"Working Today to Shine Tomorrow"

Knit Communiqué

Measuring Competitiveness of Bangladesh Knitwear Sector

Volume 10, August 2017

BKMEA
Working Today to Shine Tomorrow

SEIP
Skills for Employment Investment Program

Ministry of Finance
Government of the People's Republic of Bangladesh

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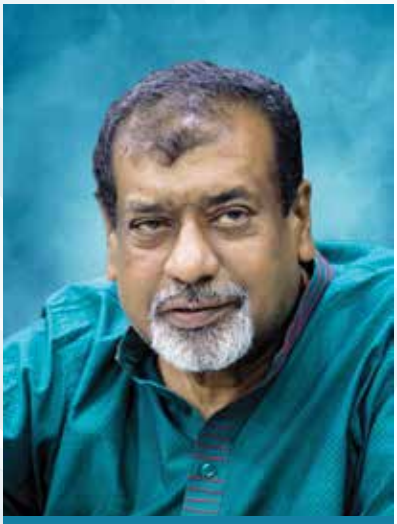

Message from PRESIDENT

Liberalization of the world's textile and apparel trade policies is working as a catalyst for thrive of competitiveness in global apparel market. With that intention in mind, we do have to find out a long term sustainable process by which we could stay stably in the higher position across the globe in apparel export rivalry ahead. BKMEA, as an internationally reputed Business organization of Bangladesh, has launched out on researching into measuring the competitiveness of Bangladesh Knitwear Sector. We have strengthened our research cell and delved into ascertaining a real picturesque of where we stand now in the world. It is important that many-a-times the RMG sector has been outlined as the most pampered sector and top liner in policy framework matrix of the government. So, whether the claim is validated or not is something we have got to get at for formulating a sustainable policy for the development and the welfare of the sector.

This issue of Knit Communiqué has given insight into measuring the location-wise and size-wise competitiveness of Bangladesh knitwear sector and it attempts to investigate the major factors that influence the competitiveness of Bangladesh. This unique piece of work suggests some rigorous policies that may help in enhancing the competitiveness of this sector, especially the small knitwear factories. Recommendations are provided to find out the complications and resolve those accordingly.

Lastly, I would like to thank our Research team for their leniency and resilience to get through this work to completion. I wish this book will be a helpful catalyzer to augment the competitiveness of Bangladesh knitwear sector in global apparel market.

A.K.M. Salim Osman, MP
President.

Message from EDITOR

The knitwear sector of Bangladesh has been playing an important role in the country's industrialization process. From the very beginning, the sector is facing enormous challenges from different perspectives. In spite of these challenges, RMG sector is holding positive growth in terms of export. But the present scenario indicates that the competition is increasing strikingly in international market. There is a gap in research based approach regarding competitiveness of Bangladesh knitwear sector and policy formulation.

As a strategic sector, RMG sector is contributing for the socio-economic development of Bangladesh. It has expanded the country's employability by employing more than 2 million workers and it is acting as a player by raising the purchasing power and by leaving an impact on the country's gross domestic product. It is mentionable that knitwear sector is having strong backward linkages which enables this sector to achieve around 75% value addition domestically. As the sector is currently passing a challenging transformation phase, the competitiveness of this sector largely depends on its success of adaptation with this change.

By adopting Double Diamond Model, this study identifies the competitive factors of the knitwear sector according to factor condition, demand condition, related and supporting industry, firm strategy, structure and rivalry. This study also reveals national and international competitiveness of Bangladesh knitwear sector. Another study also elicit the result that; export growth, average profitability, price competitiveness, cost competitiveness, factor productivity, R & D, ICT uses, and company competitiveness are higher in the large factories compared to small factories. Moreover, competitive advantages vary on different cluster and regions.

I would like to convey my heartfelt thanks to the editorial board, especially the CEO of BKMEA who has closely overlook the whole process from the beginning. I also highly admire the endeavor of Research and Development Cell of BKMEA for giving the tremendous effort to make this study successful. Finally, I am thankful to the reviewer of this publication for his constructive feedback.

Md. Homaun Kabir Khan Shilpi
Vice President (Finance)

Message from REVIEWER

It gives me immense pleasure to write few words in connection with the publication of the 10th volume of "Knit Communiqué", a research based publication of BKMEA. I had the chance to read earlier volumes of this publication and found them immensely beneficial to the researchers, policy makers and general readers in the area of Ready-made Garments and Knitwear Sector of Bangladesh. This time I had the chance to review articles of this volume as a blind reviewer. I have found most of the articles as research based and directly linked to policy-making. To maintain quality we could not provide positive signal to all the articles but there is no limit to quality improvement. My sincere thanks to BKMEA and especially the officials of R&D section for giving me the opportunity to be the part of this publication. This kind of endeavor will act as catalyst in transforming the country from a low income to a middle income country.

Gour Goswami

Dr. Gour Gobinda Goswami
Professor of Economics and Treasurer
North South University (NSU)

Research & Development Cell

Message from R&D

Competitiveness is a coeval theme at present in global apparel market. Bangladesh knitwear sector has grabbed a competitive situation in world market considering the global export of knitwear products. The sustainability of this sector largely depends on the competitive stance in global apparel market.

There are many factors that are clogging the competitive position of Bangladesh knitwear sector in international market. To let the challenges come into view, research & development cell has studied the overall competitiveness scenario. From the very beginning of journey, Research & Development Cell of BKMEA has been working with discreet attention for the development of Bangladesh Knitwear Sector. As characteristics or dimensions of competitiveness are important from policy making aspect, we had initiated intense effort to conduct two different kinds of studies aimed at different objectives.

The hundred percent export-oriented knitwear industry is facing tremendous challenges to keep up the present competitive position in world apparel market. As a result, the dimensions of competitiveness are widely extended. Upon considering the present scenario and in continuation of previous efforts, we conduct two individual studies from two different perspectives. In our first paper titled as "Measuring the Competitiveness of the Knitwear Sector in Bangladesh: Does Location and Size Matter?" marks off the competitiveness of the knitwear sector according to location and size. In the second study denominated as "Understanding the Competitiveness of Bangladesh Knitwear Industry: The Porter's Diamond Approach", we adopt Porter's Double Diamond Model to measure the competitiveness of the knitwear sector.

The Research and Development cell of BKMEA with the steerage and superintendence of BKMEA Board of Directors & particularly the President of BKMEA, has engaged into such an exalted task of collating and collecting the relevant and suitable information, data, facts and figures for the analysis of this research work. We are thankful to our reviewer for his insightful comments and to those researches, who supported us to carry out these studies. We are thankful to govt. and non-govt. organizations, published research papers, national and international data sources, and different websites. We are encouraged by the involvement and support of Asian Development Bank (ADB) and Ministry of Finance of Bangladesh for the publication of this research work.

Research & Development cell
BKMEA

Understanding the Competitiveness of Bangladesh Knitwear Industry: The Porter's Diamond Approach

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Understanding the Competitiveness of **Bangladesh Knitwear Industry**

The Porter's Diamond Approach

Abstract

Purpose: The Bangladesh ready-made garments industry is a strategic sector as it has an enormous involvement in accelerating export growth, economic development, employment generation, and rendering national brand image internationally. The purpose of this study is to measure the competitiveness of the knitwear sector on the basis of Porter's Double Diamond Model.

Methodology: This is a cross-sectional study where purposive sampling techniques have been applied to selected 132 factories at three different locations, i.e., Dhaka, Narayanganj, and Chittagong, where most of the knitwear factories are located. Data has been collected through a survey method by using semi-structured questionnaire. Percentage analysis has been applied to describe the data.

Factor condition: The main factor advantage of the knitwear sector has mostly been found as cheap labour. The results of the study show that labour productivity increased in 79.4% factories, 25.8% factories conducted research and development activities, availability of skilled human resource increased in 65.2% knitwear factories, and wage of the labour increased in all the factories in the last five years.

Demand condition: Bangladesh knitwear industry is 100% export-oriented; hence, competitiveness of this industry does not depend on the domestic demand. In FY 2015-16, knitwear export earnings have been amounted to USD 13.36 billion. Bangladesh is the second largest exporter country of knitwear product all over the world.

Related and supporting industry: The study reveals that about 83% of the knitwear factories of Bangladesh collect order through buying houses, 53% knitwear factories of Bangladesh are directly engaged in outsourcing, 34% knitwear factories supply knitwear through sub-contracting from other factories, and about 53% knitwear factories of Bangladesh are directly engaged in outsourcing to improve the productivity and efficiency of the factory.

Firm strategy, structure and rivalry: Price competitiveness has increased for 38.6% of the factories, cost competitiveness has increased for 25.8% of the factories. Majority of the 79.5 factories report that their factor productivity has increased during the last five years. For most of the factories (55.2%) profit has increased and 62.9% factories report that company competitiveness has increased during the last five years.

Originality value: Based on this Porter's Diamond Model, this study identifies the competitiveness factor of the knitwear sector, and recommendation is provided to increase the competitiveness of the global market.

Keywords: Bangladesh, Knitwear Industry, Competitiveness, Diamond Model.

1. Background of the study

The Bangladesh Ready-made Garments Industry (BRMGI) is the strategic sector of Bangladesh as it has an enormous involvement in accelerating export growth, economic development, employment generation, and rendering national brand image internationally. Bangladesh Ready-Made Garments Industry is the strategic sector for the country that has beefed up USD 28.09 billion, i.e., 82.01% of total export in the Fiscal Year (FY) 2015-16. It has expanded the country's employability by employing more than 4.2 million workers and worked as a player by raising the purchasing power and by leaving an impact on the country's gross domestic product (GDP) at 14.11% at latest. To assert, RMG industry of Bangladesh is segregated broadly in two distinct categories - knitwear industry, and woven-garments industry. In FY 2015-16, knitwear export earnings amounted to USD 13.36 billion and woven-garments export earnings were USD 14.74 billion, slightly higher than the former one. It is noteworthy that knitwear industry (HS Code 61) has a very strong backward linkage which enables this industry to perform 75% to 85% value addition in recent years within Bangladesh.

Despite the fact that BRMGI; especially the Bangladesh Knitwear Industry (BKI); has strong vertical integration production channel and process installed, established, and well performed within the country, it has been facing internal impediments. These include unplanned price hike in gas, complicacies in existing national bureaucracies, tiresome logistic supports, lack of symmetric information about any policy and preference change in foreign markets, etc. There's the battling external threat of rising markets of Vietnam, India, Sri-Lanka, Cambodia, and Myanmar. International buyers are offering low prices and there is an emergence of augmented reality shopping with which BKI entrepreneurs are not still familiar. Thus, the research query has remained, to find newly, the true scenario of competency that BKI does stand on.

In line with the aforementioned circumstances, this study has the objective in realizing the actual stature of competitiveness that BKI does occupy, adopting Porter's Double Diamond Model, certainly, which has enabled this study to reveal BKI's national and international competitiveness.

1.2 Overview of Global Competitiveness of Bangladesh: World Economic Forum publishes Global Competitiveness Index (GCI) report yearly by analyzing global competitive factors. Here it is observed that the overall competency of Bangladesh is rising. Basically the 12 pillars identify the total situation of a country. These are:

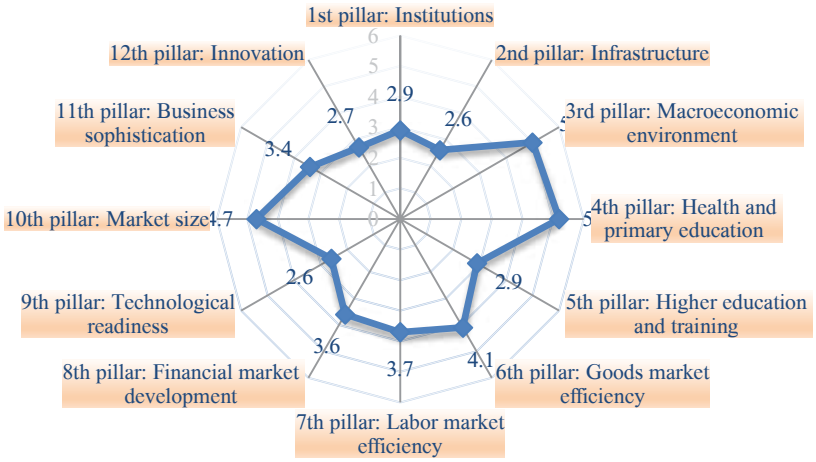
institutions, infrastructure, macroeconomic environment and health and primary education (the basic requirements), higher education and training, goods market efficiency, labor market efficiency, financial market development, technological readiness, and market size (which are efficiency enhancers), business sophistication and innovation (which are innovation and sophistication factors).

Table 1: Global Competitiveness Index (GCI) for Bangladesh

Global Competitiveness Index (GCI) for Bangladesh	Rank / 140	Score/7	Condition
GCI 1-7 (best)	**107**	**3.8**	**Rising**
Sub-index A: Basic requirements	109	3.9	Rising
Sub-index B: Efficiency enhancers	105	3.6	Steady State
Sub-index C: Innovation and sophistication factors	123	3.0	Rising

Source: World Economic Forum, 2015, Global Competitiveness Index, Retrieved from: http://reports.weforum.org/global-competitiveness-report-2015-2016/economies/#economy=BGD

Figure 1: Performance overview for Bangladesh



Source: World Economic Forum, 2015, Global Competitiveness Index, Retrieved from: http://reports.weforum.org/global-competitiveness-report-2015-2016/economies/#economy=BGD

Bangladesh has a comparatively strong position in market, macroeconomic environment, financial market development, health and primary education, goods market efficiency, and labor market efficiency.

1.3 Overview of Competitiveness of the RMG Sector: Competitiveness index measures the international market power through its export share in world market. This is the share of total exports of a given product from the region under study in total world exports of the same product. It takes a value between 0 and 100 per cent, with higher values indicating greater market power of the country and lower values indicating the lower market power in the world market (Mikic & Gilbert, 2009).

$$\frac{\sum_d X_{isd}}{\sum_{wd} X_{iwd}} \times 100$$

Mathematical definition: Where s is the country of interest, d and w are the set of all countries in the world, is the sector of interest, and x is the commodity export flow. In words, it is the share of country's' exports of good i in the total world exports of good (Mikic & Gilbert, 2008).

Table 2: Major Knitwear & Woven wear Exporting Countries of 2015

Exporters	Competitiveness Index (CI) for Knitwear	Competitiveness Index for Woven wear
China	37.49	35.22
Bangladesh	6.77	6.89
Hong Kong	4.10	3.72
Turkey	3.99	2.65
Viet Nam	4.98	5.66
Germany	3.59	3.86
Italy	3.33	5.36
India	3.48	4.19
Cambodia	2.48	0.16
Netherlands	1.60	0.00
ROW*	28.19	32.27

Source: Own calculation from ITC data.
*Note: Higher values indicate greater market power (0-100), *Rest of the World (ROW)*

The table shows that the competitiveness index for knitwear is 6.77 and woven wear is 6.89. Competitiveness index indicates that Bangladesh hold the second position in both knitwear and woven wear.

2. Literature Review

The underneath niche is focused on understanding the concept of competitiveness in line with the BRMGI and BKI to measure and, relevance and applicability of Porter's Diamond Model into this study, consequently.

2.1 Understanding the Competitiveness: For any research associated with the competitiveness the focal point is mostly competitive performance or those factors that impact the competitive performance. Fujimoto (2001) emphasizes on the capability elements that have an impact on the aggressive performance of a firm. According to him, improvement of the functionality enhances the competitive performance of a firm. This betterment takes time; however, it ensures the long-term sustainability of a firm. Over against, enhancing only 'competitive performance' and not 'capability' can also no longer lie adequate in accordance with ensure the long-term improvement about the firm.

According to Memedovic and Gereffi (2003), global apparel market is transferring in conformity with complete package deal production rather than the imported input production. This modifies the alliance in buyer than suppliers regarding clothing product or gives higher autonomy because of manufacturing upgrading of the supplying firm.

According to Memedovic and Gereffi (2003), global apparel market is transferring in conformity with complete package-deal production rather than the imported input production. They find that, the competition between the leading firms in the apparel industry is increasing for more efficient global sourcing. In this case, high value-added design and marketing segments play as key roles for this rising trend.

Haider (2007) depicts, even though Bangladesh is more competitive in certain markets, in order to join the existing world demand, Bangladesh would have to make the level up through palliation of quantity of 'production then distribution' time. This can be done through improvement of factory labor environment or convivial assent issues, through diversification regarding product, development over establishment of infrastructure and political stability.

Ahamed (2013) argues that though Bangladesh has gained exceptional prevalence concerning the RMG sector, it is necessary to rectify the social consent issues because social consent in the RMG industry is fundamental for maximum global purchasers. In this sense, proper monitoring of related laws and advanced human resource management can ensure social compliance in this sector.

Hasan (2013) portrays that a tremendous challenge has been generated to the Bangladesh RMG Industry for allowing free trade. Uprising of strong competitors, relying on raw materials that are imported, imbalanced political situation, economic obstinacy, high interest rates on banks, lack on governance incentives or imperfect learning about global market, port than infrastructural matters, are important issues concerning RMG sector of Bangladesh. In addition to this, pressure from developed countries about compliance issues is settling the challenges tremendously.

Yang (1999) thinks that China should concentrate in ameliorating home textile and clothing market rather than giving attention to global economy. In the near future, Asian countries can provide amplified market with huge number of customers, even though present economic environment is not settled enough. Keeping up with the share with competitiveness is the challenge for China now.

Brenton and Hoppe (2008) suggest that for low-wage countries clothing sector is providing an opportunity for diversifying export and expanding manufactured exports. In addition, the global market for clothing and apparel product are changing together with growing numbers of buyers, swiftness and flexibility over manufacture delivery. This study finds that, where global buyers want to minimize both economic and reputational risk, the probability of export to happen depends on strong governance. The study also suggests that, quality of infrastructure does not work as a strong determinant of clothing export.

From the point of view of Ahmed (2014), to adapt to the growth of RMG sector, it is important to invest in infrastructure, education and trade. He also has taken half policy pointers of a variety of problems such as much occupation policy, regulatory yet governance process, infrastructure, labor, finance, fiscal issues then utility, quality, neighborly or environmental standards, advertising and marketing, and this shows that the area in accordance with policies will end up more competitive yet secure the nearly convivial durability over the country.

Uddin (2014) considers that there are two principal elements in the growth of RMG sector, namely, favorable market access and low cost of labor. Situation has been changed; these factors are no more safeguarding the country in the competitive market. According to his suggestion, for the smooth growth of RMG sector Bangladesh, local supply chain should be improved more, textile industry should be located in the individual zone, bank rate should be reduced, and preserving energy supply, for collecting money from market privatized garments should be converted to public limited companies. Lead time should be reduced, more training should be

given, new marketing strategy hasto be taken for expanding in new market and strategies should be taken by collaborating with government.

Saxena and Lozac'h (2010) specify necessary elements that determine the productivity of factories. In this sense, the vital elements are political situation, natural resources, labor productivity, factory capacity, costs, and infrastructure. According to them, political stability and proper infrastructure would have to stay promoted to boost up trade.

According to the analysis of Belbase and Kharel (2009), after the conclusion of ATC (Agreement on Textile and Clothing) on Nepal's RMG sector, comparative advantage was continued at the HS six-digit level. . They found that duty-free access to the USA market of RMG products were important enough to increase productivity. They concluded by stating that well export strategy, efficient labor force, availability of machinery goods, tax incentives and market access facilities all are crucial conditions to boost up RMG export.

Watchravesringkan et al. (2010) explores the competitive advantage of Thailand's apparel industry. They find four factors work significantly to sustain the competitive advantages in global market. In addition to this, they also explore the importance of Thai govt. to sustain the competitiveness in global apparel market. According to this study, the four determinants upholding the Thai apparel industry are as follows: specialized factors, sophisticated and demanding consumer market, the presence of interdependent economic agents and strategies and structure of Thai companies and domestic rivals.

2.2 Porter's Theory of Competitive Advantage of Nations: Porter Diamond Model delivers an explicit and contemporary idea about competitiveness. Porter (1990, p. 5) claims that, maximum number of theories solely concentrate on 'cost' and that is why it is high time to come up with a new concept. This theory should focus on economies of scale, market diversification, product diversification and distinct use of technology, which will eventually reflect the idea of competition.

He explains the reason behind choosing better strategies by some of the firms in some particular countries in his new theory. He examines his theory with eight developed and two recently industrialized nations for four years. He wanted to understand why in a particular country, some industries attained and sustained competitive advantages than rest of the competitors in global market

Porter's theory was first called as 'the competitive advantage of nations' because the base of the theory was comparative strategy, then it was known as "Porter's (1990)

theory of competitive advantage of nations or the diamond model". According to the theory, cluster of relating industries can flourish the development of any country rather than isolating them. There are four different determinants by which a country can achieve competitive advantage, they are: condition of factors, related supporting industries, condition of demand and plan, structure and rivalry of the firm.In addition, he suggests that for aspiring better competitive performance, government; also have to play an important role.

Figure 2: Four Factors- Porter's National Competitiveness; 2014.

Source: MAS

2.2.1 Factors condition: This factor indicates the position of a nation in production factors (like: infrastructure, human resources, capital resources, physical resources and knowledge resources) which is important for competing in an industry (Porter, 1990). These factors can be divided into two parts: basic factors and specialized factors. Factors like: climate, location, natural resources, unskilled and semiskilled labor are the basic factors. On the other hand, factors like: skilled human resources, creative designers, highly educated personnel etc. are the specialized factors. He states that solely by basic factors nation's competitive advantage cannot be gained as they are not sophisticated enough, thus advanced factors are also necessary. Sledge (2005) show that the condition of advanced factor in the national market have positive effect on firm's global competitiveness. Porter (1990) also adds that due to the development of science, practice and knowledge, advanced factors develop continuously.

2.2.2 Demand Condition: National market demand for an industry's products or services is the condition of demand, which depends on consumers' sophistication level

and demand in the national market. In general, a country's economic development is related to this determinant. Porter (1990) argues that home demand is the elementary source of any firm's competition. Heads that sometime distribution channels, national passions and social norms generate unusual demand which help the country to secure a competitive position in global market.

2.2.3 Related Supporting Industries: The presence or absence of national suppliers and globally competitive industries are known as related supporting industries, the third determinant in Porter's Diamond Approach. (Porter, 1990). According to Porter, particularly competitive supporting industries can assist the central industries significantly to become more competitive by new innovations, information flow, and technological development (Porter, 1990). These clusters of industries are crucial for the success of any given industry as they drive learning, innovation and competitiveness, and are considered to produce the maximum synergies when all requisite institutions necessary to drive learning, innovation, and competiveness and economic agents are connected" (Rasiah, 2009, p. 151).Nation successful industries (sectors) are usually linked through vertical (buyer/supplier) or horizontal (common general buyers, technology, channels, etc.) bases. Vertical clusters create high quality while the horizontal clusters create highly competitive firms. Porter argues that the advantage of both supportive and related industries counts on the rest of the "Diamond", and its systematic character (Bakan & Doğan, 2012).

2.2.4 Plan, Structure and Rivalry of the Firm: Plan, structure and rivalry of the firms is the situation in the nation governing about companies' creation, organization, management and nature of national rivalry (Porter, 1990, p. 71). According to Sledge (2005, p. 25), strategy is the kind of action that a firm use to achieve long- term as well as short- term goals. He states that structure of any firm as the composition of being competitive or monopolistic, global or domestic, or concentrated or dispersed. Porter (1990) further argues that, the success of any national industry depends on sound practices of management. When there is significant rivalry in the domestic market, companies can build up capabilities that can act as competitive advantage on a global scale. Home markets with less rivalry may, therefore, be counterproductive, and act as a barrier in the generating of global competitive advantages such as innovation and development.

3. Data and Method

3.1 Research method: Both qualitative and quantitative techniques of mixed method are applied to conduct this study. Information is collected by using both primary and secondary sources. A desk review of secondary data and documents conducted that presents an overall idea about the present situation. The study will be done following the processes of document search, field visit and data collection, data consolidation and analysis and finally report writing.

3.2 Research Design: This is a cross-sectional study.

3.3 Timeframe and Study Area: The survey had been conducted from January 2014 to December 2014, at three different locations, i.e., Dhaka, Narayanganj, and Chittagong, where most of the knitwear factories are located.

3.4 Sample Technique and Sample Size: Purposive sampling techniques have been applied to select 132 factories at three different locations, i.e., Dhaka, Narayanganj, and Chittagong.

Table 3: Cluster wise Factory Status

Clusters	Factory Status			Total
	Large (A)	Medium (B)	Small (C)	
Dhaka	23	29	8	60
Narayanganj	18	29	11	58
Chittagong	18	29	11	58
Total	45	66	21	132

Source: Survey result by R&D Cell, BKMEA

3.5 Data Collection: Data collection procedure has been performed through a survey questionnaire developed earlier based on the responses of pilot survey run at Dhaka-based 5 factories.

3.6 Data analysis: SPSS 21 programwas used to analysis the data. Percentage analysis was applied to descriptive and analyzing the data.

4. Result

4.1 Factor Conditions: Labor force is the central factor of production of knitwear industry. Bangladesh has 151.7 million population comprising 77.66 and 74.04 million male and female respectively. According to labor force survey of BBS (2013), the total number of persons engaged in economic activities is 2.45 crores of which 83.46% are male and 16.45 % female. Of the 40.52 lakh women engaged in economic activities, 25.74 lakh are in manufacturing, largely the garment Industry. Moreover, Bangladesh is a labor-intensive country. The employment is 1.78 million directly and 0.5 million indirectly, of which, 75% are women, involved in knitwear industry of Bangladesh in current fiscal year 2015-2016. The industry has the potential to absorb the labor force. Bangladesh's population has entered into productive age. Now it is high time to reap the demographic dividend (BBS 2012)

4.1.1 Wage: The knitwear sector of Bangladesh has witnessed robust growth in wage rate during last previous years. According to the study 100% of knitwear factories have increased the wage rate of their workers. There is no decline and stable conditions of wage rate were seen in knitwear factories.

Table 4: Factor conditions

4.1: Wage rate growth of organization (Percentage)

Increases	**100**
Decreases	**0**
No change	**0**

Source: Survey result by R&D Cell, BKMEA

4.1.2 Change in wages to the total production cost: The knitwear sector of Bangladesh has faced a significant growth in wage rate which led to an increasein overall production cost toa large extent. The production cost of all knitwear factories have increased for rising wage rate.In knitwear factories, the change in wages increases total production cost by 100%.

4.2: Change in wages to the total production cost (Percentage)

Increases	**100**
Decreases	**0**
No change	**0**

Source: Survey result by R&D Cell, BKMEA

4.1.3 Change in labor related cost to the total production cost: The knitwear sector of Bangladesh has witnessed significant change in labor cost during last previous years. As a result overall production cost also increases remarkably. The change in labor related cost increases total production cost by 99.2%. At the same time, it decreases total production cost by 0% and total production cost remains unchanged by 0.8%.

4.3: Change in labor related cost to the total production cost (Percentage)

Increases	**99.2**
Decreases	**0**
No change	**0.8**

Source: Survey result by R&D Cell, BKMEA

4.1.4 Productivity of labor during last five years: Productivity measures the output, which is produced by using per unit of input. The knitwear sector of Bangladesh has undergone significant rise in productivity during last five years. According to this study, during last five years productivity increased in 79.4% knitwear factories, decreased in 4.6% knitwear factories and productivity remains unchanged in 16% knitwear factories.

4.4: Productivity of labor during last five years (Percentage)

Increases	**79.4**
Decreases	**4.6**
No change	**16**

Source: Survey result by R&D Cell, BKMEA

4.1.5 Availability of skilled human resource during last five years: Availability of skilled human resource is one of the major challenges in Bangladesh knitwear industries. According to the study, availability of skilled human resource increases in 65.2% knitwear factories, decreases in 25% knitwear factories and remains unchanged in 9.8% knitwear factories. In case of skilled manpower, it has been observed that, around 5 lac Indians and 2 lac Sri-Lankans are working in BRMGI, and BKI is not an exception to that.

4.5: Availability of skilled human resource during last five years (Percentage)

Increases	**65.2**
Decreases	**25.0**
No change	**9.8**

Source: Survey result by R&D Cell, BKMEA

From the visited knitwear factories, 34% factory depends on import of their input demand. For them, the share of import to sales is only 14% from the studied 132 factories.

4.1.6 Present condition of labor productivity: The knitwear sector of Bangladesh has reflected moderate productivity of workers during last few years. According to the study, the condition of labor productivity has considered as good in 37.1% knitwear factories, moderately good in 56.1% knitwear factories and not good in 6.8% knitwear factories.

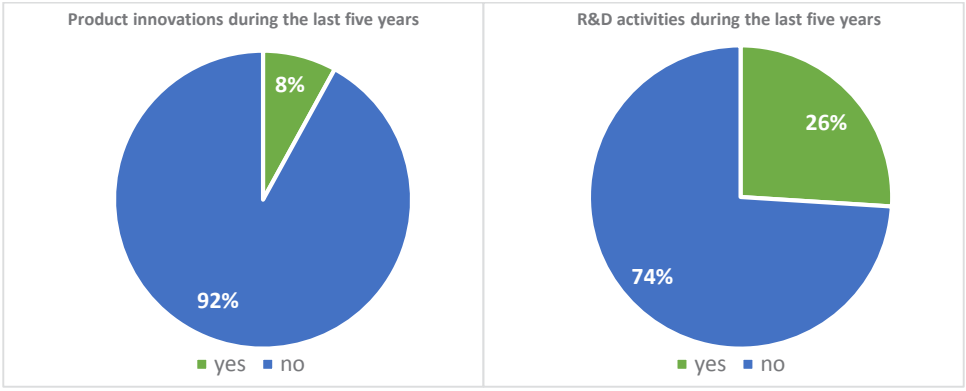
4.6: Present condition of labor productivity (Percentage)

Good	**37.1**
Moderately good	**56.1**
Not good	**6.8**

Source: Survey result by R&D Cell, BKMEA

4.1.7 R&D activities during the last five years: Research and development is important in developing new products and create new knowledge. In RMG industries, this section works for energy saving, products development and waste control. This is also inevitable for market expansion as well as product expansion. This table shows that 25.8% factories conducted research and development activities during the last five years.

Figure 3: Product Innovations and R&D Activities during the last five years.



Source: Survey result by R&D Cell, BKMEA

Product innovation refers to development of new products, bringing change in existing design and incorporating new materials with established products. Product innovation plays significant role to sustain in competitive global market. The study reveals that 8.3% knitwear factories of Bangladesh works for product innovation while 91.7% factories make the products according to the buyer's requirement.

4.1.8 Capital: Capital is the most important factor for knitwear industry. Thus, businesses collect their desired capital for the production through a bank loan and owners' equity mainly. Business managers needed capital by taking loans from banks. In case of managing financing capital needs they followed both ways, i.e., firstly, sold a fraction of own equity to interested investors, secondly, took loan from banks.

4.1.9 Land: For inspiring export oriented businesses and facilitating, Bangladesh has planned to set up 100 special economic zones gradually. There are already 21 special economic zones working efficiently and government is functioning to raise the figure to 100 for creating greater opportunities for industrialization, investment and employment with the expectation that those special economic zones will enhance the country's economic growth further.

4.2 Demand condition: According to Porter, demand condition is a very crucial condition for new innovation and up gradation of product quality. Porter claims that the more demanding domestic customers are, the more competitive the domestic firms are likely to be. Bangladesh holds an overall second position in exporting knitwear

products in the world market in terms of export volume. Therefore, maximum world demand for knitwear products is met up by China and Bangladesh.

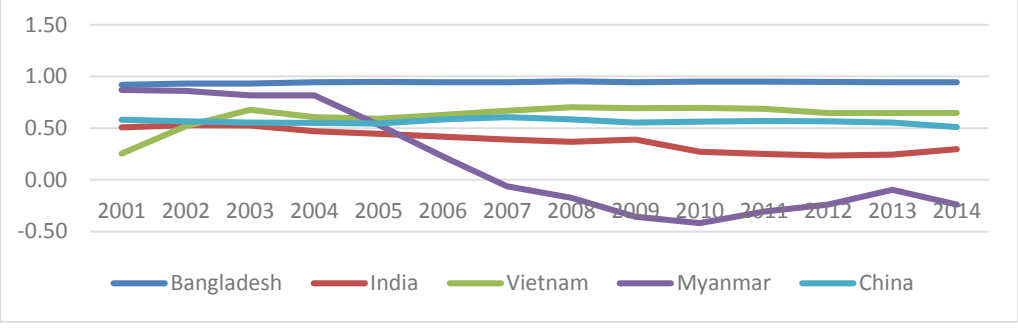
Table 05: Bangladesh Knitwear Export Position in the World (In terms of export value)

Region	Position
Asia	Second
Africa	Thirteen
Commonwealth Country Group (53)	Second
European Union (EU 28)	Second
Andean Community	Seventh
America	Sixth
Asia-Pacific Economic Cooperation (APEC)	Fourth
Middle East Countries	Tenth
Overall	**Second**

Data Source: ITC trade map (accessed: April 2016, Data Calculation: Authors' own calculation.

Figure 4 depicts the relative comparative analysis by Balassa index. The major five exporting competitors of knitwear products are China, Bangladesh, Vietnam, India, and Myanmar. The figure shows that Bangladesh has steady static and prosperous NRCA index than the competitor countries. Therefore, it can be easily defined that she meets the world knitwear export demand consistently.

Figure 4: Normalized Revealed Comparative Advantage (NRCA) for Knitwear Products



Source: Author's own calculation based on ITC Trade Map (retrieved on December 2015)

The major knitwear exporting players in the world are China (1st), Bangladesh (2nd), Vietnam (6th), India (8th), and Myanmar (contiguity of Bangladesh) in terms of value for 2014. It is easily seen that the competitive position for Bangladesh is strong enough to meet the global demand condition.

Table 6: Geographic scope of export specific advantage

Major Players (1)	Major five export product labels (2)	World Rankings (2)=(3)
China	Electrical, electronic equipment; Machinery, nuclear reactors, boilers, etc.; Furniture, lighting, signs, prefabricated buildings; Knitwear; Woven Wear	1
Bangladesh	Knitwear; Woven Wear; Other made textile articles, sets, worn clothing etc. ; Footwear; Fish	2; 3;12; 26; 36
Cambodia	Knitwear; Woven Wear; Footwear; Electrical, electronic equipment; Wood	9; 19;18; 67;50
Hong Kong	Electrical, electronic equipment; Pearls; Machinery, nuclear reactors, boilers, etc.; Optical, photo, technical, medical, etc. apparatus; Plastics	2; 2; 8; 11; 13
India	Mineral fuels, oils, distillation products, etc.; Pearls; Vehicles other than railway, tramway; Machinery, nuclear reactors, boilers, etc.; Organic chemicals	16; 6; 22; 27; 12
Indonesia	Mineral fuels, oils, distillation products, etc.; Animal, vegetable fats, and oils, cleavage products, etc.; Electrical, electronic equipment; Rubber; Machinery, nuclear reactors, boilers, etc.	23; 1; 30; 8; 38
Pakistan	Cotton; Other made textile articles, sets, worn clothing etc.; Knitwear; Cereals; Woven Wear	4; 3; 19; 14; 24
Sri Lanka	Knitwear; Woven Wear; Coffee, tea, mate, and spices; Rubber; Pearls	17; 22; 8; 31; 70
Turkey	Vehicles other than railway, tramway; Machinery, nuclear reactors, boilers, etc.; Knitwear; Electrical, electronic equipment; Iron and steel	18; 26; 4; 31; 15
Viet Nam	Electrical, electronic equipment; Footwear; Woven Wear; Mineral fuels, oils, distillation products, etc.; Knitwear	13; 3; 4; 49; 5

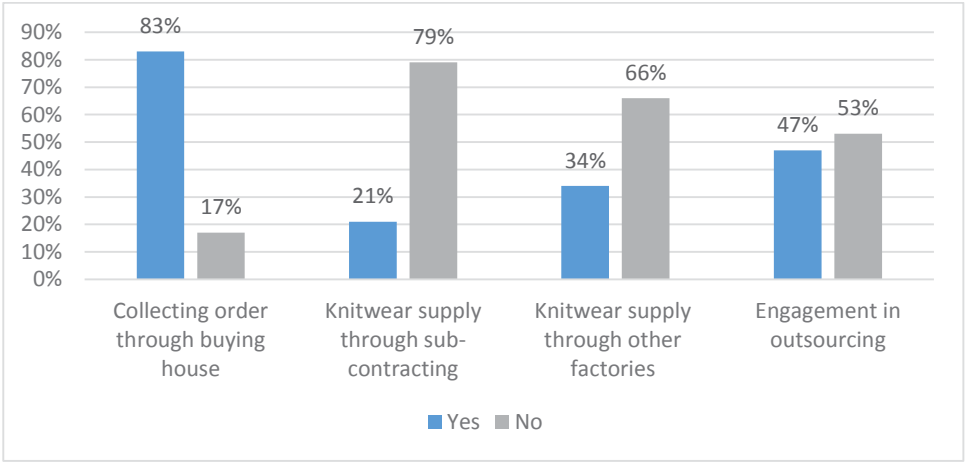
Source: ITC trade map (accessed: April 2016)

The geographic scope of export-specific advantage shows that the major players of knitwear exports and global position of exporting that product accordingly (Table 3). The world export rankings determine the global competitive strength of the five prime exporting products. The mentioned five products are amongst major exporting items of those countries. China, Bangladesh, Cambodia, Pakistan, Sri Lanka, Turkey and Vietnam have only knitwear export items of five primary exporting products.

However, maximum exporting bundles of Bangladesh cover clothing and textile items.

4.3 Related and Supporting Industries: Related and supporting industries are directly or indirectly related to many different industries and which covers all the players and are a clustering of the industry. Clusters are inter-related firms and other enterprises that manage the competitiveness of a determined industry (e.g., private enterprises of varying sizes, associations, suppliers, customers, universities, financial institutions, training and other business service providers, and other groups). Nation successful industries are usually linked through vertical (buyer/supplier) or horizontal (common general buyers, technology, channels, etc.) bases. Vertical clusters create high quality while the horizontal clusters create highly competitive firms. Porter argues that the advantage of both supportive and related industries counts on the rest of the 'Diamond', and its systematic character (Bakan and Doğan 2012).

Figure 5: Related and Supporting Industries



Source: Sample survey result by R&D Cell, BKMEA

4.3.1 Collecting order through buying house: Buying-house is an intermediary party who makes contact between buyers and producers. In RMG industry buying houses usually communicate with foreign buyers who want to buy garment products and simultaneously contact with domestic factories to supply the product according to buyers' demand. Factories working through buying houses earn lower profit comparing with those who do not work through buying -houses. Eventually, working through buying-houses negatively affects the competitiveness of knitwear industry of

Bangladesh. This study reveals that 83% factories collected order through buying-houses.

4.3.2 Knitwear supply through sub-contracting and other factories: Sub-contracting is a business practice where additional individuals or companies are hired by main contractor to complete an assigned project in time. Sub-contracting is used usually to ensure faster and cheaper production. In case of Bangladesh, only 21% knitwear factories take sub-contracting order from other factories which hold mainly lower capacity of production.

Sub-contracting reveals the lower production capacity of a particular factory, offering its workers with lower wage rate and leaving them in unsafe conditions. Though BKI factories are found to be performing production following national safety and standards to date, but there is still a possibility of un-authorized sub-contracting mechanism, that may cause industrial disputes, and mishaps. Though small portion of knitwear factories supply knitwear products by taking orders, the existing factories should attract more policy support for improving productivity and safety standard. Sub-contracting is a widely practiced concept in RMG Industry as it plays imperative role in reducing lead time. In addition, according to this study, 34% knitwear factories supply products through other factories.

4.3.3 Outsourcing: Outsourcing is an effective cost-saving strategy used by different companies to reduce cost by transferring resources. To reduce certain costs – for instance high taxes, high energy costs, production or labor costs, excessive government regulation or mandates–this business strategy is being used worldwide.

In case of knitwear industry of Bangladesh, a large number of knitwear factories are engaged in outsourcing, which indicates strong unavailability of quality raw materials and other resources in our country. Based on buyer's requirement, large portion of knitwear factories outsource upgraded technology and skilled manpower. According to the study, about 47% knitwear factories of Bangladesh are directly engaged in outsourcing to improve the productivity and efficiency of the factory. Though outsourcing can increase competitiveness of knitwear industry by cutting off overall operational cost this strategy leads to deterioration of long term competitiveness of this industry.

4.3.4 Backward Linkage and Value Addition of Bangladesh Knitwear Industry (BKI): The development of BKI has significantly contributed to the formation of backward linkage factories including dying-printing- finishing and so on. The number of registered dying-printing- finishing units in Bangladesh, at present, has reached to

236, at the same time, yarn-processing units and fabric processing units are 407 and 788 respectively (BTMEA[1], 2015). Knit sector has also contributed significantly to the establishment of garment accessories and packaging units which are 1300 in number and these units are employing currently 0.3 million workforces (BGAPMEA[2],2015). According to the statistics of BTMEA, the total export volume of yarn-processing mills and fabric processing mills from June 2014 to May 2015 was USD 28.21 and105 million respectively. On the other side, according to the estimation of BGAPMEA, total revenue generated by garments accessories and packaging factories was USD 61.19 million in FY-2013-14. In addition, this amount would exceed USD 231.87 million by the year 2018.

Table 7: The number of Bangladesh Knitwear Industries and their Backward Linkage Factories

Factories	No. of Factory
Spinning mill(govt. owned)	18
Spinning mill(private owned)	407
Fabrics Manufacturing	788
Dye-Finishing	236
Terry Towel	87
BGAPMEA	1300

Source: BTMEA, 2015, BGAPMEA,2015).

Knitwear sector of Bangladesh is playing the key role in installing and generating revenue of these factories, which are, registered members of BTMEA and BGAPMEA. Beside this, backward linkage factories of Bangladesh knitwear sector have been playing a crucial role in increasing domestic value-addition of this sector. In year 2015, the domestic value addition of Bangladesh knitwear sector has been around 70%**.**

4.4. Firm Strategy, Structure and Rivalry: In case of price competitiveness, during last five years price competitiveness increased in 38.6% factories, decreased in 8.3% factories and remained unchanged in 53% factories.

1 BTMEA stands for Bangladesh Textile Mills Association

2 BGAPMEA stands for Bangladesh Garments Accessories & Packaging Manufacturers & Exporters Association

Table 8: Firm Performance

8.1: Price competitiveness in the last 5 years (Percentage)

Increased	**38.6**
Unchanged	**53.0**
Decreased	**8.3**
Total	**100.0**

Source: Survey result by R&D Cell, BKMEA

Similarly, during last five years cost competitiveness increased in 25.8% factories, decreased in 5.3% factories and remained unchanged in 68.9% factories.

8.2: Cost competitiveness in the last five years (Percentage)

Increased	**25.8**
Unchanged	**68.9**
Decreased	**5.3**
Total	**100.0**

Source: Survey result by R&D Cell, BKMEA

In case of factor productivity during last five years, factor productivity increased in 79.5% factories, decreased in 15.9% factories and remained unchanged in 4.5% factories.

8.3: Factor productivity in the last five years (Percentage)

Increased	**79.5**
Unchanged	**4.5**
Decreased	**15.9**
Total	**100.0**

Source: Survey result by R&D Cell, BKMEA

Profit condition states that, during last five years profit increased in 55.2% factories, decreased in 10.4% factories and remained unchanged in 34.4% factories.

8.4: Profit in the last five years (Percentage)

Increased	**55.2**
Unchanged	**34.4**
Decreased	**10.4**
Total	**100.0**

Source: Survey result by R&D Cell, BKMEA

In case of company competitiveness, during last five years company competitiveness increased in 62.9% factories, decreased in 5.3% factories and remained unchanged in 31.8% factories.

8.5: Company competitiveness in the last five years (Percentage)

Increased	**62.9**
Unchanged	**31.8**
Decreased	**5.3**
Total	**100.0**

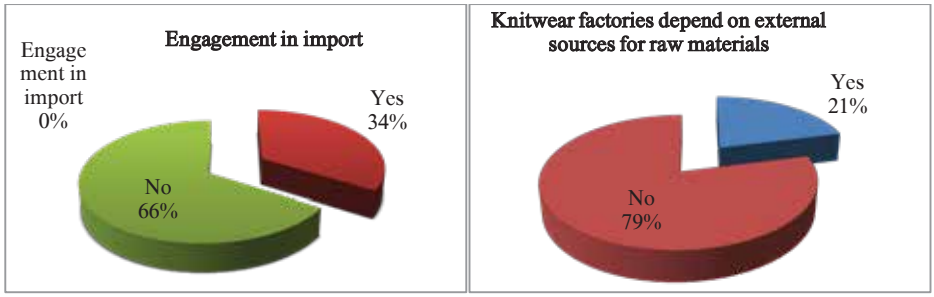
Source: Survey result by R&D Cell, BKMEA

Competitiveness of the knitwear industry is becoming strong day by day. After the Rana Plaza disaster, all the factories have been trying to meet the compliance by developing the working condition, security condition and ensuring green environment in the factory area. And now it is well -known to all over the world about our international standard. Standard quality of product, international standard of factory-security condition, green industry development, all these actions have been taken to enhance our global competitiveness. The knitwear industry has already achieved various certifications from BSCI, OKETEX WRAP, ISO; which also provides the assurance of best quality product. As a result, buyers are very much encouraged by giving more work order. The new knit-products are creating own demand to buyers. With the justification of consumers' and buyers' demand, knitwear industry has introduced knitted jacket, which has a combination of knit and woven.

Participating in several international trade fairs with the help of BKMEA, many factories can introduce their products on a cheaper rate than the other competitors. Competitiveness of intra-industries can improve and diversify their products which also show the strength of the industries. In Bangladesh, inter-industry competition effects on the positive development of total knitwear industry. It develops bargaining power, safe working environment, new technology, etc. All of these finally develop our strength of competitiveness all over the world. Factory collects labour in different way, for example one factory representative states that "For worker recruitment, we go for putting on job advertisement in national reputed daily Bengali newspapers; sometimes we go for sourcing required workers by spreading the information regarding vacant positions within the industry area we are actively working". Some businesses manage necessary workers by activating own links with skilled and semi-skilled workers working with homogenous works in other factories.

4.4.1 Engagement in import: Import volume plays a very significant role in measuring competitiveness of knitwear industry of Bangladesh. Globally rising demand and quality product make strong backward linkages in this industry. Eventually, import volume is decreasing significantly day by day.

Figure 6: Engagement in Import



Source: Survey result by R&D Cell, BKMEA

This study reveals that 34% knitwear factories of Bangladesh are engaged in imports especially for insufficiency of raw materials. For machinery products this industry is mainly dependent on China, Japan, Italy, and Germany etc. Additionally, Bangladesh also imports yarn, fabric, dyes, chemicals and accessories from India, Pakistan, china and European countries.

The overall import scenario makes a clear projection that in41% knitwear factories import growth increased during last five years, in12% knitwear factories import growth decreased during last five years, and in11% knitwear factories import growth remain constant during last five years.

4.4.2 New trade relation in near future: Additionally, market diversification is a very vital strategy in increasing competitiveness of a specific industry. Bangladesh is searching for new markets to diversify the knitwear market. South Africa, Latin America (Brazil, Argentina, Chili, Mexico, Colombia, and Bolivia etc.), Middle East (Singapore, Kuwait, Egypt etc.) and some EU countries are the emerging markets for the knitwear products of Bangladesh. Bangladesh is also adopting product diversification strategy to make the industry more competitive in global market. Including top ten knitwear items (610910, 610510, 611090, 611020, 610462, 610990, 610821, 611030, 610711, 610342) more fashionable and quality products are being introduced (including 610349,611020,611010, 611020, and 610721 etc.) in global market.

Moreover, the export scenario reveals that the major destinations of knitwear export are USA, Canada, major EU countries (including Germany, France, UK, Italy, Russia, Turkey, Denmark, Sweden, Poland, Spain, Netherland, Check Republic, Portugal, Belgium, Croatia, Hungary etc.), Australia and Japan by exporting the following major products according to HS (Harmonized System) code 610910, 610510,611010, 611020, 611030, 610342, 610432, 610462, 610821, 610349, 610469, 610711 and 610990.

4.4.3 Marketing and advertising activities for the development of knitwear factories: Marketing is used to maintain a good relation with buyers and retailers across the world. It has positive effects on export through expansion of new market and communication with foreign buyers. Marketing helps this industry in effective buyer sourcing. Direct communication with buyers removes unnecessary hassles and delays thus have positive effect in reducing lead time. Market diversification for fashionable knit product is more feasible by maintaining proper marketing policy.

4.4.4 Effect of competition (rivalry) on business: Competitive behavior has significant contribution on product diversification and improving product quality. The knitwear industry of Bangladesh is adopting latest technologies and machineries in production process to maintain strong competitive position in international market. The competitive strategy makes the industry more concerned about ensuring safe working environment. Producers are providing proper training and motivation to their workers to improve productivity. Practice of competition in this industry has great influence on market expansion and has positive impact on policy and strategy. The practice of competition encourages developing the industry as compliance standard.

5. Chance and Governmental Role

Different incentives e.g. fiscal and non-fiscal incentives from government of Bangladesh for new market expansion encourage exporters to expand the export destination into the new and emerging markets is required. Since the beginning of the 1990s, Bangladesh has adopted a number of policies to facilitate the expansion of the private Industry and increase the inflow of foreign investment.

Relaxed regulations for RMG industry help to expand export. For example, imports undertaken by 100% export-oriented industries are exempted from customs duty. Alike updated Export Policy 2012-15, amended Industrial Policy 2015 could be the most effective steps to sustain the competitiveness of the Bangladeshi knitwear industry.

While interviewing, it has come in front from the interviewees that incentives should be placed on at greater extent to grow the RMG Industry more.

"Surely, government policy and financial incentives will raise the production, thus this increased production will help export grow as if we have the opportunity to capture China's share that it had foregone already with a view to intensifying themselves more into heavy industries."

It has been observed that interviewees are highly concerned about political instability, and according to them, if there is political stability round the year then it would increase RMG export further in last couple of years. Moreover, participants praised government initiatives that are taken with a view to getting back GSP though it has remained as a matter of frustration that till now they are unable to observe any remarkable progress and still Bangladesh could not occupy any Regional Trade Agreements (RTA) either with economic blocs, such as, Gulf Cooperation Council (GCC) and Commonwealth Independent States (CIS) or with any other commercially potential countries, i.e., Turkey, Pakistan, China and Australia. Perhaps, it is put on by the interviewees that though in European Union, Bangladesh is getting Zero-Duty facility but due to non-tariff barriers (NTB), the country's foreign currency earnings from the region is not advancing much according to the expectations. RMG entrepreneurs ask the Bangladesh government to take effective steps to cast away these NTBs through bilateral and multilateral negotiations.

Table 9. Summary table with overall result of the study:

The overall result of the study collected from primary sources considering four factors of porter's national competitiveness is mentioned below:

Factors	Major changes
Factor condition	
Wage	Increasing
Change in wages to the total production cost	Increasing
Change in labor related cost to the total production cost	Increasing
Productivity of labor during last five years	Increasing
Availability of skilled human resource during last five years	Increasing
Present condition of labor productivity	Moderately good
R&D activities during last five years	74% factories don not run R&D activities

Factors	Major changes
Demand condition	Knitwear sector of Bangladesh can meet the world knitwear export demand consistently.
Related and Supporting Industries	
Collecting order through buying house	83% factories collect order through buying house
Knitwear supply through sub-contracting	only 21% knitwear factories take sub-contracting order from other factories
Knitwear supply through other factories	Only 34% knitwear factories supply products through other factories
Engagement in outsourcing	Only 47% knitwear factories of Bangladesh are directly engaged in outsourcing
Firm Strategy, Structure and Rivalry	
Price competitiveness in the last 5 years	Remain unchanged
Cost competitiveness of the last five years	Remain unchanged
Factor productivity	Increasing
Profit in the last five years	Increasing
Company competitiveness	Increasing
Engagement in Import	Decreasing

Source: Survey result by R&D Cell, BKMEA

6. Concluding remarks

BKI export earnings have grown by 19.105% annually on average since 2003-04 to this year, indicating a quick expansion and establishment of BKI factories, which has directly created job opportunities for 1.78 million people and indirectly for 0.5 million people among whom 50.82% are female workers, contributing to the national GDP at 6.04% in the Fiscal Year 2015-2016 (Source: BKMEA)

Following the adopted Double Diamond Model here, it has been found that, BKI has attained today's national and international competency level through the years, becoming vertically integrated within the country in backwardly linked supply factors, i.e., yarn supply, dyeing and printing facilities, knitting facilities, etc. In a way, this triumphant journey has been possible due to the availability of workers at cheaper rate comparing to its competing countries. But this study finds that stakeholders now think that it would not remain as blessing for long, as if, not only commodity price level is going up, but land price, house rent, transportation cost, clothing, and utility expenditures, all sorts of daily living expenses are getting high.

Thus, the pressure for increasing wage level has been repeatedly barked on by worker groups, trade unions and national and international agencies. Moreover, labor productivity of Bangladesh is very low comparing to that of competing countries, namely, China, India, Sri Lanka, Vietnam, Turkey, and Cambodia. Wage level without working on labor productivity will leave BKI in doomsday soon- by realizing this fact, the study realizes and reveals, it is now high time to fetch experts across countries to provide workers, mid-level management staffs with on the job and off the job training programs. However, interviewee stakeholders also find lack in themselves, as they do not think they possess good leadership skills, visionary outlooks, and strategic proficiencies with what they could bind workers with proper motivation and counseling, where arranging cultural programs, picnics and offering them with proper medical and child care facilities raise their morale and ensure industrial coherences. Additionally, they do not think they can settle down any intrinsic dispute rather than taking stringent acts, with a view avoiding razes. The interviewees have suggested formation of participating committee including representative from owner's side, mid-level management and worker side, as the workable mechanism.

To keep a growing industry healthy in an adverse world economic dynamics, it has been advocated to have government interventions into it, providing necessary fiscal and non-fiscal incentives toward stakeholders, and attracting thus draining foreign direct investments in the BKI in order to make it completely complaint with international work place safety, environment protection standards. As if, Bangladesh is going to run out of gas in few years, BKI stakeholders feel to see effective initiatives taken by government to look for alternative power and energy generating ways with a view to making it uninterrupted.

It has come up, that good industrial relationship should be there between workers and employees, and remuneration to workers and mid-level management should be given at the just time. Moreover, workers should get introduced to multitasking that they may get skilled in multiple segments of works. Meanwhile, still the production planning is not well equipped, turning out, BKI factories should go for complete digitalization by implementing Enterprise Resource Planning Software, and Traceability Artificial Intelligence upon entire backward-forward links in counting less wastage, understanding the markets better, and taking better business continuity plans.

The knitwear industry has been on a tremendous growth all over the world. Availability of cheap labor facility gives Bangladesh a significant advantage against

the competitors to invite investors and give chance to buyers for submitting their orders very easily. This special facility creates the efficiency and strengthens of export rate in knitwear industry. On a very short term of work order period, Bangladesh can export products to Germany, France, Japan, USA, UK, EU, Italy Canada, Denmark, Spain, and Poland. Despite lack of own raw materials, it can facilitate the export by importing maximum raw material from abroad and gain the credit by using cheap labor.

If Bangladesh develops its backward linkage support with a friendly policy, this will take a significant growth all over the knitwear industry. Many foreign companies consider Bangladesh a hub to produce their product. Buyers from South Korea, Australia, Malaysia, Portugal, Czech Republic, give Bangladesh priority to produce their product at a cheap rate. There have a lot of competitors in this region like India, China, Indonesia, and Thailand. But Bangladesh attracts many foreign buyers from Netherland, Belgium, Croatia, Greece, Cyprus, Sweden, Mexico, Russia, and Turkey with the good quality of product, and commitment of due time shipment. In the upcoming future, most of the knitwear investors of Bangladesh are looking forward to developing the export market in some new countries like Peru, Hungary, Belarus, Chili, Latvia, South Africa, New Zealand, Romania, and Bulgaria. This is the real figure of a positive competitive attitude of Bangladesh and it is rapidly growing on an efficient scale.

7. Recommendations

1. As 83% of the knitwear factories of Bangladesh collects order through buying houses, they have to pay extra money that increases their cost. Buying houses also enjoy a certain portion of export order as commission. As a consequence, negotiating factories are experienced with dramatically reduction in the profit margin frequently. In this sense, factories should take sophisticated marketing strategy and develop their capacity of negotiating power with buyers to reduce the dependency on buying houses. In this regard, BKMEA is conducting a short course named "Business Development and Buyer's Communication" under "Skills for Employment Investment Program" (SEIP) to develop the capacity of the mid-level and high level managers and owners dealing with buyers. Government should also take proper initiative to provide this kind of course and training to reduce the dependency on the buying houses.
2. To attract buyers and to increase knitwear exports, it is essential to maintain a good relation with buyers and retailers across the world. Marketing and

advertising activities can maintain such types of relation through a proper way with importers. The goal of business success depends on marketing and advertising activities. It is well established that marketing and advertising activities have positive impacts on market diversification, factory competitiveness, and direct communication with buyers.

3. To increase export, it is essential to develop backward linkage in factories or supporting industries. Availability of accessories domestically, proper line-balancing, more local spinning industries, enhanced supply chain facilities, technical up gradation in the production process, and reduction of import-export lead time should be the major concentration to increase export and to get a stable competitive situation for the knitwear Industry.
4. As the main factor advantages of the knitwear sector are the availability of labor with reasonable wage and skilled entrepreneurship, development of skilled human resources should be prioritized for ensuring strong competitive position in global apparel market. In this sense, relevant training should be provided to the unskilled and semi-skilled workforce for improving their productivity. Providing vocational training is also important to increase the productivity of the existing labor force.
5. Increasing dependency on external sources for raw materials increases the cost of production. Consequently, it adversely affects the price competitiveness scenario of knitwear sector. In this sense, proper initiatives should be taken to encourage local industries for production of raw materials domestically.
6. As Knitwear sector is the largest exporting sector of Bangladesh, the economy of Bangladesh largely stands on the development of this sector. Moreover, Bangladesh is the second largest exporter country of RMG products in international market and competing with other rigorous markets. Upon considering this circumstance, role of government is an exigent factor to improve the RMG sector of Bangladesh. Proper policy support from government such as incentivize factories for technology up gradation and production of high value added products, brand development at the enterprise level, ensuring stable policy regime, availability of power and electricity and sufficient infrastructural development are crucial for short, medium and long term sustainability.

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Measuring the Competitiveness of **Knitwear Sector in Bangladesh**

Does Location and Size Matter ?

Abstract

Purpose: Bangladesh has become the second-largest garment exporter in the global market where the knitwear sector is one of the significant sectors. This paper attempts to measure the location-wise and size-wise competitiveness of Bangladesh knitwear sector and it attempts to investigate the major factors that influence the competitiveness of Bangladesh

Methodology: This is a cross-sectional study and purposive sampling techniques have been applied to select 132 factories at three different locations, i.e., Dhaka, Narayanganj, and Chittagong. Likert-type question has been used to analysis data. Furthermore, simple index construction logic has been used to measure the Information and communication technology (ICT) and Research and Development (R & D) activity. Finally, the competitiveness has been measured by mean, and ranked according to mean value to compare the competitiveness according to size and location.

Result: This study demonstrates that larger factories are more competitive compared to medium and small factories. Further, the result also reveals that export growth, average profitability, price competitiveness, cost competitiveness, factor productivity, R & D, ICT uses, and company competitiveness are higher in the large factories compared to small factories. This study also reveals that factories located in Dhaka have more competitive advantages than factories located in Narayanganj and Chittagong. According to the size of the factories, larger factories have more competitive advantages than smaller factories.

Originality: This study identifies the competitiveness of the knitwear sector according to the geographical variance and size. Furthermore, this study also suggests some rigorous policies that may help in enhancing the competitiveness of the knitwear sector, especially the small knitwear factories.

Keywords: RMG, Knitwear, Competitiveness, Comparative Advantage, BKMEA.

1. Introduction

Bangladesh has had some pessimistic economic overview during 1971, but due to the expansion of the RMG industries in Bangladesh over the past three decades, this is changing, especially since this industry is the second largest RMG exporter in the world after China. This also means that the expansion of this industry means securing its position as the key driver of the Bangladesh economy. This sector is considered as the backbone of Bangladesh economy that is not only the major sources of foreign revenue, but also plays a crucial role in socio-economic development by creating employment, women empowerment and poverty alleviation (Rodrigues and Khan, 2015).

In Ready-made Garments, knitwear sector is a strategic sector that has exported knitwear products equivalent to US$ 13.35 billion in Fiscal Year (FY) 2015-16, accounting for 47.54% of total RMG export of Bangladesh and by creating direct employment of 1.6 million people. It has also been maintaining a domestic value addition of about 75% over the last several years. Despite many problems and difficulties such as natural disasters, poor infrastructure, weak governance and political conflicts faced by this sector over the last decades, it has positively contributed to the robust economic growth, earned competitive efficiency, and ensured social commitment (Bhattacharya et al. 2002). In FY2013-14, both garment and knitwear sectors provided 4.2 million direct jobs, contributed to 16 percent of GDP, and earned 75 percent of foreign exchange (BKMEA, 2016).

According to the Perspective Plan (2010-2021), Bangladesh will transform herself from a lower middle-income country to middle-income country status by 2021. RMG export is a major source of foreign exchange and the economy of Bangladesh highly depends on the export earnings. Thus it is crucial that a positive goal is achieved. To recall, Her Excellency, Prime Minister Sheikh Hasina, Government of People's Republic of Bangladesh, has announced her precise vision for Bangladesh RMG sector to reach US$ 50 billion exports by 2021. In line with this, Bangladesh Knitwear Manufacturers and Exporters Association (BKMEA) has already designed a blueprint to export at least US$ 20 billion worth of knitwear products by 2021. At present, the knitwear sector contributes to 6.04% of the total Gross Domestic Product that is expected to reach at 7.2% in 2021. The RMG sector is accounting for 82.01% of the total country export in FY 2015-16, whereas knitwear export is expected to be 38.99%, and it stands on the road to achieving our targeted export earnings.

The European Union (EU) is the largest destination for Bangladesh knitwear products, and is worth a value of US$ 9.4 billion with a share of 70.52% exported in FY 2015-16. This is followed by the USA that is worth a value of US$ 1.4 billion and a share of 10.45%. It is encouraging to note that over the last five years, remarkable progress has been achieved in diversifying exports to non-traditional markets. The share of apparel export to non-traditional markets, other than EU and USA, is 6.88% in FY 2008-09, and this figure rose to 18.91% in FY 2014-15. Overall, in the last five years, a significant export has increased to Australia, Japan, China, Russia, Turkey, Brazil, Mexico, South Korea, Malaysia, India, Argentina, South Africa, UAE. BKMEA is eyeing at grasping new country-markets, such as, Belarus, Chile, Paraguay, Kyrgyzstan, Kenya, Nigeria, Qatar, Saudi Arabia, Iran, etc. After all, other co-factors such as integrated business plan, technical upgradation and development of local spinning industries, backward linkage improvement, and increase in utility supply have created a new dream for many global buyers for outsourcing their demands from Bangladesh.

The RMG industries have faced several international and domestic challenges over the last three decades. In the international market, implementation of the rules and regulations of the World Trade Organization (WTO), possible trade diversion from various regional trade agreements, and preferential trade arrangements among different groups of countries are of special concern for Bangladesh. In the domestic market, the challenges include lack of backward-linkage industries (supplying inputs) for woven garments making sector, though it is a very strong one globally for the knitwear sector. Moreover, low labor productivity and technical deployment, and inadequate infrastructure development adds gravity towards challenges. In addition, this sector has been facing increasingly serious problem with offering high-quality, low-cost products within a short lead-time; and to meet health, social, and environmental compliances. Besides this, simple import to export management has made the Bangladesh knitwear industries lack in activity, innovational ability and insufficient international competition.

RMG sector in Bangladesh is divided mainly into two broad categories: woven and knit. The share of knit garment products have increased since the early 1990s.The RMG export of FY2014-15 is about $ 31.20 billion where total RMG export is $25.49 billion and this is 81.71% of total export. In this case, knitwear export is $ 12.43 billion and woven export is $ 13.06 billion (*iART*, Apparel Statistics, 2016,) In terms of export, the knitwear sector is one of the leading export sectors. Additionally, this sector has global competitiveness in terms of product quality and price, through

industrial up gradation, usage of latest machinery, vertical integration, and industrial agglomeration.

This scenario makes a clear view that Bangladesh has achieved a globally competitive (RMG) sector. In spite of major rigorous challenges, this sector is holding its position strong enough for a steady period of time. But the real scenario notifies that the competition is increasing remarkably within industries to industries, sector to sector both at national and international levels. In addition, the competitive advantage of the knitwear sector is also largely determined by the characteristics of the sector, the nature of the resource used to, management capability and capacity of its planners, as well as value chain relative to its competitors. Furthermore, the competitiveness of the knitwear sector also depends on regional differences, buyer behavior, political and ethical factors and size of factories.

The major competing countries in those markets are India, China, Vietnam, Cambodia, Pakistan, Sri Lanka, Turkey, Egypt and Uzbekistan respectively. Most of the cases the countries have more updated and fashionable product design, stronger backward linkages, availability of raw cotton and skilled hard working labor. Because of favorable geographical location some of the exporter countries can achieve 100% value addition in domestic market where Bangladesh has about 75% value addition in domestic knitwear market. Countries are adopting latest technology and machinery in production chain to shorten their lead-time. Furthermore, most of the competing countries are earning more competing price in global market which are badly affecting the competitiveness of Bangladesh knitwear Industry.

Though Bangladesh has low relative labor costs, but it's not sufficient enough for improving the competitive position of the RMG sector. Moreover, the 'export quota system' in trading market played a significant role in the success of RMG industries since early 1980s but the quota system came to an end in 2004. Even, the US suspended the GSP (Generalized System of Preference) facility after the incident of fire tragedy of Tazreen Fashions and building collapse of Rana Plaza. Consequently, the competitiveness issue requires special attention for the long-term sustainability of this sector.

This study is designed to measure the size and location wise competitiveness of Bangladesh knitwear industry. Furthermore, this paper is an attempt to quantify and recognize the direct and indirect contribution of this sector. This paper will focus on how to improve the competitiveness of knitwear sector and what is happening at the regional and country levels in bigger economies. This paper will provide a blueprint for governments and development partners to formulate and implement sustainable

strategies for achieving higher levels of competitiveness of Bangladesh knitwear at regional and national levels.

2. Review of Literature

The competitiveness related studies mainly focus on the competitive performance or factors influencing competitive performance. Fujimoto (2001) emphasizes on the capability factors that influence the competitive performance of a firm. According to him, improvement in the capability of a firm enhances its competitive performance. This improvement takes time but it ensures the long-term sustainability of a firm. In contrast, improving only 'competitive performance' and not 'capability' may not be sufficient to ensure the long-term development of the firm.

Saxena and Lozac'h (2010) identify important factors that increase the productivity at the factory and the country level. The important factors are trade, political climate and natural endowments, policy environment, labor, factory capacity, costs, infrastructure, financial environment and productivity. According to this paper, political stability and infrastructure should be developed to foster trade.

Belbase and Kharel (2009) examine the status of the competitiveness in Nepal's RMG industries after the end of the Agreement on Textile and Clothing (ATC). They also analyze the production and export coherency issues from the trade competitiveness perspective. The root cause analysis (RCA) of this paper shows the RMG sector as a whole (HS Chapters 61 and 62 together), the two chapters individually as well as the top twelve exports (for 2006) at the HS six-digit level continue to possess a comparative advantage in the post-ATC period. At the same time, both multiplicative and additive RCA indices (RCA1 and RCA2) show that the sector/product lines exhibit a revealed comparative advantage. Duty-free access of RMG products to USA market is also crucial to increase productivity. This paper suggests that the export policy, skilled manpower, market access, tax incentives, labor market and availability of machinery goods, all are needed for improving competitiveness scenario.

Tanvir, Muqaddim and Hossain (2014) examine the overall competitiveness issue from two comprehensive dimensions: facade stage and unfathomable stage. This paper suggests to upgrade the working environment of the garments factories. Moreover, corruption, political instability, bureaucratic complexities should be lessened to foster the competitiveness of the RMG sector.

Uddin (2014) shows that the internal competitive advantage leads to increase in the competitiveness of Bangladesh in the global apparel market. The result shows that

cheap labor, preferential access, low investment and low energy cost are the basis of competitive advantage of Bangladesh garments industries. This paper recommends that development of local supply chain, development of infrastructure, separated zone for garments industries, meeting the standardization of social compliance, low bank interest rate, conversion of private garments to public limited companies, sustainable energy, increasing the number of training center, reduction of lead time, working in collaboration with government, and branding strategy should be taken to explore new market.

Parrish, Berdine, Cassill and Oxenham (2008) examine the possible way to increase the competitiveness of US textile companies in global market. They also find that Research and Development, marketing, and customer service are the three competitive strategies of the US firms.

Samsul (2012) explores the factors that contribute to the growth of the garment sector after MFA was phased out in Bangladesh. Moreover, this study also identifies the factors that had negative effect on the growth of Bangladesh garments industries. By using both the econometric and statistical analysis, the result proves 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 had a positive effect to export growth while the poor infrastructure, high interest rate, corruption, longer lead-time, unavailability of raw materials, lack of government support, and labor unrest had negative effect on export growth. Finally, he reveals that the end of the MFA quota had no strong negative effect on the overall garment export performance as well as the competitiveness of the major garment export products.

Watchravesringkan, Karpova, Hodges and Copeland (2010) examine the competitive advantages of the Thailand apparel sector. They also explore the Government's role in increasing the competitiveness in global apparel market. This study also suggests some rigorous strategies for the Thai apparel companies to increase their competitiveness in global market. They find that sophisticated and demanding consumer market, the presence of interdependent economic agents, strategies and structure of companies and domestic rivals are the main determinants of competitiveness of Thai apparel industries. Furthermore, the study also explores that Thai government provided significant support to enhance the global competitiveness of Thai companies.

Hasan (2013) examines the competiveness of Bangladesh ready-made garments industries after the abolition of Multi-Fiber Arrangement (MFA). Bangladesh was

enjoying quota free market access for garments under the MFA since 1974, but this was phased out in 2005 under the Uruguay round of GATT in 1994. By analyzing different crucial factors such as export destination, cost of production, lead time, market share, profit margin, market diversification, incidents in garment industries, government support in this sector, potential measures in future this paper finds that phasing out of MFA cannot hinder the growth of ready-made garment sector of Bangladesh.

Haider (2007) examines the competitiveness of Bangladesh ready-made garment industry in major international markets. This paper finds the USA and European Union as the major export hub for Bangladesh export of RMG products. Bangladesh has strong competitive position in the EU while comparing with USA and according to this paper, China and India are more competitive in the USA market compared to Bangladesh. This paper finds that decreasing lead-time is the one of the crucial factor towards improving surface-level competitiveness and deep-level competitiveness of Bangladesh RMG sector. In this case establishing common bonded warehouse can act as a major incentive to reduce lead-time.

From the available literature we observe that there are some studies that measure the competitiveness of apparel industries in Bangladesh. But as far as we know, there is no study that measures the location-wise and size-wise competitiveness of the knitwear factories. Considering this drawback, this is the first study to estimate the location- wise and the size- wise competitiveness of the knitwear sector of Bangladesh. Thereafter, this study provides some recommendations that may help foster the competitiveness of the knitwear factories, especially the competitiveness of small factories.

3. Data and methods

Dhaka, Narayanganj and Chittagong were purposively selected for this study. These three locations are the core center for business and industries, and most of the RMG factories are located in these three areas. First, a total list of knitwear factories was collected from BKMEA. Among this list, 132 knitwear factories were selected through judgment sampling method. A questionnaire that included both open-ended and close-ended questions were developed to collect the data that were related to goal and purpose of the study.

Primary data was collected through factory-to factory-survey by a well-trained survey team. Five training sessions were conducted before the survey team went to factory visit so that everyone got a clear understanding of the overall purpose of the survey and their respective roles and responsibilities.

3.1 Data analysis technique: SPSS was used to analyze the data. The data was presented as the mean of the variable. Further, Likert questions were used to measure the factory's export growth, profitability, price competitiveness, cost competitiveness, factor productivity, and company competitiveness capability. To analyze the data, each of the item is measured by giving the Likert item value: decrease=1, unchanged=2, and increase=3. Moreover, simple index construction technique is applied to measure the R&D activities and ICT use.

3.1.1 ICT index: The ICT use is a multidimensional concept and cannot be measured by a single indicator. ICT is measured by using ICT related questions and creating an index of the included variables. Here five questions are used to measure ICT, each with the response choices of 'yes' or 'no'.

1. Use of computer in production/marketing of goods;
2. Use of internet connection in production/marketing of goods;
3. Use of email connection in production/ marketing of goods;
4. Use of fax machine;
5. Having own website.

To create the index of ICT, the numbers of 'yes' responses were added to the five questions above (yes=1, no=0). For example, if a factory answered 'yes' to five of the five questions, then index score is 5, meaning that ICT use is high. If a factory answered 'no' to all five questions, then ICT use is 0, indicating that ICT use is low. This ICT index score ranges from 0 to 5 that denotes lower to higher ICT use.

3.1.2 R&D index: Three questions are used to measure R&D activity, each with the response choices of 'yes' or 'no'

1. Did the organization conduct any Research and Development (R & D) activity during the last five years;
2. Did the organization introduce any product during the last five years;
3. Did the organization get any product patented during the last five years;

To create the index of R&D, we simply added up the number of 'yes' responses for the three questions above (yes=1, no=0). For example, if factories answered 'yes' to three of the three questions, then the index score would be 3. If a factory answered 'no' to all three questions, then R&D activity is zero. This R&D index ranges from zero to three representing lower to higher R&D activity.

4. Result

4.1 Descriptive analysis: Export growth of the large, medium, and small industries is 2.82, 2.71 and 2.50 in Dhaka, Chittagong and Narayanganj. Similarly, the export growth is higher among the large industries (3.00) compared to medium (2.75) and small industries (2.50) in Chitagong. In case of Narayanganj region export growth is higher in large industries (2.89) where the export growth is 2.52, 2.27 in medium and small industries respectively. Large factory's export growth is higher compared to middle and small.

Table 1.A: Average export growth of the knitwear sector according to size and location (2008-09 to 2013-14)

Size	Location		
	Dhaka	Chittagong	Narayanganj
Large	2.82	3.00	2.89
Medium	2.71	2.75	2.52
Small	2.50	2.50	2.27

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Ranking according to result

Table 1.B: location wise ranking considering average export growth

Location	Average	Rank
Dhaka	2.72	2
Chittagong	2.79	1
Narayanganj	2.66	3

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Table 1.C: Size wise ranking considering average export growth

Size	Average	Rank
Large	2.86	1
Medium	2.63	2
Small	2.57	3

Source: Own calculation from sample survey data by R&D Cell, BKMEA

The average export growth of all factories in Dhaka, Chittagong and Narayanganj are 2.72, 2.79 and 2.66 respectively. According to industries' size, large factories (2.86) take the first position and medium (2.63) and small factories take the second and the third position respectively.

The profitability is higher in small industries (2.75) compared to large (2.33) and medium industries (2.32) in Dhaka region. In case of Chittagong region profitability is higher in large industries (3.00) compared to medium (2.14) and small (2.50) industries. But in Narayanganj region the profitability is higher in medium industries (2.50) compared to large (2.00) and small industries (2.00) respectively.

Finally, industries are ranked by mean score of the profitability according to division and size. The mean score of profitability of all factories in Dhaka, Chittagong and Narayanganj are 2.39, 2.36, and 2.00 respectively. According to those values, Dhaka is the first while Chittagong is the second and Narayanganj takes third position.

Table 2.A: Average profitability of the knitwear sector according to Size and Location (2008-09 to 2013-14)

Size	Location		
	Dhaka	Chittagong	Narayanganj
Large	2.33	3.00	2.00
Medium	2.32	2.14	2.50
Small	2.75	2.50	2.00

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Ranking according to result

Table 2.B: Location-wise ranking considering average profitability

Location	Average	Rank
Dhaka	2.39	1
Chittagong	2.36	2
Narayanganj	2.00	3

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Table 2.C: Size-wise ranking considering average profitability

Size	Average	Rank
Large	2.22	1
Medium	2.21	2
Small	2.19	3

Source: Own calculation from sample survey data by R&D Cell, BKMEA

The profitability of the large, medium and small industries of all these three locations of the Knitwear sector are 2.22, 2.1 and 2.19 respectively. Profitability is higher in large industries compared to medium and small industries but the difference is very tiny. Thereafter, factories are ranked by mean score of profitability. It is found that large industries are the first position and the medium and the small industries are the second and the third position.

The price competitiveness is higher in medium factories (2.31) compared to large (1.91) and small factories (1.63) in Dhaka region. Price competitiveness is higher in large industries (2.25) compared to medium (2.00) and small industries (1.00) in Chittagong region. But in Narayanganj region, the price competitiveness is higher for small industries (2.27) compared to large (1.56) and medium industries (1.62).

Table 3.A: Price competitiveness of the knitwear sector according to size and location (2008-09 to 2013-14)

Size	Location		
	Dhaka	Chittagong	Narayanganj
Large	1.91	2.25	1.56
Medium	2.31	2.00	1.62
Small	1.63	1.00	2.27

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Ranking according to result

Table 3.B: Location-wise ranking considering Price Competitiveness

Location	Average	Rank
Dhaka	2.07	1
Chittagong	1.93	2
Narayanganj	1.62	3

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Table 3.C: Size wise ranking considering price competitiveness

Size	Average	Rank
Large	1.80	2
Medium	1.97	1
Small	1.62	3

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Finally, industries are ranked by mean score of **price competitiveness** according to location and size. The mean score of **price competitiveness** of all factories in Dhaka, Chittagong and Narayanganj are 2.07, 1.93, and 1.62 respectively. That means that Dhaka is the most profitable area for knitwear.

Next, according to the industry size, the price competitiveness of large, medium and small industries are 1.80, 1.97 and 1.62 respectively. Medium industries are the first and large industries are the second and small industries are the third in terms of price competitiveness.

The cost competitiveness is higher in small industries (1.88) compared to large (1.83) and medium industries (1.76) in Dhaka region. The cost competitiveness is higher in large industries (2.50) compared to medium (1.38) and small (2.00) industries in Chittagong region. But in Narayanganj region the cost competitiveness is higher in small industries (1.36) compared to large (1.22) and medium (1.28) industries.

Table 4.A: Cost competitiveness of the knitwear sector according to size and location (2008-09 to 2013-14)

Size	Location		
	Dhaka	Chittagong	Narayanganj
Large	1.83	2.50	1.22
Medium	1.76	1.38	1.28
Small	1.88	2.00	1.36

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Ranking according to result

Table 4.B: Location-wise ranking considering cost competitiveness

Location	Average	Rank
Dhaka	1.80	1
Chittagong	1.79	2
Narayanganj	1.28	3

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Table 4.C: Size-wise ranking considering cost competitiveness

Size	Average	Rank
Large	1.64	1
Medium	1.50	3
Small	1.62	2

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Finally, industries are ranked by their mean score of price competitiveness according to location and size. According to location, the score of cost competitiveness of the Dhaka, Chittagong and Narayanganj are 1.80, 1.79 and 1.28 respectively. Dhaka is ranked as the first, Chittagong is ranked as the second and Narayanganj is ranked as the third in terms of cost competitiveness.

In terms of size of the factories, the cost competitiveness of the large, medium and small factories of the knitwear sector are 1.64, 1.50 and 1.62 respectively. Thus, factories are ranked by the mean score of cost competitiveness, according to these values, large factories are the first and small and medium factories are the second and third respectively, in terms of cost competitiveness.

The company competitiveness is higher in large industries (2.78) compared to medium (2.45) and small industries (2.25) in Dhaka region. The corresponding figure for Chittagong and Narayanganj follow the similar pattern. Finally, industries are ranked by their mean score of price competitiveness according to region and size.

Table 5.A: Company competitiveness of the knitwear sector according to size and location (2008-09 to 2013-14)

Size	Location		
	Dhaka	Chittagong	Narayanganj
Large	2.78	3.00	2.44
Medium	2.45	2.50	2.03
Small	2.25	2.00	1.91

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Ranking according to result

Table 5.B: Location-wise ranking considering company competitiveness

Location	Average	Rank
Dhaka	2.67	1
Chittagong	2.27	2
Narayanganj	1.28	3

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Table 5.C: Size-wise ranking considering company competitiveness

Size	Average	Rank
Large	**2.55**	**2**
Medium	**2.57**	**1**
Small	**2.14**	**3**

Source: Own calculation from sample survey data by R&D Cell, BKMEA

In terms of location, the mean score of company competitiveness of the Dhaka, Chittagong and Narayanganj are 2.67, 2.27 and 1.28 respectively. Dhaka is ranked as the first following Chittagong and Narayanganj. In terms of size, the mean score of company competitiveness of the large, medium and small industries are 2.55, 2.57 and 2.14 respectively. In terms of rank, large industries rank first followed by small and medium industries.

The factor productivity is higher in large industries (2.91) compared to medium (2.71) and small industries (2.88) in Dhaka region. The factor productivity is the same in large and medium industries (2.75) in Chittagong region but the factor productivity is the lowest in small industries (2.00) compared to large and medium industries. The factor productivity is higher in large industries (2.94) compared to medium (2.86) and small industries (2.55) in Narayanganj.

In terms of location, the mean score of factor productivity in Dhaka, Chittagong and Narayanganj are 2.81, 2.64 and 2.74 respectively. Dhaka is ranked as the first position followed by Chittagong and Narayanganj.

Table 6.A: Factor productivity of the knitwear sector according to size and location (2008-09 to 2013-14)

Size	Location		
	Dhaka	**Chittagong**	**Narayanganj**
Large	2.91	2.75	2.94
Medium	2.71	2.75	2.86
Small	2.88	2.00	2.55

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Ranking according to result

Table 6.B: Location-wise ranking considering factor productivity

Location	Average	Rank
Dhaka	2.81	1
Chittagong	2.64	3
Narayanganj	2.74	2

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Table 6.C: Size-wise ranking considering factor productivity

Size	Average	Rank
Large	**2.91**	**1**
Medium	**2.78**	**2**
Small	**2.38**	**3**

Source: Own calculation from sample survey data by R&D Cell, BKMEA

In terms of size, the mean score of factor productivity of the large, medium and small industries are 2.91, 2.78 and 2.38 respectively. In terms of rank large industries rank first followed by medium and small industries.

The output per labor capability is higher in large industries (2.96) compared to medium (2.79) and small industries (2.75) in Dhaka location. The scenario is also difference in Chittagong location where the per labor capability is higher in medium industries (2.88) compared to large (2.75) and small industries (2.50). Similarly, the output per labor capability is higher in medium industries (2.75) compared to large (2.61) and small industries (2.27) in Narayanganj location.

Table 7.A: Output per labor capability of the knitwear sector according to size and location (2008-09 to 2013-14)

Size	Location		
	Dhaka	Chittagong	Narayanganj
Large	2.96	2.75	2.61
Medium	2.79	2.88	2.76
Small	2.75	2.50	2.27

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Ranking according to result

Table 7.B: Location-wise ranking considering output per labor capability

Location	**Average**	Rank
Dhaka	2.85	1
Chittagong	2.79	2
Narayanganj	2.62	3

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Table 7.C: Size-wise ranking considering output per labor capability

Size	**Average**	Rank
Large	2.80	1
Medium	2.78	2
Small	2.48	3

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Finally, factories are ranked by their mean score of the output per labor capability according to region and size. In terms of region, the mean score of output per labor capability in Dhaka, Chittagong and Narayanganj are 2.85, 2.79 and 2.62 respectively. Dhaka is ranked as the first followed by Chittagong and Narayanganj. In terms of size, the mean score of output per labor capability of the large, medium and small industries are 2.80, 2.78 and 2.48 respectively. In terms of rank, large industries rank first followed by medium and small industries.

The R&D activity is higher in large industries (0.52) compared to medium (0.28) and small industries (0.25) in Dhaka region. The R&D activity is higher in small industries (0.50) compared to large (0.25) and medium industries (0.13) in Chittagong region. In Narayanganj region the R&D activity is higher in large industries (0.44) compared to medium (0.30) and small industries (0.24).

Table 8.A: R&D Activity of the knitwear sector according to size and location (2008-09 to 2013-14)

Size	Location		
	Dhaka	Chittagong	Narayanganj
Large	0.52	0.25	0.44
Medium	0.28	0.12	0.30
Small	0.25	0.50	0.24

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Ranking according to result

Table 8.B: Location-wise ranking considering R&D activity

Location	Average	Rank
Dhaka	0.36	1
Chittagong	0.28	3
Narayanganj	0.33	2

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Table 8.C: Size-wise ranking considering R&D activity

Size	Average	Rank
Large	0.41	1
Medium	0.24	3
Small	0.34	2

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Finally, industries are ranked by their mean score of R&D activities according to region and size. In terms of location, the mean score of R&D activity in Dhaka, Chittagong and Narayanganj are 4.67, 4.36 and 4.46 respectively. Dhaka is ranked as the first followed by Narayanganj and Chittagong.

In terms of R&D, the mean score of the large, medium and small industries are 4.69, 4.49 and 4.38 respectively. In terms of rank, large industries rank first followed by medium and small industries.

The ICT use is higher in large industries (4.85) compared to medium (4.59) and small industries (4.50) in Dhaka region. Similarly, the ICT use is higher in large industries (4.75) compared to medium (4.38) and small industries (3.50) in Chittagong location. In case of Narayanganj region the use of ICT is same in large and small industries (4.50) where the use of ICT is comparatively lower in medium industries (4.43).

Table 9.A: ICT use of the knitwear sector according to size and location (2008-09 to 2013-14)

Size	Location		
	Dhaka	Chittagong	Narayanganj
Large	4.85	4.75	4.50
Medium	4.59	4.38	4.43
Small	4.50	3.50	4.50

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Ranking according to result

Table 9.B: Location-wise ranking considering ICT use

Location	Average	Rank
Dhaka	4.67	1
Chittagong	4.36	3
Narayanganj	4.46	2

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Table 9.C: Size-wise ranking considering ICT use

Size	Average	Rank
Large	4.69	1
Medium	4.49	2
Small	4.38	3

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Finally, industries are ranked by their mean score of ICT activities according to region and size. In terms of location, the mean score of ICT in the Dhaka, Chittagong and Narayanganj are 4.67, 4.36 and 4.46 respectively. Dhaka is ranked as the first followed by Narayanganj and Chittagong.

In terms of size, the mean score of ICT of the large, medium and small industries are 4.69, 4.49 and 4.38 respectively. In terms of rank, large industries rank first followed by medium and small industries.

Lead time indicates the time which is required for supplying the ordered garment products after the export order has been received. Duration of lead time is one of the significant factors in measuring competitiveness. In the 1980s, the usual lead time in the garment industries is 120-150 days for the main garment supplier countries of the world which has been reduced to 30-40 days in the current decade. However, in this regard the Bangladesh RMG industries has improved significantly. The average lead

time is 90-120 days for woven garment firms and 60-80 days for knit garment firms in Bangladesh. In China, the average lead time is 40-60 days and 50-60 days for woven and knit products respectively and in India it is 50-70 days and 60-70 days respectively for the same products.

Table 10.A: Lead time to export of the Knitwear sector according to size and location (2008- 09 to 2013-14)

Size	Location		
	Dhaka	**Chittagong**	**Narayanganj**
Large	74.34	60.00	83.057
Medium	78.72	64.38	85.52
Small	90.00	70.00	89.55

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Ranking according to result

Table 10.B: Location-wise ranking considering lead time to export

Location	Average	Rank
Dhaka	78.55	2
Chittagong	63.93	1
Narayanganj	85.52	3

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Table 10.C: Size-wise Ranking considering Lead time to Export

Size	Average	Rank
Large	76.56	1
Medium	79.97	2
Small	87.86	3

Source: Own calculation from sample survey data by R&D Cell, BKMEA

In terms of lead time, it is lower in large factories (74.34) compared to medium (78.72) and small factories (90.00) in Dhaka region. Similarly, the lead time is lower in large factories (60.00) compared to medium (64.38) and small factories (70.00) in Chittagong region. In Narayanganj region, the lead time is lower in large industries (83.06) compared to medium (85.52) and small industries (89.55).

In terms of location, the lead time in Dhaka, Chittagong and Narayanganj location are 78.55, 63.93 and 85.52 days respectively. From this data, it is clear that Chittagong is in favourable position because it uses lower lead time to export their product into the global market.

In terms of size, the lead time in the large, medium and small factories are 76.56, 79.97 and 87.86 respectively.

The lead time to collect raw materials from international market of the large, medium and small factories is 49.76, 43.05 and 55.00 days respectively in Dhaka location. The lead time to collect raw materials from international market of the large, medium and small factories are 52.50, and 49.50 respectively in Chittagong location. Similarly, large, medium and small factories need 52.00, 43 and 52.00 days to collect raw materials from international market in Chittagong location.

Table 11.A: Time (days) needed to collect raw material from abroad of the knitwear sector according to size and location (2008-09 to 2013-14)

Size	Location		
	Dhaka	**Chittagong**	**Narayanganj**
Large	**49.76**	**42.00**	**41.25**
Medium	43.05	52.50	58.21
Small	55.00	52.50	75.00

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Ranking according to result

Table 11.B: Location-wise ranking considering time (days) needed to collect raw material from abroad

Location	Average	Rank
Dhaka	46.89	1
Chittagong	49.50	2
Narayanganj	58.15	3

Source: Own calculation from sample survey data by R&D Cell, BKMEA

Table 11.C: Size-wise ranking considering time (days) needed to collect raw material from abroad

Size	Average	Rank
Large	46.16	1
Medium	49.59	2
Small	60.00	3

Source: Own calculation from sample survey data by R&D Cell, BKMEA

In terms of location, the lead time to collect raw materials from international market in Dhaka, Chittagong and Narayanganj location are 46.89, 49.50 and 52.14 days

respectively. In terms of location, the lead time of the large, medium and small factories is 46.16, 49.59 and 60.00 days respectively.

4.2. Comparative advantage of location: Geographical location is an important factor for competitiveness of RMG production of Bangladesh. The RMG factories are located mainly in three areas of Bangladesh. The areas are: Dhaka, Chittagong and Narayanganj.

4.2.1 Dhaka: Communication with the buyer, buying houses, and bank are very easy and available in Dhaka location. Moreover, certification and documentation facilities are available in Dhaka. Further, infrastructure facilities are good relative to other areas of Bangladesh. Available manpower and communication with other areas are another advantage of this area. Availability of electricity, gas and easy communication contribute to higher RMG production. But transport and shipment costs are comparatively higher in this area compared to other areas.

4.2.2 Narayanganj: A large number of RMG factories are located in this area. This area has easy communication with Dhaka. Skilled workers, utilities are available here. In addition, raw materials collection process is easy in this location. Moreover, this area also has some advantages like good environment, low transport costs, available raw materials and good backward linkages. Social security is better here compared to other locations. This area is also free of political unrest.

The local government of Narayanganj also has a strong support to create favorable business environment. Lower land costs and lower labor costs contribute towards making more profit. In spite of being a large hub of garment factories, the waste disposal place is insufficient in this area. Environment pollution is a major problem in this area. Factories in this area have been facing problem to maintain communication with the buyer.

4.2.3 Chittagong: The longest seaport of the Bay of Bengal is located in the Chittagong region. Most of the RMG products are exported through this port. Thus, port facility and availability of workers are the main advantages for RMG business in this region. The advantages of port save minimum two days on shipment and transport costs are minimum in this area, which reduces the lead time. But negative-banking service difficulties and documentation problem are the major obstacles of this area.

4.3 Brief Overview of Findings: This paper attempts to explore the location and size wise competitiveness of the knitwear sector of Bangladesh. The result suggests that larger factories are more competitive than small factories. Access to credit facilities and interest rate of the financial institutions largely affect the competitiveness of the

knitwear sector. Larger factories manage loans from financial institutions with lower interest rates compared to small factories. As a result, high-interest rate of financial institutions also weaken the competitiveness of small factories. Small factories do not fully adapt to the latest technology. But larger factories can quickly update and modernize their plant and machinery compared to small factories. Thus, larger factories can produce high-quality products with less time compared to small factories. Small factories are in the lowest position in terms of competitiveness compared to large and medium factories.

Management skills are associated with competitiveness of the knitwear sector. Large factories have a skilled management body that has expertize in managing, developing, organizing, and controlling human resources according to organizational purpose. They have strong interpersonal skills including communication, influence, coordination and cooperation with others. In addition, they have strong capability in building coalitions, gaining cooperation, resolving conflicts, and influencing others. But due to poor managerial skill of small factories they are less competitive in the market compared to large factories.

Competitiveness also largely depends on the ability to integrate new technology. The larger factories are capable of using modern and new technology that positively influences the turnover and productivity. But due to limited capital, the smaller factories makes less use of modern and new technology compared to large factories. That's why small factories turnover and productivity is also less than the large factories.

R&D is a crucial factor for comparative advantage towards more knowledge-based economic activity (Porter, 1990). Research and Development activities play a vital role in increasing the volume of export. It helps to ensure the quality of the product to meet the global standard as well as innovation of new design and new product. For product variation, cost minimization, quality and productivity increase intensive study is urgently required. To expand the volume of export in new markets and development of new design, research and development activities are needed to disseminate knowledge. Due to limited financial resources and insufficient managerial infrastructure, small factories are less likely to invest in R&D compared to larger factories.

Competitive behavior has immense contribution on product diversification and quality improvement. It plays a positive role in implementation of new technology for factory development. Company ensures a safe working environment and provides proper training and motivation to their workers to improve productivity. Practice of

competition across the world has great influence on market expansion and has positive impact on policy and strategy. But it has a negative impact on price competitiveness which provokes bad practices especially on price bargaining with buyers. It hampers the production as well as pricing. Competitive behavior also has negative impact on worker migration. But indeed, the practice of competition encourages developing the factory up to compliance standard.

Marketing is one of the major tools in measuring competitiveness and increasing factory competitiveness. This tool is used to maintain a good relation with buyers and retailers across the world. It has positive effect on export through expansion on new market and communication with Buyers. Marketing has a positive impact on market diversification and buyer sourcing. At the same time, it helps to get reasonable price through effective marketing policy. Direct communication with buyers removes unnecessary hassles and delays thus have positive effect on reduction of lead time. Market diversification for fashionable knit product is more feasible by maintaining proper marketing policy.

As observed by Porter (1990), the information and communication technology (ICT) can be a vital factor in enhancing factories' market reach as well as their operational efficiency. From this study, it is clear that small factories less use modern information and communication technologies less compared to large factory. Larger industries' ICT capability can also play a substantial role in securing competitive advantage because it enhances the industries capability collaboration not only with national but also with international partners. By using ICT, large factories frequently maintain good connections with their trade partners, which help to foster business relation and trust among their business partners that enhance the competitiveness.

Compliance means to comply with something or yield to the wishes of another. Compliance ensures all labor rights and facilities according to the buyer's code of conduct. The aim of compliance is to maintain the labor law strictly. Before, rented factory premises, narrow staircases, low roofs, closed environments, absence of lunch rooms, unavailability of clean drinking water and absence of separate toilets or common rooms for female workers were a major cause for concern in the garment factories of Bangladesh. But those situations have dramatically improved at the all the factories in Bangladesh. In case of health, fire, safety guard, environment policy, working hour policy, child labor abolition policy, security policy, significant improvements have been observed in last few years. BKMEA has set up compliance monitoring departments to oversee maintenance of compliance standard by factories.

Shortening production and distribution time can improve the competitiveness scenario of Bangladesh's RMG sector significantly. Dependency for raw materials on external sources is a major impediment in shortening the production and distribution time. Although cheap labor is a conducive factor for RMG sector of Bangladesh but lacking of quality cannot reduce lead time as well as production and distribution time sufficiently. The establishment of common bonded warehouses in Bangladesh can play a significant role in reducing lead time. Although such lead-time-cutting initiatives will improve surface level competitiveness, but total 'production and distribution' time will not be shortened; rather it may deteriorate further owing to additional time required for storing inputs in local warehouses.

As a prominent supplier in the global market product diversification and market composition requires special attention to ensure the long term sustainability of the Bangladesh RMG industries. Qualitative improvement of exportable garment products is more crucial than quantitative expansion at present era because of the export quota system. Comparing with other competitive countries Bangladesh fails in this regard because of main focus on manufacturing lower-end products. But the noticeable fact is that Bangladesh RMG sector is now taking the position of fashionable producer and middle/high-end producer who is previously simple female-wear producer and lower-end producer.

5. Concluding Remarks

The result from the study reveals that export growth, average profitability, price competitiveness, cost competitiveness, factor productivity and company competitiveness are higher in large industries compared to small industries. This paper explores that the larger industries of the knitwear sector in Bangladesh is more competitive than small industries.

There are some positive and negative factors that affect the competitiveness of the knitwear sector of Bangladesh. Compliance implementation in the factory premises and implementation of lean manufacturing production technique in the production process initiate a new era in this sector. Assurance of product quality and reduction of lead-time by the technological up-gradation in the production process develop the competitiveness scenario of this sector. Strong backward linkage and supply chain facilities are the core strength for knitwear sector. Moreover, implementation of labor law in RMG factories and formation of industrial police to minimize the unrest may help to make garment factories more compliant than before. Development of

information technology and new design for the RMG products are instrumental in diversifying the product quality. Bangladesh is participating in several international trade fairs with the help of BKMEA, which may help to popularize the product category of this sector.

Political instability and inadequate utility service such as gas, electricity shortage are the major impediments in attaining the desired growth of this sector. Limited supply of basic domestic raw materials and high cost of utility services and other raw materials increases the cost of production. At the same time for lack of negotiation skill for product price bargaining producers have to earn low price rate from buyers, which affect the profitability of this sector negatively. Higher cost of capital such as high interest rate and non-tariff measures and barrier imposed by different countries also have immense impact on the competitiveness of this sector. Furthermore, poor port and infrastructural facilities as well as marketing policy are the conventional difficulties of this sector.

6. Recommendations

To increase the productivity and competitiveness capability, improvement of the infrastructural and adequate supply of electricity, gas as well as regional connectivity should be ensured with urgent initiative in all location, some recommendations are as follows:

1. Weak or faltering industries should be well-informed about their cost structure. In that case, they should hire expert cost accountant. In addition, government should set proper standard of cost structure at the factory level.
2. The factories should increase investment in R&D that can facilitate in introducing new products for diversifying market and reducing dependency on traditional products. Steps should be taken to get copyrights from proper authority for the new product.
3. Skilled human resources should be prioritized for attaining company competitiveness. In this sense, training should be provided to the unskilled workforce for improving their productivity. Vocational training should be provided to the knitwear workers to increase their productivity.
4. Dedicated railway services are needed for the export of final product and import of raw materials of the RMG sectors.
5. In case of factor productivity, large factories are more productive in terms of factors of production utilization whereas small factories are less productive.

Here, medium and small factories should be nourished by the government, and existing tax rate should be decreased to support knitwear factories.

6. Government should provide incentive and ensure implementation of rules and regulations for the development of small factories.
7. Rising import of raw materials and final goods has adverse effect on price competitiveness. In this sense, initiatives should be taken to mitigate dependency on external sources and meet the demand from domestic sources including cotton and different kind of chemical and accessories. Considering the limitation of land for domestic cotton production, collaborative approach should be taken with African cotton exporter countries for cotton import and cultivating cotton using their land under the custodianship of Ministry of Foreign Affairs of Bangladesh.
8. At the same time, rising export of final goods flourishes the price competitiveness scenario. In this case, one stop service and single window system should be initiated to minimize the bureaucratic complexity. Small factories quest extra nourishment in getting these services.
9. The government should take appropriate policy for extending loans to the knitwear sector at lower and flexible interest rates. Generally, banks are not intended to grant loan to small factories considering the risk factors. In this case, Bangladesh Bank should initiate specialized credit scheme at lower interest rate for small factories in special time frame.
10. Improving the marketing strategy to expand the export bundles and developing own marketing should be prioritized urgently for sustenance of competitiveness in global contest. The factories should be taken sophisticated marketing strategy especially every factory should develop their own marketing department to reduce the dependency on buying houses.
11. The international apparel trade is fiercely competitive. In case of growing competition among RMG exporting countries and consumer preference for products which meet internationally recognized social standards, it is essential for Bangladesh's RMG suppliers to improve social compliance in their factory
12. To hold onto the present strength of competitiveness the process of upgrading products should be strengthened by the Bangladesh RMG industries. The diversification of products is also another global competitiveness factor which should be initiated by the producers without making delay. Bangladesh needs to address both the qualitative and quantitative expansion of its RMG industries simultaneously in order to sustain the business in the long run.

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