

Lead Time Management in the Garment Sector of Bangladesh: An Avenues for Survival and Growth

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Abstract

Bangladesh has emerged as an important supplier of quality readymade garments in the global market. The spectacular growth of garment sector in Bangladesh in recent years has dramatically changed the landscape of export composition of the country. Once heavily dependent on exports of primary products lead by Jute, the economy of Bangladesh is now experiencing almost 76% export contribution from readymade garments (RMG). The sector has now occupied an important place in Bangladesh national economy. Nevertheless, all is not well in this sector. It faces numerous challenges and it is now on the crossroad with the phasing out of quota system, GSP facilities and new provisions of WTO. In this study attempts have been made to find out the ways to face the competitive business environment by the efficient management process towards the lead time reduction. The main purpose of this article is to analyse the business process of the garment sector to find out it's lead time minimization process. The study has been concluded by the development of a new diagram of business process with the outcome that the other management process in the supply chain is an important factor rather than process management in the lead time minimization process.

Keywords: RMG, Lead Time Minimisation, Management process, Supply Chain.

Introduction

The spectacular growth of garment sector in Bangladesh in recent years has dramatically changed the landscape of export composition of the country. Once heavily dependent on exports of primary products led by Jute, the economy of Bangladesh is now experiencing almost 76% (Nuruzzaman, 2005) export contribution from Readymade garments (RMG). The sector has now occupied an important place in our national economy. With the blessings of cheap labour, pressure for globalisation of production based on location economies as well as the favourable treatment from developed countries, Bangladesh and some other developing countries have gradually become the global players in international trade in RMG. However, the Multi-fibre Arrangement facility, which was extended to favour the least, developed countries in exporting garments and textile has phased out after 2005. Consequently, the beneficiaries of MFA, including Bangladesh are facing severe competition in the unprotected world market. At present, this sector is facing numerous challenges nationally and globally.

Bangladesh is one of the leading readymade garments exporters in the global market. The changing global environment in business and the development of GATT into WTO raises many important questions regarding increase in export in the Textile and garment sector for a developing country like Bangladesh. To survive in this sector Bangladesh must take immediate pragmatic policies enabling itself to compete more efficiently in the changing business environment through minimisation of lead time. In the beginning of 1990s, the lead time was 120-150 days (Azad, 2004) but in 2007, it was reduced to 30-50 days, i.e. at present it is 90-100 days (Khan, 2007). China requires only 30 days due to their textile and other backward linkage facilities as well as export friendly management and supporting policy. It is 45-60 days in India and Pakistan (Nuruzzaman, 2008). Therefore it appears that in the present situation Bangladesh RMG industry will not be able to compete successfully in the international market for the existence of unusually long lead time. This is specifically the main problem area of present research.

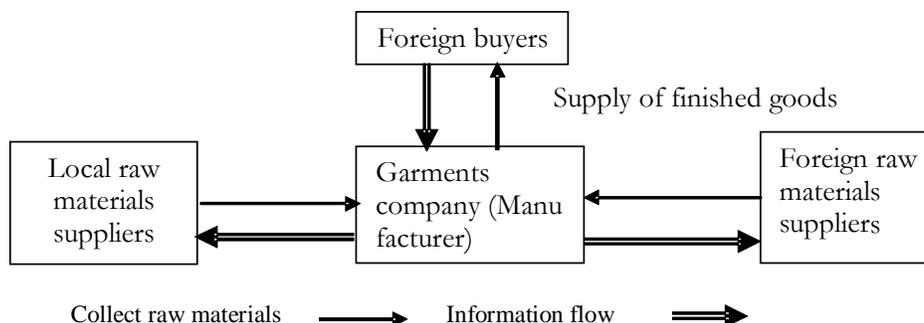
To compete successfully in the fiercely competitive post-MFA global free trade market, the manufacturers must be adequately equipped with the latest knowledge of scientific management in minimizing lead time and other management deficiencies (Nuruzzaman, 2007). We have to give all out support to this sector and have to build up the backward linkage industry to reduce the dependence on imported raw materials and to minimize lead-time. Therefore, we need to find out some alternative supply mechanism to minimize lead-time. Here in this study steps also will be taken to focus on the lead-time management by presenting some successful and unsuccessful operations in the lead-time management process. The purpose of the present study is about analysing the existing situation specially the lead-time management in the RMG sector of Bangladesh.

Theoretical Concepts

RMG Business Structure

Readymade garment is a labour intensive industry and relatively simple technology compared to other high-tech industries. The RMG manufacturing units are like 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).

Figure 1: Business Structure of Bangladeshi RMG Industries

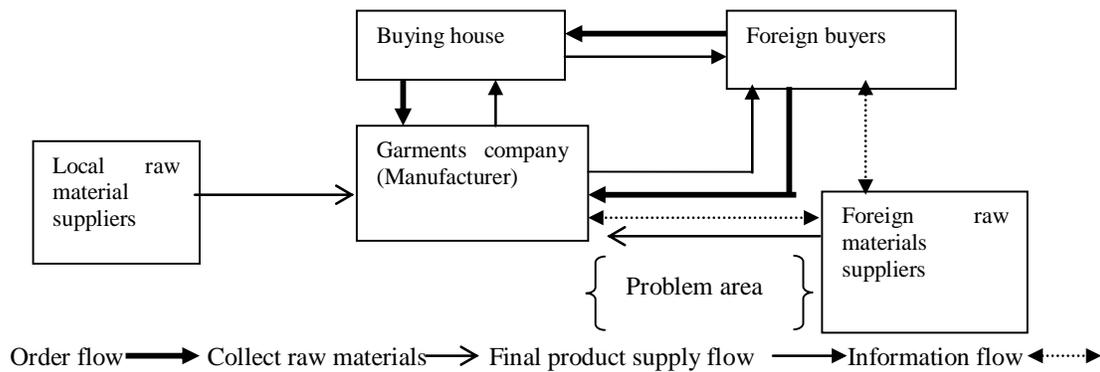


Source: Nuruzzaman, 2007

In the RMG sector, the Manufacturer - Raw materials Supplier relationship is different. In this industry the main raw materials are fabrics (Cloths) and few accessories are like button, collar etc. About 80% of the suppliers of accessories are local and accessories suppliers are not responsible to increase lead time. The lead time is getting higher due to import of fabrics mainly from China, Indonesia and India. 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 visualised in fig.-2 below.

Figure 2: Business structure and raw materials collection process



Source: Nuruzzaman, 2007

Lead Time Theory

Today's customers around the globe demand product as they want it, when they want it, and at the best possible price. In today's highly competitive global marketplace they are placing greater value on quality and delivery time. Manufacturers similarly have begun to place more value on quality and delivery time and companies are trying to gain a competitive edge and improve profitability through cutting cost, increasing quality and improving delivery. However it is safe to say that the more competitive the industry, the more shortened lead times will help. In competitive industries, short lead time will differentiate a company from its competitors, leading to increase sales (Charles J. Murgiano, CPIM).

Lead time is one of the main competitive factors among companies. 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. It normally 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). At present, the average lead time is 90-120 days. It is sometimes 100-130 days.

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. However, lead times can often be reduced if items are transported immediately after they are manufactured or arrive from suppliers (David Simchi et al., 2000). 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). **Information lead time** can be reduced by using very sophisticated and modern communication system while **Order lead time** can be reduced through efficient supply chain management (Simchi-Levi, David, 2000)

A researcher named Marc Smith explained lead time in two 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 specially in vehicle manufacturing company. It is also applicable to the RMG sector. In the lead time reduction process,

identifying the beginning of the process and walking through the process is very important. In the RMG 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 and 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 customer lead time. Therefore we can write that;

Customer lead time = [{Information lead time} + {Order lead time}]

Total lead time = [{Information lead time} + {(manufacturing lead time) + (shipping time for import fabrics) + (Shipping time for export final product)}]

(Note that, 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)

Objective of the study

The purpose of the present study is about analysing the present situation specially of the lead time management in the present business process of RMG export from Bangladesh. In view of the above purpose the specific objective of the study is to focus on reducing the lead time in relation to the business process and supply chain management. However the objectives of this study are; 1) To analyse the order lead time management process and 2) To develop a new business process to minimization of lead time

Research Methodology

The study is based absolutely on primary data. The primary data have been collected through free discussion and interviews with the key personnel of different company. Primary data have been collected from 50 Bangladeshi RMG units including 5 leading garment factories of Dhaka City on the basis of structured questionnaire designed in the light of the objective of the study. In this study the sample units have been selected randomly but 5 leading factories purposively. Interviews have been taken from Managing Directors, Managers and other officials of the merchandise department. Secondary data were also collected from some reports, articles, & various stuffs that were provided by the companies. Collected literature, data and information have been analyzed in line with the objectives of the study. In this study conceptually developed some model, Lead time measurement equation have been used. As a real example, business process of a sample company has been discussed with the lead time measurement equation. Qualitative research method and various statistical tools like averages, percentages, growth rate etc. have been used in this study to interpret and analyze the collected data in the descriptive way.

Findings and Analysis

The RMG industry of Bangladesh still plays the role of tailor in the garments business. The required fabrics and limited accessories till now come from abroad. The industry is heavily dependent on imports and had to spend about 55-75 days to import fabrics from abroad (Nuruzzaman, 2007). This backdrop is the main reason for long lead time.

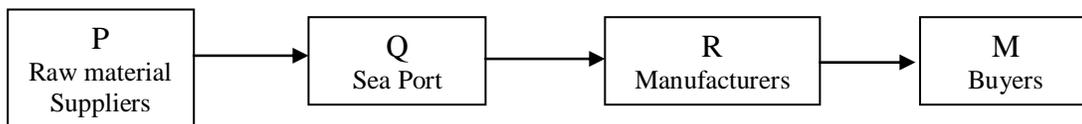
Bangladesh garment export in volume is increasing @ 15-20 percent for the last 20 years, whereas Bangladesh RMG are depending only on Chittagong port (Nuruzzaman, 2007). The facilities of Chittagong port have not increased at the same rate. The containers kept stuck up in the port and

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, 2002). 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 (M. Taheruddin, 2004). 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 50 firms including 5 leading garments units have been chosen to collect primary data. They 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 comment on import dependency as a most important cause for increased lead time. Then 91.66% i.e. 33 respondents on 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 A.K.J. Fashions limited divided the lead time into three stages as it is illustrated in fig. -3. 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 chain of Bangladeshi RMG Industries



Source: Nuruzzaman, 2007

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. From the above observation it is clear to us 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.

In the present analysis mainly the “Order lead time” (see the Lead time theory) will be considered and will be shown how can we reduce that time by an appropriate supply chain management. The manufacturers were asked a number of questions emphasizing this theme, how inefficient management in the chain can affect lead-time, and also what the consequences can be. In the interview when it was asked, all the manufacturers responded, “*order lead time is the main factor behind the lead time problem in the RMG sector. We can reduce maximum. 30 days by taking proper step in the supply chain*”. Most of the manufacturers responded that lead-time can be influenced if the buyer make contract with the raw material suppliers before giving final order to the manufacturers and if the government bodies take proper measures to increase efficiency at sea port. The Managing Director of 'Azmat Group' stated, “*We generally place order to the fabric suppliers after final contract*”.

with the buyers and count 15-20 days to make fabrics. 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 with us. As such we need not waste 15-20 days for the required fabrics."

Some manufacturers pointed out two main points responsible to increase lead time i.e. shipping time and unloading procedure at port. Some other manufacturers pointed out the poor infrastructure in railway and road transport to move their materials from port to manufacturers' factory. They all believe that order lead-time can be reduced if government authorities take proper steps to increase the efficiency of the port and develop the rail and road transport. It seems that the respondents have different but almost same opinions on this issue. A manufacturer, K.M. Fashions Ltd., expressed his opinion in a more logical way and 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." The largest RMG manufacturer 'Opex group' responded, "Lead time is generally 90-120 days for the woven garments. 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 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 RMG 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;

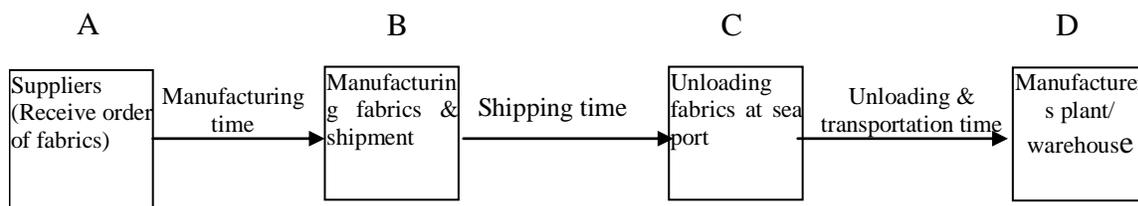
$$\text{Total lead time} = \{ \text{Information lead time} \} + \{ \text{Order lead time} \}$$

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

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

From the above equation, we can say that through the first four stages a manufacturer received fabrics from the suppliers after 60 days on average. Out of this the shipping time of 25 days is constant. There is no chance to reduce this shipping time but we can reduce the rest 35 days. There are two parties and various activities involved between suppliers and manufacturers in the supply chain. It can be seen in the fig.-4 broadly. The activities and time consumption area have been illustrated here through four boxes (A-D) or stages.

Figure 4: Lead-time and fabrics importing process



Source: Nuruzzaman, 2007

After final contract with the buyers, manufacturers first place order to the foreign fabrics supplier (A). Then the supplier manufactures fabrics (B) and send 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 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 buyers resident in Dhaka can build a stock of the required quality of fabrics in advance before making final contract with the 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 RMG products by 45-60 days regularly.

'Landmark group' is a leading garment manufacturer in the knitwear sector of Bangladesh. It states, *"we do not face lead time problem for our RMG products. We generally take 45-60 days to export our product because we need not to spend any time to import raw materials. We procure all knit fabrics and accessories from the local market."*

Therefore in conclusion we can say that by efficient supply chain management we can reduce 29% of total lead time. But to survive in the competition we have to reduce lead time by minimum 50% and we can reduce 55-60% of total lead time by avoiding import and abolishing import dependency attitude.

Analysis the lead time management of a model Company (Sharmin Group)

The company's some successful and unsuccessful business process with different buyers have been analysed here to have a clear idea about the way to minimisation of lead time. Generally, after getting final order, the company collects fabrics as per buyers' direction from the foreign suppliers. After collection of fabrics they prepare sample as per design. Then after approval of the sample the company goes for mass production and shipment to the buyers. To complete the whole process the company generally takes about 90-120 days but sometimes for some buyers it takes about 110-140 days. There are also some buyers who complete the whole process by only 50-60 days. The company takes 45-50 days in all to approve the sample and finish the production following the sample approval process. We can see the sample approval flow chart in the fig.-1 of Appendix-1. Some buyers like BMB Apparels follows this sample approval flow chart, but most of the buyers even follow shorter processes.

The interview was taken very closely with the Managing Director of Sharmin Group. At the time of interview he was found scared for the possible awful situation in the post MFA period. He stated, *"we have all but just for want of fabrics we are going to face stiff competition"*. What he said about the business operations of the company could be summerised as follows. After getting the final order, the company communicates with the suppliers through e-mail and over telephone. For this task the company spend few days. Mr. Hossain said that they were not worried about the information lead time. They generally take 5-7 days for this process. He said, *"In the garment business suppliers are not permanent, we had to communicate with one or more suppliers for fabrics in time after getting final order. A good numbers of accessories are procured from the local market. So e-mail and telephonic communication are sufficient for the RMG companies."*

At the time of interview it was gathered that the company was facing problem mainly in the supply chain i.e. order lead time for importing fabrics. The company, Sharmin group also faces problem in the sample approval process. In the supply chain the company had to spend 45 days on an

average which is not negligible. Again, the sample approval process is also cumbersome. It takes enough time and thus contributes to increase lead time problem. Mr. Hossain expressed that the company could reduce a certain portion of lead time by taking some appropriate measures but 60% of lead time can be reduced by avoiding import dependency and by considering alternative source of fabrics supply.

In Fig.-2 of appendix-1 the estimated time can be seen at different stages of the manufacturing process of Sharmin group. The estimated time was shown according to the information delivered by the Managing Director of Sharmin Group. Most of the buyers follow in this process to purchase garments from this company. At the time of our discussion on the present situation of the RMG business, Managing Director of this company told us that he was afraid for the post MFA period. The company was certainly going to lose its business due to long lead time in the post MFA period. He urged that immediately we should take some proper measures to reduce lead time. At the time of interview it has been informed that the company was doing business successfully with a European company where lead time was in between 45 to 60 days. It is the competitive lead time in the RMG sector of Bangladesh.

In the figure-2 of Appendix-1 total business process of Sharmin group has been visualised through A-F stages. From this figure we can get clear information about the estimated time in six different stages like, A-B, B-C, C-D, D-E, E-F and from F to Buyers. The total lead time in this process for Sharmin group is 120-140. There is a buyer named 'BMB Apparels' doing business with Sharmin. It strictly follows 100% of the sample approval flow chart & the RMG business process like the figure-1&2 (see appendix-1). Therefore its average lead time is 130 days. But the other buyers like JC Penny, American Eagle do not maintain the sample approval flow chart of fig.-1(Appendix-1). They approve sample in a normal procedure and spend 5-10 days for approval. In this case they take help from local office or local agent. Therefore their average lead time is in between 90-120 days.

At present the company is doing business successfully with "Corona" maintaining a minimum lead time. In this regard Mr. Hossain urged, *"we have to consider this success story with the buyer like Corona and find ways and means to deliver garments product to the buyer by 45-60 days"*. When asked for the reasons for the success in the business to the Managing Director, opined his success is mainly due to the procurement of fabrics from the local market. The buyer Corona at first makes their fabrics ready then contact with the manufacturer for order placement. The buyer takes just one or two days for sample approval. As a result the company is able to cut down the lead time by about 60-70 days. According to the figure-2 (Appendix-1), the average information lead time is 6 days and the average order lead time is 129 days for the Sharmin group. So reduction of order lead time is the crux of lead time problem. Out of 129 days, in the supply chain, total average lead time is 52 days. By taking some proper measures like making fabrics available in advance, developing inland transportation system, improving management efficiency at port etc., it is possible to reduce about 23 days in B, C, D and E stages of supply chain. In the supply chain the rest of the time is for shipment. The company can cut down this time only by avoiding import. It is also possible to reduce 30 days in sample approval process by adopting normal sample approval process performed by other buyers or by encouraging the buyers to open a local office in Bangladesh. Considering the equation of lead time and putting value in that equation three types of buyer of this company can be analysed. First time we are considering BMB apparels from UK. We know that;

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

$$\begin{aligned} \text{Or,} &= \{ \{ \text{Information lead time} \} + \{ (\text{fabrics manufacturing time}) + (\text{fabrics shipment time}) + (\text{unloading and transportation time}) + (\text{sample approval and production time of garments product}) + (\text{shipment time for export of final products}) \} \} \\ &= \{ \{ 6 \} + \{ (11) + (24) + (12) + (35+12) + (30) \} \} \end{aligned}$$

So, total average lead time = 130 days

In this study for the BMB 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.

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 unusual. So here sample approval process is the main reason for increasing lead time.

Secondly, the buyer JC Penny from USA has been considered. For this buyer,

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

$$\begin{aligned} \text{Or,} &= [\{\text{Information lead time}\} + \{\text{(time to manufacturing fabrics)} + \{\text{(time to shipment of fabrics)} + \{\text{(time to unloading fabrics and customs formalities at port)} + \{\text{(time to take fabrics from port to manufacturing point)} + \{\text{(time to sample approval and production of final product)} + \{\text{shipment time to export of final products}\}\}\}\}] \\ &= [\{6\} + \{\underline{(12)} + \underline{(25)} + \underline{(14)} + \underline{(6)} + (23) + (30)\}] \end{aligned}$$

So, total average lead time = 116 days

Now from the above calculation it is clear 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 is spent for sample approval. It is a normal process. So in the above calculations it has been observed that the four values as underlined above are the principal reasons for the increase of lead time.

Thirdly has been considered the buyer of 'Corona' from Italy. For this buyer,

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

$$\begin{aligned} \text{Or,} &= [\{\text{Information lead time}\} + \{\text{(time to sample approval and production of final product)} + \{\text{(shipment time to export of final products)}\}\}] \\ &= [\{1\} + (17) + (30)\}] \end{aligned}$$

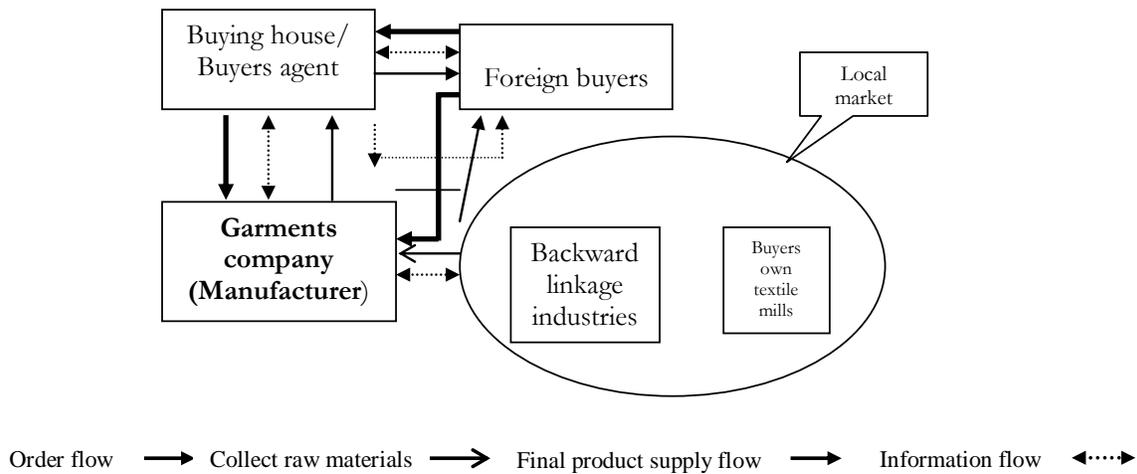
So, total average lead time = 48 days.

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 RMG company does not face any manufacturing lead time, transportation related problem and unloading related problem at port. Therefore the manufacturer does not have any problem in the supply chain. We know time required for the last two stages are common to all manufacturers. So there is no scope to reduce this time. Here buyer (Corona) communicates with the prospective manufacturer over telephone and takes the sample to the manufacturer physically and approves the sample within two/three days. For that reason information lead time and sample approval time are 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 Sharmin group could avoid import and collect fabrics from the local market, the lead time would be between 45-60 days. It will be more competitive if the buyer would open a local office in Dhaka. This will minimise 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. Considering all the above analyses a new model of RMG business process has been proposed in fig.-7, which is expected to be helpful in reducing lead time.

Figure 7: Proposed business process for RMG Industries in Bangladesh



Conclusion

The RMG sector of Bangladesh has entered in the quota free market after 2005. From that time this sector is in a very disadvantageous situation due to long lead time which has negative impact on export growth. Through analysis of empirical data it has been found that 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 industry and for this reason a total additional 55-75 days are spent in the import process of fabrics by RMG sector of Bangladesh. As a result this sector is facing long lead time which is 90 to 130 days on the average.

From the analysis it is clear that the impact of information lead time is very negligible on total lead time. It contributes only 6%. However, order lead-time has a great role to increase the lead time. By the analysis it was found that fabrics manufacturing time, shipping time, unloading time and transportation time are included in the order lead time. In conclusion considering the above analysis it has been found that import dependency is contributing 50% or more in the problem of long lead time and it is the main factor for the problem of long lead time in the RMG sector. Sample approval is another factor contributing for long lead time. The buyer from Italy for 'Corona' brand taking 48 days to complete all the process. It is the standard lead time to compete with the other manufacturer and exporter of the world. It becomes possible only for avoiding import of fabrics. For the buyer of Corona, manufacturer collects fabrics from the local market from their own textile. So, reduction of lead time is possible when the RMG sector ensure the availability of fabrics from the local market by developing backward linkage industry specially in the oven sector and by establishing textile mills by the buyer for their own consumption.

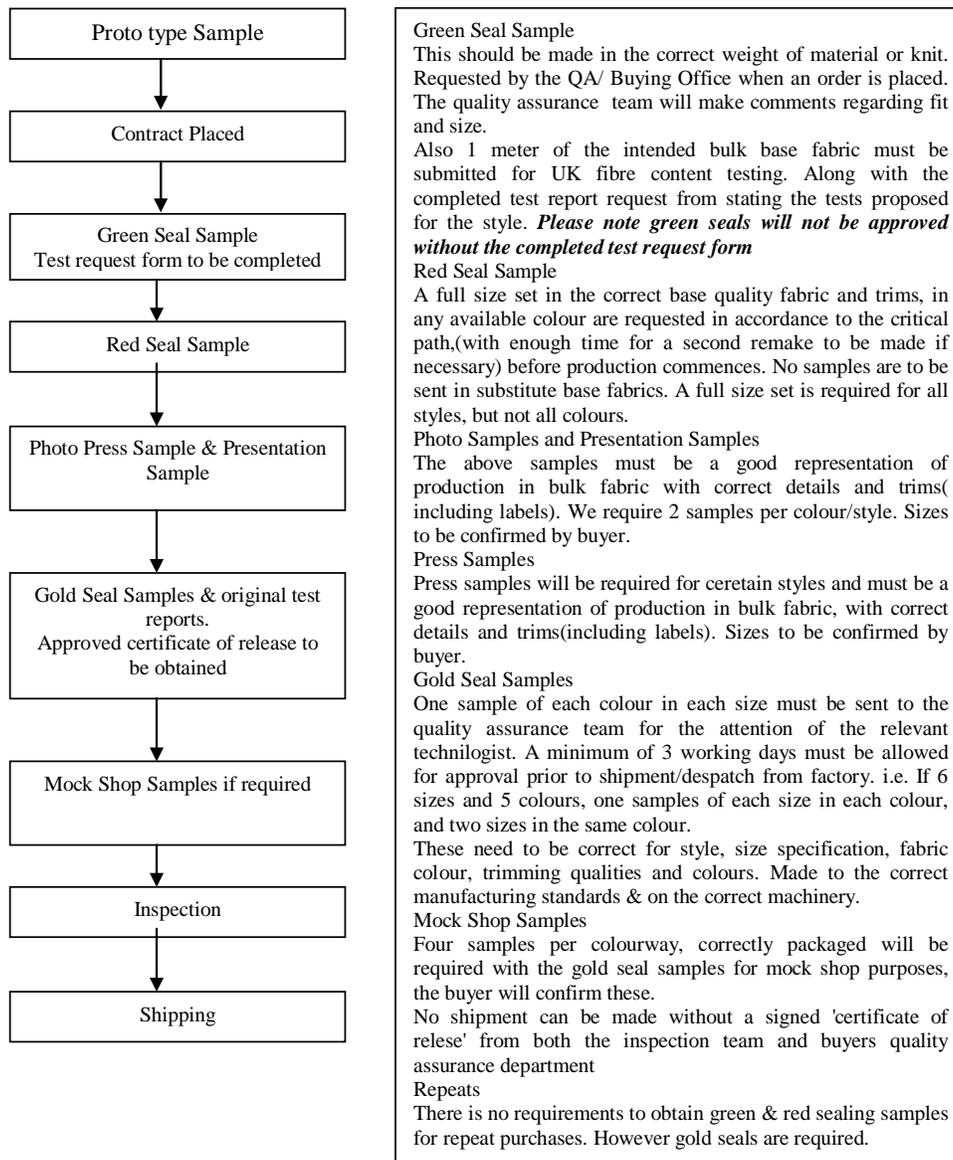
References

- [1] Azad, R. (2004), "Readymade Garment Industry in Bangladesh: Competitiveness and sustainability", unpublished Ph.D. thesis, Dept. of Marketing, R.U., Bangladesh.
- [2] BGMEA research cell, BGMEA, BTMC Bhaban, 7-9, Kawranbazar, Dhaka.
- [3] Charles J. Murgiano, CPIM, " Short lead time= Tall profit", Wellesley: Waterloo Manufacturing Software, Advanced Planning and Scheduling Technology Paper, <http://www.waterloosoftware.com/leadtime.html>, Retrieve; December 10,2007.
- [4] Cooke and Morgan (1998), *The Association Economy*, England; Oxford University Press.
- [5] Gothenburg University website (2005), <http://elsmar.com/Lead Time/tsld006.htm>, Retrieved on September, 2005.
- [6] Khan, Shahiduzzaman (2007), "Apparel Industry faces daunting tasks ahead", Editorial report, Financial Express, September 9, 2007.
- [7] Kutubuddin Ahmed (2002), "Impact of MFA phase out on the apparel industry of Bangladesh and remedial measures fir its survival", Bangladesh Apparel and Textile Exposition souvenir, Dhaka, Bangladesh.
- [8] Li, J.Q., Shaw, M.J. and Tan, G.W., (2000)" Evaluating Information Sharing in Two-level supply chain", *Management Science*, 1999.
- [9] M. Taheruddin (2004), "*Problems and prospects of Garment Industry*", The Daily Ittefaq, Wednesday, 23rd June, Dhaka, Bangladesh, P- 10
- [10] Munir Quddus, Salim Rashid (2000), "*Entrepreneurs and Economic development- The Remarkable Story of Garment Exports from Bangladesh*", The University Press Limited, Dhaka, Bangladesh, P (23-80).
- [11] Nuruzzaman, Md. (2008), "Lead time reduction and the application of Process Management- A study on selected RMG units in Bangladesh", *Journal of Business Research*, Vol.10, June 2008, P-63
- [12] Nuruzzaman Md. (2007), "Developing Export of RMG products in Bangladesh: Analysing the lead time", *Management Trends*, Vol.4, No.1, P- 1
- [13] Nuruzzaman, Md. (2005), " Development of Readymade Garment Business (RMG) in the process of Lead Time reduction- A study on Bangladeshi Readymade Garment Sector", Draft Master Thesis, GBS, Gothenburg University, Sweden
- [14] Schary, Philip B. (2000), "Managing the global supply chain", Indian edition, Viva books private limited, Delhi.
- [15] Simchi-Levi, David, Kaminsky, Philip.and Simchi-Levi, Edith (2000), "Designing and Managing the supply chain", McGraw-Hill international edition, Singapore.

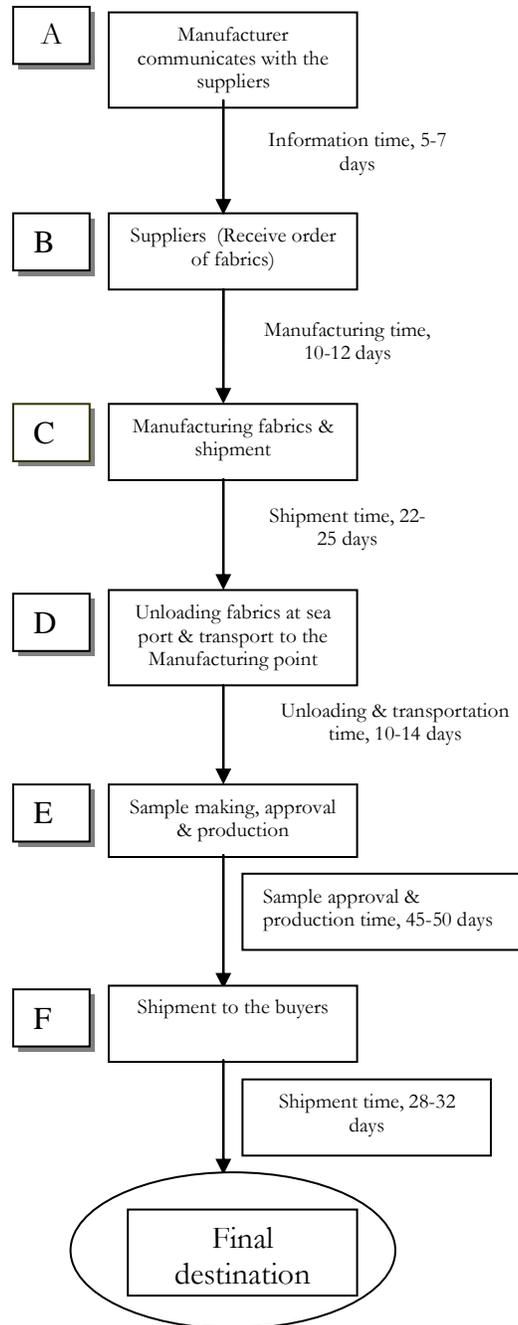
Internet source:
http://elsmar.com/Lead_Time/tsld006.htm
 Retrieved on July 2004.

Appendix-1

Figure 1: Sample Approval Flow Chart



Source: constructed for this study based on interview

Figure: 2

Source: Constructed for this study Based on Interview