Is Bangladeshi RMG Sector Fit in the Global Apparel Business? Analyses the Supply Chain Management

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In recent years, supply chain management (SCM) has been developed as essential management philosophy and practice for all business operations. As with other business management principles, SCM also applies to the textile and apparel industries. All the parties or members should cooperate with its downstream customers and upstream suppliers to achieve supply chain goal. This paper was designed as an exploratory study to investigate SCM practice and to create competitive advantages in textile and garments (apparel) industries through efficient supply chain management from the perspective of business processes. Current conditions of SCM practice in textile and garments industries in Bangladesh were revealed after questionnaire survey. In this study an attempt has been taken to develop a more effective supply chain for Bangladeshi RMG to enjoy competitive advantage in the global apparel business through analyzing the current supply chain and investigating the relationship among the players in the supply chain .In the conclusion recommendation has been made to exclude a party from the current SCM.

Keywords*: supply chain management, competitive advantage, operations*

Introduction

Starting in the late seventies, the garment sector of Bangladesh (BD) came into prominence in the middle of the eighties (International Business & Technical Consultants, Inc. 2000) It has been observed that in spite of presence of so many internal constraints (Nuruzzaman, 2001; Nuruzzaman, 2007; Siddiqi, 2007) this sector developed surprisingly from the 1985 due to some special external factors like MFA, GSP and Quota facilities etc. (Kabir, 2007; Ahmed, 2004; Karim, 2003; Rahman, 2007).

However, the first challenge came in 1984, when US imposed quotas and later European countries (Siddiqi, 2007; Rahman and Anwar, 2006; Rashi, 2006). The Multi-Fiber arrangement (MFA) and global quotas on trade in textile and apparel under the World Trade Organization (WTO) has ended on 31st December, 2004 (USAID, 2005; Nuruzzaman, 2008). So the second challenges came in the apparel sector in 1st

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January 2005 (Kabir, 2007) when all the member country of WTO including BD entered in the quota free market. With the phasing out of MFA, developing countries like BD would no more be provided any special trade concession. The US, Canada and EU members' states could import any amount from any member states (Nuruzzaman, 2008). Besides rapid and massive economic integration in the western world, different types of trade block, region, rim etc has appeared as another concern to the RMG sector of BD (DCCI report, 2003; Rashid, 2006). Therefore the apparel exporting countries like BD are in the crossroad.

In recent years some reputed organizations purchased products, move and sell goods and services on a global basis in order to meet customers' needs on a timely basis, with relevant and high quality products produced and delivered in a cost effective manner. To achieve this goal, the concept of supply chain management has proven to be of vital importance especially for the Bangladeshi textile and garment industries. It was the traditional view of all companies that they will exist as a single and complete unit and compete against each other in order to survive. However, such mindset cannot be sustained as no companies or organization can operate alone in complete independence. It is true for all firms that they can no longer compete effectively in isolation of their suppliers or other entities in the supply chain and are realizing the benefits of collaborative relationships within and beyond their own organization (Lam et al., 2006 and Cox et al., 1995). Through managing supply chain the ultimate objective is to deliver products to market with variety, responsiveness, timeliness and efficiency. Corporate strategy must include organizing, coordinating and executing the process of product flow as a competitive necessity and as a source of potential competitive advantage.

Literature Review

In the apparel sector, all the Bangladeshi garment companies are subcontractor and producing at the low end of the market. Basically they are performing cutting, making and trimming (CMT) activities (Kabir, 2007; Siddiqi, 2007; Rashid, 2006; Abdullah and Yusuf, 2008) The RMG industry is highly dependent on imported raw materials. About 90% of woven fabrics and 60% of knit fabrics are imported to make garments for export (Rashid, 2006; Rahman and Anwar, 2006). That's why this sector needs to maintain a long supply chain (backward and forward). Besides rudimentary application of ICT and inefficient port management limits its ability to respond quickly to market change, which is very essential in the fashion market (Abdullah, 2008). Therefore this industry takes maximum lead time to process an order (Hege, 2004; Nuruzzaman, 2008; Kabir, 2007; Siddiqi, 2007). In BD the lead time for apparel export varies between 90-120 days, whereas the time for Sri Lanka is about 19-45 days, China 40-50 days and for India 50-70 days for similar products (Rahman and Anwar, 2006; Kabir, 2007).

Supply Chain Management (SCM) is a complicated field in all industry today. Many companies are implementing SCM in an effort to increase competitiveness, profit and customer satisfaction. At present it is expecting as an effective management in the apparel (Readymade garment) sector to reduce lead time (Bertolini, et al., 2007; Cao, et al., 2004; Brito, et al., 2008; Bruce, 2004; 2004; Lam, 2006). Supply chain management spans all movement and storage of raw materials, work-in-process inventory, and finished goods from point-of-origin to point-of-consumption. The apparel sector can be seen as a supply chain consisting of a number of discrete activities. Increasingly the supply chain from sourcing of raw materials via design and

production to distribution and marketing is being organized as an integrated production network (Hildegunn, 2004; Lee and Ng, 1997; Stock et al., 1998). SCM is concerned with the effectiveness of dealing with final customer demand by the parties engaged in the provision of the product as a whole (Cooper et al., 1997)

The structure of Bangladeshi readymade garment industry is totally different. Therefore the SCM in the CMT based industry is not like the other competitive countries. However there are many studies regarding RMG. But these are very in general, basically about the growth and development (Rafiq, 2004; Quddus, 2002; Rahman and Anwar, 2006; Rashid, 2006; Bhattacharya, 2003). Many studies have been conducted about the strategies in the post MFA period (Hildegunn, 2004; Kabir, 2007; Karim, 2003; Ahmed, 2004; D'Souza Errol, 2004). Several authors have studied about various aspects of SCM in the textile and apparel industry. Sunhilde (2008) expressed in his article the concept of SCM and need of SCM in the apparel industry. Hege (2004) expressed that more linkages between the local textile industry and the export oriented garment industry in the buyer driven network based countries that would increase value added and improve net export earnings. In a paper Oxborrow (2000) described the apparel supply chain in the domestic market of UK between the local manufacturer/supplier and the retailer. Here he mentioned about lean retailing system and emphasis has been given on value addition service and IT capacity basically the EDI technology to reduce the lead time. Hossain (2005) did another research where he stated about the value generating activities in the supply chain and how these activities help to create value. In his study he also mentioned about the backward-forward linkages, establishing a central bonded warehouse (CBW) and close relationship with the suppliers. Lam and

Postle (2006) described about apparel SCM in Hong Kong. The author mentioned here different supply chain strategy for different product (functional and innovative).

Including the above there are many studies concerning SCM have been conducted (Bruch, 2004; Brito, et al., 2008; Cao, et al., 2004) But to the best of my knowledge there is no in-depth study about SCM for Bangladeshi apparel sector and no study with indications how efficiently we can minimize the lead time using effective supply chain. That is why the main purpose of my research is: How the RMG industries of Bangladeshi apparel sector will increase their competencies by ensuring the minimum lead time through developing effective SCM?

In view of the above overall purpose the following are the specific objectives of this study:

i) To analyze the SCM in the textile and apparel sector and assess the current SCM in terms of total lead time in the RMG sector.

ii) To explore the backward and forward linkages and integrated relationship among the supply chain parties and

iii) To explore the potentials of SCM and to build an new effective supply chain for CMT based Bangladeshi RMG sector for minimizing lead time in the face of new global apparel business environment.

Methodology

In this research 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

in order to obtain the influential variables and to get a clear perspective of SCM and lead time management in the garment sector. This research is mostly primary data based. In the unrestricted probability sampling design, more commonly known stratified random sampling, where every element in the population of every stratum (large, medium, and small) has a known and equal chance of being selected as a subject. Therefore through stratified random sampling 50(fifty) number of garment manufacturers have been selected where 18 number of large, 25 number of medium and nine number of small RMG units. Dhaka City has been selected as the study area through judgment sampling. Only one category of respondent i.e. Managing Directors of selected garment units have been considered for interviews and for some special cases interviews have been taken from the managers of the merchandise department. A structured questionnaire (see Appendix 2) including some close ended and open-ended questions have been designed on the basis of objective and used purposively for collecting primary information from those garments units. Moreover some primary data have been collected from the top executives of Garment Manufacturers and Exporters Associations (BGMEA) through open discussion. Secondary data have also been collected from different journals, publications and reports. Some statistical tools like averages, percentages, growth rate and a conceptually developed supply chain model have been used in this study to interpret and analyse the collected data in the descriptive way.

Result and Discussion

Analysis the SCM and Its Implication in Textile and RMG sector

Managing the supply chain is vital for international business and increase export. The strategic requirements of international business determine the extent, characteristics and strategic direction of the supply chain. Some businesses are only involved with international operations to secure a supply of materials and components; marketing is domestic. Other businesses manufacture and export from a home base and procure materials overseas. In Bangladesh readymade garment business are like the second type of business in the global garments market. Global corporations take advantage of low-cost production and coordinate product movement between stages of production and distribution to multiple markets by effective supply chain and dominate many product markets around the world.

Generally SCM is extremely complex. In the RMG sector the SCM is more complex due to characteristics of global supply chain. In the global supply chain, crossing borders presents supply with a variety of general barriers to international business: tariffs, nontariffs barriers, exchange rates and differences in product requirements, consumer tastes and business practices. Borders also present some obstacles in transportation services, which are very common for RMG sector in Bangladesh. Manufacturers, suppliers, and buyers all stages of supply chain in the RMG sector are decentralized. Different stages of supply chain have conflicting goals and objectives. Carefully using the available information and integration of supply chain can reduce the cost of conflicting goals and objectives. Using information technology, information enables us to integrate the various stages of supply chain in the RMG sector. Therefore an integrated global supply chain is needed in the Bangladeshi RMG sector to reduce lead time.

With the emergence of the personal computer, optical fibre networks, the explosion of the Internet and the World
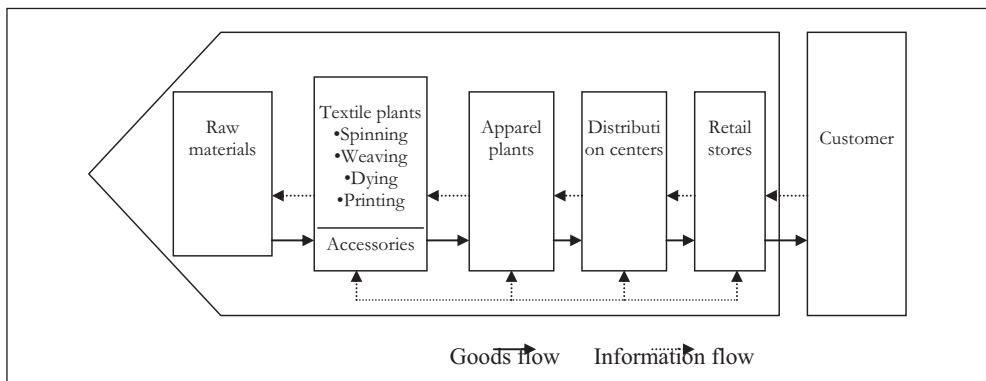
Wide Web, the cost and availability of information resources allows easy linkages and eliminates information-related time delays in any supply chain network. It is important to have close relationship within the parties in supply chain and it is easier now with the information technology. If the information can be delivered faster it will result in reduced lead time between the parties.

SCM evolved quickly in the 1990s with the advent of rapid response initiatives in textile and grocery industries, and was refined by large retailer Wal-Mart who used point-of-sale data to enable continuous replenishment. Supply chain is a term "now commonly used internationally – to encompass every effort involved in producing and delivering a final product or service, from the supplier's supplier to the customer's customer" (Feller et al., 2006). The definition of SCM is deceptively simple; Ellram (1991) describes it as the integration of planning and control of materials and product flow from suppliers to customers i.e. the ultimate consumers. It is a network of firms, suppliers, processors, service organizations and intermediaries coordinated as a single entity to deliver finished products to the final user. A supply chain for Textile and clothing industry has been shown in figure 1.

In that figure supply chain encompasses all activities associated with the flow and transformation of goods from the raw materials stage through to the end user, as well as the associated information flows. In the clothing sector the supply chain from sourcing of raw materials via design and production to distribution and marketing is being organized as an integrated production and supply network. Here the direction of the arrows indicates a demand-pull-driven system. The information flow starts with the customer and forms the basis of what is being produced and when. It is also worth noticing that information flows directly from the retailers to the textile plants in many cases.

However various definitions of a supply chain have been offered in recent years as the concept has gained popularity. The APIC dictionary (Cox et al., 1995) describes the supply chain as: The process from the initial raw materials to the ultimate consumption of the finished product linking across suppliers-user companies; and the functions within and outside a company that enable the value chain to make products and provide services to the customers. Supply Chain a term increasingly used by logistics professionals- encompasses every effort involved in producing and delivering a final product, from the supplier's supplier to the

Figure 1. Supply Chain in Clothing and Textile Sector

Source: WTO publication, Nuruzzaman (2007)

customer's customer. Four basic processes-plan, source, make, deliver-broadly define these efforts, which include managing supply and demand, sourcing raw materials and parts, manufacturing and assembly, warehousing and inventory tracking, order entry and order management, distribution across all channels and delivery to the customers (Lam and Postle, 2006). At Michigan State University,' the Supply Chain Management Program integrates topics from manufacturing operations, purchasing, transportation, and physical distribution into a unified program" (www.bus.msu.edu, 2000).
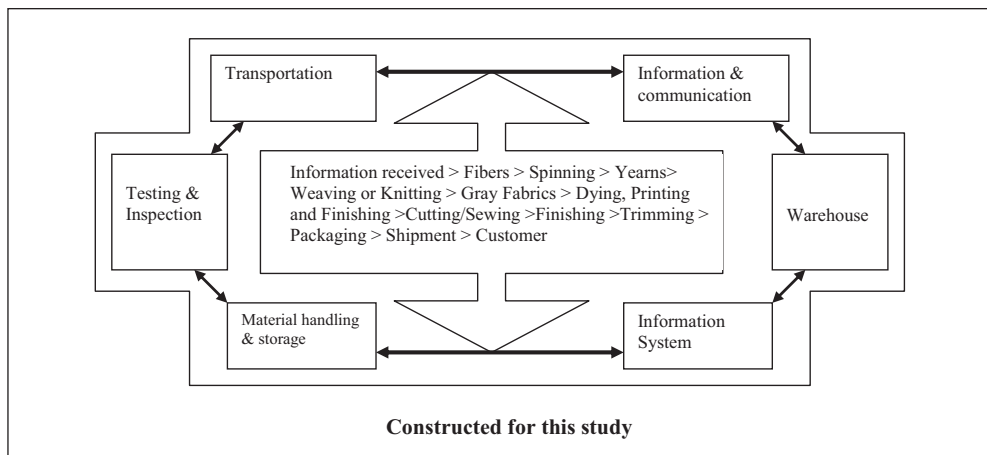
In 1998, the Global Supply Chain Forum (GSCF) defined supply chain management as "the integration of key business processes from end user through original suppliers that provides products, services, and information that add value for customers and other stakeholders" (Lambert et al., 1998) thereby adding the notion that supply chain processes must "add value" and blurring the distinction between a supply chain and a value chain.

In Competitive Advantage (1985), Porter introduced the concept of the value chain. Like the supply chain definition, the value chain definition includes: inbound logistics, operations, and outbound logistics.

Value chain is chain of activities by which a company brings in materials, creates a good or service, markets it, and provides service after a sale is made. Each step creates more value for the consumer (Zikmund and Amico, 2001) The value chain extends the definition to include marketing & sales and service. If we look into the value chain of the RMG sector we will see lot of insight (see Figure 2). It is important to note that value chain activities are not isolated from one another. Linkages exist not only between the primary activities but also between the primary and support activities. When these linkaged activities are preformed one after another maintaining a chain and managed these from a supplier to a customer then it is supply chain management (SCM).

Both chains overlay the same network of companies. Both are made up of companies that interact to provide goods and services. When we talk about supply chains, however, we usually talk about a downstream flow of goods and supplies from the source to the customer. Value flows the other way. The customer is the source of value, and value flows from the customer, in the form of demand, to the supplier. That flow of demand, sometimes referred to as a "demand chain" (Walters and Rainbird, 2004), is manifested in the flows of orders

Figure 2. Value Chain Activities

Constructed for this study

and cash that parallel the flow of value, and flow in the opposite direction to the flow of supply. Thus, the primary difference between a supply chain and a value chain is a fundamental shift in focus from the supply base to the customer. Supply chains focus upstream on integrating supplier and producer processes, improving efficiency and reducing waste, while value chains focus downstream, on creating value in the eyes of the customer. This distinction is often lost in the language used in the business and research literature (Feller, et al., 2006).

A firm developing backward or forward linkage can ensure smooth and uninterrupted flow of materials (raw and finished) through the supply chain. Depending on one's competitive advantage a firm may specialize in one or more value chain activities and outsource the rest. RMG factories in Bangladesh sometimes do outsourcing raw materials. They also outsource final goods through sub-contracting when they have huge order and deadline to meet (Hossain, 2005). Organizations may expect to achieve many different benefits through successful outsourcing, although there are significant risks that may be realized if outsourcing is not successful. In the supply chain management outsourcing is very important factor and in this regard outsourcing decision framework (In Appendix 1) is very helpful to decide about outsourcing.

Considering the above definitions, a summary definition of the supply chain in the textile and garments sector can be stated as; All the activities involved in delivering a product from raw material through to the customer including sourcing raw materials and parts, manufacturing and assembly, warehousing and inventory tracking, order entry and order management, distribution across all channels, delivery to the customer and the information systems necessary to monitor all of these activities. SCM coordinates and integrates all of these

activities into a seamless process. It links all of the partners in the chain including departments within an organization and external partners including suppliers, carriers, third party companies and information systems providers.

The Need of SCM in the Textile and RMG Sector

A supply chain is the system of organizations, people, technology, activities, information and resources involved in moving a product or service from supplier to customer. Supply chain activities transform natural resources, raw materials and components into a finished product that is delivered to the end customer. There is often confusion over the terms supply chain and logistics. Supply chain management spans all movement and storage of raw materials, work-in-process inventory, and finished goods from point-of-origin to point-of-consumption. It integrates supply and demand management within and across companies is enabled through efficient communication, ensuring that orders are placed with the appropriate amount of time available to be filled. Logistics is enhanced, keeping the cost of transporting materials as low as possible consistent with safe and reliable delivery (Sunhilde, 2008) Supply chain management is the term used to describe the management of the flow of materials, information, and funds across the entire supply chain, from suppliers to component producers to final assemblers (or manufacturers) to distribution (wholesalers, warehouses and retailers), and ultimately to the consumer (Johnson and Pyke, 2000).

There are several reasons behind the increased interest in the management of supply chains after the 1990s. Firstly, companies have been moving away from vertical integration, and moving towards specialization, thus having the need to deal with, and rely on, more outside sources.

In order to reduce production costs, most clothing firms have already outsourced production of their goods to low-cost countries, and subcontractor companies have taken on some production steps. Thus the structure of clothing supply chains has become even more complex. Not only foreign manufacturing companies, but also a number of different service companies (logistics service providers, textile finishing companies, etc.) are today involved in the clothing supply chains. Different production and delivery activities have to be synchronized and streamlined in highly dynamic supply networks. Any efforts to improve operations and supply chain performance are likely to be inconsequential without the cooperation of other firms. As a result, more companies are putting an emphasis on relationship management. A poor relationship within any link of the supply chain can have disastrous consequences for all other supply chain members. To avoid such problems, firms must manage the relationships with their upstream suppliers as well as their downstream customers (Bozarth, 2007).

Secondly, increased competition, both nationally and internationally, has resulted in customers having more choices, so it is imperative that a firm is able to deliver high customer service at low costs. The rate of change in markets, products, and technology is increasing, leading to situations where managers must make decisions on shorter notice, with less information, and with higher penalty costs. New competitors are entering into markets that have traditionally been dominated by "domestic" firms. At the same time, customers are demanding quicker delivery, state-of-the-art technology, and products & services better suited to their individual needs. In the fashion industry, for example, product life cycles are shrinking from years to a matter of two or three months (Sunhilde, 2008).
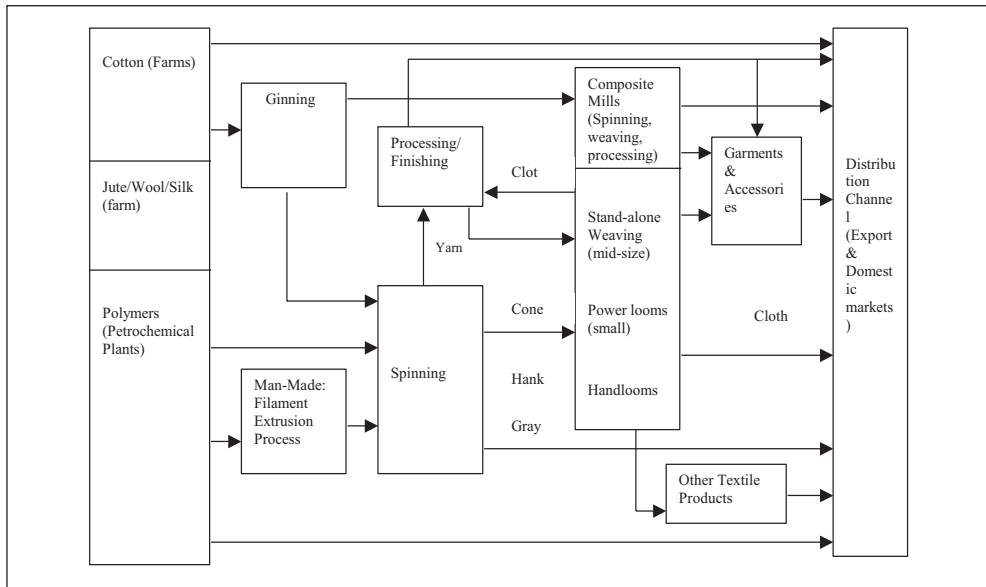
In textile industry, demand changes rapidly due to fashion trends and a volatile market situation. This demand is unpredictable and could vary and change completely in a short time creating high difficulties for supply chain. To remain competitive, lean and agile supply chain is very effective in this situation for the textile and apparels industry. In the era of globalization, where point of manufacturing and point of consumption are different, supply chain poses serious challenge to the textile and apparel industry, some of which are:
- Minimize forecasting error keeping in mind the ever changing consumer taste and quantities ordered
- Flexible supply chain supporting continuous adjustment of product orders
- Transportation system supplying goods no sooner and later than it is needed
- Frequent shipment in small batches as an ongoing replenishment
- Reducing manufacturing and delivery lead times

Due to MFA agreement many third world countries started to supply textile and RMG products. The third world countries are now competitor for the large western market share and are likely to change the already existing dynamics in the textile and apparel industry in a big way. Supply chain of this sector, therefore has to be flexible and accommodating in order for the firms to remain competition (www.aquamcg.com).

Supply chain management is seen as a critical factor in managing contemporary readymade garment business. Traditional Supply chains view flow of goods from upstream raw material suppliers through manufacturing processes and on to the customers. In the apparel and textile supply chains, one might expect to start with raw materials such as cotton, polyester and wool that are then woven into fabric, dying and passed into apparel manufacturers. The apparel manufacturer will cut the cloth,

Figure 3. The Textile and Apparel Supply Chain in India

Source: Pankaj Chandra (2005)

make it up and trim to a specific design template finishing and delivering to a retail customer, who sells the item on until it reaches its final destination - the customer.

According to the assessment of Pankaj (2005) in India, the Textile and Apparel Supply Chain comprises diverse raw material sectors, ginning facilities, spinning and extrusion processes, processing sector, weaving and knitting factories and garment (and other stitched and non-stitched) manufacturing that supply an extensive distribution channel (see Figure 3). This supply chain is perhaps one of the most diverse in terms of the raw materials used, technologies deployed and products produced.

The traditional supply chain includes purchasing, supply, distribution (logistics), operation management and marketing. In contrast, the modern supply chain concept begins and ends with the customer. The contemporary chain is viewed from marketing perspective and as being demand driven by customers. Traditional perspectives focus upon operations, tactical initiatives and emphasize cost reduction as a major goal. Contemporary views of supply chain management view it as being strategic in nature with long term implications and advantages in terms of differentiation and not simply cost alone. Modern supply chains are described also as value creation mechanisms for customers. They are not simply ''supply'' focused, nor are they necessarily ''chains''. Supply chains are dynamic, efficient, effective response networks delivering customer requirements flexibly and on time. These high performance networks consist of customers, suppliers and information traveling through organizational "arterial systems" (www.shvoong.com).

Current Global Supply Chain in RMG Business and Lead Time Management:

In global supply chains, large lead firms act as general contractors to buy products from suppliers that are typically
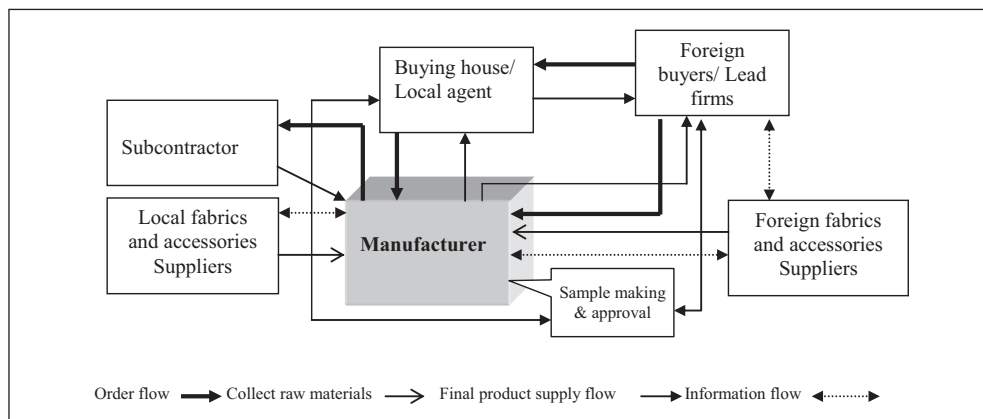
situated in lower-cost developing countries like Bangladesh. The suppliers provide components, intermediate goods, and even final goods to the lead firms that market and sell them in developed economies. Lead firms often begin working with foreign suppliers based on the availability of low-cost labor. In the process of working with their suppliers, lead firms provide quality standards that force the suppliers to improve performance to meet the more stringent demands of consumers in developed economies (Sturgeon and Lester, 2003). Suppliers continuously upgrade their capabilities either by serving the needs of the local affiliates of multinational firms or by supplying lead firms in advanced countries from a distance (Sturgeon and Lester, 2003).

In the most basic role in the global supply chain, local suppliers do labor intensive assembly on inputs that are imported, processed, and reexported, often in export zones that have special tax preferences and duty drawback provisions. The intermediate goods to be assembled, whether textiles or electronic components, are sourced from abroad when lead firms feel that local firms are incapable of producing the inputs at international standards. In this type of relationship, lead firms take advantage of low-cost labor, and local firms improve labor skills and learn about price and quality and delivery standards in international markets. The next step for suppliers in moving up the value chain is to play a role as original equipment manufacturers (OEMs) (Gereffi and Memedovic, 2003). OEMs play a full subcontractor role to lead firms, sourcing their own inputs and supplying finished products based on design and quality specifications provided by the lead firms. These products are sold under the brand name of the buyer. In Bangladesh RMG manufacturers play a full role to lead firm. The figure: 4 show the supply chain of RMG business in Bangladesh.

Bangladesh is facing acute problem in RMG for long lead time because of the current supply chain (Figure 4). The competitors like India, Pakistan and China are relatively in better position due to efficient supply chain management because all the parties or members in the chain are located in the local market and that is why their backward supply chain is more integrated than Bangladesh. Bangladesh is dependent on imported fabrics. Therefore all the parties in the chain are not located in the local market. Manufacturers depend on foreign suppliers and some local logistics providers who are not efficient in SCM due

Figure 4. Supply Chain of RMG Business

Source: Nuruzzaman (2007)

to poor infrastructure and less integrated like transportation and port facilities. Shortening the lead time through efficient SCM is the most urgent priority task for Bangladesh. The best way is to develop domestic backward linkages with the aim of reducing "production and distribution" time (Haider, 2007; Nuruzzaman 2007, 2008). Such a strategy would contribute to enhancing the deep-level performance of the industry and would have a positive impact on surface-level performance. In the current SCM foreign buyers can play a pragmatic role with the help of local suppliers to reduce lead time

The SCM Analysis in the Garment Sector

Today more than ever, companies are trying to gain a competitive edge and improve profitability through cutting cost, increasing quality and improving delivery. Companies' concentrate on improving delivery through cutting lead time and show how shortened lead times will help to increase export and reduce costs.

In the present analysis mainly "Order lead time" which is discussed and shown how can reduce that lead time by an appropriate supply chain management. Order lead time is the time that takes to produce final product and put the cargo on board for shipment. Here the supply chain management was analysed to reduce order lead time. To reduce lead time and to find out the various possible ways some related questions were addressed in the questionnaire at the time of interview regarding lead time and supply chain management for importing raw materials.
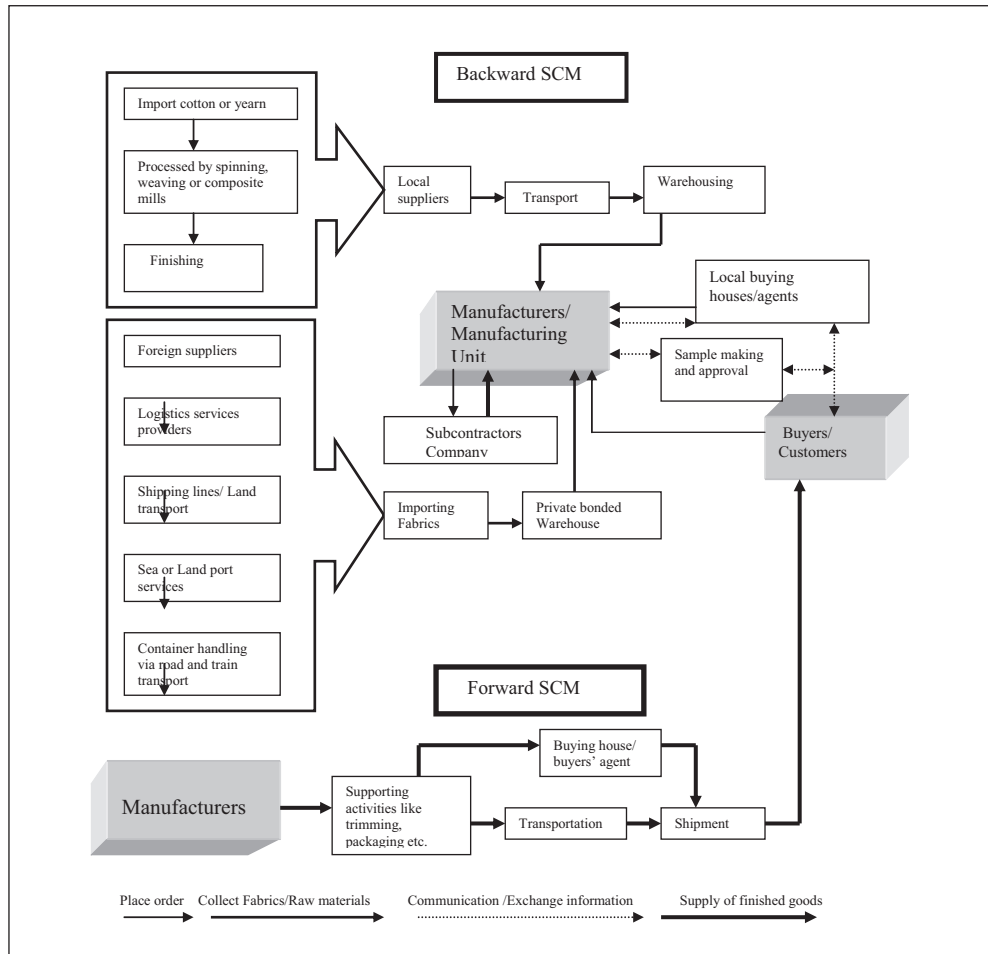
A figure has been shown here that exhibited a number of stages in the supply chain (backward and forward) of RMG sector (see Figure 5), which has been connected with different types of parties or carriers and maintaining a chain to

supply raw materials to the manufacturers. Our focus will be on those parties and carriers involved in the chain to find out the problems and necessary measures to overcome the problems towards reduction of lead time. The problem that has been extracted from the context of interviews is the notion of lead-time reduction. In the interview when questions were asked to the manufacturers, they 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 large 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. As a large manufacturer, 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"*. During the interview, we received also various opinions from Medium and small scale manufacturers about supply chain management to procure fabrics.

On the one hand some of the respondents believe that the lead-time is a problem in the woven sector mainly for import activities and we can easily shorten our lead time by avoiding import dependency through establishing backward linkage textile industries. On the other hand, some manufacturers pointed out two main points are responsible for the increasing 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 carry their materials. They all believed that order lead-time can be reduced if government authorities take proper steps to increase the efficiency of the

Figure 5. Backward and Forward SCP

Source: Own Construction

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."*

At the time of interview the largest RMG manufacturer 'Opex group' responded, "just after January, 2005 Bangladeshi RMG sector is facing 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 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." In this study

proper management in supply chain means; i) taking steps to make fabrics ready by the customer before making final contract with the manufacturer, ii) taking steps to increase shipment efficiency at the sea port and iii) taking steps to develop carriers i.e. road and railway transport.

From the respondents answer it is seen that 100% respondents agreed long lead time is the main barrier to increase export and compete in the global RMG business. They mentioned many causes behind this problem when interviews were taken. In the time management the basic bottleneck in the RMG industries come from due to *lack of backward linkage industries, lack of fabrics and dependents on imported fabrics.* Due to lack of raw materials like cotton, yearn and lack of backward industries like textile mills, Bangladesh is not self dependent for producing woven fabrics. 80% woven fabrics are importing from the neighboring countries and for importing fabrics manufacturers spending 45-60 days (Nuruzzaman, 2007 and 2008) to maintain a chain (see Figure 5). India and China are relatively in a better position because of they have no import dependency. They can procure the required fabrics from their own country. BGMEA several times demanded to establish central bonded warehouse (CBW). But there is no CBW for the RMG sector by which the manufacturers can reserve necessary yearn, fabrics etc. in advance and can easily procure that fabrics from that CBW. But due to misunderstanding with the Bangladesh Textile Manufacturers Associatiation (BTMA) till now it is unresolved. Another issue, lengthy sample approval procedures by the buyer. The buyers have no local office in Bangladesh even they didn't give the authority to the local buying house to finalize the sample approval process. So it is another time consuming process. Moreover *shipment process, customs* formalities, inefficient port management, geographical location, road congestion, poor container handling service by the railway, communication system, political unrest etc. are the crucial factor to increase the lead time. These types of logistic support can play an important role in the supply chain to reduce the import and export time. But till now these types of facilities are not efficient and up to the mark. 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 based SCM is the main bottleneck for increasing 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. According to the survey and interestingly ranking position it has been considered the first five causes behind the problem of long lead time which are mostly parts of supply chain management. The same causes were identified in the analysis based on secondary data. This fact enhances the credibility of the findings.

From the above discussion and observation it is clear that Bangladeshi manufacturers are forced to spend 55-75 days more just for the current SCM of importing raw materials. So the supply chain for import dependency on fabrics creates the main problem (long lead time) in the SCM.

Conclusion

SCM is a complex thing basically for those countries like Bangladesh. This idea is new in the apparel sector and very new in the least developed countries like Bangladesh. In the conclusion it can be assumed that how a country like Bangladesh may create a remarkable position in the world's total apparel export by managing the partners of supply chain in terms of reduction lead

time.

When the manufacturers depends on imported fabrics (raw materials) they need to calculate order lead time at five points in supply chain i.e. fabrics manufacturers, shipping lines, port facilities rail & road transport and private bonded warehouse (see Figure 5). It includes time for manufacturing fabrics, time for shipment of fabrics, time for unloading materials/fabrics at port, time for transport materials/fabrics from port to the manufacturing point. Time consumed in these five steps of the supply chain is the basic reasons for increasing lead time. Time for sample approval & production of final products and time for forward supply chain (see Figure 5) i.e. shipment of final products to the buyers are the additional points also considered in the supply chain for lead time. Considering the chain of importing fabrics as Figure 5, it can be said that through the first five stages a manufacturer receives fabrics from the suppliers after 45-60 days (Nuruzzaman, 2007 and 2008) on average. In the supply chain, fabrics manufacturing time and time for shipment are general and common to all manufacturers. But the major portion of lead time for importing raw materials has been created by inefficient SCM and it is possible to reduce that portion of lead time by improving the three areas namely; communication, port management and transport management in the various points of supply chain and it is also possible by taking some alternative ways that has been shown in Figure 6. By Figure 5 it has been tried to focus on some points those are actually the main reason to increase lead time and through Figure 6 some alternative ways have been shown by which we can develop SCM and reduce lead time to increase the business
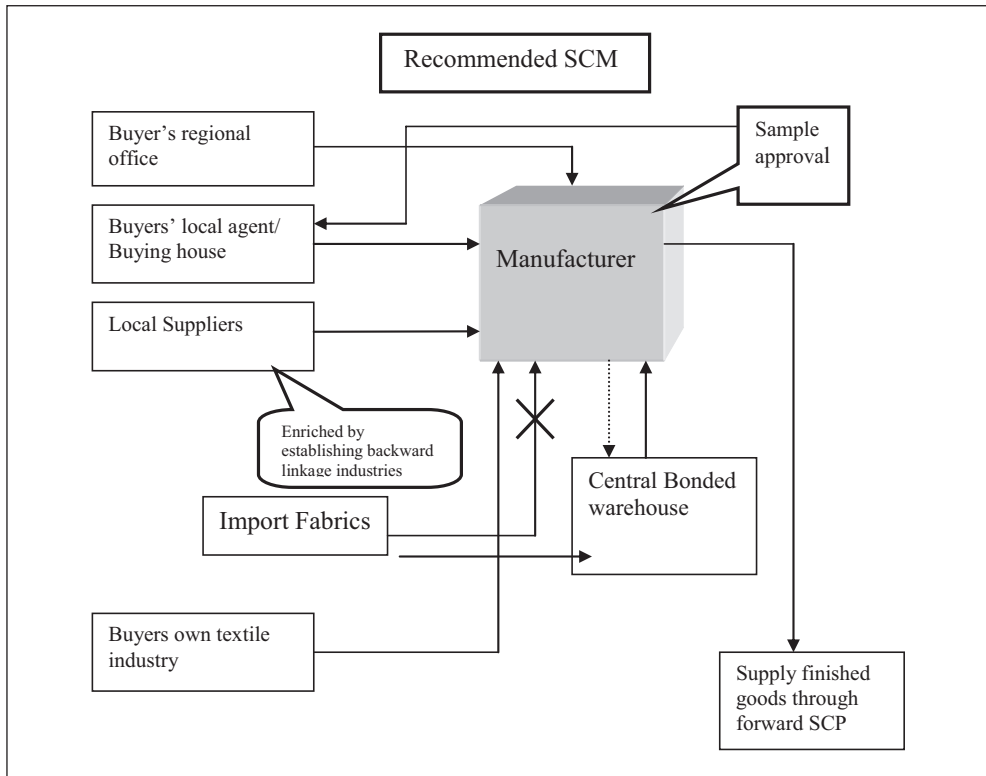
To overcome the present situation developing backward linkages industries and collect raw materials from the local suppliers (see figure 6) is the best solution in place of import fabrics but it is not easier for Bangladeshi apparel sector because, it requires huge amount of investment. To improve competitiveness Bangladesh may develop a new idea in backward supply chain management. An alternative like, CBW can be established by the government to store usable raw materials in advance for the export-oriented garment industry, with special incentives such as duty-free import. Manufacturers may collect raw materials from that CBW while necessary. This solution is the fastest way to improve surface-level competitiveness of RMG sector. But it is also under consideration due to objections from BTMA. In that case the manufacturer can invite some giant importers to establish their own textile mill to fulfill the demand of fabrics (Figure 6).

It has been drawn from the interview and secondary data that most of the RMG produced in Bangladesh are under sub-contracts with importers or major retailers from North America and Europe. Many of them maintain regional offices in Bangkok, Delhi or Singapore but very few in Dhaka. One of the largest European garment sub-contractors located in Dhaka is Hennes and Mauritaz (H&M) from Sweden. The regional offices and the buyers' agent or representative in Dhaka can maintain a stock of the required grade and quality of fabrics in advance before making final contract with the manufacturer. It will definitely reduce the manufacturing time. Again in case of sample approval the importers can delegate the authority to their regional offices or local agents. This type of chain management can be very helpful for reducing lead time. If we think about the recommended SCM (see Figure 6), can reduce certainly 55-75 days from the total lead time.

'Landmark Group' is a leading garment manufacturer in the knitwear sector of Bangladesh. It states, "*we do not face lead time problem for our supply chain. We*

Figure 6. Recommended Supply Chain Management

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 suppliers".

According to the primary data it has been seen that respondents cited different factors in the chain, which may have direct or indirect influence on the lead-time reduction. To make an effective supply chain some points have been identified and included in the chain (see Figure 5 and Figure 6) on the basis of the interview. When these alternative ways or points like CBW will be considered in the recommended chain (Figure 6) in lieu of import dependency would be more effective to create an efficient supply chain.

Therefore in conclusion we can say that an efficient and effective supply chain can be developed for CMT based Bangladeshi RMG sector by avoiding some channel points, developing & including some alternative ways and abolishing import dependency attitude. Hopefully in this way the RMG sector can make them fit in the face of new global apparel business environment.

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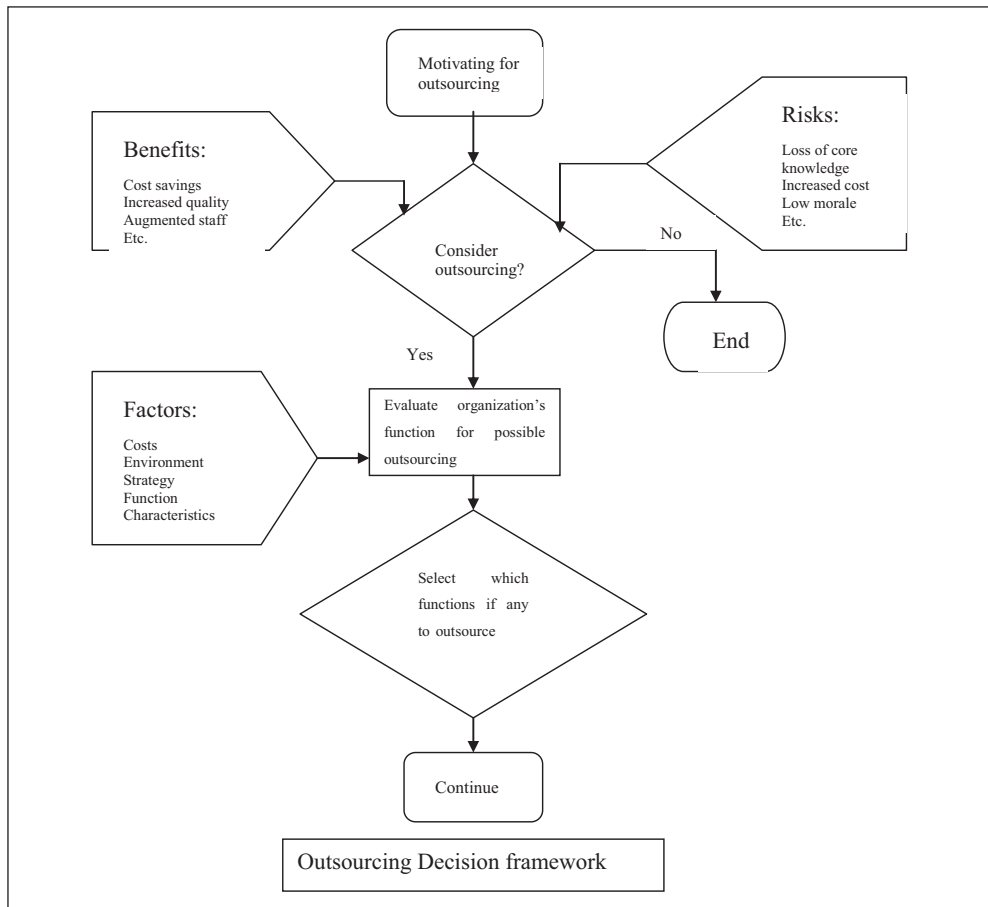
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Appendix 1. Outsourcing Decision Framework

Appendix 2

Questionnaire
Please complete the following general information
1. The name of your company
2. When did you start your garment business?
3. Is your firm 100% export oriented?
   ☐ Yes   ☐ No
4. What is the way of your export?
   ☐ Direct   ☐ Buying House   ☐ Both
5. How long has your firm been exporting?
   ☐ Less than 10 year
   ☐ 10 Years and above
6. Do you think your business will face problem after January 2005?
   ☐ Yes   ☐ No

7. What are the problems you are facing in the RMG business?
8. Do you think lead-time is one of the main problems to retain the present market share after Jan'2005?
   ☐ Yes   ☐ No
9. What are the causes behind long lead time?
10. Please rank (from most important to least important) the following causes I have identified in order to 1,2,3…8.
    Import dependency ☐
    Inefficient port management ☐
    Geographic location ☐
    Communication system with suppliers and buyers ☐
    Lack of backward linkages ☐
    Poor infrastructure in transport(Road & Rail) ☐
    Political unrest ☐
    Lack of Central Bonded warehouse (CBW) ☐
11. Do you have freedom to procure raw materials from any country?
    ☐ Yes   ☐ No   ☐ Both
12. Do you procure raw materials from some specific places as per direction of the buyers?
    ☐ Yes   ☐ No   ☐ Both
13. Please indicate the name of the countries from where you procure raw materials.
    ☐ EU   ☐ USA   ☐ INDIA   ☐ CHINA   ☐ PAKISTAN
14. What kind of raw materials you procure from local market?
    ☐ Cloths   ☐ Accessories   ☐ Both
15. How do you import fabrics?
    ☐ By air   ☐ By ship   ☐ Both
16. Do you think importing fabrics is the major reason to increase lead time?
    ☐ Yes   ☐ No
17. How many days you spend to import fabrics?
18. How importing procedure of fabrics consume more time?

19. When and How do you communicate with the supplier?
20. Do you have Internet facility?
    ☐ Yes   ☐ No
21. Do you think lead time reduction is possible through another communication system?
    ☐ Yes   ☐ No
22. Are you thinking for any alternative to communicate with supplier?
    ☐ Yes   ☐ No
23. Do you know about EDI ?
    ☐ Yes   ☐ No
24. Are you interested to take EDI via Internet?
    ☐ Yes   ☐ No
25. Are you happy with the present communication system?
    ☐ Yes   ☐ No
26. Do you think communication inside the manufacturing affect on lead time?
    ☐ Yes   ☐ No
27. Do you think the present supply chain management efficient for your company? If not, why?
28. Do you think your supply chain management interrupted by some external factors?
    ☐ Yes   ☐ No
29. What are the factors influencing in the supply chain management to increase lead time?
30. In the supply chain what are the points taking more time?
31. What is your maximum and minimum lead time in you business?
32. What is your suggestion to reduce lead-time?
33. Do you think it is possible to reduce lead time at the competitive level?
    ☐ Yes   ☐ No
34. Is it possible to reduce lead time through efficient supply chain management? If yes, how?
35. What are the alternative ways to avoid import dependency and reduce lead time?
36. Do you have any buyer where you are successful to deliver products within 60 days? If yes, who and how?