Sonargaon University (SU)

Dhaka, Bangladesh

Thesis Paper
On

Sustainable Supply Chain Management in Bangladesh: A Case Study of Ready-Made Garments

Submitted by:

Md. Zakaria
Student ID: MSCM2201025003
Program: MBA in Supply Chain Management

Semester: Summer-2023

Submitted to:
Faculty of Business
Sonargaon University (SU)
Dhaka-1215

Date of Submission:
05-September-2023

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Supervised by:

Abul Kalam
Dean
Faculty of Business
Sonargaon University (SU)

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05-September-2023

Letter of Transmittal

05, September 2023
To.
Abul Kalam
Dean,
Faculty of Business
Sonargaon University, Dhaka.

Subject: Submission of Thesis Paper on "Sustainable Supply Chain Management in Bangladesh: "A Case Study of Ready- Made Garments".

Dear Sir,
With due respect and honor, I would like to inform you that, I have successfully completed the requirements to entitle myself for the thesis paper, which is a mandatory requirement to completion of the MBA program. This is a great pleasure for me to submit the thesis paper on, "Sustainable Supply Chain Management in Bangladesh Ready- Made Garments". Here I gathered what I believe the most completed information available. I believe that it will provide a clear scenario of the Sustainable Supply Chain polices of the prominent industrial RMG Group in Bangladesh.

This report is all about to synchronize my theoretical learning from MBA program with the real corporate world. I attempted my every move to go through all the necessary materials, documents, guidelines, and other subsequent reports which fulfill the requirements of this thesis paper. I have placed my most effort on preparing this term paper and tried to leave no stone unturned to make the report a vivid and comprehensive one despite a lot of limitations. I sincerely believe that it will serve the required purposes. I will always be obliged to furnish any clarification regarding this paper, if required.

I humble request you to accept this report for your kind evaluation.

Kind Regards,
Very truly yours,

Md. Zakaria
ID: MSCM2201025003
Major: MSCM
Faculty of Business
Sonargaon University (SU)

Certificate of the Supervisor

This is to certify that this work entitled as "**Sustainable Supply Chain Management in Bangladesh: "**A **Case Study of Ready-Made Garments"** has been prepared by **Md. Zakaria, ID: MSCM-2201025003**, Faculty of Business, Sonargaon University (SU) and submitted as a requirement for the partial Fulfillment for the degree of the Master of Business Administration (MBA) with major in MSCM. To the best of my knowledge, the above- mentioned work has been conducted by the student himself. Any option and/or suggestion made in this study are entirely that of the author of this thesis Paper. The report is an original work and prepared as a partial requirement of the degree the Master of Business Administration (MBA).

Abul Kalam
Dean
Faculty of Business
Sonargoan University (SU)

Student's Declaration

I undersigned **Md. Zakaria**, a student Master of Business Administration, ID**: MSCM-2201025003** from Sonargaon University (SU) would like to solemnly declaration here that this report on **Sustainable Supply Chain Management in Bangladesh: "**A **Case Study of Ready-Made Garments"** has been authentically prepared by me under supervisor of **Abul Kalam**, **Dean, Faculty of Business**, Sonargaon University.

I didn't breach any copyright act intentionally. I am farther declaring that I did not submit this report anywhere for awarding any degree, diploma, or certificate

Sincerely Yours,

Md. Zakaria
ID: MSCM2201025003
Faculty of Business
Sonargaon University (SU)

Acknowledgement

I would like to thank Almighty Allah who made me able to complete this Thesis Paper by utilizing my Skills and knowledge.

I would like to express my indebtedness and deepest sense of gratitude to Supervisor **Abul Kalam**, Dean Faculty of Business, Sonargaon University for his encouragement, thoughtful suggestions, proper guidance, and supervision throughout the progress of my thesis work

Encouragement, thoughtful suggestions, proper guidance, and supervision throughout the progress of my thesis work. I would like to Special thanks **to Mr. Abul Kalam Azad, Sr. Manager (SCM), Matrix Sweaters Ltd, Gazipur** for his assistance while working in the concern.

I would like to convey my heartiest thanks **to Mr. A S M Sarwar Hossain, Manager (Inventory & Audit)** who gives me valuable cooperation, affectionate behavior and special guidance and several types of Accounts & Financial Information.

I would like to express my cordial thanks to **Mr. Mohammed Harisul Haque, Sr. Executive (Procurement)**, for all Types of help during my thesis work.

I express to my sincere thanks to **Mr. Md. Safkatllossain, Mr. Nokib, & Mr. Shawkat**, for their wholehearted co-operation of Compliance activities information while doing my thesis in the concern.

I wish to offer my warm thanks to **Mr. Monir, Belal, and Nasir Assistant Manager of Distribution** for their cooperation during my research Work. Special thanks go to Md. Salkat Hossain, for all kinds of help during my thesis work.

Last but not the least, I am also thankful to employees of **Supply Chain Department of Labib Group of Companies** whose management experience and tips are always helpful for me. Without their encouragement and Guidance, it might not be possible for me to complete my thesis paper so successfully and smoothly.

I am responsible for errors and mistakes presented in the report and a positive and constructive criticism will always be greeted warmth.

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Executive Summary

The ready-made garments (RMG) production industry in Bangladesh has achieved a major presence in the global fashion apparel supply chain particularly due to the competitive advantage (CA) primarily attributed to its' large pool of low-cost labor. However, the competitiveness of this industry is under threat from other emerging economies that are rapidly becoming lower cost production sources.

As a result, the Bangladesh RMG sector is under pressure to find alternate sources of CA by introducing sustainable supply chain management (SSCM) practices along with improving the dynamic capabilities (DC) of the RMG manufacturers. However, the extant literature indicates that there is a dearth of sufficient empirical evidence on whether SSCM practices in combination with improvements in management and technological capabilities of such enterprises leads to gains in CA.

Low labor cost, efficient worker, different organizational support and government support are the main strengths of this sector. Bangladesh market share is 5% of total global RMG market of 450b USD. In FY 2012- 2013 Bangladesh exported 1972.89m USD of shirts, 5185.48m USD of trousers, 2634.28m USD of jackets and 5143.22m USD of t-shirts. The major importers are European Union, USA and Canada. Knit garments are exported to 148 countries and woven garments are exported to 132 countries. The major buyers are Wal-Mart, Target, Marks and Spencer, Tesco, Levi‘s, Zara, H & M, JC Penny, GAP, H&M, S-Oliver & UNIQLO etc.

On the contrary, Supply Chain Management is such kind of Management dealing with customer contentment concerning Manufacturing and Service which are the key values for the Bangladesh Garment Industry obviously. It Constance all of the customer requirement and essential it's all about customer (buyer in term of garment industry) satisfaction. Supply Chain Management (SCM) 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 service 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 source of origin to source of consumption inside the garment commerce. So according to the nearby scenario Supply Chain Management is in actuality offering a New Paradigm for Bangladesh Garment Industry undoubtedly. 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. Quick response 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.

Since entering into the 21st Century, Bangladeshi RMG and apparel industry begun to face increasingly serious problems with offering high-quality, low-cost products within a short lead time; and to meet health, social, and environmental compliances in the face of increasingly stiff completion. Under this domestic and foreign competitive environment, the future survival and development of Bangladeshi RMG industry faces large challenge. Simple management mode of made of —import to export or the production and management mode of —vertical integration have made the Bangladeshi RMG 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 (SCM) increasingly prevails. Because of enormous economic importance in the economy of Bangladesh, RMG industry growth is to be sustained by improving SCM.

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Chapter: One (01)

"Introduction"

1.1 Introduction

RMG is the leading sector in Bangladesh in terms of foreign currency earnings. Bangladesh is the second largest garments exporter next to china. It contributes 80% of total export earnings. In Bangladesh there are 4 million people, working in around 6000 garments factories and approximately 80% people of them are female. In FY (fiscal year) 2012-2013 Bangladesh reached the export value 21b (billion) USD (21515.73m (million) USD). In FY 2013- 2014 the strategic target was 24147.31m USD by export promotion bureau of Bangladesh, but in July_13 -April '14 it reaches 19970.02m USD that is 2.72% more than the strategic target (19441m USD) during this time. RMG sector has set a target to earn 30b USD by 2015 and 50b USD by 2021. Low labor cost, efficient worker, different organizational support and government support are the main strengths of this sector. Bangladesh market share is 5% of total global RMG market of 450b USD. In FY 2012- 2013 Bangladesh exported 1972.89m USD of shirts, 5185.48m USD of trousers, 2634.28m USD of jackets and 5143.22m USD of t-shirts. The major importers are European Union, USA and Canada. Knit garments are exported to 148 countries and woven garments are exported to 132 countries. The major buyers are Wal-Mart, Target, Marks and Spencer, Tesco, Levi's, Zara, JC Penny, GAP,S-Oliver, H&M, C & A, UNIQLO etc. On the contrary, Supply Chain Management is such kind of Management dealing with customer contentment concerning Manufacturing and Service which are the key values for the Bangladesh Garment Industry obviously. It Constance all of the customer requirement and essential it's all about customer (buyer in term of garment industry) satisfaction. Supply Chain Management (SCM) 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 service packs (Lead Time or up to Shipment) needed by the bottom end customers in a supply chain. Since entering into the 21st Century, Bangladeshi RMG and apparel industry begun to face increasingly serious problems with offering high-quality, low-cost products within a short lead time; and to meet health, social, and environmental compliances in the face of increasingly stiff completion. Under this domestic and foreign competitive environment, the future survival and development of Bangladeshi RMG industry faces large challenge. Simple management mode of made of —import to export or the production and management mode of —vertical integration have made the Bangladeshi RMG 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 (SCM) increasingly prevails. Because of enormous economic importance in the economy of Bangladesh, RMG industry growth is to be sustained by improving SCM.

1.2 Objectives of the Study

The objectives of the study are:

3.1. To highlight about the supply chain of RMG industry.

3.2. To find out the role of supply chain in RMG industry of Bangladesh.

3.3. To ascertain the problems toward sustainable RMG Growth from supply chain point of

1.3 Methodology of the Study

The study is mainly based on secondary data and merely on primary data. The secondary data have been collected from different books, journals, BGMEA and BKMEA reports, newspapers and publications on Bangladesh. Published and unpublished materials and papers available in the internet have also been reviewed for the purpose. On the other hand, interviews of professionals and merchandisers of the garments factory were the primary data source

1.4 Limitations of the Study

The e-book investigates strategic CSR's struggle to maintain a balance between moral and profit-maximization motives at the cognitive level but being paradoxically required in supply chains. A limitation, inter alia, entails the focus on the horizontal perspective of the sample and the RMG supply chain.

A primary limitation of the report is that it is based on facts, accumulated from word of mouth, while consulting secondary data. Some information presented in the report may be biased, as people tend to avoid their own limitation regarding their job and tend to hold other departments responsible for Drawbacks of their own. As the report is not a comprehensive one, rather based on a Sustainable Supply Chain in RMG Group and also based on a limited number of department employees so any Ultimate decision may not be drawn about the whole organization supply chain process. There is no study work which is free from defect. Such defects are known as limitations. As the Report prepared with a short span of time, the report could not be made comprehensive and Conclusive. Some usual constraints I did face during my investigation. Due to the company's policy of maintaining secrecy I did not get the opportunity to collect information regarding all departments.
The limitation of my study work is stated by the following:

- The data and information related with the topic was not easily available.
- The study also suffered from inadequacy of data.
- The study was not done very successfully due to inexperience.
- Supply of more practical and contemporary data is another shortcoming.
- Unwillingness to response of the interviewer is another limitation for this study work.
- Lacking young, energetic, and talented officers /staffs.
- Scarcity of pertinent information.
- Time Constraint.
- Lack of experience.
- Lack of knowledge about the functional aspect of capital market activities.
- Shortage of update data.

1.5 Background of the Study

Sustainable operations and sustainable supply chain management (SSCM) have become a highly relevant topic for scientific research and management, as well as policy-making practice. Despite surging growth in extant research, the need for theoretical and conceptual substantiation persists, and large opportunities for further research remain unexploited. This paper responds to the need for a conceptual foundation and, therefore, aims at providing a structured agenda for future research areas in SSCM. Based on an addictive reasoning approach, SSCM constructs and concepts are gathered from existing literature and recombined into a comprehensive conceptual SSCM framework. Areas and directions for future SSCM research, as suggested in earlier studies, are summarized, positioned in the framework, and outlined to stimulate further SSCM research activities. To overcome the lack of holistic research in the field, sophisticated techniques and integrated systems to support decision-making are required to tackle related issues' complexity. Therefore, this paper's contribution lies in the synthesis of state-of-the-art literature to provide a more comprehensive view of SSCM. Researchers may find promising recommendations and a suitable foundation for future studies, while practitioners may find helpful.

Chapter: Two (02)

"Profile of the Ready-Made Garments (RMG)"

2.1 History & Evaluation of RMG Industry of Bangladesh

Once the cloth of Bangladesh achieved worldwide fame Especially Muslim and Jamdani cloth or our country was used as the luxurious garments of the royal figures in Europe and other countries. The British rulers in India didn't develop our cloth industries at all. Rather they destroyed them and imported cloths from England. Garment Industry Large-scale production of readymade garments (RMG) in organized factories is a relatively new phenomenon in Bangladesh. Since the late 1970s, the RMG industry started developing in Bangladesh primarily as an export-oriented industry although; the domestic market for RMG has been increasing fast due to increase in personal disposable income and change in life style. The sector rapidly attained high importance in terms of employment, foreign exchange earnings and its contribution to GDP. He hundred percent export-oriented RMG industry experienced phenomenal growth during the last 15 or so years. In 1978, there were only 9 export-oriented garment manufacturing units, which generated export earnings of hardly one million dollar. Some of these units were very small and produced garments for both domestic and export markets. Four such small and old units were Reaz Garments, Paris Garments, Jewel Garments and Baishakhi Garments. Reaz Garments, the pioneer, was established in 1960 as a small tailoring outfit, named Reaz Store in DHAKA. It served only domestic markets for about 15 years. In 1973 it changed its name to M/s Reaz Garments Ltd. and expanded its operations into export market by selling 10,000 pieces of men's shirts worth French Franc 13 million to a Paris-based firm in 1978. It was the first direct exporter of garments from Bangladesh. Desh Garments Ltd, the first non-equity joint-venture in the garment industry was established in 1979. Desh had technical and marketing collaboration with Daewoo Corporation of South Korea. It was also the first hundred percent export-oriented company. It had about 120 operators including 3 women trained in South Korea, and with these trained workers it started its production in early 1980. Another South Korean Firm, Young ones Corporation formed the first equity joint-venture garment factory with a Bangladeshi firm, Trexim Ltd. in 1980. Bangladeshi partners contributed 51% of the equity of the new firm, named young ones Bangladesh. It exported its first consignment of padded and non-padded jackets to Sweden in December 1980. Till the end of 1982, there were only 47 garment manufacturing units. The breakthrough occurred in 1984-85, when the number of garment factories increased to 587. The number of RMG factories shot up to around 2,900 in 1999. Bangladesh is now one of the 12 largest apparel exporters of the world, the sixth largest supplier in the US market and the fifth largest supplier of T-shirts in the EU market. The industry has grown during the 1990s roughly at the rate of 22%.

The growth of the industry in terms of number of units and employment generation is shown in table - 1 below:

Table 1: Growth of the industry and Employment:

Year	Number of Garment Industries	Employment in Million Workers
1983-84	**134**	**0.040**
1988-89	**759**	**0.317**
1993-94	**1839**	**0.827**
1998-99	**2963**	**1.500**
2003-04	**3957**	**2.000**
2008-09	**4825**	**3.100**

[Source: BGMEA]

2.2 Vision of RMG Group

The ready-made garment (RMG) industry of Bangladesh has advanced rapidly in the last decade, increasing its annual export earnings from $12.49 billion in fiscal year 2009-10 to $42.61 billion in fiscal year 2021-22. The robust growth in the apparel sector, which helped Bangladesh achieve both international prowess and domestic prosperity, did not come by chance. t has been possible mainly because of modernization and technological up gradation of factories over the past decade, as well as the strides in workplace safety, environmental sustainability and compliance issues. Since its inception, sustainability has always been a key strategic priority for the RMG industry of Bangladesh. In about four decades, the industry has emerged as the lifeblood of the Bangladesh economy, accounting for more than 81% of the country's export earnings. The level of progress we have made so far puts us in an advantageous position to expand our global market share. What we have to do is to keep up our efforts to innovate, upgrade, and diversify. The day is not far away when we will be able to set an annual export target of $100 billion from this vital sector. The RMG sector still has some distance to go, but the rewards are great. The global market trend exhibits huge opportunities for Bangladesh to expand its market share. It seems like the tide is in Bangladesh's favors in the international market.

2.3 Mission of RMG Group

RMG Group mission is to provide world-class products to valued customers, strictly maintaining high Ethical Standards while conduct Business. Provide ethical and economical apparel sourcing solutions to our customers while meeting the expectations of other stakeholders. Ensure complete professionalism to provide quality goods, commitment and service to all customers. To continuously modernize. o protects and promote the interests of the industry; thus, ensuring sustained growth in the foreign exchange earnings of the country. The association also strives toward the betterment of society and the environment. Annual Import Availability, Bonded Ware House Expansion, Bonding Capacity

2.4 Objectives of RMG Group

To study the trend of garment product development and its composition in order to analyze the product portfolio and its diversification. To study the present market composition for the Bangladeshi garment product about Market diversification. To analyze the recent labor unrest in the garment industry of Bangladesh. Opportunity of behavioral theory practice in our garments sector. Regularly behavioral theory practice in garments industry. Identifying the trade agreements that might affect the export growth. Finding out the type of linked industries that might be affected.

To achieve new idea about knit garments manufacturing process. To know about the management and technical process of apparel industry. To investigate the manager’s roles and responsibilities prior to using groupware and collaborative systems. Identify advantages and disadvantages of using groupware and collaborative systems into the managers’ roles and responsibilities.

2.5 Weaknesses of RMG Group

In addition, the SWOT analysis it has been found that biggest strength of Bangladeshi RMG industry is cheap labor, biggest weakness is safety and labor productivity, biggest opportunity is price competitiveness and biggest thread to be found is political stability and price diminishing. The Ready-Made Garment industry is the lifeblood of the economy of Bangladesh. The industry is at risk in terms of safety and sustainability. Fire accidents are common in garments. Bangladesh earned enormous bad reputation after two worst industrial disasters Rana Plaza Collapse followed by Tazreen Fashion fire killing more than thousands of workers. A practical survey has been done directly on different stakeholders of the industry to realize the current practices and lacks regarding safety and sustainability. From this research, it has been found that building condition, fire safety equipment and fire drill, training on health and safety are satisfactory level at compliance industry but moderate to low and some of the unsatisfactory level at average compliance one

2.6 Opportunities of RMG Group

The ready-made garment (RMG) sector is a prominent contributor to GDP growth, employment generation, and foreign currency inflow in Bangladesh. Bangladesh has achieved the prestigious second place among the biggest textile exporter's countries. The Ready-made Garment (RMG) industry has already promoted itself as the largest foreign currency earning sector for Bangladesh and occupying the 2nd position in leading exporters of clothing. From a humble beginning in late 70's RMG sector has emerged itself and did employment about 4.5 million peoples. China is the largest clothing exporter and represents the lion's share of the world market. In spite of being the second largest exporter, Bangladesh is far behind from China in any category of this sector including export earnings and a number of markets. Whereas China occupies one-third of global market share, Bangladesh has only 6 percent share in clothing export in the world but acts as a lifeline in her economy having 82 percent contribution of export earnings. Bangladesh could be more successful in this sector if it utilizes the available opportunities. For this, Bangladesh should try to grab the opportunities impeding in front because of backwardness of China in clothing export originating recently due to the transformation of the economy to high technology production and higher labor cost in garments. Hence it is important for policy makers to find out the facts and figure in exports of Bangladesh RMG to China

2.7 Functions of RMG Group

RMG works with Delivery/Project Managers to forecast the availability of people and next steps for future projects. Resource management challenges are the top issues facing organizations today, according to PM Solutions Research. This paper analyses the main drivers of growth, challenges faced and performance of ready-made garment (RMG) manufacturing in Bangladesh following the abolition of the Multi-Fiber Arrangement (MFA). It provides evidence to show that both national and international MFA quotas did provide Bangladesh garments with access to guaranteed international markets. However, as shown by the rising export volumes and market shares of Bangladesh RMG over the period 2005-06, the withdrawal of MFA quotas did not impede the further development of the industry in Bangladesh. This is an outcome of safeguard measures imposed against China in major markets such as the USA and the European Union. The paper argues nevertheless that both the government and private sector of Bangladesh should stimulate upgrading so that the removal of its preferential treatment privileges will not adversely hinder the industry's growth in future.

Chapter: Three (03)

"Sustainable Supply chain Management Review"

3.1 Concept of SSCM (Sustainable Supply Chain Management) in RMG Group

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 & Anwar, 2006). Besides rudimentary application of information and communication technology (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 Bangladesh, 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 & Anwar, 2006; Kabir, 2007). Lam and Postle (2006) discussed the strengths and problems faced by the Bangladeshi textile apparel supply chains. They argued that Bangladeshi apparel industry is generally not aware of the concept of SCM and industrial benchmark for both manufacturing and retailing industries in Bangladesh. Islam (2013) analyzed that apparel supply chain matters such as new orders, raw materials supply, production processes and logistics related to finished goods delivery by using efficient supply chain process and also mentioned that Bangladesh garment industry improvement is desired in reducing the supply time required to produce and fulfill the orders placed by foreign companies

3.2 Objective of SSCM (Sustainable Supply Chain Management) in RMG Group

Below are the important objectives of Sustainable Supply Chain Management (SSCM):

- **To maximize overall value generated**
- **To look for Sources of Revenue and Cost.**
- **Replenishment of the Material or Product whenever required**
- **Cost Quality Improvement**
- **Shortening the time to Order**
- **Speedy delivery**
- **Efficiency**
- **Inventory Optimization**
- **Transportation cost optimization**
- **Business Characteristics**
- **Demand Fulfilment**
- **Speedy delivery**

3.3 The role of Sustainable supply chain in RMG industry of Bangladesh

In the context of the Chinese government's strategy for sustainable development, the study of sustainable supply chain management (SSCM) for enterprises has important practical significance. In the last 10 years, organizations and researchers have recognized the importance of sustainable supply chain management (SSCM) because of the consumers, -profit and non-profit organizations, laws and regulations, and consumer social and corporate responsibilities. Supplier selection, environmental effects such as social cooperation, and other SSCM programmers, can all help to achieve the "triple bottom line (TBL)" of economic, environmental, and social advantages. Sustainable supplier selection (SSS) and firm performance are important factors in supply chain management (SCM). Supply Chain Management is part of an organization's business or initiative that ensures goods, services, or products deliver to customers easily. Supply Chain Management, also known as SCM, notes how their customers' needs are commensurate with what they offer or can offer. The world has gone from just having physical stores or businesses to online merchandise. Planning how to reach your wide range of customers effectively has a lot to do with Supply Chain Management. Let's talk about the importance. The RMG manufacturers need to start working together with all the supply chain partners, as the landscape of low-cost sourcing countries is about to change. Buyers in the future would be more interested in TCO (total cost of ownership) rather than just the unit price. So now need to understand who the supply chain partners/stages are. In short – Supply Chain Management (SCM) includes all stages that are involved directly or indirectly in fulfilling customer request. This includes manufacturers, suppliers, transporters, warehouses, retailers, and customers. Within each company, the supply chain includes all functions involved in fulfilling a customer request (product development, marketing, operations, distribution, finance, customer service). So, in a nut shell it we can tell that Supply Chain is becoming the senses and organs for the organization. Any RMG /Apparel industry is positioned as a natural extension of our customer's business and covers the entire apparel supply chain; from product development & design to merchandising and from production to distribution. In working with brand-owners, all over the world, apparel industries support customers with quality apparel solutions to address every aspect of apparel sourcing and manufacturing, from concept to delivery

3.4 Performance of SCCM in RMG Group

There are several loops among supply chain performance variables in the casual loop diagram (Figure 1), while the variables have been grouped into three categories of enablers, results and inhibitors. The supply chain performance is the sum total of all these three kinds of variables. We have used sales as the proxy for supply chain performance under the assumption that if the total number of orders increases then it proportionately increases the sales value and signifies the level of supply chain performance variables at any particular time. So, the higher the sales value is, the higher the total supply chain performance index is. The Vensim software can show all the loops among the variables at different nodes. At the supply chain performance node, there are five loops among the variables involving different numbers of variables. For example, if the target cost minimization increases then the difference between target cost minimization and actual cost minimization increases and the feedback loop between them is positive. As the difference in cost minimization increases, the company obtains fewer numbers of orders from the buyers. Thus the feedback loop between targets cost minimization, actual cost minimization and supply chain performance variables becomes negative (the first loop at the node of supply chain performance).

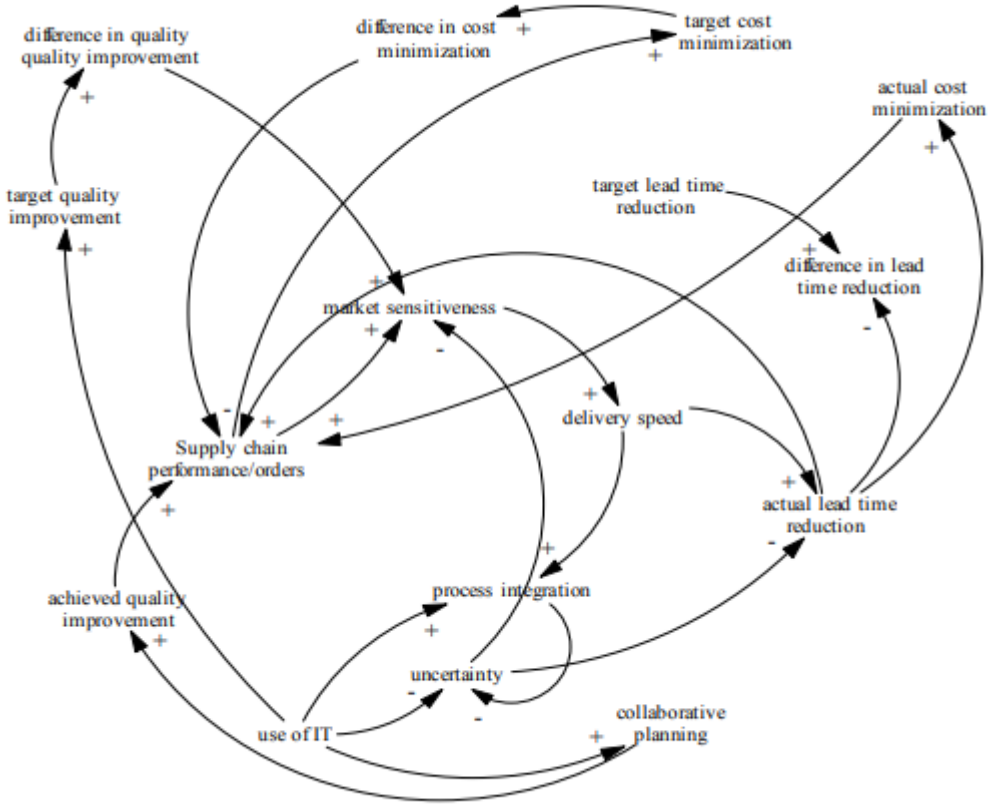


Figure 1. Causal loop diagram among variables in the RMG supply chain (see text for explanation)

3.5 Impact of SCCM in RMG Group

In today's highly competitive global marketplace customers are placing greater value on excellence and delivery time. Manufacturers similarly have begun to situate more value on quality and delivery time and companies need to try to swell a competitive perimeter and improve profitability through cutting cost, increasing quality and improving delivery by the assist of supply chain management. In the supply chain system, it can be materials, fund, information or it can even be supply of business (volume of business). One small material missing or delayed just puts the whole order at stake. Schedule failure for one single order delivery jeopardizes the whole production plan. Unplanned and earlier importation of materials increases the inventory level. Supply of materials, when delayed in-house, creates a line gap. Both the situations have a negative impact on finance. On the other hand, if the finished goods are not shipped on time due to not getting the approval, the factory has to pay the bills of back-to-back (BTB) L/Cs (letters of credit) against its bank loan at a high interest. So, the factory always tries to avoid delayed shipment, even by covering that delay with overtime work, which leads to double production cost. If SCM or procedures is ended appropriately, it can assist the Bangladeshi garment industry to diminish their catalogs which will direct to cutting of operational costs, lessen order cycle time, enhance plus efficiency as well as augment the companies 'receptiveness to the market. Improved or superior SCM also leads to quick response which is a concept pertaining to the collaboration and sharing or information among manufacturers, suppliers and distributors, permitting them to act in response more swiftly to the requirements of the clienteles. The garment 's supply chain is diverse: a. raw material, b. divisions, c. ginning facilities, d. spinning and extrusion processes, e. processing sector, f. weaving and knitting factories and g. garment (and other stitched and non-stitched) manufacturing that supply an extensive distribution channel. This SCM process is possibly one of the most diverse in terms of the raw materials utilized, technologies installed and products formed.

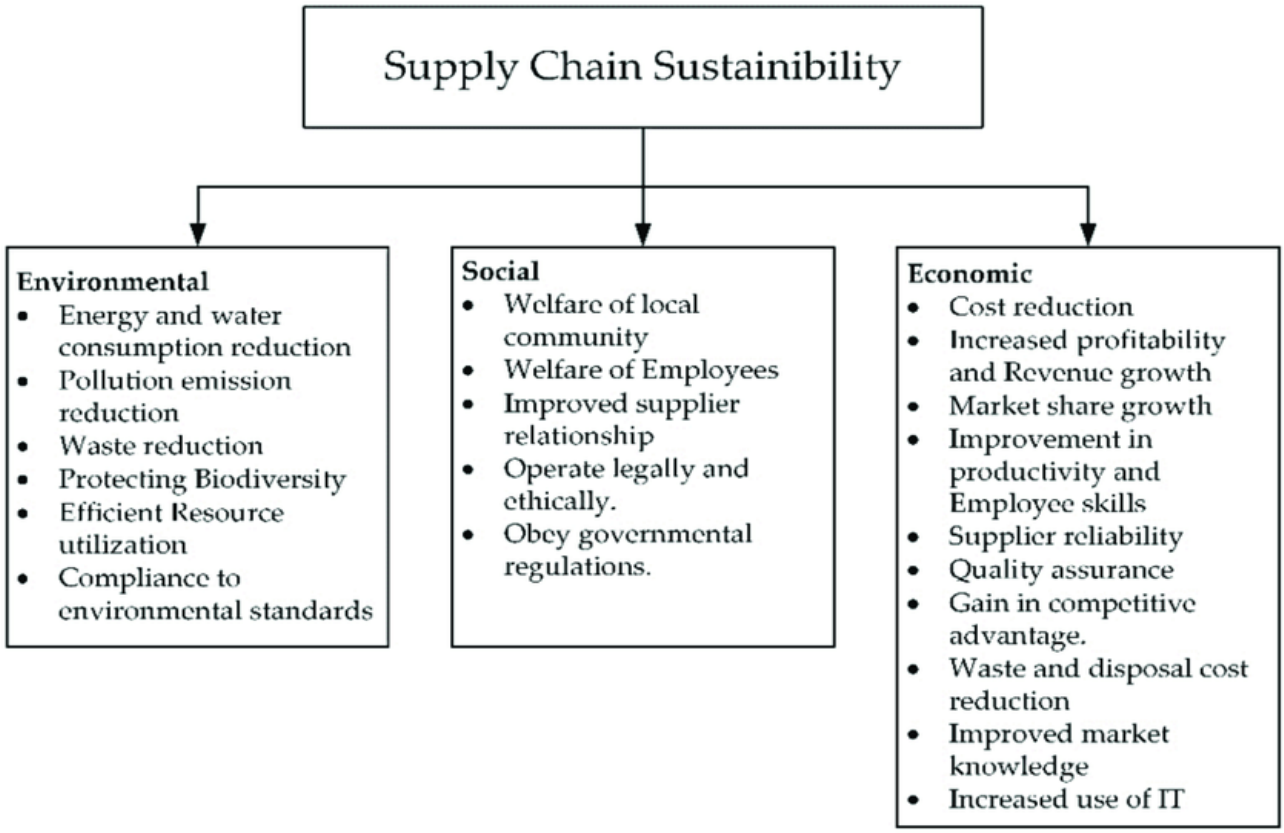
3.6 Sustainable Supply chain Management: -

3.6.1. Sustainability Supply Chain: In the broadest sense, sustainability refers to the ability to maintain or support a process continuously over time. In business and policy contexts, sustainability seeks to prevent the depletion of natural or physical resources, so that they will remain available for the long term. Sustainable supply chain is a strategic business decision that includes sustainable sourcing, production, packaging, and optimized, responsible delivery of produced goods. SCM sustainability efforts under an enterprise's corporate social responsibility activities also drive green operations and result in cost savings and an improved supply chain over the long term. The three elements of a sustainable supply chain are as follows:

- Environmental Responsibility: It involves protecting the environment from potential harm caused due to supply chain activities like production, storage, packaging, transportation and other minute operations.
- Financial Responsibility: It addresses the financial needs of the firm. Financial markets include shareholders, employers/employees, customers, clients, business partners, domestic institutions and financial institutions.
- Social Responsibility: It involves principles, ethics, morals and philanthropic expectations of the society from a business. This means every person in a sustainable supply chain is treated fairly, equally and in line with human rights requirements.

3.6.2. Sustainable Supply Chain Management (SSCM) Conceptualization: Sustainable operations and sustainable supply chain management (SSCM) have become a highly relevant topic for scientific research and management, as well as policy-making practice. Despite surging growth in extant research, the need for theoretical and conceptual substantiation persists, and large opportunities for further research remain unexploited. This paper responds to the need for a conceptual foundation and, therefore, aims at providing a structured agenda for future research areas in SSCM. Based on an abductive reasoning approach, SSCM constructs and concepts are gathered from existing literature and recombined into a comprehensive conceptual SSCM framework. Areas and directions for future SSCM research, as suggested in earlier studies, are summarized, positioned in the framework, and outlined to stimulate further SSCM research activities. To overcome the lack of holistic research in the field, sophisticated techniques and integrated systems to support decision-making are required to tackle related issues' complexity. Therefore, this paper's contribution lies in the synthesis of state-of-the-art literature to provide a more comprehensive view of SSCM. Researchers may find promising recommendations and a suitable foundation for future studies, while practitioners may find helpful orientation and guidance for decision- and policy-making.

3.6.3. Dimensions of Supply Chain Sustainability



3.6.4. Social Sustainability: Social sustainability is about identifying and managing business impacts, both positive and negative, on people. The quality of a company's relationships and engagement with its stakeholders is critical. Directly or indirectly, companies' affect what happens to employees, workers in the value chain, customers and local communities, and it is important to manage impacts proactively. Businesses' social license to operate depends greatly on their social sustainability efforts. In addition, a lack of social development, including poverty, inequality and weak rule of law, can hamper business operations and growth. At the same time, actions to achieve social sustainability may unlock new markets, help retain and attract business partners, or be the source for innovation for new product or service lines. Internal morale and employee engagement may rise, while productivity, risk management and company-community conflict improve.

3.6.5. Environmental Sustainability: Environmental sustainability is the responsibility to conserve natural resources and protect global ecosystems to support health and wellbeing, now and in the future. Because so many decisions that impact the environment are not felt immediately, a key element of environmental sustainability is its forward-looking nature. In fact, the U.S. Environmental Protection Agency defines it as "meeting today's needs without compromising the ability of future generations to meet their needs. "He terms "ESG" (Environmental, Social and Governance) and "sustainability" are used interchangeably, especially when it comes to benchmarking and disclosing data. Sustainability is an umbrella term for many green concepts and corporate responsibility, while ESG has become the preferred term for investors and the capital markets. The industry may have started with sustainability efforts, but it has evolved to include ESG practices, performance, reporting and relevance to capital opportunities. ESG data helps identify risk-adjusted returns. Emphasis on all three pillars has aided the shift in how companies measure and disclose their performance.

3.6.6. Operational Sustainability: 'Operational sustainability' is a method of evaluating whether a business can maintain existing practices without placing future potential resources at risk. Sustainability can refer to any one of a variety of areas, say ecological resources, social or economic resources. 'Sustainable Operations 'can also be defined as operations that meet the present needs without compromising on the ability to meet future needs. Sustainable supply chain management is a subset of sustainable development focused on the development and management of the supply chain. The aim is to create supply chains that perform well economically, socially, as well as environmentally. Business sustainability is often defined as managing the triple bottom line - a process by which companies manage their financial, social and environmental risks, obligations and opportunities. These three impacts are sometimes referred to as profits, people and planet.

3.6.7. Economic Sustainability: Economic sustainability is when an activity or practice, financial or not, helps to support long-term long term financial growth whilst keeping the environment, community, and social factors in mind. The main goal of economic sustainability is to create a balance between economic growth and the development of positive change for the environment and humanity. Economic sustainability is important as it is next to impossible for any business to find long-term growth or success if they rely on finite resources for production, marketing, and piquing investor or consumer interest. Think of it this way: imagine a company that wants to sell lava lamps, but the production of the lamps alone requires the use of non-renewable resources – even to power them within people's homes with electricity. It will be extremely difficult for the lava lamp company to find success if it's inevitable that they will come to a point where they can no longer mass-produce as many lava lamps that will be in demand.

3.6.8. Sustainability Governance: Governance for sustainability is defined as the set of written and unwritten rules that link ecological citizenship with institutions and norms of governance. It is a complex topic because it addresses the three issues of globalization, democracy and sustainability. No form of governance can succeed if there is no common bond between those who govern and those who are being governed. The real issue is whether the common good, that is, the sustainability of life, can be pursued through democratic forms of governance. This publication compiles information, evaluations and case studies to enable the reader to explore and reflect upon governance for sustainability. To sustain something means to keep it up. If something can't be done over a certain timescale, it's not sustainable over that timescale. If one goes into a garage, shuts the doors and windows and starts the engine of a car with an internal combustion engine, it will be sustainable for maybe a few minutes, but not too far beyond that. In comparison, the combustion of fossil fuels in our atmosphere will not be felt in a short space of time, but instead over decades. Different actions have different timescales over which sustainability must be measured.

3.6.9. Potential Benefit of Sustainable Supply Chain Management (SSCM):

To achieve a sustainable supply chain, a company has to address environmental, social, economic and legal concerns across its entire supply chain. By taking a holistic approach, this reduces waste and environmental footprint, while also improving labor conditions and health and safety — stopping worker exploitation. A fully sustainable supply chain is one that ensures socially responsible business practices. These practices are not only good for the planet and people who live here, but they also support business growth. To achieve a sustainable supply chain, a company has to address environmental, social, economic and legal concerns across its entire supply chain. By taking a holistic approach, this reduces waste and environmental footprint, while also improving labor conditions and health and safety — stopping worker exploitation. The benefits of a sustainable supply chain are:

1. Reduced environmental impact
2. Improve continuity of supply
3. Protecting against reputational damage
4. Potential for new partnerships
5. Win more business

Chapter: Four (04)

"Rationales, Benefits & Competitive Advantage of SSCM in RMG Industry of Bangladesh"

4.1 SWOT Analysis of RMG Group

The new environment represents a serious threat to Bangladesh. On the one hand, it is opening a vast market with unlimited export potentials; on the other hand, it signals fierce competition from textile giants like China, India and, from efficient producers like Thailand, Sri Lanka and Vietnam. Competition may also come from Sub Saharan Africa and the Caribbean countries due to preferential treatment from USA through TDA 2000. Different regional agreements like NAFTA also appear to be unfavorable for the RMG sector of Bangladesh.

Strengths

One of the strengths behind the success of RMG of Bangladesh is the availability of low-cost labor compared to other countries in the region. The labor rates in textile industry (compiled by Warner International) show that the average hourly wage rates for Bangladesh, India, Pakistan and Sri Lanka were respectively US$ 0.23, $0.56, $0.49 and $0.39 (Bhattacharya 1999a). Being in the manufacturing of RMG for two decades, Bangladesh now possesses a large pool of skilled & semiskilled manpower. Moreover, there are many unemployed young men and women who can easily be converted into a skilled workforce if needed.

Weaknesses

Dependence on others for raw materials, low productivity, limited knowledge in international marketing information, poor infrastructure, political instability, disruptive trade unionism, inefficiency in port management, and excessive dependence on RMG sub-sector are the major weaknesses of the industry.

Besides numerous procedural, physical and/or infrastructure related bottlenecks; some sociopolitical consequences have added fuel to the chronic go-slow and congestion problem at the port. Some of these problems are:

- Frequent work stoppage by different service providers, dock laborers, transport workers etc.
- Excessive dock labor unionism (there are about 30 different agencies/groups including 22 workers unions).
- Politicization of Collective Bargaining Agents (CBA).
- Direct involvement of powerful local politicians, elite and musclemen
- Illegal gratification practices (it has been a common phenomenon since long)

Opportunities

The greatest opportunities lie on the unlimited market outside Bangladesh. In a quota free world, the United Nations Commission for Trade and Development estimated that removal of the MFA and tariffs by developed countries will expand exports of clothing by 135 percent and textile by 78 percent. Trela and Whalley using a global general equilibrium model, estimated that the change will be much larger: the value of imports of textiles and clothing will rise by 305 percent in the US, 200 percent in Canada, and 190 percent in EU. This indicates that phasing out of quota will expand the market tremendously. Asia by far is the largest player in the world textile and clothing market and, industry experts are confident that, overall, Asia still will dominate. Although Bangladesh lags behind in the textile sub-sector, it is very likely that the sector will get a boost through forward integration with RMG.

Threats

India & Pakistan biggest threat for Bangladeshi RMG & textile export. The threat also will be the fierce competition from efficient producers like Hong Kong, China, Thailand, and Sri Lanka, Vietnam and many SSA and Caribbean countries. Threats might come not only from marketing but also from outsourcing. As mentioned earlier, more than 95 percent fabrics are imported from direct competitors. The potential danger after 2005 is that these countries might either stop selling their raw materials to Bangladesh or increase the price of their materials tremendously. Whatever may be the case, Bangladesh will lose some competitive edge in the world market.

4.2 Why Change to Sustainable Supply Chain Management (SSCM)?

Sustainability was a significant pre-pandemic focus and will be front and center post-pandemic. If you look at most corporate websites for a company's value, purpose or mission, sustainability is often top of the list. Whether you talk about corporate social responsibility, a commitment to be carbon neutral or negative, or striving to be a player in the circular economy, sustainability is always top of mind. But what makes sustainable supply chain management important.

Customer Retention

It's clear that customers care about sustainability and, after all, making customers happy and retaining they are the bottom line in business.81% of respondents to a UK-based survey by Smartest Energy said they'd be more likely to choose a brand with a positive approach to environmental sustainability.

Competitive Advantage

According to the latest research, 62% of businesses now think sustainability is as important as or more important than financial success. The pandemic has accelerated the trend, as 72% of companies say sustainability has become more important than before COVID.

Enhance Environmental Sustainability

Undeniably, the basis of sustainable supply chain management is to enhance environmental sustainability. But companies use this concept to "kill two birds with one stone. "This is because a sustainable supply chain can't only help reduce production costs and pollution, but it can also spur economic growth and provide better opportunities to sell products or services in a pro-environment atmosphere.

Minimize Pollution

Adopting sustainable supply chain management helps companies minimize the detrimental impact their supply chain has on the environment. This can be achieved by designing products in such a way that it minimizes pollution and energy. Minimizing pollution is also achieved by the adoption of lean policies, which leads to the elimination of costly losses that affect the financial health of the company.

Lower Cost of Operation

Maximizing profits companies adopt supply chain management inadvertently end up reducing the cost of operations and thus improving the financial health of the company. For example, when a company tries to reduce greenhouse emissions by curtailing the number of trips in transportation, they end up saving a lot of money and thus increase profits.

Enhanced Reputation

The adoption of sustainable supply chain management policies in a company's supply chain helps enhance the company's reputation with its customer base. By advertising the

adoption of such practices, it can place itself better among its competitors and thus have increased profits from the improved sales of its products or services.

Social Benefits

Sustainable supply chain management could improve workers' rights, whether close to home or in a much farther field—for instance, the cleaners and how they are using chemicals. Local employment is a social issue as much as an economic issue, and this could help in that as well. Sustainable supply chain management also produces pretty and ethically produced goods. Look at fair trade or alliance or other ethical goods that are coming through to make sure those workers had the right production methods to keep them healthy and their families employed.

4.3 Benefit of Sustainable Supply Chain Management (SSCM)

The supply chain connects your customers with products and services across the world, but this is coming at a cost to the environment. A fully sustainable supply chain is one that ensures socially responsible business practices. These practices are not only good for the planet and people who live here, but they also support business growth. The benefits of a sustainable supply chain are:

1. Reduced environmental impact

There is a common misconception that reducing the environmental impact of a business comes at a cost. In fact, it can lead to big savings. By reducing waste and increasing the efficiency of buildings, vehicles and machinery, you can quickly see returns.

2. Improve continuity of supply

Diversify your supply chain to avoid over-reliance on a single link in your chain. There have been many cases over the years of suppliers being unable to fulfil a service or product, which has then had knock-on effects for other businesses. Having multiple suppliers in different parts of the world can help improve the continuity of your products or services, preventing costly downtime and reputation damage.

3. Protecting against reputational damage

With information readily available online, your supply chain also affects your brand reputation. It's important to protect your reputation to enhance business growth.

Ensure your strategy for sustainability enhances the lives of every worker throughout the chain. This includes ensuring fair working conditions, pay and minimizing environmental impact. Never subject workers to unnecessary risk. Apple has fallen foul of this in recent years with the working conditions of their Chinese factory coming under scrutiny. There were concerns their new cheaper iPhone was being produced under illegal and abusive conditions.

4. Potential for new partnerships

This one may be less obvious. A business with a sustainable supply chain, is also an attractive prospect for other companies looking to partner with it. Your environmental credentials will likely align with the values of another brand. In turn, this opens up potential partnership opportunities.

5. Win more business

A sustainable supply chain can land you more business as you prove your green credentials. You can further support this through internationally recognized standards, such as ISO 14001. Often a requirement in business tenders, ISO 14001 is a management system that

helps you identify gaps in your business where you could make green efficiency savings. With an accreditation to support your environmental efforts, you are showing potential clients that you're taking essential strides to reduce your impact on the world.

4.4 Performance Management in SSCM of RMG Group

According to Chopra and Meindl (2016) the macro processes in SC are crucial for successful. The three macro processes are SRM (supplier relationship management) process, ISCM (Internal supply chain management) process and CRM (customer relationship management) Process. Li et al. (2006) also identified five dimensions of supply chain management and concluded that effective SCM management leads to competitive advantage and better organizational performance. Laihonen and Pekkola (2016) found that usages of performance measuring system improve performance of supply chain management. Gandhi et al. (2017) also found that supply chain management practices are positively related with supply chain performance. Therefore, the researchers set their second main hypothesis. However, there are several dimensions/categories of these performance metrics. Therefore, following section tried to elucidate the theoretical relationships between each of the SCM macroprocesses and supply chain performance.

Measurement Area (framework)	**Performance Indicators**
SRM Related Factors	Price, Product Quality, Reliability, Lead time, Service, Reputation, Long term relationship, Performance history, Specialization, Financial stability, Efficiency of order cycle time, Flexibility, Size of delivery, Communication method, Quality standard award, Adaptability, Customer service, E–commerce, Technology, Environmental responsibility, Improved supplier risk management
ISCM Related Factors	1. Facility: (i) Efficiency: Profit, Production cost, ROI (return on investment), SC & logistics cost, Transaction cost (ii) Quality in SC: Safety in operation, Reuse, Product reliability, working condition, Performance, A range of product offer, Appearance, Water use, Quality standard awards, Energy use, Traceability, A defect detected per unit produced per unit purchased (iii) Reliability: Perfect order fulfillment, A/C accuracy, Constant cost, Constant time, Fill rate (iv) Flexibility: Workforce, Product, Volume 2. Inventory: Seasonal, Average safety, A fraction of time out stock, Average inventory, Replenishment batch size, Turns, Cash to cash cycle time, Obsolete 3. Transportation: Average incoming shipment size, Outbound cost per shipment, Inbound cost per shipment, Fraction transportation mode, Average outbound shipment size, Third-party logistics 4. Internal Integration: Internal quick response, Information flow, Improve data validity, Information accuracy, CPFR/effectiveness of production planning techniques, Real-time monitor, Workforce productivity 5. Operation: Process, Organic

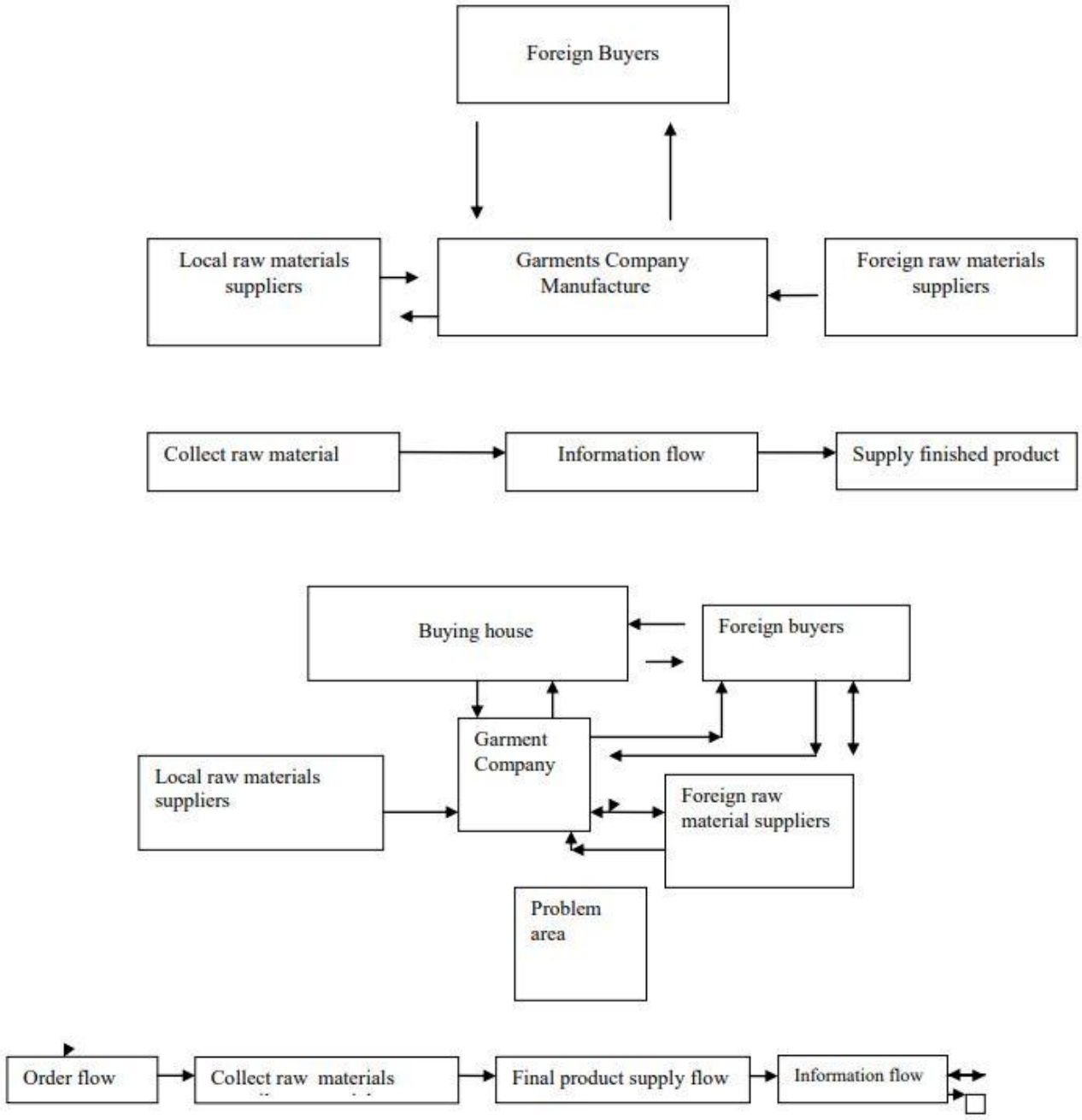
	improvement, Outsourcing 6. Technology: E-commerce, SC software
CRM Related Factors	Pre-transaction: Written customer service policy, Accessibility, Organization structure Transaction: Cost, Quality, on time delivery, Reliability, Availability, Flexibility in order, Capabilities, Order accuracy, Order status information, Customer-responsive time, Compliance, Order fill rate, Order cycle time, Product development, Product lateness, Technical expertise, Inventory availability, Delivery meets customer requirement, Function duplication Minimization Post-transaction: Availability of spares parts, increase customer service, Quick response to the customer complain, warranty to customer expected level, Based on response measure customer satisfaction

4.5 Competitive Advantage of SSCM in RMG Industry of Bangladesh

The ready-made garments (RMG) production industry in Bangladesh has achieved a major presence in the global fashion apparel supply chain particularly due to the competitive advantage (CA) primarily attributed to its' large pool of low-cost labor. However, the competitiveness of this industry is under threat from other emerging economies that are rapidly becoming lower cost production sources. As a result, the Bangladesh RMG sector is under pressure to find alternate sources of CA by introducing sustainable supply chain management (SSCM) practices along with improving the dynamic capabilities (DC) of the RMG manufacturers. However, the extant literature indicates that there is a dearth of sufficient empirical evidence on whether SSCM practices in combination with improvements in management and technological capabilities of such enterprises leads to gains in CA. In order to address the aforesaid gap, this study draws on the integration of the SSCM practices view and the DC view, to propose a set of relationships that posit that environmental, social, and economic sustainability measures of SSCM practices along with management and technological capabilities will have a significant influence on CA. The hypotheses are tested by applying structural equation modeling on a sample of 345 export-oriented RMG manufacturers in Bangladesh. The findings indicate that influence of social sustainability, along with management and technological capabilities, on CA is positive and significant. While the relationship between environmental and economic sustainability and CA were not significant.

4.6 SSCM Design in RMG Group

Ready-made garment is a labor-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).



Source: Nuruzzaman, 2007

Figure2: Business structure and raw materials collection process

Chapter: Five (05)

"Implementation of SSCM in RMG Industry of Bangladesh"

5.1 Problem Faced by RMG Industry of Bangladesh

2022 was a difficult year for the RMG industry due to a difficult global and local climate. But if we can continue the momentum of our growth and development, we may make it to the end of the tunnel sooner than expected.2022 was supposed to be the year we try to recover from the damage caused by the Covid-19 pandemic, unfortunately in the middle of our struggle to achieve this, we were forced to face new challenges such as geopolitical tensions, a downward global economy, fears of another recession, etc. Now in this New Year, 2023, Bangladesh once again has to combat both local and global challenges to maintain the growth momentum we have achieved and excel even further.

- **Global Challenges**
  - (i) **Inflation Rate:** the global inflation rate was the highest in 2022 with a rate of more than 9%. Starting from necessary commodities to utilities, everything experienced a price hike during the period.
  - (ii) **Change in brands behavior:** Due to the potential threat of a global recession, brands and buyers began taking cautionary steps. Many of our factories have disclosed that they do not have enough orders from February onwards to run the factories at full capacity.
  - (iii) **Increased production cost:** Throughout 2022, we faced a difficult situation with record-high cargo rates and container shortages. Many brands favored near shoring countries to ensure the fastest delivery. In accordance with the global trend, production costs increased significantly in our sector as well. Diesel and other utility prices had been increased to balance with the current world trend, which put significant pressure on the manufacturers.
- **Local Challenges:**
  - (i) **Utility price increase:** Utility bills, i.e. gas, water and electricity cover a big portion of the costs in RMG factories. Plunged by the dire effects of Covid-19, factories were already struggling to retain competitiveness in the global market.
  - (ii) **Overdependence on markets and products:** Even though the industry has been operating for almost 40 years, our markets and products have been heavily congested towards a few products and markets. T-shirts, trousers and knit items are our strengths, however the current world demand is for non-cotton and manmade fiber-based products.
  - (iii) **Backward linkage**: As mentioned in the previous point, our backward linkage is very weak at this moment; this poses a serious problem after Bangladesh's LDC graduation. After LDC graduation, we will have to follow the double transformation rules of origin. We will also have to produce our own fabric before making the clothes. Due to this, joint venture or FDI is a must in this sector, so that along with financial and technical know-how, the necessary skills can be learned by our industry.
  - (iv) **Ease of doing business:** Under the prudent and visionary leadership of the Prime Minister Sheikh Hasina, Bangladesh has been documented as a development surprise across the world. In the recent report of 'Ease of Doing Business' published by the World Bank, Bangladesh jumped to the 168th position from 176th in the preceding year.

(v) **Infrastructure:** Mega projects like the Padma Bridge, Power Plants, Metro Rail, and bringing the country under a railway network are making solid progress. Electricity generation capacity has reached more than 25,227 megawatts. 100 Economic Zones (EZ) are being developed to encourage structured and balanced investments. However, the timely completion of mega projects is indeed crucial. We have set a target to export $100 billion within 2030; to achieve this, a revolutionary change in infrastructure is a must.

(vi) **A dedicated lane for export import at Chittagong Port:** The two major ports of our country Chittagong and Mongla, account for around 65 billion USD of the annual trade. 98% of Bangladesh's container cargo and 92% of the total cargo is handled at Chittagong port. The drafting capacity of the port has been increased recently, which is a positive development, but a separate lane for the export-import procedure will expand its capacity.

- **Prospects:**

(i) **Highest-ever export figure:** The overall picture is not so gloomy and if we can continue the momentum of our growth and development, we may make it to the end of the tunnel sooner than expected. Amidst all the challenges, our export reached a new milestone last year. Our total export was more than $52 billion. For the first time in history, Bangladesh's RMG industry contributed its highest-ever export value of $42.61 billion.

(ii) **Regained lost position:** In all major markets like the USA, EU and non-traditional markets, our exports have seen positive growth. As per the latest published "WTO Trade Statistical Review 2021", we have also regained our position as the second largest apparel exporter in the world. We have become the top denim sourcing country both for the USA and the EU.

(iii) **Green factories:** Bangladesh achieved another milestone in 2022, becoming home to the highest number of green garment factories in the world with 183 USGBC LEED-certified factories. A record high of 30 factories got the certification in 2022.Market diversification, product development, shifting to high-end fashion items, technological up gradation, design and skill development should be our priorities in the coming years. We should also focus on medium and small-sized businesses so that they can also thrive amidst the market difficulties.

(iv) **Virtual marketplace:** The virtual marketplace can also be a big source of our growth. To enter such a new arena of business, we have to work on several issues such as reforming foreign exchange, export-import and tax policies, alongside extending fiscal incentives to those who want to develop their collection and invest in innovation.

5.2Core Contents of Implementing SSCM in RMG Industry of Bangladesh

Readymade Garments Industry (RMG) is the largest foreign exchange earning sector for Bangladesh. After the Rana Plaza, Tazrin Fashion fire incident and Holey Artisan Bakery incidents, buyers across the globe have heightened the compliance requirements for this industry (Rayhan, 2016). Moreover, the industry is now in free market competition after Multi-Fiber Arrangement (MFA) and General System Preferences (GSP) have been lifted. The country needs to recoup the benefit of efficient implementation of Supply Chain Management (SCM) in order to achieve lower lead time, lower cost and higher quality. Cheap labor is no more giving required business for the RMG. This study aims to find out the challenges for efficient implementation of SCM in the sector. A descriptive analysis and use of Kendall Coefficient Concordance were made to find the ranking of the challenges. The study reveals that the main challenges for implementing SCM in RMG industry of Bangladesh is workplace safety followed by unavailability of locally produced raw materials and political instability.

Eight tips for successful sustainable supply chain management implementation in RMG group

- Know what you need
- Shop around
- Make a realistic plan
- Map the risks and considerations
- Communication (and onboarding) is key
- Train your staff
- Test early and often
- Monitor your system's progress.

5.3 Challenges of Implementing SSCM in RMG Industry of Bangladesh

a) **Risk Management:** Supply chain management comes with unavoidable risks that can cause disruptions like delays, consumer dissatisfaction, and cost increases. These risks are often caused by socio-economic conditions, changes in the global stock market, and political schemes. Some of the supply chain risks are manufacturing financial, legal, environmental, and cyber risks. Managing these risks is an essential supply chain process that needs to be done effectively. Not being able to recognize and manage the risks in the supply chain is a risk in and of itself. Failure to effectively mitigate risks can lead to intangible consequences in the supply chain.

b) **Managing Customer Expectations:** Consumer behavior is unpredictable, so the industry has to brace itself for the worst-case scenarios. Every company wants its supply chain to be customer-centric. As a result, it has to keep up with consumers' rising expectations every day. Managing consumer satisfaction with changing customer expectations and behaviors while making significant changes to the

supply chain system is becoming increasingly challenging. Factors like delivery delays, damaged products in transit, and other mishaps can cause dissatisfaction among customers.

c) **Fluctuating Prices:** Price fluctuations are caused by myriad factors like the global stock market, natural calamities, political crises, etc., none of which are under the control of the supply chain. These fluctuations in prices can impact the supply chain in the following ways:
   - Fluctuations in transportation prices can get uneconomical for the industry.
   - Instability in the forecasting of demand and supply due to changing prices of products.
   - Price Fluctuations can lead to unpredictable market volatility.

d) **Unanticipated Delays:** With delivery options like same-day delivery, one-day, and express delivery, consumers are increasingly expecting fast deliveries and no delays. However, time delays are inherent properties of the supply chain. Especially with longer distances, modes of transportation, and products being sourced internationally, delays are getting progressively tricky to predict. Inefficient manufacturing and production processes can also cause delays. These delays can be caused by human error or other challenges, such as inefficient material procurement, a lack of standardized processes, or an inability to adapt to changing demand patterns.

e) **Adaptability to Changing Trends:** The world is moving forward at a fast pace. Naturally, the trends in any industry keep changing with time. Adapting to these trends is challenging for the supply chain because it requires inevitable learning, adapting to new processes, and letting go of obsolete methods to accommodate new ones, which can be resource-demanding and costly. For example, many consumers currently prefer sustainable options in the SCM industry, like circular supply chains, over linear supply chains, where products to be discarded are recycled and renewed. Although this is cost-effective, adapting to more sustainable options can be challenging for many supply chain companies.

f) **Digitalization:** Digitalization of the supply chain is an essential step to enable growth in the industry. What makes it challenging is the implementation of these technologies in a way that is both efficient and effective. Technology syncs various supply chain nodes, which helps with forecasting and brings visibility to prepare for any mishaps that may occur in the supply chain. If these connections aren't managed, the SCM industry will be unable to assess essential data points and actionable information to figure out how effective and flexible a company's planning and production strategies are. Many companies want to set up autonomous supply chains but implementing supply chain technologies from start to finish will be very time-consuming and highly expensive.

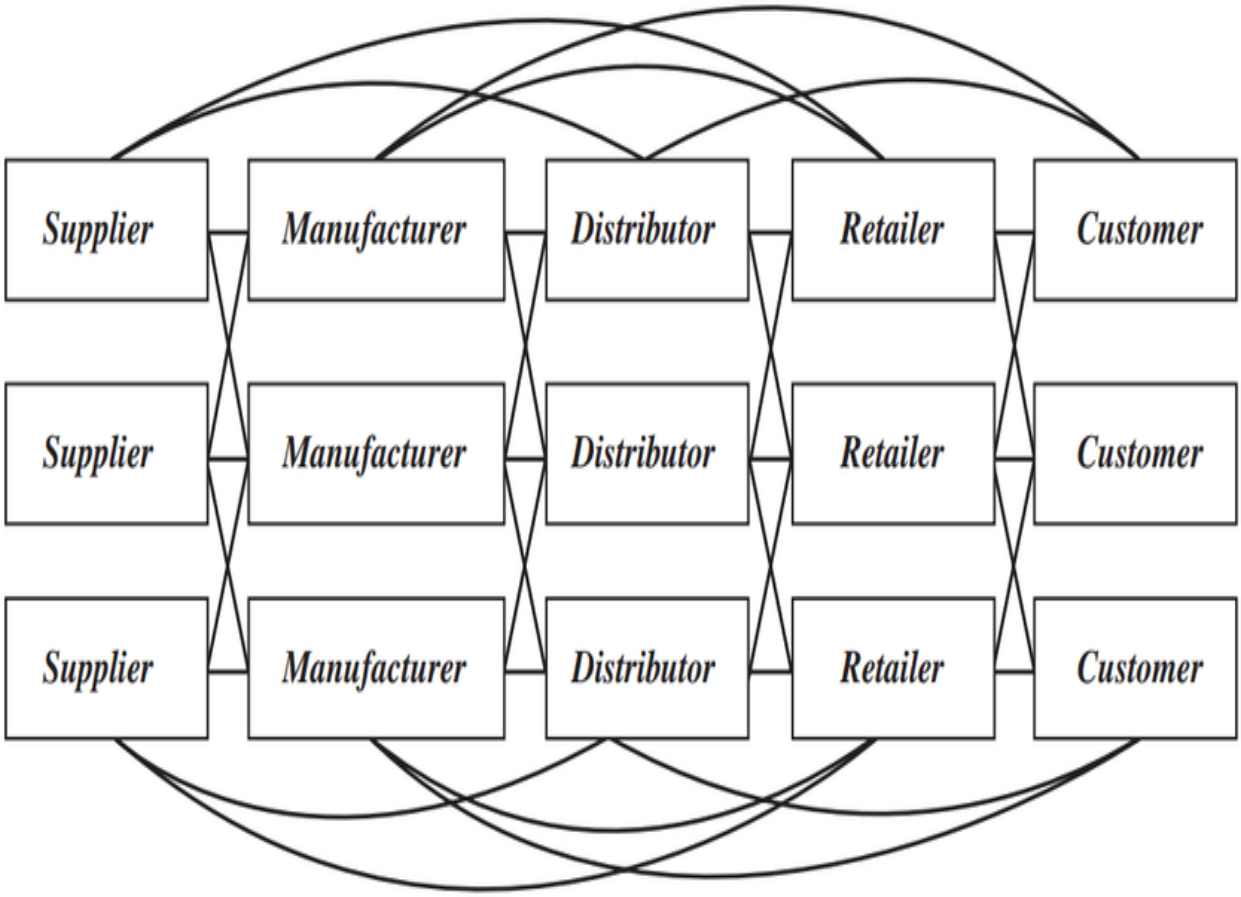
g) **Port Congestion**: Port congestion happens when a ship arrives at a port but cannot load or unload its freight because the station is already at capacity. Bad weather, accidents, port equipment damage, unpredictable trade demand, and poor port infrastructure are some of the factors that trigger congestion at ports. Port congestion can lead to delays in delivery, queuing, and extra travel time. These consequences translate into additional costs, loss of trade, low productivity,

restricted port access, and other effects that can be irrecoverable to the logistics and supply chain industry.

5.4 Different Stage of the Supply Chain of RMG Group

We live in a world surrounded by technologies and competition. Consequently, organizations today are realizing the significance of an effective supply chain strategy, which is why they are on the lookout for professionals who fully understand the domain ranging from the impact of the supply chain, its stages, and best practices.

The different stages associated with supply chain management:



a) Plan
b) Sourcing
c) Manufacturing
d) Delivery & Distribution
e) Return

Chapter: Six (06)

"The Future of SSCM in RMG Industry of Bangladesh"

6.1 RMG Industry –The Road to Process towards Sustainability

Let me begin with a quote by Bengali poet and Nobel Prize Laureate Rabindranath Tagore. "You can't cross the sea merely by standing and staring at the water."

I want to use these words as an inspiration for the journey we have embarked upon across the Bangladesh garments industry. We all want to see a stronger, richer and developed Bangladesh crossing Tagore's sea with wind in its sails. To do so, we cannot merely stare at the water but venture the high seas, using sustainability as our tailwind. The garments sector has played a pivotal role in uplifting the country's economy, creating numerous jobs, pushing down the number of people living in poverty, and fostering female labor participation. The USD 34 billion a year garments export industry is today the second largest in the world.

Following the Rana Plaza tragedy in 2013, the industry has seen tremendous improvements. Efforts that brought these incredible results to life are highly commendable.

Bangladesh still has some of the lowest wages among RMG producer countries. Freedom of association faces challenges. Meanwhile, part of the industry's "race to the bottom" on price at the lower-end of the market places a pressure down the supply chain. This poses further hurdles to the implementation of sustainable compliance across the factory floor.

Sustainability, innovation and expertise development are thus not an option but a must to move to the next level, generate decent employment and cement Bangladesh's position as a preferred outsourcing hub contributing to the country's sustainable growth.

Governments, employers and workers are elements of the same structure that sustains and improves compliance with the Labor Law and core labor standards through enforcement and industrial relations. This process must be supported by responsible business practices across the whole supply chain.

WB's sustainability strategy sees stakeholders fully in the driver seat, equipped with the tools, framework and mind-set to ensure that good working conditions are standard in the industry. We see a role for BWB in forging a shared sense of purpose and implementing a joint roadmap to build a strong, self-reliant culture of compliance.

We believe transparency is an essential requirement. The establishment of a platform for factories to exchange best practices is underway and will serve this purpose. Five years into our existence, BWB's outreach spans more than 530,000 workers in 230 factories, working with 25 international brand partners. That is not yet enough.

6.2 A More Integrated Approach to Sustainable Supply Chain Management

The term "supply chain" first appeared in literature as an inventory management approach. Commercial businesses had been encountering a demand for greater levels of responsiveness and shorter cycle times for delivery and inventory of goods and services placing, preparing, storing, and fulfilling orders. The notion of "the perfect order" required that the supply chain provide non standardized, quality products quickly and efficiently every time. Supply Chain Management: A supply chain is a network of facilities and distribution options that performs the functions of procurement of materials, transformation of these materials into intermediate and finished products, and the distribution of these finished products to customers. Supply chains exist in both service and manufacturing organizations, although the complexity of the chain may vary greatly from industry to industry and firm to firm.

The result of these factors is that there is not a single, integrated plan for the organization---there were as many plans as businesses. Clearly, there is a need for a mechanism through which these different functions can be integrated together. Supply chain management is a strategy through which such an integration can be achieved. Common supply chain performance areas:

- Products and services
- Sales
- Cost
- Responsiveness
- Customer service
- Quality
- Delivery
- Cycle times
- Assets utilized
- Warehousing

benefits of Supply Chain Management Today's information-driven, integrated supply chains are strategic assets that support innovative war fighting capabilities enabling organizations to reduce inventory, add product value, extend resources, accelerate time to market, and retain customers Effective supply chain management can impact and improve upon virtually all business processes, such as data accuracy, operational complexity reduction, supplier selection, purchasing, and warehousing and distribution. Other benefits include:

- quicker customer response and fulfillment rates,
- greater productivity and lower costs,
- reduced inventory throughout the chain,
- improved forecasting precision,
- fewer suppliers and shorter planning cycles,
- improved quality and products that are more technologically advanced,
- enhanced inter-operational communications and cooperation,
- shortened repair times and enhanced equipment readiness, and
- more reliable financial information

6.3 Barriers of Sustainability of Supply Chain Management

When implementing SSCM practices, companies can experience barriers that prohibit or greatly diminish the success of sustainable supply chain management practices. A barrier in its most basic form is a concept that limits a person's and/or companies' ability to partake in an activity. Change in a corporation can either be accepted or denied. Barriers block the implementation of sustainable supply chain management. Barriers can exist in different forms these include internal and external (Sajjad et al., 2019) (Walker and Jones, 2012) (Narimissa et al., 2020). Internal barriers are barriers that exist in the focal company itself and external barriers are barriers that exist in the external environment. Further categorization includes economic, social, and environmental (Soni et al., 2020). An economic barrier is a barrier related to a fixed cost that a company has to endure to compete in the market, upon entry. Social barriers refer to inequalities and differences associated with different types of people in society. Environmental barriers are negative features of a person's environment that prohibit that person to partake in an activity.

Overview barriers of sustainable supply chain management

Below you'll find papers discussing barriers of SSCM. The paper by Sajjad et al., (2019) and Walker and Jones (2012) used interviews to come up with barriers of SSCM. These papers can be found in sections 4.3.1 and 4.3.2. Soni et al., (2020) used ISM to find barriers of SSCM, for a detailed description of ISM see section 3.3 in which all the steps needed to develop an ISM are discussed. Norimasa et al., (2020) first did a literature review using meta synthesis which was then evaluated using the Delphi three-round study. Barriers of SSCM were much harder to find then papers of enablers, this is reflected in the number of papers which were selected for this chapter. Four papers of SSCM barriers were selected and eight papers which discussed enablers of SSCM. A possible explanation for the number of papers discussing barriers of SSCM could be that researchers primarily focus on the positive side of SSCM. Barriers don't appear to be such a hassle; a possible disadvantage could be that barriers are overlooked. Implementation of SSCM is then further problematic, with companies not being able to correctly identify internal and external barriers.

Barriers – Walker and Jones

(2012) Walker and Jones (2012) list barriers found in literature into two categories: (1) external barriers and (2) internal barriers. For a complete list of barriers listed by the authors see section 3.2 of the appendix. For a detailed description of the paper by Walker and Jones (2012) see section 3.3.4. The interviews held by the authors yielded mixed results, internal barriers were mentioned far more than external barriers. The key internal barriers were (1) culture; (2) purchasing and supply function and (3) internal integration. Key external barriers were problems on (1) the global market and (2) customers. The first key internal barrier is the culture which may not allow the company to implement SSCM since the culture in place resists the change. The second potential key internal barrier is the purchasing and supply function, changing these functions might prove difficult for companies and costly. The purchasing and supply function are integral to the operations of a company, if the focal company wants to change such functions it would require a sizeable investment. If top management doesn't see the potential and future benefits of adapting the existing functions, top management might resist the implementation of SSCM practices.

Internal integration is also a key barrier. Internal integration is about the information sharing between for example two departments, if this integration isn't optimal parts of the companies miss out on critical information. This integration is therefore a barrier since it doesn't allow the company to implement SSCM practices as a whole. The first external barrier is related to problems on the global market. This barrier may relate to the competitive advantage the focal company loses by implementation of SSCM in the short run, increased costs will decrease the profitability. The second external barrier is customers, customers are more environmentally aware with demand shifting to more sustainable products. There might be a group of customers that is more cost-focused, asking for even more cheap products.

Barriers Narimissa et al.

(2020) Norimasa et al., (2020) divide the barriers into two categories: (1) internal barriers and (2) external barriers. For a complete list of barriers see appendix section 3.4. For a detailed description of the case from which the barriers were found see section 3.3.9. The authors mention the following key barriers for SSCM implementation: (1) high cost of sustainability implementation; (2) banking problems; (3) lack of availability of financial resources. The first key barrier mentioned is the high cost of sustainability implementation this barrier has also be mentioned by other authors (Sajjad et al., 2019) (Walker and Jones, 2012). Companies are worried about the sizable amount of capital that needs to be invested for a successful implementation of SSCM practices. Banking problems may be problems that relate to financing the change in SCM practices. Banks may not be convinced by such an initiative and only lend money to established companies with outdated supply chains. Lack of availability of financial resources are problems relating to the availability of potential investment partners. A company might not be able to invest the sizeable amount on its own. The company has to find an external partner to finance the transition to SSCM practices, if the parties aren't available implementation is problematic. Lack of availability of financial resources and banking problems could be combined, both barriers relate to the financial/cost aspect of SSCM implementation

Chapter: Seven (07)

"Findings, Recommendation & Conclusion"

7.1 Findings

The Sustainable supply chain process for manufacturing and service industries started with suppliers, manufacturers, distributors, retailers, customers and suppliers, service providers, customers and end with consumers respectively. The customers are the most vital focal point of the supply chain, since the primary purpose of the existence of any supply chain is to directly or indirectly satisfy customer needs. The basic Sustainable supply chain of readymade garment industry in Bangladesh involves supplier, manufacturer, ultimate buyer and service provider. The basic diagram of supply chain in garment industry can be shown as follows In today's highly competitive global marketplace customers are placing greater value on excellence and delivery time. Manufacturers similarly have begun to situate more value on quality and delivery time and companies need to try to swell a competitive perimeter and improve profitability through cutting cost, increasing quality and improving delivery by the assist of supply chain management. In the supply chain system, it can be materials, fund, information or it can even be supply of business (volume of business). One small material missing or delayed just puts the whole order at stake. Schedule failure for one single order delivery jeopardizes the whole production plan. Unplanned and earlier importation of materials increases the inventory level. Supply of materials, when delayed in-house, creates a line gap. Both the situations have a negative impact on finance. On the other hand, if the finished goods are not shipped on time due to not getting the approval, the factory has to pay the bills of back-to-back (BTB) L/Cs (letters of credit) against its bank loan at a high interest. So the factory always tries to avoid delayed shipment, even by covering that delay with overtime work, which leads to double production cost. The RMG business involves a buyer-dominated supply system where garment makers have a very limited role. Unfortunately, even with a limited role in the supply chain, a factory has to face tremendous pressure to meet the lead time. In this particular business, suppliers are not static and a large number of suppliers are involved in the process of making a single shirt of a particular style. For the same buyer it is not necessary that the suppliers' list and items will be the same. The number of suppliers varies depending on style specifications. There are almost 20 items required for a single shirt. A factory dealing with 15 buyers has to handle at least 100 suppliers. Most of the factories run their operation in the traditional system i.e. not having any modern information system.

The RMG sector is now passing through many difficulties it never faced before. A devastating fire at the Tazreen Fashions and the Rana Plaza collapse have raised the question about its capability in terms of compliance, fire safety and building integrity. Only minimum wage competitiveness does not guarantee any international business of this kind. Hundreds of factories are closed, thousands of workers have lost their jobs, and many factories are running under-capacity even after accepting the business at the cost price. For the first time growth in our RMG export has fallen mainly on the compliance ground. So, to ensure compliance there is no way to enforce an effective SCM

7.2 Recommendations

In RMG supply chain, meeting lead-time, quality standard and buyers 'specification are very important. Failure to comply with these requirements creates buyers 'dissatisfaction and cancellation of order. RMG 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, buyers reject some batches of products because of non-conformity of sample with bulk. It's a huge economic loss and loss of reputation of the company. Moreover, buyers set a fixed lead time and within this time the manufacturers need to procure, produce and deliver the finished products. If there is any deviation buyers are dissatisfied and may even reject the shipment. Therefore, the following The SCM process in RMG sector is scattered in perspective of Bangladesh which is lagging behind in the global competition. To be more efficient in the Global apparel industry Bangladesh have to maintain standard SCM procedures.

b) Subsequent, Bangladesh requirements to get better the factory working environment and various social matters related to the RMG industry. International buyers are

Very scrupulous about compliance with codes of conduct (Wal-Mart is clearly ahead to SCM generation for an example).

c) Thirdly, issues associated to product and market diversification as well as advancement products desires to be addressed with extraordinary heed which is ensuring by SCM in a scattered manner.

d) Direct marketing and elimination of middle men can help establish an effective supply chain system. It is very difficult to make a combined and coordinated system among the interest groups involved at present. Miscommunication and misinformation at any point hamper the whole process.

e) The impact of political instability and workers' unrest destabilizing the SCM are another concern. Adaptation with changing technologies, undisrupted utility supplies, minimizing corruption, and elimination of bureaucratic tangles in customs, port management and other concerned government agencies can play a vital role in overcoming the challenges. Without combined efforts and firm commitment from all concerned, a performance-based supply chain system is not possible. g are the recommendations that the decision makers and planners of RMG may consider as fruitful.

f) The textile industry is lacking the correct supply chain management know-how as the country has an acute shortage of people who understand the complex nature of supply chain management.

g) The RMG manufacturers need to start working together with all the supply chain partners, as the landscape o

7.3 Conclusion

A chain is as strong as all of its rings are. Similarly, a chain is as weak as one of its rings is, i.e. one single ring is more than enough to make the whole chain dysfunctional. The RMG sector in our country has so far been witnessing very clear price competitiveness. The minimum wage in our country is still the lowest among our competitors. But our lead time is under pressure. Cheap labor does not help, if the workers are not efficient. The supply of a small quantity with many styles within a short time is not possible without a functional supply chain system. Reducing the dependence for materials on other countries and elimination of middle men are vital to make the chain strong. Without proper management of the supply chain, only wage competitiveness cannot ensure sustainable business. So, for the sake of the sector, we have no alternative but to make the SCM effective.

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