The Competitive Factors of the Garment Industry during the Post Multi-Fibre Arrangement (MFA) Period: Empirical Evidence from Bangladesh

by

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Certification page

I, hereby proclaim that this thesis titled, “The Competitive Factors of the Garment Industry in the Post Multi-Fibre Arrangement (MFA) Period: Empirical Evidence from Bangladesh” is my individual work with the supervision of Professor Natsuda Kaoru. I have acknowledged all the sources that I used by following appropriate referencing method.

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Abstract

The garment industry of Bangladesh has been continuously growing both in the pre- and post-MFA period. Although, many scholars anticipated that Bangladesh would lose about 50 % of its market share after the abolition of MFA, the post-MFA performance in the period of 2005-2011 shows exactly the opposite result. In this post-MFA period, this industry has achieved a growth rate of nearly 12% per year with high growth of employment generation. Hence, this tremendous success story of the garment sector of Bangladesh motivates researchers to look back to identify the competitive factors that made Bangladesh as one of the major players in the global garment market. The study has both the quantitative and qualitative approaches with the primary and secondary data. This study considers the labor cost, labor force, electricity production, electricity cost, paved roads, lending interest rate, literacy rate, inflation, exchange rate, lead-time, and corporate tax rate as the macroeconomic factors, and availability of raw materials, compliance of international labor and environmental law, labor unrest, technological development, market diversification, functional upgrading, role of international buyers and market access policy as the industry specific factors for analyzing the growth of the industry in the post MFA period. By employing both the econometric and statistical analysis, the study provides empirical evidence that the wage rate, corporate tax rate, market access policy, exchange rate, technological development, compliance of labor and environmental law, functional upgrading, international buyers and market diversification have contributed positively while the infrastructure, interest rate, corruption, lead-time, availability of raw materials, government support, and labor unrest have

contributed negatively. Findings of this thesis will definitely help to sustain the current growth of the garment industry of Bangladesh in the long run.

Key words: Competitive factors, Multi-fibre Arrangement (MFA), Compliance, Technological development, Market diversification.

Chapter One
Introduction

1.1. Statement of the Problem

The garment industry of Bangladesh has emerged as a fast growing industry since the 1990s and become the largest contributor to the economic development of the country. While the Bangladesh garment industry started its journey with a few prospects in the late 1980s, Bangladesh managed to be ranked as the 2nd largest garment exporting nation across the world in 2011 (WTO, 2011). To illustrate it more, while the export revenue of the Bangladesh garment and textile industry was less than 4% of its total export revenue in 1978, the industry contributed 75% of the total export revenue in 2011 (BGMEA, 2011). In addition, the garment industry has been contributing to the employment creation and poverty alleviation for the last couple of decades (Haider, 2007). According to the Bangladesh Export Promotion Bureau, the industry employs 4 million workers, the majority of whom are women migrated from poor areas to major cities in search of employment (Ahmed, 2009). Therefore, the industry has been considered as a driving force for the socio-economic development of Bangladesh as it ensures women empowerment and poverty alleviation.

Bangladesh had enjoyed the advantage of quotas until 2005 under the Multi-Fibre Arrangements (MFA)[1], an arrangement under which developed countries, especially the U.S and EU restricted their markets by imposing quotas of apparels import in order to protect their domestic markets. Developing countries were also subject to import tariffs, but some least developed countries, for example Bangladesh, Cambodia etc. got a small degree of import tariff exemption under the Generalized System of Preferences (GSP) in the U.S market and in the EU market where the least developed countries (LDCs) got duty-free access. The implementation of quotas, therefore, made some favors to the LDCs as it partially restricted the exports of the most competitive producers such as China and India as these counties had to pay tariffs. Hence, introduction of MFA is considered a turning point for the garment sector of Bangladesh. Along with GSP and duty-free access, cheap labor advantage has made Bangladesh as one of the most competitive players in the world garment sector. During the MFA Period,

[1] The Multi-fibre Arrangement (MFA) is an international arrangement under which the world textile and garment industry is governed and operated in the period of 1974-2004. The purpose of this arrangement was to provide the protection of developed countries' textile and garment industry with the competition of developing countries. Developing countries naturally enjoy comparative advantage in garment and textile production as this industry is highly labor intensive.

Bangladesh has been outperforming in this industry and grew very rapidly meeting all kinds of the international and domestic demand (Rahman, 2004).

It was expected that after the abolition of the quota system, the garment sector of Bangladesh would be at risk. Many scholars argued that after the abolition of MFA, Bangladesh would lose its competitiveness and accordingly lose the market share in the global market. For example, Spinanger and Wogart (2001) concluded that Bangladesh would lose its half of its market share after the quota abolition while Cookson (2003) anticipated that almost 50 percent and 35 percent of the U.S and EU market respectively might be lost due to the high competition, leading to the total loss of 35 percent of garment exports. Norda˚ s (2004) predicted that China and India would significantly raise their market share, which will cause other LDCs such as Bangladesh and Cambodia to lose their market share in the major exporting markets to a great extent. As for the reasons of their losing market share, they mentioned both the international challenges such as abolition of quota and rise of other developing countries especially China and India and domestic challenges including high lending rates, load-shedding, lack of

skilled manpower and labor unrest, which put the country's performance at risk.

Yang and Milachila (2004) referred to the potential loss in Bangladesh's garment export values which could be 25 percent of the total order when quotas are eliminated in 2005 as Bangladesh could not capitalize on industrial upgrading and diversify its export markets. Rasiah (2009) empirically proved that Bangladesh, along with other LDCs would not be able to sustain its garment exports growth in the U.S and EU due to the lack of basic infrastructure, high-tech infrastructure and integration in the global markets and value chain. Moreover, Nurruzaman and Hoque (2009) and Habib (2009) also argued that Bangladesh may lose its competitiveness as well as market share in the global garment value chain if proper actions and policies are not taken immediately.

However, the post-MFA performance of Bangladesh shows a totally opposite result from scholars` estimation. In the post-MFA period of 2005-2011, this industry has achieved a growth rate of nearly 12% per year. Moreover, this sector keeps growing rapidly in terms of the employment creation and business

expansion. To describe it more, according to the Bangladesh garment manufactures and export association (BGMEA), the number of employees in the garment sector has risen from 2.2 million to 3.6 million and around 1000 new factories have been set up within this period. Besides the BGMEA, McKinsey and Company (2011) and Abras (2011) also confirmed the bright prospects of Bangladesh garment industry in the post-MFA period. McKinsey and Company (2011) has conducted an extensive interview based survey of Chief Purchase Officer (CPO) from the leading apparel players in the Europe and U.S and a telephone survey of more than 100 local suppliers in order to assess the potentiality of the Bangladesh garment industry in the post-MFA period. The survey found that 89% percent of the CPOs viewed Bangladesh as the number one lucrative place for sourcing garment and apparel products for the next five years. Abras (2011) also predicted that the Bangladesh garment industry would continue in increasing its market shares in both the U.S and the EU-15 until next decade.

Hence, this tremendous success story of the garment sector of Bangladesh motivates researchers to look back in order to identify the competitive factors that

lead to the success. This thesis is particularly interested in identifying the important factors that made the Bangladesh as one of the most competitive players in the global garment market.

1.2.Research Objectives

This study is undertaken to identify the factors that contributed to the growth of the garment sector after the MFA phase out in Bangladesh by evaluating its competitiveness relative to the other competing countries. Moreover, this study will also find the factors that have negative effect to the garment industry growth of Bangladesh.

1.3. Research Questions

Based on the above research objectives of this study, the research questions developed as follows:

1) What are the competitive factors that made the garment sector of Bangladesh a significant player in the global market after the MFA

phase out?

2) What are the competitive factors that have negative effect to the garment export growth of Bangladesh in the post-MFA period?

1.4. Research Significances

Findings of this research will undoubtedly contribute to the global garment exporters as well as Bangladesh garment industry. There is hardly any previous literature which analyzes the competiveness of Bangladesh garment industry using the data and information of both macro-economic and industry-specific factors after the MFA phase out. Therefore, the findings of this research will be exclusively original. Secondly, the other developing countries which are facing problem after the MFA phase out such as Nepal or Laos can get a lesson from the findings of this research. Thirdly, after finding out the important competitive factors of the garment sector, the government or policy maker will have a clear vision regarding the garment sector, which will be helpful to develop the appropriate policy. Finally, this research attempts to identify the prospective markets for the Bangladesh garment sector based on the survey with the firms, which will be a great contribution for the garment sector of

Bangladesh.

1.5. Operational Definition

The following definitions are very much necessary in order to comprehend the research background, methods, findings and analysis.

Garment Industry: The garment industry is considered as the most labor-intensive industry that focuses on the manufacturing, marketing, consumption, supply chain, trading and many other components of clothing or garment and its accessories as a whole. From the mid-19th century, the garment industry is considered as the initiator of industrialization for many countries and has shifted through many regions while providing the fundamentals of economic development.

Garment Firm: A garment firm is unit entity within the garment industry that holds and controls a portion of the total industry as a whole. Therefore, the performance of the garment industry could be summarized as the summation of most of these unit entities operations. However, there are other entities within the garment industry that also regulates and take parts in the changing behavior of this

industry as a whole. For example: trading/buying of a house, fashion and textile industry, yarn dying/manufacturing industry, chemical invention, etc.

The value chain: The value chain refers to all the value-adding activities of garment firms. These activities range from product idea to product consumption. Therefore, it is all the necessary steps that add value cover by the value chain.

Technology Development: Technology development is a simultaneous process of researching and developing better ideas and methods, covering the total span of the value chain activities such as research and development, process automation, design, and re-design.

Quota: An indication and a minimum borderline for a specific amount of garment that will be allowed into a country during a certain period. As quota and tariff can both be used at the same time, it can also be used as in-quota tariff and out-quota tariff.

CMT (Cutting, Making, Trimming): This is when international clients send all necessary raw materials to the local manufacturers for cutting, making and trimming.

FOB operation: This is the logistics term of 'Free On Board'-till the goods are on board of a ship/plane for shipment. But it could vary depending on the place of shipment and that particular country's law. Many manufacturers use this term of operation while commencing business across international borders. For example, designing the sample from a manufacturer, providing the sample and receive approval from the ultimate brand owner. After necessary pricing negotiation, product revision, design finalization, timeline confirmation etc. the supplier goes for the production of goods. In most cases, the price for the supplier/manufacturer is estimated as the FOB price, and the FOB price covers the manufacturing cost (based upon per piece production) and the transportation cost up to the port of discharge and the goods are boarded on the transport for shipment.

Competitiveness: Competitiveness is the relative idea of the capability of a firm, or nation to sell and supply goods and services with regard to its market.

The factors of Competitiveness: There are various factors that affect the competitiveness of performance in business. Both macro-economic and industry-specific factors are considered in this study.

1.6. Organization of Study

This thesis consists of seven chapters divided into three main divisions. The first division includes Chapter one to Chapter three, the second division includes Chapter four to Chapter 6 and the final division includes Chapter seven. Chapter one describes the background and statement of the problem of this study followed by the objectives and significance of the research. Moreover, the chapter deals with the operational definitions and concepts that have been used in order to carry out the research. Chapter two presents both the theoretical framework and literature review. The theoretical framework explains global value chain and competitiveness to guide the discussions while the literature review includes all relevant literature with regard to the competiveness of the global garment value chain as well as the Bangladesh garment industry. Chapter three focuses on the overview of the Bangladesh garment industry in terms of major markets, employment, backward linkages, products portfolio and ownership structure etc. In Chapter four, the research methodology, including the econometric model and the questionnaire survey are presented to explain how this thesis will be carried out. Chapter five examines the contributing factors of the Bangladesh garment industry growth in the post-MFA period. Chapter six analyzes the major findings

of this study with comparison of relevant previous study's findings. Finally, Chapter seven concludes the study with summarization of this thesis finding.

1.7. Limitation of Study

The study has been undertaken to access the competitive factors of the garment industry in the post-MFA period covering the Bangladesh garment industry. However, there are many other countries such as China, India, Vietnam, and Cambodia who are also successful in maintaining a high garment export growth which were not included in this research. Therefore, the findings of this research are valid and reliable to some extent but not to the full extent. Moreover, this research covers seventy firms in the questionnaire survey. Though the sample size represents the overall population, more inclusion of sample firms could have reduced the biasness of the findings at minimum level. Furthermore, the target respondents of this thesis's survey were the owner or managing director and the data collected through the survey represent only the opinion of the management side. However, the opinion of worker's side could not be included in this thesis. Inclusion of the worker's opinion could have increased the validity of this thesis's findings even more.

Chapter Two

Theoretical Framework and Literature Review

This chapter attempts to review the basic concepts and theories in order to develop the conceptual framework of this study. The following four sections will be discussed in this chapter:

Section 1: Global value chain (GVC) theory.

Section 2: The theories of competitiveness assessment.

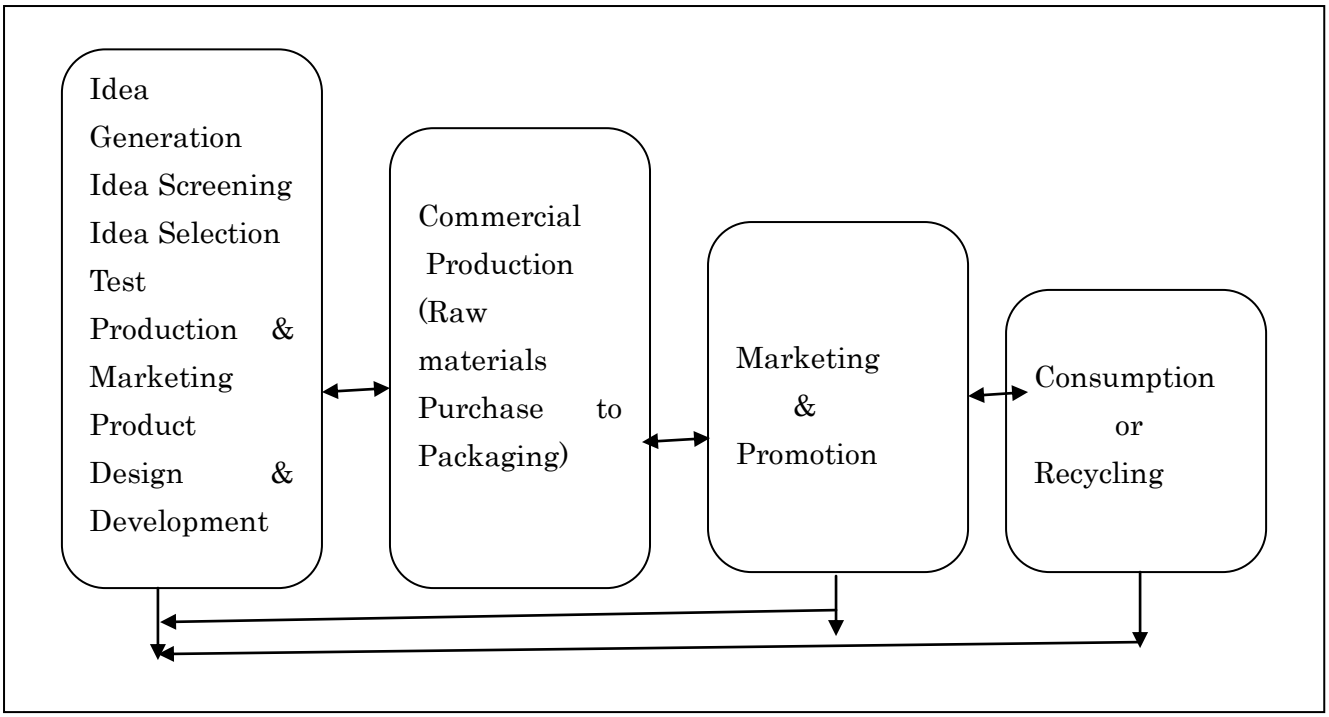
Section 3: The competitive factors of the global garment value chain.

Section 4: Previous studies regarding Bangladesh garment industry.

2.1. Global Value Chain (GVC) Theory

A value chain theory depicts the full range of activities that are necessary to bring a product or service from conception to consumption (Kaplansky, 2001). Hence, design and product development, production, marketing, and consumption or recycling are different stages where at every phase creates more chances to add value. The different phases of the value chain are illustrated below

Figure 2- 1: Different Phase of Value chain (for products or services)



Source: adapted from Kaplansky and Mosrris, A Handbook for Value Chain Research, *IDRC* (2000), p-4

The value chain analysis is to show who, how, where and to whom the value is created and distributed. To define the value chain theory, Ponte and Gibbon (2005) termed it a "*vertical relationship*" from the buyer to seller or the producer to the consumer. He emphasized on the flows of material resources, finance, knowledge, and information from the buyer to seller or producer. Kaplansky's and Ponte and Gibson's value chain definitions are merely confined to the conventional stages of the value chain. They did not point out how the value chain has been redefined by

'technology.' For his part, Kognut (1985) has given much importance on *'technology'* where as he opined "[a] *value-added chain is 'the process by which technology is combined with material and labor inputs, and then processed inputs are assembled, marketed, and distributed. A single firm may consist of only one link in this process, or it may be extensively vertically integrated*." (Kogut 1985: 15)

Subsequently, Bair (2005) emphasized on the depth of the relationship between lead firms and suppliers in defining the value chain concept. They argued that the complexity of the value chain depends on '*Characteristics of production processes*' *'the organization of the industry*', '*the presence of technical and process standards', 'competitive turnaround time'.* The success of the value chain for a particular industry therefore largely depends on lead firms and its exploiting capacity on technical and process standards and turnaround time.

Summing up the afore-mentioned definitions, it can be concluded that a value chain is the process through which a firm can uphold its position by adding value during different stages of a product or service's life cycle stages through exploiting existing technology. Accordingly, the value chain activities cover design, production,

marketing, distribution and logistics and all other associated activities to bring out the product or service from the producer to its final consumer. However, in practice, the value chain activities are definitely more intricate than what is described above. The value chain activities can be seen in different functional departments' within a firm or divided among the firms limited in a particular geographical area or extended over the broader areas. Therefore, the GVC analysis helps to understand firms to mark their position and how much they are contributing on GVC. Additionally, the GVC analysis assists firms to know about the technologies, standards, regulation, product, and process and market, which make them to be more competitive on their concerned industry's value chain.

There are two types of global value chains that dominate in the literature: *Buyer-driven Value Chain and Producer-driven Value Chain*. Buyer-driven value chain is very common for labor-intensive industry where as producer-driven is well-suited for technology intensive industry. Yet, the *'dynamics of the relationship*' and '*inter-reactions they generate*' has revealed many differences between two of them (UNIDO, 2004).

The global garment value chain is distinctively classified under buyer driven value chain as it is labor-intensive in which global buyers and traders play a very important role (Gereffi, 1999). Global buyers and traders, typically from developed countries, are sourcing their products from some renowned manufacturing companies particularly from Hong Kong, Taiwan and Korea who operate their production in different cheap labor abundant developing countries such as Bangladesh, Vietnam and Cambodia etc. Therefore, Gereffi (1999) termed this pattern of manufacturing as a *'triangular manufacturing*' where manufacturing companies possess huge power to influence the garment market (Natsuda,et al. , 2010)

According to Gereffi (2001), the global garment value chain is structured within five important segments. These are: 1) raw material (both natural and synthetic fibers) supplies 2) the provision of components, for example, yarns and fabrics produced by the textile companies 3) production networks consisting of both domestic and international sub-contractors 4) export channel controlled mainly by the international buyers and traders and 5) marketing networks at retail level. He also argued that all of these segments cover a variety of factors such as geographical location, labor, technology and scale and the type of enterprise that create various

opportunities to add more value in the chain.

Three common characteristics have been observed in the garment GVC: i) the barrier of entry exists in garment GVCs as global buyers always prefer to produce from those local producers who have the capacity to produce in large volume as well as maintain world class product quality standard including compliance with international social and environmental issues (Goto et al., 2011) ii) the international buyers are the key players as they organize and control the whole chain without possessing any factories and iii) the production of garment shifts from one country to another as international buyers prefer to produce labor abundant and cheap wage rate countries (Gereffi, 1999; Taplin, J. Winterton, & R. Winterton, 2003).

The author points out that the most significant argument advocating garment GVC is the ***'industrial upgrading'***. The global garment value chain analysis has been assisting the local producers by rendering advice, technological and financial support from the global buyers on how to improve their production processes, attain consistency and high quality (Humphrey, Schmitz, 2000). Hence, the role of the international buyers in industrial upgrading has great importance. In agreement with

Humphrey and Schmitz (2000) and Kaplinsky and Morris (2001), this study has further explained how the local firms can benefit through inserting themselves into the GVC. They argued that firms can upgrade their position through participating in the GVC emphasizing on increasing efficiency on manufacturing, raising their competiveness and focusing on more value adding activities. In addition, they categorized that local firms can be upgraded specially in four areas:

i) Process upgrading: raising efficiency in transforming input to output in the internal process by introducing modern production system and technology.

ii) Product upgrading: product upgrading can be possible through development of new products or improving old products.

iii) Functional upgrading: firms can obtain new functions by moving less value adding activities to high value adding activities.

iv) Chain upgrading: moving to sophisticated value chain. For example, the East Asian Countries success from labor-intensive industry to capital-intensive industry.

Besides these four upgradings, GVC analysis helps the local producers to diversify their export by providing research information about emerging markets. The GVC analysis also gives attention on workers benefits from the upgrading that a firm or nation achieves through successful insertion in GVC. Moreover, the GVC analysis ensures that firms deliver benefits in the form of greater job security, or improved working conditions (Bair, 2004). To illustrate it more, the major international buyers particularly from the U.S and EU not only give the importance on product quality but also on the maintenance of international labor and environmental laws. Hence, the local producers face immense pressure to compliance with international labor and environmental laws which eventually protect workers' benefits and rights.

As mentioned above, GVC analysis assists in upgrading industry through the technology and capital transfer, foster innovation, train manpower, market diversification and compliance with international labor and environmental laws which eventually lends a hand in enhancing the competitiveness of the local producers as well as the country's economic growth. For these reasons, the writer sees that GVC analysis is necessary for assessing the competitiveness of the

Bangladeshi garment industry in the global garment market.

2.2. The Theories of Competitiveness Assessment

The concept of 'competitiveness' has different meanings to different people. To a businessman, it may mean bringing efficiency in his/her products or services line that ensures better profitability compared with his/her competitors. In the eyes of the policy maker, it may mean how a new policy benefits its users to perform better. To an economist, it may mean how well an economy is capable to continue and sustain its economic growth compared to other's economies. Hence, there is no straightforward definition of competitiveness that can be generalized to all. The explanation of competitiveness, therefore, is subjective and thereby inconclusive.

In the context of this study, we prefer to adopt national or economy- level (macro-economic) usage of this term. The Business Dictionary defines 'competitiveness' is an ability of a nation to produce/offer world standard goods/services that can compete in both domestic and international markets in terms of quality, quantity and price. To make it more comprehensive, the Organization for Economic Co-operation and Development (OECD) further

defines competitiveness by focusing on the capacity of a nation for sustainable economic growth. According to OECD, competiveness can be defined as the degree to which a country is competent to produce internationally marketable goods and services that assist in generating more income and eventually raise the living standard of the nationals. Moreover, the Institute of Management Development (IMD) defines competitiveness as how a nation creates and nurtures a business-friendly environment to make its enterprise more competitive in the global business.

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Michel E. Porter (1990), a world-renowned scholar for 'competitiveness theory' defines competitiveness as a capacity of a country to create a conducive business environment by maximum usage of its resources. He argued that both macro-economic factors and micro-economic factors are very important for the nation's competitiveness. In agreement with Porter, Scott and Lodge (1985) describe competitiveness as a country's ability to produce and distribute goods/services that ensure maximum return on its resources.

While most of the aforementioned definitions are not closely similar, they

share a common characteristic that is, creating business-friendly environment on national level, which promotes high competitiveness to achieve sustainable economic growth as well as to improve people's quality of life. As a result, it has become a very important goal for every nation to increase the national level of competitiveness in the international market. In order to increase the competitiveness, measuring its parameters is a vital issue for the nation.

Measures of national competitiveness and its parameters depend on the nature and structure of the industries in a particular country. Therefore, many indicators, models and indices are available now to measure the national level competitiveness. For instance, the IMD and World Economic Forum (WEF) are the two contemporary leading indices that measure the national level of competitiveness year to year based on hard data and opinion-based soft data. The IMD applies 300 criteria to rank the world's most 59 economies whereas WEF uses more than 170 variables to rank over 130 economies. The basic difference between these two indices is that the IMD prefers to use hard data while WEF generally gives importance on soft data.

To measure the national level of competitiveness, different studies used different factors and methodology to support their study. Most of the studies found that the GDP growth rate, inflation rate, labor cost, and information technology are the common factors to all countries to measure their competitiveness; some other factors are different from country to country. For example, Cockburn et, al.,(1998) found the GDP growth, inflation rate, exchange rate, interest rate, labor cost, and tax rate are the most significant factors to measure the Mali's manufacturing industry's competitiveness. Moreover, kao et al., (2004) conducted a study on 10 South Asian countries where they found infrastructure, information and technology, R & D, and education as the factors of competitiveness for these countries.

Porter (1990) developed the 'Diamond Model' focusing competitiveness in ten different countries on four country-specific factors: 'factor conditions', 'demand conditions', 'related and supported industries and 'firm strategy, structure, rivalry', and two external variables: chance and government. Though this model is widely used in different studies such as Bellak and Weiss(1993), Hodgetts (1993) and Grant(1991); Bellak and Weiss (1993) criticized the Porter's

Diamond model by arguing that the model does not fit for small and open economies.

Based on the above literatures, it is very straightforward to point out that definition of competitiveness and its measurement is extremely complicated. It entails different features and requires much effort to identify the variables based on the country, industry and its value chain.

2.3. The Competitive Factors of Global Garment Value Chain

The garment industry is considered as a 'starter' industry for many export-oriented countries particularly in the Asia and Latin America (Gereffi, 2001). While the industry was started from Britain in the 1950s, it was shifted to different countries from time to time for exploiting cheap labor. When any nation starts its industrialization process, the wage rate begins to increase and therefore the producer of the garment industry shifts from that country to another new country where cheap labor is abundant (Gereffi, 1999; Taplin, J. Winterton, & R. Winterton, 2003). Following this reason, the industry shifted from Britain to Japan, Korea, Taiwan and Hong Kong in the late 1970s.

The transformation of the garment industry from the developed countries to the developing countries has threatened the market share of the developed countries and eventually created a severe unemployment problem. Therefore, the policy makers from developed countries established the Multi-fiber Arrangement (MFA) in 1974 in order to protect the market of the developed countries. After the abolition of MFA, the Agreement on Textile and Clothing (ATC) was implemented in 1995 for the following ten years as a process of protection. Accordingly, on January 1, 2005; the quota system was brought to an end and the market of garment and textile has become more or less open to all.

After the MFA/ATC phasing out, competition in the global textile and garment industries has increased manifold. Therefore, to survive in this intense competitive market, increasing competitiveness has become important. Hasim (2005) argued that one of the main factors for determining competitiveness is the unit cost in the current post-MFA/ATC period. Therefore, he suggested that large-scale production, disbursement of credit, cheaper raw materials and greater availability of electricity at reasonable rates are some steps necessary to help the garment industry to become more cost-effective. However, some recent literatures such:

Tewari 2006; United Nations 2005 and Kelegama 2005; challenged the findings of Hasim. They argued that low unit cost alone is not sufficient enough to ensure competitiveness in the post-MFA garment industry. Global competitiveness in the garment industry today requires competencies that go well beyond the traditional factors of relative price and low wages. Therefore, they suggested that along with cheap labor and low unit cost; the garment exporting countries should be competitive on technology adaptation, literacy rate increasing, infrastructural development, investment friendly government policy implementation, lead-time minimization, labor productivity growth and market diversification to increase their market share in the global garment value chain. In this thesis, we will examine how far Bangladesh has progressed in the above-mentioned competitive factors of the garment industry.

It has been six years since MFA/ATC was phased out. Within these six years, it has already been proven that the countries depending only on cheap labor and low cost factors are no longer competitive. For example, Belabase & Kharel (2009) found that the Nepalese garment were competitive in the 1980s through the usage of quota protection and cheap labor abundance. However, the industry has been

losing its market share drastically after the quota abolition. They argued that the Nepalese concerned authority did not take timely preparation for coping up with the post-MFA environment by raising their competitiveness in lead-times, marketing, product development and labor productivity.

On the other hand, some other developing countries in Asia, for instance, Cambodia, Vietnam, Bangladesh and Sri Lanka increased their market share by making themselves more competitive in the global garment value chain. Along with cheap labor, Cambodia's improved labor standards have partly contributed to attract more buyers to source from Cambodia (Adhikari, 2007) whereas product differentiation and compliance with international labor laws and standards are the main competitive factors of Sri Lanka that helped to remain competitive in the post-MFA period (Belabase & Kharel, 2009). Bangladesh and Vietnam have also taken different steps such as garment export promotion strategy and import substitution strategy that led them to boost their market share in the global garment value chain. However, many studies suggested that these countries still have more scope to increase their competitiveness to expand their export.

Summing up the aforementioned literatures, it can be said without any dispute that the garment industry‘s competitiveness is no longer confined with the traditional cheap labor and low price factors, rather the international buyers prefer to source from those countries that have both macro and industry-specific competitiveness as well as comply with the international labor laws and environmental standards.

2.4.Previous Studies Regarding Bangladesh Garment Industry

The export-oriented garment industry is one of the most important leading industries in Bangladesh in terms of export and employment opportunities. Therefore, the industry attracts the attention of the public in the country and has been studied intensively at different time periods. In this thesis, we have classified all the relevant literature into three major categories: i) literature with regard to the structure and features of the garment industry ii) literature with regard to impact of the MFA abolition on Bangladesh garment industry and finally iii) literature with regard to the competitiveness of the garment industry.

2.4.1. Literature with Regard to the Structure and Features of the Garment Industry

Zohir et.al., (1996), Martelli (1999), Quddus and Rashid (2000), Islam (2001), Bhattacharya and Rahman (2001), Ahmed (2002), Siddiqi (2004), World Bank (2005) Fukunishi et al. (2006), Uddin and Jahed (2007) and Abras (2011) are the most cited study that analyzed the structure and feature of Bangladesh garment industry. While most of the above-mentioned studies used published data collected from the Bangladesh statistics Bureau and BGMEA, a few studies, for example, Quddus and Rashid (2000), Islam (2001), Fukunishi et al. (2006), Uddin and Jahed (2007) and Abras (2011) used primary data to analyze the structure, growth and feature of the garment industry both in the pre- and post-MFA period.

Quddus and Rashid (2000) presented the developments of Bangladesh garment industry in the early years. Their study analyzed the existing literature during that period of time, exhibited data on the sector performance, and provided special concentration on the role of the local entrepreneurs for the development of Bangladesh garment industry. The study found that the development of Bangladesh garment industry until 1998 was due to the dynamic role of the garment entrepreneurs, cheap labor and quota advantage in the major apparel

markets. Islam (2001) evaluated the negative impact of the 1998 floods and the East Asian economic crisis on the industry. By using secondary and primary data, he found that the impact was not severe as it was expected. He also mentioned that the government and international support have helped to mitigate the effect of crisis and flood.

Fukunishi et al. (2006) examined the immediate impact of quota abolition on the export, employment, markets, products and backward linkages. The study confirms that the abolition of MFA does not have any negative impact at any rate. Rather, the study found that the industry position is becoming stronger in the global garment value chain. Uddin and Jahed (2007) presented the impact of the garment industry growth on the poverty alleviation as well as the economic growth of Bangladesh. The study employed regression analysis by using primary data. After conducting the regression analysis, the study concluded with empirical evidence that the garment industry helped thousands of poor household to get rid of the vicious cycle of poverty by providing employment opportunities with high wages who would be otherwise employed with low-wage agricultural activities. Abras (2011) also analyzed the different aspects of the garment industry between

2005 and 2011. The study found that Bangladesh is one of the successful garment exporters among the LDCs who achieved significant progress on product diversification, market diversification, process and function development and compliances. However, the study also mentioned backward linkages, longer lead-time, and infrastructure as some of the challenges that Bangladesh should look forward in order to sustain its growth in the long run.

2.4.2. Literature Regarding the Effect of the MFA abolition

There was severe concern that the LDCs, for example, Bangladesh and Cambodia, which relied profoundly on the garment industry, would suffer from the intense competition, triggered by the complete abolition of MFA at the beginning of 2005. Dowlah (1999) and Nordås (2004) anticipated that China and India would increase their exports magnificently in the post-MFA period which will cause small exporters to lose their market share. Moreover, Siddique (2004) and Raisha (2007) also supported the prediction of Dowlah (1999) and Nordås (2004). Their studies concluded that the sustainable growth of Bangladesh garment industry in the post-MFA period will be severely affected. However, the above-mentioned studies do not state any quantification of impact.

Some studies such as Cookson (2003) and Springer and Wogart (2001) estimated the possible loss in a quantifiable way. Springer and Wogart (2001) forecasted that the textile export will reduce by 15.5 percent and the garment export by 7.9 percent in the post-MFA period. Cookson (2003) estimated that Bangladesh will lose about 50% from the U.S. market and about 35% from the EU market. Thus, an overall loss of 35% of garment exports from Bangladesh.

Table 2. 1: A summary findings about the effects of the MFA abolition in January, 2005.

Study	predictable effect	Methodology	Remarks
Dowlah (1999)	Predicted huge loss but no quantifiable estimation	Analyzes the common features of the industry	Focuses only secondary data
Springer and Wogart (2001)	GDP: 0.14% Garment export: 7.9% Textile export: 15.5%	Uses Global Trade Analysis Project (GTAP) model	Focus only relative prices and cost competitiveness
Cookson (2003)	50% loss in U.S market, 20% loss in E.U market and overall 35% loss.	Interview with international buyers	did not mentioned sample size
Nordås (2004)	Almost half of the export market share can be lost	considers all the factors that might have impact on the competitiveness by using GTAP model and Vertical Integration concept	Exclusive and rigorous analysis

Source: Adapted from IMF working paper

Although the above-mentioned studies have attempted to assess the impact of quota removal on Bangladesh garment industry, it is very difficult to draw a conclusion as most of these estimates are done based on past experience or guestimates.

2.4.3. Literature Regarding the Competitiveness of the Bangladesh Garment Industry

While the different aspects of Bangladesh garment industry were analyzed by different authors, the competitiveness of Bangladesh garment industry is examined by a few of them. As far the authors' knowledge goes, Mlachila and Young (2004), Siddique (2004), Rahman and Anwar (2007), Haider (2007), Nurruzzaman and Hoque (2009), Saxena and Salze-Lozac'h (2010) and Mckinsey and Company (2011) are the pioneer studies that focused to determine the competitive factors of the Bangladesh garment industry.

Mlachila and Young (2004) examined the performance of Bangladesh garment industry during the period of MFA/ATC implementation period. They found that two factors-low wages and generous quotas in the restricted markets relative to its main competitors were the crucial for the garment industry growth of Bangladesh.

But they emphasized that merely depending on these two factors will severely affect the export growth after the MFA/ATC phase out. Thus, Bangladesh should focus on industrial upgrading and diversifying its garment export. Siddique (2004) attempted to measure how the backward linkages affect the competitiveness of the garment industry growth of Bangladesh and found very negative impact, as Bangladesh is highly dependent on all sub-sectors of backward linkages. Therefore, he emphasized on an integrated backward linkage policy to remain competitive in the post-MFA period. Rahman and Anwar (2007) conducted a comparative study with regard to the competitive factors of the garment industry between Bangladesh and Cambodia. They found that low wage rates, duty-free access to EU, Canada, and Norway, capability of mass production of basic garment, and improved labor standards are the strength while overdependence of raw materials and poor infrastructure are the major weaknesses for the garment industry of Bangladesh.

Haider (2007) measured the competitiveness of Bangladesh garment industry in the major international markets particularly in the U.S. and EU. He addressed the competitiveness issue from two broader dimensions: surface-level and deep-level

competitiveness. In the surface-level competitiveness, he included the export value, product price, market share and lead-time that can be easily observable. On the other hand, linkage expansion, factory environment and product/ market composition were considered as deep-level competitiveness. In the findings, he concluded that the surface level competitive performance of Bangladesh garment industry is rather better than the deep-level competitiveness.

Nurruzzaman and Hoque (2009) conducted their study to see the impact of the current lead-time on the garment industry growth of Bangladesh. The study provided evidence that the current lead-time for a Bangladesh garment is 90-100 days while 30-35 days for China and India and 45-60 days for Pakistan. Therefore, they concluded that having such long lead-time for Bangladesh could have a negative impact on its garment industry growth in the post-MFA period. Saxena and Salze-Lozac'h (2010) evaluated competitiveness by considering the views of four key stakeholders: international buyers, government officials, factory owners, and middle managers. They tried to understand each group's basic notions of competitiveness, and what they viewed as the key factors at factory level. In their findings, the authors argued with empirical evidence that Bangladesh has

outperformed in reducing price, increasing quality and minimizing lead-time. In the concluding remarks, they suggested that Bangladesh should make investments in human capital and technology, rather than just reduce input costs.

McKinsey and Company (2011) mentioned that most of the CPOs reported the price, capacity and capability as major advantages of Bangladesh garment industry. The cheap wage rate offers competitive price with satisfactory quality level products. Moreover, more than 50% of CPOs interviewed reported that Bangladesh is clearly ahead of the South-East Asian garment suppliers with a current 5000 factories employing about 3.6 million. Capability ranked as a third competitive advantage for supplying large volume in low value added activities. In addition to price, capacity and capability and recent development in compliance issue also created favorable condition to the garment export. However, the study found the infrastructure and overdependence of raw materials as key challenges for the Bangladesh garment industry in the post-MFA period.

Although the aforementioned studies examined the competitiveness of Bangladesh garment industry by using different methodologies, most of them

were conducted basically using the data before the MFA phase out. Therefore, the real picture of the Bangladesh garment industry in the post-MFA period is absent. Moreover, these studies emphasized merely on the industry-specific factors rather than on the country-level factors. But in the post-MFA garment market, country-specific factors have also been considered by the international buyers and traders before choosing a country. Therefore, this study attempts to analyze the competitiveness of Bangladesh garment industry using both country-specific factors and industry-specific factors after the MFA phase out.

Chapter Three

The Overview of the Bangladesh Economy and its Garment Industry

This section presents an overview of the Bangladesh economy and its garment industry structure. It firstly describes the macro-economic indicators of Bangladesh in order to comprehend the strengths and weaknesses of the economy. Then, it documents the historical development of the Bangladesh garment industry, export markets, export products, employment status, ownership and investment and backward linkages. The section ends with an analysis of different problems and challenges of the Bangladesh garment industry.

3.1. Overview of Bangladesh Economy

Bangladesh, a country in South-Asia bordering Myanmar and the Bay of Bengal to the south and India in all other directions, is the 43rd largest economies across the world according to the Purchasing Power Parity (IMF, 2011). The country became independent in 1971 and since then it has been struggling to achieve the economic development. Bangladesh experienced a very sluggish economic growth during the post-war period between 1971 and 1980. However, there has been a moderate economic growth at an average 5%-6% GDP growth from the period of 1990s until now. Moreover, other macro-economic indicators

have also been performing well over this time period. For example, poverty (head count) ratio has decreased from 57% in 1992 to 40% in 2005 (WB, 2005), the life expectancy, literacy rate and GDP per capita have increased sharply for the last couple of decades (see table 3.1)

Table 3. 1: Trends of Some Selected Development Indicators of Bangladesh

Indicators	1973	1981	1991	2001	2006	2009	2010
GDP Growth (Annual %)	3.33	3.8	3.34	5.27	6.63	5.74	6.07
GDP per capita (constant2000US$)	230	256	283	376	460	532	558
Literacy rate ((% of people ages 15 and above)		29	35	47	NA	56	NA
Life expectancy at birth (years)	39	56	60	65	67	68	NA

Notes: NA means information not available.
Source: World Development Indicators (online).

Despite a robust development in many key macro-economic indicators, a number of interrelated factors including investment, public expenditure management, and proper resource mobilization have not developed as expected. For instance, the private investment shares only 19% of GDP whereas an ideal economy should have 35%-40% private investment of GDP. Gross fixed investment has also remained constant in 24% of GDP (USAID, 2010). Moreover, there is no significant improvement in decreasing income inequality as Gini index

remained unchanged for the last couple of decades (see table 3.2). Beside these, Bangladesh still has to achieve significant development in some other macro-economic indicators such as infrastructure, energy production, law and order, human resource, and public sector governance in order to become a middle income country (see table 3.3).

Table -3. 2: Trends in Inequality

Items	FY1995-96	FY2000-01	FY2007-08
Gini Coefficient	0.432	0.451	0.467
National Income to the poorest 15 percent of Population (%)	3.12	3.34	2.77
National Income to the richest 15 percent of Population (%)	58.3	66.35	71.45

Source: World Development Indicators (online)

Table 3. 3: Relative Position of Bangladesh in Selected Macro-economic Indicators.

Items	Data Source	Bangladesh	LMI countries	UMI countries
Paved Road (%)	EDB	10*	48	80
Mobile Subscribe (per 1,000 population	EDB	46	28	54
Per capita electricity consumption (KWH)	EDB	146*	685	1677
Adult literacy (%) Male Female	WDI	 61** 51**	 78 66	 89 87
Infant mortality (per 1000 live births)	WDI	48	8	7
Child malnutrition (%)	WDI	39	30	6
Political Stability and No Violence	WGI	-1.42 (weak)	1.25 (moderate)	2.5 (strong)
Government Effectiveness	WGI	-0.84 (weak)	1.25 (Moderate)	2.5 (strong)

Regulatory Quality	WGI	-0.86 (Weak)	1.25 (Moderate)	2.5 (strong)
Voice and Accountability	WGI	-0.26 (weak)	1.25 (Moderate)	2.5 (strong)
Rule of Law	WGI	-0.77 (weak)	1.25 (Moderate)	2.5 (strong)
Control of Corruption	WGI	-0.99 (weak)	1.25 (Moderate)	2.5 (strong)

Note: The data mostly relates to 2010(* means data for 2007;** means data for 2009). LMI = lower middle income; UMI = upper middle. Per capita income of about $1,000 and $3,700 are respectively the threshold levels for LMI and UMI countries. EDB= Economic Division of Bangladesh; WDI= World Data Indicators; WGI= Worldwide Governance Indicators. For Political Stability and No Violence, Government Effectiveness, Regulatory Quality, Voice and Accountability, Rule of Law, and Control of Corruption indicators are ranged from -2.5 (weak) and +2.5 (strong) performances.
Source: Economic Division of Bangladesh, World Data Indicators, Worldwide Governance Indicators.

The trade performance of Bangladesh in international arena is not good as it expected, however, the recent performance gives the evidence of hope and optimism as the growth rate has been impressive during the last decade. Bangladesh has experienced continuous double-digit growth both in the export and import of goods and services during the last 7-8 years. Hence, the rapid growth of the trade has helped to raise the Trade-GDP ratio (see table 3.4) which shows the intensified significance of the international trade in the economy and the endeavor of the policy makers to incorporate the economy to the international

trading market. With regard to the major trading partners for Bangladesh, the U.S. is the largest trading partner with its export value of 27.08 percent in the 2009. At the same year, the 2nd and the 3rd place are positioned by Germany and the UK which account 16.76% and 9.96% respectively. Other significant partners are France, Italy, Canada, and Spain with the export percentages of 7.23%, 4.27%, 3.87% and 3.81% respectively.

Table 3. 4: International Trade in Bangladesh

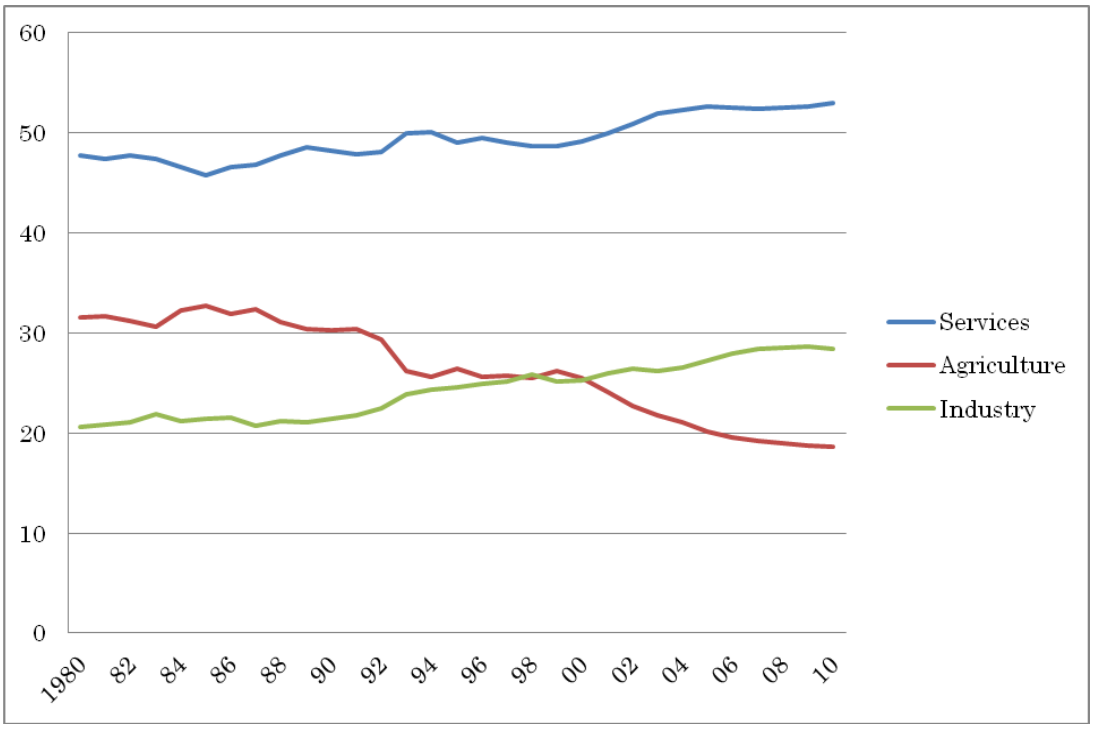
Financial Year	Export (in US$ million)	Import (in US$ million)	Trade-GDP ratio (% of GDP)
2000-2001	7228	10103	36.88
2001-2002	6791	9061	33.22
2002-2003	7379	10401	34.25
2003-2004	8747	11772	36.28
2004-2005	9995	13891	39.63
2005-2006	11,745	15627	44.22
2006-2007	13530	18269	46.88
2007-2008	16181	22873	49.09
2008-2009	17360	23727	45.98
2009-2010	18472	25106	43.42

Source: World Development Indicators (online)

Considerable changes have also been observed in the sectorial composition of Bangladesh's economy over the last 30 years. Service and Agriculture were two prominent sectors in the period between 1980 and 2000 while Industry was the lagging sector in terms of contribution to GDP in the same period. To illustrate it

more, the contribution of industry to GDP was nearly 20% whereas services and agriculture accounted around 50% and 30% respectively. However, from the beginning of the 21st century, the share of industry has surpassed the share of agriculture and rose moderately during the last decade. The average growth rate in the services sector throughout the period seems to be much the same with a rate of around 50% (see figure 3-1). Thus, the period since 1980 to 2010 can be characterized by higher growth rate in industry and declining trend in agriculture.

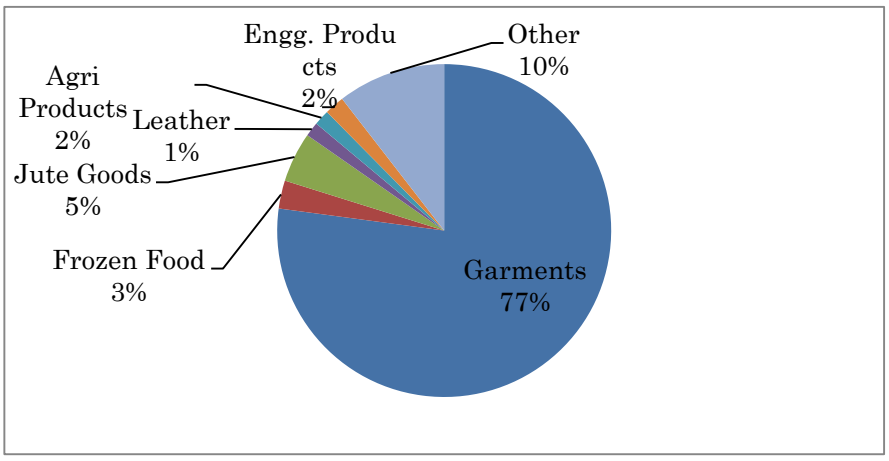
Figure 3- 1 Trend of sectorial composition of GDP



Source: World Data Bank (online), designed by author.

The industrial growth of Bangladesh for the last couple of decades was led by the manufacturing sector in general and the garment industry in particular. If the industry-wise export of Bangladesh is analyzed, the contribution of Bangladesh garment industry will be manifested. In 2009, the garment products accounted 77% (US$16,204 million) of the total export of Bangladesh while jute, the 2nd largest exported item, consisted only 5% (US$1050 million). Besides garment and jute, other mention-worthy exported items such as frozen food, agricultural products, engineering products and leather were US$ 630 million (3%), US$420 million (2%), US $420 million (2%) and 210 million (1%) respectively (see figure 3.2). So from this statistics, it is clear that the lion share of industrial export is earned by the garment industry.

Figure 3- 2: Manufacturing export of Bangladesh in 2010.



Source: Export Promotion Bureau of Bangladesh (EPB, 2010)

3.2. Development of Bangladesh Garment Industry

Traditionally, Bangladesh has reputation in the world in making some special clothes such as Dhaka Moslin and very beautiful fabrics. Both men and women in Bangladesh have expertise on weaving the garment skills in weaving and sewing have been passed on from generation to generation and the country has successfully adapted them into modern garment factories. Thus, Bangladesh has a long and successful history of domestic garment.

While Bangladesh has a famous history in making decent garment for the domestic market, the export-oriented garment industry of Bangladesh started when the first shipment of Bangladesh garment export was made by the Reaz and Jewel garment in 1977. In the same year, Desh Company, the largest garment company of that time, came into operation in Chittagong (Quddus and Rashid, 2000). However, the real turning point for the Bangladesh garment industry is considered when the MFA came into practice in 1985. Many foreign investors particularly from Korea, Taiwan, and many other East Asian countries were attracted by the unused quota and abundant cheap labor of Bangladesh (Abras, 2011). These foreign investors trained the unskilled labor, brought new machinery

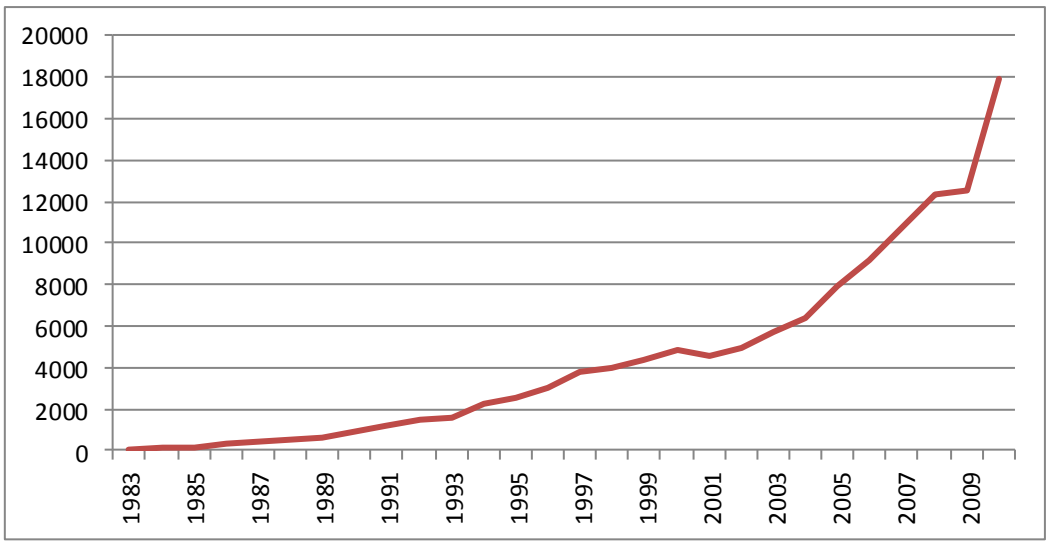
and technology which resulted in the overall garment productivity in Bangladesh. Moreover, a number of incentives from the government such as low lending interest rate, import substitution policy and low corporate tax attracted many domestic investors in this sector. So, both domestic and international trade environment were conducive to the initial development stage of Bangladesh garment industry.

Subsequently, the growth of Bangladesh garment industry accelerated even more when many developed countries such as the EU, U.S, Canada, and Australia removed their quota restriction on Bangladesh's garment export. Quota restriction removal process was initiated by the EU in 1986 through a successful negotiation between Bangladesh and EU's officials. This quota free access to the European markets stimulated Bangladeshi garment exporters to mostly export in the EU market and it contributed to the substantial growth of Bangladesh garment industry in the late 1990s. Later on, in 2003, the U.S. also removed its restrictions on the Bangladeshi garment export. Consequently, Bangladesh got duty free access to the U.S market which contributed to the rapid growth of exports to the US. Thus, the U.S became the 2nd largest export destination of the Bangladesh's

garment products. Moreover, the withdrawal of Australia and Canada's quota restriction in the year of 2002 and 2003 respectively had also a considerable effect on the Bangladeshi garment export. By using quota free access in these countries, Bangladesh garment industry has enjoyed an exponential growth during the period of 2000-2005.

From the period of MFA phase out in 2005, the Bangladesh garment has been growing very smoothly and there was no negative growth over the last six years. Though there were many challenges and obstacles in this post-MFA period, Bangladesh managed to overcome these challenges and become the largest exporter of garment after China in 2011 (WTO, 2011)

Figure 3- 3: The export trend of Bangladesh's garment (in US$ million)



Source: Author's calculation based on statistics provided by BGMEA (2011)

Table 3. 5: Major Events in Bangladesh Garment Industry from 1977-2011

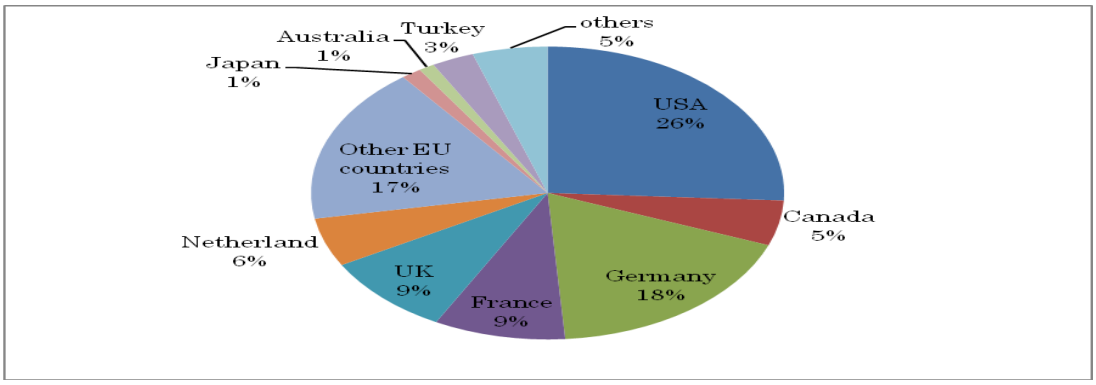
Year	Event
1977-1980	Infant Industry and Steady Growth
1981-1984	Moderate Growth Stage
1985	Imposition of Quota by France, UK, Canada, U.S.A
1986	A negotiation to relax quota was successful and France, UK withdrew their quota mostly
1987	Advisory committee was formed by Bangladesh government in order to cope with quota restriction.
1987-1990	A considerable development in Knitwear export.
1990-1994	Exponential Growth Stage
1995	Apparel Industry moved to ATC from MFA era. A sharp turn down of apparel s export
1996-2000	Moderate Growth due to flood and natural disaster
2001	China joined the WTO, garment sector expected challenge after MFA phase out in 2005.
2002	Duty free and quota free access in Australia Market
2003	Quota free access in US and Canadian market
2004	First Ever Bangladesh Apparel Fair in Tokyo, Japan
2005	MFA implementation ended and World Garment markets opened up Bangladesh government launched a Post-MFA Action Plan which included quality and capacity enhancement goals
2006	Government package of $100 million to cope with post MFA competition.
2007	Severe labor unrest and disruption took place demanding higher wage
2008-2009	Total export was expected to decrease due to financial crisis in major markets. However, garment industry enjoyed 15% growth rate in this crisis period
2010	Minimum monthly wage increased to $43 from $24 Bangladesh became world's 3rd largest garment exporter.
2011	46 garment products got duty free access in Indian market Bangladesh became world 2nd largest garment exporter.

Source: Data adapted from Quddus and Rashid (2000); Haider (2007); BGMEA website.

3.3. Market constitution

The export markets of Bangladeshi garment products are highly concentrated on the two major markets: EU and U.S. Bangladesh's export to its major export markets: EU, U.S, Canada and others were US$7,190 million (58 %), US$3628 million (26%), US$ 596 million (5%) and others US$790 million (10%) respectively in 2010-2011 (BGMEA, 2011). In the EU countries, the export to the Germany was US$ 2000 (18%) which is the highest followed by France (9%) and the UK (9%) at the export amount of US$953 million. Among others, Turkey and Japan are the biggest emerging markets accounting for US$86 million (3%) and US$173 million (1.6%) respectively (see Figure 3-4).

Figure 3- 4: Market Composition of Bangladesh Garment in 2010

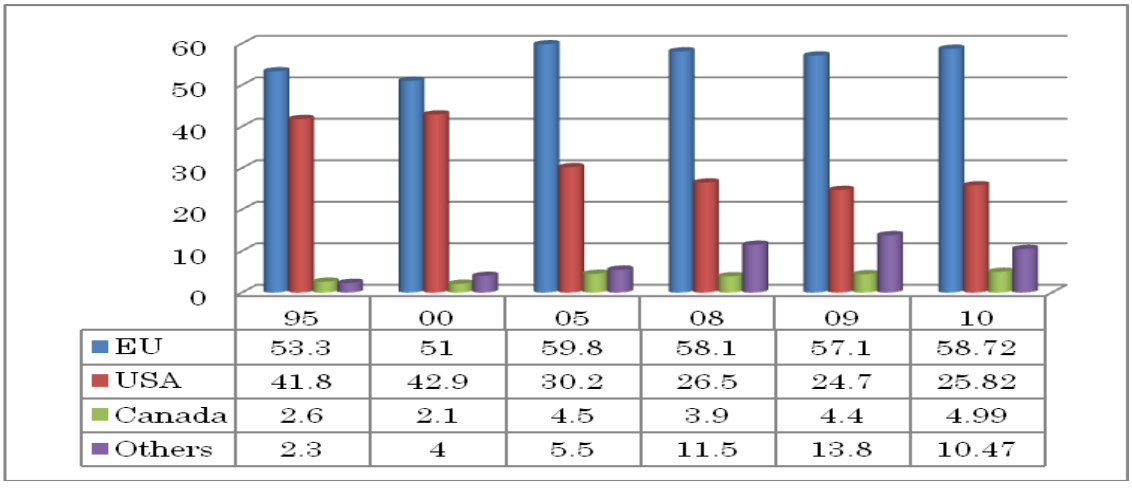


Data Source: Author's calculation based on BGMEA data.

Moreover, if the market composition trend of the Bangladeshi garment industry is analyzed from the historical point of view; some significant changes can be

observed. For instance, the EU has been the most important export destination for the Bangladeshi garment and the export ratio to the EU increased very gradually over the last couple of decades. In 1995, the EU market accounted for 53% of the total garment exports while it increased to 59% in 2010. So, it increased by 6% for the last 15 years. The second largest export market is the U.S. However, the U.S market share has declined from 42% in 1995 to 26% in 2010. The export to Canada has gradually been increasing with the share doubling during the period of 1995-2010. Moreover, the export to the newly emerging markets such as Australia, Japan, Brazil, etc. have increased almost five times over the same time period (see figure 3-5). From this analysis, it is evident that Bangladesh has been managing to diversify its market without over-relying on any particular market.

Figure 3- 5: Market Share Trend of the Bangladesh Garment Industry between 1995 and 2010.



	95	00	05	08	09	10
EU	53.3	51	59.8	58.1	57.1	58.72
USA	41.8	42.9	30.2	26.5	24.7	25.82
Canada	2.6	2.1	4.5	3.9	4.4	4.99
Others	2.3	4	5.5	11.5	13.8	10.47

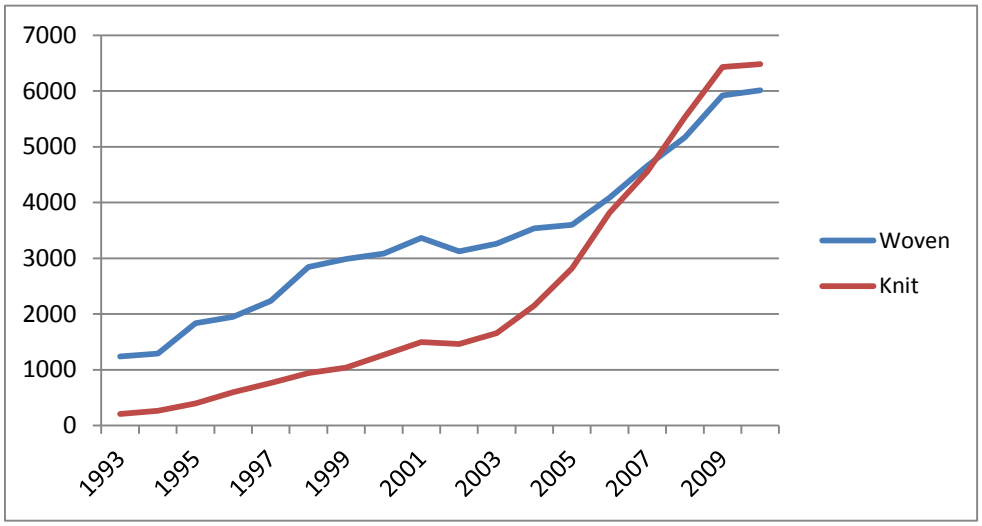
Source: Author's calculation based on Bangladesh Statistics Bureau.

3.4. Types of the Garment Products

The garment products are mainly divided into two broad categories which are knitwear and woven[2]. Historically, Bangladesh focused on producing the woven garment but in recent years Bangladesh has been more successful in the knitwear production as well. In 1992, the woven exports accounted for 86 percent of total garment exports whereas export of knitwear product was only 14 percent. However, from that time, the share of the woven product started to decrease and the share of the knit products started to increase consistently. By 2006, the knit and woven accounted for an equal share of the total garment exports. In 2009, the share of the knitwear export surpassed the share of the woven and Bangladesh has become the second largest knitwear exporter in terms of volume in 2010 only behind China (see figure 3-6).

[2] Knitted fabrics are made of one long continuous thread worked into interlocking loops. Woven Fabrics are composed of two sets of yarns. One set of yarns, the warp, runs along the length of the fabric. The other set of yarns, the fill or weft, is perpendicular to the warp. Woven fabrics are held together by weaving the warp and the fill yarns over and under each other.

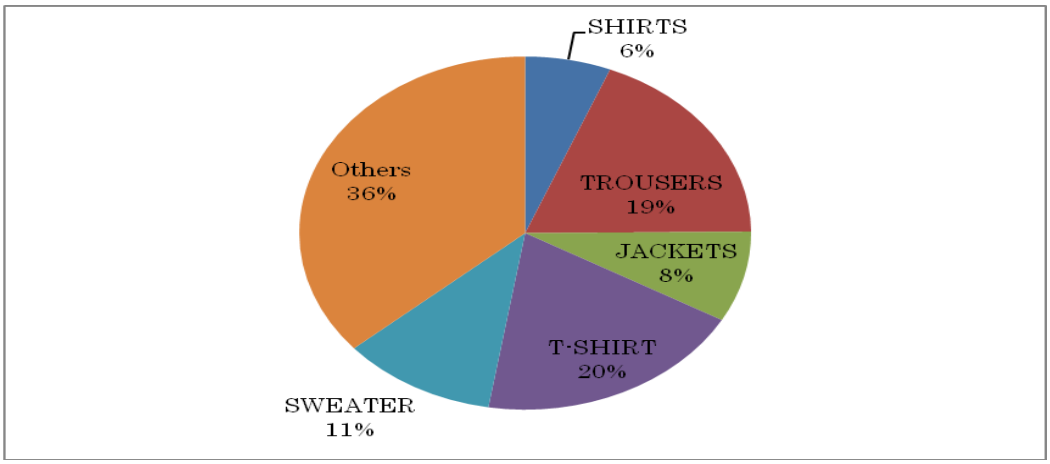
Figure 3- 6: The Export Trend of the Knit and Oven Products (in million US $)



Source: Author's calculation based on Bangladesh Statistics Bureau data.

The garment export of Bangladesh both in the knit and woven is largely dependent on few items. T-shirt, Polo shirts, Skirts, Shorts and Pants are the very famous among the knitwear products and Shirts, Pants, Trousers and Jackets are mentionable among the woven products. From both categories, Shirts, T-shirts, Trousers, Jacket and Sweater are the most popular products that Bangladesh has been exporting. In 2009, major export items such as shirt, jacket, sweater, trouser, t-shirt were US$993.41 million (6%), 1350.43 million (8%), 1795.39 million (11%), 3035.35 million (19%), 3145.52 million (20%) respectively (see figure 3-7)

Figure 3- 7: Main Exported Items of the Bangladesh Garment in 2009

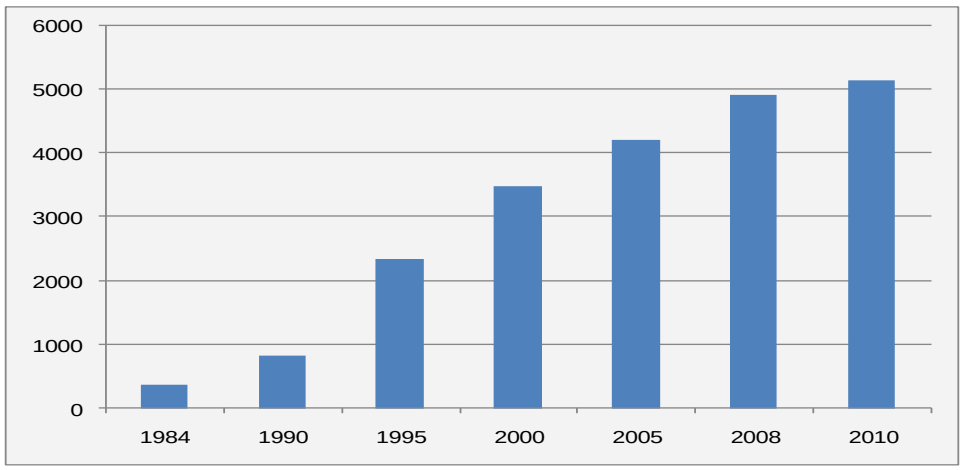


Source: Bangladesh Export Promotion Bureau (BEPB, 2009)

3.5. Firms and Employment of the Garment Sector in Bangladesh

The garment sector has been enjoying a steady growth rate over the last three decades. Accordingly, the number of enterprises increased dramatically over the same period. For instance, the industry consisted of only 30 enterprises in the year 1980; but, at the end of the year 2010, there were over 5000 enterprises. Every year, the garment sector brings nearly 100 new firms on an average in this industry (See figure 3-8). The entrance of these new firms has intensified the competition which results the high quality products on one hand while it promotes the diversification on the other.

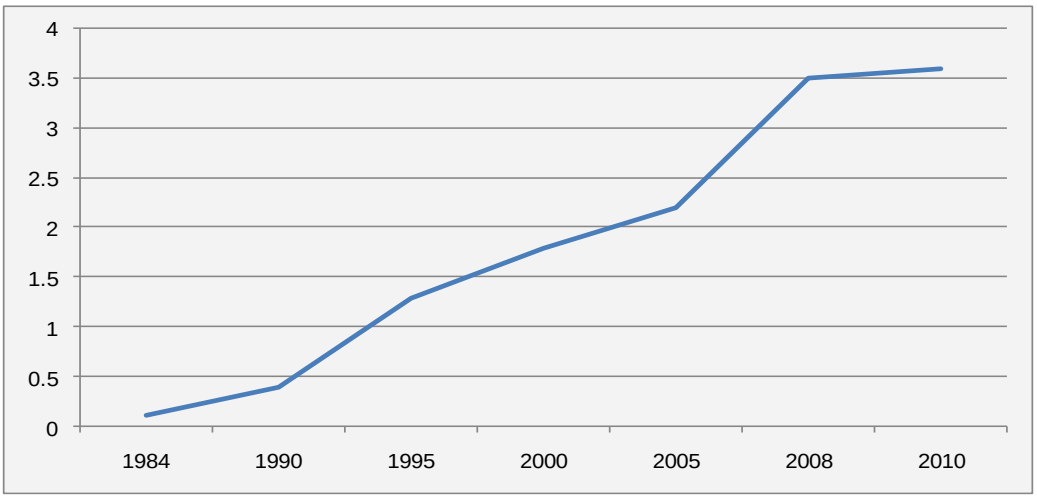
Figure 3- 8: Number of Garment Factories



Source: Author's calculation based on BGMEA statistics

The number of employees in the garment sector of Bangladesh has also been rising along with the industry expansion. While the industry was in its infant stage in the year of 1983, the number of employees was 0.04 million. However, in the year 2010, around 3.6 million people were employed in the garment sector (see figure 3-9). Furthermore, the textile industry, a subsector of the garment industry has also played a very important role in the employment creation. A study pursued by the Department of Textile of Bangladesh (2009) found that almost half a million people are engaged in the textile sector. From these statistics, it is evident how the garment and its subsectors are important to Bangladesh in terms of employment generation.

Figure 3- 9: Employment in the Garment Sector (in millions)



Source: Author' calculation based on BGMEA (2011)

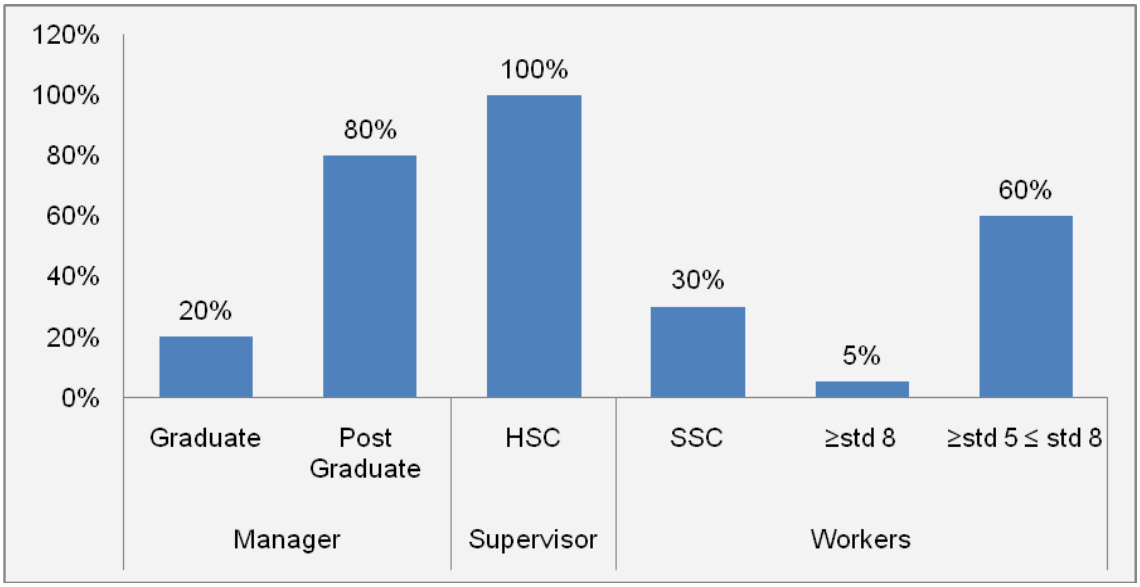
Analysis of the current employment status of the Bangladesh garment industry shows that two basic characteristics are worthy to mention. First, the share of women employed in the sector. According to Ahmed (2009), the numbers of women employees were 80 percent out of the total employees in this sector in 2000. However, a recent study by Abras (2011) found that the female employees have been decreasing since 2010 and it decreased to 54 percent in 2009. There are couples of reasons for decreasing the female intensity of employment in the garment sector of Bangladesh. The first one is related to changes in the composition of apparel exports from woven to knit *(ibid).* To illustrate it more, the nature of work in the woven segment suits with women rather than men as the woven segment is highly concentrated on cutting and weaving. On the other hand,

the knit segment is highly depended on operating complex machineries and to operate such machineries, men are always preferable and more suitable than women. Another reason could be the increasing participation of female workforce of Bangladesh in high skill and entrepreneurial activities (Hossain and Tidshel, 2005). The participation of female workers in educational and skill-developing activities has increased significantly during the last decades which results the increasing trend of women workforce in joining the high skill and entrepreneurial job and the decreasing in low skilled activities such as the garment weaving.

Second, the education level of workers in the Bangladesh's garment sector. The level of education in garment industry is satisfactory in managerial and supervisory level. However, the level is quite low among workers. A study conducted by Uddin (2006) categorized all the garment employees into three: manager, supervisor and general workers in order to know the education level of Bangladeshi workers. At managerial level, he found that most of the managers had a graduate or post graduate level of education. The level is much higher compared to the other garment exporting nations. At supervisor level, he found all supervisors had Higher Secondary School (HSC) level education. In contrast, at

workers level, he found that almost 60 percent of the workers had a below "standard eight level" of education which is comparatively lower than the other garment exporting nations (see figure 3-10).

Figure 3- 10: Level of Education



Source: adapted from Uddin (2006) p-68
Note: std 5 = Elementary School; std 8 = Junior High School; SSC= High School; HSC= Senior high school.

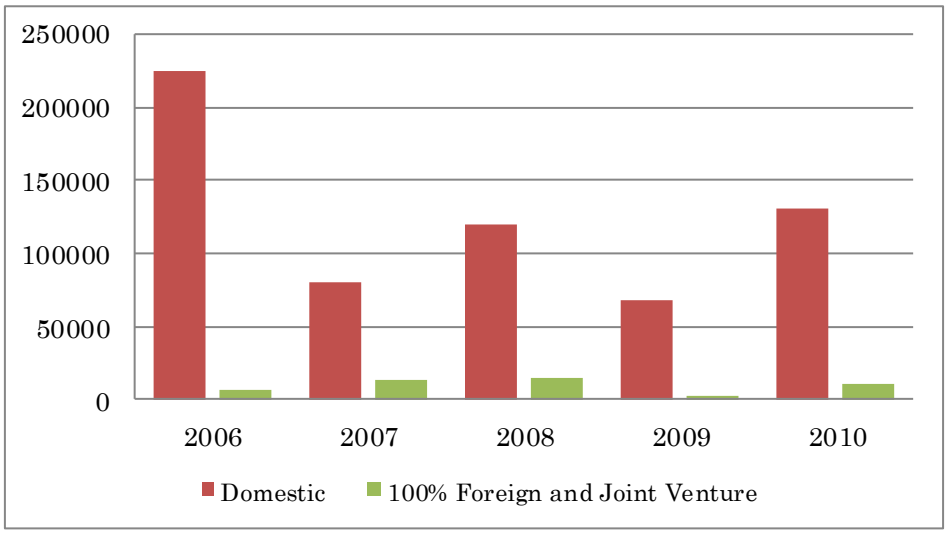
3.6. Ownership and Investment:

While the export oriented garment industry of Bangladesh was initially led by the foreign owned firms, the industry is currently dominated by the locally owned firms. According to the Dunn (2008), the number of fully or partially owned foreign companies was 83 in 2006 whereas the number of locally owned firms was more than 4000. It seems that the number of foreign firms was quite fewer

compared to the domestic firms. The huge difference between the locally owned firms and foreign owned firms is partly due to the industrial policy of Bangladesh government as foreign direct investment (FDI) was only allowed in the Export Processing Zone (EPZ). Through the partial FDI restriction, the local entrepreneurs were given opportunities to invest in domestic industry which accounted for the growing number of domestic firms.

From 2006, it was expected that aggregate FDI in garment and textile sector was to increase considerably as foreign investors were not to face any restrictions thereafter. However, the gross investment analysis of 2006 to 2010 in Bangladesh's garment and textile industry indicates that the foreign investment is also very low and there was no significant increase in the restriction free period (see figure 3-11).

Figure 3- 11: The trend of foreign and domestic investment in garment and textile sector of Bangladesh



Source: Bangladesh Board of Investment (BBI, 2010).

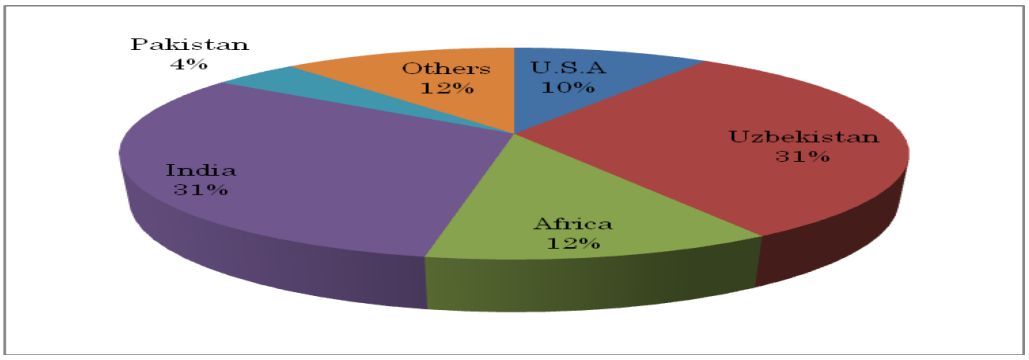
3.7. Backward Linkages

Basically the backward linkages of the garment industry consist of four stages namely cotton production, yarn production, weaving and knitting, and dying, printing and finishing. This study analyzes all of these four stages of backward linkage in order to understand the current status and trend.

Cotton is the primary stage of backward linkages of the garment industry. The performance of Bangladesh in the cotton production is in a dreadful position due to the land constraints. While the cotton production needs a vast amount of land,

the total area of Bangladesh is very limited (144,000 square kilometers). As a result, Bangladesh is in comparative disadvantage position in the cotton production which made the country over-dependent on cotton import. For instance, the garment sector of Bangladesh consumed 842,000 metric ton of cotton in 2010 where as domestic supply was only 12,000 metric ton. The rest was imported mainly from Uzbekistan (31%), India (31%), Africa (12%), USA (10%) and Pakistan (4%) (See figure 3-12)

Figure 3- 12: Cotton Imported Countries of Bangladesh in 2010.

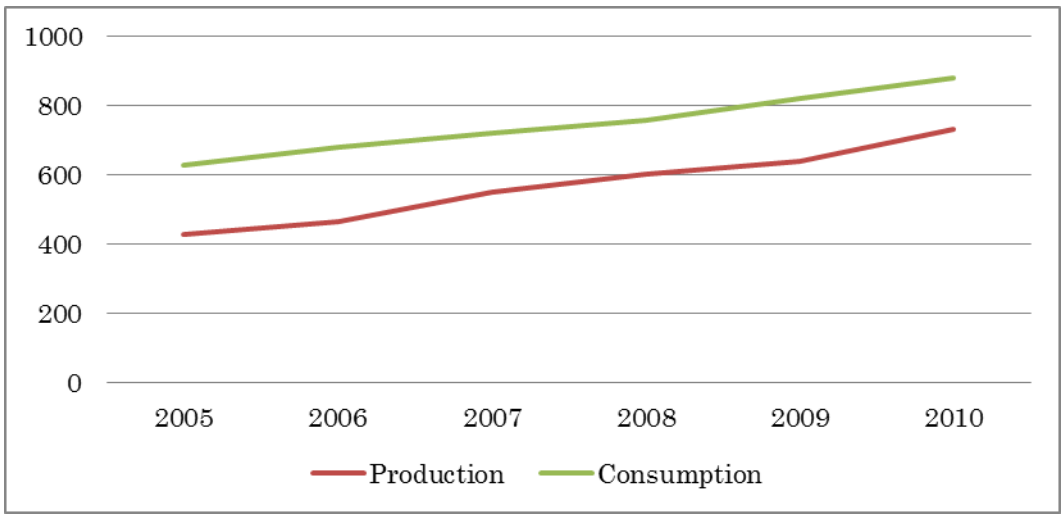


Source: Bangladesh Cotton Development Board (BCDB, 2010)

Yarn production is the second stage of backward linkages for the garment industry. Regarding the yarn production, Bangladesh has achieved a remarkable development during the last couple of decades. For example, while the domestic production of yarn was 39 million kg in 1974, it increased to 731 million kg in 2010 (BTMA, 2011). So, the yarn production in Bangladesh has grown very

rapidly between 1974 and 2010. However, this rapid growth is not enough to meet the yarn demand in the garment sector. According to the Bangladesh Textile Mills Association (BTMA), Bangladesh used 880 million kg of yarn in 2010 whereas the domestic supply was 731 million kg. The gap between the domestic demand and supply is still large (see figure 3-13) and this gap is met by the importing from India, Pakistan, Thailand, and China.

Figure 3- 13: Yarn consumption and production in Bangladesh ('000'tons)

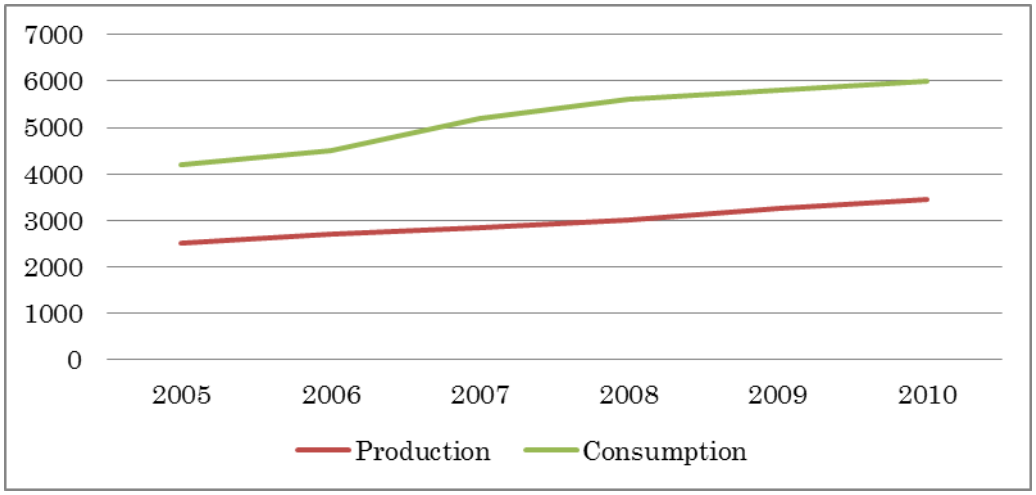


Source: Bangladesh Textile Mills Association (BTMA, 2011)

The next stage of backward linkage of the garment is weaving and knitting where yarn is converted to fabric. Fabric is the most important raw materials for the garment production which accounts 75 percent of the garment cost. Figure 3-14 compares the domestic consumption and production of fabric. According to this figure, the domestic production has increased from 2,500 million meters in

2005 to 3,450 million meters in 2010 while the domestic consumption of fabric has increased from 4,200 to 6,000 million meters in the same period of time. Therefore, there was a consistent gap between the domestic supply and demand. In order to meet this gap, Bangladesh is dependent on import mostly from China, India, Pakistan and Thailand.

Figure 3- 14: Fabric consumption and production in Bangladesh (in million meters)



Source: BTMA(2011)

Dyeing, Printing and Finishing is the final stage of the backward linkages of the garment where the fabric is used either for the domestic market or in the garment sector for export purpose. Bangladesh is only self-sufficient in this units and all the local suppliers are able to dye, print and finish the product both in terms of quality and quantity (Abras, 2011). At present, Bangladesh has 232 dyeing,

printing and finishing units which can supply 2,200 million meters. However, only a few units can carry out proper dyeing due to the scarcity of dyeing technology.

From the above analysis, it is clear that the current condition of backward linkages stages of the Bangladeseh's garment industry are vulnarable and highly dependent on import which could hamper the sustainable growth of garment exports. Hence, Bangladesh should give more attention on the development of backward linkages in order to sustain and promote its current growth in the long run.

3.8. Problems Surrounding Garment Sector:

Though the garment sector of Bangladesh has been growing impressively and its contribution to the national GDP has also been increasing remarkably, this sector is facing a lot of problems. As discussed in the backward linkages section, Bangladesh imports most of its raw materials from abroad and this dependency hampers the real development of the industry. In the employment section, it is also observed that majority of the workers do not have enough education and skills thus their products are often of lower quality. Likewise, Bangladesh needs

to diversify its products. In the world garment market, 115 to 120 items of garment are in demand while Bangladesh supplies only 10 to 15 products (BGMEA, 2011). Hence, product diversification can lead Bangladesh to an even better position and ensure sustainable growth in this industry.

Furthermore, acute shortage of power particularly the electricity and gas supply, political instability, poor infrastructure including port services, corruption and low access to credit often hamper the production and export (Bhattacharya & Rahman, 2000). However, surpassing all these problems, labor unrest, a common phenomenon in Bangladesh garment sector, has become severe threat to its growth for the last 5-6 years (Ahamed, 2009). A number of reasons can be attributed for the labor unrest in the Bangladesh garment industry. Among these, the first and foremost is the owner`s misconduct to the labor in terms of financial and other incentives. In addition to this, rumors, conspiracy from home and abroad are also often blamed for causing labor unrest.

Irrespective the cause of labor unrest in the garment sector, the negative impact of it is beyond our estimation. If the labor unrest continues, all the stakeholders of

the industry will severely be affected. International buyers will cancel their orders and divert it to other countries. Consequently, employees lose their jobs, owners go out of business and the government will be deprived of foreign currency. Hence, the potential loss of labor unrest could be catastrophic to the whole economy.

If Bangladesh wants to increase its share in the global market and sustain its present growth in the future, all of the above-mentioned problems must be solved as early as possible.

3.9. Conclusion

The garment industry of Bangladesh has experienced an exponential development over the last three decades. The industry has sustained its growth regardless of pessimistic anticipation and adversities. The industry has not only been serving the country's economy as a significant source of the foreign currency earner, but has also generated employment opportunities and women empowerment. As the Bangladesh’s economy is largely dependent on the garment industry, the policy makers of Bangladesh should adopt time-demanded policy in order to sustain and accelerate the present growth.

Chapter Four

Research Methodology

This chapter deals with the whole procedure of this thesis – how the research has been conducted, how the empirical findings have been organized and how the analysis has been carried out. At first, this chapter explains the research design, source of data and hypothesis development and testing. Then, it describes the research instruments: econometric model and questionnaire survey in detail. Finally, the chapter is concluded by explaining some limitations and difficulties faced while conducting the research.

4.1. Research Design

Designing the research approach to fit the chosen methodology is of great importance. For this study, we consider both the quantitative and qualitative analysis by using the primary and secondary data to access the determinants of the competitiveness of the Bangladesh garment industry in the post-MFA period.

Based on the literature review, this study considers both macro-economic factors and industry-specific factors that could be important for analyzing the

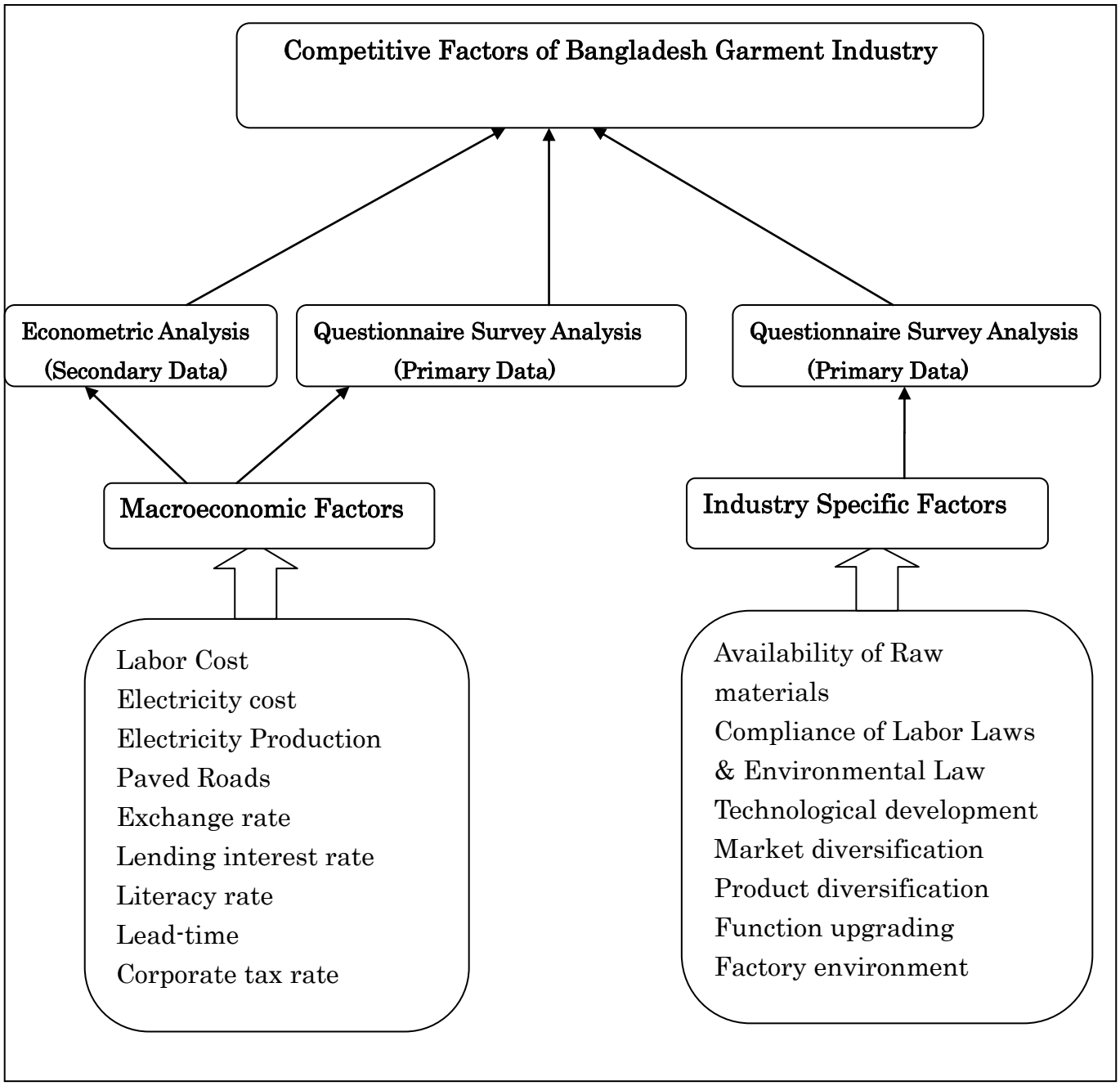
growth of the Bangladesh garment industry. In macro-economic factors, this thesis focuses on the labor cost, labor force, electricity production, electricity cost, paved roads, lending interest rate, literacy rate, inflation, exchange rate, lead-time and corporate tax rate. With regard to these macro-economic factors, an econometric analysis has been carried out to know the impact of macro-economic factors on the export performance of Bangladesh garment industry. The econometrics analysis has been done fully based on secondary data.

However, the secondary data that we found are very limited to analyze all the important factors of the garment industry competitiveness. For example, corruption is a very important factor which has significant effect on the Bangladesh's export performance. However, due to the lack of proper data, corruption could not be included in our econometric model. Hence, primary data is needed to cover all of the factors of competitiveness of the garment industry as well as explaining the real condition of the results. By considering the importance of the primary data, this research collects the primary data through questionnaire survey which was analyzed by using different statistical parameters in order to verify and validate the findings from secondary sources. Inclusion of primary data

analysis provides an exclusive, original and valid output to analyze the effect of macro-economic factors on the growth of Bangladesh garment industry

For the industry-specific factors, this study gives importance on the availability of raw materials, compliance to international labor and environmental laws, labor unrest, technological development, market diversification, product diversification, functional upgrading, role of the international buyers and market access policy. Regarding these industry-specific factors, it is very difficult to collect the secondary data from secondary sources. Therefore, this study solely depends on the primary data collected through questionnaire survey to analyze the impact of industry-specific factors on the export performance of the Bangladesh garment industry.

Figure4- 1: Research Design



Source: Developed by Authors

4.2. Data Collection

As we discussed before, this thesis utilizes the quantitative and qualitative data together from both the secondary and primary sources. The quantitative data is a kind of information that can be expressed in numerical numbers while the qualitative data is a type of information which explains the things in terms of category or quality. In this thesis, most of the quantitative data are collected from the various reliable sources such as the BGMEA, Ministry of Finance, Bangladesh; Bangladesh Statistics Bureau (BSB), Bangladesh Bank, World Development Indicators (WDI), World Bank, World Governance Indicators (WGI), World Bank, International Monetary Fund (IMF), United States Agency for International Development (USAID) and Euro stat.

Besides the quantitative data, the qualitative data is also used in this thesis in order to understand and generate the analytical framework, model development and questionnaire preparation. The qualitative data is collected from the different academic published articles, working papers, presentation, and books.

4.3. Hypothesis Development

This thesis deploys hypothesis development and testing in order to interpret the findings from both the secondary and primary data. Considering the different

theories and the objective of this study, this thesis develops the following hypothesis.

Table 4. 1: Hypothesis

Macro-economic Variables			
Variable	Null Hypothesis (H0)	Alternative Hypothesis (Ha)	Expected Sign
Wage Rate	has no significant effect	has significant effect	+
Interest Rate	has no significant effect	has significant effect	+
Infrastructure	has no significant effect	has significant effect	_
Corporate tax	has no significant effect	has significant effect	+
Exchange Rate	has negative effect	has positive effect	_
Lead-time	has no significant effect	has significant effect	_
Corruption	has no significant effect	has significant effect	_
Industry-specific Factor			
Market Access Policy	has negative effect	has positive effect	_
Technological Development	has negative effect	has positive effect	_
Compliance	has negative effect	has positive effect	_
Labor Unrest	has no significant effect	has significant effect	_
Raw materials	has negative effect	has positive effect	_
Market Diversification	has no significant effect	has significant effect	_
Functional Upgrading	has no significant effect	has significant effect	_

4.4. Hypothesis Testing

There are many ways and methods available for hypothesis testing. Among these methods, *t* test is the most traditional and popular for the econometrics model (Gujrati, 2004) and descriptive statistics such as percentage, mean, and standard deviation are the widespread ways for questionnaire survey (Pintrich et. al.1991). This thesis employs both of these two methods to test the above-mentioned hypothesis and understand the influence of macro-economic variables and industry-specific factors to the garment export performance. The details about these methods are described in the latter part of this chapter.

4.5. Research Instrument

Research instrument refers to an assessment tool for evaluating a particular phenomenon, such as descriptive statistics, an econometric analysis or a set of guiding principles in order to get the valid and reliable information. This thesis, as we discussed before, covers econometric analysis and descriptive statistics to find the competitive factors of the Bangladesh garment industry growth in the post-MFA period.

4.5.1. Econometric Analysis

This section describes the econometrics approach, which is one of the quantitative methods employed in this study. Specifically, this section elaborates the model development, data processing, data testing and hypothesis testing.

4.5.1.1. Econometric Model

Based on the prior discussion in both the literature review and research design part, this study suggests the following equation for the garment export of Bangladesh in year t (garment exports of Bangladesh,t)

The model employed in this study is

$$Garment\ export_t^h = X_t\beta + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (i)$$

Where β is a vector of regression coefficients to be estimated, X_{it} is a matrix of independent variables and the ε_t represents vector of random error term. Breaking equation (i) according to our research design

$$Garment\ export_t^h = \beta_0 + macro\text{-}economic\ factors + + \varepsilon_t \ldots\ldots\ldots (ii)$$

Based on our literature review, the macro-economic factors that are important for the garment industry are the wage rate, availability of labor force, paved roads, availability of electricity, electricity cost, exchange rate, lending interest rate, literacy rate, lead-time (days required to export), inflation and corporate tax rate. Hence, by considering all these macro-economic factors in our regression, we can construct our primary model

$$Garment\ export_t^h = \beta_0 + \beta_1 wage\ rate + \beta_2\ availability\ of\ labor\ force + \beta_3\ paved\ roads + \beta_4\ availability\ of\ electricity + \beta_5 electricity\ cost + \beta_6\ exchange\ rate + \beta_7$$

lending interest rate $+\beta_8$ *days required to export*$+\beta_9$ *literacy rate*$+\beta_{10}$ *inflation*$+\beta_{11}$ *corporate tax rate*$+\varepsilon_{t...}$ ……..*(iv)*

Where, t denotes time which t = 1 to 25; $\beta_0, \beta_1, \beta_2 ... \beta_{11}$ are constant coefficient.

4.5.1.2. Estimation Techniques

This thesis carries out a time series regression analysis by using the Ordinary Least Square (OLS) method. The OLS regression analysis is a procedure for constructing a model under which several variables can bring into a linear equation in order to predict or forecast the relationship between dependent and independent variables. In this thesis, the OLS regression is used to forecast the relationship between the garment export growth and macro-economic factors performance in Bangladesh. The time series data from 1985 to 2010 will be processed for regression analysis by using Stata version 10.0. The reasons for selecting OLS regression method are as follows:

(i) OLS is the easiest and most understandable way to predict the behavior of dependent variable in correspondence with the change independent variables.

(ii) OLS analysis shows the strength of the relationship between the dependent and independent variables which is also very important in this thesis in

order to carry out the analysis

(iii) Other econometric model requires more wide-ranging and extensive series of data which is not found in Bangladesh garment industry.

4.5.1.3. Hypothesis Testing

For the purpose of hypotheses testing with regard to the econometric model, significance level such as 1%, 5% and 10% will take into account first. In every significance level, if the significance level is higher than the p value of variables, it suggests that H0 should be rejected and Ha should be accepted. In other words, the relationship between the dependent and independent variables is significant particularly at that significance level. Besides significance level, direction and degree of the relationship will also be taken into account. To illustrate it more, (+) sign means that the dependent variable has a positive relationship with independent variables whereas (-) means vice versa to measure the direction. For the case of the measuring the degree of relationship strength, coefficient value near 0 means that the independent variable has a weak relationship with the dependent variable while value near 1 indicates strong relationship.

4.5.1.4. Data Testing

According to Chatterjee, Hadi, & Price, (1999); Gujarati, (2003) and Greene, (2002); a linear regression model under OLS method should follow the following statistical assumption to confirm that data is valid and reliable for further analysis and prediction.

i) there must be no multicollinearity among the variables

ii) the model is properly specified by including all the relevant variables and excluding irrelevant variables

iii) the variables constructed the model must be linear

iv) the residuals must be normally distributed

v) the disturbance must be constant

vi) the variables must be stationary over the time period

vii) and the variables should have uniformity of variance over error term.

In order to meet the above-mentioned assumptions, this thesis has conducted the multicollinearity test, model specification test, normality test for residuals, linearity test, autocorrelation test, unit root test, and heteroskedasticity test. The explanation regarding all of these tests are described below

4.5.1.4.1. Multicollinearity Test

The most important assumption for OLS regression is that the independent variables should not be highly correlated with each other. If one of the independent variables is highly correlated with the other variables of the same model, then it is said that the multicolleniarity problem exist in the model. In the existence of multicollinearity problem, model may give wrong or erroneous result and thereby prediction from such model may lead to invalid explanation. To illustrate the consequence of the multicollinearity, Agresti and Finlay (2007) stated that a model which has multicollenarity problem cannot give any reliable and trustworthy prediction until the multicollinearity problem is solved. Therefore, detection of Multicollinearity problem and solution for it is very important.

In order to detect the multicolleniarity problem in OLS model, there are many statistical tests available such as partial correlation test, pair wise correlation test and VIF test. However, VIF test is the most common and popular among the recent econometrics literature and we have also used VIF test in this thesis. According to the VIF test, if the values of any variables are greater than 10, it is usually considered that the variable has the multicolleniarity problem with any

other variable or variables of the model. On the other hand, if the value of any variables is less than 10, then it is said free from the multicolleniarity problem. To solve the multicollenarity problem, Gujrati (2004) advocates a number of solutions such as exclusion of highly correlated variables, alteration of variables, factor analysis etc.

4.5.1.4.2. Model Specification Test

This study has carried out model specification test through 'OVTEST' by using Stata 10 statistical software. The purpose of this test is to find out whether the model is properly specified by including all the relevant variables and excluding irrelevant variables. If the model is wrongly specified by either including some irrelevant variables or excluding some important variables, it will provide bias result. For example, if the relevant variable is omitted from the model, the consequences will be that the common variance they share with other inclusive variables may be incorrectly attributed to those variables. Furthermore, the error term will be inflated. On the other hand, if the irrelevant variable is included in the model, the common variance shared by the relevant and irrelevant variables

may also be wrongly attributed to them. In addition, the model specification errors could substantially affect the estimate of the regression coefficients.

4.5.1.4.3. Normality Test for Residuals

In the OLS method, one of the vital assumptions is that the error term should have normal distribution. Researchers have developed many tools to check the normality of residuals. However, the most widely used methods are "Shapiro-Wilk" and "Kernal Normal distribution" test. Regarding these two tests, the first one is based on non-graphical while the second one is graphical presentation. In this study, we have employed both "Shapiro- Wilk" and "Kernal normal distribution" test to identify normality of the residual terms. If both of the test results show that the residuals do not follow the normal pattern, then it is necessary to check the omitted variables, linearity and model specification.

4.5.1.4.4. Linearity Test

Linearity means the relationship between and the predictor and outcome variable should be linear. A linearity problem usually exists when the predictor variable is not normally distributed. Violation of linearity assumption would

seriously mislead the prediction. Therefore, the variables that are found in non-linear form must be corrected. To correct this, the non-normally distributed variable can be corrected by transforming the non-normally distributed variable into a normally distributed variable. There are many transformation models found in the literature to transform but the most common transformation method is the logarithm transformation.

4.5.1.4.5. Autocorrelation

Autocorrelation is the common problem in OLS regression analysis in time series data. Autocorrelation, which is also termed as a serial correlation, means that errors are correlated with different time periods. The existence of autocorrelation in any model not only violates the assumption that the errors are independent from different time period only but also causes standard error to be underestimated.

The most traditional statistical test for identifying autocorrelation is the Durbin Watson (DB) test and we also conducted DB test in this thesis. According to the Durbin Watson test, if the t-value is found near 2, it is considered that the model

has no autocorrelation. However, if the t-value is far away from 2, then the model is said to have autocorrelation and must be corrected by employing the Prais-Winston test can solve the autocorrelation problem.

4.5.1.4.6. Unit Root Test

This thesis has conducted unit root test to verify if the time series data are stationary or non-stationary. If the series are non-stationary, the OLS model will lead to spurious estimates. To make it clear, in a spurious regression model even if that model has a high R^2 and its t-statistic is significant, it does not have any economic meaning until the non-stationary problem is solved. So, considering this non-stationary problem, this study has carried out Augmented Dickey Fuller (ADF) test in order to detect whether the series has non-stationary problem or not. Regarding the treatment for non-stationary variables, proper steps have been taken to make the variables stationary.

4.5.1.4.7. Heteroskedasticity Test

One of the vital assumptions regarding the OLS regression analysis is uniformity of variance of error terms. In other words, an error variance should be constant over its observations in an ideal OLS regression. If this assumption is not

met by any econometric model, then the model is considered to have the heteroskedastic problem. There are two important reasons for the heteroskedastic problem in an econometric model (Berry & Feldman,1985). Firstly, if the model suffers omitted variable or linearity problem, then there is a high possibility to have the heteroskedastic problem. Secondly, if the model consists of any variables which has extreme value it may lead to the heteroskedastic problem.

The existence of the heteroskedasticity might have serious consequences on models prediction. The presence of the heteroskedasticity leads standard errors to be biased and misleading and accordingly, the estimation from the model would be biased. Therefore, detection and correction of the heteroskedasticity problem is important.

There are two most common statistical tools available to detect heteroskedasticity problem. The first one is the '*visual inspection'* by which error variance can be graphed visually. Another one is the '*Breusch-Pagan test* developed by Breusch & Pagan in 1979 which is the most popular in the recent econometric journal . In this thesis, we have used *Breusch-Pagan test.*

4.5.1.4.8. Cointegration Test

Cointegration is an analysis tool to examine the existence of correlation among non~stationary time series variables. If it is found that two or more non-stationary series have stationary linear combination, then the series are considered to be cointegrated. The presence of the cointegration can produce spurious correlation among the variables and thereby mislead the prediction. Therefore, the possible existence of the cointegration should be taken into account when the time series data is analyzed.

There are three types of tests available to test the presence of the cointegration in time series data. These are the Engle-Granger cointegaration test, the Johansen procedure and Phillips-OuliarisCointegration test. Among these test, Engle and Granger cointegration test is the most popular and in this study we have also employed this test. In this case, if we find the cointegration problem in our model, then we must follow Vector Error Correction Model (VECM) in order to solve the cointegration problem.

4.5.2. Primary Data Analysis

In this thesis, primary data has been collected through questionnaire survey. A well designed questionnaire has been developed in order to identify the competitive factors of Bangladesh garment industry growth in the post-MFA period. The reasons for choosing questionnaire survey are as follows.

Firstly, a questionnaires is a very easy and straightforward method for the respondents to response. Therefore, questionnaire system is very popular in Bangladesh and Bangladeshi respondents are very familiar with this form of survey. Secondly, we can easily access a lot of information within the shortest possible of time by using questionnaire, which could be difficult in other means of survey. For example, the questionnaire survey used in this thesis has four sections such as profile of the respondent firms, background information, and trade environment after MFA and policies. All of the important information regarding these four sections is gathered from the first sources with the shortest possible of time. Thirdly, questionnaire survey can be distributed without being physically present. Finally, questionnaire survey is easy to document and analysis compared to the other forms of survey.

The above-mentioned unique advantages of questionnaire motivated us to use questionnaire as a method for collecting primary data. In the latter part of this section, we briefly focus on the sampling, target respondents, questions and questionnaire design, data analysis method, hypothesis testing and validity and reliability of the questionnaire.

4.5.2.1. Sampling and Target Respondents

As we discussed in chapter 3, the number of firms in the garment industry in Bangladesh are around 5000. Due to the resource and time constraints, it was very difficult for us to cover even 5% of these total firms. Therefore, being practical, this thesis covers 70 firms which were selected purposely. In this case, we consulted with Bangladesh Garment Manufacturers and Exporters Association (BGMEA) to choose the sample firms so that this sample firms can represents all the population. Out of the 70 firms, 50 firms were selected from Dhaka where most of garment firms operate their business. Rests of the 20 firms were selected equally from Narayngonj and Chittagong.

In relation to the target respondents, this research targets president, director,

managing or representative director, or head of the each division who are decision maker as well as responsible for execution of decision. As 90% of the top level management of Bangladeshi firms have undergraduate or post graduate degrees (Uddin, 2006), it can be expected that the responded data is true, reasonable and thereby expressing the real situation of Bangladesh garment industry after the MFA abolition.

4.5.2.2. Design of the Questionnaire

While the questionnaire was being prepared for this thesis, the researchers always gave the importance on designing the clear, concise and easily understandable questions to answer. Moreover, the questionnaire of this thesis does not include any sensitive questions which might put the respondent in any embarrassing situation. Besides these, researchers have given full care and attention on the following matters in order to collect the required information.

Firstly, all necessary attempts are taken to minimize the potential error of the questionnaire data which occurs often due to the response effect and lack of interest of the respondents to response the questions. For example, we ensured all kinds of clarification and explanation so that the participant can answer the

questions with full understanding. On top this, a pilot project has been carried out to ensure that the respondents can understand and comprehend the questions. Secondly, proper sequence is maintained so that the respondents can easily get the logic of the questions.

Thirdly, strategic and close-ended questions are set up in order to reduce the number of invalid answer and understand the logic of the answer. Fourthly, ranking and rating questions are designed to understand the priority of the respondents attached to both macro- and industry-specific factors.

4.5.2.3. Questionnaire Measurement

There are four types of questions included in the questionnaire of this thesis. These types are dichotomous format questions, closed format questions, rating scale questions and importance format questions. In the dichotomous format questions, the respondent are requested to answer a number of simple questions such as by yes or no. For example, does the respondent know about the expiry of MFA? Or does the respondent firm still export after MFA? To measure the dichotomous format question, numbers (1 is for yes and 2 is for no) are

considered in order to analyze easily. In closed format questions, there are many multiple choices for respondent and he or she is asked to choose a particular one for his/her answer. Each of the multiple choices is assigned a particular number so that percentage or statistical estimation can be calculated in order to analyze the findings. Regarding the rating scale questions, we requested respondent to rate a particular issue on a scale that ranges from -5 to 5. Most of the competitive factors (both macro- and industry-specific factors) are evaluated with this range of ratings where -5 is for extremely unfavorable and 5 is for extremely favorable. From this range, mean value is calculated to know how each of the variables influences the competitiveness of the Bangladesh garment industry. The researchers use the following criteria in order to measure the variables by using separate 10 levels scale.

Table 4. 2: Criteria of measuring competitive factors.

Unfavorable ⟷ Favorable										
-5	-4	-3	-2	-1	0	1	2	3	4	5
Extremely Unfavorable	Very Unfavorable	Quite Unfavorable	Comparatively Unfavorable	Unfavorable	Average	Favorable	Fairly Favorable	Quite Favorable	Very Favorable	Extremely Favorable

Finally, in the important format questions, the respondents are requested to

rate the weight of different issues policies that could be important for increasing the competitiveness of the Bangladesh garment industry. In this format of questions, we use rating scale from 1 to 5 where 1 means not important and 5 means very important. The criteria for measuring important type questions are described as below.

Table 4. 3: Criteria for Measuring Important Format Questions.

Not Important ⟷ Most Important				
1	2	3	4	5
Not Important	Somewhat Important	Important	Very Important	Most Important

4.5.2.4. Data Analysis and Hypothesis Testing Method

This thesis has used Microsoft Excel in order to analyze the primary data, which will be presented in the next chapters. The methods which are used to analyze the data and hypothesis testing are discussed as below.

1. Descriptive statistics are used to present the background information such as the types of ownership, process of production, capital both current and at the time of establishment, number of employees, major export markets, and major sources of imported raw materials etc. Besides the descriptive statistics, pie chart, bar diagram are also used to present questionnaire data in the graphical presentation.

2. Different statistical estimation such as mean, standard deviation and percentage are applied to test the hypotheses of both macro-economic and industry-specific factors.
3. Finally, to use the mean value for ranking the strength and weakness of ranking format questions and importance format question, some steps are needed to follow. Firstly, interval is required which can be calculated by differencing the maximum and minimum value for the scale. Then, level is needed which can also be calculated by counting the total numbers from minimum value to maximum value. Once the interval and level are found, range of satisfaction rank can be calculated by dividing interval with level. The rank calculation procedure is illustrated as below.

Range of the satisfaction level = (Maximum value-Minimum value)/level

= {5-(5)}/1 = 10/11 = 0.90

Table 4. 4: Satisfaction level calculation

Range of Mean Score	No	Satisfaction level
(-5.00) – (-4.10)	1	Extremely unfavorable
(-4.09 – (-3.19)	2	Very Unfavorable
(-3.18) – (-2.28)	3	Quite Unfavorable
(-2.27 – (-1.37)	4	Comparatively Unfavorable
(-1.36) – (-0.46)	5	Unfavorable
(-0.45) – (0.44)	6	Average
(0.45) – (1.35)	7	Favorable
(1.36) – (2.26)	8	Fairly Favorable

(2.27) – (3.18)	9	Quite favorable
(3.19) – (4.1)	10	Very Favorable
(4.1) – (5.00)	11	Extremely Favorable

For the importance type question, the range of the each importance level will be

= (Maximum value-Minimum value)/level

= (5-1)/5= 0.90

Table 4. 5: Important Rank Calculation

Range of Mean Score	No	Level of importance
1.00 – 1.80	1	Not important
1.81 – 2.60	2	Somewhat important
2.61 - 3.40	3	Important
3.41 – 4.20	4	Very important
4.21 – 5.00	5	Most important

4.4.2.5. Validity and Reliability

Validity of a questionnaire means its ability to assess and explain what it is supposed to access and explain. In others words, a valid questionnaire can recognize easily the attribute, state or quality of what the researcher want to identify. Moreover, a questionnaire is considered as valid when it has no system or random error. In this thesis, our questionnaire provides the data and information of what we exactly wanted to measure. In addition, the data we have collected through this questionnaire is free from systematic and random error. Thus, it can be said the questionnaire has met all of the requirements of validity.

The reliability of any questionnaire means the consistency and accuracy of data which are gathered by questionnaire. It refers that a reliable questionnaire will produce the same answers and outputs if any respondent responses the questionnaire more than one time. It also means that the questionnaire would have similar answer if it were asked more than one person who has similar knowledge regarding the contents of the questionnaire. Thus, a reliable questionnaire is designed in such a way that every question is clearly understandable to the respondent. In this thesis, the questionnaire is prepared with utmost care by the researchers and included all kinds of explanation in order to avoid any misunderstanding of the respondents.

Moreover, researchers have considered only completely responded questionnaires for analysis. Any partially responded questionnaires or incomplete questionnaires have not taken into account in order to make sure that all data and information used in this thesis is accurate and comprehensive. Therefore, it can be said that the primary data used in this thesis is reliable and safe for further prediction.

Chapter Five

Empirical Results and Findings

This chapter presents the results derived from the econometric model and questionnaire survey. First, this chapter discusses the results from econometric model and then, it describes all major findings from the questionnaire survey.

5.1. Empirical results from the Econometric Model

The results of this section are designed based on the model and methods which are described in the methodology part. To recall, the primary model in this study is:

$$Garment\ export_t^h = \beta_0 + \beta_1 wage\ rate + \beta_2\ availability\ of\ labor\ force + \beta_3\ paved\ roads + \beta_4\ availability\ of\ electricity + \beta_5\ electricity\ cost + \beta_6\ education + \beta_7\ lending\ interest\ rate + \beta_8\ time\ required\ to\ export + \beta_9\ literacy\ rate + \beta_{10}\ inflation + \beta_{11}\ corporate\ tax\ rate + \varepsilon_t$$

Here, t denotes time (t = 1 to 25), $\beta_0, \beta_1, \beta_2 \ldots \beta_{11}$ are constant coefficient and the garment export is considered as dependent variable and all others macro-economic factors are considered as independent variables.

Based on this primary model, descriptive and statistical summary has been presented in the table 5.1.

Table 5. 1: Descriptive statistics of garment export, electricity cost of industry, lending interest rate, exchange rate, time needed to export, education, inflation, total tax rate, paved roads, wage indices, labor force, electricity production.

Variable	Obs	Mean	Std. Dev.	Min	Max
garmentsex~t	26	4083.443	3776.498	116.2	12496.72
eletricity~y	26	3.254231	.5953632	2.52	4.35
lendingint~e	26	14.96154	1.112862	12	16
exchangerate	26	48.46154	14.23301	28	70
timetoexport	26	37.5	6.087693	25	47
education	26	32.26462	11.98932	17.6	46.87
inflation	26	6.346154	2.65243	2	11
totaltaxrate	26	36.25	6.33443	27.5	45
pavedroads	26	18131.15	3741.885	11185	22378
wageindices	26	3034.346	1581.75	1641	6587
laborforce~g	26	17.80965	.1957575	17.46125	18.18069
electricit~n	26	1.49e+09	7.58e+09	22.23355	3.86e+10

Notes: Garment export is in million and labor force and electricity production are in logarithm format. Except these three variables, all other variables are expressed in real value format.

The purpose of the descriptive and statistical summary is to present the mean, standard deviation, minimum and maximum value so that one can get the exclusive information about all the variables. Moreover, it also shows the number of observations of all variables in order to ensure that any data regarding any variables is not missing in the model. In this case, the descriptive and statistical summary shows that all the variables have 26 observations, which confirms the

model does not miss any data regarding any variable or year. On top of this, the mean, standard deviation, maximum and minimum values of the table help to understand important information about the data.

After presenting the descriptive and summary, this study has conducted Variance Inflation Factor (VIF) test (see table 5.2) to check whether the variables have the multicollinearity problem or not. Under the VIF test, it is suggested that if any variables contains more than 10 VIF value, then the variable is considered to have the multicollinearity problem. The preliminary VIF test with all the independent variables of our model shows that most of the variables except the electricity production, lending interest rate and inflation have multicollinearity problem.

Table 5. 2: Results for the Multicollenearity test for primary model.

Variable	VIF	1/VIF
Labor force	273	0.003656
Exchange rate	147.05	0.006800
Paved roads	52.14	0.019178
Wage rate	43.74	0.022862
Corporate tax rate	36.14	0.027670
Electricity cost of Industry	33.55	0.029809
Education	30.25	0.033059
Time needed to export	25.19	0.039706
Electricity production	6.31	0.158600
Lending interest rate	2.6	0.385040
Inflation	2.09	0.479460
Mean VIF	59.32	

In order to avoid the multicolleniarity problem from our variables, one of the best ways is to exclude some variables which are highly correlated with each other. Hence, we have decided to drop the variables such as labor force, exchange rate, electricity cost of industry and education. After excluding these variables from primary model, once again VIF test is conducted and we found that all remaining variables have less than 10 VIF value which means that the remaining variables have no multicollinearity problem (see table 5.3).

Table 5. 3: Results for VIF test after excluding some variables.

Variable	VIF	1/VIF
Corporate tax rate	9.87	0.101317
Paved roads	9.32	0.107296
Wage rate	8.61	0.116144
Time needed to export	6.51	0.153609
Inflation	1.97	0.507614
Electricity Production	1.87	0.534759
Lending interest rate	1.73	0.578034
Mean VIF	5.70	

After rectifying the multicolleniarity problem, the new model is illustrated as follows

Garment $export_t^h = \beta_0 + \beta_1 wage\ rate + \beta_2\ corporate\ tax\ rate + \beta_3\ paved\ roads + \beta_4$ *availability of electricity* $+\beta_5$ *inflation* $+\beta_6$ *lending interest rate* $+\beta_7$ *time required to export* $+\varepsilon_t$.

Based on this new model, a number of specification and diagnostics tests such as model specification test, normality test for residuals, linearity test, autocorrelation test, unit root test, and heteroskedasticity test have been conducted and the results and explanation regarding all of these tests have been presented below.

5.1.1. Omitted Variable Test

After selecting the variables through solving the multicolleniarity problem, it is very necessary to examine whether the selected variables express the model perfectly or not. In this thesis, the omitted variable (OV) test has been conducted in order to find the existence of any irrelevant variables or the exclusion of any important variable that can be important to express the model better. According to the OV test, the null hypothesis is that the model has no omitted variable biased.

Table 5. 4: Result of Omitted Variable test

```
. ovtest

Ramsey RESET test using powers of the fitted values of garmentsexport
      Ho:  model has no omitted variables
                  F(3, 15) =      1.63
                  Prob > F =      0.2238
```

From the above OV test result, it is found that Prob >F=0.2238 which is greater than 0.05 at 5% significance level. Hence, it fails to reject the null hypothesis and thereby it can be concluded that the model has not included any irrelevant variables or excluded any important variables.

5.1.2. Linearity Test

This thesis uses STATA command `ladder` and `gladder in order to verify whether the variables have any non-linearity problem or not. P (Chi2) is considered to judge the linearity test which means that the higher the P (Chi2) is, the higher the linearity and vice versa. Moreover, linearity test offers proper transformation to solve non-linearity problem. With regard to the linearity test, the study found most of the variables in a linear form except the paved roads and electricity production. These two non-linear variables have been corrected through suggested transformation of log value

5.1.3. Normality Test

In order to meet the vital assumption of 'residual should be normally distributed' for the OLS regression in time series analysis, this thesis has carried out both 'Shapiro –Wilk' test and and " Kernal Normal distribution test. Under

Shapiro –Wilk test, the null hypothesis states that the data are normally distributed and if the selected significance level is 5% and the value of Prob > z is smaller than 0.05, null hypothesis of this test is rejected. However, If the Prov>z is higher than 0.05, it fails to reject the null hypothesis.

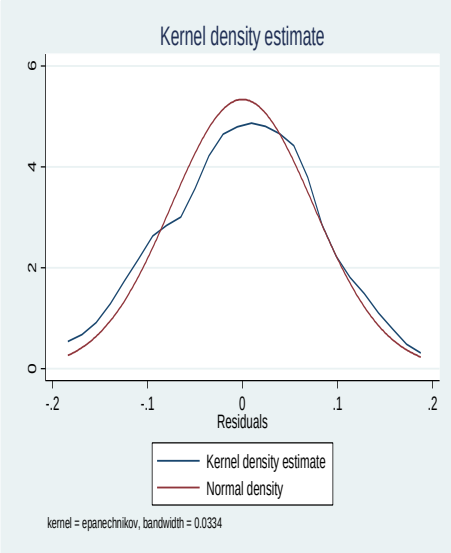
Table 5. 5: Result for Shapiro –Wilk normality test

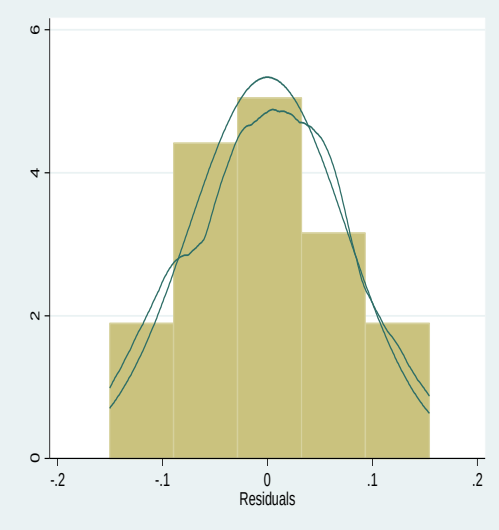
Shapiro-wilk w test for normal data

Variable	Obs	W	V	z	Prob>z
r	26	0.95373	1.323	0.574	0.28307

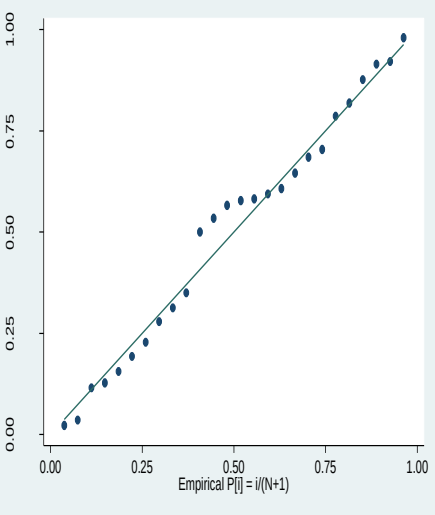
From the above test result, the value of prov>z is o.28307 is higher than 0.05 (at 5% confidence level). Hence, this finding fails to reject the null hypothesis which eventually means that the residuals are normally distributed. Moreover, Kernal Normal distribution test included three graphs: kdensity, pnorm and qnorm in order to check normality in the residuals.

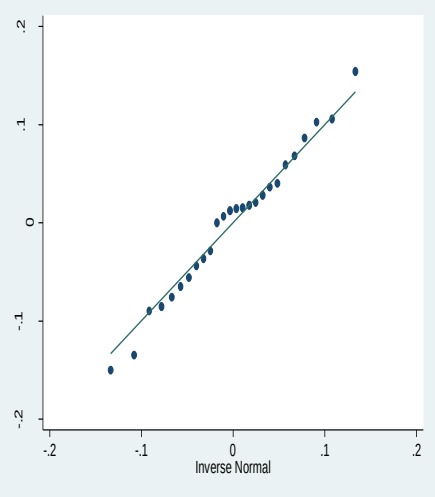
Figure 5- 1: kdensity e, normal histogram e, kdensity normal





pnorm e qnorm e





All of the above presented graphs confirm that the residuals behave normally.

5.1.4. Unit Root Test:

Unit root test is very important in time series analysis to justify whether the data is stationary or non-stationary over the time period. This study has conducted

the ADF unit root test with Stata, version 10.0 to check whether the data is stationary or not over the time series. The ADF unit root test advocates that the null hypothesis is the series of data which is stationary whereas the alternative hypothesis is that the series of data which is non-stationary. This thesis has chosen 5% significance level. If the prov>z value of ADF test shows higher than 0.05 of the significance value, it means that it accepts the null hypothesis and rejects the alternative hypothesis that data series is stationary. Besides the criterion of prov>z, the comparison of statistic and the critical value criteria can be used. In this case, if the statistic value is smaller than the critical value of its significance level, then it is considered as a stationary. The summary of prov>z value and statistic value of ADF test is presented below

Table 5.6: Summary of ADF test

Variable	Level		First Difference		Second Difference		Degree of Integration
	Test statistics	Critical Value	Test Statistics	Critical Value	Test statistic	Critical Value	
Garment export	-3.577	-3.000	-	-	-	-	I(0)
Lending interest rate	-3.278	-3.000	-	-	-	-	I(0)
Inflation	-3.406	-3.000	-	-	-	-	I(0)
Time needed to export	0.138	-3.000	-6.445	-3.000	-	-	I(1)
Corporate tax rate	-0.598	-3.000	-2.078	-3.000	-4.929	-3.000	I(2)

Paved Roads	-3.492	-3.000	-	-	-	-	I(0)
Wage Indices	-3.963	-3.000	-3.312	-3.000	-	-	I(1)
Electricity Production	1.825	-3.000	-0.201	-3.000	-5.026	-3.000	I(2)

Variable	Prov>z		
	Level	First Difference	Second Difference
Garment Export	0.0062	-	-
Lending interest rate	0.0159	-	-
Inflation	0.0108	-	-
Time needed to export	0.9686	0.000	-
Corporate tax rate	0.8715	0.2535	0.000
Paved Roads	0.0108	-	-
Wage Indices	1.000	0.0144	-
Electricity production	0.9984	0.9984	0.000

Notes: All critical values are taken from MacKinnon's critical values at 5% significance level

From the above tables, it is found that the garment export, lending interest rate, inflation, and paved roads are stationary at level. However, time needed to export, wage indices, corporate tax rate and electricity production are found non-stationary at level. Therefore, integration procedure has been done to make these variables stationary in order to confirm the unbiased regression analysis. After integration process, time needed to export and wage indices are found at first difference level where as corporate tax rate electricity production are stationary at second difference level.

5.1.5. Autocorrelation Test

The purpose of the autocorrelation test is to ensure that there is no correlation exists between the errors in different time periods. In other words, it can be said that the autocorrelation test is performed to make sure that cov (e_t, e_{t-i})≠0. In this thesis, we have used the Durbin Watson (DW) test (d-statistic) to test the autocorrelation. According to DW test, if the d-statistic is found close to 2 in any model, the model is considered to have no major autocorrelation problem.

Table 5. 7: Result for Durbin Watson test

```
.dwstat

Durbin-Watson d-statistic (8, 26) = 2.148276
```

The above DW result finds the d-statistic = 2.148276 which is close to 2. Thus, it can be concluded that there is no autocorrelation in our model.

5.1.6. Cointegration

We have already discussed in the methodology chapter that this thesis carries out the Engle-Granger cointegration test in order to check the existence of correlation among non-stationary time series variables. The Engle-Granger cointegration test advocates that if the test statistic value is higher than the critical

value of its significance level, then the model is said not to have any cointegration problem. However, if the test statistic value is smaller than the critical value of its significance level, then the model is considered to have cointegration problem. In this study, we employed 5% significance level.

Table 5. 8: Engle-Granger Cointegration test

		Interpolated Dickey-Fuller		
	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-2.365	-3.750	-3.000	-2.630

MacKinnon approximate p-value for Z(t) = 0.1519

Table 5.8 presents the critical value at 5% significance level is -3.000 while test statistic value is -2.365. Hence, the test statistic value is higher than the critical value and according to the rule of the Engle-Granger cointegration test; we can conclude that there is no cointegration problem in our model and we do not need to follow the Vector Error Correction Model (VECM) in our thesis.

5.1.7. Heteroskedasticity Test

In order to check whether the variance of the error terms are constant or not, Breusch-Pagan test for the heteroskedasticity has been conducted in this study. The null hypothesis for the Breusch-Pagan test is that the series is

homoskedasticity. In this test, if the value of ‘prob>chi2’ is higher than the chosen significance level, then we fail to reject the null hypothesis. In our study we chose our significance level at 5%.

Table 5. 9: Result for Breusch-Pagan test for the heteroscedasticity.

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
        Ho: Constant variance
        Variables: fitted values of garmentsexport

        chi2(1)      =    2.28
        Prob > chi2  =   0.1307
```

From the above result, this study finds that the ‘prob>chi2’ value is higher than ‘0.05’ at 5% significance level. Therefore, it can conclude that Breusch-Pagan test fails to reject the null hypothesis which means that there is no heteroskedasticty problem in our model. In other words, the series is homoskedasticity and we do not need to robust the model.

After conducting all of these diagnostic and specific tests, this thesis runs the regression and finalizes the following OLS regression results.

Table 5. 10: OLS regression results

Source	SS	df	MS	Number of obs =	26
Model	354296994	7	50613856.2	F(7, 18) =	404.64
Residual	2251510.41	18	125083.912	Prob > F =	0.0000
				R-squared =	0.9937
				Adj R-squared =	0.9912
Total	356548504	25	14261940.2	Root MSE =	353.67

garmentsex~t	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lendingint~e	-174.527	82.79665	-2.11	0.049	-348.4763	-.5777352
timetoexpo~1	-199.29	40.56177	-4.91	0.000	-284.5071	-114.0729
inflation	-38.5516	37.53244	-1.03	0.318	-117.4043	40.30112
totaltaxra~2	86.51775	50.04411	1.73	0.101	-18.62103	191.6565
pavedroads	.0548846	.065657	0.84	0.414	-.0830556	.1928249
wageindice~1	1.892074	.1668378	11.34	0.000	1.541561	2.242587
electricit~2	-1.30e-08	1.27e-08	-1.02	0.320	-3.96e-08	1.37e-08
_cons	4559.327	3618.242	1.26	0.224	-3042.317	12160.97

In order to analyze the goodness of fit of the model, there are two important factors such as R square and the adjusted R square to consider. In this case, the more the R square and the adjusted R square close to 1, the better the goodness of fit of the model. In this study, we found that R square is 0.9937 and the adjusted R square is 0.9912. Therefore, we can conclude that the model is good enough for any analysis and prediction.

5.1.8. Major Findings from the Econometric Analysis

Based on the regression analysis, the major findings are summarized as below

1. Lending interest rate is negatively correlated with the export performance of Bangladesh's garment at 5% significance level.
2. Lead-time has strong negative impact on the Bangladesh garment export performance at 1% significance level
3. Inflation has no significant impact on the garment export growth of Bangladesh.
4. Corporate tax rate has positive contribution to the garment export growth of Bangladesh at 10% significance level.
5. Wage rate is found as a highly and positively correlated with the garment export at 1% significance level
6. The variables regarding infrastructure such as the paved roads, availability of electricity are not significantly correlated with the export performance of Bangladesh.

5.2. Findings and Results from Questionnaire Survey

This part of this thesis demonstrates all the results and findings derived from the questionnaire survey. There are five sections in this part:

Section 1: Response rate

Section 2: General profile of the firms

Section 3: Factors affecting the performance of Bangladesh garment industry

Section 4: Factors effect on the other aspects of business

Section 5: Measures adopted to cope with the MFA

Section 6: Importance of the different policies regarding competitiveness.

Results from all of the above-mentioned sections have been presented into the different categories considering the characteristics of the variables as well as purpose of the study. The results are depicted in the form of number, percentage, mean and standard deviation.

5.2.1. Response Rate

The questionnaire survey was carried out in December, 2011 and January, 2012. Approximately two months were needed to conduct the survey. Most of the questionnaires were distributed directly to the all garment firms with the help of the BGMEA. By distributing110 questionnaires, we have finally got back 70

qualified filled questionnaires, covering to a 63.63% response rate.

5.2.2. General Profile of the Firms

In this section all basic information such as the nature of ownership, current capital, number of employees, product nature, process of production, major markets and competitors are analyzed in order to give the overview of the surveyed firms. Table 5.11 depicts all the information together, which are analyzed briefly later on in this section.

Table 5. 11: General Profile of the Surveyed Firms

Details	Frequency	Percentage
Types of Ownership		
Single	2	3%
Partnership	61	86%
Corporation	8	11%
Origin of Firms		
Domestic	68	97%
Joint Venture	0	0%
Totally Foreign Owned	2	3%
Year of Establishment		
Before 1985	2	3%
1985-2005	49	70%
2006-2011	19	27%
Registered Capital (taka)		
5 million-10 million	13	19%
10 million-20 million	34	49%
More than 20 million	23	33%
Investment Employed (current)		
5 million-10 million	2	3%
10 million-20 million	14	20%
More than 20 million	54	77%
Registered Employees		
1-100	5	7%
101-500	25	36%
501-1000	35	50%
More than 1000	5	7%
Number of Employees (Current)		
1-100	0	0%

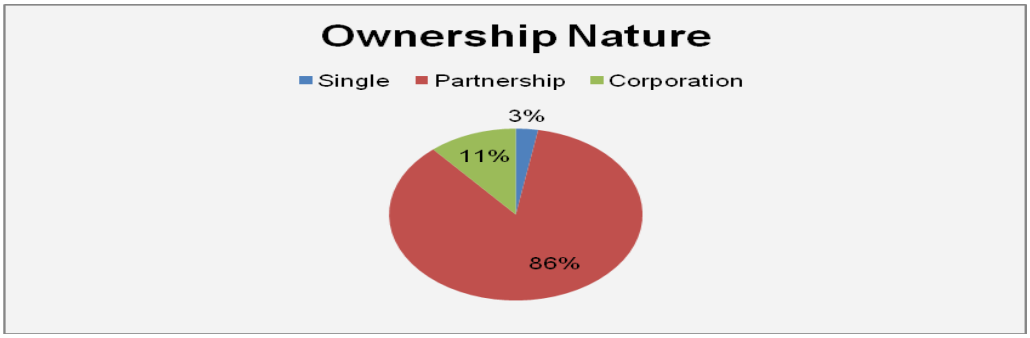
101-500	7	10%
501-1000	18	26%
More than 1000	45	64%
Wage (Monthly)		
$50-$60	21	30%
$61-$70	49	70%
Use of Imported Raw Materials		
No use of imported raw materials	0	0%
1%- 20%	10	14%
21%-50%	17	24%
51%-80%	41	59%
More than 80%	2	3%
Major Markets (after MFA)		
1st Destination:		
U.S.A	18	26%
E.U	48	70%
Others	3	4%
2nd Destination:		
U.S.A	47	71%
E.U	13	19%
Others	7	10%
3rd Destination		
U.S.A	0	0%
E.U	2	3%
Others	64	97%
Major Markets (Before MFA)		
1st Destination:		
U.S.A	28	58%
E.U	18	38%
Others	2	4%
2nd Destination:		
U.S.A	18	39%
E.U	23	50%
Others	5	11%
3rd Destination		
U.S.A	0	0%
E.U	4	16%
Others	21	84%
Export Medium		
Directly	11	
International Traders	3	
International Buyers	63	
Major International Buyers		
GAP, H & M, Wall Mart, JC Penny, PVH, VF Matalan		

Profitability Bearing net loss Bearing net profit	 1 69	 1% 99%

5.2.2.1. Ownership Structure

Out of 70 surveyed firms, it is found that 3% (2) firms are established under the single ownership, 86% (61) firms are in the partnership whereas only 11% firms are established under the corporation (see figure 5-2). Again, if we see the ownership structure based on the origin of firms, we will find that there are 68 (97%) firms which are owned by the domestic owners while only 2 (3%) firms are owned by the foreigners. However, there is no firm which is operated through joint venture. **This finding indicates that the local entrepreneurs are successful and encouraged to invest in the garment sector rather than the foreigners.**

Figure 5- 2: Type of Ownership



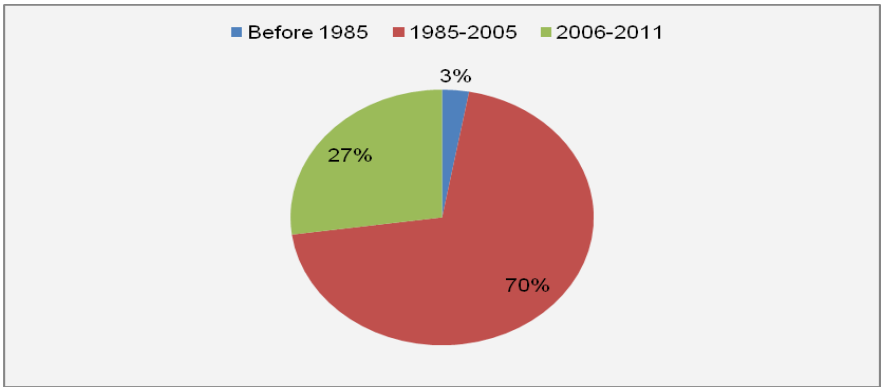
Source: Field Survey, 2012.

5.2.2.2. Year of Establishment

If we analyze all the surveyed firms based on the year of establishment, it is found that only two (3%) firms were established before 1985 whereas 49 (70%) firms were established during the period of 1985-2005. Moreover, there were 19

(27%) firms established during the post-MFA period of 2006 -2011 (see figure 5-3). **This finding denotes that though most of the firms of Bangladesh garment industry were established before the MFA phase out in order to exploit the quota advantage, the trend of the firms establishment was even more accelerated after the MFA phase out.**

Figure 5- 3: Year of Establishment of the Surveyed Firms



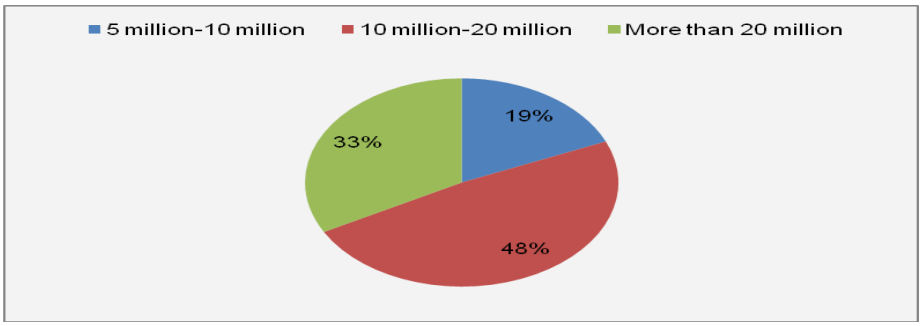
Source: Field Survey, 2012.

5.2.2.3. Size of the Firms

If we look through the size of the firms on the basis of the registered capital or capital invested on establishment, it is found that most of the firms are small and medium size. Out of 70 firms, 13 (19%) firms had the registered capital between the amounts of 5 million taka (US$61,000) and 10 million taka (US$122,000), 34 (48%) firms had the registered capital of 11 million-20 million taka (US$.134, 000.-US$244,000). However, only 23 (33%) firms had the comparative large

capital more than 20 million taka (US$244,000)

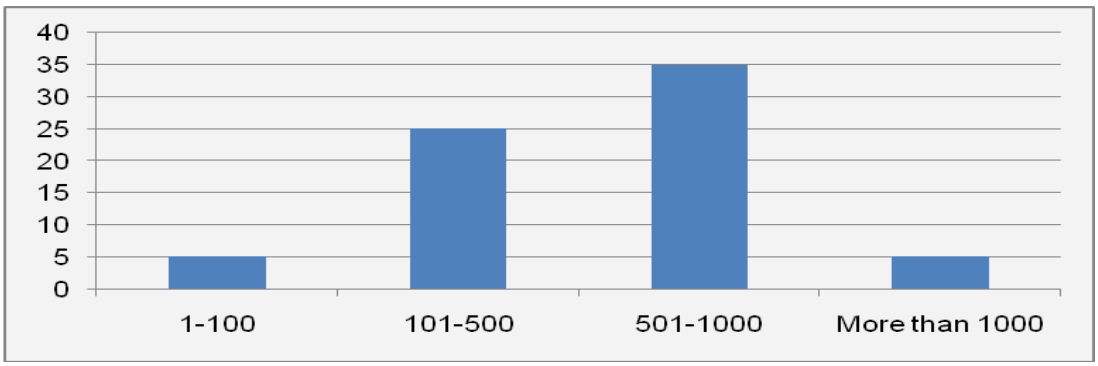
Figure 5- 4: Registered Capital (in Taka)



Source: Filed Survey, 2012.

In terms of the size by number of employees during the establishment time, only 5 (7%) firms had more than 1000 employees while they started their operation. From the rest of the 65 firms, 30 (42%) firms had employees in the ranges 1 to 500 and 35 (50%) firms had employees between 500 and 1000 (see figure 5-5)

Figure 5- 5: Number of Employees during Establishment

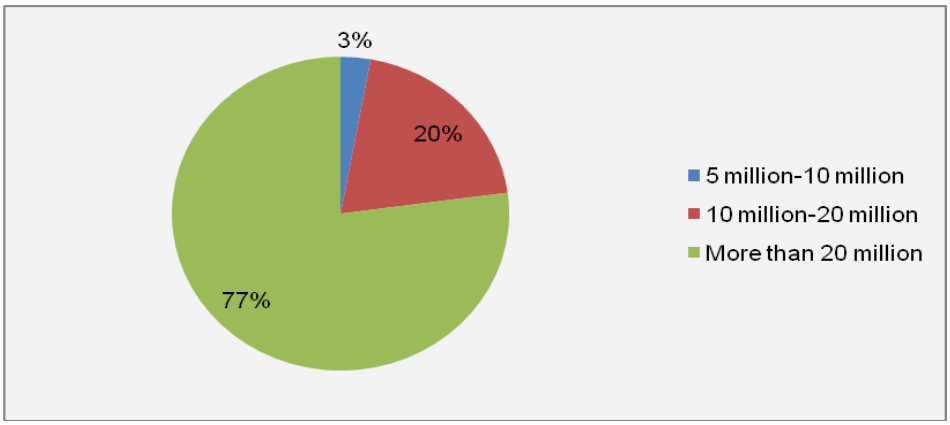


Source: Survey, 2012.

Although most of the firms started their operation as a small and medium size enterprise with the modest capital and employees, they managed to expand their

business both in the form of invested capital and employee numbers. Therefore, the number of middle and large enterprise has been increasing rapidly. For example, the survey found that out of 70 firms, there is no company which has current investment capital of less than 5 million taka (US$ 61,000), 14 companies have current investment capital in the range of 10 million taka (US$122,000) to 20 million taka (US$244,000) and more surprisingly there are fifty four companies who have investment capital of more than 20 million taka or $ 244,000 (see figure 5-6)

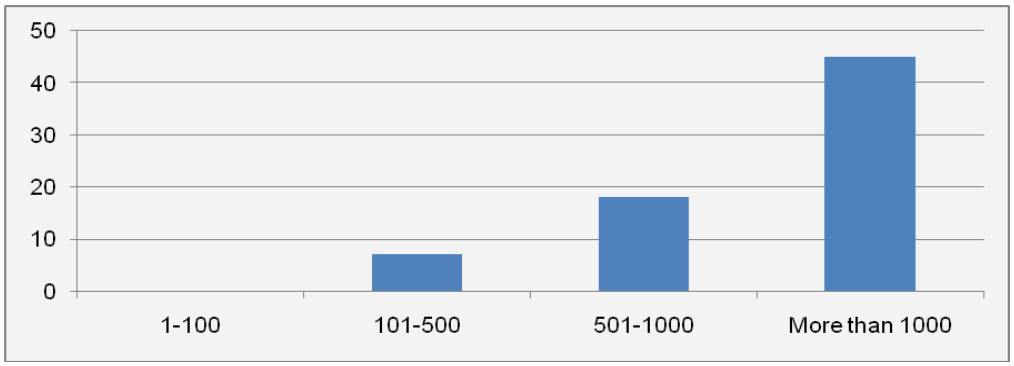
Figure 5- 6: Current Invested Capital



Source: Survey, 2012.

Besides currently invested capital, the numbers of employees have been also increasing rapidly since the established time. While there were only 5 firms who had numbers of employees more than 1000, at present 45 companies have more than one thousand employees (see figure 5-7)

Figure 5- 7: Number of Employees (at present)



Source: Survey, 2012.

From the above results, **it is evident that most of the garment firms of Bangladesh have started their business with the limited capital and scope. However, with the passage of time, the firms re-invested a huge amount of capital and consequently the size of their firms are becoming bigger and bigger.**

5.2.2.4. Major Markets

In this survey, we found that most of the surveyed firms concentrated their export markets in two particular markets namely the U.S. and EU in the post-MFA period. Out of 48 respondent firms; 28 (58%) firms exported to the U.S, 18 (38%) firms exported to the EU while only 2 (4%) firms exported to the other markets as a first choice of their export market. Moreover, as a second choice of export market, 18 (39%) firms exported to the U.S, 23 (50%) firms exported to the EU whereas only 5 (11%) firms exported to the other nations. Besides the first

and second choices of export, only 25 firms had the third export destination. Out of these 25 firms, there were no firms who exported to the U.S, 4 (16%) firms exported to the EU and 21 (84%) firms exported to the other exported nations (See table 5.12). Therefore, these findings show the evidence that the export market for Bangladesh's garment were mainly concentrated with the two major markets -the U.S. and EU.

While the export markets of Bangladesh garment industry were highly dependent on the two traditional markets in the pre-MFA period, the dependency has started to decrease gradually after the MFA phase out. In our survey conducted, 69 firms' responded about the first destination of their export. Out of these 69 firms, 18 (26%) firms export to the U.S, 48 (70%) firms exports to the EU and 3 (4%) firms export to the other countries as a first choice of their export destination. Again, 67 firms responded regarding their second destination of the export market. Out of these 67 firms, 47 (71%) firms export to the U.S, 13 (19%) firms export to the EU, and 7 (10%) firms export to the other nations as a second choice of their export market. Here, if we compare the findings of first two major markets destinations before the MFA phase out and after the MFA phase out, we

will not find any significant changes except one. T**he exception is the U.S. was the first choice of destination before the MFA phase out which is being occupied by the EU and the EU was the second choice of destination in pre-MFA period is being replaced by the U.S. in post-MFA period.** However, a significant change has been observed with regard to the third destination of export market. Out of 66 responded firms, 2 (3%) firms export to the EU and rest of the 64 (97%) firms export to the other nations mainly Canada, Japan, Australia, New Zealand, India, South Africa, Brazil, Mexico etc. (see table 5.12). This finding denotes that Bangladesh has been trying to diversify its export markets in non-traditional markets along with the maintaining high export growth in their traditional markets.

Table 5. 12: Major Export Markets both in the pre- and post MFA period

	Before the MFA Phase out			After the MFA Phase out		
	First	Second	Third	First	Second	Third
U.S.	28 (58%)	18 (39%)	0 (0%)	18 (26%)	47 (71%)	0 (0%)
E.U	18 (38%)	23 (50%)	4 (16%)	48 (70%)	13 (19%)	2 (3%)
Others	2 (4%)	5 (11%)	21 (84%)	3 (4%)	7 (10%)	64 (97%)
Total Respondents	48	46	25	69	67	66

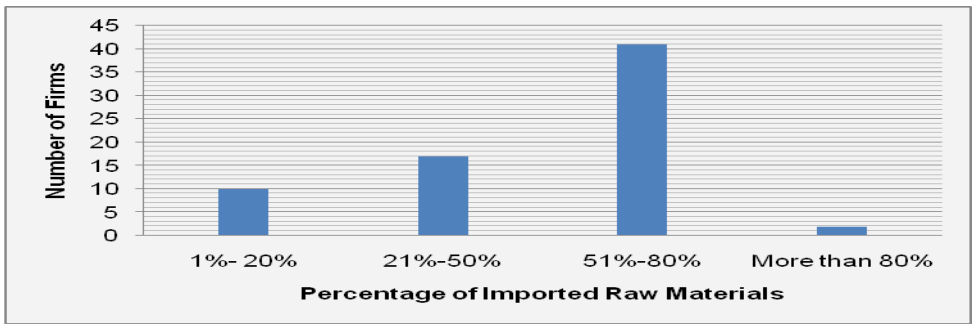
Source: Survey, 2012.

5.2.2.5. Raw Materials

The survey found that all the 70 surveyed firms import raw materials in order

to carry out their production. Among these firms, 10 (14%) firms import in the range of 1% to 20%, 17 (24%) firms import in the range of 21% to 50%, 41 (59%) firms import in the range of 51% to 80% and 2 (3%) firms import more than 80% of their total used raw materials (See figure 5-8)

Figure 5- 8: Percentage of Imported Raw Materials



Source: Survey, 2012.

Regarding the source of imported raw materials, the survey also found that 64 firms import from China, 47 firms import from India, 35 firms import from Pakistan and 32 from the Central Asia. Other sources for importing raw materials, even though the imported amount was in insignificant, were Hong Kong, Taiwan, Singapore, and the U.S. All the surveyed firms reported the unavailability of raw materials in the domestic market as a reason for the high dependency on imported raw materials.

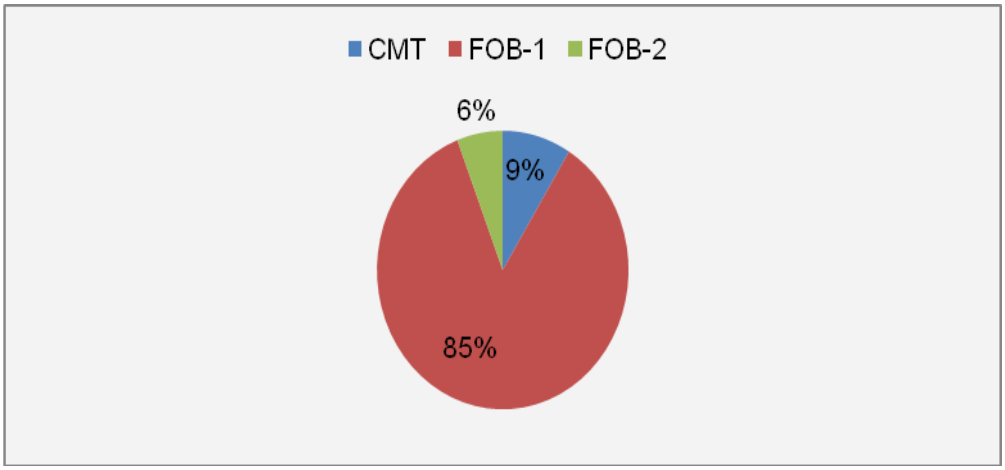
5.2.2.6. Process of Production

In the garment production, there are basically three basic processes of

production such as Cut, Make and Trim (CMT), Free on Board-1 (FOB-1), and Free on Board-2 (FOB-2). Among these three processes of production, CMT is the lowest value added activity. Under CMT production, the producing firms are provided all necessary raw materials by the customer in order to carry out the process of production and therefore, the producing firm gets only the processing fee. In the case of FOB-1, greater value added activities compared to the CMT, takes all the responsibility of arranging all raw materials to continue the production. However, design, the most value added activities in the garment product production is not included in FOB-1 process. Considering the limitation of both process CMT and FOB-1, FOB-2 is the perfect and complete process of production which includes all kinds of arrangement of raw materials and design. Hence, FOB-2 is the most value added process which offers completed garment to the buyers or traders

In our survey, 68 firms responded regarding their process of production. Out of 68 companies, 6 firms reported that they are producing on CMT, 58 firms carry out their production until FOB-1 and only 4 firms can continue their production until FOB-2 (See figure-5-9)

Figure 5- 9: Process of Production



Source: Survey, 2012.

5.2.3: Factors Affecting the Competitiveness of Bangladesh garment industry

5.2.3.1: Macro-economic Factors

The surveyed firms were asked to rate the macro-economic factors of the competitiveness that contributed to increase or decrease their export after the MFA expiry. The majority of the respondents in the survey responded that the wage rate, corporate tax, exchange rate and lead-time are positively contributing whereas interest rate, infrastructure and corruption are negatively affecting their export growth as well as the Bangladesh garment industry.

Table 5. 13. Macro-economic Factors Affecting the Export of Bangladesh's Garment.

Variable	Total Respondent	Mean	S.D	Comments
Wage Rate	68	4.38	0.86	Extremely Favorable
Interest Rate	68	-3.66	2.32	Very Unfavorable

Corporate Tax	68	1.94	1.17	Fairly favorable
Infrastructure	70	-4.43	1.09	Extremely Unfavorable
Exchange Rate	67	0.48	1.51	Quite favorable
Lead-time	70	-0.04	2.39	Unfavorable
Corruption	67	-3.85	0.97	Very unfavorable

Note: The mean values are judged by using the following criterion:

Range of Mean Score	Satisfaction level
(-5.00) – (-4.10)	Extremely unfavorable
(-4.09 – (-3.19)	Very Unfavorable
(-3.18) – (-2.28)	Quite Unfavorable
(-2.27 – (-1.37)	comparatively Unfavorable
(-1.36) – (-0.46)	Unfavorable
(-0.45) – (0.44)	Average
(0.45) – (1.35)	Favorable
(1.36) – (2.26)	Fairly Favorable
(2.27) – (3.18)	Quite favorable
(3.19) – (4.1)	Very Favorable
(4.1) – (5.00)	Extremely Favorable

As depicted in the table 5.13, the respondent viewed the wage rate as 'extremely favorable' (score 4.38), interest rate as 'very unfavorable' (score -3.66), corporate tax as 'fairly favorable' (score 1.94), infrastructure as 'extremely unfavorable' (score -4.43), exchange rate as 'favorable' (score 0.48), lead-time as 'fairly favorable' (score 1.98) and corruption as 'very unfavorable' (score -3.85) to the garment export of Bangladesh.

5.2.3.2. Industry Specific Factors

With regard to the industry-specific factors towards the competitiveness of the garment sectors in Bangladesh, as shows in table 5.14, the respondents deemed the market access policy, technological development, compliance of labor and & environment laws are positively contributing while the government support in the form of cash incentive, import substitution and prompt bureaucracy and labor unrest are considered to have negative effect on the garment export of Bangladesh.

Table 5. 14: Industry Specific Factors Affecting the Growth of the Bangladesh Garment Industry

Variable	Total Respondent	Mean	S.D	Comments
Market Access Policy	68	2.32	1.28	Quite Favorable
Technological Development	68	3.78	0.568	Very Favorable
Compliance of labor &Environment Laws	70	0.814	2.51	Favorable
Government Support	67	-3.22	1.53	Extremely Unfavorable
Labor Unrest	68	-3.27	0.883	Extremely Unfavorable

Note: The mean values are judged by using the following criterion:

Range of Mean Score	Satisfaction level
(-5.00) – (-4.10)	Extremely unfavorable
(-4.09 – (-3.19)	Very Unfavorable
(-3.18) – (-2.28)	Quite Unfavorable
(-2.27 – (-1.37)	comparatively Unfavorable
(-1.36) – (-0.46)	Unfavorable
(-0.45) – (0.44)	Average
(0.45) – (1.35)	Favorable
(1.36) – (2.26)	Fairly Favorable
(2.27) – (3.18)	Quite favorable
(3.19) – (4.1)	Very Favorable
(4.1) – (5.00)	Extremely Favorable

As it is seen in the table 5.14, the respondent responded the market access policy as ‘quite favorable’ (score 2.32), technological development as ‘very favorable’ (score 3.78), compliance of labor and environmental law as ‘favorable’ (score 0.814), government support as ‘very unfavorable’ (score -3.22), and labor unrest as ‘very unfavorable’ (score -3.27) to the export growth of Bangladesh garment industry.

5.2.4: Measures Adopted to Cope with the MFA Phase out

Asked if firms have taken any measures to cope with the MFA phase out, all of the surveyed firms answered that they have taken many measures to cope with the challenges created due to the MFA phase out. The respondents viewed that the upgrading technology, training workers, minimizing lead-time, improvement of factory environment, diversification of export, compliance to the international labor laws, compliance to the international environmental laws are very important measures that they have taken to cope with the competition in post- MFA period.

Table 5. 15: Degree of Different Measurement

Measurement	Total Respondent	Mean	S.D	Comments
Upgrading technology	69	3.66	0.885	Very effective

Training workers	69	3.44	0.654	Very effective
Minimizing lead-time	67	3.14	0.557	Effective
Improvement of Factory Environment	70	3.61	0.837	Very effective
Compliance of Labor law	68	3.22	0.75	Effective
Compliance of Environmental law	66	3.18	0.654	Effective
Diversification of Export	69	4.22	0.837	Most effective

Note: Level of effectiveness is measured by using following criterion.

Range of Mean Score	No	Level of effectiveness
1.00 – 1.80	1	No Effective
1.81 – 2.60	2	Somewhat effective
2.61 - 3.40	3	Effective
3.41 – 4.20	4	Very Effective
4.21 – 5.00	5	Most effective

As depicted table in the table 5.15, the most effective measure that was taken by the firms is the diversification of export (score 4.21). Besides the diversification of export, the upgrading technology (score 3.66), training workers (score 3.44), improvement of factory environment (3.61) were also taken as very effective measures to cope with the post- MFA period. Moreover, respondents adopted lead-time minimization (score 3.14), compliance of labor laws (score 3.22) and compliance of environmental laws (score 3.18) as effective measures to sustain and promote the export growth in the post-MFA period.

5.2.5: Importance of the Different Policies Regarding Competitiveness

Firms were asked to rank the five policies such as trade, human, tax, infrastructure and good governance policy in terms of their importance in enhancing the competitiveness of Bangladesh garment industry. The majority of the respondents viewed the infrastructure policies such as electricity production, paved roads proliferation, port service modernization as most important. The average score derived for the infrastructure is 4.69. This is followed by the good governance policy (4.29) which can be worked to eradicate corruption and promote prompt and faster bureaucracy. The human resource policy is also considered very important (score 3.51), which can be ensured by establishing technical colleges and institution. The trade policies such as the tariffs and custom procedure (score 3.38) and tax policy which includes the tax burden and tax holiday (score 3.07) are also supported as the important polices to increase the competitiveness though these two policies obtained lower score compared to other policies (see table 5.16)

Table 5. 16: Importance of Policies Regarding Competitiveness.

Measurement	Total Respondent	Mean	S.D	Comments
Trade policy	70	3.38	0.91	Important
Human resource policy	70	3.51	0.654	Very important

Tax policy	70	3.07	0.557	Important
Infrastructure	70	4.69	0.837	Most important
Good governance	69	4.28	0.75	Most important

Note: The important level is judged by using the following criterion:

Range of Mean Score	No	Level of importance
1.00 – 1.80	1	Not important
1.81 – 2.60	2	Somewhat important
2.61 - 3.40	3	Important
3.41 – 4.20	4	Very important
4.21 – 5.00	5	Most important

Chapter Six

Hypothesis Testing and Analysis

This chapter presents the hypotheses testing and analysis of the results. The analysis will be based on the hypotheses which are developed in chapter four. As mentioned in chapter four, the hypothesis is to test the effect of both macro-economic factors and industry-specific factors on the performance of the Bangladesh garment industry. In our study, we use two ways to judge these hypotheses. The first one is the findings from the econometric model. The p value of the independent variable is used to test the hypothesis. If the p value is higher than the significance value, it suggests that it is significant and therefore accepts the alternative hypothesis. The nature of the relationship (positive or negative) and the depth of the effect can be analyzed from the correlation coefficient found in the preceding chapter. The second way is for the questionnaire survey findings. In this case, we consider mean value to judge the effect of different variables on the garment performance of Bangladesh, which is already presented in the previous chapter. The chapter presents the analysis in two major categories: (1) The effect of the macro-economic factors on the garment industry growth of Bangladesh (2)

The effect of industry-specific factors on the garment industry growth of Bangladesh.

6.1. The effect of the Macro-economic Factors on the Garment Industry Growth of Bangladesh

In this thesis, we finally consider the wage rate, interest rate, infrastructure, corporate tax, exchange rate, lead-time and corruption as macro-economic factors. In this part of thesis, we will verify all of these variables with our constructed hypotheses.

6.1.1. Wage Rate

The null hypothesis with regard to the wage rate advocates that there is no significant effect of wage rate on the growth of Bangladesh garment industry. The alternative hypothesis suggests that there is a significant effect of wage rate on the growth of Bangladesh garment industry. From the econometric model (table 5.1), this thesis finds the p value for the wage rate is 0.000 which is significant at 1%. Hence, it rejects the null hypothesis and accepts that there is a positive significant effect of the wage rate on the growth of Bangladesh garment industry. The coefficient of the wage rate is 1.8902 which means that a 1% decrease in wage rate will be accompanied by an increase of $1.8902 million in the garment export

and vice versa, ceteris paribus other variables.

To verify this finding, this study compares the econometric model finding with the survey finding. In the questionnaire survey, out of 70 firms, 68 firms responded regarding the contribution of the wage rate to the garment industry growth of Bangladesh. The survey finds the mean value and standard deviation are 4.38 and 0.86 respectively. The mean value (4.38) indicates that the wage rate of Bangladesh is highly favorable to the garment export whereas the value of standard deviation (0.86) denotes the views among the firms regarding the wage rate contribution to the garment export are almost uniform. Hence, the empirical results from both econometric model and survey confirm that the wage rate has a strong positive effect on the garment export performance of Bangladesh

This finding goes with our expectation and is not surprising at all. One of the arguments to support this finding could be the nature of the garment industry. The garment industry is one of the most labor-intensive industries in the world. The industry started its journey from England at 1950s and since then shifted different countries from time to time in order to exploit the cheap labor. In recent decades,

Bangladesh offers the abundant labor and the lowest labor cost compared to the any other major garment exporting nations (see table 6.1) which attract major garment producers and buyers to set up their business and place order in Bangladesh. Therefore, garment production in Bangladesh has been rapidly increasing which certainly helps Bangladesh garment industry to grow. Almost all of the previous studies such as Bhattacharya and Rahman (2002), Mlachila and Young (2004), Haider (2007), Ahmed (2009), Saxena and Salze-Lozac'h (2010), and Abras (2011) also confirm that the low labor cost facilitates the growth of the garment industry of Bangladesh both in the pre-and post-MFA period.

Table 6. 1: Comparison of Wage Rate (per hour) in Selected Economies

Country	Rate
India	0.83
China	1.44
Pakistan	0.55
Bangladesh	0.32
Cambodia	0.53

Source: USAID (2009).

6.1.2. Interest Rate

For hypothesis testing with regard to the interest rate, the null hypothesis is that there is no significant effect of the interest rate on the growth of Bangladesh garment industry. The alternative hypothesis states that there is a significant effect of the interest rate on the garment industry growth of Bangladesh. From the

econometric model (table 5.1), this thesis finds the p-value for the interest rate is 0.049 which is significant at 5%. Hence, it rejects the null hypothesis and accepts that there is a negative significant effect of the interest rate on the garment export performance of Bangladesh. The coefficient of interest rate is -174.527 which means that a 1% increase in interest rate will decrease of $174.527 million garment export and vice versa, ceteris paribus other variables.

In the questionnaire survey, most of the firms also viewed that the interest rate has a strong negative impact on the garment industry growth of Bangladesh. 68 out of 70 firms responded on the interest rate issue. The mean value and standard deviation for the interest rate are -3.66 and 2.32 respectively. The mean value (-3.66) means that the interest rate is very unfavorable to the garment export growth of Bangladesh. However, the high standard deviation (2.32) indicates that there was no strong uniformity among the respondents regarding the interest rate issue.

Both from econometric model and survey results, it is empirically proved that the interest rate had a strong negative impact on the garment industry growth of Bangladesh. This finding is expected in one sense and surprising in other. The

finding is expected in the sense that the lending interest rate of Bangladesh is comparatively higher than any other garment export nations and more than triple of China's lending interest in both 2005 and 2008 (see table 6.2). Moreover, McKinsey & Company (2011) also found high interest rate as a major hurdle to the garment industry growth of Bangladesh.

Table 6. 2: Interest Rate in Selected Economy

Country	2005	2008
Bangladesh	16.38	14.00
China	5.31	5.58
Pakistan	12.94	9.07
Vietnam	15.78	11.03
India	13.31	10.75
Indonesia	13.60	14.05

Source: World Development Indicators (WDI)

On the other hand, it is surprising to find negative relationship between the lending interest rate and domestic investment. To illustrate it more, if the interest rate falls, the domestic investment rises and vice versa. Therefore, it was expected that the high rate of lending interest rate should have demotivated domestic entrepreneurs to invest in the garment sectors. However, the empirical findings both in the Chapter three and five suggest that 98% of the garment investments in Bangladesh are made by the domestic entrepreneurs. Moreover, the high lending interest rate causes the higher production cost and makes the product less

competitive in both domestic and international markets, which eventually impacts on the profitability of the firms. Here, it is also even more surprising that after paying such high interest rate, Bangladeshi garment firms are still competitive in the global market and most of the domestic firms in Bangladesh (69 out of 70 surveyed firms) are profitable in their operation (see table 5.2)

6.1.3. Infrastructure

The null hypothesis for the infrastructure suggests that the infrastructure has no significant effect on the garment industry growth of Bangladesh while the alternative hypothesis is that the infrastructure has significant effect on the garment industry growth of Bangladesh. In the econometric analysis part, this thesis could not include all the variables of infrastructure due to the unavailability of time series data. Only the paved roads and availability of electricity are considered in the econometric model.

From the table 5.1, we found the p-value for the paved roads is 0.414 which is not significant at all. Hence, it accepts the null hypothesis which means that paved roads has no significant effect on the garment industry growth of Bangladesh.

Besides the paved roads, the p-value for electricity availability is found 0.320 which is also not significant at any level. Therefore, it also fails to reject the null hypothesis and accepts that there is no significant impact of electricity availability on the garment export performance of Bangladesh.

While the econometric analysis did not find any significant effect of the infrastructure (paved roads, availability of electricity) on the garment industry growth of Bangladesh, the survey found that infrastructure has an important impact on the garment industry growth. All the surveyed firms acknowledged that their garment export is severely impeded due to the poor infrastructure of Bangladesh. The mean score of the infrastructure is found -4.43 which denotes that the infrastructure of Bangladesh is extremely unfavorable to its garment industry growth.

The empirical results of the infrastructure differ between the econometric model and survey. One of the reasons for this difference could be that the absence of proper variables of infrastructure in the econometric model. As it is mentioned before, some important variables of infrastructure such as railroads, port facilities,

and telecom have not been included in the model which might have had influence on the model findings. To avoid this limitation of the econometric model, this thesis only considers the findings from the survey.

Many international organizations such as the World Economic Forum (WEF, 2006), World Bank (2005) and USAID (2009) also support the survey findings. WEF (2006) rated the different aspects of infrastructure including railroads, water port facilities, power supplies and the telecom services and found the infrastructure of Bangladesh as one of the poorest among the major garment exporting nations (see table 6.3). Moreover, World Bank (2005) and USAID (2010) consider infrastructure as one of the major obstacles to the growth of the Bangladesh garment industry to its potentials.

Table 6. 3: Different Aspects of Infrastructure

Country	General Infrastructure	Rail Roads	Port Service	Power Supply	Telecom Service
Bangladesh	2.7	2.6	2.6	2.3	2.5
China	3.2	3.6	3.6	3.7	5.5
Cambodia	2.4	1.5	2.7	2.6	4.7
India	2.9	4.2	3.1	3.3	6.3
Vietnam	2.6	2.3	2.8	3.5	5.8
Indonesia	3.3	3.1	3.3	3.6	4.4

Note: higher value represents better situation

Source: World Economic Forum (2006)

6.1.4. Corporate Tax

The null hypothesis regarding the corporate tax states that the corporate tax rate has no significant effect on the garment industry growth of Bangladesh whereas the alternative hypothesis suggests that the corporate tax rate has significant effect on the garment industry growth of Bangladesh.

The result of econometric model shows that the p-value for corporate tax rate is 0.101 which is positively significant at 10% level. Hence, this finding rejects our null hypothesis and accepts that corporate tax significantly induces the garment export growth of Bangladesh. The coefficient of the corporate tax rate (86.52) suggests that 1% decrease in corporate tax will help to increase the garment export at $86.52 million.

The questionnaire survey also confirms that corporate tax rate has positive contribution to the garment export of Bangladesh. The mean value for the corporate tax rate is 1.94 (see table 4.8) which means that the corporate tax rate is fairly favorable to the garment export growth of Bangladesh. Kelegama (1999, 2005) also had the similar findings. He argued that the comparative low interest

tax rate of Bangladesh (see table 6.4), tax exemption and tax holidays are a few of the reasons for the existence of more domestic firms rather than the foreign firms. To support their argument, they mentioned that these tax privileges helped the domestic firms to protect themselves from the large foreign firm's competition and induce many domestic entrepreneurs to take the risk of establishing new firms and successfully operate their business at the initial stage.

Figure 6. 4: Tax Rate on Commercial Profits in Selected Economies (in 2010)

Country	Rate (%)
China	64
Cambodia	23
India	62
Bangladesh	35
Vietnam	40
Pakistan	35

Source: World Development Indicators (Online)

6.1.5. Exchange Rate:

In the primary model of the econometric analysis, the study has taken the exchange rate as an independent variable in order to measure the impact of exchange rate on the garment industry growth of Bangladesh However, a strong multicolleniarity problem has been found in the exchange rate. Therefore, we could not include the exchange rate in final regression analysis.

While this study could not reach any conclusion from the econometric analysis,

the questionnaire survey found that the exchange rate is positively influencing the garment industry performance of Bangladesh. 67 out of 70 respondents' rated the effect of the exchange rate to their garment export performance of their firms and found the mean value at 0.48. The mean value (0.48) rejects the null hypothesis and accepts the alternative hypothesis that the exchange rate has favorable impact on the garment industry growth of Bangladesh. However, the high standard deviation (2.51) indicates firms are divided in their opinion with regard to the impact of exchange rate on their export growth.

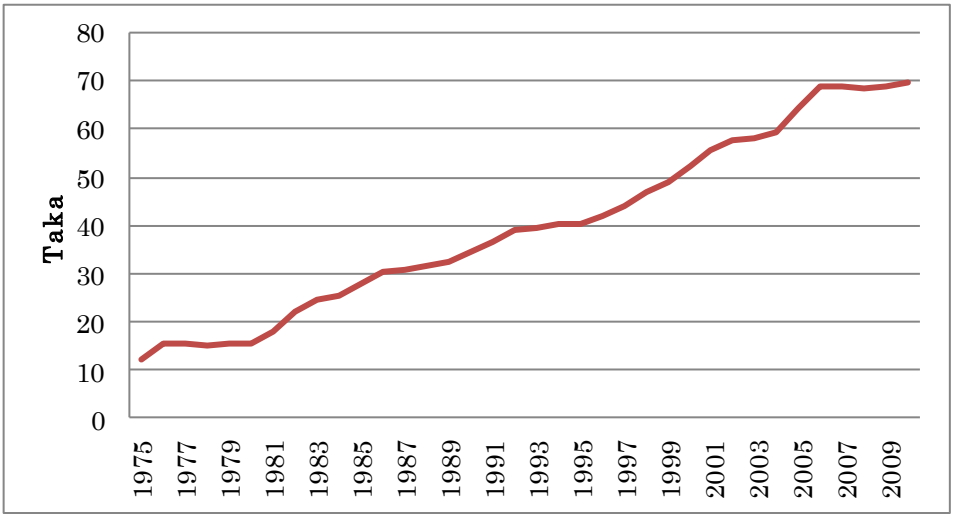
Although the exchange rate is found favorable to the garment industry growth of Bangladesh, the low mean value (0.48) suggests that the contribution of the exchange rate to the growth of the garment industry of Bangladesh as not much as expected. Moreover, the low mean value is contradictory to the finding of Ahamed (2009) who argued that the exchange rate has high contribution to the export growth of Bangladesh garment industry.

The reason for why exchange rate is found not highly favorable could be the net effect of the currency depreciation. To illustrate it more, the currency of

Bangladesh (TAKA) has continuously been depreciating against dollar for the last couple decades (see figure 6.1). The continuous depreciation of Bangladesh currency has obviously been contributing to the garment export performance in two ways. The first one is that the depreciation of Bangladesh currency has been strengthening the competitiveness of the Bangladeshi garment in the international market as it allows the international buyers and consumers to buy the Bangladeshi garment at a cheaper price than before. The second way is that the depreciation of Bangladesh currency has been facilitating the domestic garment firms in increasing their revenue or profit as firms receive more local currency in the exchange of dollar.

However, depreciation of Bangladesh currency has been increasing the cost of garment production. As it is found in the Chapter three and five that Bangladesh imports 80% of its total used garment raw materials from abroad, the depreciation of local currency against dollar causes additional cost in their import price. Hence, consideration of the net effect of the currency depreciation supports our finding that Bangladesh garment industry is not highly favored by its continuous currency depreciation.

Figure 6- 1: The Trend of Depreciation of Bangladesh Currency (Taka) against US Dollar.



Source: WDI

6.1.6. Lead-time

In the econometric analysis, the study has taken 'time needed to export' as a variable for the lead-time. The variable indicates how many days are usually required to export any goods from the placing order. Therefore, this variable represents overall lead-time for any industry's product export from Bangladesh. In this case, the table 5.11 shows the p-value of for time needed to export is 0.000, at 1% significance level. Hence, it rejects the null hypothesis and accepts that there is a strong negative relationship between the lead-time and the growth of Bangladesh garment industry. The coefficient of the time needed to export indicates that by taking ceteris paribus on other variables, a 1% decrease in time

needed to export will be accompanied by an increase of $199.29 million in garment export.

To verify this econometric finding, this study compares again the econometric model finding with the survey finding. The mean value for the lead-time is -0.04 (see table 5.4), which was found 'unfavorable' under the survey criteria. Therefore, both the empirical results suggest that long lead-time is one of the major obstacles to grow the Bangladesh's garment export more rapidly.

The empirical results of the lead-time do agree with our expectation and the previous literature. For example, Nuruzzaman (2007) and Nuruzzaman and Azad (2009) also had the similar findings. There could be many reasons for the longer lead-time in Bangladesh. The first reason is the poor infrastructure of Bangladesh. To make it clear, infrastructure has a strong correlation with the lead-time (Nordas et, al., 2006). The better the infrastructure, the shorter the lead-time is. As Bangladesh's infrastructure is very poor to support its garment export, it is expected and reasonable to find unfavorable lead-time. The second reason is the overdependence on the imported raw materials. As we discussed before several

times, Bangladesh imports 80% of used raw materials from abroad, the import time obviously causes the lead-time to be longer.

6.1.7. Corruption

In our econometric analysis, the corruption has not been considered due to the lack of hard data. Though some organizations such as Worldwide Governance Organization, (WDI) and Transparency International of Bangladesh (TIB) publish different scores to measure the corruption, such scores do not fit with the econometric model. Therefore, this study excludes the corruption in econometric analysis and fully depends on survey to measure the impact of the corruption in the garment export.

In the questionnaire survey, out of the 70 firms, 67 firms responded that the corruption impedes their export performance to some extent. The mean value of corruption is -3.85 which means that the corruption is highly unfavorable to the garment export growth. Hence, it rejects the null hypothesis and accepts the alternative hypothesis that the corruption has severe negative impact on the growth of Bangladesh garment industry.

The most imperative argument regarding the negative impact of the corruption in the garment industry of Bangladesh is that the corruption weakens the concept of the free markets and its efficiency. To illustrate it more, transparency and fairness are necessary to grow the confidence among the stakeholders of the efficient free market. However, corruption destroys transparency, fairness certainty and provides immense power to some people. Consequently, all parties lose their confidence regarding market outcome which eventually guides to less involvement by the honest entrepreneurs. Therefore, the efficiency of the industry reduces gradually which ultimately causes the demise of the industry. Moreover, this argument has been partially supported by Quddus (2006). He found that one of the important reasons for having less FDI in Bangladesh's garment sector is corruption. To support his findings, he also mentioned that Bangladesh has lost its goodwill to the international business community and therefore international business communities are often discouraged to invest in Bangladesh.

Mckinsey & Company (2011) found that most of the Chief Purchasing Officers (CPOs) of garment from the EU and U.S consider the corruption as a major obstacle to maximize the growth of garment industry of Bangladesh. In Mckinsey

and Company's survey, 57% respondents viewed corruption exists in Bangladesh but in manageable level while 33% respondents considered corruption as an out of control and threat of their business. Besides Mckinsey and Compnay's survey, a World Bank study (2005) found that all agency and bureaucracy engaged in the garment industry such as customs, central bank, and export promotion bureau take bribe for the procedure of business. The study also mentioned that an entrepreneur or owner of the factory usually pay bribes five times of their setting up cost at the establish time of the business. Likewise, firms need to pay bribes thirty times of their renewal charge that is paid to the state in every year.

6.1.2: The Effect of Industry-specific Factors to the Performance of the Bangladesh Garment Industry

In this thesis, we consider the market access, technology upgrading, compliance of labor and environmental laws, functional upgrading, market diversification, labor unrest, and availability of raw materials as industry specific factors. Secondary data regarding these variables are very difficult to find and therefore this thesis completely depends on the questionnaire survey findings to analyze the effect of the industry-specific factors to the performance of the Bangladesh garment industry.

6.2.1. Market Access Policy

The survey result confirms that the market access policy of Bangladesh plays very important role in the growth of Bangladesh garment industry in both pre- and post-MFA period. 68 out of 70 surveyed firms opined that the time-demanded market access policy has been providing the preferential access of the Bangladeshi garment in the major apparel markets. The mean value for the market access (2.32) indicates that the market access policy is quite favorable to the growth of Bangladesh garment industry. Hence, this finding rejects the null hypothesis and accepts alternative hypothesis is that the market access policy has positive contribution to the garment export growth of Bangladesh. Moreover, the low standard deviation (1.28) also confirms that there is no high dispersion among the responses. Moreover, two recent studies Abras (2011) and Ahmed (2009) also had similar findings.

To support this finding, it is worthy to mention that Bangladesh has managed the preferential market access in the major markets in the post-MFA period for its sensible and time-demanded market access policy. For example, Bangladesh has successfully incorporated in the 'Everything But Arms' (EBA) agreement through

which Bangladesh got quota and tariff free access to the EU market. This preferential access highly helped Bangladesh to the increase its garment exports to the EU and made the EU as the biggest export market of the Bangladeshi garment (Abras, 2011). Furthermore, Bangladesh has managed to be eligible for the Generalized System Preference (GSP+) in 2011 which also created the huge potentiality in the EU market. Besides the EU market, Bangladesh has also started to enjoy the duty free market access to Canada, Australia, New Zealand, Norway, and Japan with the 'Rules of Origin' (ROO) changed from double to single transformation. However, the export of Bangladesh to the U.S market is still confronting challenges due to the most- favored-nation (MFN) treatment.

While Bangladesh has managed the preferential access in the major international markets, a huge potential has also been created in the regional markets through the regional cooperation and trade agreements. The most important one is that being the member of the South Asian Association for Regional Co-operation (SAARC) under which Bangladesh was given duty free access of 46 garment products by India from September, 2012. It is expected that this duty free access will enable Bangladeshi garment producers to capture the

huge market of India.

6.2.2. Process Development or Technological Development

In the theoretical framework part in the Chapter two, it has been discussed that a country or nation can raise its efficiency in transforming input to output in internal process by introducing the modern production system and technology. The survey confirms that there have been significant changes with regard to the new technology introduction in the Bangladesh garment industry. All of the surveyed firms reported that they have purchased new machinery and technology in order to increase the efficiency, which immensely helps them to cope with the post-MFA competition. Moreover, respondents were asked to report about the contribution of the introduction of new technology and machinery to their export performance. Most of the respondents rated the introduction of new technology and machinery as 'very favorable' with the mean value of 3.78. In addition to mean value, the low standard deviation (0.568) also confirms there was no high dispersion among the respondents of the firms. Therefore, the result of questionnaire survey has failed to accept the null hypothesis and confirms that the technology has strong positive contribution to the garment growth of Bangladesh in the post MFA period.

Many latest studies such as Abras (2011), Saheed (2008) and Just Style (2010) also supported this finding. According to Abras (2011), most of the garment firms of Bangladesh have invested in new computerized cutting and spreading machinery, high-quality sewing machines, and barcode-enabled inventory management systems which facilitated to sustain and continue its export growth. Saheed (2008) presented many statistics regarding the new purchase of machinery and technology by the Bangladeshi apparel firms in order to prove his argument that technology upgrading plays very crucial role for Bangladesh for fostering its garment export growth in the post-MFA period. For example, he found that the garment sector purchased machinery valued at US$200 million and the textile sector for US$236 million, amounting to a total of $436 million. In the case of spinning industry, Bangladesh was ranked as one of the largest purchaser of spindles and short-staple spindles in 2007 after China and India. Moreover, Just Style (2010) reported that Bangladesh was the number one importer of the hand knitting and semi-automatic flat knitting machinery and second in 2008 and fourth in 2009 in purchasing of the single and double jersey circular knitting machinery.

6.2.3. Compliance of Labor and Environmental Laws

In the literature review part, most of the studies in the pre-MFA abolition period such as World Bank (2005), Ahmed (2007), Mlachila and Young (2004) and Haider (2007) argued that the performance of the Bangladesh's garment sector in maintaining the international labor and environmental laws is not satisfactory and could be a threat for the export growth in the post-MFA period. However, finding of this thesis provides evidence that Bangladesh has been progressing well with regard to the compliance issues since the MFA abolition. The mean value of the effect of compliance on the garment export is found 0.814 which lies under "favorable" category. Therefore, it rejects the null hypothesis and accepts that the compliance of international labor and environmental laws is favorable to the export performance of Bangladesh garment industry.

This finding has been also supported by two recent studies such as McKinsey and Company (2011) and Abras (2011). Mckinsey and Company (2011) found that 67% of the U.S and EU buyers interviewed agreed that the compliance standard in Bangladesh has somewhat improved and 26% buyers reported as strongly improved. Abras (2011) also argued that Bangladesh has taken many

steps to develop the compliance standard, which resulted in a significant development in recent years. For instance, BGMEA has been working with the International Labor Organization (ILO), the United Nations Development Programme (UNDP), the German Technical Corporation (GTZ), and the EU in order to address compliance requirements at factory level. Moreover, the Ministry of Commerce has initiated to develop a National Forum on Social Compliance in the textile and garment industry to monitor the factory level performance.

However, this study has found a high standard deviation at 2.51 which indicates that some firms are extremely performing well while some others are yet struggling to comply with the labor and environmental laws. Moreover, the mean value is pretty low which also suggests that Bangladesh still needs to work further on compliance issue.

6.2.4. Labor Unrest

Most of the surveyed firms viewed their export growth are being greatly challenged by the recent labor unrest. The mean value for the labor unrest in correspondence with the export performance is found -3.27. Hence, this mean value advocates that labor unrest is ‘extremely unfavorable’ to the garment

industry growth of Bangladesh and fails to accepts the null hypothesis.

The most common reason for labor unrest is the low wage rate. Although Bangladesh has been facing a strong inflation, there was no initiative to adjust inflation with the minimum wage of garment workers until 2006. In October, 2006; the government increased the minimum wages from taka 930 (US$16) to taka 1662 in 2006 (US$24) per month. Yet, the increased wage was not sufficient to meet the pace of inflation and protestors demanded minimum wages to be increased to 5000 taka (US$ 72). Responding to the demand of the protestors, Bangladesh government raised minimum wage to 3000 taka (US$43) in 2010. However, there is still huge gap between the demanded and increased minimum wage and many labor unions and protestors expressed dissatisfaction at proposed increase. Therefore, it is early to predict whether increased minimum wage will be enough to end labor unrest.

Besides the low wage, the long working hours, delay in promotion, irregular payment of salary, low overtime payment, lack of paid leave, lack of medical and maternity benefits, absence of job protection and lack of housing facilities often

lead to labor unrest (Habib, 2009).

6.2.5. Functional Upgrading

In the chapter two, we have discussed in the theoretical framework that any country or nation can upgrade its position in the global garment value chain by engaging in greater value added function. With regard to the functional upgrading, Bangladesh garment industry has achieved a significant progress particularly during the last 5-6 years. The majority of firms were traditionally engaged in cut-make-trim (CMT) function. For instance, a World Bank survey conducted in 2005 found that 67% of garment firms in Bangladesh were engaged in CMT production. From the rest of 33%, majority of the firms were engaged in FOB-1 which means these firms were capable of managing all financial, raw materials inputs and supplying all necessary production service except design, final finishing and packaging. No firms were found as FOB-2 firms who could carry out the whole process of production. However, our survey has found a completely different picture. Out of 70 surveyed firms, 68 firms' responded regarding their nature of function. From 68 respondent firms, 56 (85%) and 4 (6%) firms were engaged in FOB-1 and FOB-2 respectively whereas only 6 (9%) firms were found involved in CMT function.

While the finding of this thesis provides evidence that the Bangladeshi garment firms has accomplished an outstanding progress in upgrading from CMT to FOB-1 production, a limited progress has been achieved in upgrading from FOB-1 to FOB-2. Only 4 surveyed companies can offer finished products by providing all necessary production materials, including branding. Therefore, it can be concluded that Bangladesh has been progressing rapidly in upgrading the process of production but there are still enough opportunities in upgrading in the design and branding.

One of the arguments for having less FOB-2 firms in Bangladesh garment sector could be the size of the firms. As it shown in the table 4.2, most of the firms are in medium size in terms of the employed capital. Therefore, it is very difficult for a medium size company to afford the sophisticated and expensive technology for designing as well as bearing the huge advertisement cost in the international branding. Another argument could be the origin of the firms. Most of the garment firms in Bangladesh are owned by domestic entrepreneurs who have limited capital, experience and knowledge to carry out all the process of production.

6.2.6. Market Diversification

Traditionally, Bangladesh garment exports were largely concentrated in two major markets. However, the survey result shows that the situation has started to change gradually since the MFA phase out. In the pre-MFA abolition period, only 21 out of 52 firms exported to any third nations besides the U.S. and EU, while 66 out of 69 firms export to any third nations in the post-MFA period. This finding provides an indication of the export diversification of Bangladesh's garment market during the post-MFA period and thereby rejects the null hypothesis and accepts that the market diversification leads the Bangladeshi garment exports in the post-MFA period.

The finding of this thesis is also supported by the trade statistics of BGMEA (2011). According to BGMEA (2011), the export of the Bangladesh garment to the U.S. and EU was 98.10% while other nations were 1.9% only in 2001-2002. However, since then a turnaround trend was observed in exports to other countries and increased to 15.46% whereas export to the U.S. and E.U decreased to 84.54% (see table 6.5)

Table 6. 5: The Percentage of the Market Share in the U.S, EU and other countries

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Year	U.S.	E.U	U.S. & E.U	Others
2001-2002	42.67	55.43	98.10	1.90
2004-2005	30.64	64.24	94.88	5.12
2008-2009	29.91	58.46	88.37	11.63
2010-2011	25.82	58.72	84.54	15.46

Source: BGMEA, 2011.

One of the motives which lead the Bangladesh garment export to diversify could be the government incentive. To illustrate it more, the government of Bangladesh has announced three-year incentives for searching new garment markets in 2008. Under this scheme, garment exports to countries except the U.S, the EU and Canada received 5%, 4%, 2% cash incentives for the financial year of 2009-10, 2010-11 and 2011-12 respectively. Another explanation could be the quota and tariff free access in the emerging markets. For example, Australia, New Zealand, China, India and Japan have given quota free access of the Bangladeshi garment in their respective markets.

6.2.7. Availability of the Raw Materials

The figure 5.7 shows that Bangladesh garment industry is highly dependent on imported raw materials. All of the surveyed firms reported that they import their used raw materials mostly from China, India, Pakistan and Central Asia. Therefore, we accept the null hypothesis that unavailability of raw materials causes tremendous negative impact on the growth of Bangladesh garment industry.

The consequences of scarcity of raw materials could be many. As we discussed before, overdependence of imported raw materials causes longer lead-time, foreign currency disbursement. Additionally, firms need to open a back-to-back letter of credit (L/C) for which they need to pay high interest rate along with the different commission and charges for the middlemen involved. Hence, paying these charges increases the production cost.

There are many reasons for the scarcity of raw materials in Bangladesh. The first and foremost one is the land area of Bangladesh. To describe it more, the production of basic raw materials for garment such as cotton and silk need vast area of land. However, Bangladesh is a very small country and thereby very

limited land areas available to produce silk and cotton. Another reason could be the need of the sophisticated technology. An expensive and sophisticated technology is needed to produce yarn and fabric. However, most of the firms are in medium size in terms of the invested capital (see figure 5.2.1) that can hardly afford such expensive and sophisticated technology.

6.2.8. Role of the International Buyers

The mediums which are used to channel the export of the Bangladeshi garments are highly concentrated on the international buyers and international traders. According to the table 5.2, among these 69 firms, 64 firms channel their export by using one of the export mediums directly: international traders and international buyers. However, rests of the 5 firms use more than one medium. To be more specific, 8 firms exports directly, 1 firm exports through the international traders, 55 firms export through the international buyers, 3 firms export both directly and the international buyers and 2 firms channel their export through both the international traders and buyers. Hence, these finding provides the evidence that the international buyers dominate the Bangladesh garment industry. The most popular international buyers for Bangladesh's garment are Wal-Mart, H & M, JC Penny, GAP, NIKE, Adidas, Kohl's etc.

The international buyers, the most important player in the global garment value chain, play very important role not only in channeling the Bangladesh's garment export but also in sustaining its current growth. All of the surveyed firms who export through the international buyers acknowledged that the international buyers always create pressure to maintain the international labor and environmental laws. To meet the pressure from the international buyers, they have taken many effective measures in order to comply with the international labor and environmental laws. Therefore, by creating pressure on the local producers, the international buyers contribute greatly to improve labor condition and factory environment in the Bangladesh garment industry.

Moreover, international buyers help in the skill development of local workers by providing different professional and vocational training. For example, German buyer Güldenpfenning GmbH has been providing vocational training skills to the unskilled and unprivileged garment workers of Bangladesh since 2007. Moreover, 31 out of 55 surveyed firms who export through the international buyers informed that they receive different technical and financial support from the international buyers which eventually help to increase their productivity as well.

Chapter Seven

Conclusion

The main objective of this study is to identify the competitive factors that contributed towards the growth of the garment sector of Bangladesh after the MFA phase out by evaluating its competitiveness in terms of other competing countries. The study has initially conducted an econometric analysis with regard to the macro-economic factors based on the secondary data. Besides the secondary data, the study has also collected primary data regarding both the macro-economic and industry-specific factors for improving the reliability and validity of the findings. The summary of the econometric model and questionnaire survey are described below.

7.1. Summary of the Findings from the Econometric Model

Based on an empirical time series analysis of the econometric model, this study found four out of six statistically significant macro-economic factors that are either positively or negatively correlated with the garment industry growth of Bangladesh. Wage rate and corporate tax rate are discovered as positively significant while lending interest rate and lead-time are found negatively

significant to the garment industry growth of Bangladesh. This study found no relationship between inflation and garment industry growth. The econometric model suggests similar results for paved roads and availability of electricity.

7.2. Summary of the findings from Questionnaire Survey

The surveyed firms were asked to rate (on a scale -5 to +5 where -5 for extremely unfavorable; 5 for extremely favorable) both the macro-economic factors and industry-specific factors of competitiveness that contributed to increase or decrease their export after the MFA expiry. With regard to the macro-economic factors, the respondent viewed the wage rate as extremely favorable (score 4.38), interest rate as very unfavorable (score -3.66), corporate tax as fairly favorable (score 1.94), infrastructure as extremely unfavorable (score -4.43), exchange rate as quite favorable (score 2.48), lead-time as fairly favorable (score 1.98) and corruption as very unfavorable (score -3.85) to the garment export of Bangladesh.

Regarding the industry-specific factors towards the competitiveness of the garment sectors in Bangladesh, the respondent responded the export policy as

quite favorable (score 2.32), availability of raw materials as very unfavorable (-3.35), market diversification as favorable (score 0.837), technological development as very favorable (score 3.78), compliance of labor and environmental law as favorable (score 0.814), government support as very unfavorable (score -3.22) and labor unrest as very unfavorable (score -3.27) to the export growth of the Bangladesh garment industry.

By employing both the econometric model and statistical tools from the primary and secondary data, the study comes up with empirical evidence that the wage rate, corporate tax rate, market access policy, exchange rate, technological development, compliance of international labor law and market diversification have contributed positively while the infrastructure, interest rate, corruption, lead-time, availability of raw materials, government support and labor unrest have contributed negatively to the garment export growth of Bangladesh during the post-MFA period.

7.3. Suggestions for the Further Studies

The study presents all the facts and factors that help the Bangladesh garment industry to sustain and expand its growth in the post-MFA period. The findings of this thesis are reasonable, valid and original with its limitation. However, the limitation of this study can be avoided by doing further research considering the following suggestions.

Firstly, as this study is undertaken to identify the competitive factors of the garment industry focusing only on Bangladesh, the findings is valid to some extent but not to full extent. In order to have more valid findings and broader conclusion, we suggest to pursue further research in this filed by including more countries who are both the gainer and loser from the MFA phase out.

Secondly, it is needed to expand the scope of the collection of primary data by increasing number of survey firms and target respondents. Hence, further researches can be conducted by increasing more survey firms as well as including the opinion not only from the management side but also the workers

side. This kind of expansion would reduce the biasness of the findings at the minimum level.

Finally, it is obvious that the abolition of MFA has not only effect on the overall garment export performance but also on the competitiveness of the major garment export products. However, this study has not covered that how the end of the MFA phase-out has affected the competitiveness of major garment export products in the major garment markets including the U.S and EU. Therefore, any studies aim to tackle this issue is appreciable.

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Appendix

Sample Questionaire

Questionnaire for identifying the competitive factors of Bangladesh Garment Industry after Multi-fiber Arrangement phase-out

Dear participant

We would like to invite you to participate in our research study which is being pursued by Ritsumeikan Asia Pacific University, Japan. Along with this letter, there is a short questionnaire that asks a variety of questions about the current status of your firm and Bangladesh garment industry in order to comprehend the current situation of garment producing firms. It should take you about 10 minutes to complete and your kind participation will be a great contribution to the findings of this research. The information you provide is strictly confidential and would be used for research purpose only. Moreover, your name and your company name will not be disclosed under any circumstances. If you have any questions or concerns about completing the questionnaire or about being in this study, you may contact us at: mdsaal10@apu.ac.jp or 81-8039-456-304 (mobile).

Thank you for your co-operation.

Best Regards

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and
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1. Profile of Respondents

1.1. Name of the garment firm:

……
……

1.2. Address:

……
……

1.3. Name of owner or Managing Director

……
……

1.4. Name of interviewee:

……
……

1.5. Email:

……

1.6. Types of ownership:

□ Single □ Partnership □ Corporation □ Joint-venture with foreign firms □ Totally Foreign Owned

1.7. If the firm owns by Joint venture, what is the ratio of foreign partner owns?

□ 1%~49% □ 50%~99%

1.8. Type of products that you produce:

□ knitted garment □ Oven garment □ both □Others (……....)

1.9. The process of production:

□Cut, Make, & Trim (CMT) □ FOB-1 (including arrangement of input but excluding design) □ FOB-2 (including arrangement of input and design)

2. Background of the RMG firm

2.1. Year of establishment:

□ Before 1985 □ 1985~2005 □ 2005~2011

2.2. What is your capital on establishment in BDT?

□ Less than 5 million □ 5 million to less than 10 million □10 million to less than 20 Million □ more than 20 million

2.3 What is your Current Capital in BDT?

□ Less than 5 million □ 5 million to less than 10 million □ 10 million to less than 20 Million □ more than 20 million

2.4. How many employees you had in establishment?

□ 1~100 □101~500 □ 501~1000 □ more than 1000

2.5. How many Employees do you have now?

□ 1~100 □ 101~500 □ 501~1000 □ more than 1000

2.6. What is the average level of wage per month (including overtime) for the operators and helpers in your firm?

□ $38~$40 □$41~$50 □ $41~$50 □$50~$60 □Others (……..……)

2.7. Do you use imported raw materials for production?

□Yes □No

2.8. If yes, what is the percentage of your imported raw materials?

□ 1%~20% □21%~50% □51%~80% □ More than 80%

2.9. From where, do you import your raw materials?

□China □India □Pakistan □ Central Asia □others (…….)

<u>3. Trade environment after expiry of the MFA</u>

3.1. Do you know about the MFA (Multi-fiber Arrangement) expiry?

□ Yes □ No

3.2. Do you still export your products after MFA expiry?

□ Yes □ No

3.3. If yes, which are your top three markets for exports in terms of export value in the current post-MFA expiry period?

(Please put the tick (✔) mark in your desired answer column)

Country	Export Performance			
	1st	2nd	3rd	Not Significant
U.S.A				
E.U				
Japan				
Canada				
Mexico				
Australia				
Brazil				
Middle East				
Turkey				
South Africa				
Others				

(Specify) …….				

3.4. Which were your top three export markets in terms of export value before the MFA expiry?

Country	Export Performance			
	1st	2nd	3rd	Not Significant
U.S.A				
E.U				
Japan				
Canada				
Mexico				
Australia				
Brazil				
Middle East				
Turkey				
South Africa				
Others (Specify) …….				

3.5. How do you export your products?

□ Export directly □ Export through international traders □ Export through international buyers

3.6. If you export through international traders, could you mention the name of the international firms and it's originate country?

Traders Name	Originate country
1.	
2.	
3.	
4.	

3.7. If you export through buyers, which company/companies are your top buyers?

□GAP □H & M □Levi Strauss □Adidas □Target □Children's Place □Wal-Mart □The William Carter □VF jeans wear □Matalan □Blue Star □Nike □PVH □C&A □JC Penny □khol's □MGT □American Marketing □ others (please Specify)……

3.8. If you export through international buyers, do you get any financial or technical

support from your international buyers.

□ Yes □ No

3.9. Have your exports increased after MFA expiry?

□ Yes □ No □ No Change

3.10. What are the factors, you think, contributed to increase / decrease your export after MFA expiry?

Please rate the degree of importance and circle the appropriate number (-5=extremely unfavorable, -4= very Unfavorable, -3= somewhat unfavorable, -2= not very unfavorable, -1= unfavorable 0= average, 1 =favorable, 2 = not very favorable, 3 = somewhat unfavorable, 4 = very favorable, 5 = extremely favorable)

Factors	Ratings
Export Policy	-5 -4 -3 -2 -1 0 1 2 3 4 5
Corporate tax Policy	-5 -4 -3 -2 -1 0 1 2 3 4 5
Wage Rate	-5 -4 -3 -2 -1 0 1 2 3 4 5
Infrastructure	-5 -4 -3 -2 -1 0 1 2 3 4 5
Interest Rate	-5 -4 -3 -2 -1 0 1 2 3 4 5
Exchange Rate	-5 -4 -3 -2 -1 0 1 2 3 4 5
Factory Environment	-5 -4 -3 -2 -1 0 1 2 3 4 5
Lead-time	-5 -4 -3 -2 -1 0 1 2 3 4 5
Availability of Skilled Manpower	-5 -4 -3 -2 -1 0 1 2 3 4 5
Market Access	-5 -4 -3 -2 -1 0 1 2 3 4 5
New Machinery and Technology	-5 -4 -3 -2 -1 0 1 2 3 4 5
Compliance of International Labor and Environment Law	-5 -4 -3 -2 -1 0 1 2 3 4 5
Corruption	-5 -4 -3 -2 -1 0 1 2 3 4 5

Government Support (Cash Incentive, Import substitution and prompt Bureaucracy)	-5 -4 -3 -2 -1 0 1 2 3 4 5
Labor unrest	-5 -4 -3 -2 -1 0 1 2 3 4 5
Others (Please specify) …….	-5 -4 -3 -2 -1 0 1 2 3 4 5

3.11. Have your profits increased after MFA Expiry?

□ Yes □ No □ No Change

3.12. Did you buy any new capital assets after the MFA expiry?

□ Yes □ No

3.13. Do you think RMG sector of Bangladesh is facing a higher competition after MFA expiry?

□ Yes □ No

3.14. If yes, which countries do you think are the competitors of RMG sector of Bangladesh?

Please rate the degree of competition you face, in terms of their effects on RMG exports (1 = not important, 2 = somewhat important, 3 = important, 4 = very important, 5 =most important)

Country Name	Degree of Competition
China	1 2 3 4 5
India	1 2 3 4 5
Vietnam	1 2 3 4 5
Cambodia	1 2 3 4 5
Indonesia	1 2 3 4 5
Sri Lanka	1 2 3 4 5
Philippine	1 2 3 4 5
Turkey	1 2 3 4 5
Others(specify) ……..	1 2 3 4 5

3.15. Do you think that international labor and environment law compliance became very important factor to the major markets after MFA phase out?

□ Yes □ No

3.16. If yes, please specify the markets

□ European Union □ United States □ Canada □ Australia and New Zealand □Japan □ Others (Please specify) ……..

3.18. Impacts of the MFA expiry on other aspects of business:

Aspects	Better	Worse	Same
Productive Capacity			
Wage Rate			
Over time Work			
Lead-time			
Factory Environment			
Others (Please Specify) ……			

3.19. What are the potential markets for export of RMG sector of Bangladesh?

□ Japan □ Middle East □ Australia □ New Zealand □ Canada

□ India □ Turkey □ México □ Brazil □ South Africa

□ Others (Please specify)……

3.20. Have you taken any measures to cope with the competition in the post-MFA period?

□ Yes □ No

3.21. If yes, what measures have you taken?

Please rate the degree of measurement you have taken in order to increase RMG exports (1 = no effective, 2= somewhat effective, 3= effective, 4=very effective, 5= most effective)

Measurement	Rating
Upgrading of technology	1 2 3 4 5
Training Workers	1 2 3 4 5
Minimizing lead-time	1 2 3 4 5
Improvement factory Environment	1 2 3 4 5
Diversification of Export	1 2 3 4 5
Compliance with International Labor Law	1 2 3 4 5
Compliance with International Environmental Law	1 2 3 4 5
Others: (please specify)……	1 2 3 4 5

3.21. Please rate the importance that you attach to the following policies regarding competitiveness of overall RMG industry competitiveness (1 = not important, 2 = somewhat important, 3 = important, 4 = very important, 5 = most important):

Policy	Ratings
Trade policy (policies related to import and export of production, such as tariffs and customs procedures)	1 2 3 4 5
Human Resource Policy (policies related to establishment	1 2 3 4 5

of technical and textile colleges in order to develop skills of workers)	
Tax policy (level of the tax burden and tax design of tax policy, including the way it is administered, directly influencing business costs and returns on investment)	1 2 3 4 5
Infrastructure (policies related to increase electricity production, to proliferation more paved roads and modernize port service)	1 2 3 4 5
Good Governance policy (Policies that can be worked to eradicate corruption and promote Prompt and faster Bureaucracy)	1 2 3 4 5

3.22. Please mention other constraints on Bangladesh's RMG competitiveness in export trade

……
……
…….

Thank you for your kind co-operation.