

Competitive Advantage through Sustainable Supply Chain Management Practices: An Empirical Case Study Based On the Ready-Made Garment Industries of Bangladesh

A.K.M. Shafiqur Rahman

PhD in Management Linkokwing University of Creative Technology
Corresponding Author: A.K.M. Shafiqur Rahman

Abstract: *There is a fierce battle of competition now prevailing in everywhere around the world, not only between single companies but also between networks of linked partners, known as supply chains. Demands of the customers are changing so frequently and companies have to react quickly when new trends and consumer requirements appear and for which the competition becomes more time-sensitive. And this is very much applicable in the apparel industry because time is a crucial factor and can make the difference between the success /or failure of a company in this competitive business. After considering the important role of apparel manufacturers within the global, we conducted a research on the Bangladesh garments industry and focus on several important supply chain operational issues. Here, the objectives are to analyze apparel supply chain matters such as procuring new orders, raw materials supply, production processes and logistics related to finished goods delivery. In this research data has been collected from trade statistics, conducted structured interviews, and sending survey questionnaires to different garment manufacturers. The analysis shows that apparel manufacturers are striving for sustainable business growth. We have identified related supply chain practices influencing the industry, setting guidelines for improvement and offer recommendations for sustainability.*

Keywords: *Supply chain, competitive, operational, logistics, striving, time-sensitive, sustainability.*

Date of Submission: 01-02-2019

Date of acceptance: 16-02-2019

I. Introduction

At the moment, the ever- changing business environment is forcing the manufacturing firms to adopt new technologies, implementing new processes and using new materials in order to sustain in the dynamic business environment aiming at maximizing profit. In this competition, majority of the firms either forgot or considering the concept of sustainability practices in their business operations. Carter and Rogers (2008), Rao (2002), suggest new managerial implications to implement the concept of sustainability in all dimensions of business. Considering the sustainable issue in the supply chain management is emerging and challenging for the manufacturing firms in developing countries like Bangladesh. This research paper made an attempt identifying the key issues to be focused on sustainable supply chain management practices for competitive advantage in Bangladeshi garment manufacturing firms. This research finding can be used as a manifesto to implement the concept of sustainability practices among Bangladeshi manufacturing firms in the domain of supply chain for competitive advantages.

Bangladesh is the second largest garment exporting country next to China which contributes more than 80% of the country's total foreign exchange earnings. In Bangladesh, there are 4 million people are working in around 6000 garment factories and approximately more than 80% people of them are female. The major garment importers are European Union, USA, Canada. Knit garments are exported to 148 countries and woven garments are exported to 132 countries from Bangladesh. The major garment buyers are Wal-mart, Target, Marks and Spencer, Primark, Tesco, Levi's, Zara, JC Penny, GAP, C&A, UNIQLO etc.

The supply chain is such kind of management that deal with the customer contentment concerning manufacturing and services which are obviously the key values for the Bangladesh garment industry. It constance all the customer requirement and essential it's all about customer (buyer in term of garment industry) satisfaction. In the more broader spectrum the supply chain management is such kind of management for a network of intra and interconnected businesses (supplier to manufacturer to buyer) engaged in the provision of goods and services packs (lead time or up to shipment) needed by the bottom end customers in a supply chain. Supply chain management extents all attempts and procurements of raw materials like trims and accessories, work-in-process inventory, and completed goods from the source of origin to source of consumption inside the garment commerce. So undoubtedly, according to the nearby scenario the supply chain management is in actuality offering a New Paradigm for Bangladesh Garment Industry. Basically, Supply chain management

systems help in reducing inventories, operational costs, compress order cycle time, enhance asset productivity as well as increase the companies' responsiveness to the market. Besides from these benefits, the apparel industry is able to achieve quick response through efficient supply chain management practices. The Quick responses is a concept pertaining to the collaboration and sharing or information among manufacturers, suppliers and distributors, allowing them to respond more rapidly to the needs of the customers.

Now, the textiles and apparel industries of Bangladesh are facing serious problems with offering high-quality, low cost products within a short lead time, and to meet health, social, and environmental compliance issues in the face of increasingly stiff competition. Under this domestic and foreign competitive environment, the future survival and development of Bangladeshi ready-made garment industry faces large challenge. Simple management mode of "import to export" or the production and management mode of "vertical integration" have made the Bangladeshi ready-made garment industry lack in activity, innovational ability and insufficient international competition. Under this background, the idea of "horizontal integration" begins to rise, and as the representative of this idea, the supply chain management increasingly prevails. And because of enormous economic importance in the economy of Bangladesh, ready-made garment industry growth is to be sustained improving supply chain management.

II. Theoretical Concepts

(a) Ready-made garment Business Structure

The ready-made garment is a labor intensive industry and adopting relatively simple technology compared to other high-tech industries. The ready-made garment manufacturing units are like a tailor's shop; getting order from the foreign buyers and then import raw materials specially fabrics from the foreign suppliers or sometimes buy from the local market as per order, then manufacture garments and supply those to the buyers (Munir, Q. and Salim, R. 2000).

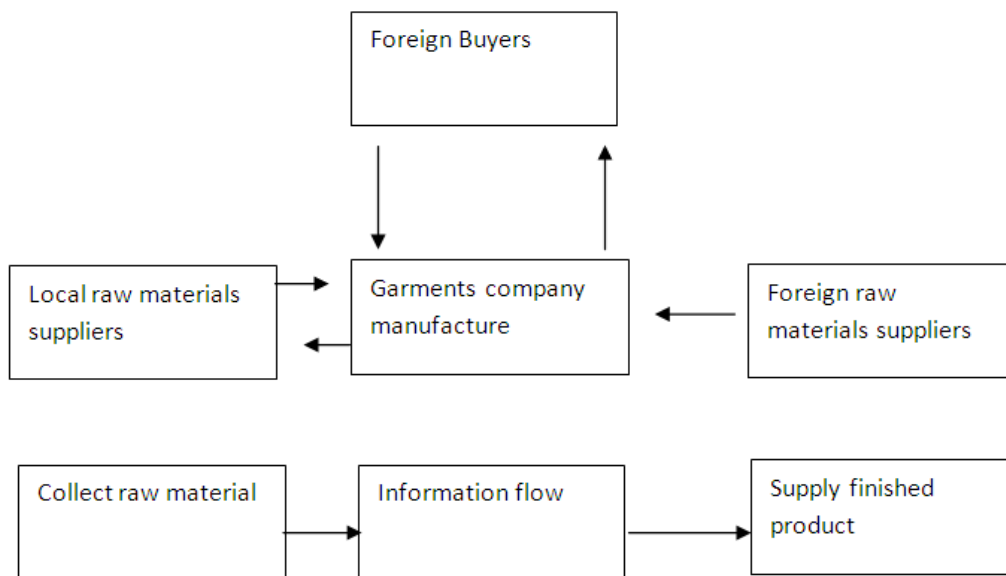


Figure1: Business Structure and raw material suppliers
Source: Nuruzzaman, 2007

In the garment business, the Manufacturer -Raw Materials Supplier relationship is different. In this industry the main raw materials are fabrics (clothes) and few accessories are like button, zipper, label, sewing thread etc. Approximately, more than 80% accessories are being sourced locally from Bangladesh and these suppliers are not at all responsible for increasing lead-time and it is because of fabrics are imported mostly from China, Indonesia and India. Currently, the total average time to import fabrics from abroad is 50-65 days and this is the main reason for long lead time (BGMEA Research Cell). In the process of import of fabrics from the foreign suppliers lies the main reason for long lead time. The process is shown which is as follows:

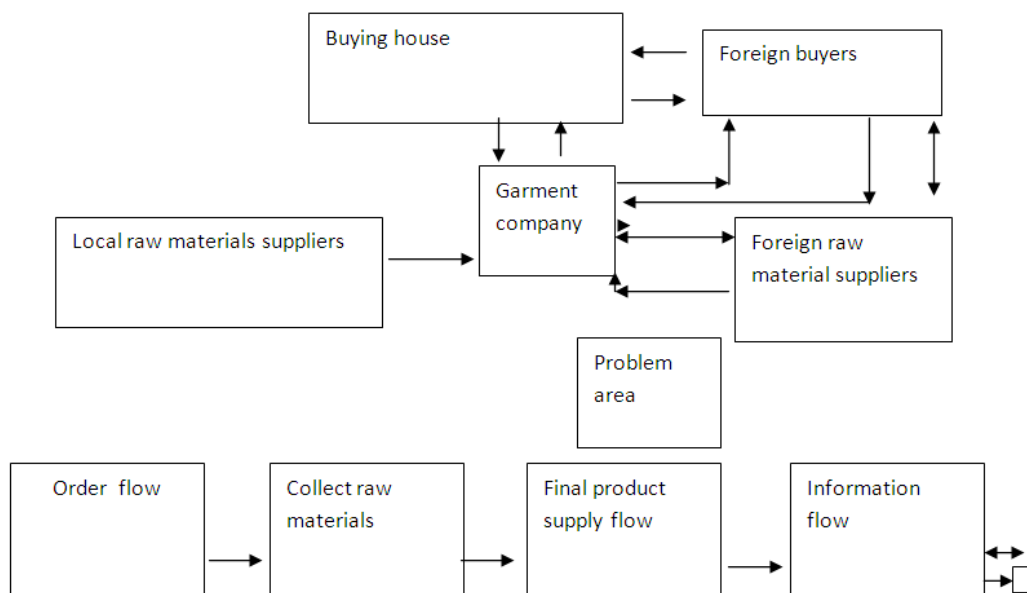


Figure2: Business structure and raw materials collection process
Source : Nuruzzaman, 2007

(b) Theory of Lead Time

Now a days, the garment buyers around the world demand product as they want it, when they want it, and at the best possible price. At this highly competitive global marketplace they are placing greater value on quality and delivery time. And the manufacturers subsequently have begun to place more value on quality and delivery time and companies are trying to gain a competitive edge and improving the profitability through cutting cost, increasing quality level and improving delivery. However, it makes sense that the more competitive the industry, the more shortened lead times will help. In today's competitive industries, short lead time will differentiate a company from its competitors, leading to increase sales (Chariest J. Murgiano, CPIM).

It is clear that lead time is one of the main competitive factors among companies and the ability to deliver quickly influences export, sales and thereby revenue. The definition of lead time can vary depending on what part of the company is focused upon. In general, it includes all activities from start to end. Lead time begins with the first receipt of a customer order and ends with customer receipt of the product or service. Everything in between is the lead time (2004, elsmar.com). Lead time refers to the time lag between placing an order and receiving it (Li, 2000). In this study, lead time is defined as the time it takes from getting order from a customer and received the delivered product by that customer ((Azad, 2004).

In Bangladesh, the average lead time in the ready-made garment business is normally 90-120 days. It is sometimes 90 – 120 days. The total lead time is made up of time devoted to processing orders, to procuring and manufacturing items, and to transporting items between the various stages of the supply chain. It is logical that the total lead time can often be reduced if items are transported immediately after they are manufactured or arrive from suppliers (David Simchi et al., 2000). The lead time typically includes two components : **Information lead times** (i.e., the time it takes to process an order) and **Order lead times** (i. e., the time it takes to produce and ship the item). The **Information lead time** can be reduced by using very sophisticated and modern communication system while the **Order lead time** can be reduced through an efficient supply chain management (Simchi-Levi, David, 2000).

Marc Smith a renowned researcher explained lead time into two different ways (www. Elsmar.com, 2004). First, **Customer lead time**, which refers to the time span between customer ordering and customer receipt ? Second, **manufacturing lead time** which refers to the time span from material availability at the first processing operation to completion at the last operation? In his paper Marc Smith developed theories for the reduction of lead time in the equipment manufacturing company especially in the vehicle manufacturing company which is also applicable to the ready-made garment sector as well. In the lead time reduction process, Lead Time Management in the Garment Sector of Bangladesh: An avenues for Survival and Growth. Identifying the beginning of the process and walking through the process is very important. In the ready-made garment sector after order confirmation the process begins by sending information to the suppliers for raw materials (Fabrics + accessories) and the process run through shipment of final product received by the buyers. The whole of this process is comprised of the following steps – order submission, scheduling & sequencing, manufacturing

and distribution. A manufacturer may be able to reduce lead time by taking some strategic measures in all of these four stages.

From the above theory it is clear that the total lead time is the customer lead time. Therefore, we can write that; **Customer supply time** = [{ Information supply time } + {Order lead time}] **Total supply time** = [{ Information lead time } + {(manufacturing lead time) + (shipping time for import fabrics) + (Shipping time for export final product)}.

In the ready-made garment business, shipping time for import includes shipping time, unloading time and transport time from port to manufacturing point. Shipping time for export includes manufacturing time for final products and shipping time for export). The lead time on delivery issues matters most important in the ready-made garment export trade. At the beginning of this trade the lead time was 120-150 days, but now this time has been reduced to 40 to 60 days. China requires only 30 days due to their textile and other backward linkage facilities as well as export friendly policy. Bangladesh needs to set up a central bonded warehouse for woven, grey fabrics and related garment accessories in order to help the manufacturers to collect the fabrics within seven days from the issuance of Letter of Credit (L/C) and thus reduce the lead time significantly.

Research Problem

The ready-made garment industry contributes the major role for the economic development of the country. But the required fabrics and some limited accessories till now come from abroad. The industry is heavily dependent on imports and this backdrop is the main reason for long lead time, therefore it appears that in the present situation Bangladesh ready-made garment industry will not be able to compete successfully in the international market for the existence of unusually long lead time. This is specially the main problem area of the present research.

Research Questions

1. Which measures could be taken by an international fashion apparel retailer to shorten the lead-time and consequently the lead time gap ?
2. Which measures could be taken by international fashion apparel retailer to enable it to respond more quickly to changes in the market ?

Object of the Study

The study on Bangladesh ready-made garment industry is the main source for economic development of Bangladesh demands examination and evaluation of multidimensional aspect of garment sector and its impact on the economic condition of Bangladesh.

The main objective of the study is to examine, evaluate and analyze business process and buyers order time, supply chain management garment industry and identify the techniques used by some apparel business operators of Bangladesh.

Aim of the research

The overall aim of the research is to consider the Bangladesh garment management approaches used in the textiles and apparel sector. This is addressed through case studies of companies at different points of the apparel chain, ranging from fiber producers downstream in the chain to manufacturers and foreigners.

III. Research Methodology

In this research the data has been collected on primary and as well as on secondary basis. Also, the secondary data were used in the study and those were collected mainly from various publications, books, journals, Bangladesh Economic review and the annual reports, interview of key persons of different garment factories, foreign buyers. In this study, qualitative method has been used. In the qualitative method we can find out how people feel or what they think about a particular problem, which are very relevant in this research. Mainly the descriptive research approach has been used. But in the exploratory phase of the research, in-depth interviews have been conducted with the suppliers/ manufacturers (owners) and the relevant bodies and association.

IV. Literature Review

The apparel industry stands out as one of the most globalised industries in the world and the supply chain management is the supporting tool for efficient business processes. To compete globally, most of the industries have already started adapting supply chain management and ready-made garment industries are no way an exception to this strategy. Ha-Brookshire et al. [13] states that one must acknowledge businesses' social and environmental practices along with all business decisions and strategies based on profit maximization. Therefore, the goals of supply chain members' activities must gauge both financial and

nonfinancial consequences. Global garment and textiles contribute like the US, China, Hong Kong, Bangladesh, Pakistan, Turkey and India have started adapting supply chain strategies to sustain successfully. Researches on the supply chain started in the early 90's across various industries. The literature tries to visualize the importance of ready-made supply chain management simultaneously with supply chain collaborations which leads to competitiveness.

Dickerson KG stated that fragmentation has made the U.S. Textile and apparel industry more vulnerable in facing global competition [14]. Teng and Jaramillo [15] provide recommendations based on the evaluation of strengths and weaknesses that may be used as references for small companies to increase their potential to be active partners in the U.S. supply chain, Jinfu and Aixiang [16] give an insight into the application of e-commerce and the supply chain in the textile and apparel industry and how it improves Chinese textiles. In the Chinese textile and apparel industry researches have focused on the concept of the rapid-response eco-supply chain [17]. Lam and Postle [18] studied the awareness of supply chain management practices in Hong Kong textiles and provided a selected bibliography to develop supply chain strategies. Today, from clothing and textile producers' perspective, their supply chain is extremely fragmented and globalised [19].

Koprulu and Albayrakoglu Murat [20] suggest that firms have to be managed to drive maximum potential in the supply chain, and the selection of the supplier is the most critical task in supply management. In [21] the paper discusses supply chain flexibility in an uncertain environment reveals that unpredictable dynamics of the supply chain can arise from a variety of internal and external sources, including suppliers, operating systems, consumers and competitors.

Bangladeshi textiles and apparel researches on supply chain practices have approached the issue from different perspectives. Supply chain management practices have yet been very widely adopted in developing countries like Bangladesh. Ramesh et al. [22] assessed the present status of SCM practices in Bangladeshi manufacturing organizations. Venu and Haesun [23] discussed the influence of technology adoption on Bangladeshi apparel manufacturing firms, its effect on organizational factors and competitive advantage. Anbanandam [24] investigated the problems of global competition and provided critical insights into a firm's strategy and challenges. Effective Supply chain management of the apparel industry includes lower inventories, lower costs, higher productivity, greater flexibility, shorter lead times, higher profits and loyalty. Vereecke and Mullye [25] studied textile and apparel industry productivity and financial efficiency, focusing on the industry's current position and its performance. It concluded that company/management should try to increase production, minimize cost and operating expenses, and exercise proper control of liquidity i.e. the reduction of power, fuel, borrowing funds, overheads, interest burdens etc. This study builds a knowledge base for technology adoption in apparel manufacturing and shows influential factors in developing countries. All current researches are focused on enhancing supply chain practices; the leading apparel and textiles players have started applying the concept as well strategic supply chain practices to achieve competitive advantage. To summarize, the important aspects of efficient supply chain practices are supply chain collaboration, supplier selection, supply chain flexibility, supply chain responsiveness and adoption of maturity models. There are many world class apparel companies by now realized the importance and emphasized on the lead time reduction. Short lead time is the major enabler in achieving a responsive and flexible apparel supply chain because the time reduction contributes greatly to the improvement of demand forecast accurately. In the fashion and apparel industry there are major three critical times; Time – to Market, Time – to Serve and Time – to React (Christopher & Peck 1997).

V. Discussion and Result

In the ready-made garment business the required fabrics and limited accessories till now come from abroad. The garment industry is heavily dependent on imports and had to spend about 55 - 75 days to import fabrics from abroad (Nuruzzamam, 2007). This backdrop is now the main reason for long lead time. Bangladesh garment export in volume is increasing @ 30-40 percent for the last 20 years, whereas Bangladesh ready-made garments are depending only on Chittagong port. The infrastructure of Chittagong port have not increased at the same rate. The containers kept stuck up in the port and many containers remain jammed for 15-20 days, which is required to be released within three days. If the raw materials remain idle in the container at Chittagong port for 10 -15 days, the garment industry would definitely face a serious negative impact (Kutubuddin Ahmed, Ex-President, BGMEA). According to an estimate, it takes about four days for goods to reach Chittagong from Singapore. But in a very sharp contrast, it takes about 18 to 19 days or nearly three weeks on average for the same goods to travel to the inland container depot (ICD) at Kamalapur in Dhaka. Besides the dilatory and cumbersome customs procedure and port operations also significantly delay the movement or release of goods. In Chittagong port it takes about 6 days to unload goods from a ship whereas for the same goods it takes just few hours in Singapore. About port management Mr. Anisul Haque, MD of Mohammadi Group and former President of BGMEA stated, “ unfortunately we are spending 15-20 days to receive our fabrics from sea port to our factory and it is playing the main role to increase lead time.” Again to find out the probable causes of long lead time and for the empirical analysis of 50 firms including 5 leading

garments units have been chosen to collect primary data. They have mentioned many causes behind this problem when interviews were taken but in the interview 100% i.e. of the 36 number respondents (Though 50 firms were chosen but 36 firms were interviewed successfully) put their comments on import dependency as a most important cause for increased lead time. Then 91.66% i.e. respondents raised their voice in favor of Central Bonded Warehouse (CBW), 75% i.e. 27 respondents on inefficient port management, 69.44% i.e. 25 respondents on poor infrastructure and 41.66% i.e. 15 respondents on communication system respectively. The same causes were identified in our analysis based on secondary data. This fact enhances the credibility of our findings. At the time of interview, the Managing Director of Hamim Apparels Limited divided the lead time into three stages as it is illustrated in the following figure. First stage, from P-Q (Fabrics suppliers - Sea port) the approximate lead time for the first stage is 40-55 days including the manufacturing time of fabrics, then from Q-R (Sea port – Manufacturer) the approximate lead time for the second stage is 15-20 days and at last from RMG (Manufacturer – Buyer) the approximate lead time for the last stage is 35-45 days.

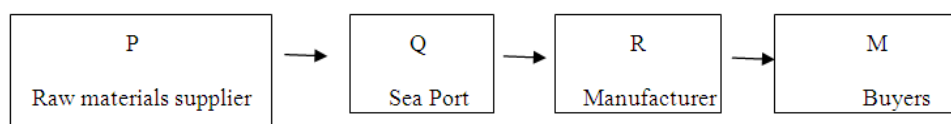


Figure :3 Basic supply chains of ready-made garment industries of Bangladesh

The present estimated time from point Q to point R is unnecessary. Here the main task is unloading the container and carry it to the manufacturing point. The total procedure can be done by only 2 or 3 days through efficient management in port and good transportation system. But due to inefficiency of port management and poor transportation system it takes 15 to 20 days. This manufacturing lead time can be reduced by the help of buyers or buying house. They can make ready their required fabrics at first and then they can make contract us. As such they we need not waste 15-20 days for the required fabrics. From the above observation it is clear that just for import of raw materials Bangladeshi manufacturers are forced to spend 55-75 days more. So, import dependency for fabrics is the main reason of longer lead time.

A manufacturer, Standard Group Ltd., expressed his opinion in a more logical way stated , “ To reduce lead time effectively we have to reduce import dependency as soon as possible. Immediately we can reduce 30%/40% lead time only by proper and efficient management in the supply chain.”

At the time of interview the Managing Director of the largest ready-made garment manufacturer of Bangladesh “Opex Group” stated that “ just after January, 2005 Bangladeshi ready-made garment sector is facing very tough competition due to long lead time. For the woven garments export, our lead time generally 90-120 days. But immediately we can reduce 30% of lead time through proper management in supply chain during import of fabrics and 15% would be possible by only developing port facilities. If we develop our textile sector and procure fabrics from the local market we can easily reduce 60% of total lead time. For the knitwear garments we procure all raw materials from the local market so there is no lead time problem in the knitwear garments sector.”

From the above discussion, it appears that the manufacturers of ready-made garment sector mainly face “ order lead time” problem and this problem occurred in the supply chain due to inefficient management. Time consumed in the first four steps in the supply chain is the basic reasons for increasing lead time. It is possible to reduce a major portion of order lead time by improving the other three areas namely communication, port management, and transport management in the supply chain. We can get a clear idea about lead time in the supply chain by considering the equation of lead time and put average estimated time collected from the interviews for each step. We know that ;

$$\text{Total lead time} = \{ \{ \text{Information lead time} \} + \{ (\text{Order lead time}) \} \}$$

Or, = [{ Information lead time} + { (time to manufacturing fabrics) + (time to shipment of fabrics) + (time to shipment of fabrics) + (time to unloading fabrics and customs formalities at port) + (time to take fabrics from port to manufacturing point) + (time to sample approval and production of final product) + Time to shipment or export of final products.

$$\text{Or, } 120 = [\{ 7 \} + \{ (15) + (25) + (14) + (6) + (23) + (30) \}]$$

In this above equation it is said that through the four stages a manufacturer received fabrics from the suppliers after 60 days on average. Out of this shipping time of 25 days is constant. No way to reduce this shipping time but we can reduce the rest 35 days. There are two parties and various activities involved in between suppliers and manufacturers in the supply chain. The activities and time consumption area has been illustrated here through four boxes (A – D) or stages.

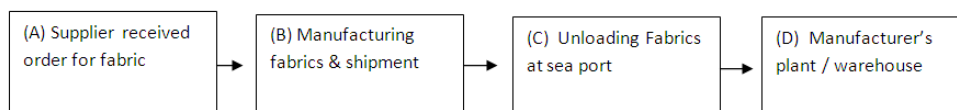


Figure4: Lead time and fabrics importing process

After final contract with the buyers, manufacturers first place order to the foreign fabric supplier (A). Then the suppliers manufactures fabrics (B) and sends fabrics by shipment. After a certain time the ship reaches at the port (C). Here after unloading and completing some custom formalities fabrics are sent through train or road transport to the manufacturers' production-plant/ warehouse (D). For this total process from A-D manufacturers need 55-75 days. At the time of import a proper management in the supply chain can reduce 30-35 days. The rest of the time of 25-35 days is needed only for shipment. It is known from the interview that most of the buyers have no regional offices in Dhaka. These are either in Hong Kong, Bangkok or Singapore. One of the largest European garment sub-contractors based in Dhaka is Hennes & Mauritz (H & M) from Sweden (Asia invest, p-11, Sector 4.). The regional offices and the buyer's resident in Dhaka can build a stock of the required quality of fabrics in advance before making final contract with manufacturers. It will definitely reduce the manufacturing time. Again the proper and efficient management at port and good transportation system can reduce time to receive raw materials from port to manufacturing plants. But if we avoid fabric import altogether then we can reduce 55-75 days from the total lead time and we will be able to assure export of ready-made garment products by 45-60 days regularly.

Analysis -1

We have analyzed three types of very world renowned garment buyers considering the equation of lead time and putting value in those equations. Here, we have considered MBM Apparels from UK. We know that;

Total lead time = [{ Information lead time } + {(Order lead time)}] Or, = [{ Information lead time } + {(fabric manufacturing time) + (fabrics shipment time) + (unloading and transportation time) + (sample approval and production time of garments product) + (shipment time for export of final products)}] = [{ 6 } + {(11) + (24) + (12) + (35 + 12) + (30)}]. So, total average lead time = 130 days. In this study for the MBM buyer, manufacturer's order lead time is 124 days. In the supply chain the company spends totally (11 + 24 +12) = 47 days for import of fabrics where 20 days can be saved. (625 Nuruzzaman and Ahasanul Haque). Time for the last two stages is common for all manufacturers. Here manufacturer spends (47 + 30) 67 days where maximum time is consumed by sample approval. The company spends about 35 days for sample approval process for this buyer. It is absolutely unusual. So here the sample approval process is the main reason for increasing the lead time.

Analysis - 2

Secondly, JC Penny a buyer from USA has been considered here. For this buyer, Total lead time = [{Information lead time } + {(Order lead time)}] Or, = [{ Information lead time } + {(time to manufacturing fabrics) + (time to shipment of fabrics) + (time to unloading fabrics and customs formalities at port) + (time to take fabrics from port to manufacturing point) + (time to sample approval and production of final product) + shipment time to export of final products)}] = [{ 6 } + {(12) + (25) + (14) + (6) +(23) + (30)}]. So, the average lead time = 116 days.

It is clear from the above calculation that doing business with the buyer JC Penny, USA, manufacturer's order lead time is 110 days. In the supply chain the company spends totally (12 + 25 + 14 + 6) = 56 days for importing fabrics where about 24 days can be reduced. Times for the last two stages are common to all manufacturers. Here manufacturer spends (23 + 30) = 53 days. Where maximum 10 days are spent for sample approval. It is a normal process. So, in the above calculation it has been observed that the four values as underlined above are the principle reasons for the increase of lead time.

Analysis - 3

Thirdly, we have considered the buyer of 'Corona' a renowned garment buyer from Italy. For this buyer, Total lead time = [{ Information lead time } + {(Order lead time)}] Or, = [{ Information lead time } + {(time to sample approval and production of final product) + (shipment time to export of final products)}] = [{ 1 } + (17) + (30)]. So, the total average lead time = 48 days. Here in this case the manufacturer does not have to import fabrics for Corona. The buyer himself supplies fabrics from their own textile mill located in Bangladesh. For this reason the order lead time is only 47 days. After getting order the company spends totally 48 days in the supply chain to export final products to the buyer. In this case as there is no need to import of fabrics, the ready-made garment company does not face any manufacturing lead time, transportation and unloading related

problems at the port. Therefore, the manufacturer does not have any problem in the supply chain. We know that time required for the last two stages are common to all manufacturers. So there is no scope to reduce this time. Here the buyer (Corona) communicates with the prospective manufacturer over telephone and take the sample to the manufacturer physically and approves the sample within two/three days. For that reason, information lead time and sample approval time is very minimal in the total lead time. From the above discussion and analysis of some buyer's success and other failure in reducing lead time, one can draw a conclusion that if the fabric is not being imported and collect fabrics from the local market, the lead time would be between 45-60 days. I will be more competitive if the buyer would open a local office in Dhaka and which will minimize sample approval process.

While integrating all the findings from the survey and the case study we can draw a conclusion that in the current RMG business manufacturers are facing lead time problem due to import dependency i.e. import of fabrics from foreign market. This problem is exacerbated due to inefficiency in the supply chain management. Lead time could be further reduced by taking some appropriate measures in manufacturing, unloading, and transportation system but it does not help the manufacturer to be more competitive. If the manufacturers could find some alternative source of supply in the local market and collect fabrics locally. That will be more logical, appropriate, and helpful in the direction of lead time reduction.

VI. Conclusion

The Ready-made Garment sector of Bangladesh has entered into the quota free global market after 2005 as the quota has been phased out. From that time this sector is in a very vulnerable situation due to long lead time which has a negative impact on our export growth. After thorough analysis of empirical data it has been found that the import dependency is the major bottleneck and it is the main factor for greater lead time. Just due to import of fabrics manufacturers are to count shipment time, unloading time, customs clearance time and transportation time from port to ICD (Inland Container Depot) at Kamalapur, Dhaka. Import dependency arises out of the absence of sufficient backward linkage industries and for which a total additional 55-75 days are spent in the import process of fabrics and as a result this sector is facing long lead time which is 90- 130 days on the average. In China, the scenario is totally different as they are self-reliant in backward linkage industries which made them possible to be the number one ready-made garment exporting countries around the world.

In the ready-made garment supply chain -- meeting lead-time, maintaining quality standard as per the buyers' specifications are very important. Failure to comply with these requirements creates buyers' dissatisfaction and cancellation of orders. The ready-made garment products are sensitive to design, color and use of accessories. The manufacturers need to submit samples for buyers' approval before producing in a bulk quantity. If the size, color, design and other specifications are approved by the buyers, operation is started for bulk production. Sometimes, buyer rejects some batches of products because of non-conformity of sample with bulk. It's a huge economic loss and loss of reputation of the economy. Moreover, buyers set a fixed lead time and within this lead time the manufacturers need to procure, produce and deliver the finished products. If there is any deviation for which buyers are dissatisfied and finally may even reject the shipment which is again a huge financial loss for an exporter.

The ready-made garment industry of Bangladesh is moving towards an efficient supply chain strategy for gaining competitive advantage and for which collaboration is a vital factor of it. The factors of effective sustainable supply chain 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 supplier relationship, their ability to save money in business, maintaining a professional relationship with suppliers, product diversification & differentiation to attract customers and advertisement for their clothing units.

Garment order time management is one of the most vital issues for today's ready-made garment business. The foreign buyers are always asking for shorter lead time as they need to catch the seasons. In fashion there are two calendars like Spring/Summer and Autumn/Winter .Due to the growing intensity of competition both in the local and global business sectors, the major companies and service providing companies have also realized the need to develop more strategic approaches for managing supply chains. These effective factors and realizations then led to the development of traditional supply chain management systems up to the advanced systems companies applying now at the moment. Actually, the supply chain management evolution took place during 1990s, at this time, collaboration between manufacturers and suppliers had been established in order to enhance the traditional approaches in supply chain functions. At the same time, retailers as well as wholesalers had integrated their logistics operations as well as to achieve greater competitive advantage (2002).

References

- [1]. Tanvir, S., & Muqaddim, N. (2013). Supply Chain Management Offering the new Paradigm for Bangladesh Industry, *Journal of Economics and Sustainable Development*, 4 (20), page no. ISSN:2222-1700(Paper) ISSN: 2222-2855.
- [2]. Shahriar, M., F., Pathik, B.,B., & Habib, M., (2014). A Research Framework of Supply Chain Mngement in Ready Made Garments Industry of Bangladesh. *International Journal of Business and Economics Research*. 3, (6), 38-44 doi:10.11648/j.ijber.s.2014030601.16.
- [3]. Asgari, B., & Hoque, M., A., (2014). A system dynamics approach to supply chain performance analysis of the ready-made garment industry in Bangladesh. *Ritsumeikan Journal of Asia Pacific Studies*, 32, page no.
- [4]. Hossan, C.,G., Sarker, M., A., & Afroze R. (2012) Recent Unrest in the RMG Sector of Bangladesh: Is this an Outcome of Poor Labour Practices ? *International Journal of Business & Management*, 7, 206-218.
- [5]. Nuruzzaman, A.H. & Azad, R.,(2010).Is Bangladeshi RMG Sector Fit in the Global Apparel Business ?Analyses the Supply Chain Management. *The South East Asian Journal of Management*, 4(1).
- [6]. Chopra, S., Meindl, P., & D.V. Kalra, D.V. (2003). *Supply Chain Management-Strategy, Planning and Operation*, Pearson, India, 4th Edition, pp-7-8. ISBN. 978-81-317-3071-3.
- [7]. Nuruzzaman, A.H. (2009). Lead time management in the garment sector of Bangladesh: An avenue for survival and growth. *European Journal of Scientific Research* , 33, 617.
- [8]. N. Md., “ Developing Export of RMG Products in Bangladesh: Analyzing the lead time,” *Management Trends*, Vol.4, No.1, P-1.
- [9]. World Bank. (2005). End of MFA Quotas: Key issues and Strategic Option for Bangladesh Readymade Garment Industry. *Bangladesh Development Series Paper No.2, PREM Unit. Washington D.C.*
- [10]. Mohammad Ali and Dr. Md. Mamun Habib; *Supply Chain Management of Textile Industry: A case study on Bangladesh; International Journal of Supply Chain Management*; Vol. 1, No.2, September 2012; ISSN: 2050-7399 (Online).
- [11]. Leonie Barrie, *The daily star, Bangladesh : The catalyst for change in the supply chain*. Access on January 20, 2015
- [12]. Basher, M.A. (2010). Compliance in the RMG sector: What has been done so far, and what more needs to be done? Dhaka, Bangladesh.
- [13]. Ha-Brookshire JE, Hawley JM. Envisioning the Clothing and Textile and Textile Related Discipline for the 21st Century it’s scientific nature and Domain From the Global Supply Chain Perspective. *Clothing and Textiles Research Journal* 2012; 31, 1: 17 – 31.
- [14]. Dickerson KG. *Textiles and in the global economy* (3rd ed.). New Jersey: Prentice- Hall Inc., 1999. .
- [15]. Teng GS, Jaramillo H. A model for evaluation and selection of suppliers in global textile and apparel supply chains. *International Journal of Physical Distribution & Logistics Management* 2005; 35, 7: 503 – 523.
- [16]. Jinfu W, Aixiang Z. E-commerce in the Textile and Apparel Supply Chain Management: Framework and Case Study. In *Second International Symposium on Electronic Commerce and Security 2009: 374-378*. doi: 10.1109/ISECS.2009.84.
- [17]. Du L, Yu L, Cheng R. The Construction Research on Rapid-Response Eco-Supply Chain of the Textile Industry Based on the Circular Economy. In: *International Conference on E-Health Networking; Digital Ecosystems and Technologies IEEE* 2010; 1: 248 251.
- [18]. Lam JKC, Postle R. Textile and apparel supply chain management in Hong Kong, *International Journal of Clothing Science and Technology* 2006; 18, 4: 265 – 277.
- [19]. Ha- Brookshire J, Dyer B. Apparel import intermediaries: The impact of a hyperdynamic environment on U. S. apparel firms. *Clothing and Textiles Research Journal* 2008; 26: 66 – 90.
- [20]. Koprule A, Albayrakoglu Murat M. Supply chain management in the textile industry: a supplier selection model with the analytical hierarchy process. In: *ISAHP 2007, August 3 -6 Vina Del Mar, Chile, 2007*.
- [21]. Moon k, Ka-Leung C, Ying Y, Ngai EWT. An instrument for measuring supply chain flexibility for the textile and clothing companies. *European Journal of Operational Research* 2012; 222, 2: 191 – 203.
- [22]. Ramesh A, Banwet DK, Shankar R. Modelling the enablers of supply chain collaboration. *International Journal of Logistics Systems and Management* 2008; 4, 6: 617-633.
- [23]. Venu Varukolu, Haesun Park-poaps. Technology adoption by apparel manufacturers in Tirupur town, India. *Journal of Fashion Marketing and Management* 2009; 13, 2:201 – 214.
- [24]. Anbanandam R Banwet DK, Ravi Shankar. Evaluation of Supply Chain Collaboration: A case of supply retail industry in India. *International Journal of Productivity and Performance Management* 2011; 60, 2: 82 – 98.
- [25]. Vereecke A. Muylle S. Performance improvement through supply chain collaboration in Europe. *International Journal of Operations and Production Management* 2006; 26, 11: 1176 – 1198.
- [26]. Duangpun Kritchanchai, and Thananya Wasusri, Implementing Supply Chain Management in Thailand Textile Industry, *International Journal of Information Systems for Logistics and Management*, Vol. 2, No.2, (2007) 107-116.
- [27]. Mohammad Ali, Dr. Md. Mamun Habib, The material requirements planning system for ready-made garments and inventory control, *Journal of Applied Management and Investments*, Volume 1, Number 2, 2012.
- [28]. Habib, Md. Mamun, “Supply Chain Management (SMC): Theory and Evaluation” Dr. Md. Mamun Habib (Editor), “Supply Chain Management – Applications and Simulations”, InTech Open Access, Croatia, September 2011, ISBN 978-953-307-250-0.
- [29]. BGMEA E. Bangladesh ready-made garment industry. In Google. 2017
- [30]. Sarkar AN. Green Supply Chain Management: A potent tool for sustainable green marketing. *Asia-Pacific Journal of Management Research and Innovation*. 2012; 8: 491-507.
- [31]. Curwen LG, Park J, Sarkar AK. Challenges and solutions of sustainable apparel product development: A case study of Eileen Fisher. *Clothing and Textile Research Journal*. 2013; 31: 32-47.
- [32]. Abe M, Ye L. Building resilient supply chains against natural disasters: The cases of Japan and Thailand. *Global Business Review*: 2013; 14: 567-586.
- [33]. Haque A. Lead time management in the garment sector of Bangladesh: an avenues for survival and growth. *European Journal of Scientific Research*.2009; 33: 617-629.
- [34]. Margaret Bruce, Lucy daly and Neil Towers; *Lean or Agile: A Solution for Supply Chain Management in the Textile and Clothing Industry ? ; Vol. Iss: 2 ; DOI: 10.1108/01443570410514867,Page: 151-170*.
- [35]. Conway Liu; *How to be a Smarter Garment Merchandiser; V.M.C. Fashions Ltd.; Valiant Garments Ltd.; Hong Kong*.
- [36]. Richard B., Chase Nicholas J., Quilano Robert F., and Jacobs; *Production and Operations Management*, McGraw-Hill Education, 2001.
- [37]. Ferhana Ferdousi and Amir Ahmed; *An investigation of Manufacturing Performance Improvement Through Lean Production: A Study on Bangladeshi Garment Firms; Vol. 4, No. 9, September 2009, CCSE*.

- [38]. Hidegunm Kyvik Nordas; The Global Textile and Clothing Industry post the Agreement on Textiles and Clothing; World Trade Organization; Geneva, Switzerland; Discussion Paper No: 5.
- [39]. Anni-Kaisa Kahkonen, Katrina Lintukangas, Veli Matti Virolainen; The Effects of e-Business on Supply Management; An International Journal of Operations and Supply Chain Management; ISSN: 1979-3561, EISSN: 1979-3871; Page: 75
- [40]. Power, D J., Sohal, A., & Rahman, S. U. (2001). Critical success factors in agile supply chain management : an empirical study. International Journal of Physical Distribution and Logistics Management, 31 (4): 247-265.
- [41]. Raihan, MD. Zahir. (2016). The competitiveness of RMG Industry of Bangladesh after Some Tragic Incidents: An overview of the Present Compliance Practice at RMG Sector of Bangladesh, Research Journal of Social Science and Management, Vol. 05, No. 10.
- [42]. Joarder, Momin. (2016). Post-MFA Preference of Bangladesh Apparel Sector, International Review of Business Research Papers, Volume 6. Number 4. September 2010. Pp.134 – 144.
- [43]. Council of Logistics Management, P.M. Swamidass. (2000). Encyclopedia of Production and Manufacturing Management, Print ISBN 978-0-7923-8630-8.

IOSR Journal of Business and Management (IOSR-JBM) is UGC approved Journal with SI. No. 4481, Journal no. 46879.

A.K.M. Shafiqur Rahman. "Competitive Advantage through Sustainable Supply Chain Management Practices: An Empirical Case Study Based On The Ready-Made Garment Industries of Bangladesh". IOSR Journal of Business and Management (IOSR-JBM), Vol. 21, No. 2, 2019, pp. -20-29