Better Performance through Supplier Development Practices in Sri Lankan Clothing Supply Chains

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Abstract— The aim of this paper is to explain the impact of implementing supplier development practices by retailers on suppliers' performance in the Sri Lankan Apparel Industry context. A structured questionnaire is used as the data collection instrument from a sample of 100 clothing manufacturers in Sri Lanka. Structural Equation Model (SEM) is employed as the main analysis approach using SMARTPLS. The model developed demonstrates a significant relationship between supplier development practices and suppliers' performance. The key findings were compared with prevailing literature which is based on both developed and developing economies; consequently managerial implications were drawn in terms of what type of supplier development practices can be initiated by retailers in future to take out the better performance from the suppliers in the clothing industry.

Keywords— Supplier Development Practices, Supplier Performance, Sri Lanka Introduction

1. Introduction

At present, the competitive position of a business entity heavily depends on its ability to manage the supply chain productively which may maximize the overall value creation. In this milieu, organizational buyers have identified that developing their supplier which is called as 'supplier development practices' as an emerging trend and rewarding way to maintain the competitive position. According to [01] 'any effort of a buying firm with a supplier to increase performance and/or capabilities and meet the buying firm's short and/or long term supply needs' can be defined as a supplier development practice. It is believed that supporting suppliers to improve their capabilities and performance will enhance the competitive position of buying organizations [02]. However, there is still a small amount [03] of empirical research that has tested the effect of supplier development practices on supplier performance [04]. In addition, [05] identified, seeking the direct or indirect relationships between supplier development activities and suppliers' cost, quality, delivery and production innovation from suppliers' perspective as a

potential future resaech area as the seldom liturature have considered the impact of supplier development practices on supplier perfromance; they are also in buyers' perspective.

Globalization, changes in the international trade policies and practices, development of new markets are only few changes that demand supply networks to move their supplier base from developed countries to first industrial countries and then to developing countries. As per [06], many developing countries are supplying a range of products such as agricultural products, textile and clothing items, home appliances, toyes etc. to the global market accounting one-third of world trade and has become much more significant with a remarkable change in traditional trade.

Despite the significance of the developing countries in the world economy mainly as suppliers to main markets empirical studies in supplier development is largely based upon North America [07] and hardly found in Sri Lankan context or South Asian region. On the other hand, owing to the cultural diversity, technological and resource disparity, supplier development practices and techniques incepted and used in developed countries may not be able to apply as it is in the developing countries. Thus, the forementioned supplier development related practices should be investigated and empiricaly validated in developing conuntires context. Accordingly, the purpose of this research is to assess the impact of supplier development practices of retailers on the performance of suppliers in the clothing industry in Sri Lanka from the suppliers point of view. Taking the contribution making to the international cloting industry on board Sri Lanka has been selected as the research context of the current paper. Accodring to scholers (eg. [03]) studies in this nature is important because a buying firm's performance increasingly hinges on the capabilities of its supply base. Moreover, [02] particularly bought up the fact that the number of studies and publised

work dedicated for textile industry and its sub-sectors which explore these practices remain exceptionally low.

In the following section the relevant literature is reviewed. The conceptual model and research hypotheses are then developed. Subsequently, the research methodology is described. The analysis and results are presented in section five. The sixth section makes the discussion and concluding remarks.

2. Literature review

2.1 Supplier Performance

From the management perspective, performance provides the necessary information about the success and potential of management strategies. In measuring organizational effectiveness, business performance can be measured financially or non-financially. Non-financial measures also can name as operational measures. Operational measures of performance can further classify as key competitive success factors (quality, delivery, price, service, and flexibility) and internal indicators (defects, schedule realization, and cost). This study focuses on measuring the extent of business goals achievement through in the form of improvements in key competitive success factors. [08] in their study on identifying strategic priorities of suppliers to be considered in selecting a supplier in textile industry, discoved six critiria to be considered namly cost, quality, delivery, flexibility, innovation and trust. In addition, [09] in measuring supplier performance used operational perfromance (cost, quality, delievery, inventory) and capability imporvements (product design, porcess techonology improvements). However, taking insights from [03], this study considers key competitive success factors of: quality, delivery, service, flexibility, and cost in measuring supplier performance as these measures have taken the suppliers' perspective that matches with the perspective of the current study. The degree of the business performance of suppliers is identified as one of the gaps to be filed and objective and hypothesis was developed accordingly.

Gap 1- what is the degree of business performance of suppliers in the clothing industry in Sri Lanka
Objective 1- To assess the degree of business performance of suppliers in the clothing industry in Sri Lanka
H_1: The degree of business performance of suppliers in the clothing industry in Sri Lanka is high

2.2 Supplier Development

The term 'supplier development' is initially proposed by [10], to describe efforts by manufacturers to increase the number of viable suppliers and improve suppliers' performance. It is found that the origin of this concept can be seen from Japanese automobile industry and then the concept was adopted by Western companies in 1990 [11]. Taking insights from the finidngs of [12], this research consider supplier development definition from capability-performance approach and consider the defnition made by [01] "any effort of a buying firm with a supplier to increase its performance and/or capabilities and meet the buying firm's short-and/or long-term supply needs". According to this definition, the supplier development activities intitiate by buying firm foucs on sloving specific production problems of suppliers and making immediate improvements in the supplier's operations (performance approach) and making continuous imporvement through clutivating the supplier's techinical, quality, delivery, and or cost capabilities (capability approach).

Eventhough organizations have different approaches for supplier development decisions , Hahn et al., (1990) were among the first to develop a generalized conceptual model which can be used in formulating organizations' decisions on supplier development. Until today, many authors identified different types of supplier development practices (e.g. [01]; [14]; [04]; [15]; [16]; [17]) and tried to classify them in to different categories such as external & internal [04], direct & indirect [18], transaction specific & infrastructure factors [16], low involvement & high involvement [19], narrow sense & broder sense [13] etc. [12]identified 565 such supplier development activities and found that many studies examine the same supplier development activitiy, but in different settings making no meaningful classification of supplier development activities. With a consolidation of total available activities considering all available studies counducted from buyer or supplier perspective from 1996 to 2010 as a 15 years of window [12] identified 30 types of activities. This study also have taken these 30 supplier development activities in to consideration. Going hand in hand with the research inclination identified, this research is undertaken to better understand the nature of supplier development activities practise in the Sri Lankan clothing industry. This will fill the below mentioned gap prevailing in the existing literature.

Gap 2 – What is the degree of supplier development practices initiated by retailers on suppliers in the clothing industry in Sri Lanka
Objective 2 - To assess the degree of supplier development practices initiated by retailers on suppliers in the clothing industry in Sri Lanka
H2: The degree of suplier developmemt practices by retailers on suppliers in the clothing industry in Sri Lanka is high.

2.3 Supplier Developement Practices and Supplier Performance

According to scholars the implementation of supplier development practises result in improved performance and/ or capabilities. [01] highlighted activities such as introducing competition in to the supply base, evaluating suppliers through formal and informal means, recognizing good supplier performance through rewarding, raising performance expectations, traning and educating supplier personnel and direct invesment in supplier's operations are caused to inprove supplier competitive capability and motivate supplier performance such as on-time delivery, short cycle time and completely received orders [17]. [16] noted that according to existing literature buying firms typically improve suppliers' performance and capabilities by: (i) increaisng supplier performance goals; (ii) providing suppliers with training; (iii) providing suppliers with equipment, techonological support and even investments; (iv) exchanging personnel between the two organizations; (v) evaluating supplier performance and (vi) recognizing supplier progress in the form of awards. [16] also mentioned these activities as "direct supplier development". [19] noted that there is a large variety of actions that can be implemented to improve suppliers' performance, ranging from low involvement to high involvement, which may vary the intended effects ranging from immediate improvements in the suppliers' operational or financial performance to more indirect, longer-term benefits.

[19] emphaisis that activities that involve knowledge interchange such as establishment of multidisciplinary and inter-firm teams, training of the supplier's personnel, and onsite technical assistance have been reported to contribute to the operational and ecomonical performance of the supplier. Acoording to [04] activites such as supplier evaluation, feedback and certification – have been considered as pre-requisites or enablers of succesful supplier development programs and supplier development strategies are critical to encourage supplier performance improvements [17]. Further, taking insights from industry [09] highlighted that the organziations believe that their supplier development initiatives help to reduce supply base cost, reduce lead time, imporve quality, imporve delivery, increase capacity and imporve productivity.

However, whether suppler development practices has an impact on supplier performance in the Asian context is yet an unexplored area. Thus, addressing such gap in the literature the main purpose of the paper is to examine the impact of supplier development practices on suppliers' performance in Sri Lankan Clothing Industry from the Suppliers' Perspective. According to the above discussed literature the following objective and hypothesis is derived in order to fill the gap identified.

Gap 3- What is the impact of supplier development practices initiated by retailers on supplier performance in the clothing industry in Sri Lanka?
Objective 3 - To examine the impact of supplier development practices initiated by retailers on the supplier's performance in the clothing industry in Sri Lanka
H_1: There is a significant impact of supplier development practices initiated by retailers, on supplier's performance in clothing industry in Sri Lanka.

2.4 Clothing/Apparel industry in Sri Lanka

In the global economy the apparel sector contributes nearly 6% to world merchandise exports and apparel industry is one of the oldest, largest and among the most global industries [20]. Clothing industry has become one of the main foreign income sources for voluminous amount of developing countries. In particular, apparel industry earns the biggest export income to Sri Lanka where the country heavily depends on this industry for employment, foreign exchange earnings, and foreign direct investments. Large-scale as well as small-scale manufacturers are there in the industry manufacturing apparel categories such as; sportswear, lingerie, lounge wear, bridal wear, work wear, swimwear, children's wear and winter wear etc. They export these apparel products to world famous brands such as; Victoria's Secret, Next, Gap, Nike, Tommy Hilfiger, Pink, Triumph, Speedo, Jones NewYork, Marks & Spencer etc. According to statistics 44% of total export earnings of Sri Lanka derived from garments.

However, experts argue that, with the elimination of Multi Fibre Arrangement, Sri Lankan apparel industry became highly vulnerable [20] to global trading system and in such situation, strengthening the competitiveness of the industry is very vital. These evident that, the industry needs research work with policy and managerial implications for improvements. Specially to explore how Sri Lankan clothing manufacturers can face the competitiveness while acquiring the competitive advantage.
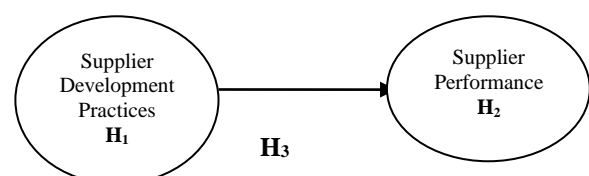
3. Conceptual model and hypothesis

Figure 1: Hypothesized model

The discussed literature in section 2 above is conceptualized in Figure 1.

4. Methodology

This paper is an explanatory in nature as it measures the impact of supplier development practices on the performance of supplier's performance in the perspective of the developing countries context. First, the content analysis was carried out for both concepts in order to accurately define the domain and to identify the dimensions and indicators of the concepts. In the second phase of the study, a survey is carried out with all the clothing manufacturers in Sri Lanka who involve in export and registered under Sri Lanka Export Development Authority (SLEDA) by 2017. SLEDA is the regulatory authority in Sri Lanka to get all the clothing item exporters registered. 100 structured usable questionnaires have been used. It is single cross sectional in time horizon and conducted in non-contrived environment.

The survey questionnaire was containing close-ended interval scale questions with bi- polar five point Likert-scales and was developed by using priory questionnaires. The questionnaire contained questions to measure supplier development practices (adopted by [12], and supplier performance (adopted by [03]) from suppliers' perspective.

An Exploratory Factors Analysis (EFA) and Confirmatory Factor Analysis (CFA) were carried out using SMART PLS. Measurement scales were then validated and reliability is ensured. In measuring H_1 and H_2 (Degree) One Sample T-test is used as data are from a population with unknown variance (SPSS). The hypothesized model, which depicts the implied relationship among the constructs, is shown in Figure 1 above and the indicators used are further elaborated in Appendix 1. Subsequently, the developed hypothesis was tested using Regression Analysis.

5. Analysis

5.1. Outer Model evaluation

After several iterations, two new measurement scales were developed for supplier development practices and supplier performance. According to [21] when the AVE values of the constructs, which is the average of the factorial loads squared are below the threshold the values of the indicators with low loadings should eliminated in order to elevate the AVE. So as to further refine the loadings, the following indicators were removed from the analysis due to their low

factorial loadings (below 0.60 loading). SDP13, SDP16, SDP20, SDP25, SDP14, SDP4, SDP5, SDP6, SDP12, SDP14, SDP25, SDP6, SDP5, SDP4, SDP12, SDP3, SDP17, SDP 28, SDP 22, SDSP 18, SDP15, SDP10, SDP11, SDP1, SP3 and SP4 (see appendix 1). Thereafter, twelve supplier development practices have been identified and 4 indicators have been derived for supplier performance out of the six indicators (see appendix 1).

5.1.1 Convergent Validity

Composite Reliability (CR) and Average Variance Extracted (AVE) were used to ensure the convergent validity. In order to satisfy the convergent validity, AVE should be greater than 0.5 (Henseler, Ringle & Sinkovics 2009 as cited in [21]) and CR value should be greater than 0.7 (Henseler, Ringle & Sinkovics 2009 as cited in [21]). Hence the bootstrapping values are more accurate, we paid attention to the significant values of AVE's after bootstrapping. The mean value of AVE of supplier performance is 0.525 and supplier development is 0.503. In addition to that, the CR of supplier performance is 0.809 and supplier development is 0.922. With that, convergent validity of the measurement scales was satisfied.

5.1.2 Discriminant Validity

Discriminant validity is an indicator that the constructs or variables are independent from one another and it ensure the construct validity. In simple, it measures if the square roots of the AVEs of variables are greater than the correlations between the constructs. In this case, the correlation between supplier development and supplier performance is lower than the square root values of AVE as shown in the following table.

Table 1: Test result of the Discriminant validity

Variable	Supplier Performance	Supplier Development
Supplier Performance	**0.720**	-
Supplier development	0.655	**0.708**

Notes:
1: Square root values of AVE values are presented in bold.
2. Paired correlation coefficients are presented in the cells below AVE values.

Heterotrait- Monotrait (HTMT) test is an additional measure of discriminate validity. However, this test measures whether these are same or different in factors. The threshold that we measure is 1. If the values are less than 1 (<1) we consider they are different in factors. In this case, the

between supplier performance and supplier development is 0.650 which is lower the threshold (0.650 <1) hence the discriminant validity is satisfied.

5.1.3 Reliability- Inter-Item Consistency

In current study, Cronbach's coefficient alpha is used in testing inter-item consistency. According to rationalization of George & Mallery (2003), the Cronbach's Alpha value of supplier performance 0.814 is considered as good and Cronbach's Alpha value of supplier development 0.923 is considered as excellent.

5.2. Inner Model Evaluation

The R^2 evaluates the portion of the variance of the endogenous variables, which is explained by the structural model. It indicates the quality of the adjusted model. In this research 49.4% of the variance of supplier performance (dependent variable) is explained by supplier development (independent variable) and this is significant at 99% confidence interval (0.000<0.001).

Further to this, in order to ensure that the model that we use is fit for the study, Standardized Root Mean Square Residual (SRMR) Model fit value was considered. In the model fit SRMR value less than 0.1 or 0.08 are considered a good fit. And it is here 0.064 (0.064 <0.08) and significant at 99% confidence level (0.000< 0.001) hence, it ensures that the model is fit for the study.

Table 2: Values of the indicators of the predictive validity and the Effect size

Variable	Q^2	f^2
Supplier Performance	0.197	0.385
Supplier Development	0.001	0.437
Reference criteria	$Q^2 > 0$	**0.02 small** **0.15 medium** **0.35 large**

The quality of the model was measured through Relevance or Predictive Validity (Q^2) and Effect size (f^2). The Q^2 evaluates how much the model approaches what was expected of it. The f^2 is obtained by the inclusion and exclusion of model constructs. Here in this case the values obtained are shown in the following Table. The reference criteria put forwarded by [21] was considered in this purpose.

The Q^2 value of supplier performance is 0.197 (0.197> 0) and supplier development is 0 (0.001> 0) where both the values are above the threshold. Further to that, f^2 value of supplier performance is 0.385 which is large value and f^2 value of

supplier development is 0.437 which is also a large value. These indicate that the model is accurate and that the constructs are important for the general adjustment of the model.

Table 3: Hypotheses test results for H_1 and H_2

Test Value = 3.5					
Hypothesis	t	Mean	Sig. (2-tailed) p < 0.05	Mean Difference	Result
H_1	52.323	3.92	0.000	0.423	Reject the H_0
H_2	78.151	4.29	0.000	0.788	Reject the H_0

As per Table 3, the positive mathematical sign of t-value of supplier development proves that the rejection region is in the right side of the sampling distribution. Moreover, Table 3 exhibits that the t-value of supplier development is 52.323 and the p-value associated with the t-value of supplier development is 0.00 (p < 0.05) which means the t-value is statistically significant. Further, the mean difference of supplier development is 0.423 (3.92 -3.5) and the 95% confidence intervals (CI) of the difference are 3.77 and 4.07. Therefore, the mean of supplier development is higher than 3.5 (assumed mean), so supports to reject the null hypothesis.

The positive mathematical sign of t-value of supplier performance proves that the rejection region is in the right side of the sampling distribution and the t-value of supplier development is 78.151 and the p-value associated with the t-value of supplier development is 0.00 (p < 0.05) which means the t-value is statistically significant. Further, the mean difference of supplier development is 0.788 (4.29 -3.5) and the 95% confidence intervals (CI) of the difference are 4.18 and 4.40. Therefore, the mean of supplier performance is higher than 3.5 (assumed mean), so supports to reject the null hypothesis.

Figure 2: Path coefficient and factor loadings of the constructs

The path coefficient of the relationship between supplier development and supplier performance is 0.658 and the relationship is significant at 95% confidence interval (0.008
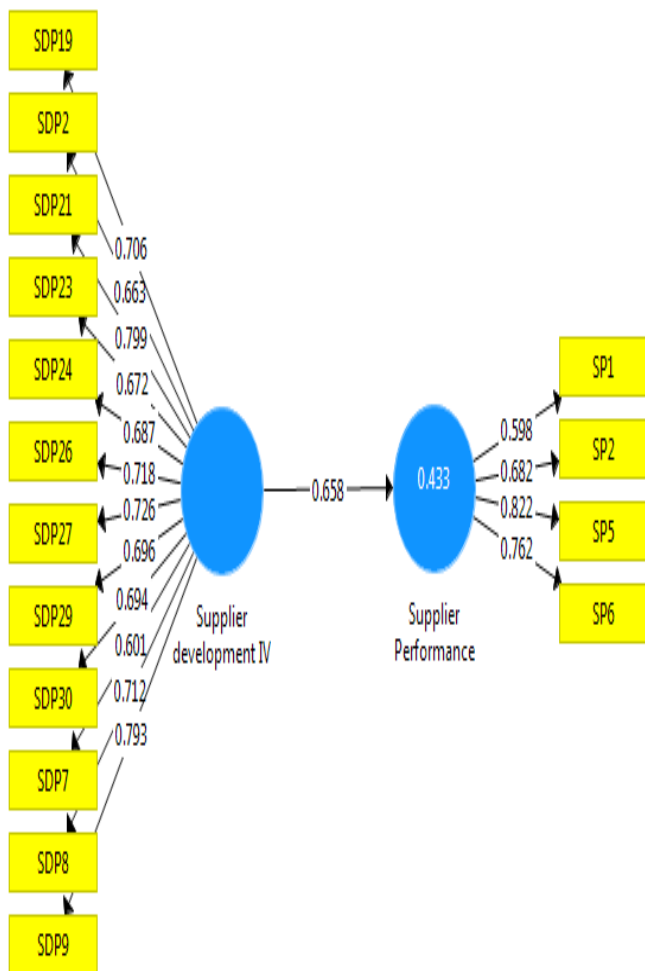
< 0.05). As a result, it is concluded that supplier development significantly influence supplier performance and accepted the H_3.

5. Discussion and conclusion

The purpose of the study is to examine the impact of supplier development practices on supplier performance in the developing countries context under suppliers' perspective. Sri Lanka has been selected as the research context of the current paper and downstream stream of clothing supply chain was considered in measuring the constructs from supplier's perspective.

In addressing the purpose, we first carried out a content analysis for all the mentioned concepts in order to accurately define the domain and to identify the dimensions and indicators. Then, a survey was conducted employing a structured questionnaire as the data collection instrument for a sample of 100 companies in the clothing industry in Sri Lanka. SMART PLS was used in conducting Exploratory Factors Analysis (EFA), Confirmatory Factor Analysis (CFA) and measuring the hypotheses developed.

Going in line with the existing literature [16]; [12]; [17]; [11]; [03]; [09]), this study found product quality and delivery performance as key indicators of supplier performance. This finding also well-matched with the findings of [08] who highlighted that textile is a sector

where quality is one of the key competitive success factor and on-time shipment in the correct quality rate (delivery) as a very critical factor. Since the clothing category is mostly a high-end product with the most expensive fabrics and best fit, the quality might be an important factor in supplier performance improvement expectations. In addition, due to the shortening cycle time in fashion, speed might have become a very much important criteria for clothing suppliers to be improved interms of production lead time, sampling turn time and on-time shipment rate. In addition to that, going in line with the findings of [03] service support and overall performance also were significant in measuring supplier performance though they were not much admired in past literature as key competitive success factors. Suprisingly, eventhough most of the prevaling literature suggest cost/price as an indicator of supplier performance imporvement, it was not counted significant in this study. The reason might be the different perspective (supplier perspective) that was considered in this study or may be due to high empahsis on quality. Because, [22] highlighted that if 'quality emphasis in supplier selection' supplier development activity places a high concern that will be in opposition of price. Moreover, [15] also confirmed that performance outcomes in quality and delivey are more important than cost in supplier development context. This finding further par with [08] who also found interesting that cost is not a strategic priority in textile industry.

As depict in Figure 2, from the 30 supplier development practices tested, it is found that only 12 activities are significant in Sri Lankan context. supplier development practices such as paying attention on quality (versus price or schedule) in their supplier selection decisions (SDP19), buyer send its employees to the supplier's facility to offer training or the inviting the supplier to participate in training that is offered at buyers facilities expecting supplier performance improvement (SDP2), creating a platform or network for suppliers to facilitate supplier learning and ongoing communication (SDP21), developing a core family of suppliers that are more competitive and reduce the number of suppliers and depend on few quality suppliers (SDP23), the use of quality assurance programs for monitoring supplier's processes and products (SDP24), requiring suppliers to meet strictly the clear quality specifications given (SDP26), developing a long-term relationship with suppliers and proactive attitude of a buyer towards supplier development (SDP27), working with supplier to improve performance or solve problems and build up their business (SDP29), involving with supplier's product development process, operations, supplier's planning and goal-setting activities (SDP30), providing assistance in terms of automation and modernization of machinery, upgrading of tooling and equipment, facilitating technical agreements etc. (SDP7), providing managerial

guidance or procedures to improve suppliers' performance (SDP8), and communicating critical and proprietary information to supplier (SDP9) count high in Sri Lankan clothing industry and suppliers of the view that those have improved their performance in terms of quality, delivery performance, service support and overall performance.

Past literature (e.g [23]; [17]; [18]) suggests positive views on the impact of supplier development activities on supplier performance and implementation of supplier development practices should result in improved performance and/ or capabilities. Validating the existing literature, the fact has confirmed by the findings of this study. Further, as per [09] supplier development initiatives helps to reduce supply base cost, reduce lead time, imporve quality, imporve delivery, increase capacity and imporve productivity. Going in line, this study has found that higher degree of implementation of supplier development activities has casued to improvement in supplier quality, delivery, service support and overall perfomance. This result is also consistent with the previous work (Cooper & Gardner, 1993 as cited in [11]; [04]; [07]. Accordingly, this study fills the research gap prevals by explaining the causal relationship between supplier development practices and supplier performance. The research measured the relationship from suppliers' perspective in developing county context where there is dearth of investigation.

This study provides managerial implications to practitioners in order to identify right combination of supplier development practices to be used in developing countries context which cause to imporve perfromance and capabilities specially in clothing industry. Further, this is an eye openner for managers which reminds that they should consider suppliers' standpoint in addition to the buyers' perception when initiating supplier development practices. Investing more on these may gain more positive benefits to suppliers and may pass the benefits to buyers as well.

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