2009).

Dassanayake (2014) has discovered that within the Sri Lankan apparel companies the TQM services are moderately implemented but not in a significant amount. The author mainly focused on the principles of ISO 9000 and their effectiveness. Hence, the conceptual variable “Quality Management Usage” is derived based on the findings of Dassanayake (2014). Hettiarachchi et al (2015) stated that warehouse operations, distribution and shipment consolidation are the most commonly used 3PL services among Sri Lankan context which result in a considerable effect for large scale companies and highlighted the main purpose of undertaking 3PL contract is for both domestic and international purposes. Hence, the variable “3PL Usage” derived from the findings of Hettiarachchi et al (2015).

ii. Formulation of Empirical Model

$$TQ = f (\beta x1 + \beta x2 + \beta x3 + \beta x4 + \beta x5)$$

Where, TQ = Perception on TQM

- x1 = span of employees
- x2 = 3PL usage
- x3 = quality management usage
- x4 = outsourcing proportion
- x5 = importance on profit

The function is developed based on the conceptual framework shown in figure 2.

iii. Operationalization

The operationalization is based on the relationship between independent and dependent variables. In the current study, the dependent variable is total quality while six independent variables are shown in Figure 2. The following independent variables were selected to bridge the gap which discussed in Chapter one under objectives with the basis of relevant literature.

Table 2: Data and Indicators

Source: Developed by the author (2015)

The operationalization shown in table 2 was developed for the purpose of gathering with the maximum generalizable data from the sample. Thurston scale which has ten scales to vary and select the best and closes option, was selected due to the necessity of obtaining a closer value to the true figure according to the previous literature.

iv. Sample Profile

Since the study focused on medium scale apparel industry in Sri Lanka, all the garment factories located within the boundaries of the country belong to the survey population. As percentages in Sri Lanka’s industrial product sector the whole population of garment factories takes place in 52 percent as a proportion of whole industrial businesses (Deerasinghe, 2005). Due to practical difficulty in investigating all the elements in the population, a representative sample of 20 garment factories (approximately 25 percent of the total population) were selected through simple random sampling service. This sample mostly focus on medium scale garment factories, very few large scale garment factories as per the previous literature by Dassanayake (2014). According to Hettiarachchi et al (2015) none of the small scale businesses were taken in to the count as the 3PL technology is not practiced in a satisfactory level to gather data. The sample will be spread and located in Colombo district where the factories highly

Variables	Description	Data collection method	Indicator
Perception on TQM	What is the ideal level that respondents willing to reach	Direct answer question	No of quality services
Span of employees	No of heads involved in a predetermined operation	Direct answer question	No of Operations
Quality management usage	The services which use to obtain the expected outcome	Thurston scale	No of quality awards
3PL usage	The state of involvement of 3PL	Thurston scale	The ability to outsource
Outsourcing proportion	The degree of involvement in outsourcing for one particular operation	Thurston scale	No of items produced No of items outsourcing
Importance of profit	The difference between the profits with and without the 3PL service	Thurston scale	Average profit per unit Average profit per unit with 3PL

scattered and urbanized within the geographical boundary itself for several other operating necessities.

v. Data Collection Method

Primary data was considered to be the key input for the analytical process of the current study. Hence, primary data was gathered by survey method by using questionnaires and interviews. In reference to Dassanayake (2014) 20 medium scale garment factories were taken as the sample by simple random sampling service and a structured questionnaire with two sections including the interview section were prepared to gather primary data.

VII. DATA ANALYSIS

The data analysis of the current study has done according to the previous literature to obtain a higher rate of generalizability. The model fit of the study was measured using R-square value and the significance of ANOVA table. As per the study determine the factors which affect to the dependent variable were tested on Kaiser-Meyer-Olkin (KMO) and Bartlett’s test to measure the sampling adequacy. The reliability test was conducted with Cronbach Alpha which is an inbuilt feature in SPSS. The validity of the statistics and analysis was depend on the expert review which will be continuously observed under the research supervisor. Quantitative and qualitative methods were used while uni-variable, bi-variable and multivariable factors taken in to consideration. Further, correlation, coefficient and significance were considered to identify the confidence level under three separate confidence levels.

i. Estimation of Empirical Model

Multivariate analysis is essentially the statistical process of simultaneously analysing multiple independent variables with dependent variable using matrix algebra where most multivariate analyses are correlational. Above in the Univariate analysis each independent variable were discussed along with the dependent variable. Hence, here the multiple response outcome will be discussed. By using multivariate analysis the study can deliver a richer, realistic design as the result while looking at the phenomena in an overarching way. On the other hand there are several disadvantages as well including less awareness about the robustness of assumptions and difficulty to interpret. The multivariate analysis is checked using the following tests.

Sample Adequacy

Table 3: Sample Adequacy

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.711
Bartlett's Test of Sphericity	Approx. Chi-Square
	df
	Sig.
	63.397
	15
	.000

Interpretive adjectives for the Kaiser-Meyer-Olkin Measure of Sampling Adequacy are: in the 0.90 as ideal, between 0.9 – 0.7 as fairly good, between 0.7 – 0.5 as good and below 0.50 as unacceptable. The value of the KMO Measure of Sampling Adequacy for current study’s set of variables is 0.711, which would be labelled as 'FAIRLY GOOD'. Since the KMO Measure of Sampling Adequacy meets the minimum criteria, the data which use in the study do not have a problem that requires to examine the correlation between objectives.

Reliability

Table 4 Cronbach’s Alpha

- a. List wise deletion based on all variables in the procedure.

Cronbach's alpha simply provides an overall reliability coefficient for the set of variables. For five variables in this study were the inputs to Cronbach’s Alpha test and obtained 0.715 which represents the reliability is “Fairly Good”.

Model Fit

Table 5 Variables entered

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.672 ^a	.451	.314	6.593

- a. Predictors: (Constant), No of employees, Change in the profit due to 3PL, Current Quality Service Usage, Outsourcing Proportion , Current 3PL Usage

The independent variables were compared with the relationship between the dependent variable and identified

		%	
Cases	Valid	26	96.3
	Excluded ^a	1	3.7
	Total	27	100.0

goodness of fit of the model. The R Square value is 0.451 which interprets that the independent variables have 45 percent of effect in change of the dependent variable. It is understood that in the current study the objective that there is no direct relationship between 3PL and TQM even companies practise both services separately.

Significance

Table 6 ANOVA Table

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	715.231	5	143.046	3.291	.025 ^b
	Residual	869.384	20	43.469		
	Total	1584.615	25			

a. Dependent Variable: Perception on TQM

b. Predictors: (Constant), No of employees, Change in the profit due to 3PL, Current Quality Service Usage, Outsourcing Proportion, Current 3PL Usage

This is the table that shows the output of the ANOVA analysis and whether there is statistically significant difference between dependent variable and independent variables. The significance level is 0.025 ($p = .025$), which is below 0.05. And, therefore, there is a statistically significant difference in the perception of TQM and independent variables in medium scale apparel companies.

Coefficient

Table 7 Coefficient of TQM

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8.927	4.473		1.996	.060
	Importance on Profit	11.847	8.954	.357	1.385	.180
	Outsourcing Proportion	-.157	.152	-.296	-1.034	.315
	Current Quality Service Usage	.302	.126	.497	2.388	.027
	Current 3PL Usage	.053	.103	.148	.511	.615
	Span of employees	.000	.000	.088	.502	.621

a. Dependent Variable: Perception on TQM

According to the Table 7 change in the profit due to 3PL and perception on TQM has a positive relationship under 90 percent confidence level. Outsourcing proportion of the apparel companies has a negative relationship with the perception on TQM which interprets that outsourcing has no significance over the TQM perception within the sample. There is a positive relationship between current quality

service usage and perception on TQM within 95 percent confidence level. Between current 3PL usage and perception on TQM has a positive relationship while having an extreme negative significance and less confidence level. The statistics stated that the hypothesis is proven with the factors above which clearly considered as there is no direct relationship between 3PL service usage and TQM.

VIII. DISCUSSION

i. Explore the current usage of 3PL services

In Sri Lankan context 3PL is widely use in several operations such as warehousing, transportation, packing, shipping, consolidation and etc. When it comes to apparel sector the 3PL function mostly scattered around warehousing and transportation. According to the previous literature by (Dheerasinghe, 2005) the current study was decided to select 22 medium scale apparel companies which is approximately 25 percent of the total population that are practising 3PL services in present operations. Each company were given a questionnaire that includes 9 questions regarding 3PL and several other questions regarding background information which can support to gather data on 3PL service and based on the answers given the data were analysed.

The research findings showed that 73% of medium scale apparel companies are currently practising 3PL services where most of them are enjoying the benefits in warehousing and transportation operations as mentioned above. On the other hand when it consider about the large scale and extra-large scale apparel companies they tend to practise 3PL in higher no of operations and they believe that it would effect to their efficiency and high quality product delivery. The study conducted by Dassanayake (2014) had taken large, medium and small scale to cover the sample but in the current study large scale companies were only taken as sources of knowledge. The above statement tend to make the gap of using 3PL between medium scale and large, extra-large scale companies in a greater manner. The medium scale companies has their own significant way of practising 3PL. It was discovered as they use 3PL services uniquely for each order. Basically the service that they are using to complete the task is depend on the client and his preferences, order quantity, due date, product type and several other factors that the company can maximize their productivity and profitability. Further, Dassanayake (2014) found that the uses of quality services are unique to each company and its parent company's culture. Hence, the

details obtained by medium scale companies within a limited time cannot completely generalizable in one common platform as it depend on the order and seasonal changes which is not static continuously.

ii. Relationship between current 3PL Usage and TQM

TQM could be known as the main focus of an apparel company who is intended to serve to the international market while obtaining a higher degree of reputation and considerable market share which can compete with other global suppliers. Moreover, Cheong (2003) identified that there is a worldwide trend for 3PL where then the companies can focus on core business activity. It is observed that 73 percent of medium scale companies are currently practicing TQM which is an acceptable standard of climbing the ladder to achieve the international market. However, there is no direct impact between 3PL service usage and TQM. It was seen that there were situations where, few companies practise TQM while applying 3PL. As Syduzzaman et al (2014) mentioned the quality necessities depends on the role of the people engaging in the task. On the other hand there were few companies applied 3PL in their operations without practising TQM. Hence, it gives 50 percent probability to be in either 3PL Usage side or TQM side. Further, it can be argued that a medium apparel company can practise TQM with or without applying 3PL service which does not represent a positive halo effect between 3PL service and TQM.

To assess the main objective of identifying the relationship between 3PL service and perception on TQM the researcher analysed other variables as ground information. Such as outsourcing proportion, percentage change in profit due to 3PL, no of employees and current quality services. It can be argued that there are 18 percent medium scale apparel companies which does not greatly practise both 3PL service and TQM. Further, another 18 percent medium scale companies were significantly noted in greatly practising both 3PL service and TQM. Further according to Dassanayake (2014) Sri Lankan apparel sector more tend to adhere to one single quality service.

According to the Table 7 change in the profit due to 3PL and perception on TQM has a positive relationship that means the change in the profit due to 3PL has NO effect to perception on TQM. Outsourcing proportion of the apparel companies has a negative relationship with the perception on TQM which interprets that outsourcing has somewhat significance over the TQM perception within the sample when considering the hypothesis "H1 – There is a negative

relationship between current 3PL service and Total Quality". There is a positive relationship between current quality service usage and perception on TQM which means there is NO impact. Between current 3PL usage and perception on TQM has a positive relationship again implying that there is NO impact while having an extreme negative significance. The statistics stated that the hypothesis which "H1 – There is a negative relationship between current 3PL service and Total Quality" is proven with the factors above which clearly considered as there is no direct relationship between 3PL service usage and TQM.

Moreover, it is clearly observed that there is no linear relationship between 3PL service usage and perception on TQM. The common public image on 3PL service usage and TQM within the apparel company seems to be depend on each other. But in the current research it was proved that there is no such direct positive relationship between 3PL service usage and perception on TQM.

iii. Relationship and impact of large companies

All large scale companies practise TQM and 3PL together in a greater proportion and identified that there is a direct linear relationship between 3PL service usage and TQM within those companies. This is one of the main reasons that the large scale companies already reach to the international market having a significant amount of market share while obtaining continuous orders throughout the year. According to Premarathna (2012) the present situation in Sri Lankan market 3PL have not reached to its maximum level of delivering the service and it is yet to discovered. Further to compete in international market it is highly essential to keep a static continuation within the operations to deliver a better range of product.

Moreover within the interview each large scale and extra-large scale company mentioned that 3PL is highly essential as a TQM practise to remain constant in the place that they have already achieved in the international market. The final finding of the research is proved that within the Sri Lankan apparel sector the medium scale apparel companies does not apply 3PL service as a TQM practise frequently. In rare cases only few medium scale companies are willing to practise and tend to use 3PL services as a TQM tool.

IX. CONCLUSION

Respondents were asked about their suggestions in the end of the questionnaire. It would be very crucial to identify the customer requirements and their suggestions to improve

the TQM practises by introducing 3PL service as a TQM tool which they are practising currently as a separate unit to enhance the capacity and quality of their product and to obtain a higher level of market share to compete in the international market. 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 implementing 3PL service as a TQM practise in their companies and they expect that the new implementation would give vast opportunities in international market. By this study the lessons learned from the large scale and extra-large scale companies provide a better outline to implement 3PL service as a TQM practise. When considering the global context of the 3PL industry, they move towards the new technological services. Sri Lanka also should focus on these new applications to enhance the quality further that can bring higher number of demand to Sri Lanka and increase country's GDP. If not they couldn't survive in the market because the competitor will take the competitive advantage over them.

Moreover it was identified that if all parties consider on win-win operation where both 3PL Company and the apparel company that willing to apply 3PL as a TQM tool can come to one common platform to perform well in their B2B business, there may be high growth in 3PL industry and the apparel industry. 3PL provider is no longer just a service provider but acts as a business partner for apparel companies and their output quality, competitive advantage, culture, strategic plan, objectives and etc. concerned.

X. RECOMMENDATION

For future research it is suggested to use extra-large scale, large scale and small scale companies as well. The data was collected from one region, which may cause bias despite the empirical model. This survey was conducted in Colombo and suburb areas, which is fairly small geographical spread. Therefore, to validate and expand the results, a broader island-wide 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 3PL service as a TQM tool. However there are several other factors that highly effect in TQM are also very much important aspects to conduct further research. Therefore, further research can be conducted to measure the relationship between TQM and profit fluctuations, order quantity, lead time, green practises and tec.

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