A Study on Supply Chain Collaboration in Textile Industry

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Abstract

The Indian textile industry gives employment for both unskilled and skilled labor across the country by offering direct employment to over 35 million in the country. About 27% of the foreign exchange earnings comes from the export of textiles and clothing alone. By 2021, it is estimated that the Indian domestic textile and apparel industry will reach 141 Billion US $. There are 9 Centre of Excellence established for Technical Textiles all over the nation, which shows us the importance the government gives to the Textile sector in India. Three such centers are located at Mumbai, two in Coimbatore, one each at Ahmadabad, Kolhapur, Kolkata, and Ghaziabad. Supply Chain Collaboration in the textile industry has become so vital for efficient supply chain management and it helps the textile units to have competitive advantage over their competitors. This study mainly focused on the textile units located in Coimbatore, Tirupur, Erode, and Salem, collectively known as the TEX VALLEY. The main aim of the study is to identify the factors influencing supply chain collaboration and the reasons for the textile units to implement the supply chain collaboration. The research was conducted in 100 textile units, where majority of them were Exporters Garment Suppliers and remaining were domestic Garment
Suppliers, merchandisers, traders lot size, stockists. Majority of these Textiles were registered themselves under the Tirupur Exporters Association (TEA). The SPSS (Statistical package for social science – 16.0) was used for analysis. The result shows that supplier and market knowledge has a positive impact on the supply chain collaboration of the textile units.

Keywords: Supply Chain Management, Supply Chain Collaboration, Competitive Advantage

1. Introduction

The textile industry is a long network which includes the raw materials, production, clothing production, complement production, and many more. The textile supply chain is a long, complex, fragmented and unorganized sector [1]. A supply chain is a big network, which consists of the supplier, factory, warehouse, distribution centers and importantly the suppliers and retailers, through whom raw materials are acquired, transformed, produced and delivered to the customer. From the flow and transformation of goods and the information from the raw material stage reaching then on to the end user all the activities in between them constitute a supply chain [2].

India is placed second behind our Asian neighbor China in the production of textiles and garments. Also India is the world’s 3rd largest producer of cotton and the second biggest consumer of after China. The Indian textile industry is very diverse and highly complex. The strength of this industry arises out of its strong production bases located all over the nation. A wide range of fibers / yarns from the natural fibers like cotton, jute, silk and wool to synthetic /man-made fibers like polyester, nylon, viscose and acrylic are extremely available in the country. The growth pattern of the Indian textile industry in the last 10 years more than the previous decades. The main reason behind this is the liberalization of trade and economic policies initiated by the Government in the 1990s.

The Cotton producers, ginners, yarn producers, manufacturers, wholesalers and retailers all form the supply chain. Collaboration among them can bring benefits to all these partners in the supply chain. Intermediate products like yarns and fabrics can be made out of fibers [3]. Gaining a competitive supply chain network in textile and apparel industry needs innovation, flexibility, efficiency, and high quality along with their strong strategic approaches towards the supply chain partners[4]. A long-term relationship with the suppliers will have a lasting effect on the competitiveness of the entire supply chain[5]. Kaya.O and Öztürk.F [6] says, those who manage and build the management of supply chain in effective, economic and productive way will enjoy more market share. Supply chain is to be agile in
other words to adapt the changes in supply and demand fast. Small firms with 100-200 machines are the most flexible. Compared to the smaller firms, the larger ones have more trouble in adjusting to global market shifts. India has a labor aristocracy of unionized or unorganized workers and the large scale enterprises are protecting the organized workers [7].

Indian garment and textile industry is present at the top of the garment sector in the global market. But the major problem is India is full of diversities and faces many infrastructural issues and different stature of players involved at each and every level. These issues have their impact on the supply chain activities our Companies. Also, Indian companies which are already facing various logistics and Supply Chain related challenges [8]. Another important issue is the competition where the Indian industry generally faced competition from both domestic and foreign firms [9].

The clothing and textile industry is always has the highest amount of political scrutiny and The Industry is also sculptured by the international trade agreements. Because of the number of small firms and subcontractors active in the area makes the job of estimating the number of people working in these sectors is extremely difficult. The Indian Textile Industry, being one of the oldest and important sectors earns lot of foreign exchange and employs a considerable percentage of population from both urban and rural areas [10]. Exports of cotton have emerged has a major source of foreign exchange earnings for the country. Cotton being the, commercial crop of India, is grown in 84 million hectares but the per hectare yield in India is at lowest level compared with other countries like Israel, Australia, Syria, Turkey, China and USA and the quality does not measure up to the world standard [11]. The cotton cultivation not only engages around 6 million farmers, but also includes about 40 to 50 million people relating to cotton cultivation, cotton trade and its processing [12].

2. Review of Literature

The Supply chain refers to a group of companies that are bound by physical, informational and financial flows [13]. Supply chain management in the textile industry is a cutting edge tool for the industry to enhance its competence. It is also an important stage for the Indian textile industry to advance and upgrade its position in the global industry chain [14]. In the current era of globalization, industries are adopting new tools and techniques to produce goods to compete and survive in the market [15]. In addition to the effect of globalization, the markets are becoming hyper competitive and the global players from all corners of the world are increasingly becoming more demanding in their requirements [16].
Lambert in 2000 [17] defines Supply Chain Management as the integration of key business process from end user through original suppliers that provide products, service and information and hence add value for customers and other stakeholders in his research paper.

Supply chain Collaboration refers to Sharing of information[18], making decisions jointly and sharing benefits between two or more supply chain members so that the profitability is improved and customer needs are satisfied [19]. A successful collaboration requires the coordination among all the supply chain members [20] as well as the inter-industrial partnerships (co-marketing alliances) [21]. The major variables affecting the supply chain collaboration in garment sector in India are; trust among the supply chain partners, top management commitment, long term relationships, information sharing and risk and reward sharing [22].

Flow of information, product and material is very crucial. The flow of material and product occurs in a forward way which depends on the flow of information about the customer orders, market needs, demands and the trends heading backward from customers towards the retailers and through them it flows in the direction of manufacturers who in turn pass on the information regarding the raw material needs to the suppliers.

Indian supply chain is full of complexities and unlike the European countries and other parts of the world, huge amount of work is needed to be performed in India in terms of the supply chain management practices [23]. All these challenges and issues needed to be resolved for gaining the competitiveness [24].

Indian Companies are considerably[26] aware collaboration, but problems in its successful implementation and so, they generally fail to create a long term collaborative relationship. The following areas requires more supplier’s involvement [27] they are, JIT implementation, quality improvement, and supply planning and transactional performance mainly at the stage of finished production [25]. The whole supply chain is driven by real and current market needs [28].
3. Research Objectives

- To identify factors influencing supply chain collaboration in textile industry.
- To understand the level of awareness in SCC among textile workers.
- To recognize the importance of supplier selection in textile industry.
- To understand factors leading to competitive advantage.
- To understand the relationship between supply chain collaboration and competitive advantage.

4. Research Methodology

The research design is descriptive, involving both primary and secondary data. The primary data for the study was collected by using a survey questionnaire through which the quantitative data as well as qualitative responses about supply chain practices among textile units in Coimbatore, Tirupur, Erode and Salem were collected. These 4 districts along with Karur and Madurai is referred to as the “TEX VALLEY” of India. The TEX Valley contributes nearly 50% to the nation’s textiles sectors of raw material, production, trading and exports. Since 1870’s, Tirupur has been the center of textile business in Tamil Nadu. This district located near Coimbatore dominated the yarn trading and cotton pressing. All these textile mills are set up by colonial rulers mostly British, to counter the high cost of labor associated with the European mills [27].

The sampling frame of 100 included Export garment suppliers, Domestic garment suppliers, Merchandisers, Traders and stockists. All 100 units were interviewed individually using a questionnaire to collect data.

Initially a pilot test was conducted among 26 respondents to make sure about the accuracy of the questions in the questionnaire. The variables and indicators of the questionnaire were justified to be relevant to the textile sector. The questionnaire consists of nine parts. They are Demographic details, Supply Chain Collaboration, time spent on business, Reserves for uncertainty, supplier relationship, Supplier selection, Cost advantage, Differentiation advantage, Competitive advantage. The questions were framed using the five point Likert scale. SPSS (statistical package for social science – 16.0) was used for analysis.
5. Research Model

The following research model is used for the study.

![Diagram](image)

Independent Variables 1 includes first generation entrepreneur, online supply of goods, possessing very good market knowledge and supply of goods.

Independent Variables 2 includes up to date knowledge about the industry, taking overdraft for business and the last one is the supplier relationship.

Objective and Hypothesis:

- To determine the type of business setup affects the process of attaining competitive advantage.
- To prove efficient Supplier selection and role of supplier relationship leads to supply chain collaboration which influences competitiveness.

H1: Business type has a positive influence on competitive advantage
H2: Supplier selection and supplier relationship has a positive influence on competitive advantage.
Analysis and Result

The factors influencing supply chain collaboration and competitive advantage are first generation entrepreneur, online supply of goods, possessing very good market knowledge and supply of goods to other part of Tamil Nadu. Also thorough knowledge on textile industry, good supplier relationship influences the competitive advantage. The frequency analysis, revealing the percentage of influence, is exhibited in the following tables.

Percentage Analysis in SPSS

<table>
<thead>
<tr>
<th>Statistics</th>
<th>First generation entrepreneur</th>
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<td>N</td>
<td>Valid</td>
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<td>106</td>
<td>0</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>First generation entrepreneur</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>34</td>
<td>34.0</td>
<td>34.0</td>
<td>34.0</td>
</tr>
<tr>
<td>No</td>
<td>66</td>
<td>66.0</td>
<td>66.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

*Table 1: First generation entrepreneur*

The above table 1 shows the percentage of first generation entrepreneurs in our study. About 66% of them are in textile business for generations.
Table 2: Online Supply by Textile Units

The above table 2 shows the percentage of textile units who supply online in our study. Only a mere 18% of them are supplying online.

Table 3: Textileentrepreneurs market knowledge

The above table 3 shows the percentage of entrepreneurs who have a good market knowledge. The results show that 91% of them in textile business have good knowledge about the market.
Table 4: Supply of Goods to other parts of Tamilnadu

The above table 4 shows the percentage entrepreneurs in our study supplying to other parts of Tamilnadu. About 89% of the respondents opine that they are supplying to other parts other than their home district.

Graph: 1 Percentage of Textile owners response to 4 Independent variables.

Table 4: Supply of Goods to other parts of Tamilnadu

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
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<tr>
<td></td>
<td>No</td>
<td>11</td>
<td>11.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>
The above table 5 shows the entrepreneurs understanding of the current happenings in industry. Surprisingly only about 51% of the respondents in textile business are aware of what is happening in their industry.

Table 5: Up to date Textile Knowledge

The above table 6 shows the percentage of textile entrepreneurs in our study drawing overdraft every month. About 27% of the respondents in textile business take overdraft every month.
Table 7: First generation entrepreneurs.

The above table 7 shows the percentage of textile owners having knowledge about their suppliers. About 64% of the respondents in textile business think that they know very well about the suppliers.

Graph: 2 Percentage of Textile owners' response to 3 Independent variables.
Table 8: Relationship with the suppliers.

The above table shows the percentage of textile owners maintaining a highly professional relationship with suppliers. About 93% of them intextile businessopine that they maintain a highly professional relationship with suppliers.

Table 9: Attracting Customers by product differentiation

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid Yes</td>
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<tr>
<td>No</td>
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<td>7.0</td>
<td>7.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>
The above table 9 shows the percentage of textile units providing product differentiation to attract customers. Nearly 87% of them think that they are gaining the competitive advantage by providing something different and special.

**Table 10: Textile Advertising.**

The above table 10 shows the percentage of entrepreneurs in our study advertising their business. About 38% of them in this study are advertising their business.
Graph: 3 Percentage of Textile owners response to 4 Dependent variables

**Friedman Test**

<table>
<thead>
<tr>
<th>Ranks</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank my purchases – Quality</td>
<td>3.36</td>
</tr>
<tr>
<td>Rank my purchases - Cost</td>
<td>2.64</td>
</tr>
<tr>
<td>Rank my purchases – Variety</td>
<td>2.12</td>
</tr>
<tr>
<td>Rank my purchases - Stock</td>
<td>2.61</td>
</tr>
<tr>
<td>Delivery Time</td>
<td>4.26</td>
</tr>
</tbody>
</table>

*Table 11: Friedman Test – Ranking of purchase dimensions*

The above table 11 shows the ranking of various attributes that influences purchase. Thus decreasing order of importance is delivery time, quality, cost, stock and variety.
Visual PLS Modelling

Figure 1: Visual PLS Structural Equation Model. Where in Fig 1, In 1 and In 2 denotes the Independent variables and out indicates the dependent variables.

In_1 in the image includes 4 components namely, first generation entrepreneur, online supply of goods, possessing very good market knowledge and supply of goods.

In_2 in the image includes their up to date knowledge about the industry, taking overdraft for business and the last one is the supplier relationship.

Output of the model includes their ability to save money in business, maintaining a professional relationship with suppliers, product differentiation to attract customers, advertisement for their textile units.
The Rsquare value of 0.523 is obtained from the Visual PLS Software after the analysis of the variables. This value indicates that these variables will influence the Supply Chain Collaboration and leads to competitive advantage positively by 52.3%. The AVE values for all constructs are greater than 0.40 as per the standard AVE rule showing convergent validity and also the Composite Reliability values for all constructs are greater than 0.4. Thus the reliability scale is proved to be higher in this research indicating the effectiveness of the study.

In the bootstrap analysis, the impact of all independent variables on the dependent variable will be evaluated and as a rule, the T-statistic value should be greater than 2.0. The T-Statistic value indicates the effectiveness of the independent variables on influencing the dependent variable. From the above figure, it is clear that the all the independent variables have sufficient T values to affect their dependent variables.

6. Conclusion

The Indian Textile Industry is going towards having an efficient supply chain strategy for gaining competitive advantage. Supply Chain collaboration is vital factor of it. The factors of Supply Chain collaboration includes seven dimensions, namely first generation entrepreneur, online supply of goods, possessing very good market knowledge and supply of goods, up to date knowledge about the industry, taking overdraft for business and the last one is the supplier relationship, their ability to save money in
business, maintaining a professional relationship with suppliers, product differentiation to attract customers and advertisement for their textile units.

A total of 100 textile companies participated in the research study. All the factors of supply chain collaboration were studied. From the results it is well-understood that apart from business type supplier relationship contributes to competitive advantage significantly. The technological and managerial assistance along with exchange of information during product development and production stages needs more attention. The study proves that competitive advantage through supply chain collaboration is the way to move forward for the textile units. The results highlights that technological assistance is required for sustainable competitive advantage.

7. References


