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**Technology Development and Labor Incentives in
Bangladesh Ready-made Garments Industry**
(バングラディシュの既製服産業における技術発展と労働誘因)

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Statement of Authentication

I certify that the work presented in the thesis is, to the best of my knowledge and belief, original except as acknowledged in the thesis. I hereby declare that I have not submitted this material, in either completely or in part, for a degree at this or any other institution.

Islam Md. Shafiqul

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CHAPTER 1 GENERAL INTRODUCTION

1.1. Overview

Bangladesh, bordered by India and Myanmar, is located in South Asia. In December of 1971, East Pakistan was named Bangladesh after being liberated from West Pakistan. The country's total area is 148,000 square kilometers and the population is 164.0 million with a population growth rate of 1.09% (World Bank, 2017). Almost 80% of the people live in the rural areas making their primary living in agriculture.

Although Bangladesh was renowned for its fabrics in the past, during the colonial era, there were very few small and medium industries in East Pakistan. Immediately after independence, to boost the industrial sector, the focus of the new government was on developing backward linking industries (i.e., jute and cotton textiles, sugar, fertilizer and others). Bangladesh was known for cotton textiles and silk manufacturing during the Mughal era¹. All of these products were exported to meet the demands of the Asian and European markets. In 1947, the contribution of the industrial sector to Gross Domestic Product (GDP) was less than 4%. During the 1950s, the central planning agency initiated a campaign to increase GDP by expanding the industrial sector. In fiscal year 1969-70, there were 3130 registered factories in the country, of which 791 were textiles, 576 chemicals, 406-food manufacturing, 257 metal products, 207 in footwear and apparel textiles, and 147 in leather and leather products. According to the Pakistan Government's Five Year Plan (1970-75), output of the major industries was 587 thousand tons of jute goods, 106 million lbs. of cotton yarn, 59 million yards of cotton cloth, 94 thousand tons of sugar, 40 thousand tons of cement, 96 thousand tons of fertilizer, 57 thousand tons of paper, and 58 million lbs.

¹ The Mughal Empire dominated the Indian subcontinent excluding the southernmost tip of India from the late 17th century to the early 18th century from the beginning of the 16th century and lasted until the late nineteenth century Turkish Islamic dynasty (1526-1858). The capital city is Delhi, Agra and others. It is also called the Mughal dynasty, the empire and ruled period was Babur in India (1526-1530), Humayun (1530-1556), Akbar (1556-1605), Fatehpur Sikri, Jahangir (1605-1627), Shah Jahan (1627-1658), Aurangzeb (1627-1707), Bahadur Shah (1707-1712) etc, & finally Bahadur Shah II (1837-1858).

of tea. The share of the industrial sector in GDP was about 9%, where the share of the large-scale manufacturing sector was 6% and the remainder was from small cottage industries. Bangladesh was one of leading countries to export primary products like jute, cotton, wool, hides and skins. After the liberation, Bangladesh builds small and medium industries and is trying to reach world standard levels, especially in the textile sector, the country has become an important region in the northeastern part of the Indian trade sub-continent. Despite developments in the area of textiles, there is still a way to go to reach world standard levels due to lack of proper infrastructure and industrial policies. However, in order to achieve the objectives of accelerated industrial growth and to increase the industrial contribution to GDP, Bangladesh should introduce a comprehensive array of policies aimed at bringing about significant socio-economic benefits and ultimately self-reliance for all people. In recognition of the private sector's ability to contribute towards achievement of these goals, the government has implemented a number of significant policy reforms. These were designed to create a more open and competitive climate for foreign investment.

In Bangladesh, the trade liberalization process started in the mid-1980s and the economy was increasingly opened in 1990's. Agriculture was the backbone of the economy of Bangladesh. After the independence in 1971, the first step towards industrialization started with private entrepreneurs. As a domestic customer based tailoring company, Reaz Garments Limited² was involved in the Cut, Make and Trim (CMT)³ processes and then became the first CMT based Ready-made Garment (RMG)⁴ factory in Bangladesh in 1978.

² Established in 1960 as a small tailoring outfit, named Reaz store at Urdu road, Dhaka, Bangladesh in 1973 it changed its name into M/S Reaz Garments Ltd.

³ Cut, Make and Trim (CMT): Ready-made Garment products manufacturer involves in cutting, making, finishing and sourcing trims for any garment order. Buyer has to provide fabric and design to the manufacturer including all cost except freight cost.

⁴ Ready-made Garments (RMG) are mass-produced finished textile products of the clothing industry. They are not custom tailored according to measurements, but rather generalized according to anthropometric studies. They are made from many different fabrics and yarns. Their characteristics depend on the fibers used in their manufacture. RMG's are divided into the following types: outer clothing, which includes work wear and uniforms, leisure wear, and sportswear (e.g., suits, pants, dresses, ladies' suits, blouses, blazers, jackets, cardigans, pullovers, coats, sports jackets, skirts, ties, jeans, shorts, T-shirts, polo shirts, sports shirts, tracksuits, bathing shorts, bathing suits, and bikinis); and undergarments, which include jersey goods and lingerie (e.g. underpants, undershirts, briefs, socks, stockings, and pantyhose). The first Ready-made Garment factory was established in New York in 1831. During the American Civil War,

The RMG industry has now become a major earning export industry in Bangladesh. The first Export Processing Zone (EPZ)⁵ was established in Chittagong in the early 1980s and has been dominated by garment manufacturing firms. It was followed by the Dhaka EPZ, established in 1993, which specializes in high- technology firms. With the introduction of new economic liberalization policies, considerable amounts of private finance were invested in this sector. As a result, the sector has grown to become the lone export-oriented industry in the country. The key nature of the RMG industry in Bangladesh is private entrepreneurs' ownership. At the beginning, due to lack of the industrial knowledge as well as the limited professional knowledge in this field, industry was limited only to a CMT industry, which received orders from different buying houses⁶. With increased professionalism and the continuous increase in foreign demand for the products, the RMG sector spearheaded the country's economy. Since then the RMG industry holds a unique and unparalleled position in the Bangladesh economy and became largest exported item among all the export commodities of Bangladesh.

Under the quota system of the Multi-Fiber Agreement (MFA),⁷ which was in place for 15 years, the RMG industry experienced phenomenal growth. According to the Bangladesh Garments Manufacturer Exporters Associations (BGMEA)⁸ there are currently 4825 RMG factories in Bangladesh that employ about 4.0 million workers in this sector, 6% of the total labor force of 49.5 million. The opportunities for employment in the garment sector became

the need for Ready-made uniforms helped the garment sector grow in the United States.

⁵ A free trade zone (FTZ) or export processing zone is an area of a country where some normal trade barriers such as tariffs and quotas are eliminated and bureaucratic requirements are lowered in hopes of attracting new business and foreign investments.

⁶ Buying house means is an office with some testing machine and equipment's, as it is not directly executing the order and every buying house need some energetic skilled merchandiser to maintain the placement of order and execution, some quality controller to maintain the products quality some other officials to do works. The buying house procures garments from the manufacturers and exporters to other countries is called buying house and it try to communicate with buyers of other countries who want to buy garment products and then they contract with factories who can make those kinds of product and fulfill buyer's demand (ref: Noor Ahmed Raaz, Sinha Group, Narayangonj, Bangladesh).

⁷ An international trade agreement on textile and clothing that was active from 1974 until 2004. The agreement imposed quotas on the amount that developing countries could export in the form of yarn, fabric and clothing to developed countries.

⁸ BGMEA is one of the largest trade associations in the country representing the Ready-made Garment industry, particularly the woven garments, knitwear and sweater sub-sectors with equal importance. Starting its journey in 1983 today BGMEA takes care of an industry that is at the backbone of Bangladesh's economy.

the largest solution to the country's unemployment problems and mostly unskilled women employment was attractive in RMG sector. In terms of contribution made to GDP and direct and indirect employment generation, and therefore poverty reduction, the RMG sector has been playing a significant role in the economic development of Bangladesh. In 2008, the RMG sector reached to what is called the "green stage"⁹, because of its astonishing growth performance.

Currently, Bangladesh's RMG factories are taking all raw materials, accessories and designs from buyers or from buying houses to produce the final product. Once the orders are received, the producer uses the CMT process to finish production. The contribution of the industrial sector to GDP in Bangladesh has been mounting since the beginning of the 1990s, especially because of increased export earnings from the RMG industry. Due to this reason, the CMT based production process in the RMG sector arose as an important determinant of industrial development in Bangladesh. Therefore, further explanation about the CMT type of production is critical to understanding its role. Further, the impact of the RMG association (formed by CMT based RMG factory owners, BGMEA) on the development of the RMG industry as well as the dual structure¹⁰ of industrial growth is also explained in this thesis.

There has been no sizable change in the RMG sector in Bangladesh, even after the introduction of open economic policies in 1989 and thus, performance of the CMT factories have not shown a significant difference from its previous performance. Here, it was found that the CMT factories have been facing fundamental development problems, even after the government introduced the new industrial policies. These problems included lack of

⁹ From 1990-2005 all RMG manufacturing factories have profitable period so called green stage and also see Siddiqi, 2005 The University Press Limited "The Ready-made Garments Industry of Bangladesh"

¹⁰ Would describe the term "dual structure of an economy" to indicate the co-existence of two different sectors alongside each other with disparities in technology and productivity between them. Take for instance, the existence of a traditional primary sector along with a modern non-primary sector constitutes to a "dual structure". Duality can exist within a particular sector of the economy.

management resources, lack of management ability for marketing and lack of improvement of the job environment for employees. These developmental barriers have stagnated the development of CMT factories in Bangladesh.

With open economic policies, the demand for Bangladeshi RMG products increased and as a result, CMT factory owners understood that they would not be able to meet demand with a system of production that had been spread across sections. Considerable encouragement was given to foreign investors through the open economic policies that established exports processing zones with more concessions for foreign investors. Therefore, they wanted all the production to be carried out in a unique place. Since the year 2000, this has influenced some of them to start a new industrial system called Composite Corporation (CC)¹¹. This is likely one of the critical factors that influenced the entrepreneurs to form CC based RMG factories. The labor force in Bangladesh also wished to join CC factories because they believed their jobs were more secure. Therefore, the latest data published by the Bank of Bangladesh showed that the export share of Bangladeshi RMG has risen faster under CC factories. Some of the CMT factories were shut down while others were taking production advantage with the help of large CMT factories. Further, in order to face the challenges that came after the expiration of the MFA quota system, some of the CMT factory owners decided to develop the CC system that involves negotiating very closely with buyers to accept orders directly. This CC system has shown improved performance within a very short period and therefore, the system became popular among the RMG producers in the country. Paying attention to the development of skilled labor should be the basic focus of the CC or medium and large-scale of CMT factories. In turn, these skilled labors will

¹¹ It is larger than CMT factories with some more factories where total RMG products production is possible like from cotton to final RMG product and up wholesale buyer. It is called also group of companies and recently, a number of large firms with composite mills have emerged. These firms have both backward and forward linkages. They procure orders from the retailers of US and EU (European Union) without the help of buying houses, produce fabrics, make the garments and export them. Therefore, "CMT" scenario is changing. It also meaning group of companies where they can manufacture the RMG product begging to end using new type of production process & technology. This type of manufacturing has started in Bangladesh at the beginning of 21st century (Siddiqi, 2005).

efficiently produce higher quality products at a minimum cost. Besides, the lead-time (production time) for delivering of RMG products will be less.

1.2. Socio-Technical System

Socio-technical systems (STS)¹² in organizational development is an approach to complex organizational work design that recognizes the interaction between people and technology in workplaces. The term socio-technical systems was coined by Eric Trist, Ken Bamforth, and Fred Emery, in the World War II era, based on their work with workers in English coal mines at the Tavistock Institute in London (Kishida and Tanaka, 2009). Socio-technical systems pertain to theory regarding the social aspects of people and technical aspects of organizational structure and processes. Here, technology does not necessarily imply material technology. The focus is on procedures and related knowledge, i.e. it refers to the ancient Greek term *logos*. "Technology" is a term used to refer to structure and a broader sense of technicalities. Socio-technical refers to the interrelatedness of *social* and *technical* aspects of an organization.

Socio-technical systems theory therefore is about joint optimization, with a shared emphasis on achievement of both excellence in technical performance and quality in people's work lives. Socio-technical systems theory, proposes a number of different ways of achieving joint optimization. They are usually based on designing different kinds of organization, in which the relationships between socio and technical elements lead to the emergence of productivity and satisfaction.

At the beginning, a big number of unskilled women were employed for production of RMG in Bangladesh. Therefore, it is necessary to develop for the labor skilled up due to production and reduce lead-time for Bangladesh RMG industry. Finally, this study finds the

¹² Kishida and Tanaka (2009), History of Management Thought, Page 70-75,

two main core objectives for sustainable profit of RMG industries as i) how to reduce the lead time and ii) how to increase the production.

The objective of this dissertation is to focus on labor incentives programs and its impact on the performance of the RMG industry of Bangladesh. The main objectives of the incentive programs for the RMG factories are: i) to attract the skilled and increase the efficiency of the labors, ii) to motivate labors towards better performances and create a competitive advantages among labors, iii) to keep a focus on reducing the lead-time for delivering the products to the foreign customers, and iv) to gain the main firm performance advantages of foreign direct investment of Japanese company (Maruhisa Pacific Co. Ltd) by introducing non-structured labor incentive programs.

1.3. Literature review of the thesis

The RMG industry of Bangladesh contributed to export earnings, foreign exchange earnings, employment creation, poverty alleviation and the empowerment of women. This sector became a prominent player in the economy within a short period and played an important role in the poverty alleviation and acted as a driving force to the economy. Over the years, a number of studies were conducted on the RMG sector of Bangladesh. A few of them were on the operational methods of the RMG sector to cope with the competition in the international markets. Those papers are based on theoretical and empirical methods and have focused on the RMG industry development, product development, new technologies, new policy, new investment, labor skill upgrading training, incentives, as such. They also stressed the necessity for finding alternative ways to increase the labor efficiency to excel productivity. My study is unique in that no such study was conducted on finding the factors to increase the labor productivity and profitability of RMG industrial sector in Bangladesh. A brief discussion of studies is provided below.

Kishida and Tanaka (2009) found in their research at Tavistock Institute of Human Relation that the utilization of more human resources does not really increase the production of the industry, whereas the utilization of technology development contributes largely to increase in production. As urged in Bangladesh RMG sector, CMT based RMG factories developed CC based factories through human work and technological development with emphasis on social aspect. CMT is a long wall method and three decade is continuing its production at Bangladesh but technological development is low.

Khosla (2009) found that the RMG industry in Bangladesh provided women with opportunities to work outside their home. This working chance for women allowed them to raise their voice to increase emphasis on girls' education and campaigns to improve women's health and reduce fertility. As a result, the social exclusion of women reduced considerably. Given these important changes, this industry helped the wellbeing of women lives. The stakeholders should focus on making the industry more humane and sustainable for women. In this context Kishida (2010) found that technology development has a positive impact on productivity development in the Bangladesh RMG industry. He highlighted that technical development leads to CMT and CC, thereby increasing labor productivity through employee satisfaction.

Haider (2007) showed that the export-quota system and the availability of cheap labor were the two main reasons behind the success of the RMG industry in Bangladesh. Bangladesh exported its RMG products to the United States of America and the European Union. These two destinations accounted for more than 90% share of the country's total earnings from garment exports. Bangladesh achieved some product diversification and product upgrading in both the United States and the European Union. He argued that Bangladesh is less competitive to China or India but it is somewhat competitive in the

European Union. The competitiveness issue of the Bangladesh RMG industry was a top priority topic since the phase-out of the export-quota system at the beginning of 2005. The most important task for the industry is to reduce the lead-time of finished RMG products. Haider (2007) argued that a reduction in total “production and distribution” time was improved by reducing lead-time. This in turn improved the competitiveness of the RMG factory. He further argued, the RMG industry of Bangladesh needed to improve the factory-working environment and various social issues related to this industry, as the international buyers were concerned about compliance with codes of conduct as well as the working environment of the workers. Besides, issues related to product and market diversifications as well as upgrading products were needed to be addressed with special care.

Mottaleb and Sonobe (2009) argued on the rapid growth of the garment industry in Bangladesh. The export-oriented garment industry in Bangladesh grew rapidly for the last three decades and now ranks among the largest garment exporters in the world. While early success is attributed to the initial technology transfer from South Korea, a one-time infusion of knowledge alone was insufficient to explain the sustained growth for three decades. They used primary data collected from the knitwear manufacturers and garment traders to explore the process of the continuous learning of advanced skills. They found that among other things, the high profitability of garment manufacturing process due to the initial infusion of specific human capital attracted a number of highly educated entrepreneurs into this industry. They have concluded that the division of labor between manufacturers and traders facilitated the expansion of the industry and that enterprise growth lasted long because of the continuous learning from abroad by the highly educated entrepreneurs.

Shumon, Zaman and Rahman (2010) argued that the apparel industries should produce momentous quantities in shorter lead times. Apparel product is highly correlated with high level of productivity. As a result, the sewing line should be balanced in shorter possible time

and in effective way for each style and quantity. The focal constraint against higher productivity is the difference in individual capacity, which is the mode of improper line balancing and bottleneck process. This research was based on an effective layout model to trace the point to hit upon the bottleneck process through benchmark capacity. They have balancing process by using two separate concepts of manufacturing processes—modular and traditional systems. The result showed that this balanced layout model increased efficiency and labor productivity by 21% and 22%, respectively.

Huda, Akhtar and Akhtar (2011) surveyed on employee's view on job satisfaction and focused on the job satisfaction of the employees in the RMG industry. They found that irrespective of its stage of development, every country is engaged in garment manufacturing and trading. This industry migrates from high-wage to low-wage countries like a “flying goose”. Historically, the RMG industry was the first industry any country was able to introduce, which eventually led to the development of other industries. They collected data from the primary survey on employees and experts in this industry. These primary data were supported by secondary research on previous research, industry report, government paper, and interview of resource persons. Percentage analysis and hypothesis tests are the primary tools used for the data analysis. Their findings showed that garment workers were unhappy with their working environment and pay package.

Abedin (2008) showed the overall problems and prospects of the Bangladesh RMG industries. The garment industry was the largest industrial sector of the country. It had global reputation for its products especially in the European market. Many of the less-developing countries (LDCs) took the chance and Bangladesh started to export RMG that market. In his research, it was found that the RMG industry started to contribute to Bangladesh economy from the late eighties (1977). Although the RMG sector of Bangladesh was present

in the 1970s, the growth was not worth mentioning, and the sector made phenomenal growth over the next two decades. Its achievement is noteworthy, particularly for a country plagued with poor resource endowments and adverse conditions for industrialization. Abedin (2008) found that a large number of labors were employed in this sector and he concluded that proper attention should be given to the labor so that they can contribute more on the export earnings. He also investigated the ways that the labor could be motivated to increase the export share of the sector.

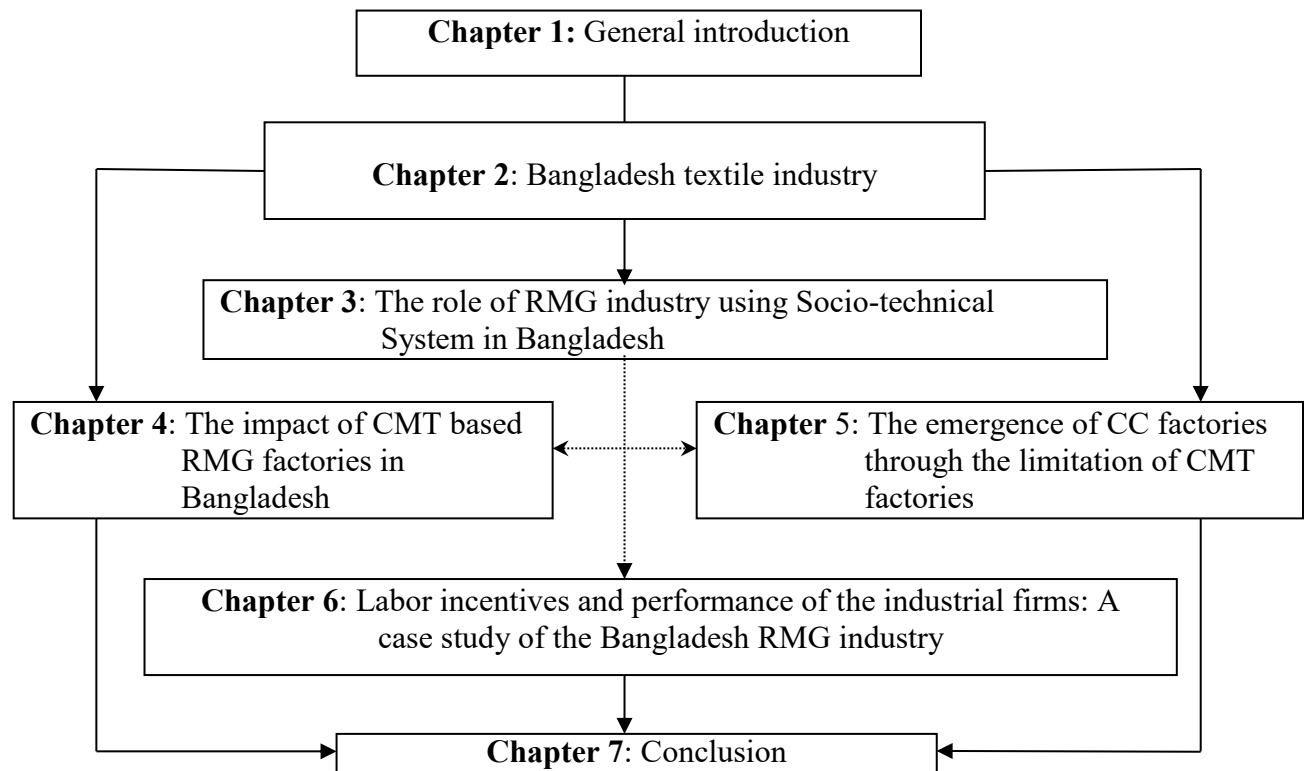
Finally, Wang (2004) highlighted that most of the management are often frustrated by the lack of motivation generated by end of the year bonus. Currently, there are two compensation ideals, merit-based versus incentive-based. Merit based compensation correlates compensation to one's job performance; whereas incentive is based on goals achieved and correlates bonus rewards before the period used to evaluate the performance. An effective incentive program contributes to a company's overall competitiveness by encouraging superior performance as well as improving its earnings and cash flows. An incentive compensation program is not a substitute for lack of staff accountability, rather it should be used to motivate individuals and align the goals of individuals with those of the company. However, Wang (2004) found three prospective methods for a firm's development such as determining the current incentive package, efficient factor for industries compensation and determining factors needed to have a complete incentive package, where the RMG industry survived its growth path in the economy of Bangladesh.

This research focuses on the labor incentives of the RMG industry in Bangladesh. For any labor-oriented company, motivating the personnel is one of the prime factors in its development. For the RMG of Bangladesh, different incentives are needed to motivate the employees to increase efficiency as well as productivity.

1.4. Framework of the thesis

This thesis consists of seven chapters including this general introduction (Chapter 1). Chapter 2 examines the importance of industrialization with focus on the textile industry of Bangladesh, and the demand and supply gap in the local market as well as in the export market as per socio-technology systems. Chapter 3 discusses the role of the RMG industry in the socio-economic context of Bangladesh. Chapter 4 considers the impact of CMT based RMG industry and the growth factors of CMT factories in this industry. Chapter 5 analyzes the emergence of CC factories because of the limitations of CMT factories. The introduction of CC factories created a dual structure of RMG factories. Chapter 6 analyzes the empirical data collected from 36 medium and large-scale RMG factories for the period 2001-2012. Chapter 7 follows the conclusion of the thesis using socio-technical system.

Figure 1. 1 - Framework of the Thesis



CHAPTER 2 - BANGLADESH TEXTILE INDUSTRY

2.1. Introduction

This chapter provides an overview to the Bangladeshi textile industry from the industrial development and socio-technology systems point of view. The first section of the chapter discusses the importance of industrialization for Bangladesh. The second section elucidates the history and the development of the Bangladeshi textile industry. An overview of domestic market supply demand gap in textile products is highlighted in section three. Fourth section explains the dependency of the Bangladeshi textile industry on the Indian textile industries. Fifth section highlights the recent developments of textile industry in Bangladesh. The textile industry industrialization is explained in the sixth section, and finally section seven concludes the chapter.

2.2. Importance of industrialization using socio-technical system

Bangladesh is one of the world's highest population density countries with a population of 1.64 million.¹³ Almost 75% of the total population of Bangladesh lives in the rural areas (2009)¹⁴. 50% of the rural population is depending on the agriculture, whereas only 11% of workers belong to the manufacturing sector¹⁵. Like other developing countries, in order to eradicate poverty and to create more employment opportunities for the poor, Bangladesh has also realized that its agriculture based economy should be changed into industrial based economy. As a result, Bangladesh as a developing and low income country is slowly moving into industrialization using its human capital at RMG industry.

Industrialization is the process of social and economic change that transforms a human group from a pre-industrial society into an industrial society. As mentioned by Lewis-

¹³ CIA world fact book, 2017(<https://www.cia.gov/library/publications/the-world-factbook/fields/335.html#BG>)

¹⁴ Bangladesh Bureau of Statistics, 2009, March, (www.bbs.gov.bd)

¹⁵ Bangladesh Bureau of Statistics, Labor Force Survey, 2005-06, 2007

Fei-Rani (1954 and 1965), two sector model provides a useful guide to the role of manufacturing in the development process of a country without an international trade sector¹⁶. Taking current resource endowment in to account, policy makers have already identified the importance of introducing RMG industry in the Bangladesh economy mainly competitively high position in the international market in RMG using STS.

Bangladesh started its export promotion by promoting the RMG industry in which it has many competitive advantages compared to its other trading partners (Todaro, 1996). Even though export composition from traditional agricultural products to non-traditional textiles, which is now heavily dependent on Indian and Chinese textile industries. Therefore, to overcome textile industries dependency is necessary and important to Socio-technical system skilled up and development. In socio-technical theory, it has been highlighted that performance of any organizational system can only be understood and improved if both ‘social’ and ‘technical’ aspects are brought together and treated as interdependent parts of a system. Moreover, socio-technical system is not developed but using STS theory, it is easy to explanation of the Bangladeshi RMG industry.

2.3. History of the Bangladesh textile industry

Bangladesh began its journey as an independent country in a very destitute situation. Its economy immediately fell into even greater disorder due to its close relation with Pakistan. Furthermore, Bangladesh had limited experience in handling business, trade and finance. Prior to its separation, entrepreneurs from West Pakistan and other non-Bengalis (non-native Bangla language speakers), for example Biharis and those who migrated from India’s Bihar province during and after the partition in 1947 controlled the country’s industry, trade and commerce. As these entrepreneurs, industrialists and business owners

¹⁶ Lewis (1954), Fei and Ranis (1965), The model is perhaps most usefully viewed as descriptive in a historical context-nineteenth-century England and pre-1950 Japan- and normative in the post-Second World War context of most LDCs.

left the country during the civil war, most of their business enterprises and factories became bankrupt. After independence, economic activities were in disorder and Bangladesh faced serious problem due to lack of experienced administrators, managers, entrepreneurs, engineers and technicians to effectively control the economy. Furthermore, the new nation immediately faced acute shortages of food grains and other staples caused by wartime disruption, which has been further exacerbated by the high growth rate of the population, estimated to be 2.0% in 2008. In addition, the infrastructure was virtually destroyed during the war for independence and Bangladesh was in need of foreign aid for meeting its many basic needs.

India was the first to assist and later economic aid flowed from Russia, the United States, the World Bank, and 26 other international financial institutions and foreign governments (Bangladesh Aid Group). During 1971-1999, Bangladesh received US\$ 34.76 million (Tk. 1,800 billion) as foreign aid (of which 52% was loan and 48% was aid). In the beginning more aid than loans were granted but the amount of aid gradually declined. In 1972 the loan amount represented approximately 10% of the total help, and by 1998 this share increased to about 55% as shown in Table 2.1.

According to Chowdhury (2004), the new government did not reform any national policies regarding entrepreneurship nor was there an implied policy in practice. The history of the Bangladeshi textile industry can be explained by dividing it into two main periods, namely the pre-independence period and the post-independence period. Moreover, the textile industry of Bangladesh can be divided into three main categories: the public sector, handloom sector, and the organized private sector (Khandker, 2002). The Bangladeshi textile industry accounted for 45% of all industrial employment in the country and contributes 5% of the total national income. Bangladesh faced serious problems, principally because the country did not produce the necessary raw materials; there are unfavorable trade

policies; and there were inadequate incentives for expansion. The textile and clothing industry of Bangladesh, therefore, was plagued with many difficulties. Moreover, textile industry is based on human capital and it is necessary social and technical development by the government institution or policy implication.

Table 2. 1 - Total foreign loans and aids -1971/72-1998/99 (Sectors: Food, Commodity & Project)

Allocation Sectors	Loan	Aid	Total Amount in million \$	Percentage
Food	763	5,069	5,832	16.8%
Commodity	5,215	4,874	10,089	29.0%
Project	12,025	6,811	18,836	54.2%
Total	18,003	16,754	34,757	100%
Percentage	51.8%	48.2%	100%	

Note: Above figure did not include IMF credit and loan for certain special projects, which included Food Ministry, Bangladesh Shipping Corporation, Petroleum Corporation, Defense, NGO, and private sector.

Source: Economic Relation Division, Ministry of Finance Report dated February 27, 2000 on Flow of External Resources into Bangladesh-as of June 30, 1999, Barkat

2.3.1. Pre-independence period

Pakistan announced the first industrial policy statement with an amendment on November 18, 1948. The basic elements of the industrial policy pursued over the period 1950-70 were: (a) industrialization was to be achieved through private enterprise; (b) the government committed to promote industrialization through suitable and active intervention; (c) the central government, with the concurrence of provincial governments, assumed responsibility for the planning and development of 27 specified industries. The government would own and operate industries relating to production of arms and ammunition, generation of hydro-electric power, manufacturing of railway wagons, telephones, telegraphs, wireless, and broadcasting apparatuses. Jute and cotton textiles were kept for central planning with the concurrence of provincial governments (Khondaker, 2002, p 23-24). The industrial policy of Pakistan remained the same throughout the 1950s and 1960s. The goal of focusing on industrialization was to be achieved by private industries. Thus, over the years, the government developed infrastructure that facilitated industrial

investment within the framework of its overall and sectorial development plans and formulated certain policies and activities for the rapid industrialization of the country.

Table 2.2 - Change of GDP during the Pakistan period (percentage)

Sector/Year	Value added of GNP		Growth Rate
	1949-50	1969-70	1969-70
Agriculture	60	45	2.6
Manufacturing	6	12	7.9
Construction	1	5	13.0
Others	33	38	4.1
Total	100	100	4.1

Source: Government of Pakistan, the Fourth Five Year Plan (1970-75), 1981, p2.

Because of these developments, the structure of production changed considerably after 1950. In relation to a 4.1% in the growth rate of GNP, value added in agriculture grew at 2.6%, manufacturing at 7.9%, construction at 13.0% and other sectors at 4.7%. Concentration on production in agriculture was reduced with the gradual industrialization of the economy. Though the agricultural sector continued to be a dominant sector, its share declined from 60% (1947-50) to 45% (1969-70) of GDP as shown in Table 2.2. During the same period, the share of large-scale manufacturing increased from 1.4% to 8.8%¹⁷.

To provide financial support and sufficient capital for industrial enterprises, the government granted credit through formal credit institutions. The government established the Pakistan Industrial Finance Corporation (PIFC) in 1949. This corporation was authorized to give financial assistance to industrial entities by guaranteeing loans repayable within twenty years, underwriting issues of shares, bonds and debentures, and granting loans or subscribing to debentures. However, PIFC did not play a practical role in the development of the industrial sector in Bangladesh (East Pakistan at the time) and later was converted to the Industrial Development Bank of Pakistan (IDBP) in 1961, which was allowed to extend

¹⁷ Government of Pakistan, The Fourth Five Year Plan (1970-75), p.195

credit for the establishment of new enterprises. The agency that played the most important role in the development of industries in Bangladesh was the East Pakistan Industrial Development Corporation (EPIDC), which was established in 1962 by Pakistan Industrial Development Corporation (PIDC). The activities of EPDIC were mainly related to providing equity finance and managerial support to private entrepreneurs to enable them to start and operate industrial enterprises. However, the private investors during the 1950s and the early 1960s were concentrated mostly in West Pakistan (now Pakistan) (Clare, 1992). As a result, in large-scale production, Bangladeshi entrepreneurs were engaged mainly in jute manufacturing and cotton textiles. At the time of independence in 1971, Bangladesh entrepreneurs owned about 34% of fixed assets in the jute and textile industries, respectively.

Besides these two industries, there were six enterprises with assets over Tk. 2.5 million owned by Bangladeshi entrepreneurs. The development of textile industries as shown in Table 2.3 was assisted by EPIDC. Cotton textiles accounted for more than 10% of total value of all cotton textile projects sanctioned during the Pakistan period. Since 1964, only one west Pakistani originated cotton textile project was established in Bangladesh.

Starting in 1947, the industrial base of Bangladesh was formed by the end of the 1960s. The contribution of the manufacturing sector in 1970 was Rs. 1,672 million, or 7.8% of the GDP compared to Rs. 339 million in 1950 which was 3.0% at constant 1960 prices. The contribution of large scale industries was Rs. 783 million (3.7%) and that of small manufacturing was Rs. 889 million (4.1 %) during the same period¹⁸. However, during the same period, Pakistan (both East and West Pakistan) had no natural resources and its overall manufacturing capacity was negligible. With the exception of a few cotton, sugar

¹⁸ Qazi, Khaliqzaman, Ahmed, The Manufacturing Sector of Bangladesh, 2001, p.393.

and tea plants, and some capacity in cement production, the country had no modern industry, banking or other large commercial establishments.

Table 2. 3 - Development of cotton textile industries in Bangladesh under the Pakistan regime

Year	Registered (⁰⁰⁰)	Equipment (⁰⁰⁰)		Production (million yards and lbs)	
	Factory	Spinning	Looms	Yarn (yards)	Cloth(lbs)
1955-56	n.a	234	3	22.6	62.8
1956-57	n.a	283	3	28.1	62.0
1957-58	n.a	307	3	33.4	56.7
1958-59	n.a	320	3	40.1	65.2
1959-60	18	346	3	45.4	63.9
1960-61	18	364	3	47.5	69.4
1961-62	20	403	3	53.4	67.1
1962-63	25	492	3	54.2	55.1
1963-64	28	521	4	63.8	48.8
1964-65	29	617	5	63.9	48.8
1965-66	33	664	6	73.0	40.0
1966-67	38	661	7	74.3	55.0
1967-68	37	662	7	77.5	52.0
1968-69	42	731	7	96.7	60.9
1969-70	44	750	7	106.7	59.2

Note: n.a= not available. Source: Asia Kenkyu Sho, *Hatten Tojokoku Chu Sho Kigyo Kenkyu, Bangladesh*, p.43

During partition in 1947, Pakistan was considered as an agricultural country since its economy was based largely on agricultural products. The land in West Pakistan was mostly dry, whereas the land in East Pakistan (now Bangladesh) was extremely well watered and considered highly fertile. East Pakistan was the major producer of raw jute and tea, which at that time earned about 70% of the foreign exchange for all of Pakistan. West Pakistan produced cotton, which was another important product of the country. Jute, tea and cotton constituted the main exports of the country. After independence, more than half of the country's foreign exchange came from the jute alone. This jute was called the '*golden fiber*' of East Pakistan. However, these vital jute and cotton industries faced an immediate shut down after independence/partition (Chowdhury, 2004). Table 2.3 shows the development of cotton textile industries in Bangladesh under the Pakistan regime. From

Year of 1960 to 1970, the number of factories increased from 18 thousand to 44 thousand machines, which is equal to 144%.

Pakistan is one of the major cotton producing countries in the world. As such, it is essential to explain the Pakistani textile and cotton industries and their production capacities compared to their Bangladeshi counterparts. The figures in Table 2.3 provide the number of registered firms, machinery equipment, and production capacities in the period 1955-1969, before Bangladesh got its independence in 1971. However, nearly 30% of the above firms, machinery equipments and production capacities belong to Bangladesh after independence. Moreover, 25% of those firms that belonged to the Bangladesh Textile Mills Corporation (BTMC) eventually shut down due to obsolete technology and thus, inability to compete with the latest developments in the worldwide textile industry.

2.3.2. Post-independence period

As Chowdhury (2004) observed, after the separation from Pakistan, Bangladesh had to depend on India for its major supplies of raw materials as well as its markets. He explained the situation of Indian influence on the Bangladeshi economy by stating that before independence, Bangladesh was dependent upon Pakistan for many of its vital supplies while India would be the ultimate beneficiary. Therefore, by helping Bangladesh independence, India would not only weaken its archrival but also gain an instant market for its many products. With a population of about 75 million at the time, Bangladesh easily provided a huge market for India's expansionary economy. And this is precisely what followed. Immediately after independence, many Indian products such as foods, clothing, spices, tools, machinery and others found their way into Bangladesh. These imports then made such an impact on the economic circumstances in the country that the entire economic

outlook changed. Thus, after liberation, the country became dependent on India for its vital supplies. As a main trading partner, India was then able to transform this newly created country into a stable market place for its many products. Industrial success depended on the market size, and a bigger market would offer a better opportunity for achieving faster growth. For India, Bangladesh readily provided that kind of market structure to promote growth of its manufacturing sector (Chowdhury, 2002, p24).

In March 1972, the first Bangladesh government declared that there were 620 enterprises under its initial economic plan and policy proposal as shown in Table 2.4 below. Under the same policy proposal over 80% of the large-scale industries were nationalized by a constitutional declaration¹⁹. The total value of these 620 enterprises was Tk. 3,374 million, under state ownership and first industrial and economic policy. During the war for independence, the manufacturing sector fell into widespread dislocation, with damage of buildings, tools and equipment, vehicles, raw materials, spare-parts, and finished goods²⁰.

Later the Bangladesh government introduced the New Industrial Policy in 1982 (NIP'82), replacing the *Two Year Plan (1978-1980)* that had been introduced by the government of the People's Republic of Bangladesh. According to Table 2.4, only 21 textile mills were registered in 1983, with the number increasing to 260 in 2006. The primary textile²¹ mills started to increase with the introduction of the New Industrial Policy in 1982. The government oversaw the major industrial policies and saw little change because of nationalization (Khan, 2006).

Bangladesh experienced a transition from nationalization to privatization if its industries with social human power.

¹⁹ Government of The People's Republic of Bangladesh, Bangladesh Industrial Enterprises (Nationalization) Order, 1972, (President Order N.27, of 1972), The Bangladesh Gazette, March 26, 1972.

²⁰ Government of the People's Republic of Bangladesh, The First Five Year Plan (1973-1978), p.195.

²¹ Primary textile is defined by Ministry of textile and Jute and it indicates only yarn and fabrics for the local markets only.

Table 2. 4 - The distribution of enterprises in nationalized sector under first economic plan and policy

Corporation	No. of Enterprises	Value of Fixed Assets (Taka in Million)
Jute mills (BTMC)	76	1,784.00
Textile mills (BTMC)	52	391.70
Sugar mills (BSMC)	15	235.30
Steel mills (BSC)	8	473.74
Engineering (BESC)	17	26.48
Fertilizers (BFCPC)	9	56.64
Food and Allied (BFAPC)	16	38.56
Paper and Board (BPBC)	10	489.60
Oil, Gas and Mineral (BOGMC)	6	28.30
Forest Industries (BFIDC)	6	35.90
Tanneries (BTC)	30	10.00
Sena Kalyan Sangstha	20	22.40
Freedom Fighter Foundation	15	11.30
Disinvestment Board	340	170.00
Total	620	3,773.92

Source: Robinson and Keith Griffin, The Economic Development of Bangladesh within a Social Framework, p.181, Bangladesh Economic Review 1998, p47.

The Revised Industrial Policy (RIP '86) was initiated and banks and insurance companies in the private sector started flourishing. Trade liberalization policy was undertaken in 1990. These policy changes motivated private entrepreneurs to bring the latest textile industry technology (RMG industry) to Bangladesh, and as a result of those efforts, the Bangladesh export-oriented RMG industry showed and sustained moderate growth to date.

Table 2. 5 - Growth pattern of primary textile mills in Bangladesh

Year	No. of Mills	Spindle Capacity	Growth in No. of Mills	Growth in Spindle Capacity
1995	84	1,701,823	10.52%	19.56%
2000	116	2,289,280	38.09%	34.52%
2001	145	2,352,310	25.00%	2.75%
2002	163	3,390,026	12.41%	44.11%
2003	174	3,419,504	6.75%	0.87%
2004	197	3,931,624	13.22%	14.98%
2005	230	4,937,353	16.75%	25.58%
2006	260	5,500,000	8.7%	11.39%
2007	283	6,000,000	8.85%	9.09%
2008	341	7,200,000	20.0%	20.0%
2009	350	7,600,000	2.6	5.6%

Source: Bangladesh Textile Mills Association (BTMA), 2010

Soon after the independence in 1971, Bangladesh looked forward to the country's

industrialization by introducing various policies aiming at rapid industrial growth. Table 2.6 summarizes those policies decade by decade, starting from 1970s with the prime objectives. Except for policy number three in the 1970s; all the other policies directly affected the RMG sector in the country. Among them was the establishment of the board of investments (BOI) to encourage foreign direct investment (FDI) to the export processing zone (EPZ) and to deal with EPZ coordination as one of the priorities. For example, there are a number of unique advantages for EPZ investors, such as tariff reduction, tax holidays, infrastructure facilities, etc. Open economic policies appeared with the 1985-90 Five Year Plan and due to the open economic policies, export earning started increasing.

Table 2. 6 - Overall outlook of the Bangladesh economic development policy

Period	Major policy Changes/introduction	Policy Objectives/Effects
1970s	1. BTMC existence in 26th March 1972. 2. The First Five Year Plan (1973-78)²² 3. Two Year Plan (1978-80) 4. EPZ Program 1979 first established in Chittagong	1. Economic and social development and annual development plan, to formulate policies for implementation of the plans 2. National base textiles industry setting facility and cover the textile requirement 3. Emphasis to foreign direct investor by Board of Investment to EPZ area 4. Emphasis to national base industry but no changes 5. New government institution (BOI) has raised for EPZ
1980s	1. SAARC policy established 1985 2. The Second Five Year Plan (1980-85) 3. The Third Five Year Plan (1985-90) 4. MFA policy by WTO for LDCs (1985-2005)	1. Among region for free trade co-operation facility 2. Privately association policy has started 3. emphasis for more easy open economic policy 4. Implicated by quota system for RMG base CMT industry
1990s	1. The Industrial Policy, 1991 (revised in 1992) 2. The Fourth Five Year Plan (1990-95) 3. The Fifth Five Year Plan (1997-2002) 4. The New Industrial Policy in 1999	1. Policy has announced for liberalization of industrial policy 2. 2.FDI has started in EPZ area and banking policy also open 3. 3.Poverty alleviation & micro-credit programs policy has started 4. Trust Sector for production of textile industry due to many of national base industry shutdown
2000s	1. MFA policy has expired in 2005 2. The fifth year plan (1997-2002) still 3. Bangladesh Industrial Policy 2005 4. Non-party care taker government policy (1st Nov., 2007 to 29th Dec., 2008)	1. Started open competition 2. Export policy made more open and also import policy 3. Private sector influence more invest in textile sector but faced know how and marketing ability problems 4. Newly government institution for privatization policy Changes corruption strategy for the time being

Source: Author, 2016.

²² Government of The People's Republic of Bangladesh, *The First Year Plan, 1973-78*

Another important policy issue was the Multi-Fiber Agreement (MFA) quota system that came from World Trade Organization (WTO). This quota system provided a stable market for Bangladeshi RMG products, though export volume was restricted through the MFA quota system to certain extent. To encourage RMG sector investors, the government has identified leading RMG factories as a “TRUST SECTOR” as a part of the 1990-95 Five Year Plan. Among several conditions that had a major influence on the RMG sector in Bangladesh, the removal of the MFA quota system in 2005 was crucial.

2.4. Domestic market supply demand gap in textile products

Due to the continuous development and penetration into the textile market, as well as a diversification in products, there was a significant demand for fabrics and yarn during the past five years. However, domestic fabric manufacturing mills could not cope with the demand. As such, a vast scope existed for investment in fabric production.

Table 2. 7 - Total demand-production gap between fabrics for domestic and export-oriented RMG units (million meters)

Financial Year	Demand for Fabrics		Total	Domestic Production	Demand Production Gap
2000-01	1,595	2,246	3,841	1,800	2,041
2001-02	1,618	2,568	4,186	2,050	2,136
2002-03	1,754	2,779	4,533	2,280	2,253
2003-04	1,865	3,323	5,188	2,750	2,438
2004-05	1,960	3,880	5,840	3,200	2,640

Source: Bangladesh Ministry of Textile and Jute, 2007

It is clear from Table 2.7 that the performance of the public sector gradually declined in terms of yarn production and fabric production completely stopped. The demand production gap for the domestic and export-oriented RMG industries for fabric was 2041 million meters in fiscal year 2000-01 and the gap increased to 2640 million meters in fiscal year 2004-05. The domestic market for the primary textile sector depends on local fabric

manufacturing competition in Bangladesh. The market price of primary textiles also depends on domestic demand, which mainly comes from the private sector. The private sector alone was not enough to meet both the international and domestic demand. Since domestic raw material production was not sufficient to meet the domestic demand and in addition to the high price of domestic raw materials, the private sector had to make a turn towards India and China for low price with quality raw materials.

Bangladesh expected to reduce the domestic and international market demand/supply gap in the primary textile sector because of industrial policy in 2005 that emphasized more investment in the primary textile sector. Table 2.8 shows the decrease of yarn production by the public sector from 16 million kg of yarn in 1996 to 8 million kg of yarn in 2006. In contrast, the private sector yarn production has been increased from 157 million kg in 1996 to 530 million kg in 2006.

Table 2. 8 - Annual production of yarn and fabrics

Year	Year production (million kg)			Fabric production(million meters)		
	Public sector	Private sector	Total	Public sector	Private sector	Total
1995/96	15.90	157.01	172.91	2.79	1,262.43	1,265.22
2000/01	15.81	186.76	271.57	-	1,845.00	1,845.00
2001/02	15.39	204.81	298.50	-	2,050.00	2,050.00
2002/03	9.35	330.65	340.00	-	2,200.00	2,200.00
2003/04	9.70	370.30	380.00	-	2,750.00	2,750.00
2004/05	9.48	440.52	450.00	-	3,100.00	3,100.00
2005/06	8.00	530.00	538.00	-	3,500.00	3,500.00

Source: Bangladesh Ministry of Textile and Jute, 2007

The latest public sector fabric production data is available only for fiscal year 1996 and thereafter there was public sector production ceased. However, the production of fabric in the private sector increased from 1262 million meters in 1996 to 3500 million meters in fiscal year 2005-06. Though it hindered the economy, with government permission, the

private sector continued to earn profit by importing fabric and raw materials. Thus, the government of Bangladesh has been trying to develop a primary textile sector since 1982 by introducing several industrial policy packages.

2.5. Dependency of Bangladeshi textile industry on Indian textile industry

Geographically Bangladesh is facing to India on three sides. India was rich in raw materials including cotton for its textile factories. India's textile export is expected to grow to US\$40 billion in 2010 from US\$15 million in 2005 capturing 8% of the market share of the total textile export market.

Table 2. 9 - Common commodity imports by Bangladesh from China and India

Group-wise Commodity	China (TK in Millions)		India (TK in Millions)	
	2005-06	2004-05	2005-06	2004-05
Cotton, (all types) cotton yarn, thread and cotton fabrics	2,987	2,072	2,284	1,246
Boilers, machinery and mechanical appliances, parts thereof	2,094	1,595	994	1,147
Electrical machinery and equipment and parts thereof, sound recorders and reproducers, television image and sound reproducers, television image and sound recorders and reproducers and parts and accessories of such articles	1,334	636	323	302
Man-made staple fiber	1,016	884	286	267
Knitted or crocheted fabrics	857	665	91	93
Vehicles other than railway or tramway, rolling stock and parts and accessories thereof	214	200	704	504
Plastics and articles thereof	164	98	474	444
Cereals	21	20	1,425	2,961

Source: Bangladesh Bank 2007, Import Payments (annual), Department of Public Relation and Publication, Dhaka, Bangladesh

India accounted for 16.7% of the global production of cotton, having approximately 9 million hectares. India is likely to benefit from the rising demand of textiles and apparel products in the domestic sector, wherein it has a competitive edge against its neighbor Bangladesh. Nonetheless, a rapid slowdown in the denim cycle poses risks to fabric players. The cotton/man-made fiber textiles industry was the largest organized industry in India in terms of employment and number of units. In addition, there are a large number of

subsidiary industries like manufacturing machinery, accessories, stores, ancillaries, dyes and chemicals which are dependent on the textile industry.

Table 2.9 shows Bangladeshi cotton imports from India and it indicates how much the Bangladeshi textile industry depends on Indian cotton. During the period from 2004 to 2006, Bangladeshi cotton imports from India grew by 83%. In addition to cotton imports, most of the other necessary imports for the Bangladeshi textile industry, such as boilers, machinery and mechanical appliances, parts thereof, man-made staple fibers etc., were being imported from India, with import expenditures steadily increasing over time. Even though China exports more cotton, cotton yarn/thread (all types) and cotton fabrics to Bangladesh than the amount provided by India, for the future growth of the Bangladeshi textile industry, India was still better supplier of raw materials compared to China because of SAARC trade facilities. Bangladesh can enjoy the benefits of low tariff rates and free trade agreements.

Table 2. 10 - India's major export markets of textiles (Excluding ready-made garments) (US\$ Million)

Export Market	2004-05	2005-06	% age share in total export
USA	1262.19	1593.32	20.87
UAE	565.10	512.14	6.71
Germany	336.53	405.82	5.32
Italy	338.14	387.61	5.08
UK	344.27	352.24	4.61
Bangladesh	252.81	302.06	3.96
Turkey	224.17	230.81	3.02
South Korea	186.16	229.82	3.01
Spain	175.56	194.25	2.54
Sri Lanka	139.21	174.23	2.28
Egypt	129.53	162.16	2.12
Belgium	141.63	150.84	1.98
France	150.28	148.63	1.95
Saudi Arabia	154.58	148.52	1.95
Japan	128.10	135.29	1.77
Hong Kong	131.48	130.94	1.72
China	93.07	123.51	1.62
Canada	101.31	114.73	1.50
Total(Including Others)	6691.01	7633.91	100.00

Sources: CMIE, Global Trade Atlas and Euro stat, COMEXT data base.

Further, data in Table 2.10 indicates that the Chinese textile industry also depends on the Indian textile market and therefore, in all aspects it is more advantageous for Bangladesh to deal with India. Moreover, India has a long sustained and traditionally inherent textile industry with greater operating experience. Therefore, as the neighboring country, which plays larger role in the cotton and textile industry in the world and also is a major raw material supplier to Bangladesh, India is crucially important for development of the Bangladeshi textile industry. The data provided in Table 2.10 shows that Bangladesh receives 4% of the India's textile exports and India's textile exports to Bangladesh have increased by nearly 20% from 2004 to 2006. The situation that prevailed in is continuing until today.

2.6 Recent development of the textile industry in Bangladesh

With the introduction of an economic liberalization policy and export-oriented trade policy at the end of 1970s, the economic structure of Bangladesh has started to change rapidly. Bangladesh's textile industry can be divided into three main categories: i) public sector; ii) handloom sector; and iii) the organized private sector. The private sector is the fastest growing sector in the country. The handloom industry provides employment for a large segment of the population of Bangladesh and supplies a large portion of the fabric required by the local market. As Table 2.11 shows, at the beginning of the 1980s a large part of export share, 67%, belonged to traditional export growth, which included products such as raw jute, jute goods, tea, etc. At the same time export share of non-traditional products was just 33%. However, after two decades the economic structure was completely changed. According to Table 2.11, traditional export shares came down to 4.5% and non-traditional export share grew up to 95.5% in 2004. This is the important point.

Table 2. 11 - Traditional and non-traditional items ²³(In US\$ million & Taka million)

Fiscal Year	Total Exports	Traditional items		Non –Traditional items	
		Value	% Share	Value	% Share
1983-84	(811.00) 19901.90	(281.54) 19901.90	66.76	(529.46) 12993.01	33.24
1984-85	(934.43) 24154.92	(316.62) 8184.54	64.20	(617.81) 15970.34	35.80
1985-86	(819.21) 24314.02	(299.33) 888.13	54.67	(519.88) 15429.89	45.33
1986-87	(1076.61) 32631.99	(298.37) 9043.67	40.45	(778.24) 23588.32	59.55
1987-88	(1231.20) 38081.06	(286.69) 8867.33	34.17	(944.51) 29213.73	65.83
1988-89	(1291.56) 40968.40	(300.72) 9538.82	32.27	(990.84) 31429.58	67.73
1989-90	(1523.70) 49764.21	(322.96) 10547.85	32.26	(1200.74) 39216.36	67.74
1990-91	(1717.55) 60560.88	(306.13) 10794.21	25.15	(1411.42) 49766.59	74.85
1991-92	(1993.92) 75908.56	(267.26) 10174.69	20.62	(1726.66) 65733.87	79.38
1992-93	(2382.89) 92575.40	(313.91) 12195.47	16.76	(2068.98) 80379.93	83.24
1993-94	(2533.90) 100975.94	(346.80) 13820.11	14.49	(2187.10) 87155.83	85.51
1994-95	(3472.56) 139284.58	(452.20) 18137.81	12.17	(3020.36) 121146.76	87.83
1995-96	(3882.42) 158790.87	(475.84) 19461.65	11.56	(3406.58) 139329.22	88.44
1996-97	(4418.28) 188130.42	(526.43) 22415.58	10.59	(3891.85) 165714.48	89.41
1997-98	(5161.20) 234163.75	(501.93) 22772.55	8.41	(4659.29) 211391.20	91.59
1998-99	(5312.86) 254911.02	(422.33) 20263.18	7.76	(4890.53) 234647.84	92.24
1999-2000	(5752.20) 288185.16	(469.14) 23503.85	6.12	(5283.06) 264681.31	93.88
2000-2001	(6467.30) 348587.43	(484.62) 26121.10	4.95	(5982.68) 322466.33	95.05
2001-2002	(5986.09) 343661.45	(390.30) 22406.92	5.35	(5595.79) 321254.53	94.65
2002-2003	(6548.44) 379154.49	(462.59) 26784.15	5.41	(6085.85) 352370.34	94.59
2003-2004	(7602.99) 448272.22	(553.36) 32626.20	4.49	(7049.63) 415646.02	95.51

Source: Bangladesh Export Promotion Bureau, Bangladesh Export Statistics 2003-2004, p-11, 2005.

One of Hirschman's (1961 and 1987) best-known and most creative ideas is concerning industrial linkages. When one industry expands, it requires inputs from other

²³ Traditional item: Raw jute, tea and jute goods (excluding carpets) are considered as traditional items.
Non-traditional item: Other than traditional items all products are considered as Non-traditional items like woven garments, knitwear, frozen food, chemical products, leather, home textile, pharmaceuticals, handicrafts, footwear, textile fabrics etc.

industries to be able to produce. These are called backward linkages, since they induce effects on the output of supplying industries. On the other hand, when an industry sells and transports its production to other firms and sectors in the economy, it makes forward linkages to the original producers. That is, the induced effect of the output of the first industry moves in the direction of the final consumer (Dietz & Cypher, 2008). However, though the textile industry has experienced forward and backward linkages, which are crucially important for the development of any type of industry, is not clearly shown for the textile industry development. Furthermore, in the 1970s, the newly established RMG industrial sector in Bangladesh did not show considerable linkages with other related industries. The government introduced many policies for industrial development such as industrial policy of 1973, the New Industrial Policy of 1982 (NIP-1982), and the Revised Industrial Policy of 1986 (RIP-1986). Under the NIP 1982, Bangladesh introduced industrial liberalization policies and competitive market economic policies targeted for rapid industrialization in the economy.

According to the New Industrial Policy (NIP'82), some important measures were related directly to private and textile industry development as follows:

- Development of the industrial sector in order to increase its contribution to the GDP, income, resources and employment.
- Expansion of industries by putting more emphasis on development of the private sector and in this respect to make the role of the government 'promotional' rather than 'regulatory.'
- Encouraging domestic and foreign investment in overall industrial development.
- Developing export-oriented, export-linkage and efficient import substitute industries.
- Encouraging specially the development of small and cottage industries.
- Expediting development of labor-intensive industries through acquisition and improvement of appropriate technology.

- Stimulating development of industries based on indigenous raw materials and indigenous technology.
- Motivating investment the intermediate and basic industries.
- Confining the role of the government, particularly in establishing strategic and heavy industries, and improve efficiency of the public sector.
- Creating possible opportunities for revitalizing and rehabilitating sick industries.
- Making effective arrangements for improving standards and controlling quality of products.
- Taking appropriate measures for preventing environmental pollution and maintaining ecological balance.

However, the NIP-1982 policies were revised in 1986 and that policy package was known as RIP-1986. According to the RIP-1986, the Board of Investment (BOI), established in 1989, was the responsible government body for the implementation of the above policies. The BOI gave priority for accelerating private investment in Bangladesh by providing for capital investment and rapid industrialization, providing assistance to avail infrastructure facilities for industries, issuing work permits to expatriate personnel working in private sector industrial enterprises and providing import facilities to industrial units in the private sector, among other things. Within the industrial policy, the role of the private policy sector has been recognized as a predominant one. Except for reserved sectors, private sector investment has been kept open without any ceiling. Foreign investment is desired for export-oriented industries in the Export Processing Zones (EPZs) that were established in 1979 to encourage the production of technologically advanced import substitute or export-oriented products. Other benefits enjoyed in the EPZs are a tax holiday for 10 years, exemption of income tax on interest for borrowed capital, duty free import of machinery and raw materials among other benefits²⁴.

²⁴ Board of Investment, Guide to investment in Bangladesh, Prime Minister Office, 1998.

2.7. Textile industry development for industrialization in Bangladesh using STS

In terms of clothing exports with these structural changes that Bangladesh has already captured, Bangladesh still has to depend heavily on India and China for cotton and textiles and for a considerable share of the world market, which was equal to 2.3 % in 2005. Further, as Table 2.12 indicates, Bangladesh moved into 4th position in Asia after China, Hong Kong and India. Starting from the year 1990, Bangladesh clothing exports rapidly grew up in 2005. In order to speed up its industrialization process, Bangladesh has introduced a number of policy changes in both the pre-independence and post-independence eras. Among those policy changes, the establishment of the BOI, EPZs and the 2005 industrial policy package were most important. However, even after introducing these policies, the growth rate of industry, in particular the textile industry is not comparable to the growth rate of other competitors in the industry. The problems hinder the development of the textile industry.

- When Bangladeshi RMG industry received order from buyers by Letter of Credit (L/C),²⁵ it needs confirmation from a local authorized bank. It cannot receive the full amount of master L/C's value because it needs to purchase material and accessories from other countries using back-to-back L/C for 75%. The remaining 25% is received by the RMG factories.
- The RMG industry knows the buyer details but cannot go directly to the buyer's door because of limited facilities.
- The RMG industry gets only the labor cost, which is one of the major reasons for slow growth of this industry in Bangladesh.

²⁵ This is bank to bank negotiations by traders internationally. According to the Bangladesh bank using master (original) L/C, the manufacturer can purchase by opening one more L/C from another country but must deposit 25% from the master L/C. This process was for Bangladeshi factories that are 100% export-oriented.

The situation that prevailed in is continuing until today.

Table 2. 12 - Clothing exports of selected economics

Region/Economics (ranked by value in 2004)	Value(USD million)			Share of World Exports
	1990	2004	2005	2005
World	108129	259147	275639	
Asia				
China	9669	61856	74163	26.9
Hong Kong China	15406	25097	27292	9.9
India	2530	6632	8290	3.0
Bangladesh	643	5686	6418	2.3
Indonesia	1646	4464	5106	1.9
Vietnam		4441	4805	1.7
Other Regions				
EU25		76887	80354	29.2
Mexico	587	7490	7271	2.6
USA	2565	5059	4998	1.8
Turkey	3331	11193	11818	4.3

Source: Adhikari and Yamamoto (2008)

Clothing Export of Selected Countries(Value-USD) (Continued)					
Exporters/Year	2012	2013	2014	2015	2016
World	405112300	440248728	474684870	442354875	442123993
China	148269585	165044601	173437980	162348987	147793700
Bangladesh	19271198	19567733	Data N/A	26532326	33452933
Vietnam	14078822	16745481	19699178	21434183	24655528
Turkey	13849886	14959139	16256751	14845200	14784503
Germany	17650924	18297393	19461448	16656698	17116335
India	12896322	15702657	16538203	17131190	16961165
Italy	20345172	21639999	22938683	19400009	19968409
Hong Kong	21280613	20717212	19387296	17445637	14915743
Cambodia	4005756	4806443	5319879	5916473	10277967
Indonesia	7184170	7383998	7359754	7283375	7171032
Sri Lanka	3780770	4270811	4681465	4547691	4598051
Pakistan	3700676	3960247	4387275	4487070	5313238

Source: International Trade Center and World Trade Organization, 2017.

To overcome these difficulties and bottlenecks and accelerate growth process, the RMG industry needs to increase its productivity development. This study puts emphasis on using Socio-Technical System for the improvement of textile industry with its appropriate technology.

A change in technology is one of the ways of creating innovation according to Schumpeter (1939). As Eris and Saatcioglu (2006) have explained, Schumpeterian innovation is not only invention, but it includes the introduction of new marketing channels,

new ideas, new technology, etc. Technological innovation has become increasingly critical for firms as they struggle to achieve and maintain competitive advantages. Therefore, following this Schumpeterian idea, it is urged that updating the existing technology will enable the Bangladeshi textile industry to reach its potentials and achieve a high rate of growth, which in turn will contribute to the economic development of this country. Thus, STS strategy will contribute to the textile sector in Bangladesh.

As Pack (2007) stresses, **the compression of the industrialization process** is essential for industrialization and trade development. Because, Bangladesh is a low-income country, its annual GDP growth rate is US\$5.7% (estimated in 2009), and it is experiencing slow productivity and slow accumulation of relevant industrial skills. In order to develop industrial sector, it should use appropriate intermediate technology, STS, and managerial and technological development in the field. Technological knowledge will increase relevant industrial skills, which will later become very much important preconditions to industrial revolution in this country.

2.8. Conclusion

Bangladesh is experiencing the development of a market economy with industrial policies that patronize the promotion of the private sector. To keep the world market share as it is or to improve it further, it should first access the latest technology and then develop a strong textile production base in the region. The domestic market demand is also playing a key role in the development process of the textile sector. Due to huge local demand, the private sector entered into the textile manufacturing business intending to exploit the advantages of the local as well as the international markets. Compared to India, with its well-developed textile industry and one of the fastest growing economies, Bangladesh, as its nearest neighbor, can also move onto the same growth path by taking advantages from

it. However, Bangladesh is a resource rich country in terms of cheap labor, cheap energy recourses, and more than 30 years of managerial, marketing, and exporting experience in the RMG industry. It should gradually try to access the much needed infrastructure facilities, develop socio-technical system (STS) and introduce of new technologies for the production and development of its own independent textile industry.

CHAPTER 3 - THE ROLE OF READY-MADE GARMENT INDUSTRY USING SOCIO-TECHNICAL SYSTEM IN BANGLADESH

3.1. Introduction

This chapter discusses the role of RMG industry in Bangladesh using socio-technical system (STS). First, it discusses the impact of industrial development on industrialization. Second, a brief history is provided to the garment sector evolution in Bangladesh. A discussion on post-MFA (Multi-Fiber Agreement) era and the quota system is provided in the third section. Fourth section explains the significant role of RMG industries in Bangladesh, and the final section concludes this chapter.

3.2. Impact of Industrial development on industrialization

Chapter 1 described the evolution of textile industry in Bangladesh, where it highlighted that the industries in this country started with textile and jute in the pre-independence era. After independence in 1971, the government's nationalization policy had slowed down the primary growth of industries. Under the First Five-Year Plan (1973-78), some of the privately owned firms were nationalized which used machine and socio-technical system. The industrial sector grew very slowly in the 1970s and 1980s.

The RMG industry in Bangladesh appeared in 1978 for the first time. With the introduction of new economic liberalization policies, considerable amounts of private finance were invested in this sector. The sector existed as the only the export-oriented industry in the country. The key nature of the RMG industry in Bangladesh is private entrepreneurs' ownership. There was no special role to be played by the government. At the beginning, due to lack of the industrial knowledge as well as the limited professional knowledge, the industry was limited only to a CMT based RMG industry which received orders from different buying houses. CMT based RMG industry used only swing machine

and human power without any human skilled technology. With increased professionalism and the continuous increase in foreign demand for the products, the RMG sector spearheaded the country's economy. Since then the RMG industry holds a unique and unparalleled position in the Bangladesh economy. It is the largest export item among all export commodities of the country.

Under the quota system of the MFA for 15 years, the RMG industry experienced phenomenal growth. According to the Bangladesh Garments Manufacturer Associations (BGMEA), there are 4,825 RMG factories and also about 3.1 million workers in this sector, which is actually 5% of the total labor force of 49.5 million (Maligalig, Cuevas, & Rosario, 2009). This employment opportunity became one of the viable solutions to the country's unemployment problems as well. In terms of contribution made to GDP, direct and indirect employment generation, and poverty reduction, the RMG sector has been playing a significant role in the economic development of Bangladesh.

3.3. Evolution of garment sector in Bangladesh: A brief history

The history of the Bangladesh RMG industry is not considerably long. During the 1960s it had a very narrow backward linkage with Karachi (West Pakistan) and Dhaka (East Pakistan). However, prior to independence, Bangladesh had few textile producing firms and all of these textile firms belonged to the private sector owner. The government of Pakistan made a five-year industrial development plan in 1960-65²⁶ and it was successful during the Pakistan period. The history of the Bangladesh textile industry demonstrates that all the firms belonging to the government failed to make any profit. This motivated the government to use new ideas and technology utilized by the private sector inviting the private sector to become involved in the textile industry. After independence from Pakistan, the Bangladeshi

²⁶ Pakistan's Fiscal Year started from July. The Second Five-Year Plan (1960-65) surpassed its major goals when all sectors showed substantial growth.

government made the first of its five year plans, in which the nationalization of privately own firms was undertaken. After the nationalization program, it was difficult to see any development in the industry because of - 1. Plight of managers and skilled behari labors to Pakistan, 2. Damage of facilities in the War, 3. Labor Problem, 4. Inadequacy of local managers and skilled labors, 5. Disrupted electricity supply.

3.3.1. Ready-made Garments sector: Historical background

Ready-made garments started to develop during the 1960s in West Pakistan and at that time Bangladesh was known as East Pakistan. The domestic market for RMG in Bangladesh was much smaller than that in West Pakistan. The companies located in Karachi used to order from small RMG factories in Dhaka. Later, Karachi Company started exporting products to European countries. According to Siddiqi (2005), there were a few tailoring groups in Dhaka who manufactured export quality shirts and children wear on order, but the quantity was very small RMG items produced in Dhaka were sent to and sold in Karachi and was considered domestic business because Dhaka and Karachi were the two main cities of the Pakistan.

Siddiqi highlighted that the growth and development of the RMG industry in Bangladesh had a distinctive feature. In most countries, particularly in the developed countries, including the UK and other European countries, the USA, Canada, and Japan, not only the textile but also apparel industry were developed in response to domestic demand that motivated the industry. Even in the cases of India, Indonesia, Hong Kong, Thailand, and similar other countries, initially it was the domestic demand. During the 1960s, Bangladesh's domestic demand for garments was insignificant compared with the countries such as India, Indonesia, Hong Kong, and Japan. Because of this, the domestic garment sector in Bangladesh (East Pakistan) did not attract large-scale investments. Historically,

agriculture was the backbone of the economy of Bangladesh. However, the agriculture sector has failed to create job opportunities for its rapid growing population in Bangladesh. After independence, more than half of the country's foreign exchange came from jute alone. So much so that it was referred to as the "Golden Fiber"²⁷. When its demand was decreasing, most of the industrial operations within Bangladesh were paralyzed. Traditional industries and other production came to a near halt resulting in the country becoming dependent on India for its vital supplies. As a main trading partner, India was then able to transform this newly created country into a stable market place for some of its products (Chowdhury, 2004). Industrial success depends on the market size and a large market can offer a better opportunity for achieving faster growth. Bangladesh was the market for the manufacturing production of different items and it was beneficial for Indian enterprises to obtain rapid growth in its manufacturing sector. Bangladesh utilized the first foreign loan and aid money allocating funds to three sectors: food, commodity and project (as mentioned in chapter one in table 1) used to reestablish methods to develop other manufacturing sectors. From the beginning Bangladesh faced price competition with the cheaper imports from India.

However, labor costs in Bangladesh were relatively low compared to its trading partners and this factor motivated investors to relocate their firms to Bangladesh resulting in a more competitive industry. It was primarily due to the migratory nature of the RMG industry, moving from high-wage to low-wage countries, that the industry saw its development in Bangladesh. From the end of the 1960s the industry started to become globalized and therefore, to produce a garment, production activities were undertaken at a number of stages in a variety of locations, adding value at each stage (Siddiqi, 2005). Further, it was noted that within the framework of the world trading system, the garment production, exporting, marketing, and retailing systems formed a global commodity chain. It is obvious

²⁷ Bangladesh's traditional primary product. During the 1960-1970 decades its export share was highly and was high profitable item.

that globalized apparel production is a buyer-driven market. The companies constituting the buyer-driven commodity chain are apparently “manufacturers” without factories. For example, retailers like Wal-Mart, Sears Roebuck, JC Penny, Liz Claiborne, and GAP do not manufacture the products that they design or sell. They link overseas factories and traders with the main consumer markets. Mainly, the two factors that played important roles in the growth of the RMG industry in Bangladesh were: (i) a favorable exporting environment created by the MFA quota system²⁸ and (ii) Low wage rates in Bangladesh. How these two factors have contributed to the rise of the garment industry in Bangladesh will be discussed in next section.

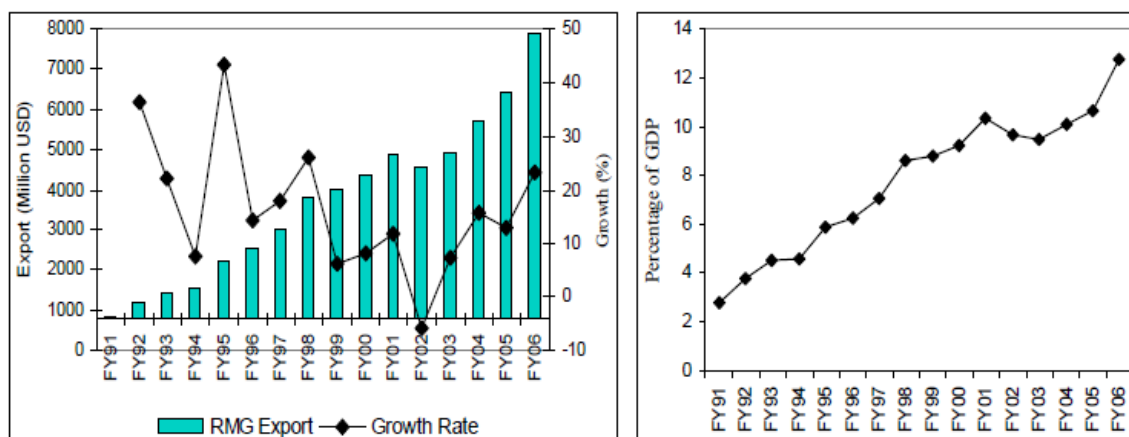
The garment industry sunk roots in the late 1970s and then witnessed remarkable growth to emerge as the major export item of the country with a share of about 75% in total export earnings. The industry began to grow under very unfavorable initial conditions which were characterized by particularly strong government regulations of the economy, domination by the public sector, and an inward-looking industrialization strategy. While these unfavorable conditions slowed industrial growth in the country, the garment industry grew. Moreover, the trade liberalization process started in Bangladesh at the end of the 1990s, which boosted RMG industry growth further under favorable open economic conditions (Siddiqi, 2005).

Over the past one and half decade RMG export earnings have increased by more than 8 times with an exceptional growth rate of 16.5%. Figure 3.1 shows that in fiscal year 2006, exports have gained about 8 billion US dollars, which was highest during the last 15 years starting from 1991 with one billion US dollars. Except for fiscal year 2002, the industry

²⁸ In an unregulated, quota-free market, developing nations and their embryonic garment industries would not have been able to compete in large and lucrative markets like the United States and Europe. This quota system forced buyers, including large retailers like J.C. Penney, the Gap, Wal-Mart, and Ralph Lauren, to purchase textiles and ready-made garments from a long list of countries. This allowed developing nations, such as Bangladesh, to build up their garment industries. In Bangladesh, one-third of the country's industrial workforce now works in the garment industry, which accounts for 75% of all its exports. The country is expected to lose nearly a million jobs as a result of MFA's termination.

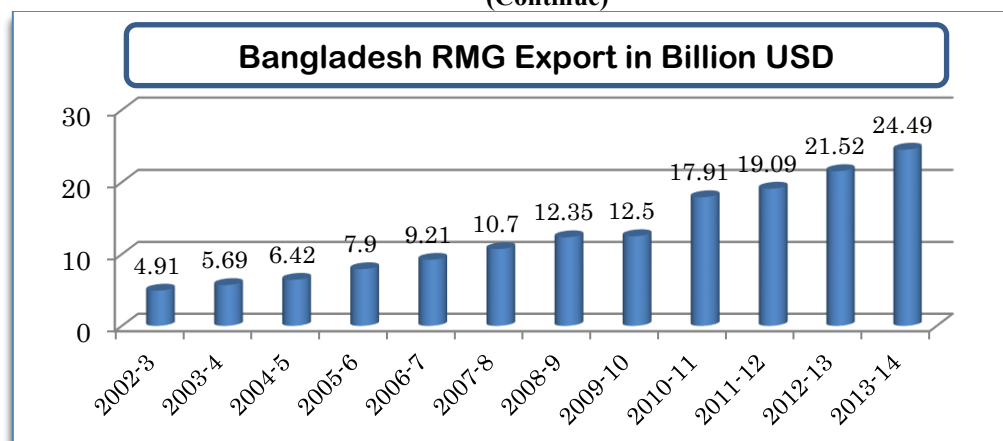
registered significant growth throughout this period. In terms of GDP, RMG contribution is highly remarkable; it reached 13% of GDP, which had only been about 3% in fiscal year 1991. Below figure is shown, Fiscal Year 2013-14 Bangladesh RMG export US\$24.49 billion when FY2005-06 was only US\$7.9 billion. This is a clear indication of the industry's contribution to the overall economy. It also plays a pivotal role to promote the development of other key sectors of the economy like banking, insurance, shipping, hotel, tourism, road transportation, railway container service, etc.

Figure 3. 1 - Trends of RMG export volume, export growth and contribution of GDP



Sources: Export Promotion Bureau (EPB) and Bangladesh Bank, Economic Trends, 2007.

(Continue)



Sources: Export Promotion Bureau (EPB) and Bangladesh Bank, Economic Trends, 2015.

Subsequently, policy reforms undertaken by the government created a friendlier environment for the expansion of the garment industry. In particular, relaxation of

investment sanctioning procedures allowed more firms to enter the garment industry. Implementation of the new industrial policy in 1986 (RIP) brought Bangladesh's garment manufacturers to the same level as its competitors by providing them access to import inputs at world market prices and the institution of the back-to-back L/C (Letter of Credit) system helped the garment producers to largely overcome the problem of investment finance. Thus, there is no doubt that the supportive public policy had contributed substantially to the growth of the garment industry in Bangladesh. The ingenuity and vision of RMG entrepreneurs was also a contributing factor to the remarkable growth of this industry. While the opportunity was created by the MFA quota system, the dynamic pioneering entrepreneurs of this industry had the vision and the courage to take the risk of setting up this industry in unfavorable times.

3.3.2. Growth pattern of RMG sector in Bangladesh

Reaz Garments Limited²⁹, the pioneer of the garment industry in Bangladesh, was established in 1960 as a small tailoring outfit, named Reaz Store in Dhaka. It served only the domestic market for about 15 years. In 1973 it renamed to M/S. Reaz Garments Limited and expanded its operations into the 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 Limited (Hafiz, 2005), the first non-equity joint venture in the garments industry was established in 1979. Desh had technical and marketing collaborations with Daewoo Corporation of South Korea. It was also a 100% export-oriented company. It

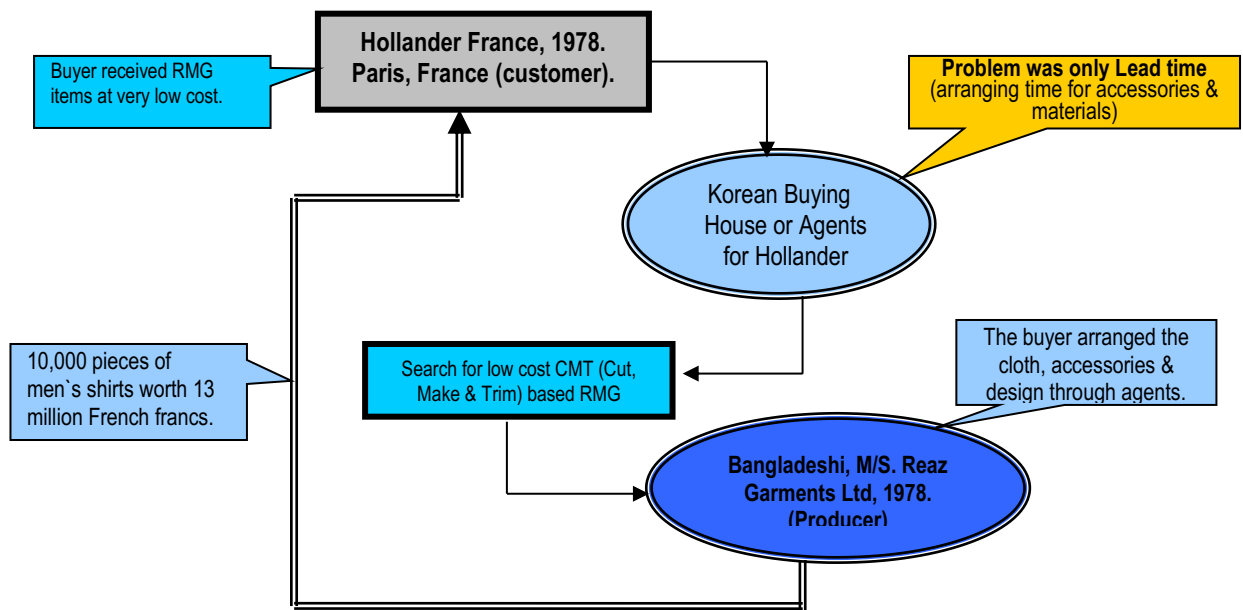
²⁹ Its located in Urdu Road, Dhaka city as local order made tailoring shop namely Reaz Tailor in 1960 and 1978 it became Reaz Garments Limited as export oriented CMT based RMG factory. This garments factory was the first RMG product exporter in Bangladesh.

had about 120 operators including three women trained in South Korea, and with these trained workers it started production in early 1980. In 1980 another South Korean firm, Youngones Corporation, formed the first equity joint venture garment factory with a Bangladeshi firm which was named as Trexim Limited. Later, Bangladeshi partners contributed 51% of the equity for three new firms, named Youngones Bangladesh. It exported its first consignment of padded and non-padded jackets to Sweden in December 1980.

Figure 3.2 illustrates that how the RMG industry existed in Bangladesh during the period of 1970s. It was taking the product orders through Korean buying houses or agents who had reputed business connections with the final consumers. After getting orders from sellers/agents, the Korean buying house started searching for low cost producers for outsourcing due to the comparatively higher cost of production in Korea than its competitors' cost. The Korean buyer finally found Reaz Garments Limited in Bangladesh, which owned a small CMT based RMG factory.

Reaz Garments Limited depended on the Korean intermediate buying house, not only for the required cloth and other accessories but also designs from the original customer to start the production. However, the problem in this method is that the producer has to spend an unnecessary long time for input. As a result, the producer finds difficulties in supplying orders without delay and the system shows relatively inefficiency. Since there was no direct business relationship or contacts between the Bangladeshi producer and customers, the production process was unnecessarily delayed in supplying the orders. However, despite this delay the final customer continued placing production orders with Bangladeshi RMG factories due to competitive low cost production.

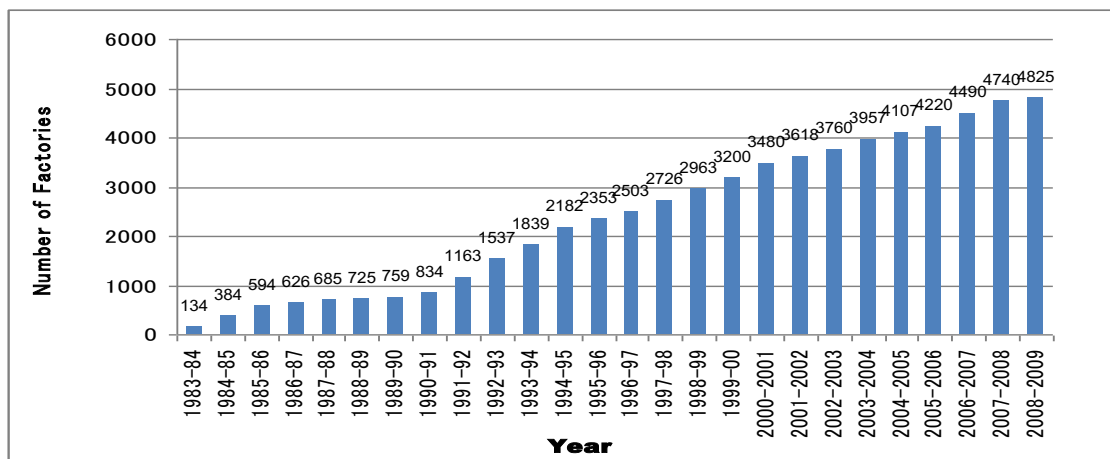
Figure 3. 2 - Bangladesh is first step in the 1970s for the industrial society by M/S. Reaz Garments Ltd



Source: Author, 2017.

3.3.3. Trends of RMG sector development and labor employment

Figure 3. 3 - Trends of garment factories in Bangladesh - Number of garment factories



Source: Bangladesh Garments Manufacturer and Exporters Association, 2009.

Bangladesh was the sixth largest exporter of apparel in the world after China, the EU, Hong Kong, Turkey, and India in 2006. In that year Bangladesh's share in world apparel exports was 2.8%. Figure 3.3 shows the trend of number of factories in Bangladesh. In the figure, the years between 1983-84 and 1990-91 can conceptualized as the first stage, where

the numbers of garment factories were less than 900. The number suddenly increased to more than 1000 in 1991-92, along with a radical transformation in the national politics. Since then the number of garment factories has risen steadily and in 2008-09 more than 4825 garments factories existed in Bangladesh.

This was the result of the introduction of various favorable policies at the beginning of the 1990s (as explained in chapter 1, Table 1.5), notably the introduction of a liberalized economic policy package. In addition, low energy costs in Bangladesh have also made a positive impact to increase the number of factories. As indicated in Table 3.1 Bangladesh reports the lowest energy costs compared to other countries such as India and Pakistan.

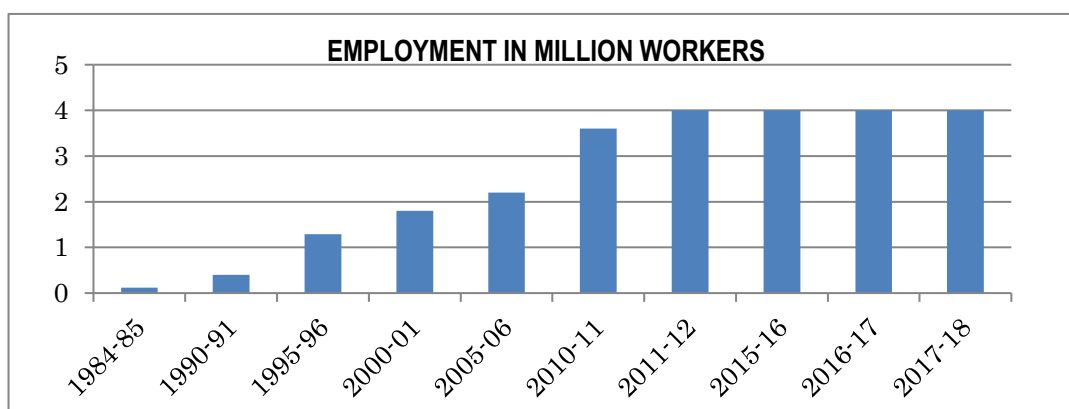
Table 3. 1 – Comparative Energy cost in Bangladesh, India and Pakistan

Country Name	Energy Cost
India	US\$ 0.095/Kwh
Pakistan	US\$ 0.08/Kwh
Bangladesh	US\$ 0.07/Kwh

Source: http://www.bkmea.com/business_opportunities.php, access date: 22.10.2015

The number of workers in the RMG sector in Bangladesh is about 4.0 million as shown by the Figure 3.4. In the year 1989-90 it was below 0.5 million. The number becomes more than double just within 4 to 5 years showing a positive response to the new industrial policies that were introduced at the beginning of the decade. From FY2000-01 to FY2016-17 the number of workers increased more than 100% once again and the RMG sector became the only the sector in the economy that was able to create such a large number of employment opportunities for the poor, especially those who had migrated from rural regions.

Figure 3. 4 - Number of workers employed in RMG sectors (in millions)



Source: Export Promotion Bureau (EPB) and BGMEA 2018.

3.4. Post MFA era and quota system

In addition to the factors which contributed to the overall development of some Bangladeshi RMG factories (as mentioned in section 2.2), another important factor is the quota system that came under the MFA. Under the MFA, textile and cloth (T&C) products from developing countries participated in markets of developed nations such as Canada, the European Union, Norway and USA through a quota system. The Bangladesh RMG industry has experienced this quota system up until the elimination of the agreement in 2005. The MFA, which brought quotas for the LDCs (least developing countries) like Bangladesh, contributed to a sustained growth of CMT factories in different private spheres. Professionals and foreign investors enjoyed during the era of MFA quotas. Moreover, from 1985 to 2005 was golden period for the CMT based RMG industry while they exported and collected orders from EU, USA, Canada, etc for low quality RMG products.

3.4.1. Post-MFA era in the ready-made garments sector

In the Bangladeshi economy, the RMG industry has occupied an incomparable position throughout the past two decades. The RMG sector is the largest export earning sector in the economy and it has been growing remarkably throughout the past two decades.

From the beginning of the 1990s, it enjoyed the advantages of the MFA until its expiration in 2005. With high growth performance and increasing export earning, as indicated in column 5 of Table 3.2, the contribution of the RMG sector to GDP increased within a short span of time. In terms of GDP, contribution of garment exports is significant; it reached 12.64 percent of GDP in 2005-06, compared to only 5.87 percent in 1989-90. The share of garment exports to total exports and contribution to GDP had been increased significantly during the period from 1984-85 to 2005-06. The table provides a clear indication of the contribution of the RMG industry to the overall economy. In addition to these direct benefits from the industry, there are many indirect benefits as well. For example, manufacturing of intermediate product such as dyeing, printing, zippers and labels has begun to take a foothold on a limited scale and expected to grow significantly. Moreover, it has helped such businesses as insurance, shipping, hotel, tourism and transportation. In these ways, the RMG industry is contributing considerably to the economy of Bangladesh (Siddiqi, 2005).

Table 3. 2 - Growth and trend of garments exports and contribution to GDP

(Amounts in million USD)

Year	Garment Export (Min USD)	Total Export (Min USD)	Share to Total Export in %	Share to GDP in %
1984-85	116 -	934 -	12.42	-
1989-90	624 (40)	1924 (16)	32.43 (21)	-
1994-95	2228 (29)	3473 (13)	64.15 (15)	5.87 -
1999-00	4349 (14)	5752 (11)	75.61 (3)	9.23 (9)
2004-05	6418 (8)	8655 (9)	74.15 (-1)	10.63 (3)
2005-06	7901 (23)	10526 (22)	75.06 (1)	12.64 (2)

Source: Economic Review of Bangladesh, BGMEA and Computation made by author. Figures in parentheses indicate compound growth rates (CGR) for the respective periods.

At the onset Bangladeshi RMG factories purchased used or new machineries from Japan. These machines are still in use by the RMG factories in Bangladesh, without adding new investments. Even though some factories have purchased machinery from Japan or

China through a secured bank loan, the loan is 100% refundable to RMG factories owners. Even after the MFA, the interesting point to note here is that the contribution of the RMG sector of the GDP was 12.64% for year 2005-6, which was the highest contribution to GDP according to the data given in Table 3.2.

3.4.2. Post-Quota era implication

MFA quotas were imposed on Bangladesh in 1985. Prior to this, Bangladesh's garment manufacturers were making handsome profits due to the low capital investment requirements of the industry, good rate of return, and low wages. High profitability continued even after the imposition of MFA quotas due to the fact that Bangladesh's exporters of garments earned considerable quota rents. It was the high profits that enabled the garment manufacturers to get around the various government controls and regulations that were constricting the growth of other industries (Chowdhury, 2004).

Since 1974, world trade in textiles and apparel has been governed by MFA which provided the basis for which industrialized countries restricted imports from developing countries. Every year quotas, the quantities of specified items that could be traded between trading partners, had been negotiated on a country-by-country basis. The MFA does not apply to trade between rich industrialized countries themselves. Basically MFA rules and regulations were developed to protect industrialized countries from the low cost competition from developing countries. Introducing a quota system to the products coming from developing countries, industrialized countries tried to find some time to adjust or to compete with low cost products from the developing world. Despite the fact that the MFA was designed to favor industrialized countries, in order to take the advantage of the MFA benefits, RMG factories were located in countries such as China, Vietnam, Sri Lanka, Bangladesh, etc., (along with low wage costs, supply of materials, infrastructure for

transport, marketing and proximity to markets). This is one of the reasons that the apparel and textile suppliers have located in these countries including Bangladesh. Even though there were no massive increases in the production in developing countries due to MFA, the Bangladeshi RMG sector showed remarkably high growth during the past couple of decades (Siddiqi, 2005).

The Bangladesh Garments Manufacturer Exporters Association (BGMEA) was formed in 1983 by 19 private RMG factory owners in order to handle quota issues such as distributing quotas among the producers, making co-ordination with government bodies, contacting and negotiating with international buyers, etc.

3.4.3. Post MFA era in ready-made garments sector

The quota system that was the basis of the MFA, and which had governed trade in textiles and clothing (T&C) for decades, was eliminated on 31 December 2004 in accordance with the terms of the World Trade Organization's (WTO) Agreement on Textiles and Clothing (ATC)) (Iyer, 2005). Foreign Direct Investment (FDI), attracted by the underutilization of quotas in these countries, played a major role in the development of their T&C industries. T&C today constitutes an important proportion of the total exports of several countries in the region.

There exists a dependency on India and China in the RMG textile industry as explained in Chapter 1. However, when the quota system finished in 2005, the government revised its industrial policy without making new investments, in order to promote the progress of the industry. In this situation only the privately developed association was challenged to move forward, promoting more exports to international market using new technology. After 1990, with the back up support of the quota system introduced by MFA,

the industry started to taking off and from 2006 onward, with the elimination of the quota system, the industry has entered a global competitive stage. At this stage, the industry is facing regular competition and competing with other major countries. Market expansion, as well as quality improvement, is one of the key issues (Chowdhury, 2004).

Countries like Bangladesh, Sri Lanka, Cambodia and Nepal had to face several adjustment issues when the MFA quota system was removed in 2005. However, because of their production capacity and well-endowed raw materials for the industry, China and India quite comfortably managed the issues that came up after the quota system was repealed. On the other hand, in order to face the competition, these countries are forced to introduce much expertise into all stages of production. Because, the RMG producers know the buyer destinations, some small suppliers can manage to compete with rival competitors in the non-quota markets.

3.5. The significant role of RMG industries using socio-technical system in Bangladesh

After the first consignment of RMG exports was processed by Reaz Garments Limited in 1978, many Korean companies started joint CMT based RMG exporting activities, widely expanding the industry throughout different areas in Bangladesh. Only these Korean companies had trained workers who operated machinery in the CMT factories. The cost of building small-scale, CMT based RMG factories was not terribly expensive and such factories had the ability to run with basic machinery. Due to this reason small-scale, CMT based RMG factories spread throughout the country.

There are two types of RMG products in Bangladesh, namely: i) Woven items and ii) Knitwear items. Both of these categories produced and exported, playing a significant

role through the exportation of relatively low-grade RMG products for well developed markets such as the US and EU. Many factors have contributed to this significant role of the RMG industry such as low wages, low cost energy, easy access to ports and governmental industrial policies. Furthermore, EPZs and the BOI have increased the overall awareness of the private sector to encourage contribution to this industry.

3.5.1. Economic, Social Role and Socio-Technical System

Economically:

The RMG sector as the most significant sector in terms of various aspects in regards to the economy of the Bangladesh since at the beginning of the 1970s. This significant role played by the sector can be explained as follows:

i) Job opportunity: Many development economists (Todaro, 2008, Lewis, 1954) emphasized that employment generation for poor is one of the most important factors to eradicate poverty in the developing world. Since the agriculture sector lagged far behind in creation of employment opportunities, it is necessary for LDCs to develop their industries. The RMG requires labor resources and due the availability of cheap labor, the industry extensively expanded in LDCs, giving more employment opportunities for the poor. For example, the Bangladesh RMG sector has created 4.0 million jobs to date, covering almost 16.1% of the total workforce in the country (total labor force 66.6 million, in 2017³⁰).

ii) Empowerment of women: Because of socio-cultural background of Bangladesh, women are not allowed to be employed outdoors. However, the RMG industry has opened the door for women, creating a large number of in-house job opportunities. In other words, a large number of women have been empowered by this RMG sector in Bangladesh.

³⁰ <https://tradingeconomics.com/bangladesh/labor-force-total-wb-data.html>, access date 17.09.2017

iii) Income distribution: RMG factories are usually located in the cities where producers can find easy access to transportation, communication and other facilities. As a result, labor started to migrate from rural to urban areas to find jobs. Through this process, income is being redistributed to the rural areas and consequently it will bring solutions to the income misdistribution problem that persists in the country.

iv) Export share: Due to the increase in RMG production, Bangladesh exports volume and therefore export earnings have increased. Also the RMG sector contribution to GDP has grown. These export earnings strengthened their current account in the balance of payment account.

v) Access to international market: Access to international markets through final product export and raw materials and accessories imports are also important for the country.

vi) Traditional to non-traditional products: At the beginning, Bangladesh grew by exporting traditional products. However, over time, traditional export share became insignificant and showed slow growth. At the same time, non-traditional exports became popular in the international market and Bangladesh products became cost competitive compared to other developing countries.

vii) Changing social life-style: Social behavior has also changed due to the increased employment opportunities. A considerable amount of unskilled women are employed in the RMG sector where they can earn a wage without facing many difficulties.

Socially:

After the independence, though several industrial policies were introduced, these policies brought minor change in the industrial development of the country. However, only the privately owned RMG sector has started to grow from 1978. The RMG industry is a female dominant industry. According to the latest Census of Manufacturing Industries

(CMI), females accounted for 66.5% of the industry's employment in 1999-2000 (Table 3.3). Female concentration in the RMG industry is much higher than the 35% average for the manufacturing sector as a whole.

Table 3. 3 - Gender-wise employment status in RMG industry (1999-2000, persons)

	Total number employed		Administration, clerical, sales work		Production-related work	
	Male	Female	Male	Female	Male	Female
(Female share)						
Knit-RMG	24199	27114 (52.8%)	6526	8 (0.1%)	17092	27106 (61.3%)
Woven-RMG	336933	688445 (67.1%)	55546	1343 (2.4%)	273965	686218 (71.5%)
Total RMG	361132	715559 (66.5%)	62072	1351 (2.1%)	291057	713324 (71.0%)
Total manufacturing	1699897	913667 (35.0%)	250491	4189 (1.6%)	1171234	833795 (41.6%)

Source: Compiled from Bangladesh Census of Manufacturing Industries 1999-2000, Table 16.

Although the RMG industry is generally considered a female dominated industry, in the historical and cultural context of Bangladesh, the massive entry of female workers into the formal industrial sector was a totally new phenomenon and bore important social, cultural and political implications. According to Bangladesh's traditional Islamic historical background, where woman are not allowed to work outside the home, the RMG sector provided many employment opportunities for the woman and to certain extent, has empowered woman in Bangladeshi society.

Socio-technical systemically:

Socio-technical system (STS) in organizational development is an approach to complex organizational work design that recognizes the interaction between people and technology in workplaces. The term also refers to the interaction between society's complex infrastructures and human behavior. The socio-technical system is a philosophy and is a method. As a philosophy it supports the value of empowerment as well as the systemic focus

on product and customer. As a method socio-technical system helps provide custom solutions for performance by design (Tailor and Felten, 1993).

This combination of philosophy and method is methodology - an informed approach to organizational improvement. As socio-technical system theory, Bangladeshi RMG industry uses 'social' aspect at CMT technical based RMG factories and improved 'technical' aspects are brought together and treated as interdependent parts of a system (Trist, 1981). Development Economics focus only on technical factors. However, that theory can't explain the development of Bangladesh Garment Industry. Then I found using the STS-Model in organization theories more effective, because its model is covering both technical and social factors, especially labor incentives.

3.5.2. Investments role of Ready-made Garments Industries

Initially the Bangladeshi RMG industry consisted of CMT based production method only but yet, could play a significant role. This role has become even more significant as the industry was diversified into a **dual structure industry**³¹. In addition, it was influenced to buy all its machinery from Japan, because the reputation of the machinery from Japan held a certain reputation of high quality, which was vital to promote a good impression of the buyer/buyers. Due to this, Bangladesh has to remain dependent on Japan for machine spare parts. Also a reputable second hand market grew up both locally and internationally for Japanese machinery because of their quality. As it will be mentioned in Chapter 4, there are four categories of industries in the manufacturing sector, which according to the Industrial Policy of 2005 are namely small, medium, large and cottage industries. Three

³¹ According to Bangladeshi RMG industrial history, few are large CMT factories added some factories by invested new technology/machine for complete total production process, which are called group of companies or Composite Corporation based RMG factory in twenty first century in Bangladesh, which separate from CMT factories. It is larger than CMT factories with some more factories where total RMG products production is possible like from cotton to final RMG product and up wholesale buyer. It is called also group of companies and recently, a number of large firms with composite mills have emerged. These emerged CC factories became dual structure industry at Bangladesh RMG sector. These firms have both backward and forward linkages.

types of non-manufacturing industrial sectors are also mentioned there. Both manufacturing and non-manufacturing sectors can easily operate with traditional technology. Operating with low cost non-skilled labor, manufactures are able to derive a substantial profit by engaging both types of industrial sectors (Siddiqi, 2005). Price competitiveness enhances Generalized System of Preferences (GSP)³² facilities, market and product diversification, and cheap labor. It also increases backward integration, creates a high level of investment, and government support. This support contributes to export earnings and continuous growth in the RMG sector (Ahmed and Hossain, 2006). These factors can be explained as below.

i) Market diversification: The RMG industry occupied a unique position in the Bangladesh economy. Bangladesh as an emerging tiger in this industry exported its products mainly to the US and EU markets during last 20 year period under the quota system. For example in 1996-97, Bangladesh was the 7th and 5th largest apparel exporter to the USA and EU, respectively. However, the removal of the quota system brought new challenges to the Bangladeshi RMG industry and removal of the quota system revealed the danger of limited markets. Even during the 1990s, about 90% of the RMG products went to the US and EU markets mainly due to MFA from the US and GSP from the EU. In order to face the challenge of finding markets in the absence of such protections as the MFA and GSP, Bangladesh started to find other destinations for its products as early as the beginning of the 21st century. As a result, Bangladesh RMG products are now going to Canadian, Australian and Japanese markets as well.

³² The Generalized System of Preferences is a formal system whereby a wide range of industrial and agricultural products originating in certain developing countries are given preferential access to the markets of the developed country. Actually, GSP is an instrument by which developed nations help the poorer countries foster more trade. The GSP scheme is specifically designed to benefit certain developing countries and integrate them into the world economy Non-reciprocal concessions under which developed countries allow duty-free or low-duty entry to imports from selected developing countries up to a certain limit or quota.

Table 3. 4 - Region-wise share to RMG export

Year	Export Share to USA	Export Share to European Countries	Combined Share of USA & EU (%)	Export Share of Other Countries (%)
2001-2002	42.67	55.43	98.10	1.90
2002-2003	38.02	57.12	95.14	4.86
2003-2004	28.64	65.42	94.04	5.94
2004-2005	30.64	64.24	94.88	5.12
2005-2006	33.67	49.77	83.43	16.57

Source: Bangladesh Bank Quarterly, 2007.

Bangladesh Export Region wise During 2015-2016(Continued)	
Region	% Share
E.U Countries	54.58
American Region	22.71
Asian Region	11.24
Middle East Region	2.36
African Region	0.74
East European Region	2.92
Oceania Region	2.29
Other Countries	3.16
Total	100

Source: Bangladesh Export Promotion Bureau, 2017.

ii) Product diversification: In this globalized and rapidly changing world, no single country can survive in export markets depending on one or two products for a significant period of time. Few basic RMG products will be able to keep market sustained since those products are easily moved from one production place to another depending on availability of the basic resources of labor, raw material, etc., at competitively low prices. To face this challenge the Bangladeshi RMG industry has already diversified its garment products from woven and knitwear products such as ordinary shirts, T-shirts, trousers, shorts, pajamas, ladies and children's wear to sophisticated high value items like quality suits, branded jeans, jackets, sweaters, embroidered wear, etc.

iii) Backward integration: Backward linkages can play a major role in the garment industry, helping to reduce lead time and offer competitive prices in the international market. However, though there are enormous chances for further industrialization in the country, this vital industry still depends heavily on imported fabrics. If Bangladesh wants to enjoy increased market access created by the global open market economy it has no alternative

but to produce textile items competitively at home through the establishment of backward linkages with the RMG industry. For this purpose, the country should try to raise domestic value added products by maximizing the use of domestic resources. The importance of this becomes very crucial in a post-MFA situation in the RMG industry in Bangladesh. To this extent, Bangladesh has already made some investments in fields such as spinning, weaving, knitting, dyeing, paintings etc.

iv) Flow of investment: It is plausible that domestic entrepreneurs alone may not be able to develop the textile industry. Establishing modern mills with adequate capacity to meet the growing RMG demand without significant flow of investment, both in terms of finance and latest technology will not be sufficient. Understanding this point clearly, Bangladesh has been introducing investment incentives, which also attract FDI to this industry. As a result, even with the uncertainties after the MFA period, the industry attracted much needed foreign investment. This is another reason that the industry has been progressing well even in the post-MFA period. However, further progress is necessary to improve and sustain competitiveness on a global scale.

v) A Supportive policy regime: The government of Bangladesh has played an active role in designing policy support for the RMG sector that includes back-to-back L/C, bonded warehouses, cash incentives, an export credit guarantee scheme, tax holidays and related benefits. For example, the 2004 budget lowered the corporate income tax rate for the RMG industry from 30% to 10% for the period up to June 30, 2006. From 2005, the tax regime has been further changed, and a 0.25% tax at the source will be deducted from the value of the export proceeds in the woven and knitwear categories. At the same time, the income tax rate for textile manufacturers was reduced to 15% from its earlier level for the period up to June 30, 2008. The reduced tax rates and other benefits showed a positive impact on the RMG sector.

vi) Lead time: In the global apparel market, international buyers place an order with competitive pricing combined with the shortest possible lead time to deliver RMG products. 'Lead time' is a crucial factor for maintaining export competitiveness. Among the competitors in the same industry in the region, Bangladesh has recorded lead times of 120 days, the longest in the RMG world. In contrast, the corresponding period for Sri Lanka is about 19-45 days and for India it is only about 12 days. Various factors like the distance from major markets, importation of raw materials, port congestion, labor strikes, poor roads, etc., are some of the factors responsible for this. Therefore, bringing down the 'lead time' to about 30-40 days is a major challenge for the RMG sector. As explained above, so as to face to this challenge Bangladesh has taken several steps, such as the improvement of backward linkages in the industry.

3.5.3. The special role of RMG sector in green stages

Since clothing is one of the basic needs for humans, the textile and garment industries were developed at a very early stage of human history. The textile sector played a leading role in the revolution of worldwide economic and industrial development. As a result the textile and garment industries are currently operating at a very large scale in most of the countries.

According to Table 3.5, export growth share is 16.59% at the beginning of post-MFA era in 2006. Further, even three years after the MFA quota system, RMG export earnings have increased by nearly 45% in the first quarter of 2008. This is a three-fold increase from the years 2006 and 2007. This higher growth rate has come due the investments made for significant role of the RMG sector in Bangladesh. It provides enough evidence to say that Bangladesh possesses adequate potential in the industry even in the absence of external support like MFA and GSP.

Table 3. 5 - Export earnings over last five fiscal years (July-June)(Value in million US\$)

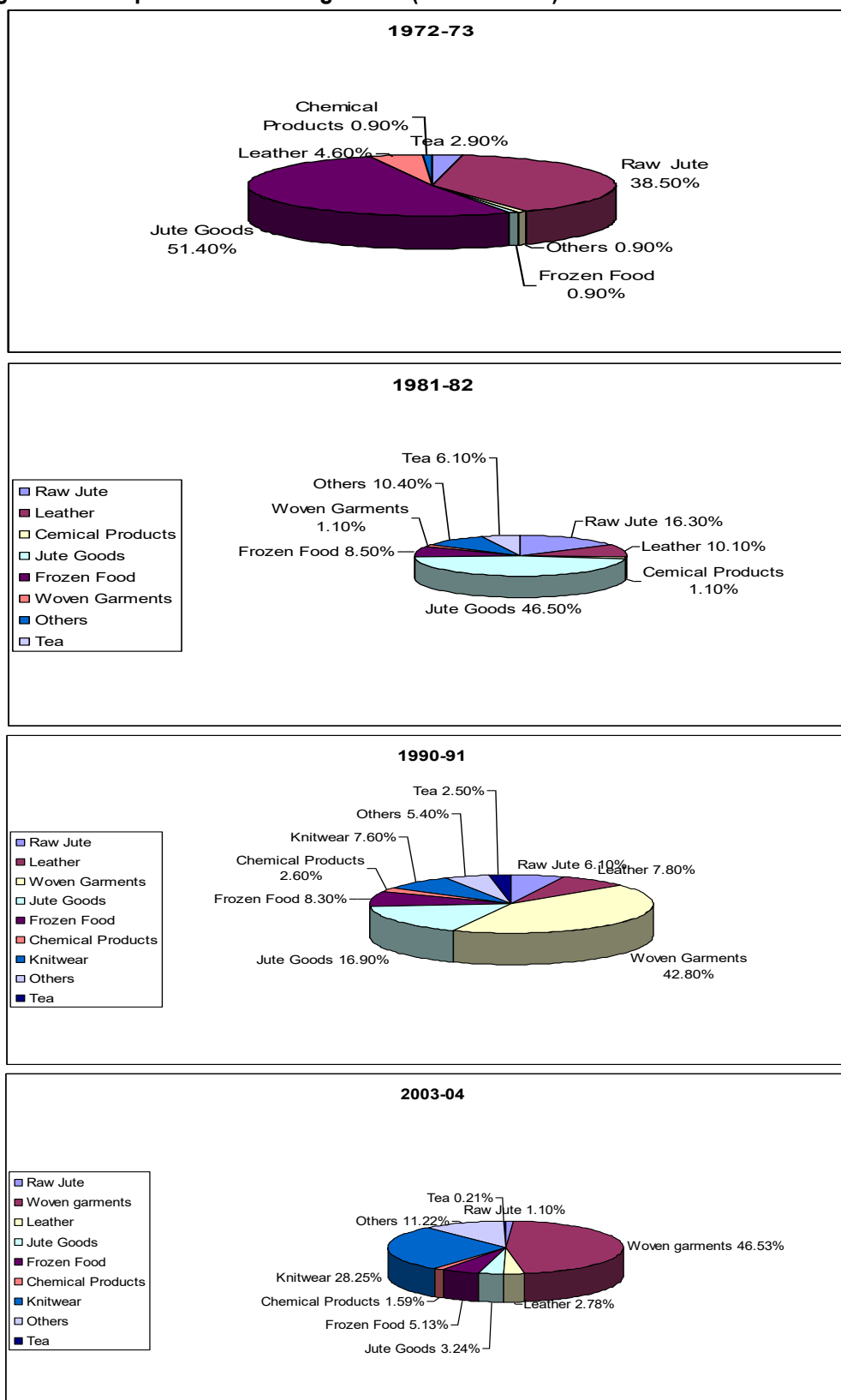
Fiscal Year	Woven Garments	Knitwear	Total	Growth
2004	3598.20	2819.47	6417.67	12.87%
2005	4083.82	3816.98	7900.80	23.11%
2006	4657.63	4553.60	9211	16.59%
2007	5167.28	5532.52	10699.80	16.16%
2008(1st Qtr.)	1525.28	1831.08	3356.36	44.66%

Source: Bangladesh Export Promotion Bureau (EPB) and Bangladesh knitwear Manufacturers' Association (BKMEA), 2008.

However, it does not mean that the Bangladeshi RMG sector has achieved a stable position in the world market. Therefore, for a sustainable RMG sector Bangladesh still has many challenges ahead. For example, new technology is necessary for the CMT based RMG industry. Details about the growth factor of CMT factories in Bangladeshi RMG industry will be given in the next chapter. With the miraculous export growth in 2008, the period starting from 2008 is referred to as the green stage of export growth in the Bangladesh economy. However, to highlight this miraculous growth is a questionable issue. This paper attempts to reveal the real issue behind the development strategy for the RMG industry in the green stage detailing the main issue of this thesis.

In the charts of Figure 3.5 explain the changing pattern of export share of RMG products from Bangladesh. In 1972-73, the export earning share was widely controlled by jute (manufactured and raw- totaling 89.90%), with no significant role of RMG. In 1981-82 the RMG showed a light impact (1.10%) and in 1991-92 it became more than 50% of the export share. In 2003-04, the export market share was totally dominated by RMG, which was around 75%. The charts in Figure 3.5 also reveal that the RMG sector became the dominant export earning industry in Bangladesh.

Figure 3.5 - Export items of Bangladesh (1972 to 2004) in %



Data Sources: Bangladesh Export Statistics 2003-04, Export Promotion Bureau, 2005

3.5.4. The role of small and medium industries (SMI) for Bangladeshi industrialization

Bangladesh RMG industries are small and medium type of industries where their role is very important. According to Pack (2007) *Initial Conditions* are also essential for industrialization and trade development by the small and medium industries. Although Bangladeshi private investors have already crossed the initial conditions for its industrial development, lack of education and industrial experience are too far behind to other recently industrialized countries such as NICs (Newly industrialized countries-Korea, Hong Kong, Singapore, and Taiwan). With the industrial research activity, education and industrial experience policy upgrade is necessary for the small and medium scale industry. Small and medium scale industries are playing a very crucial role at the beginning of industrialization. For examples Japanese economy at the beginning of industrialization has paid deep concern to develop small and medium scale industries.

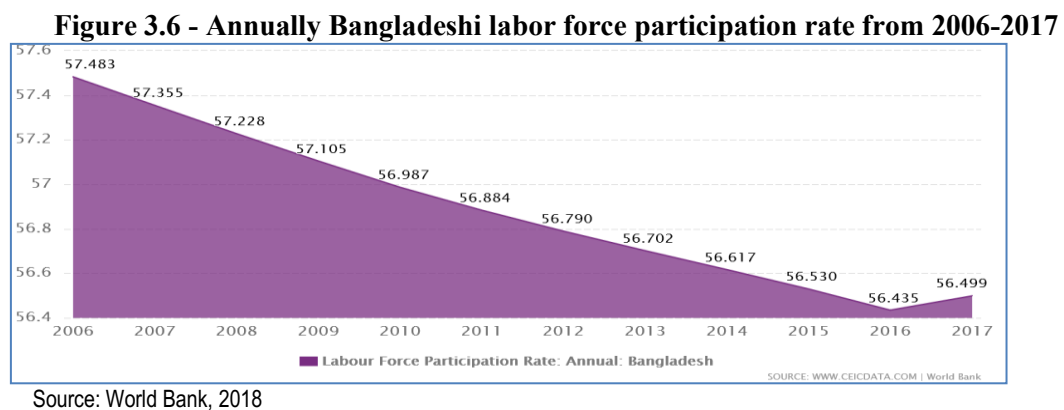


Figure 3.6 explain the decreasing and increasing pattern of labor participant of Bangladesh labor force. In 2006 was 57.4% and 2017 also 56.4 % and it reveal that the most of the labor force is employed at RMG sector in Bangladesh.

3.5. Conclusion

Bangladesh, being a developing country, needs to reconcile its industrial base with the economic development. RMG is currently playing a key role to consolidate the industrial base of the country, and hence can be treated as the key industry to secure export earnings. This chapter reveals that the history of RMG in Bangladesh is not a long history, rather the industry has shown rapid growth within a short period of time. This has created an amazing number of employment opportunities for the poor in Bangladesh, especially allowing for women employment in the RMG industry. In recent 25 years, the RMG has become the sole dominating industry creating vital foreign exchange from exporting. On the other hand, though the RMG at this stage benefited from the privileges of the quota system introduced by the MFA, in 2005 the system was eliminated. Thus, Bangladeshi RMG started facing global challenges.

Recent indicators show that in the new scenario the RMG began contributing more to the export earnings, which means that the role of RMG cannot be ignored. Therefore, problems and prospects of RMG should be addressed with proper attention and policies to facilitate its growth. In this respect STS is one option for the industry to overcome the existing issues. The following chapters will introduce some key issues like CMT factories, the banking system, entrepreneurship and other issues to facilitate the RMG.

CHAPTER 4 - THE IMPACT OF CMT BASED RMG FACTORIES IN BANGLADESH

4.1. Introduction

Chapter 3 demonstrated the importance of ready-made garments in Bangladesh. It also underlined how RMG has emerged as the major export earning sector in this country. The RMG sector reached to, what is called the “green stage” in the year 2008, as a result of its astonishing growth performance. For instance, it recorded a 45% growth rate in the first quarter in 2008. This chapter will further explain about the growth factors of CMT technology based factories and export earnings in Bangladesh. Currently Bangladesh RMG factories are taking all raw materials, accessories and designs from buyers or from buying houses to produce the final product. Once the orders are received the producer uses CMT technology to finish the production process.

The contribution of the industrial sector to GDP in Bangladesh has been mounting since the beginning of the 1990s, especially because of increased export earnings from the RMG industry. Owing to this reasons CMT technology in the RMG sector arose as an important determinant of industrial development. Therefore, further explanation about CMT technology is critical to understanding its role. Moreover, the impact of the RMG association (formed by CMT based RMG factory owners) on the development of the RMG industry and the dual structure of industrial growth is also important.

The remainder of this chapter is organized as follows: the section two explains the industrial development based on the CMT based manufacturing process in Bangladesh; the section three discusses the importance of the BGMEA, one among many of the development factors of CMT based RMG factories and the section four explains about the emergence of Composite Corporation (CC) based RMG factories through CMT factories. The same

section explain further about Bangladeshi RMG industrial development. The Section five will conclude this chapter.

4.2. RMG industrial development of Bangladesh based on CMT concept

The Bangladeshi textile industry has failed to meet its demand in both domestic and international markets. The government owned firms are mainly obsolete using outdated technology and machinery over a long period of time without introducing innovative modes of production or the latest equipment. In contrast, some private firms, though their production capacities were relatively small, adopted the latest changes in the industry and showed better performance than government owned firms. Therefore, private entrepreneurs are increasingly interested in the privatization³³ process implemented by the government. However, it is worthwhile to discuss the factors that contributed to the development of CMT factories, their manufacturing patterns, and the present situation of CMT factories.

4.2.1. Background of CMT factory development

Bangladeshi RMG is based on the CMT (Cutting, Making and Trimming) concept. It can be regarded as a method of value addition to the product for international market. CMT based RMG factories are based on long wall method of socio-technology system. Figure 4.1 explains the CMT concept. The same figure highlights how RMG export share has reached its highest level passing several stages of production and distribution processes. This CMT based technology is successful in the RMG sector in Bangladesh and therefore, CMT based RMG factories have become popular in this country. Basically, two categories of RMG production can be identified, namely (1.) woven items (trousers, shirt, and jackets) (2.) knit items (T-shirts, sweaters, polo shirts).

³³ **Privatization** is the incidence or process of transferring ownership of a business, enterprise, agency or public service from the public sector (government) to the private sector (business). In a broader sense, privatization refers to transfer of any government function to the private sector including governmental functions like revenue collection and law enforcement.

According to the data presented in Table 4.1, the larger portion of foreign exchange earnings, nearly 77.3% generate from these two major product categories of woven and knitwear. Both of these products are produced in the three different types of CMT based RMG factories. These factories can be defined as follows:

Table 4. 1 - Major export items and receipts, 2003-2004

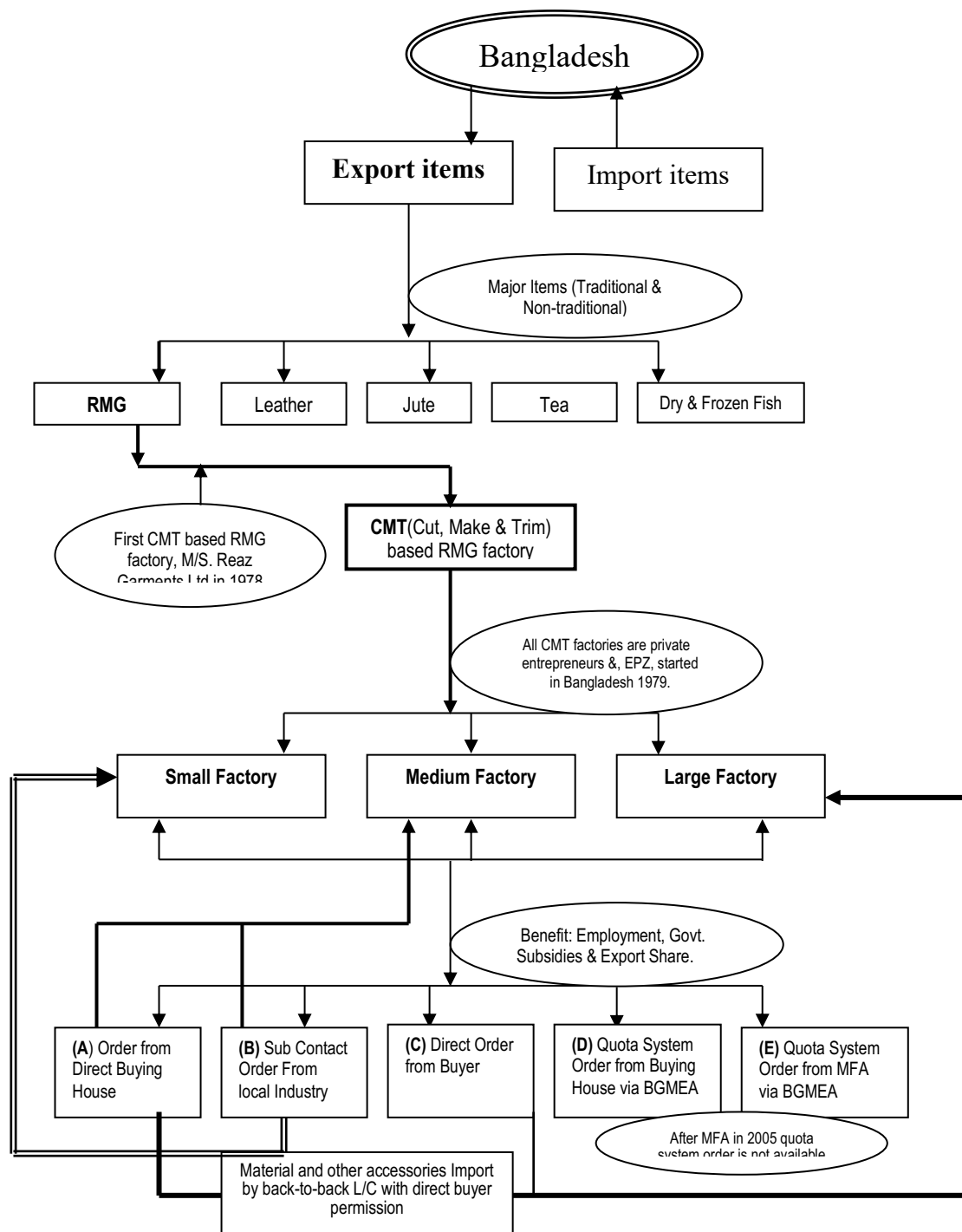
Items	Export receipts(USD millions)
Woven Garments	3538.07
Knitwear Products	2,148.02
Terry Towels	68.31
Other Textiles	135.49
Frozen Fish	390.25
Jute Goods	79.70
Raw Jute	211.41
Leather	80.67
Tea	15.81
Others	688.81
Total Exports	7,602.99

Source: Bangladesh Bank, 2005.

Small factory-CMT based technology: Sub-contract orders are collected from local large factories. An example is: woven items are manufactured in a small 2-line factory, with 70 machines, 8000 square meter floor size, and approximately 80 to 100 employees with such responsibilities as machine operators, managers, supervisors, iron and packing , cutting, assistance master, helper, etc.

Medium factory-CMT based technology with orders collected from buying house (foreign buyer agents, office in Bangladesh). The direct buyer sends L/C and using that L/C the medium-sized factory utilizes designs supplied from the buyer and materials supplied by the buying houses.

Figure 4. 1 - Bangladesh export items development pattern in CMT based RMG factory



Source: Author, 2016

Note: Buying House means Buyer Agent or Broker,

An example is: woven items are manufactured in a small 2-line factory with 180-200 machines, 2,000 square meter upper floor sized factory, approximately 180 to 200 employees with such responsibilities as machine operator, supervisor, iron and packing man, two cutting masters, one cutting master helper, etc.

Large factory-2/3 CMT based technology factories and washing factory. Material sources are available for purchase using back-to-back L/C for the accessories and materials. The design also can be prepared by large factories with the help of their expert designers according to the buyer advice. All procedures should be confirmed by the original buyer each time, before the development of the RMG product. Buyers are mainly from the EU, USA, and so on with brand producers, namely JC Penny, World Mart, etc. Products are inspected by the original buyer's agents or through buying houses by buying experts. Knit and woven items are manufactured by more than 1000 employees.

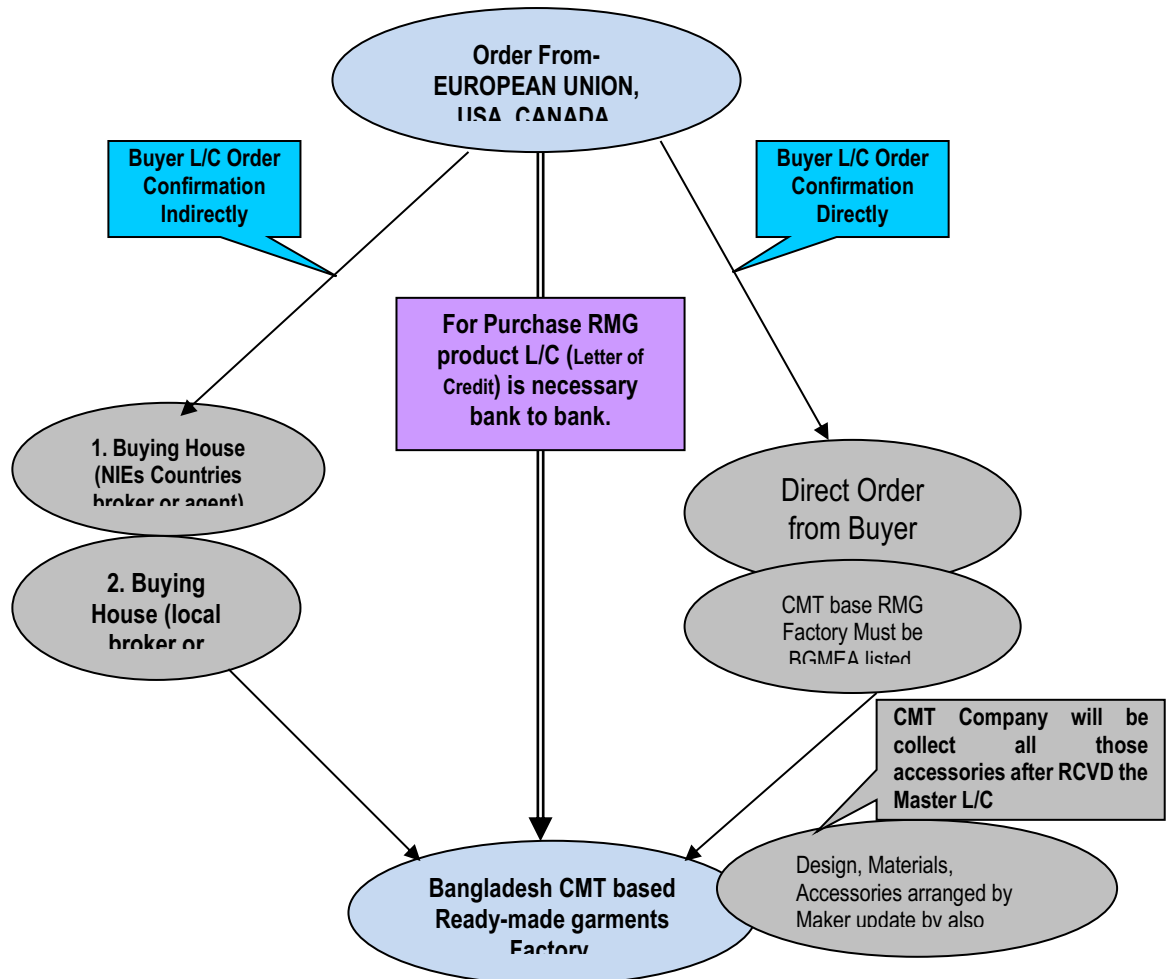
Figure 4.1 shows Bangladesh export items with RMG as a non-traditional export item. The RMG is based on CMT concept or method and CMT based RMG has three categories based on factory size: small, medium and large- as mentioned above. All type of factories are based on swing, cutting machine and unskilled human power. The manufacturing pattern is shown in this figure using connection lines with bold and double lines. The same Figure shows Bangladesh's overall trading pattern with some traditional and non-traditional export items, including RMG items.

4.2.2. CMT factories manufacturing pattern

Figure 4.1 shows how an order is placed at a CMT based RMG factory in Bangladesh while Figure 4.2 explains the manufacturing pattern of CMT factories. As in Figure 4.2 indicates, buyers can place orders for RMG products in two ways, namely direct and indirect through buying houses. If orders come indirectly, then buying houses are confirmed the all-manufacturing pattern. After the buyer confirms the work orders, RMG factories start the production. For this purpose, RMG factories need to buy raw materials, accessories and designs from the buying houses. This procedure is called the manufacturing

pattern in the RMG industry. Figure 4.2 explains this manufacturing pattern and the output of the CMT based RMG factories.

Figure 4. 2 - CMT technology based RMG factories buyer order pattern



Source: Author, 2017

Note: BGMEA- Bangladesh Garments Manufacturer Export Association. L/C- Letter of Credit, NIEs Countries are - Taiwan, Singapore, Hong Kong and South Korea.

Bangladesh RMG products are destined mainly to markets in the EU, USA, Canada and Australia. Initially, Bangladeshi RMG factories received production orders only for low grade RMG items from these countries. However, those factories began to manufacture medium grade items starting at the end of 1990s. At the beginning, all such activities were

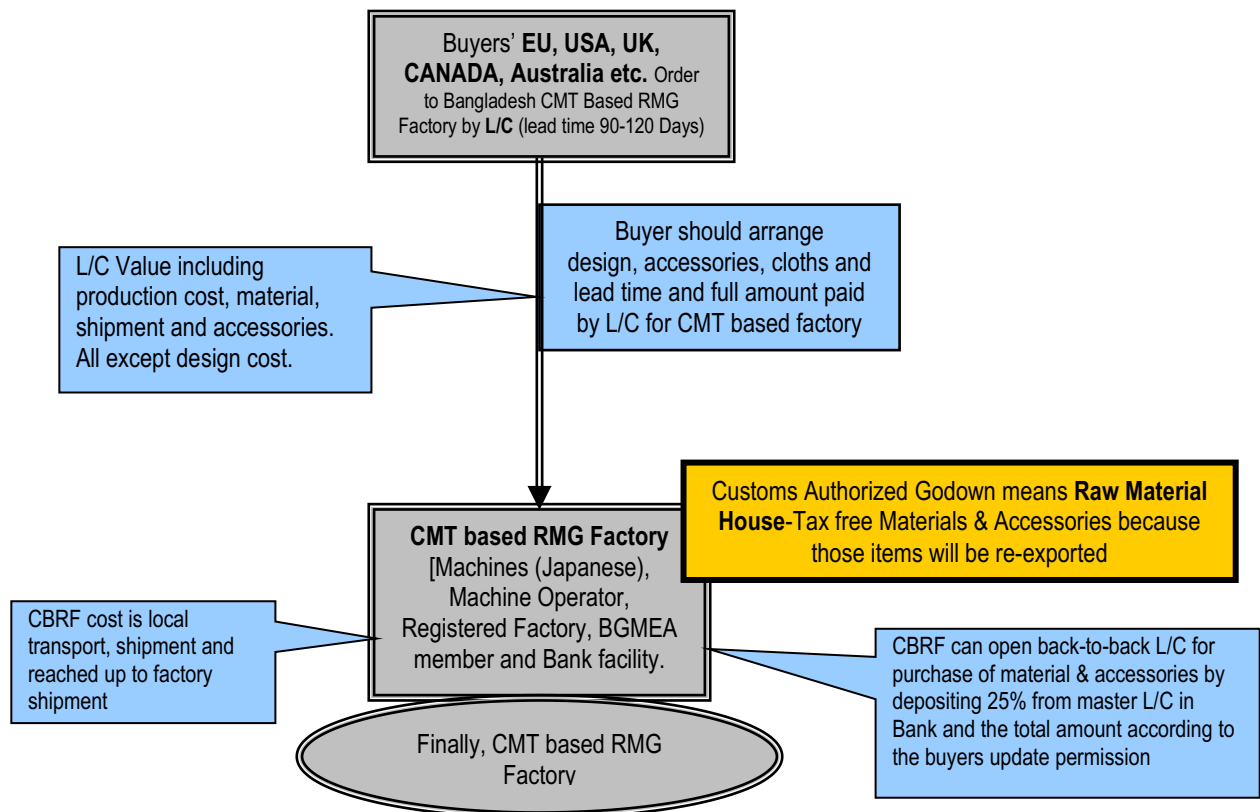
carried out as work order; letter of credit (L/C) arranging, designing, material and accessories approval, quality checking and shipment were controlled by local buying houses.

However, RMG factories in are now receiving most of their orders through buying houses located in the NIEs of Singapore, Korea, Taiwan and Hong Kong. The most important reason is the relocation of RMG factories over time from developed countries to developing countries. The readymade garment industry was initiated first by developed countries such as the UK and the USA. Later, due to continuously increasing costs of production, the industry started relocating to regions where cheap raw materials and labor could be found easily. Therefore, technically developed countries like Japan also started to make RMG products before the industry moved to the NIEs, later to be followed by developing countries with low labor cost like China, India, Bangladesh, Vietnam, etc. Though presently developing countries are dominating in the RMG business, more skilled and experienced entrepreneurs in NIEs are still dominating the intermediate business by operating buying houses/buying agents.

These buying houses took orders from the original buyer and give production orders to developing countries such as China, India, Bangladesh, Vietnam, etc. where cheap labor is available. As a result, Bangladesh RMG factories receive most of their orders from these buying houses. When a Bangladeshi RMG factories receives a L/C for the full amount, They can use it to purchase (import items which are not tax free) accessories and materials through the back-to-back L/C.³⁴ These imported materials went to the RMG factory's warehouse, known as the "RAW MATERIAL HOUSE" or else "BOND HOUSE," where all materials and accessories were kept until the order is completed.

³⁴ Arrangement in which one irrevocable letter of credit (L/C) serves as the collateral for another; the advising bank of the first L/C becomes the issuing bank of the second L/C. In contrast to a 'transferable letter of credit,' permission of the ultimate buyer (the applicant or account party of the first L/C) or that of the issuing bank, is not required in a back-to-back L/C It is used mainly by middlemen (intermediaries) to hide the identity of the actual supplier or manufacturer.

Figure 4. 3 - CMT based RMG factory manufacturing pattern³⁵



Source: Author, 2017.

Note: CBRF- CMT based RMG Factory

4.2.3. The CMT factories at present

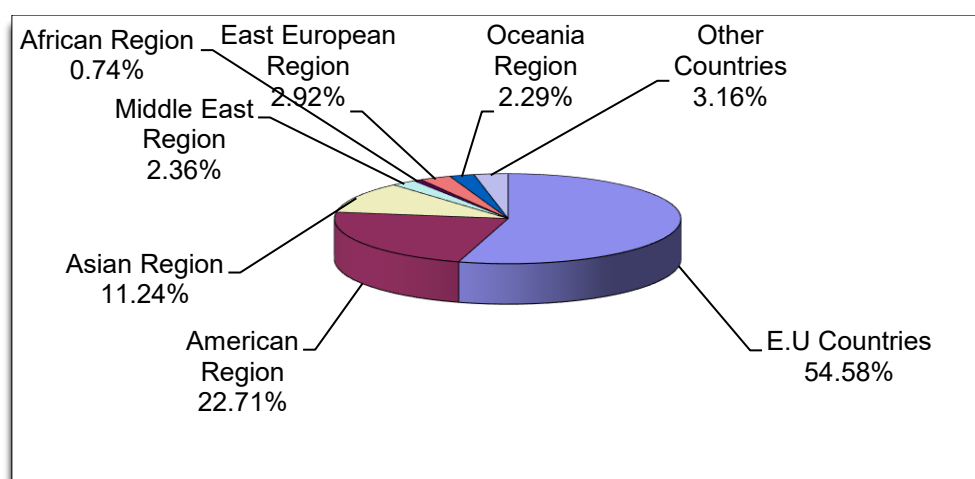
Machinery for Bangladeshi RMG factories come mainly from Japan and some of these machines are brand new, while others are used. However, some CMT based RMG factories use Chinese machinery even though buyers do not like to purchase products that are being produced with Chinese machines since quality of those products are not up to standard level. All international buyers are well aware of the quality of the products that are produced by using Japanese machinery.

RMG factories in Bangladesh are now mushrooming due to the success of the industry. Many non-professional entrepreneurs are now entering into this market in order to

³⁵ Islam, Md Shafiqul. author of this paper. Chubu University, 2017

take advantage from the fast growing CMT factories. These non-professional entrepreneurs are seeking only short-term profit from engaging in this business but are not making genuine effort to improve the quality of the products. However, the only advantage currently enjoyed by the Bangladeshi RMG sector is the low cost of production due to the availability of an abundance of cheap labor. It is important to mention that Bangladesh will not be able to continue to take the advantage of this cheap labor due to new entrants like Myanmar and Nigeria among others, who are more than capable to produce RMG with an even cheaper labor force in their countries. Therefore, the time is right for Bangladeshi RMG factories to introduce necessary changes to improve product quality.

Figure 4. 4 - Direction of Bangladesh's exports (2016)



Source: Bangladesh Export Promotion Bureau, 2017.

Figure 4.4 shows the direction of Bangladesh's exports in 2016, according to the Bangladesh Export Promotion Bureau (EPB). The export sector was potentially vulnerable to the on-going financial crisis as it heavily depended on the EU and US markets, which were badly hit. Almost half of Bangladesh's exports went to the EU, while another quarter went to the US. In the same year, Bangladesh's exports to the EU countries were 54.58% and to the USA 22.71%, which indicated that Bangladesh was diversifying its market with competitive pricing to the developing countries as well. It was apparent that the low price was the main advantage for the developing countries. Therefore, main sources of economic

growth came from the manufacturing and service sectors, which were both crucially dependent on the RMG sector in Bangladesh.

High export concentration was a source of vulnerability for Bangladesh's exports, especially in the context of that recession. There were at least two channels through which the crisis could hurt Bangladesh. Declining wealth and earnings in the USA and EU had reduced import demand and reduced demand for Bangladeshi exports. Another impact could be through the banking system, reducing trade credit to buyers involved in imports from Bangladesh. This in turn affected exports.

4.3. CMT factory growth factors

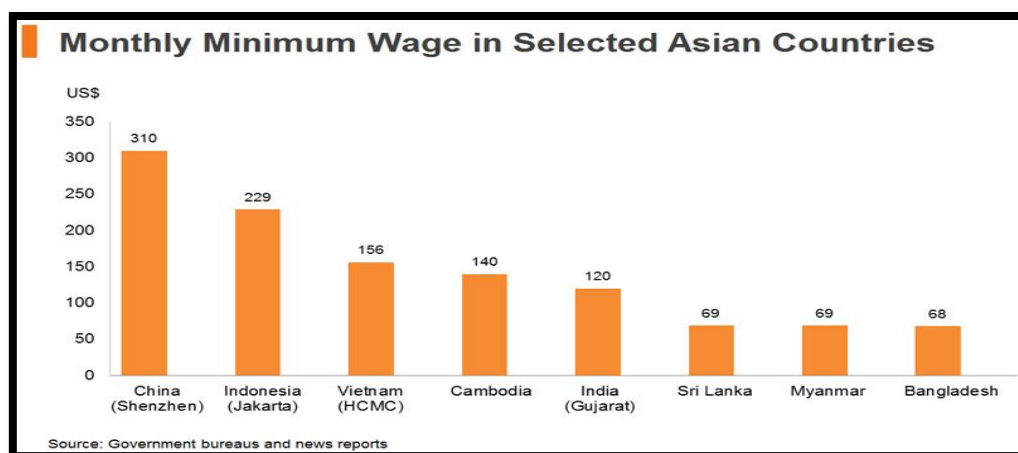
The industry in Bangladesh consists mainly of the RMG industry, which exports one third of the total industrial exports. The RMG factories in Bangladesh were predominantly developed by the private sector, as well as foreign direct investors, who were attracted to this sector. As a government institution, the Board of Investment (BOI) in Bangladesh applied different policies for FDI, but the CMT based RMG sector did not pay any special attention. Therefore, CMT based RMG factory owners came together and formed an association for sustainability of the RMG factories. This association called BGMEA was found to have made a sizable impact on CMT based RMG factory development. This section will illustrate the factors for CMT based RMG factory growth and the role of the owners association for CMT factory growth while paying attention to its future vision.

4.3.1. CMT factory growth factors in general

From the perspective of the private sector, the Bangladeshi RMG industry's contribution to export earnings has reached a very high level for GDP growth. At the end of the 1970s, CMT factories were started with unskilled and low cost labor. The factors for the rapid growth of RMG industry in Bangladesh were:

a) Availability of cheap labor and low energy costs: Firstly, the most important factor is cheap labor. Bangladesh is one of the cheapest labor cost countries among the developing nations. As indicated in Figure 4.5, the average monthly wage rate in Bangladesh was below other countries involved in the apparel industry. Wages were unlikely to increase due to the vast unemployment rate that existed in the country and lack of alternative work opportunities, especially for rural women, who constitute 80% of the RMG work force. The wages paid to RMG workers in Bangladesh were the lowest even by South Asian regional standards. As already pointed out in Table 2.1 in Chapter 2, energy costs were also very cheap in Bangladesh.

Figure 4. 5 - Comparative Average Hourly Wage in Apparel Industry, 2017



Source: Hong Kong Trade Development Council (Government Bureaus and news reports) 2018

b) MFA policy implications for Bangladesh: The MFA policy applied to LDCs was to achieve a degree of economic balance in the world of clothing manufacturing. Under this MFA policy Bangladesh was able to establish a stable market for its apparel products.

c) Bangladesh industrial policy and bank facilities: The Bangladesh government established several policies over the years with a view to boosting growth of CMT based RMG factories. With these policy reforms, the private sector has been playing a significant role for the industry development, and for the first time, Bangladesh could export RMG products as non-traditional exports. Bangladesh industrial policies supported RMG exporters by giving such benefits as subsidies and tax holidays, creating Export Processing

Zones (EPZs) with proper infrastructure, and encouraging FDI through the Board of Investment (BOI) etc.

d) Activities of BGMEA: Among the activities accomplished of the BGMEA were women empowerment programs, establishment of social secure ideas, international organization and lobbying activities, MFA quota distribution, order confirmation for buyers to guarantee supply, declaring export and import data and negotiating with government bodies. Also as a dispute settlement body, this association played a significant role to keep good coordination among the factory owners.

e) Policies by the government: Industrial policies in 1982 (NIP), 1985, 1991, 1999 and 2005 motivated private enterprises to export by using imported raw materials free of duty under government policies.

4.3.2. Role of BGMEA

At the beginning of the 1980s CMT technology based RMG factories started manufacturing and since that time, growth in production has been continuing. However, looking forward to realize the potential growth and profitability of the industry and also with the view of promoting and protecting the interests of the manufacturers and exporters of the RMG industry, owners of 134 factories formed an association called the Bangladesh Garments Manufacturer Exporters Association (BGMEA) in 1983.

The BGMEA is the only formal institutional body that represented the interests of all the export oriented-garment manufacturers and exporters of the country. It helps drive commerce by increasing sales of Bangladeshi-produced garments and pursues excellence in the RMG sector through its activities and programs, including establishing and nurturing relationships with foreign buyers, businesses and trade associations, organizations, chambers of commerce, and research organizations. It set up its regional office in

Chittagong in 1985, which is a strategically important commercial port and the gateway for all RMG export. It also acts as a pressure group to protect the interests of the RMG sector and acts as a facilitator of trade negotiations with global trade bodies such as the WTO, ILO, and UNCTAD. Moreover, as it is the BGMEA's role was to promote and protect the interests of the RMG sector, it has helped boost RMG exports by 500%, allowing Bangladesh to become one of the chief RMG exporters worldwide.

Table 4. 2 - Important issues related to the Bangladesh RMG industry

Year	Issue
1970-1980	Early period of growth
1982-1985	Boom days
1985	Imposition of quota restriction
1990	Knitwear sector developed significantly
1993	Child labor issue and its solution
2003	Withdrawal of Canadian quota restriction
2005	Phase out of quota restriction
2006	Riots and strike by garments labor
2007-2008	Stable growth
2008-2015	Continuous growth

Source: Compiled by the database of the Bangladesh Garment Manufacturers and Exporters Association (BGMEA), and the Export Promotion Bureau (EPB), Bangladesh, 2016

BGMEA played a crucial role for women labor employment, women labor enhancing facilities, exports data processing and quota distribution among the factories. As listed in Table 4.2 there were some important issues that it faced throughout its development.

Detail roles of BGMEA:

- To assist the board in formulating and executing vital policies and programs of the organization with the help of four vice presidents having important portfolios, along with a secretariat of experienced officials,.
- To establish a healthy business environment for a close and mutually beneficial relationship between the manufacturers, exporters and importers in the process ensuring steady growth in the foreign exchange earnings of the country.

- To protect and uphold the interest of the industry by aiding the formulation of government policies consistent with a congenial growth of the sector.
- To protect the interests of its members and their employees by implementing legitimate rights and privileges for garments workers.
- To negotiate and consult with foreign and local agencies to promote the garments sector in all possible fields.
- To maintain liaisons with foreign buyers, business associations and chambers of commerce.
- To provide foreign buyers with all necessary information regarding all issues concerned with the RMG sector.
- To bring the opportunities for local manufacturers to interact with foreign buyers and form new rapport by arranging different apparel fairs at home and abroad.
- To keep the BGMEA factories child labor free through continued monitoring.
- To continue and expand collaboration with relevant ministries of the government.
- To provide information services to its members by publishing monthly newsletters, issuance of circulars and through Dhaka's first B2B web portal, which directly links exporters and buyers around the world. (www.bgmea.com, access date 20th June,2017)

BGMEA also established its own institute called "BGMEA Institute of Fashion & Technology (BIFT)" in 1999. The process to transform it into a university is underway. It has introduced service books for each and every worker employed in the factories. It has ensured that the minimum wage be implemented in 99.49% of all factories. It has set up a crisis management committee for emergencies. BGMEA has developed a central database system for the garment workers that will cover all workers' information of the readymade garment sector.

The BGMEA basically expected that the workers were well aware about the following:

- a) 100% of workers in the RMG sector hold the opinion that the local factory owners should contribute in increasing wages of RMG workers.

- b) 100% of workers in the RMG sector hold the opinion that local factory owners should contribute to form a welfare fund for the RMG workers of Bangladesh.

The workers and the trade union activists of the RMG sector of Bangladesh were equivocal on the issues concerning the role of BGMEA. They mentioned that the primary responsibilities facing the local manufacturers involve the followings:

- BGMEA should immediately implement the three-partied agreement which has been recently worked out among the BGMEA, trade unions and the government of Bangladesh.
- BGMEA should immediately agree to the proposal of increasing the basic minimum wage of the RMG workers from Tk. 4,000 (US\$40.0) to Tk. 5,500 (US\$68.0) monthly, issue job-contract and implement the provision of one day weekly holiday.
- BGMEA should work to improve workplace safety.
- BGMEA should abide by the labor laws of the country, including that of the workers' rights to organize.

4.3.3. The vision of BGMEA for the RMG industry

BGMEA has member services like RMG information, customs activities, amendment of export orders, renewal of bond licenses and dealing with policy matters and problems. Also BGMEA is engaging in other social programs such as programs to eliminate child labor practices in accordance with an ILO and BGMEA partnership project and health care facilities for the garment workers, using group insurance and hospitals.

As an association, BGMEA has included the following initiatives for its vision for the RMG industry in Bangladesh:

- Establishment of a compliance cell in the BGMEA
- Group insurance for RMG workers
- Training programs with professional certification.

- Lobbying at the international level
- Establishing a research and training institute for the RMG sector

However, as a trade body of the garment industry, BGMEA should take the leading role to initiate the following requirements:

(a) Database: A database is an essential part of any dynamic business in today's knowledge-based economy. A database will help the firms to stay up to date about the information that matters to the firm, like formation of the competitors and searching for new markets.

(b) Training institutes: Training institutes should be established immediately according to the requirements of the industry. The training program should be regular and should encourage firms to join. BGMEA can invite experts on any particular subject from the industry or any visiting fellow who has solid knowledge on that subject. The training program should be vast and detailed, and should at least concentrate on price negotiations, effective communication and dealing with buyers and global suppliers, merchandising, commercial (export-import) and banking, among others.

(c) Compliance: Compliance issues have to be monitored by BGMEA within its members on a specific schedule. This is essential for the industry. BGMEA should encourage a code of conduct, especially for those firms who are small and often target subcontracting. BGMEA should take the initiative to liaise with the ILO and NGOs that are working with labor issues. Most NGOs now have connections with international parties who are campaigning for fair labor environments, thus any issues that might arise internally could damage the overall image of the industry. In addition, if BGMEA follows any developed countries compliance methods such as “**HO-REN-SOU**”³⁶ in Japan, then it

³⁶ It is a method used inside a manufacturing factory where there is any trouble complaints are issued from customer complains. The procedure is: 1. (Hou-Houkoku) inform to senior boss, 2. (Ren-Renraku) telephone, and 3. (Sou-Soudan) discuss about the matter to devise the for proper solution.

would be easier to solve any problem arising inside the factory or during the manufacturing period.

(d) Aggressive marketing: Aggressive marketing should be the strategy for the industry to go beyond the US and the EU markets. This could be done through trade fairs locally and internationally and through the Bangladesh embassies. BATEXPO (Bangladesh Apparel & Textile Exposition, 1997) should be continued and attract more potential buyers. Meanwhile, trade fairs in different strategic countries should be held on a regular basis, for instance as they have been in Las Vegas and Canada. The BGMEA has to keep their eyes open on any opportunity to enter into China's huge market.

(e) Presentation of the industry: Presentation of the industry will create a positive impact on current and prospective buyers. The description should include the importance of the garment industry for Bangladesh, the achievements brought by the industry towards societal change, particularly for young women. Brochures, catalogs and user-friendly modern websites should also be part of the presentations.

(f) Zero tariff access: Zero tariff access to the US needs to be pursued more energetically. This would significantly increase Bangladesh's competitive strength. Rahman (2004) shows that zero tariff access is likely to increase exports to the US by approximately \$1.0 billion. This happened for Canada where exports increased from \$105.6 million in 2002 to \$162.8 million in 2003, a growth of about 54 % (Habib, 2005).

(g) Promotion of traditional clothing: Promotion of traditional clothing as a process of creating a niche market will help Bangladesh to make its own brand name internationally. India is currently famous for craft design in mass products which is also done in Bangladesh but in a disorganized way. Organization of these craftsmen and promotion of their work could help to make the brand name for Bangladeshi products in the

international market. Handmade clothing, *zamdani*, silk, which is a famous fabric and clothing along with *kantha* stitches which can easily promoted to the western market.

The work force is the life-blood of the readymade garment industry of Bangladesh. The country has been competitive in the global apparel market at the present state of competition mainly due to availability of human resources at low cost. The RMG industry employs 4.0 million people at present and is still running a shortage of 25% workers. BGMEA gave utmost attention to this shortage since it directly related to the sustainable growth of this industry. The present board has placed this agenda item of human resources development on top of their mandates and has been working with the government and development partners to develop less-skilled human resources in the poverty stricken areas (Samad, 2009).

4.4. Emergence of CC based RMG factory through CMT factories

CMT based RMG factories continue to manufacture RMG items using old and obsolete technology that limits the industry. For example, the industry still utilizes cheap, unskilled labor rather than moving towards more educated and skilled labor. Skilled labor can benefit firms in a number of different ways, such as creating new designs and absorbing the latest changes in this global industry, etc. However, following the same production strategy from the beginning of the industry to this point, the Bangladesh RMG industry has been surviving for almost three decades. At present, there is no institutional arrangement for labor training, design making and other skill training. In order to face global challenges in the industry, however, the Bangladesh RMG industry moved onto a new route by diversifying its product manufacturing strategy from the beginning of the 2000s and till date CC strategy is continuing its production by export RMG product at international market.

4.4.1. CMT based RMG factories in last three decades

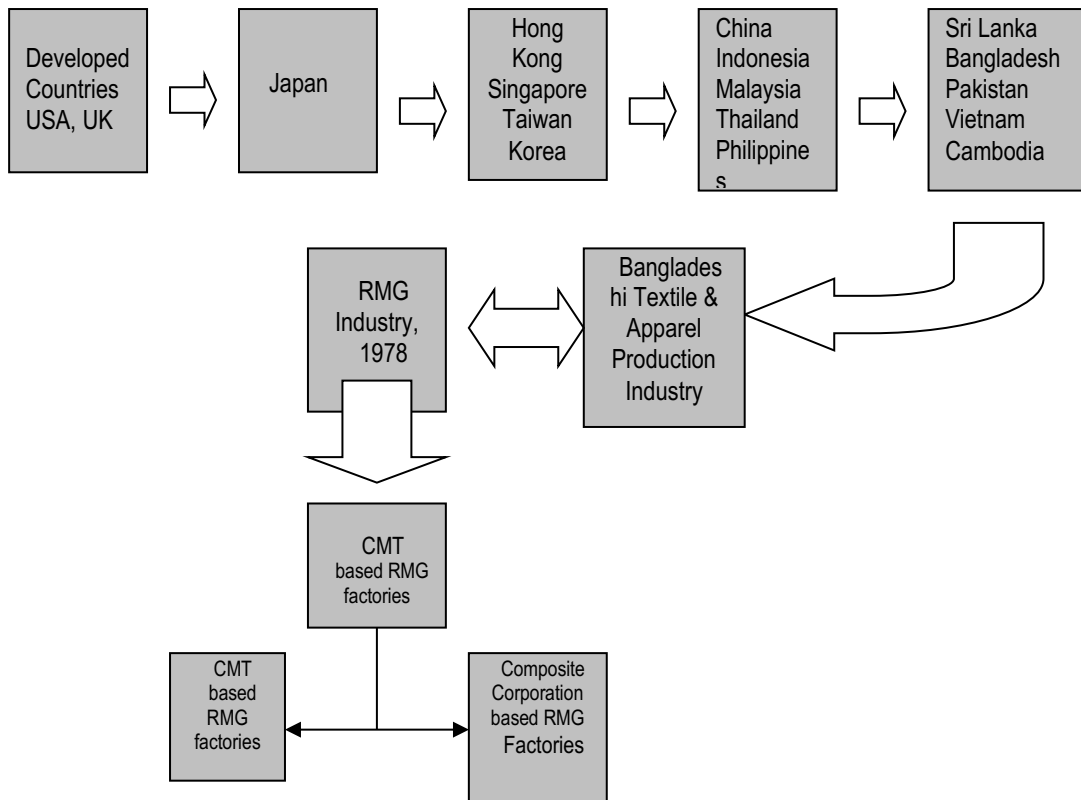
Since the beginning, the RMG industry has been continuously contributing to the generation of export earnings and having a positive influence on GDP growth of the country. However, though Bangladeshi RMG exports' share in the world rose to number six, the RMG industry in Bangladesh, even in the 1980s, depended heavily on low cost labor. Other than that, there were no strategic technological changes introduced into the industry. This was the situation in the 1980s, the first decade, and according to the findings for this research, to date only the CMT method has been used as updated technology.

In the 1990s, the second decade, decisive international support appeared in the form of the MFA quota system. During this time, the other important change that occurred was the formation of a factory owners' association. However, the same CMT technology continued during this decade as well. The Bangladesh government has declared the textiles sector as the trust sector in the economy in the third decade (the 2000s) of CMT based RMG history. Moving into this decade, the RMG sector already recognized as the main contributor to export earnings and industrial development under the open economic policies of Bangladesh. Same as in the previous decades, the industry was limited to the use of the CMT technology, which has not changed during the 30 years of Bangladeshi RMG history. Therefore, this is the point that needs serious deliberation, at a time when global competition among the apparel producers is more severe than ever before in order to sustain and face that competition. Especially, a new mode of production or an introduction of the latest technology became crucial for the Bangladeshi RMG sector for its future development.

4.4.2. The route towards the dual structured RMG industry

Figure 4.6 shows how the apparel production industry came to Bangladesh overtime, passing through the developed countries, NIEs and then countries like China, Indonesia, Malaysia, Thailand, and Philippines.

Figure 4. 6 - Migration of the textile and apparel production



Source: Chapman (1997). Modified by the author (2015)

The final stage of the same figure indicates the present dual structure of the RMG industry in Bangladesh. Having a 30-year period of experience in the RMG industry, without any technical or managerial level assistance from the government throughout the period, private entrepreneurs introduced the Composite Corporation (CC) strategy into the RMG industry as new mode of production. The RMG industry in Bangladesh became dual structured with this system. This demonstrates that private entrepreneurs have identified the importance of moving with the latest changes of the RMG industry rather than depending only on cheap labor. Composite Corporation showed increased performance within a very

short period from its introduction. With the empirical data collected from both CMT based RMG factories and from CC based RMG factories the author will do a comparative analysis to show the faster CC than the performance of CMT based factories and that will be the one of important issue of this research.

Bangladeshi RMG industry is necessary for its own trade development in international market and for industrialization such as i) **the elasticity of factor supplies**, and ii) **the role of rationality**. Further as explained in Pack (2007), there are similar two issues for Bangladeshi industrial development. For i) **the elasticity of factor supplies** which is a necessary condition for industrialization. Currently Bangladesh is lacking of supplying skilled operatives, managers and technologists flexibly in support of its industrialization. These bottlenecks must be solved with necessary industrial policy proposals. If any industrial policy is not supported by other supply factors such as skill operatives, managers and technicians, the proposal will end up with no result. Under the concept of ii) **the role of rationality**, Bangladesh should look over the other countries and should allow market mechanism to work freely. This economic rationality, as neoclassical economist mostly believed, will expand international market for the country. Therefore, at the beginning of the industrialization, as Pack (2007) correctly pointed out, the role of rationality becomes crucially important.

4.5. Conclusion.

The CMT based RMG factories desperately need technological advancement to keep its growth momentum. Having discussed about the background of the CMT factories development, manufacturing pattern and the present condition, it is necessary to think about

technological advancement for the industry. The CMT based RMG sector in Bangladesh has been showing good performance to a certain extent under different conditions such as the MFA quota system and policy assistance from the government. The Bangladeshi CMT factory owners' association, BGMEA, has provided various kinds of assistance to the RMG industry development both domestically and internationally.

However, the Bangladesh RMG sector captured only low-grade quality apparel markets in the USA and EU because of the absence of innovations and technological advancements in the industry. Understanding the uncertainty of the apparel markets and with a view to avoiding that uncertainty, some private entrepreneurs have taken initiative to introduce the CC system to the industry as a new technology using Socio-Technical System.

CHAPTER 5 - THE EMERGENCE OF CC FACTORIES THROUGH THE LIMITATION OF CMT FACTORIES USING SOCIO-TECHNICAL SYSTEM

5.1. Introduction

This chapter has seven sections including this introduction. The second section, the background, provides overview of the emergence of CC technology based RMG factories. The section three is about the development problems faced by the CMT factories. The fourth section is used to show how the dual structure in the RMG industry has emerged. Development of CC based RMG factory is discussed in the section five. The section six explains the factor of export competitiveness power in RMG industry of CC and finally the section seven concludes the chapter.

5.2. Background

There was no sizable change in the RMG sector in Bangladesh, even after the introduction of open economic policies in 1989 and thus, performance of the CMT technology based RMG factories did not show a significant difference from its previous performance. Here it is found that the CMT based RMG factories have faced fundamental developmental problems, STS development problem, even after new industrial policies were introduced by the government. These problems include lack of management resources, lack of management ability for marketing, and lack of improvement of the job environment for the labors. These developmental barriers stagnated the development of CMT technology based RMG factories in Bangladesh. This might be one of the factors that compelled the entrepreneurs to form CC technology based RMG factories. The labor force in Bangladesh also wished to join CC based RMG factories because they believe their jobs were more secure than otherwise. Therefore, the latest data set published by the Bank of Bangladesh

showed that export share of Bangladeshi RMG rose faster under CC technology based RMG factories. Considerable encouragement has been given to foreign investors through the open economic policies that established exports processing zones with more concessions for foreign investors.

With these open economic policies the demand for Bangladesh RMG products increased and as a result, CMT based RMG factory owners later understood that they would not be able to meet this demand with the current system of production, which had been spread across the sector. Therefore, they wanted all the production to be carried out in a unique place and which influenced some of them to start a new industrial system by the name of CC. Some of CMT based RMG factories were shut down³⁷ while some others took some production advantages with the help of large CMT factories. Further, in order to face the challenges that came after the MFA quota system, some of the CMT factory owners decided to make this CC system and negotiated very closely with buyers. According to them, the CC can accept orders from the buyers directly. This CC system showed improved performance within a very short period of time and therefore the system became popular among the RMG producers in the country. After identifying the main reasons and specific problems of CMT based RMG factory development and the reasons why the same pattern of production was used without any new developmental changes, this chapter intends to highlight the improved performance of CC technology based RMG factories.

5.3. Development problems of cut, make and trim (CMT) factories

As mentioned by Chowdhury (2001) there are some specific problems in the RMG industry in Bangladesh. These are: i) inability to identify products with firm international demand growth potential; ii) lack of product development in terms of design to meet

³⁷ According to the Ministry of Commerce list in 2006 to 2009, were 270 CMT factories were shut down. There was no development step among those factories.

changing demands of customers; iii) failure to fulfill international demand of product quality and product diversification; and iv) lack of aggressive salesmanship to develop markets. These problems/barriers are making disturbances in different ways for continuous production in the textile and RMG sectors in Bangladesh.

Although the CMT based factories in Bangladesh are popular among the world apparel producers and buyers and has earned the position of 6th largest RMG exporter in the world, the industry has not been free from considerable developmental problems. For continuous development of CMT based RMG factories, these problems must be identified and solved by paying close attention. Among these development problems some major ones can be explained as follows.

5.3.1. Lack of management resources

The researcher has found there are five factors in Bangladeshi CMT based RMG factories facing development issues. Those are:

i) Skilled labor: Until very recently large parts of the Bangladesh RMG industry were represented by CMT based garment factories. These CMT factories ran with very basic production process as compared with the recent developments of the global RMG industry. As such, the CMT factories made moderate profit margins, just sizeable enough to remain in the business. In addition, since CMT activities are rather easy, CMT factories ran mostly with un-skilled³⁸ labor while skilled laborers were reluctant to stay because of the possibility of future job uncertainty. Therefore, CMT factories want to hire skilled labor by paying higher wages with expectations that the quality standard of the product will improve. This lack of skilled³⁹ labor negatively impacted on the future of the CMT factory in Bangladesh

³⁸ No education and no experience, only physical ability.

³⁹ Education, experience and formal certificate and physical ability.

(Siddiqui, 2005). Moreover, un-skilled labor can improve their labor quality to semi-skilled⁴⁰ and skilled labor.

ii) Owners with less managerial experience: As many pointed out (Siddiqui 2005, Chowdhury 2001), most of the owners of the CMT factories are not from the same professional field and do not bring professional managerial experience with them. Manufacturing orders are sometimes placed based on personal relationships or family background business relationships. These family background and professional relationships also influence various professionals to enter into CMT based RMG factories.

iii) Capital for investment: It has been known that the managers with less professional experience in the RMG field used the profit of the CMT factories for personal use, like sending their children/family abroad for education and other purposes. Because these managers fail to use the profits for reinvestment, CMT factories find difficulties for capital investment for the future growth. Once more it is necessary to mention that to build a small type of CMT factory the cost is not that high, but to develop its production more information and know-how are needed.

iv) New information: Small and medium scale CMT factories, in particular, face problems that require business information. For example, they find difficulties in searching new information about new equipment and machinery. Further, since they do not have direct business links with foreign buyers, it is difficult to find international markets for their products. The only available option to fill this information gap is the BGMEA monthly news bulletin. However, information in the bulletin is limited and does not fully satisfy the requirements of these CMT factories.

v) Know how: Technological know-how is one of the foremost important factors in any manufacturing firm. The firm management, therefore, should know very well about

⁴⁰ Less education, less experience and carrying informal certificate with physical ability.

the methods of production as well as the changing patterns of production methods of the same product around the world. Furthermore, they should be aware of the changing patterns of the demand for the products. For example, as fashion is changing frequently in RMG, the industry must also adjust. If firm management is unaware of these changes they could end up with excess stock or have a deficit production stock and ultimately face huge losses. In CMT based RMG sector in Bangladesh this factor is lacking due to the shortage of proper channels to access that knowledge.

Further, even after the thirty years of experience, RMG sector CMT based factories in Bangladesh are still producing low-grade products for exporting to the EU and USA markets. The management and/or ownership have failed to move ahead with the latest changes in this field due to this lack of know-how. As a result, the future of CMT based RMG in Bangladesh is uncertain.

5.3.2. Lack of management ability for marketing

Most of the CMT based RMG factories in Bangladesh at present receive less and less production orders. It was identified that the lack of management ability is one of the reasons for the reduction in orders (Siddiqi 2005). The most common problem in the RMG industry today is information asymmetry or difficulty accessing information on textiles and marketing. It is found that for some goods the market demand, both domestic and foreign, is limited to textile products in the world. About 90% of textile raw materials are imported from abroad for the Bangladeshi RMG industry. The raw materials costs become much higher in Bangladesh due to 10 to 15% import tax, 15% VAT (value added tax), and 2.5% advance income tax (National Board of Revenue, Bangladesh). As a result, the local production cost of textile becomes higher than imported textiles. The domestic demand is limited due to lack of private and public purchasing power (Chowdhury, 2001). Further as

mentioned Chowdhury (2001), there are some specific marketing problems in the RMG industry in Bangladesh. These are:

- inability to identify products with firm international demand growth potential
- lack of product development in terms of design to meet changing demands of customers
- failure to fulfill international demand of product quality and product diversification
- lack of aggressive salesmanship to develop markets
- most export activities do not have full access to foreign exchange at the official exchange rate
- authorization for importing banned items, e.g. second hand cloths and garments, and an anti-export bias in tariff structure

These problems/barriers are create disturbances in different ways for continuous production. The government is trying hard to solve these problems for a strong future for industry in the country.

According to the world export market share for the Bangladeshi RMG products and its current position among the world's largest apparel exporters, it is quite obvious that the industry has the capability to achieve a higher-level of production. The main problem, however, is that the industry now faces how to further expand their existing market and how to find new market for its products. This marketing ability has not been developed yet. As a result the Bangladesh RMG industry cannot realize its maximum production despite the high potential to expand and find new markets. As Siddiqi (2005) correctly pointed out that there are several large markets, for example, India, Japan, China, ASEAN, Russia and the Middle East in which Bangladesh is yet to penetrate.

Further, according to him as indicated in Table 5.1, Japan is a potentially large market for Bangladeshi apparel. However, the challenge left for the Bangladesh is to develop their marketing management and find solutions to such management problems.

Table 5. 1- Japan's import of apparels: 1990-2000 (US\$ billion)

	1990	1995	1998	1999	2000	Changes
Japan	8.7	18.8	14.7	16.4	19.7	126%

Source: The Ministry of Commerce, GOB, initial report on post-MFA development strategy and technical assistance for the RMG sector, Dhaka, August 2002.

5.3.3. Lack of good environment for CMT factories

As a whole, the country is socio-economic and political environments are not supportive for the RMG industry development. It is true that since the beginning of the 1980s many governments that have come into power introduced several development policies. However, with these industrial policies, other supportive facilities such as institutional and infrastructural facilities have not been established. Further, there was not development programs to upgrade the labor quality, which seriously influenced the upgrading of quality of the products in this industry.

Also, women contributing to the labor force play a crucial role in the RMG industry all over the world including, Bangladesh. Since Bangladesh is an Islamic nation and there are some religious restrictions on women's labor, institutional changes to facilitate the utilization of these unskilled women laborers and change of social attitudes against women working and improvement of the quality of woman labor force have not yet been established. Moreover, the present education system in this country has not generated the required skilled labor for the RMG industry. The RMG industry needs qualified designers, technicians, managers, etc., for its future growth. The present education system has not introduced programs in universities and technical colleges to produce such skills. Another important factor is that the currently available skilled labor has started to move from CMT factories to CC factories to secure their jobs. This movement has badly affected the future of the CMT factories.

5.4. Dual structured⁴¹ in RMG industries

The word “dual” has the meaning of double, twofold according to the Australian Oxford Dictionary (2016). Presently, the Bangladeshi RMG industry mainly constitutes two types of garment factories, namely CMT factories and CC factories. This co-existence of two different factories, including disparities in technology and productivity between them created this dual structure. Between the two types of factories, manufacturing processes, negotiation processes of competitive selling prices are superior in the CC factories compared to the CMT factories. Thus, there is a high potential for future growth for the CC factories while that of the CMT factories is quite uncertain. Further, as Siddiqi (2005) also explained, in restructuring the textile and apparel industries Bangladesh should establish only a small number of CC mills combining spinning, weaving, dying, processing and printing facilities and should not commit huge amounts of investment in such mills. Rather it should invest more to increase the number of dying, processing and printing units. Grey fabrics cannot be imported and therefore, they are dyed in the country. In these sub sectors value addition per unit of investment is likely to be higher and investment required for individual units should be affordable for entrepreneurs. Since the beginning of 2000, a number of large firm composite mills started to emerge and these firms have both backward and forward linkages which the CMT factories do not have. CC factories procure orders from retailers in the USA and EU without the help of buying houses, produce the fabric, make the garments and export them. Thus, even though CMT factories played a significant role in the economy in various aspects thus far, popularity and the future prospects of these factories are declining, and therefore, the scenario must change.

⁴¹ The author describes the term “dual structure of an economy” to indicate the co-existence of two different sectors alongside each other with disparities in technology and productivity between them. The existence of a traditional primary sector along with a modern non-primary sector constitutes to a “dual structure”. Duality can also exist within a particular sector of the economy.

5.4.1. Relationship between CMT factories and CC factories

CMT based RMG factory: Most of the garment factories in Bangladesh used CMT technology to finish the production process and therefore it is frequently referred to as CMT based RMG factories.

CC based RMG factory: This is a group of companies that can make the total RMG product on its own because the CC factories possess all types of cotton, yarn and fabric. The fabric is created going from the spinning through the weaving, dying, and printing processes. Furthermore, CC factories are in a position to make their own designs as well as export to buyers. Their interrelationship and/or differences are as follows:

- Both CMT and CC factories receive production orders from the buyers through L/C (Letter of Credit) confirmation from an authorized local bank.
- Usually buyers check whether both CMT and CC factories used machinery made in Japan before they confirm their buying orders. Also, they are seriously concerned about whether these factories employ certified labor (according to the ILO rules). Finally they demand the quality of the RMG items.
- CMT factories do not receive the full amount of the L/C amount because they need to pay some percentage of the original L/C to purchase materials and other accessories. As Siddiqi (2005) explained, CMT factories can spend about 75% through back-to-back L/C and can retain the remaining 25%. However, in contrast to this, CC factories are in a position to receive the full value of the L/C amount.
- Even though CMT factories possess all information about the buyers they cannot receive direct orders from them due to limited capabilities. In contrast, CC factories are more capable to handle direct orders, and use this advantage to improve the quality of the RMG products.
- For knit or woven item manufacturing, both CMT based RMG factory production type and CC factories have to follow the same as CMT.
- Both CMT and CC factories fail to pay adequate attention to local and international environmental protection rule and regulation.

Table 5.2 - Comparison between CMT factories and CC factories

No.	CMT based RMG factories	CC based RMG Factories
1	Most of the garment factories in Bangladesh have been using only Cut, Make & Trim technology to finish the production process and therefore it is frequently referred to as CMT based RMG factories	This is a group of companies that can make the total RMG product on its own because the Composite Corporation (CC) factories possess all types of cotton, yarn and fabric. The fabric is created going from the spinning through the weaving, dying, and printing processes. Furthermore, CC factories are in a position to make their own designs as well as export to buyers
2	CMT is an input oriented system	CC is an output oriented system,
3	CMT is a long wall method in socio-technical system	CC is a composite wall method in socio-technical system
4	CMT factories are receiving production orders from the buyers Buying house through L/C (Letter of Credit) confirmation from an authorized local bank.	CC factories also receiving production orders direct from the buyers through L/C (Letter of Credit) confirmation from an authorized local bank
5	CMT factories fail to pay adequate attention to local and international environmental protection rule and regulation	CC factories fail to pay adequate attention to local and international environmental protection rule and regulation
6	Usually buyers are checking whether both CMT and CC factories are using machinery made in Japan before they confirm their buying orders. Also, they are seriously concerned about whether these factories are employing certified labor (according to the ILO rules). Finally they demand the quality of the RMG items	For the CC factories are using machinery made in Japan before they confirm their buying orders. Also, they are seriously concerned about whether these factories are employing certified labor (according to the ILO rules). Finally they demand the quality of the RMG items
7	CMT factories are not receiving the full amount of the L/C amount because they have to use LC amount for materials and other accessories. As Siddiqi (2005) explained, CMT factories can spend about 75% through back-to-back L/C and only can retain the remaining 25%	CC factories are in a position to receive the full value of the L/C amount
8	Even though CMT factories possess all information about the buyers they cannot receive direct orders from them due to limited capabilities	CC factories are more capable to handle direct orders, and are using this advantage to improve the quality of the RMG products
9	For knit or woven RMG products manufacturing pattern is the same for the CMT based RMG factories	For knit or woven, item has manufacturing pattern and has to follow CC production type
10	The CMT factories' value addition coming only from labor cost which come from cutting, making, packing and ironing	CC factories value addition is much higher compared to CMT factories because CC factories receive all types of cost such as materials, accessories, making, cutting, designing, packing's and etc.
11	CMT based RMG factory the production start with unskilled labor system which is long wall method	CC factories have to start with skilled labor system then it will be composite wall method

Source: the author, 2017.

- The CMT factories' value additions come only from labor cost from cutting, making, packing and ironing. However, CC factories value addition is much higher than that of CMT factories because CC factories receive all types of cost such as materials, accessories, making, cutting, designing, packing, etc. (Mohiuddin, 2009).

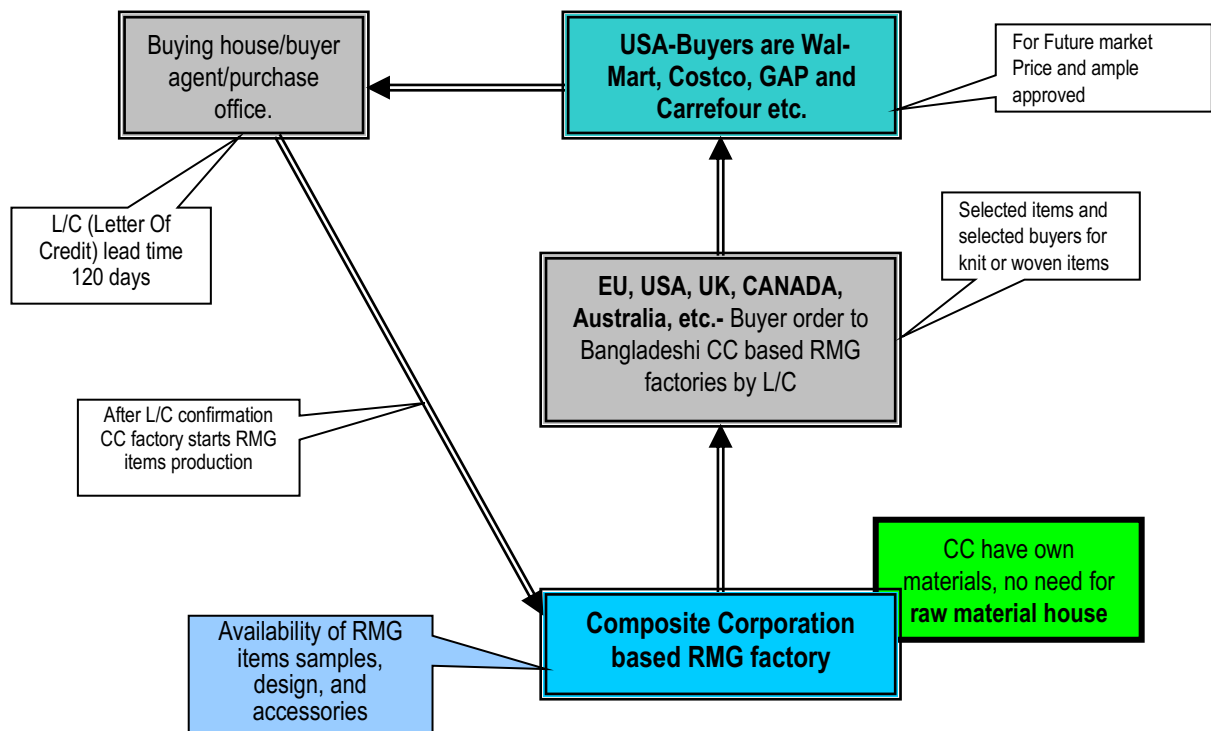
5.4.2. Manufacturing pattern of CC factories

As shown in Figure 3.3 in Chapter 3 there are manufacturing pattern differences between CMT factories and CC factories. The CMT factories have to use back-to-back L/C to purchase and arrange raw materials, fabrics, and accessories after they receive and confirm the manufacturing order. They also receive their product design directly from the buyer or through the buying houses/agents. However, CC factories are not necessarily restricted to this when they receive manufacturing orders.

Figure 5.1 shows the continuous production and exporting systems used by the CC based RMG industry in Bangladesh. Since CC factories possess almost all the production facilities such as fabric, fabric color designing, accessories, modern machinery, and so on, buyers prefer to buy the products from CC based RMG industries. Wal-Mart, Costco, GAP and Carrefour are some of the US buying firms, which place orders to CC, based RMG industry in Bangladesh via buyers, buying houses/buying agents, and purchasing orders usually negotiated with banks through a letter of credit.

As explained in Figure 5.1 the manufacturing pattern of both CMT and CC based RMG factory is the same except for three points, namely (a) CMT based RMG factories need to maintain raw material warehouse. (b) it is not necessary for CC factories to arrange the accessories and other material from outside while CMT factories must have this arrangement. (c) CC based RMG factories are capable of making their own designs and can adjust to future market requirements.

Figure 5. 1 – CC Technology based RMG factories’ manufacturing pattern in Bangladesh



Source: Author, 2017.

Note: The manufacturing line will be divided into 10 stages that move in chronological order from: 1. Cotton, 2. Yarn, 3. Cloth/fabric, 4. Printing, 5. Dying, 6. Finishing, 7. Designing, 8. Cutting, 9. Making and finally, and 10. Washing before they are off to packing. Then sent to the warehouse for export to original buyers.

Bangladesh needs to work on image building and publicize the advantages of investment opportunities in apparel as well as textiles. It must join hands with leading textile and apparel makers in China, Hong Kong, South Korea and Turkey to encourage them to relocate the part of their production to it. It should improve cooperation with the leading consumer goods retailers such as Wal-Mart, Costco, GAP and Carrefour. The RMG entrepreneurs should make their strategies and policies in terms of the value chain rather than the final products, as the strategy of the competition among the leading players is more sustainable than the blind competition.

5.4.3. Present situation of Composite Corporation technology based RMG factories

Almost 4.0 million workers are employed by the RMG industry in Bangladesh. Though there are male laborers, women dominate the RMG sector. Presently, laborers in the CMT based RMG factories are not fully satisfied with their job security, in addition to health care and salary problems. Workers in the RMG sector are becoming increasingly aggressive due to these problems to the extent that it caused problems to continuous production. One of the key reasons for the workers' unrest is the absence of a proper labor policy by the government. Though the BGMEA tried for several years to address this issue, identify the RMG workers' problems, solutions undertaken by the BGMEA alone might not be enough. Meanwhile some of CMT based RMG factories tried to change their production style and move to composite corporation production style. Presently, it commonly occurs that some of the CMT factories take subcontract production orders from CC factories in order to survive in the RMG business field. This suggests that the composite corporation production system is successful in exporting and maintaining a satisfactory profit margin.

Table 5.3 shows continuous growth of Bangladesh's share of exports in the world's garment exports. The CC based production pattern for some knit and woven items greatly contributed to this improvement in the export market. RMG exports to the USA, EU and other countries in fiscal year 2005 was equal to 6,417.7 million in US dollars, which is almost 13% growth of exports. Moreover, export earnings in 2009 were equal to 12,347.8 million US dollars, a growth of almost 16%. The data indicates this continuous growth of exports in the Bangladesh RMG industry and export share with profits. Also Table 5.3 shows, country-wise export to Germany a FY2013-14 almost US\$2573.70million RMG items.

Table 5. 3 - Major destination-wise exports (US\$ in millions & growth in percentage)

	FY05	FY06	FY07	FY08	FY09
Exports of RMG	6,417.7(12.87%)	7900.8(23.11%)	9,211.2(16.69%)	10,699.8(16.16%)	12,347.8(15.40%)
European Countries	4,122.8(10.84%)	3,932(-4.63%)	4,642.6(18.07%)	6,725.0(44.85%)	7,252.4(7.84%)
USA	1,966.1(20.72%)	3,932(35.29%)	3,047.2(14.56%)	3,225.7(15.86%)	3,693.4(14.50%)
Other Countries	328.8(-2.69%)	1,308.8(298.05%)	1,521.4(16.24%)	749.1(-50.76%)	1,402.0(87.16%)
Woven Garments Products	3,598.2(1.70%)	4,083.8(13.50%)	4,657.6(14.05%)	5,167.3(10.94%)	5,918.5(14.54%)
European Countries	1,822.8(-4.35%)	1,545.0(-15.24%)	1,985.7(28.52%)	2,371. (19.41%)	2,656.2(12.02%)
USA	1,563.4(12.33%)	1,995.0(27.61%)	2,284.8(14.53%)	2,418.4(5.85%)	2,734.0(13.05%)
Other Countries	212.0(-11.89%)	543.8(156.51%)	387.1(-28.82%)	377.7(-2.43%)	528.3(39.87%)
Knitwear Products	2,819.5(31.26%)	3,817.0(35.38%)	4,553.5(19.30%)	5,532.5(21.50%)	6,429.3(16.21%)
European Countries	2,300.0(26.80%)	2,387.0(3.78%)	2,656.9(11.31%)	4,353.8(63.87%)	4,926.0(13.14%)
USA	402.7(70.06%)	665.0(65.14%)	762.4(14.65%)	807.3(5.89%)	959.4(18.84%)
Other Countries	116.8(20.04%)	765.0(554.97%)	1,134.3(48.27%)	371.4(-67.26%)	543.9(46.45%)

Source: Export Promotion Bureau, Collected by Bangladesh Bank, 2009(modified by author, 2010)

Table Continue - Major destination-wise exports (US\$ in millions)

Country	2009-10	2010-11	2011-12	2012-13	2013-14
Germany	1282.77	2022.05	2039.97	2168.13	2573.70
UK	725.74	990.98	1103.30	1259.84	1335.25
USA	891.61	1119.04	1013.95	1130.90	1197.85
France	692.00	999.71	855.18	892.45	964.27
Spain	384.55	595.92	660.73	702.90	856.28
Italy	379.04	525.17	571.46	554.94	731.91
Canada	283.86	432.92	401.82	461.97	445.10
Netherland	528.57	591.07	325.28	246.77	385.48
Belgium	155.79	299.74	320.46	317.19	440.63
Denmark	178.24	256.32	318.72	375.62	450.71

Source: Export Promotion Bureau, Bangladesh, 2015 *FY= Financial Year (July-June)

5.5. Development of CC based RMG factories

Bangladesh maintained the momentum of its real economic development in 2009 as well, despite the global economic slowdown, as economic activities responded promptly to the robust domestic demand throughout the period. Real GDP grew at the rate of 5.9% in 2009, which is not far below the 6.2% 2008 growth⁴². All the small, medium and large factories have such facilities in different categories as SME loans, industrial term loans, public finance, and so on. Since CC is a combination of a number of factories that belong to the different stages of RMG production, CC factories have more production capability compared to CMT based RMG factory.

⁴² Bangladesh Bank, Economic and Financial Developments, 2009.

5.5.1. Management resource ability

First of all, CC factories are based on skilled labor, though there are chances available for unskilled labor, too. CC formally educated and skilled labors are essential in introducing new technology for any industry. In order to compete in the international market, the RMG industry requires mass production with the cutting edge design and high quality. Moreover, when the buyer is aware of the production capacity and the technological capability of the CC factories, it is easier to place an order for production. It is obvious that with mass production, the unit cost or average cost of production decreases. These are the factors that can enhance the competitiveness of CC or medium and large scale factories, both in domestic and export markets. This is common for CC based RMG as well because it needs skilled labor for designing, marketing, quality improvement, etc.

5.5.2. Ability of power Management of CC factories

Since the ability of power management in the CC factories is greater relative to CMT factories, CC factories are presently producing medium-grade quality RMG items for the international market. This is very important for stable growth of the economy in Bangladesh from the point of view of economic development. Bangladesh has the possibility to exploit its full advantage of an inexpensive manufacturing strategy with cheap labor and cheap energy costs, if it possesses superior ability of power management. In order to face the world competition in the RMG industry, the advanced energy and power management is essential.

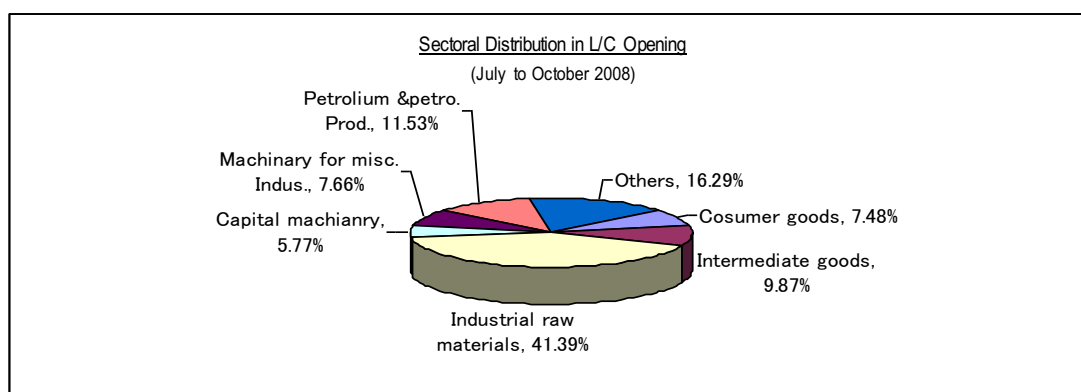
5.5.3. Development of Composite Corporation factories

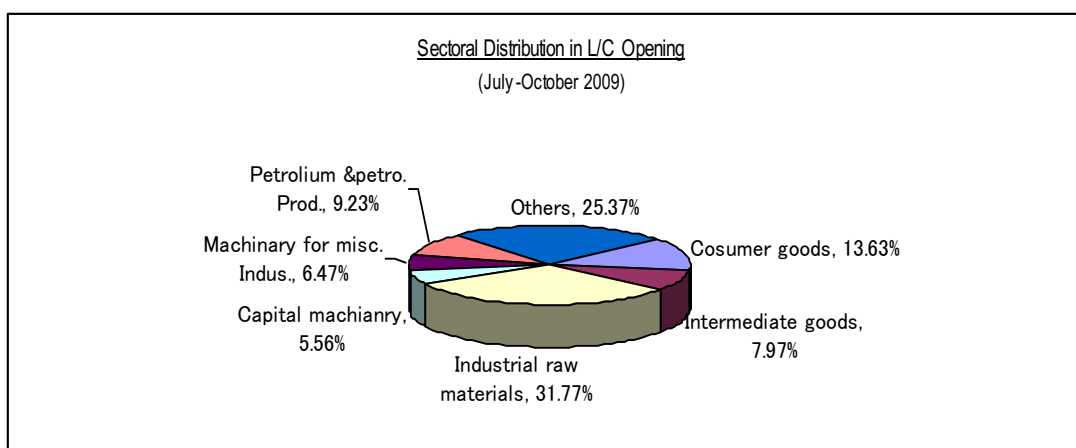
When the CMT scene started changing its production pattern to the CC style of production it influenced the international market as well. At the beginning, CMT started to export low-grade, quality items to developed countries. Presently the Bangladeshi RMG

industry exports medium-grade quality RMG items as well. Taken more than 30 years of experience in the RMG sector, some CC factory owners now try to capture the markets in developed countries through superior quality RMG products. Moreover, markets in developed countries now search for quality products in small quantities with new and rapidly changing designs. This may be because 21st century people have come to expect QCP (Qualities product, Competitive price and Prompt service) concept. The problem remains that CC factories have not yet reached to full QCP potential because of a lack of supply chain management (SCM). Therefore, it becomes necessary to pay deep attention to this problem and give proper solutions for the future sustainability of the CC factories.

Figure 5.2 shows the different changes of raw material imports from different countries. Bangladesh reported that its industrial raw material imports for fiscal year 2008 reached 41.39%. In fiscal year 2009 the same imported raw materials declined to 31.77%. The data collected from the Bangladesh Bank, where a sector-wide detailed break-down of L/C (letter of credit) opening during July-October, 2008 and during July-October, 2009 is given in Figure 5.2.

Figure 5. 2 - Change of raw material imports





Source: Bangladesh Bank, 2009

5.6. Factors affecting export competitive advantage of RMG in Bangladesh

Bangladesh is renowned for its garments products around the world and it is the top export items among the overall export items in the country over the years. This position was achieved due to many advantages the Bangladesh enjoyed over other countries. It is true that the country still enjoys some comparative advantage in manufacturing garment products because of low labor costs. Other than innovation and technology development, backward linkages and the GSP play a major role in boosting the RMG export in Bangladesh. Generalized System of Preferences (GSP) which provides opportunities for many of the world's developing and underdeveloped countries to use trade privileges such as zero tariffs to grow their economies and climb out of poverty.

5.6.1. Cheap labor and cheap energy

Bangladesh is one of the cheapest labor cost countries among the developing nations. As mentioned previously, the average hourly wage rate in the apparel industry is below other countries. Wages are unlikely to increase due to vast unemployment rate that exists in the country and lack of alternative work opportunities, especially for rural women, who constitute 80% of the RMG workforce. The wages paid to RMG workers are the lowest even by South Asian regional standards. Bangladeshi RMG sector created 4.0 million jobs to date, covering almost 5% of the total workforce in the country (total labor force 49.9

million, in 2008). Table 5.3 shows that just only 11% belongs manufacturing sector. The RMG sector employs almost half of the labor. As mentioned before Bangladesh reports the lowest energy costs compared to other countries such as India and Pakistan. Compared to other major garment manufacturing nations such as China, India and Vietnam, Bangladesh offers the lowest labor costs, accounting for USD \$0.22 per hour in 2010.

Bangladeshi CC factories have very well managerial skills recruited from renowned countries. Sri Lankan designing experts are employed with high payment in Bangladeshi CC factories. Sample and design development is one of the main factor for the CC factories. The design and quality control division also have a crucial role in CC factories. This is one reason where CC factory can assure to the buyer about the design and quality.

Table 5. 4 - Share of employed labor force (Above 15 years) by sector

Sector	1995-96	1999-00	2002-03	2005-06
Agriculture, forestry and fishery	48.85	50.77	51.69	48.10
Mining & quarrying	-	0.51	0.23	0.21
Manufacturing	10.06	9.49	9.71	10.97
Power, gas & water	0.29	0.26	0.23	0.21
Construction	2.87	2.82	3.39	3.16
Trade, hotel & restaurant	17.24	15.64	15.34	16.45
Transport, maintenance & communication	6.32	6.41	6.77	8.44
Finance, business & service	0.57	1.03	0.68	1.48
Commodities & personal services	13.79	13.08	5.64	5.49
Public administration and defence	-	-	6.32	5.49
Total	100.00	100.00	100.00	100.00

Source: BBS, Labor Force Survey, 1995-96, 1999-00, 2002-03 & 2005-06.

Note: According to Labor Force Survey 2002-03 and 2005-06, population above 15 years of age has been counted as labor force, but in the previous surveys, the criterion for counting labor force was population above 10 years.

Therefore, semi-skilled and skilled labors are entering into CC factories with new machineries, design and technology at internal environment to upgrade their quality by taking high salary. The environment of the CC factories really brings large-scale production from the buyer. As a result, The RMG industry brings new industrial development compared

with other sectors. Only the CC factories can bring sustainable economic growth by exporting RM

5.6.2. Innovation and technology development

The governments pay subsidies if import substitutions are minimized by the same factories/exporters. CC factories tried to reduce the import subsidy and day-by-day they tried to make more and more manufacturing plants. The private investors tried to take new industrial facilities. There are many changes in industrial policy for domestic investors.

In the highly competitive global market, in regards both to fashion and quality, products like RMG should always be innovative. In this regard, CC factories are well suited for the future of the Bangladesh RMG industry. The unique characteristic of CC factories is the introduction of their own designs in RMG products that are created by a design development department to grab the attention of new buyers. New designs that often come from the buyers also help the designers to enhance their skills. This practice brings them more innovative product design for RMG exports to foreign buyers.

Table 5.4 shows Bangladesh total RMG Products export to the world market from 2016 to 2017. CC factory designers can produce products by varying raw materials. CC factories export RMG products both to developed and developing countries, dictated by product quality and price. However, without Bangladesh government industrialization policy assistance private association and private investors are not able to find the industrialization and development. There are many skill operatives, managers and technicians to find out the path of industrialization. In addition, most of the machinery with modern technology imported from Japan.

Table 5.5 - Bangladesh's RMG Export to World Market (FY 14-15, FY15-16 and FY16-17) US\$ in Million

	Woven			Knit			Total		
EU Countries	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
Austria	22.51	24.89	6.52	28.07	27.88	21.20	50.58	52.77	27.72
Belgium	398.63	364.82	319.79	436.70	388.34	385.78	835.33	753.16	705.57
Denmark	223.58	229.67	229.09	419.08	442.17	438.86	642.66	671.84	667.95
Finland	6.51	4.95	6.96	22.87	24.21	22.96	29.38	29.16	29.92
France	701.63	714.34	780.40	1012.68	1050.30	1071.53	1714.31	1764.64	1851.93
Germany	2013.14	2320.25	2362.94	2639.99	2814.77	3216.58	4653.13	5135.01	5579.51
Greece	5.96	7.89	20.39	20.71	23.49	29.95	26.66	31.39	50.34
Italy	478.59	477.97	506.21	799.48	870.61	947.83	1278.07	1348.58	1454.04
Ireland	78.66	73.03	76.58	123.09	84.19	93.29	201.75	157.22	169.88
Netherlands	313.42	381.81	414.76	346.13	432.53	520.62	659.55	814.34	935.38
Portugal	14.92	22.35	23.69	37.99	45.26	45.14	52.90	67.61	68.83
Spain	831.64	828.09	1056.83	1032.40	1050.65	1220.95	1864.04	1878.74	2277.77
Sweden	159.04	183.42	194.71	278.17	309.30	338.38	437.21	492.72	533.09
U.K.	1839.69	1637.55	1826.62	1684.09	1668.95	1897.63	3523.78	3306.50	3724.26
Czech Republic	347.30	264.24	397.98	67.07	83.23	94.31	414.37	347.47	492.29
Poland	239.17	260.02	328.67	377.10	460.07	536.19	616.27	720.10	864.85
Slovakia	32.91	33.02	37.62	41.75	45.25	46.53	74.66	78.27	84.15
Slovenia	11.42	15.47	14.43	23.18	41.21	43.09	34.60	56.68	57.52
Sub-Total (EU)	7731.96	7857.02	8619.61	9421.40	9893.58	11009.41	17153.36	17750.60	19629.02
<i>EU % of World</i>	52.46	54.59	55.88	70.54	71.92	72.49	61.06	63.06	64.12
<i>Growth%</i>	18.60	1.62	9.71	6.49	5.01	11.28	11.63	3.48	10.58
USA	4228.62	3901.94	3977.70	1396.30	1302.06	1374.37	5624.92	5204.01	5352.07
<i>% of USA</i>	28.69	27.11	25.79	10.45	9.46	9.05	20.02	18.49	17.48
<i>Growth%</i>	6.49	-7.73	1.94	6.01	-6.75	5.55	6.37	-7.48	2.85
Canada	575.71	541.49	552.13	422.73	404.81	411.02	998.44	946.30	963.15
<i>% of Canada</i>	3.91	3.76	3.58	3.17	2.94	2.71	3.55	3.36	3.15
<i>Growth%</i>	5.64	-5.94	1.97	10.15	-4.24	1.53	7.50	-5.22	1.78
Non-Traditional Markets									
Australia	229.31	210.47	242.85	406.97	371.55	391.16	636.27	582.02	634.01
Brazil	58.39	48.38	80.64	61.81	51.43	77.74	120.20	99.81	158.38
China	197.78	221.77	233.89	143.44	169.82	157.75	341.22	391.60	391.64
India	102.17	92.36	207.62	34.25	37.45	71.06	136.42	129.81	278.68
Japan	391.43	345.43	401.94	383.04	399.04	444.80	774.47	744.48	846.74
Korea Rep.	110.16	86.70	93.84	76.00	78.13	98.13	186.16	164.83	191.97
Mexico	63.63	55.38	68.61	85.19	69.46	79.74	148.82	124.84	148.35
Russia	109.96	172.03	167.24	139.20	207.38	260.68	249.16	379.41	427.93
Turkey	342.85	289.05	174.27	117.45	92.32	85.89	460.29	381.37	260.16
Other Countries	540.30	515.76	539.04	611.37	618.16	641.41	1151.67	1133.92	1180.44
Sub-Total (Non-Trad.)	2202.46	2092.14	2276.81	2114.99	2156.79	2393.71	4317.46	4248.93	4670.52
<i>% of Non-Traditional</i>	14.94	14.54	14.76	15.84	15.68	15.76	15.37	15.09	15.26
<i>% Growth of Non-Traditional</i>	8.53	-5.01	8.83	12.58	1.98	10.98	10.48	-1.59	9.92
GRAND TOTAL	14738.744	14392.59	15426.25	13355.424	13757.25	15188.51	28094.17	28149.84	30614.76
% Growth	12.81	-2.35	7.18	7.47	3.01	10.40	10.21	0.20	8.76

Source: EPB, Compiled by: RDTI Cell, BGMEA, 2018

Moreover, it will be more viable step for the Bangladesh RMG industry to continue international competition by the development of CC factories. For reducing delay in

shipment it is also very important for the CC or medium and large scale factories to provide non-structured labor incentive programs. Undoubtedly, the CC factories contribute to innovate RMG's development.

Technological upgrading plays a crucial role for Bangladesh in fostering its garment exports in the post-MFA era. Accordingly most of the garment firms in Bangladesh have invested in new computerized cutting and spreading machinery, high-quality sewing machines and barcode-enabled inventory management systems, which facilitate the sustainability and the continuity of export growth.

5.6.3. Backward linkages

Backward linkages in the Bangladeshi garment industry include cotton, yarn, weaving and knitting, dyeing, printing and finishing. Bangladesh is self-sufficient in dyeing, printing and finishing, and local suppliers are not only well-equipped to carry out these activities, but also capable of maintaining both high quality and quantity (Habib 2009).

5.7. 'MARUHISA' A Japanese Company's Firm Performance under STS

Maruhisa factory began production in 2009 at Adamjee Export Processing Zone in Bangladesh and steadily increased its capacity. The total number of employee of the factory is 2500 and production capacity for RMG items per month is 1,000,000pcs. Further in 2011, the company opened a new jersey knitting and dyeing plant. The factory produces top quality products through vertical system of production from raw material to finished product using their highly skilled workers. The author visited this factory two times in 2012 and 2017 and collected data by interviewing 5 employees. They stated that working condition, job satisfaction, income satisfaction, company managerial system, medical facility and income avenues are excellent. They further highlighted that Maruhisa is providing a un-structured incentive as well. The incentive the factory offer is two types

namely structured and non-structured which are explained in Chapter 6 in details. Finally, non-structured incentive data were collected through a questionnaire. It was asserted that labor management strategy of Maruhisa Company and local large/medium scale RMG factories non-structured incentive strategy is very important.

Maruhisa is the first multinational company which invested for non-structured incentive program and they provide food, transport, housing, and medical facility for all workers and labors. It found that after implementation of non-structured incentive there was no delay in production, labor attendance, and physical health issues and working motivation became excellent. There was continuing labors presence with skilled up facilities. Accordingly, Maruhisa supplies products to Japanese RMG Fashion shop Shimamura Co. Ltd⁴³ as per large volume demand. Moreover, Maruhisa is selling RMG items at attractive price, quick supply to door-to-door of Shimamura's all branches in Japan with price barcode and hanger.

Finally, after visiting and interviewing Maruhisa factories, the most important factors and issues found for the Bangladeshi RMG industries were:

1. Educated top managers tend to give labor incentives in order to make better firm performance.
2. Incentive for the workers creates positive impact on firm performance.
3. Social and Technical System (STS) value has an influence for firm performance.

These three factors are used as a hypothesis of the next chapter of this thesis using STS-spiral Model and introduced the production field of non-structured labor incentives that is strong in laborers motivation. Also, result will be find the laborers technical and social development factors using non-structured incentives through STS-Spiral Model.

⁴³ SHIMAMURA Co., Ltd. engages in the retail sale of clothing in Japan, Taiwan, and China. The company's stores offer casual clothing and shoes, baby and children's goods, miscellaneous goods and fashion shampoos, fashionable garments, ornaments, and other soft goods. It operates its stores under the Tsurumura, Avel, Birthday, Divero, Chambre, Shi ma la, and others names. The company was founded in 1953 and is headquartered in Saitama, Japan. It have 1503 Branch shop in whole Japan.

5.8. Conclusion

Even though the post-MFA era is finished, the Bangladesh RMG sector increased its export share. Due to the inefficiencies of CMT factories in regards to management, product marketing and providing job facilities, it should also follow the same manufacturing method of CC factories. Recently, CC factories create new markets with profitability for some developing countries as illustrated in Table 5.2. Developing countries cannot often make the effort to produce the fabric, raw materials and accessories that CC factories can produce for export. In addition, CMT exists in CC factories and the part of manufacturing processes is the same between the two. However, only CC can fulfill the wholesale buyer requirements, and in the future it should develop a system to deliver to the final destination. It is true that CC factories have competitive marketing power with cheap labor and low energy. On the other hand, STS factories are sustaining their market power using technology usage.

The next chapter analyzes empirical data to establish that the performance of the RMG industry depends on the labor incentive programs adopted by the CC or medium and large-scale RMG factories using three hypotheses, which were found at Maruhisa Pacific Co. Ltd.

CHAPTER 6 - LABOR INCENTIVES AND PERFORMANCE OF THE INDUSTRIAL FIRM: A CASE STUDY OF BANGLADESHI RMG INDUSTRY

6.1.Introduction

Agriculture is the backbone of this country but the manufacture and the service industries play a very vital role in the country's economy and day-by-day this dependency on those sectors are increasing. According to the Bangladesh Bureau of Statistics total labor force is 62.7 million in 2017. The size of industry in GDP has increased from 15% in 2000 to nearly 30% in 2009⁴⁴. GDP growth rate in 2018 is 6.5% and GDP at Financial Year 2018 is US\$1751.00 (World Bank, 2018). The industrial sector is dominated by RMG sector and the economy as a whole depends heavily on RMG industry for at least last four decades. At present Bangladeshi RMG industry is competing with RMG sector giants, like India and China, using its relatively cheap labor. According to Bangladesh Bureau of Statistics (2016), approximately 4.0 million workers are employed in RMG sector, of which 85% of the labors are women. Since RMG sector is the biggest industrial sector in Bangladesh, the survival of this sector is very much important for the economic development of the country. Besides, the increasing competition in the international market put this sector in vulnerable position recently. Bangladesh opened up its economy in 1990s and since then the economy is growing moderately with the increase in the export of RMG products. In this globalized and highly competitive world, Bangladesh needs to overcome its inefficiencies in production and other irregularities in the RMG industry to gain the highest profit from the low labor cost and also to keep international competitiveness. For long run sustainability in international market, the industry must be concerned about the improvement in productivity. However, productivity is resulted from the efficiency of production, and productivity is the ratio of the total output to the total input. From Bangladesh industrial development

⁴⁴ Economic Survey of Bangladesh different years, World Bank, 2009 and Bangladesh Bank Statistics data, 2011.

perspective, during early 2000, some medium and large-scale RMG industries took some initial steps for its productivity improvement through technology adoption, investment in equipment, human resources and pay strategy, labor incentives, etc.

A big number of unskilled women were employed for the production of RMG. Therefore, it is necessary to develop skilled labor, to produce and reduce lead-time for RMG industry. STS pertains to a theory regarding the social aspects of people and technical aspects of organizational structure and processes. Here, technology does not necessarily imply material technology. For, this study the two core objectives of sustainable profit for RMG industries are: i) how to reduce the lead time, and ii) how to increase the production.

One objective of this dissertation is to focus on labor incentives programs and its impact on the performance of the RMG industry. The incentive programs for the RMG factories are: i) to attract the skilled and increase the efficiency of the labors, ii) to motivate labors towards better performances and create a competitive advantages among labors, iii) to keep a focus on reducing the lead-time for delivering the products to the foreign customers⁴⁵, and, iv) to gain the main firm performance advantages of foreign direct investment of Japanese company (Maruhisa Pacific Co. Ltd) by introducing non-structured labor incentive programs.

This chapter focuses on the present scenario of labor incentive programs in the RMG industry in Bangladesh. Analyzing 36 medium and large-scales firm to trace out the impact of the implication of the incentive packages on the work performance, profit and operational strategies of the industries. The rest of the chapter is organized as follows. Section 6.1 introduces this chapter and section 6.2 shows the history of RMG industry and evaluation in Bangladesh. Section 6.3 discusses firm's performance and productivity

⁴⁵ A lead time is the latency (delay) between the initiation and execution of a process. For example, the lead time between the placement of an order and delivery of a new car from a manufacturer may be anywhere from 2 weeks to 6 months. In industry, lead time reduction is an important part of lean manufacturing. Bangladeshi RMG industries are mostly taking order by letter of credit (L/C) for 90 days to 120days from manufacturing to delivery period.

improved by non-structured labor incentive programs. Section 6.4, covers the literature and hypothesis. Section 6.5 shows data and performance of labor incentives program. The Section 6.6 concludes the chapter.

6.2. Contribution of the RMG Industry to Bangladesh Economy using STS

Reaz Garments Limited has set the milestone by establishing the first RMG Industry in Bangladesh in 1978. Since then, more than 95% RMG firms are locally owned with an exception of a few foreign firms located in EPZ (Gonzales, 2002). The RMG firms are mostly located in the capital city Dhaka, the port city *Chittagong* and the industrial city *Narayangonj*. During the 1980s and 1990s, manufacturing process was mostly CMT. In the last decade, the traditional CMT production process changed into CC type of production process (cotton to fabric, fabric to design and printing, printing to dyeing and finishing, finishing fabric to RMG sample designing, cutting for the RMG product, making, trimming, ironing and packing for export).

Therefore, at the first decade of 2000, there are some medium and large-scale of Bangladeshi RMG factories have started CC type of production process due to the end of MFA quota system in 2005. RMG sector is the only the sector in the economy that was able to create a large number of employment opportunities for the poor, unskilled, and especially for those who had migrated from rural areas. In addition, to continue its competitive position in the international market and to increase the export growth, as mentioned before, the RMG sector has changed its production style from CMT to CC.

Compared to the other industrial sectors in Bangladesh, RMG sector has contributed the most to the GDP of Bangladesh and its economy during last two decades. The RMG export earnings have increased by more than eight times with an exceptional growth rate of 16.5% per annum. According to the Export Promotion

Bureau and Bangladesh Bank (2011), the growth rate in RMG product export in 2005 to 2006 was 12.8% and in 2006 to 2007 is 23.1%, which almost doubled growth rate, as shown in Table 6.1. The highest RMG products (woven and knit) export was US\$12,346.3 million in 2009 which is about 15% high than from 2008 and the export was US\$12,496.7 million in 2010.

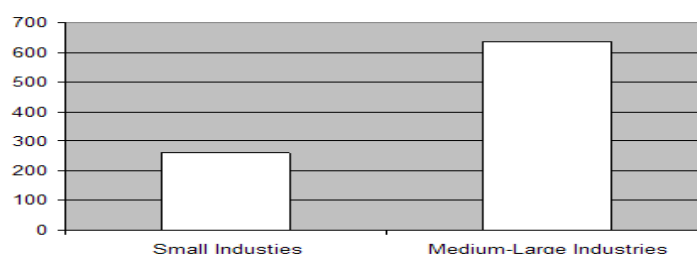
Table 6. 1 - Category-wise exports from 2005 to 2010 (million US Dollar)

No.	Items	FY05	FY06	FY07	FY08	FY09	FY10
1	Raw Jute	96.2	148.3	147.2	165.1	148.2	196.3
2	Jute Goods(excluding carpet)	307.5	361.0	320.8	318.3	324.9	534.5
3	Tea	15.8	11.9	6.9	14.9	12.3	5.7
4	Leather	220.9	257.3	266.1	284.4	178.2	226.1
5	Frozen Shrimps and Fish	420.7	459.1	515.3	534.1	455.6	437.4
6	Woven Garments	3598.2 (41.58%)	4083.8 (38.8%)	4657.6 (38.25%)	5167.3 (36.62%)	5919.0 (38.03%)	6013.4 (37.11%)
7	Knitwear Garments	2819.5 (32.58%)	3817.0 (36.26%)	4553.6 (37.39%)	5532.5 (39.21%)	6427.3 (41.29%)	6483.3 (40.01%)
8	Fertilizer	130.3	124.1	125.1	91.3	107.5	38.6
9	Terry Towels	64.8	80.2	106.0	112.9	117.7	157.1
10	Others	980.6	1183.5	1479.3	1890.0	1874.5	2112.3
	Total Export	8654.5 (100%)	10526.2 (100%)	12177.9 (100%)	14110.8 (100%)	15565.2 (100%)	16204.7 (100%)

Source: Export Promotion Bureau, 2011.

Among the industrial sectors, the medium and large industries contributed to the GDP most. Figure 6.1 shows the total export during 2009-10 by the medium and large industries. This export was about US\$643.8 million and the export of small industries was about US\$276.6 million.

Figure 6. 1 - Contribution of industries to GDP during 2009-10 (million US\$)



Source: Ministry of Finance and Bangladesh Economic Review-2010 (Bangla version).

It is necessary to trace out the causes of large export volume by the medium and large-scale industries as the share and contribution of medium and large-scale industries

plays a major role in the development of Bangladesh economy. Besides, it is necessary to study the labor development in medium and large-scale RMG industries where mass production is possible by using cheap labor. The next section discusses the labor incentive and how it works in the Bangladeshi RMG industries.

6.3. Firms performance and productivity improvement by labor incentive

Performance: performance in the context of industrial organization is a broad concept, which has been used to deal with productivity, efficiency, effectiveness, and more recently competitiveness (Cooke, 2000). As Cook has explained, labor productivity of a firm has long been the concern for labor economists ever since Marx and Smith (1968). Using labor power effectively in production is subject to the management ability, and therefore, the managers can use various strategies to motivate labors to increase their efficiencies. One of such strategies is to provide varieties of incentives for labor. Following Cooke's (2000) ideas on performance through productivity, the Bangladesh RMG industry should use its own strategies to increase the labor productivity.

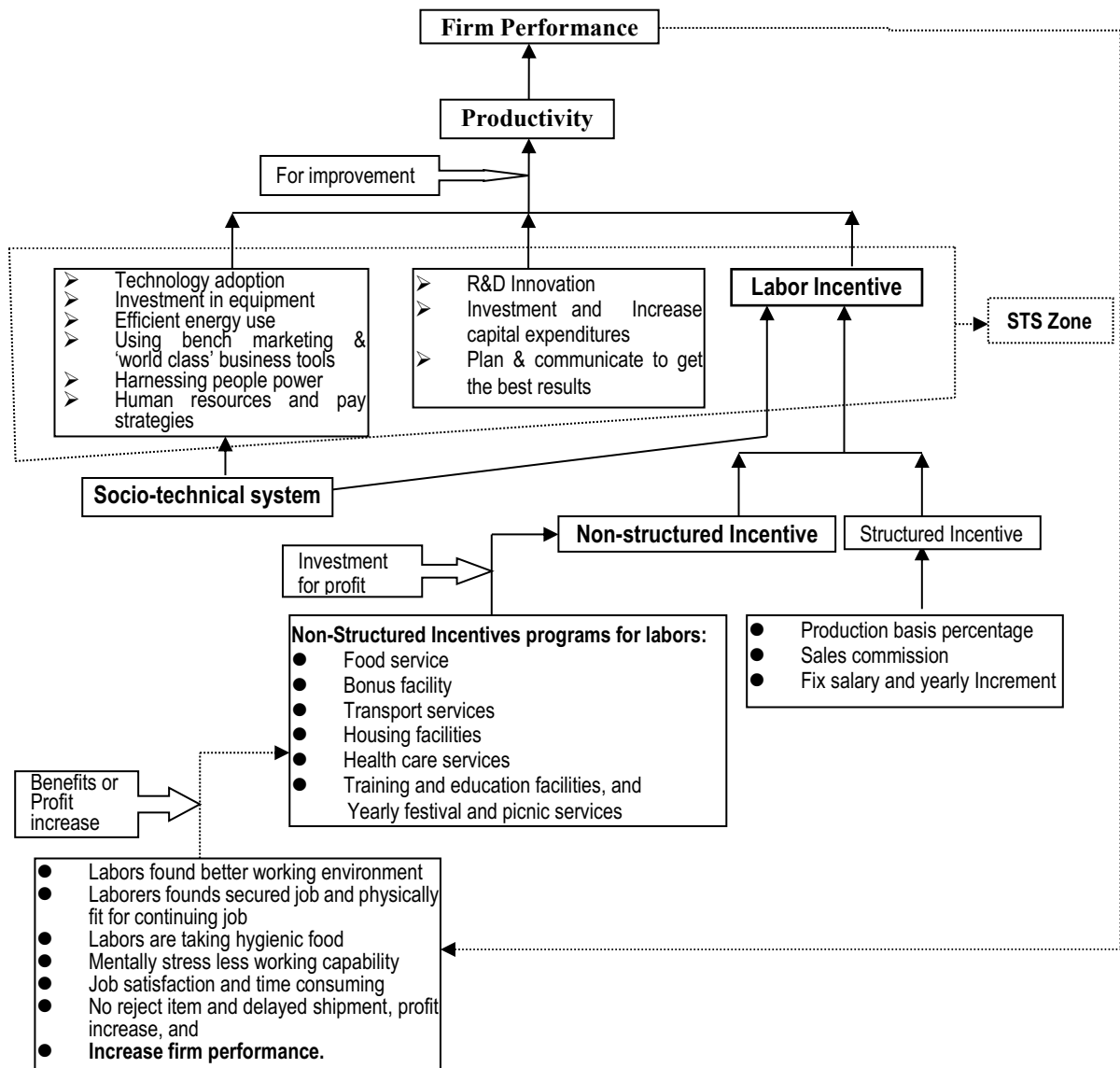
Productivity: Productivity is a measure of the efficiency of production. According to Saxena (2010) productivity is the ratio between inputs and outputs. Productivity is the concept which is used most often to evaluate the firm performance. Productivity⁴⁶ is a measure of output from a production process, per unit of input. As the 6th largest RMG exporter in the world, Bangladesh is now looking for the improvement of performance of its RMG industry further. Since Bangladesh is a labor rich country, its present concern is toward the improvement in labor productivity. Increasing productivity bring many benefits

⁴⁶ Aki Pekuri, Harri H and Maila Herrala (2011). Productivity and Performance Management-Managerial Practices in the Construction Industry.

to a industry and some of those benefits increase profitability by lowering operational costs, optimizing the use of company resources, reducing environmental impact, increasing competitiveness and market share, and providing opportunities for expansion. As mentioned by Forfas (2009) and Billikopf (1992), productivity is influenced by many factors including labor incentives. Billikopf (1992) and Debapriya and Moazzem (2007) found that labor issues within industrial firms are critical for the firm performance at present. Figure 6.2 reveals other factors, which are influencing productivity improvement and firm performance. The same Figure shows, for increasing firm performance some medium and large-scale RMG firms are investing in labor facilities as non-structured incentives such as food, transport, housing, medical, etc. Many poor and rural unskilled labors work in Bangladesh RMG industry. Since most of the garment workers are women, the following incentives should be provided to them. In addition, factory owners, government agencies and even non-government agencies can come forward to help in this.

STS Spiral Model - With regard to Socio-technical theory, it has been highlighted that performance of any organizational system can only be understood and improved if both ‘social’ and ‘technical’ aspects are brought together and treated as interdependent parts of a system. Accordingly Social Technical Systems spiral facilitates to explain the cause-and-effect relationship between rising technical dimensions and rising social dimensions.

Figure 6. 2 - Determinant factors of firms' performance – STS Spiral Model⁴⁷



Source: Author, 2017.

Labor productivity: Labor productivity is the "average product of labor" (average output per worker, an output which could be measured in physical terms or in price terms). It is not the same as the marginal product of labor, which refers to the increase in output that result from a corresponding increase in labor input. The qualitative aspects of labor

⁴⁷ STS is a philosophy and it is a method. As a philosophy it supports the value of empowerment as well as the systemic focus on product & customer. As a method STS helps provide custom solutions for performance by design. Also known as the spiral lifecycle model is a systems development lifecycle (SDLC) model used in information technology (IT). A preliminary design is created for the new system this usually involves interviewing a number of users representing all the external or internal users and other aspects of the existing system. <https://searchsoftwarequality.techtarget.com/definition/spiral-model>

productivity such as creativity, innovation, teamwork, improved quality of work and the effects on other areas in a company are more difficult to measure (Datta, 2005).

Although the ratio used to calculate labor productivity provides a measure of the efficiency with which inputs are used in an economy to produce goods and services, it can be measured in various ways. Labor productivity is equal to the ratio between a volume measure of output (gross domestic product or gross value added) and a measure of input use (the total number of hours worked or total employment) (Freeman 2008, p5).

$$\text{Labor productivity} = \text{volume measure of output} / \text{measure of input use}$$

The volume measure of output reflects the goods and services produced by the workforce. Numerator of the ratio is labor productivity, the volume measure of output is measured either by gross domestic product (GDP) or [gross value added \(GVA\)](#). Although these two different measures can both be used as output measures, there is normally a strong correlation between the two (Freeman 2008, p5).

Labor Incentives: Labor is an important input in industrial production. Organizations use incentives to motivate their employees. This is common for the garment industry of Bangladesh. Human resource is considered to be an important factor in increasing the productivity, to improve quality and to reduce the costs of all necessary to survive in the competitive world. There are several issues related to labor. Industrial labor in the garment sector has undergone important changes over the two decades. Billikopf (1992) stated two types of incentive, i) Structured incentive, and, ii) Non-structured incentive. Labor incentive is like the fuel for a car, without fuel it is not possible to drive a car, and similarly an appropriate incentive programs will put the labors in high gear and motion to move forward toward the desired goal (Boesen, 2004).⁴⁸

⁴⁸ UNDP (2006), Conference paper #8, incentives systems, incentives, motivation, and development performance, p.6.

Structured incentives: structured incentives help employee's efforts directly. Other benefits include cost and cost reductions for the RMG factory owners. Benefits to employees include higher pay and job satisfaction. In structured incentives, workers are informed about the performance measures and the incentives. In a casual approach, workers never know when a reward will be given. Examples of structured incentives are: A structured incentive (1) fluctuates (variable pay) as the performance level changes, and (2) is based on a specific accomplishment-reward connection well-known to both management and workers. Examples of typical incentives for making RMG product are piece-rate pay for picking, allowing laborers to go home early, with full pay, when they finish a job, end-of-season bonus for employees who stay to the end, quality or production incentive, and bonus for reducing production costs, profit sharing.

Non-structured incentives: Non-structured incentives mean which are applicable to the companies or organizations for the labors or employees, such as, food, transport, training, bonus and so on. Non-structured incentive is implied in private firms or organization and mostly in developing countries. As UNDP (2006) says, non-structured incentives are implicated only for the developing countries and not for the developed countries and also mentioned that public service incentives are weak in developing countries. The non-structured incentives attract many medium and large-scales RMG factories which will not be considered as a structured incentive. Non-structured rewards include such things as pat on the back, a sincere thank-you, a half price bill, a dinner, lunch and breakfast for free living cost, etc. The objectives of the labor incentive program are to attract the best labors, retain the high performing labors, motivate labors for superior performance and create a competitive advantage for the company (Wang (2004)).⁴⁹ One of the many factors that directly affect a firm's profitability is employee productivity, so it makes sense to try to

⁴⁹ Sharpnack, Rick (FMI: Management Consultant to the Construction Industry). *Compensation in the Construction Industry*

increase output whenever possible. Every labor and employee is an investment for a company. Having a happy worker means better production and loyalty to the company. Keeping the employees happy is a proven way to boost employee morale, which leads to better production, lesser day offs, and establish loyalty. In order to motivate workers, RMGs in Bangladesh adopt the following measures.

i) **Food services:** This is one of the best ways to increase employee motivation and improve their overall performance. Bangladesh is one of the most densely populated countries in the world and 1142 people are living per square kilometer area and the population density is three times higher than India and nearly five times that of Pakistan (Shahidul, 2010). Due to population growth, food and agriculture products are becoming scares. In addition, rural people are migrating to urban areas to work and find it hard to purchase necessity items according to their salary. Moreover, preparing Bangladeshi traditional meals consume time and women are mostly responsible to prepare the meals as the male hardly enters the kitchen. Therefore, the company owners can provide their workers with healthy and hygienic food. This brings benefit to a company in many ways. Firstly, it will result in a healthy work force, secondly, all workers can start and finish their work at same time, thirdly, workers will be motivated to work with more positive attitude then before, fourthly, job satisfaction will increase and therefore company don't need to recruit new and unskilled workers frequently, and fifthly, production performance of the firm will increase.

ii) **Bonus:** Bonus implies increasing labors accountability, justifying objectivity of management, establishing clear expectations, aligning action to achieve goals or strategic objectives, and linking bonus rewards to performance (Wang 2004). The goal setting, in the incentive based bonuses, gives labors the satisfaction of reaching goals, and seeing where future improvement may lie. By paying bonus to labors, it is easy to evaluate his/her

performance in a collaborative manner, allowing for sharing of managerial views on labor contribution to the success of the firm and the profits of the firms are distributed to the labors. If the labors are dissatisfied with the bonus at the end of the year, it might be resulted in lowered productivity, limitations to the improvement in motivation and finally seeking employment elsewhere. If the labors do not see a direct correlation between performance and bonus, this may lead to a lack of motivation because employees see no reason to perform better (Wang, 2004). RMG industries in Bangladesh mostly depend on the unskilled and cheap labors. Paying bonus instead of improving the skill of the labors will induce the unskilled labors to stay with the company and thus the firm performance will not improve. Rather, improving the skill of the labors as well as providing bonuses will add profit to the company through increasing the efficiency of the labors.

(iii.) **Transport services:** In Bangladesh, the transportation facilities are not friendly at all to women. It is mainly due to the fact that Bangladesh is a highly sex-segregated society and women mobility is restricted to some extent. Thus *women only* bus service can be started so that the women workers can travel to and from their workplace more easily. It would not be too hard as most of the workers of a factory tend to live together. Therefore, if the factory owners arrange the transport facility, then at the same time all workers can start on their work. Besides, transport service is essential for all the labors as it is difficult to commute during the office hours. Bangladesh is a Islamic cultural society and women are not allowed to seat with men, thus, separate transport facility is necessary to carry the women labors only. Then women will secure job satisfaction and production performance of the firm will increase.

(iv.) **Housing facilities:** In search for a better living standard, the young female workers are migrating from the village to work (mostly in RMG sector), and the low income level forces them to live in unhygienic and insecure places. As a result, they are often stressed

during their work and it leads to decrease productivity. RMG factory owners can provide them cheap, secure and hygienic housing facilities. And if the company setup housing facility for the workers then it will definitely encourage them to work without much stress. Sometimes company also needs overtime work to complete its production orders and shipment in time. If a company provides housing facility, it will help it to get overtime work too. This will result in a decrease in the lead time and an increase in productivity.

(v.) **Health care services:** Most of the health hazards among the garment workers arise due to the owners' non-compliance of labor laws. Lack of health care facilities is also greatly responsible for the ill-health of the workers employed in the garments industry. The absence of medical facilities and lack of leave facilities should be blamed for the workers ill-health. Sometimes the employers do not allow the workers to go out of the factory for a short time for medical purposes. Thus, there is an immediate need for providing medical assistance to the workers at the doorstep of the factory. Factory owners and non-government agencies should set up mini-clinics at factory premises for the workers to avail medical treatment regularly. Regular medical checkup at the cost of company cannot be treated as real cost to the company as the productivity will increase with healthier workforce. On the other hand, workers also enjoy this facility as they can save money and time from this medical facility.

(vi.) **Training and education facilities:** Most of the garment workers enter the job market without any prior training or education. They mostly learn through on-the-job training (OJT). However, their productivity could be greatly increased if they were given skill training and other necessary education for an industrial worker (Ehrenberg & Smith, 2009). Prior training will motivate the unskilled labors to join with the existing workforce without many conflicts. Training and education will also lead to increase productivity without spending much financial resources and time.

vi) **Yearly festival and picnic services:** Internationally followers' holidays and cultural holiday's facilities are available for laborer in Bangladesh. In addition, yearly they have a tour/picnic party in certain places where they perform their activity in accordingly. Most of the privately owned companies are providing these facilities. Annual sports and cultural programs are arranged according to the companies' performance. These activities reduce the mental stress of the labors resulted by engaging in a routine work. This type of outbound trip and activities will build strong relationship among the workers. Further these will help to create job related team work and perform as a team in a factory or a firm. Although it is costly to keep employee satisfaction at a high level, every wise businessman knows how important this is. It is certainly a good investment; a happy employee makes a happy profit.

6.4. Technological adoption/innovation

The latest technological innovations foster business by using the latest hardware and software to upgrade the machineries and equipment. For example, owners can install a program to record the operational activities and to measure productivity instead of using manual labor in record keeping, which is essentially unnecessary labor. It could not only increase output, and also hasten the jobs needed to be done. Adding productivity to the company or organization rests entirely on ability to balance all the factors in business management. Yet, the balance should not neglect any aspect in favor of another which can lead to undesirable consequences.

This part of this research will focus on whether the above incentive issues are applicable to Bangladeshi RMG industries. For this purpose empirical data is collected from 36 randomly selected firms, and analyzed here.

6.5. Literature, Methodology and Hypotheses

6.5.1. Literature

Several studies have found productivity effects from introducing pay for performance. Seiler (1984) finds that workers paid by piece-rate earn higher pay due in part to higher effort and in part to a risk premium. Lazear (2000) finds a 44% productivity increase in a windshield installed company, and attributes about half of this to incentives and half to sorting. Paarsch and Shearer (1999: 2000) find that productivity differential among tree planters paid by piece rates, relative to those paid by a fixed salary. Guiding the labors and making them motivate are critical dimensions for enhancing the firms' productive capacity. The capacity is defined as "*the ability of people, institutions and societies to perform functions, solve problems and set and achieve objectives*" (UNDP, 2006). Therefore, as mentioned in the same UNDP report the incentives and incentive systems are fundamental to developing capacities and to translating developed capacities into better performance.

The focus of this paper is on the incentive programs and the incentive systems that influence motivation and behavior of people or larger system performance in the RMG industry in Bangladesh. Bangladesh RMG industry has to compete with more advanced countries in RMG sector such as China and India. In addition to competing with these countries via cheap labor, RMG factory owners should look forward to increase the labor performance, and for this, incentive systems and motivations are critical as they enable individuals and organizations to perform their functions effectively, efficiently and sustainably. Incentive, which can be measured in various ways, viz-a-viz, salaries, secondary benefits, and intangible rewards, etc. have traditionally been used to motivate employees to increase their work performance (UNDP, 2006). Incentive systems reside within organizations, their structure, rules, human resource management, opportunities,

internal benefits, rewards and sanctions, etc, (UNDP, 2006). Incentive systems do have a significant influence on the performance of individuals and the overall organization. In particular, in many developing countries the most persistent structural motivators and incentives are located at the societal level, such as security, rule of law, investment climate, civil service pay or legislation.

In order to increase labor productivity at the enterprise level, the industry should keep appropriate training, improvement of compliance situation, diversification of product mix, provision of entertainment facility, performance incentives, and good behavior towards workers (Mustafizur, Debapriya & Moazzem, 2007). Productivity is a measure of a company's return on investment (Farfas, 2009). Basically, it is an indicator of how efficiently one convert inputs to outputs- in other words, a ratio of what one put in (labor, raw materials or other resources) to what he/she gets in the form of end products or value added. According to Saxena (2010), productivity is the ratio between inputs and outputs. Output is measured by the number of garments produced by a line of sewing machine operators in a specific time frame. Labor efficiency is the comparison of the time spent working productively to the total time spent at work. According to Wang (2004) investing in incentive, attracts the best employee, retain the high performance of the employee, motivate employee superior performance, and create a competitive advantage for the company.

McKenzie and Lee (1998) have found that one of the most important reasons of incentive programs within the organization is that organizations are a collection of workers whose interests are not always aligned with the interests of the people who employ them. Usually, the performance-based incentive programs motivate individuals to work harder to achieve a higher performance (Barki & Hartwick, 1989). According to Billikopf's (1992) incentive pay, also known as pay for performance, is generally given for specific

performance results rather than simply for time worked. While incentives are not the answer to all personnel challenges, they can do much to increase worker performance. Billikopf (1992) also mentioned incentives work well—they help motivate high worker performance.

The World Bank (2002) has explained that Bangladesh is the greatest muscle to its people but lagging behind economic growth of technical and technological modernization. Bangladesh is ethically consistent and well known for hard worker and is resilience under strain (World Bank 2002, p6). The World Bank also mentioned, Bangladesh has no more alternatives in order to gain development, with the exception of properly utilizing its population. Bangladesh has a big labor market and it is necessary urgently to take proper implication for its labor income growth as suggested by the World Bank (2002), United Nations Development Program (UNDP, 1999) and United Nations Educational, Scientific and Cultural Organizations (UNESCO) (2000).

6.5.2. Methods

This study is conducted through a case study on Bangladeshi RMG industrial sectors. For logical analysis purpose empirical data has been collected from 36 medium and large-scale RMG factories. Reference have been drawn from research reports, scholarly reports, Bangladesh Bank report, Bangladesh Bureau of Statistics (BBS) reports, World Bank annual reports, documents published by NGOs on labor issues, and BGMEA activity report, project reports, and so on.

6.5.3. Hypotheses

The study has developed three hypotheses in line with the main objective of the study.

H₁: *Educated top managers tend to give labor incentives in order to make better firm performance.*

H₂: *Incentive for the workers creates positive impact on firm performance.*

H₃: *STS has an influence for firm performance*

6.6. Empirical data presentation and analysis

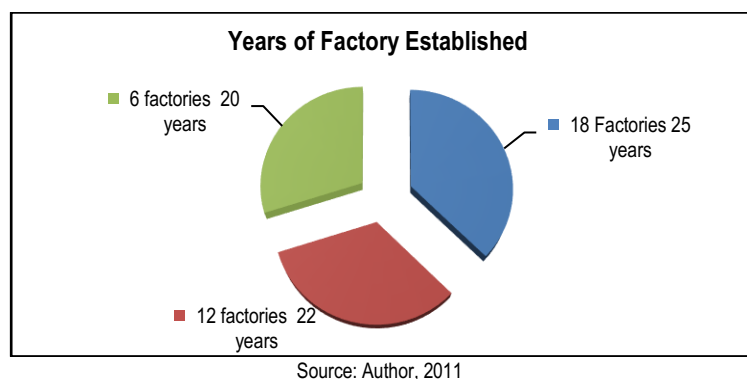
The author has collected empirical data by direct interview from 36 medium and large scale RMG factories during the April to June of 2011.⁵⁰ Those factories are located in commercial areas in cities like Dhaka, Mirpur, Malibagh, Banani, Gulshan, Baddah, Uttara, Dakkhin Khan, Savar and Chittagong. The main reason for these periodical data is to identify the export growth performances of the RMG factories in the international market resulted from the implementation of labor intensive program.

As shown in Table 6.1, the export growth of RMG product is growing in international market, the empirical data has been taken pre- and post-incentive program implementation to the medium and large type of RMG factories. Data of medium and large type of RMG industries has been collected to find out the number of shipment order delayed or canceled and finally yearly profit growth rate. Two hypotheses have been formed to find out the effectiveness of the incentives program. The questionnaires as shown in Appendix (with a total of 26 questions into 4 sections.) are organized as follows. The first two sections argue on the first hypothesis, and the second hypothesis is proved with third and fourth part of the questionnaires. The first two sections of the questionnaires focused on the necessity of the top manager's qualification and experience. Data on pre- and post-incentive program implementation has been summarized in Table 6.3 to explain the growth of RMG product.

The first section of the survey in the Figure 6.3 shows, almost all the medium and large scale RMG factories were formed approximately 20 to 25 years ago and the ownership of the companies still remains the same.

⁵⁰ According to the Bangladesh Garments Manufacturer Exporters Association (BGMEA, 2007) report Bangladesh has 45 to 50 medium and large scale of RMG product manufacturing industries and there are few turning to large scale manufacturing industries (Also, Rahman. 2008, D. Bhattacharya, 2009 and The Daily Starr Business Report, 2005), the author indicate and selected the 36 RMG factories as medium and large scale industries which list has been collected from Bangladesh BGMEA directory, 2007-2008. Almost 80% data has been collected from Bangladesh medium and large scale RMG manufacturing industries.

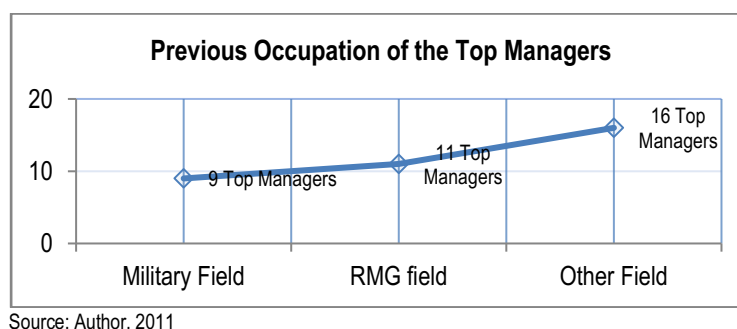
Figure 6. 3 - 36 Medium and Large Industries Years of RMG Manufacturing After Establishment



In Bangladesh, defense armed forces are the most disciplined among the service sectors. So labor management is one of the development factor to industrial development. As shown in Figure 6.4, 25 % of the top managers or owners are armed forces or military field personnel, whereas 30% of the top managers are from the RMG background. Therefore, the result also shows three categories top managers are accelerating the RMG industries export growth performance using their management skilled.

As shown in Table 6.2, almost 75% of the top managers have master degree in different subject, whereas 25% of the top managers have undergraduate degrees and 25% of the top managers have diplomas in the RMG related subject. In next section data shows that, all of top managers' job experience in RMG field is more than 20 years.

Figure 6. 4 – Top Managers Previous Occupation



Moreover, data result shows, 36% of the top managers have 4 years previous job experiences in different RMG factories and 53% have 2 years job experience as employee. 47% of the companies surveyed are owned by one owner. However, it is easy to understand which is shown in Table No. 6.2, most of the top managers are highly educated and they have been implemented the non-structured labor incentive programs to their own firms. In addition, Table 6.2 shows the educational background of the 36 medium and large RMG industries top managers. The result and argument of this paper show, *“Educated top managers or owners tend to give labor incentives in order to make better firm performance.”*(H₁)

The labor incentive program has been implicated by the educated top managers of Bangladeshi RMG industries and collected empirical data shows in Table No. 3, before and after investment of labor incentive program. The empirical data has been collected from medium-and large-scale RMG factories before incentive program (2001 to 2005) and after incentive program (2006 to 2010).

Table 6. 2 - Characteristics of Top Managers in Bangladeshi RMG industries

	Graduate level	Masters level	Extra Diploma	20 years & more in RMG field	Extra 4 years	Extra 2 years	Self 1(one) owner	Jointly (More than 1owner)
Managers Education Level	25% (9)	75% (27)						
Managers Job Experience				100% (36)				
Managers Institutional Diploma			25% (9)					
Professional Experience					36% (13)	53% (19)		
Factory established by							47% (17)	53% (19)

Source: Author, 2011.

Before the incentive program

Due to many reasons, such as labor migration, lack of skill, labor irregularity, political unrest, strike, etc, before incentive program large number of production orders was delayed in medium- and large-scale RMG industries. The data in Table 6.4 shows that, 309 production orders were complete in 2001 by 36 factories where a total of 97 production

order was delayed. Ultimately shipment was completed for 309 orders and top managers found yearly profit of the factories 5%-10% only. In 2005 the number of completed shipment was 324 and delayed was 79 orders. There are only the same ranges of profit found by the top managers.

After the incentive program

One of the major findings of this paper is the reduction in the delayed shipment of orders after the implementation of the incentive programs. Table 6.3 shows after implementation of incentive program in 2006 the number of production order was 327 and delayed production order was only 21 and factories shipped the same figure of total 327. The implementation of the incentive programs resulted in 100% of the labors attendance, which has reduced the delayed shipment to zero in 2008. As in 2010, medium- and large-scale RMG factories profit increased by 25% to 30%. Thus it is reasonable to say that the, *“Incentives programs for the workers create positive impact on the firm performances”* (H₂).

Table 6. 3 - Difference of Two Periods before and after incentive programs in Bangladesh RMG industries

Before Incentive program					After the Incentive program				
Year	No. of production order complete in yearly(Total)	No. of production order delayed in yearly(Total)	Total No. of shipment in yearly	Increase d Profit (%) in yearly	Year	No. of production order complete in yearly(Total)	No. of production order delayed in yearly(Total)	Total No. of shipment in yearly	Increased Profit (%) in yearly
2001	309	97	309	5-10%	2006	327	21	327	10-15%
2002	302	92	302	5-10%	2007	339	14	339	15-20%
2003	312	65	312	5-10%	2008	387	0	387	20-25%
2004	314	77	314	5-10%	2009	418	0	418	25-30%
2005	324	79	324	5-10%	2010	464	0	464	25-30%

Source: Author, 2011.

Table 6.3 shows that after introducing the incentive programs, profit have been significantly increased. For example, during the period of 2001 to 2005 annual profit increase was 5% to 10%. As opposed, during the period of 2006 to 2010, which was the period that the incentive program was introduced, the profit has been increased in the range of 10% to 30%. This is evident that *STS has an influence the generating better performance*

in the industry (H₃). In summary, it can be concluded that non-structured incentives play a major role in generating better performance of firms in Bangladesh.

6.7. Conclusion

Increasing the productivity of the labor remains at the core of increasing the competitiveness among the RMG industries. This increase in the productivity, in turn, depends on the level of technological advancements, wage incentives, working conditions and skill up-gradation programs. Bangladesh is yet to achieve all these elements to improve the labor productivity. Educated and experienced top managers of Bangladesh RMG factories can help the business to earn more profit by investing in non-structured incentive program for the labors. The structured incentive programs are not found in medium-and large-scale RMG industries. Most of the privately owned RMG industrial sector is more inclined to invest in the non-structured incentive program. It leads to the success of RMG industries as it increases the profit of the factories. After the implementation of the incentive program there is no complain from the labors to the top managers about the food and healthcare facilities and attendance in the factory. The educated top managers mostly implemented the labor incentive programs and motivated the growth in export. Therefore, the performance of the firm depends on an institutionally trained expert or on an educated top manager.

Finally, as a manufacturing industry, RMG industries of Bangladesh are highly contributing to its economy and popular as a profitable business. By implementing incentives programs, most of the privately owned RMG industries are able to reduce their delayed shipments to zero resulting in the foreign buyer's satisfaction. Presently, this sector is trying to increase the quality of the product by using new technological production

methods and also through skilled labors. In addition, training and assistance policies of the government can bring success and growth to this sector through high productivity of CC factories and labor incentive program.

The technological changes promote the automation of clothing production. In sewing machine industry, technology provides a flexible method of adapting to changing styles, fabrics and sizes. Some important results have emerged as the development in fabric evaluation. This improved competitiveness and records bring better performance in this industry.

CHAPTER 7 – CONCLUSION

Bangladesh, as a developing country, needs to reconcile its industrial base for economic development. It experienced market economy evolution with an industrial policy that enables the promotion of the private sector. The RMG industry in Bangladesh predominantly was developed by the private sector. Since the end of the 1970s, the RMG industry emerged as an important player in the country and gradually replaced from the jute industry to its primary industry. The “export-quota system”, under MFA, trading garment products played a significant role in the success of the industry and raised export share. To maintain its export share in the world market or to improve it further, Bangladesh should first access the appropriate technology and strive to create a strong textile production base in the region.

At present, the RMG industry plays a key role to consolidate the industrial base of the country and hence, it can be treated as a key industry to secure export earnings in the country. In addition, the industry showed rapid growth within a short period. This created a remarkable employment opportunities for the poor people in Bangladesh, especially for women. On the other hand, though the RMG sector received privileges from the quota system introduced under the MFA, the RMG sector had to face severe problems with the elimination of that system in 2005. Since then, the RMG industry in Bangladesh has faced global challenges. Recent indicators revealed a new scenario of the RMG industry, in which it started to contribute more to export earnings indicating that the role of RMG cannot be ignored. Therefore, proper attention should be given to identify the problems and prospects of this industry, and proper policy implications are needed to foster its growth.

Until recently, Bangladeshi RMG sector captured only low-grade quality apparel markets in the USA and EU because of the limitations in technological advancements in the industry. With a view to avoiding the uncertainties in the international apparel markets, some private entrepreneurs took the initiatives to introduce the CC system as a new form of technology for the industry. As a result, recently CC factories were setup by some large CMT factory owners to overcome the problems faced by CMT factories and have made significant profits within a short period. The relationship between CMT and CC factories are very clear. The CMT factories' manufacturing process is more or less the same as that of CC factories. Although CC factories cannot go directly to the consumer as a retailer, it can fulfill the wholesale buyer requirements more efficiency than CMT factories. The factors influencing the stagnation of CMT factories mostly resulted from the development of CC factories as highlighted in this thesis. In the highly competitive global market, in regards to both fashion and quality, products like RMG should always be innovative. In this regard, CC factories are well suited for the future of this industry. The unique characteristic of CC factories is the introduction of RMG products with their own designs that are created by a design development department to grab the attention of the new buyers. New designs that often come from the buyers also help the designers to enhance their skills. This practice makes them more innovative in the product design for RMG exports to foreign buyers. Considering their international market demand, CC factory designers can produce RMG products by varying raw materials. CC factories export RMG products to both developed and developing countries dictated by product quality and price.

In order to compete in the international market, the RMG industry requires output oriented with the innovative design and high quality. Moreover, when the buyer is aware of the production capacity and the technological capability of the CC factories, it makes easier to place an order for production. It is obvious that with mass production, the unit cost or

average cost of production decreases. These factors can enhance the competitiveness of CC or medium and large-scale factories, both in domestic and export markets. Cheap labor and low energy costs played a key role in the development of CC factories in Bangladesh. In contrast to CMT factories, CC factories have their own design development departments with the latest machinery and technology that enables them to make any kind of RMG product with a little adjustment to their designs. As a result, CC factories can produce low priced products in large volumes for developing countries as well as high priced lower volumes for developed countries. Compared to all other innovations in the industrial sector in Bangladesh, the strategy of CC factories became an engine to industrial development due to this rapid growth. The growth performance of CC factories indicates that the RMG industry in Bangladesh depends mainly on the development of the CC or medium and large scale factories.

CC factories have motivational systems for high quality, innovative and easily adaptable labors. Because of these labor incentives and quality products, CC factories gained an increase in orders from foreign customers compared with the CMT factories. CMT factories, on the other hand, still use unskilled, inexpensive labor without changing production strategies to provide quality products. Further, due to the labor motivational system in the CC factories, semi-skilled labors gradually become skilled labor. In addition, with the skills obtained through experiences in the RMG field laborers can eventually become quality controllers. Skilled labors make it easier for factories to continue their labor quality improvement system, which is called socio-technical system. Skilled labor can adapt to changing technology of RMG production without difficulty.

Although Bangladesh RMG industry depends mainly on the CC or medium and large-scale factories, especially during post-MFA period, it was yet to achieve the potential to improve the labor productivity. Educated and experienced top managers of Bangladesh

RMG factories can help the business to earn more profit by investing in non-structured incentive programs for the labors. And thus, the educated top managers could implement the labor incentive programs in the RMG industries and motivate the growth of export. As a manufacturing industry, RMG industry of Bangladesh is still highly contributing to its economy, and is one of the most popular sectors in terms of profitability. Most of the privately owned medium and large scale RMG industries are able to reduce the delay in shipment to zero and achieve foreign buyer's satisfaction by implementing incentive programs. New technologies bring significant change and enhance economies of RMG industry, its design, cutting and marker making. It can be handled with use of the most modern equipment and technology. Using of STS will provide better performance than traditional RMG factories. However, more research is needed to find the social and technological development in this industry by using STS theory.

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SUMMARY

Labor incentive has become a widely accepted phenomenon that sustains a firm's performance. The notion of low cost advantage posits that low labor cost in Bangladesh attracts the garment industry and a number of firms in this industry provide a wide array of incentives to attract and retain employees and also as a strategy of increasing labor productivity. Although Bangladesh is a labor rich country, traditionally women are not allowed to work outside of the house. However, with the starting of the RMG industry from 1978 women were employed gradually in this sector. RMG factories employed unskilled labors as sewing machine operators. At the beginning, RMG factories used only CMT (Cut, Make and Trim) technology in Bangladesh. CMT is a long wall method. There is no chance for labors to develop skill at CMT technology based RMG factories. Presently, about 4.0 million workers are employed in 4480 RMG factories. CC (Composite Corporation) technology based RMG factories have emerged with full set production capacity. CC technology based RMG factories use composite wall method. These RMG factories have skill development facility for labours, because they have RMG products with full set of production ability, such as material, fabric, printing, design, marketing and management, and so on. Therefore, CC based production technology system and socio-technical system (STS) are fitted with the technology system development. If the CC technology based RMG factory use structured/non-structured incentives for the employees, they can continue their skill development for the performance of the firm using mass production. A foreign company which had a non-structured incentive program has applied social technical system development idea using STS for firm performance. Moreover, non-structured incentive program is very essential for the Bangladesh RMG industry to keep and continue its international market competition position. As per as different data indicate, Bangladesh is still in a better position for the world apparel export share.

The main problems of the Bangladesh RMG industry are products cannot be delivered on scheduled time, low production, lack of labor development, no increase in the efficiency of the labors, lack of motivation of labors towards better performances, no competitive advantage among labors, and a high lead-time for delivering the products to the foreign customers. The structured incentive programs are not very frequently implemented in the medium and large scale of RMG industry as most of the privately owned factories are reluctant to invest in the non-structured incentive programs. In Bangladesh RMG industrial sectors STS is not yet fully developed, and in future more research is needed to find out its development problems and their solutions.

It is not let out fully understood to what extent labor incentives, in particular, non-structured incentive affect firm performance in this industry in Bangladesh. This research, therefore, investigates the labor incentive particularly non-structured labor incentives and its influence on the performance of industrial firms using cases from RMG industry in this country. Analysis was performed using data from 36 medium and large scale RMG firms. Results found that firm performance has influenced incentives such as food and healthcare facilities, and asserted that such incentives have encouraged the employee attendance and motivation. The idea of non-structured incentives was drawn from a Japanese company. The findings highlight that the educated top managers mostly implemented the labor incentive programs in RMG industries and has motivated the growth in export. However, Bangladesh is yet to achieve all these to improve the labor productivity. Findings of this study would encourage educated and experienced top managers to pursue non-structured incentive programs for the labors other than the structured incentive programs to ensure long term sustainability of this industry.