Dynamics of Comparative Advantage and Competitiveness of Textile and Apparel Industry: An Empirical Analysis for China and Bangladesh

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Authors' contributions

This work was carried out in collaboration among the authors. The research work was a part of the Ph.D. research work of author MEH. Author HD was the Ph.D. supervisor of author MEH and had guided the first author regarding the Ph.D. research project. Authors HD, CZ and VTV worked in the same research group. Author CZ had also guided author MEH in his Ph.D. project. Author MEH designed the study, wrote the literature, set up objectives and wrote the first draft of the manuscript. Authors HD, CZ and VTV carried out the analysis and reviewed the first draft manuscript. All authors read and approved the final manuscript.

Original Research Article

ABSTRACT

Aims: The purpose of this paper is to analyze the level of comparative advantage and competitiveness of Textile and Apparel (T&A) industry of Bangladesh and China in the global market. It also tries to link the competitiveness analysis with the trade theories of comparative advantage to synthesize different approaches of competitiveness recommending with policy implications.
Place and Duration of Study: We used the two digit classification of Harmonized System (HS) data of 14 main products of Textile and Apparel industry of Bangladesh and China over the period from 2000 to 2015.
Methodology: The proposed approach is based on the Balassa revealed comparative advantage

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(RCA) and Spearman Rank Correlation coefficient (r_s) to examine the comparative advantage and competitiveness respectively for 14 main products of Textile and Apparel industry of Bangladesh and China. For calculation of RCA values, the export data have been taken from UN COMTRADE, an electronic database of the United Nations. To calculate the trends of trade between the two nations and individual industries, we used the database of Bangladesh Garment Manufacturers and Exporters Association (BGMEA), database of International Trade Center (ITC), and the World Trade Organization (WTO) database.

Results: The findings show that during this 16 years period, among the 14 products; Bangladesh improved her comparative advantage over 7 products, lowered over 5 products and remained quite unchanged over 2 products whereas China improved her comparative advantage over 8 products lowered over 2 products and remained quite unchanged over 4 products. According to the Competitiveness analysis of the 14 products; 3 products exhibit higher competition, 6 products exhibit modest competition and 5 products exhibit complementary between Bangladesh and China in global market. As a result, policy implications were discussed in this paper.

Conclusion: In this paper revealed comparative advantage has been analyzed at the two digit level of HS classification for both Bangladesh and China. The implications reveal that the three main stakeholders of T&A; the government, manufacturers, and buyers must work together to realize the potential of textile and apparel market for both Bangladesh and China. It is suggested for both countries to improve the industrial competitive advantage through human resource exploitation strategy and innovation in science and technology. Improving product and market diversification and reducing the lead time also suggested for improving the competitiveness of Bangladesh's T&A industry.

1. INTRODUCTION

Textile and Apparel (T&A) industry has long been an important component of international trade and trade in this industry is conducted on an immense scale. Bangladesh's steady growth for the past two decades and the average annual GDP growth more than 6 percent over the last five years and the past decade's boom in exports particularly the T&A sector is very significant to the country's economic growth [1,2,3,4]. The industry has been contributing through export, creating employment for more than 4 million jobs, alleviating poverty and women empowerment [5]. Among all industries in China, T&A industry is among the earliest sectors to begin the marketization with strongest international competitiveness, and fastest growth. At present, in China around 6.7 million people working in T&A industry, among which more than 70% are skilled and technical workers [6,7,8]. In 2015, textile exports took up 11.99% of China's total exports and 31.5% of the world's total exports in textile and apparel [9,10]. The production and exports of Chinese textile products are the largest in the world. The increasing consumption demand on apparel fuels the development of China's T&A industry. Qualified labor power, the world's 30% raw materials, complete industry chain, favorable investment environment and continuous reform on related policies and facilities are the preconditions of the development of Chinese T&A industry. Market-oriented reform has brought unprecedented vitality to Chinese T&A industry and China has rapidly become the world's most dynamic apparel market [11,12]. China's entry into the WTO in 2001 provided easier access to international market. Moreover 2005's phasing out of quotas led to the rapid strengthening of the market share of the Chinese textile and clothing industries in the global market [13,14,15].

Fig. 1 shows the trend of export of T&A for Bangladesh and China, likely the Fig. 2 shows the trend of export of T&A products and share compare to total export of Bangladesh and China in last 16 years period, where Bangladesh's export in T&A become sevenfold and Chinese one become more than fivefold within the period of time (Fig. 1). But in terms of share in total export, Bangladesh's share stayed quite stable whereas Chinese share reduced significantly. This is because of the recent policy reform of Chinese T&A, moving from labor intensive readymade garments to high technology based production [16,17].
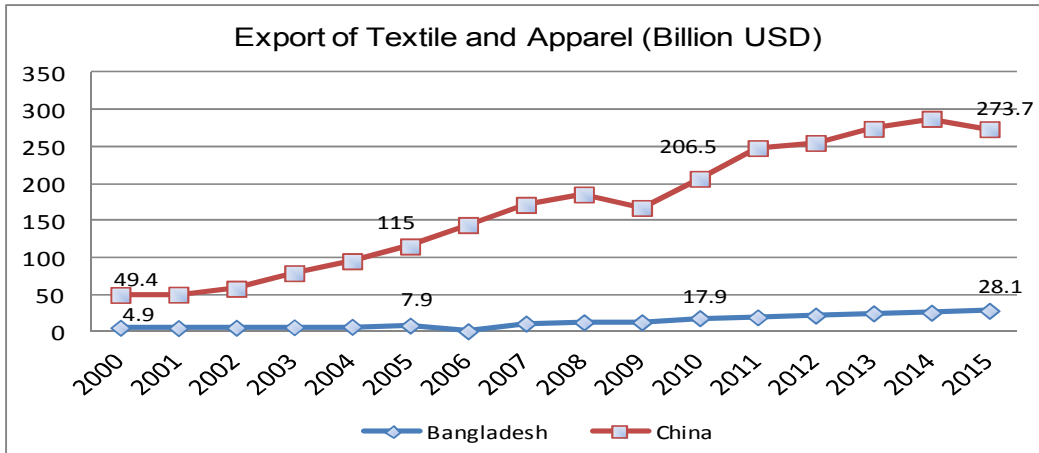
Fig. 1. Export value of textile and apparel of Bangladesh and China in Billion US$
Source: UN COMTARDE database, the database of World Trade Organization (WTO) and Bangladesh Garment Manufacturers and Exporters Association (BGMEA) compiled by the authors in November 2016
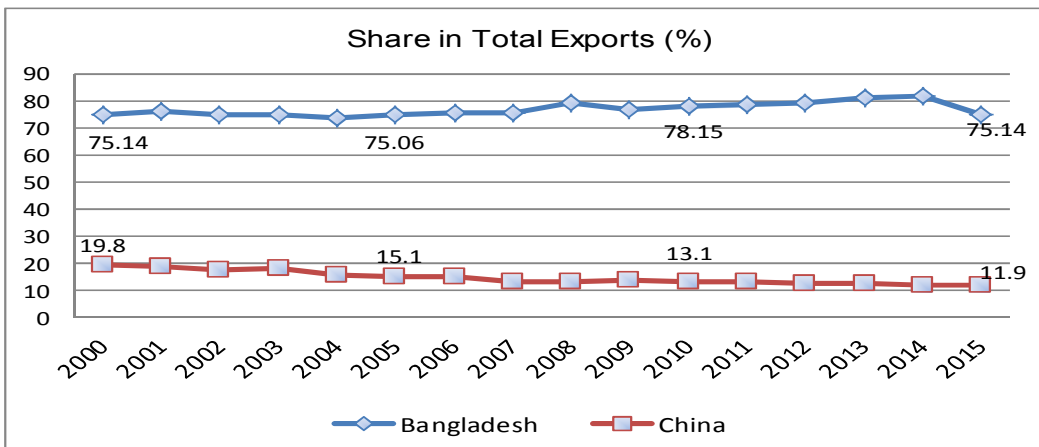
Fig. 2. Share of total export of textile and apparel for Bangladesh and China
Source: UN COMTARDE database, the database of World Trade Organization (WTO) and Bangladesh Garment Manufacturers and Exporters Association (BGMEA) compiled by the authors in November 2016
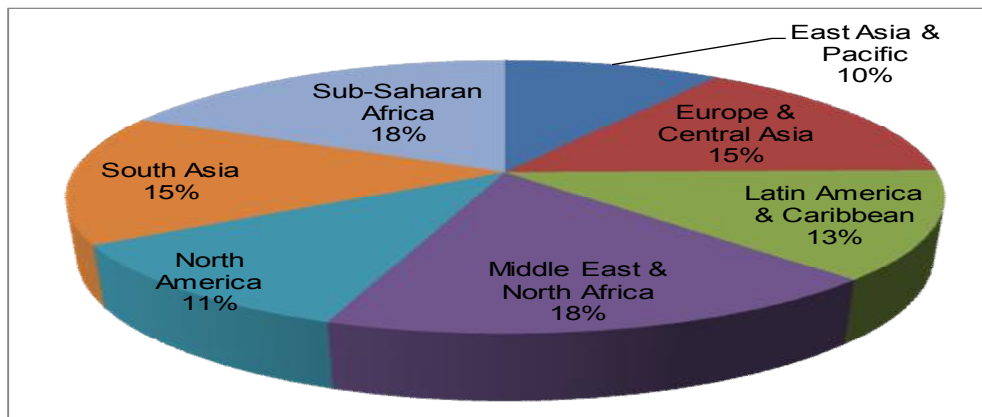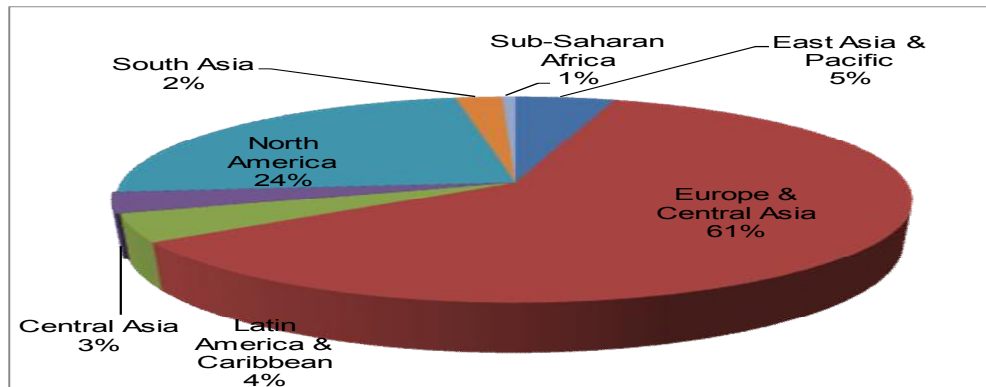

Fig. 3. Chinese T&A export to different region of the world in 2015
Source: World Integrated Trade Solution (WITS) database, compiled by the authors in November 2016

Fig. 3 Shows the export destinations of Chinese T&A where Asian countries are the largest destination of export. Besides Asia, North American countries and European countries are the second largest export destination of Chinese T&A. On the contrary, European countries are the largest destination for Bangladesh's export of T&A (Fig. 3) where the competition between two countries is immense. In the same, in North American countries are also the second largest export destination for Bangladesh's T&A and there also exhibit higher competition between two nations. Recent years, Bangladesh has explored some new non-traditional market for her export of T&A. In this regard, Australia, Brazil, Chile, China, India, Japan, Korea Rep., Mexico, Russia, South Africa and Turkey are the recent new potential markets for Bangladesh's T&A where the growth of export is quite significant.

According to Fig. 4, the major export destination of Bangladesh's T&A is EU and Central Asian market likely, the North American market is the second largest market. East Asia and South America are the third and fourth largest destinations for the T&A export of Bangladesh.

According to the statistics provided by the World Integrated Trade Solution [10], in terms of US import share (%) of T&A products from the world, China is the major player. On the contrary Bangladesh competes in US as the second largest supplier of T&A after China enduring a strong competition between the two countries to grab the US market. USA is the largest market for Bangladeshi T&A goods as a single country for her export earnings. From the same source of statistics also shows the similar scenario for Bangladeshi T&A export to Canadian market. In Canada also Bangladesh is the second largest country after China for Canadian import of T&A goods (WITS-Canada).

Fig. 4. Bangladesh's textile and apparel exports by region in 2015
Source: Bangladesh Garment Manufacturers and Exporters Association (BGMEA) and database of International Trade Center (ITC), compiled by the authors in November 2016
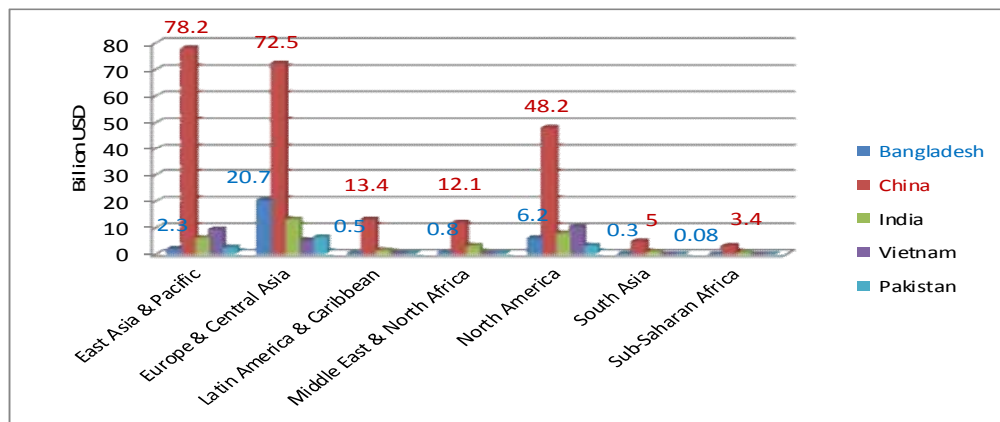
Fig. 5. Export of T&A to global markets by the major exporters in 2015
Source: Database of UN COMTRADE, compiled by the authors in November 2016

Besides North America, Europe and Central Asian market are very crucial market for Bangladesh T&A industry as more than 60% of total export of T&A is to the EU market (Fig. 5) and Bangladesh enjoys some quota to export in the EU market. According to the statistics provided by the US Department of Commerce [18], in EU Market China is the major exporter, where Bangladesh is the second major exporter in EU market. In East Asia and pacific market, China is also the major player where Bangladesh positions 5th largest exporter (Fig. 5). In Latin American and Caribbean market also China is the largest exporter. For Bangladesh it's a potential non-traditional and emerging market for her export of T&A (Fig. 5). Middle East and North Africa is another potential emerging market for Bangladesh's T&A export. Here also China is the major player where Bangladesh is the 4th largest exporter (Fig. 5). In South Asian market and Sub Saharan Markets also China is the largest exporter and Bangladesh playing as the third and fourth consequently (Fig. 5). All these markets are non-traditional and emerging markets for the world textile and apparel export as well as for Bangladesh [19,20,21,22,23].

In terms of global trade in the 14 products of Textile and apparel, China is the Major market player comparing to Bangladesh. The Fig. 6(a) shows the difference in net trade values between China and Bangladesh in 2015. Where the HS 61: Articles of apparel, accessories, knit or crochet, HS 62: Articles of apparel, accessories, not knit or crochet and HS 63: Other made textile articles, sets, worn clothing etc. are the most valued products in trade for both countries. In terms of net global trade (%) for Bangladesh shows Fig. 6(b) that HS 57: Carpets and other textile floor coverings, the HS 61: Articles of apparel, accessories, knit or crochet, HS 62: Articles of apparel, accessories, not knit or crochet and HS 63: Other made textile articles, sets, worn clothing etc. are the main products in this industry occupying the larger share. On the other hand for China, HS 54 to HS 63; all those 10 products occupied the larger net trade (%) in the global export.

The Textile and Apparel sector is characterized by geographically dispersed production and rapid market-driven changes, providing employment opportunities to millions of workers worldwide especially for young women [24]. About 75 million people are employed in the textile and apparel sector worldwide in 2014. The Employment in T&A accounted by top T&A exporters; China (6.7 million), India (16.8 million), Bangladesh (4.9 million), Indonesia (3.8 million) and Pakistan (3.6 million) [25]. Due to the scale and the profile of workers employed, the sector offers great potential to contribute significantly to economic and social development of the countries [26]. Regarding export values and commodities, T&A industry accounts 75.14% for Bangladesh and 11.9% for China compare to their total export in 2015 (Fig. 2). Considering the factors and importance, this study on textile and apparel industry of Bangladesh and China has much significance for the existing literature gap in this area. This research explores the valuable insights of comparative advantage and competitiveness of 14 key products (according to HS 2digit level) of textile and apparel industry of Bangladesh and China.
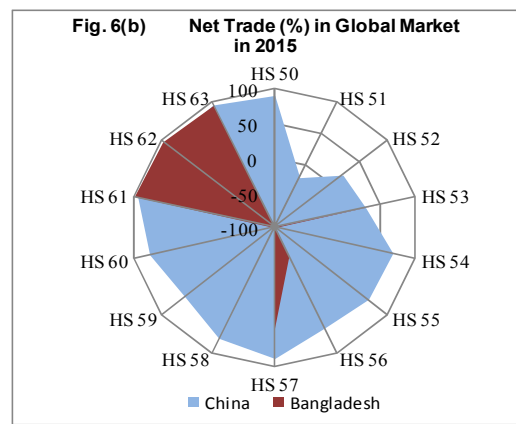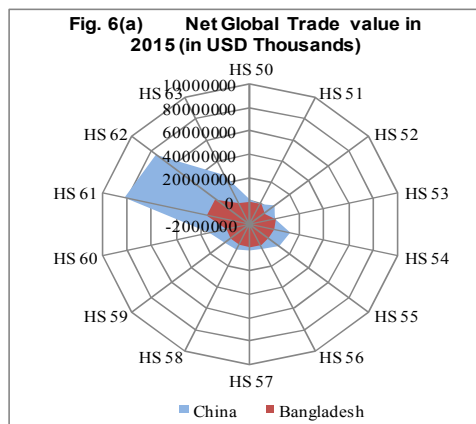
Fig. 6a. Net global trade value and   6b. Net Trade % for T&A Industry in 2015

Source: UN COMTRADE Database compiled by the authors in November 2016

2. LITERATURE REVIEW

Bangladesh economy which is being integrating with the world economy has left largely unhurt by the recent financial tsunami. Apart from GDP growth, other key economic variables have shown minimum fluctuation in the recent years [27]. Being the pillar industry, Bangladesh's T&A is a very dynamic sector which has become the main source of direct and indirect employment, foreign exchange earnings. The export-oriented T&A sector, with about 5600 firms and a workforce of directly 4.0 million and more than one million indirectly is a critical and important segment of the economy of Bangladesh [28,29]. At present, it contributes 40% value addition to the manufacturing sector. T&A sector which constitutes 79.63% in the total export basket is expected that within 2030 T&A sector would be able to earn more than US$ 50 billion if the infrastructural facility like electricity and gas as well port facility is provided. Bangladesh is now the 3rd largest exporter of T&A products as a single country in the world market [30].

Since the 1990s, Bangladesh and China have both made progresses in their international trade. With the expansion of their trade volumes and global markets, the overlapping parts of their exporting products and markets have been enlarging, which has been bringing competition between the two countries. China's movement towards export oriented development strategy may have altered the picture of comparative advantage for labor intensive manufacturing economies in the global market [31,32]. There is an ongoing debate across developing countries and emerging concern about the threat and opportunity in relation to the rise of Chinese economy and the consequent intensification of competition in labor intensive manufacturing countries, especially in T&A industry [33,34,35]. It is important therefore, to explore the structure of comparative advantage of T&A industry of Bangladesh and China and the extent to which products the two economies compete with each other in the global market of T&A. This paper makes an attempt to develop some insights on the issues for textile and apparel industry.

Comparative advantage has been an important concept in modern economic theory which is a concept of more than 200 years old that are immovable until today and is considered determinant of specialization in the concept of international trade [36,37]. Liesner [38] is the first person who introduced the measurement of reveal comparative advantage (RCA) [39] and later on developed by Blassa [40,41,42] and Bela [43]. The classical theory of comparative advantage predicted that gains from exchange maximize welfare and free trade would lead to world economic prosperity. According to a country's relative export performance in individual product categories has been taken to reflect its 'revealed' comparative advantage. Technically, the doctrine of RCA argues that if a country's share in world exports of a particular good is greater than its overall share in total world exports, then the country has a revealed comparative advantage in the export of that good. In other meaning, RCA explains if a country can produce a good at a lower relative cost than other countries in international trade, the concern country should devote more of its scare resources to the production of the goods [44,45,46]. The concept of RCA is also widely used empirically to identify a country's weak and strong export sectors [47]. For example, Fertő et al. [48], analyzed the revealed comparative advantage and competitiveness in Hungarian Agri-food sectors; Batraand Khan [49], analyzed the revealed comparative advantage of India and China. Yue and Hua [39] analyzed the comparative advantage explains export patterns in China. Havrila [50] explored the comparative advantage and competitiveness for Australia's textile and clothing industries. Vixathep [51] analyzed Cambodia's comparative advantage patterns and trade structure. As following the above mentioned literatures reveal the existing studies on comparative advantage analysis by RCA in different geographical areas and industries.

Many authors used the Spearman Rank Correlation coefficient (SRC) to analyze the degree of competition between two industries or countries. Accordingly, Amir Mahmood [52] analyzed the export specialization and competitiveness of the Malaysian manufacturing in 2000 using SRC. Gautheir TD [53] analyzed the trends of environmental forensics using Spearman's rank correlation coefficient in 2001. In 2003, Shyam Upadhyaya [54] measured the industrial performance for cross-country analysis where the author also used the SRC. Lalit Mohan Kathuria [55] analyzed the competitiveness of clothing export sector between India and Bangladesh and used the SRC to find out the degree of competition in 2013. Susana Franco et al. [56] explored the correlation analysis between cluster strength and competitiveness Indicators in their research using the SRC in 2014.

Svetlana Ignjatijević et al. [57] analyzed the revealed comparative advantages and competitiveness of the processed food sector for the Danube countries in 2014 here they also used the SRC to find out the degree of competitiveness. The above literatures ravel the using of Spearman Rank Correlation coefficient to find out the degree of competition that supports us to use the SRC for our analysis.

The existing literature on the comparative advantage and competitiveness analysis of textile and apparel industry for Bangladesh and China are as following. Rahman and Anwar [58] analyzed Bangladesh's apparels export to the US market regarding the competition with China. The authors compared the export competitiveness and price competitiveness of 15 products of apparel industry between China and Bangladesh. The authors also made several recommendations related to policies of the industry i.e. productivity enhancement, reducing the lead time, compliance assurance and preferential market access. Mohammed Ziaul Haider [5] explored the Competitiveness of the Bangladesh ready-made garment industry in major international markets and the author emphasized in his research regarding the competition faced by Bangladesh after the MFA and also recommended to improve the factory compliances and market diversification. Joarder et al. [59] analyzed the post-MFA export performance of major apparel exporting countries with special concentration on that of Bangladesh's readymade garments (RMG). Mottaleb and Sonobe [60] analyzed the Rapid Growth of the Garment Industry in Bangladesh using primary data from the knitwear manufacturers and garment traders. Jahid Hasan [61] analyzed the Competitiveness of Ready Made Garments Industry of Bangladesh in Post MFA Era, where the author explored the consequences of post MFA era of Bangladesh Apparel industry. Karaalp and Yilmaz [15] explored the comparative advantage of four countries in the world: Bangladesh, China, Germany and Turkey was analyzed with respect to the US and the EU-15 textiles and clothing markets by employing Balassa's revealed comparative advantage (RCA) index for the period 2000-2010. Where the findings showed that the Bangladesh clothing industry had a substantially higher comparative advantage in all three markets compared to the other countries. Alam and Natsuda [62] explored the competitiveness of Bangladeshi garment industry by analyzing the macroeconomic and industrial-specific factors based on a survey of 70 firms in the country. Their study reveals that, the Bangladeshi garment industry has various impediments such as insufficient infrastructure; corruption and labor unrest etc. But factors such as labor cost, market access policy and technological development have been significantly contributing to the creation of the export competitiveness of the Bangladeshi garment firms. Lalit Mohan Kathuria [55] Analyzed the competitiveness of clothing export sector of India and Bangladesh using Revealed Comparative Advantage (RCA) and the findings revealed that the comparative advantage for Bangladesh increased from 21 products to 29 products between 1995 and 2003 at the at the HS 4-digit level.

The above mentioned literatures mostly explored the consequences of the readymade garments (Apparel) industry not about textile. Very few of the literatures exhibits that conducted research on both of textile and apparel collectively. Therefore, we didn't find any literature that analyzed the 2 digit HS product level of textile and apparel industry of China and Bangladesh till now. Because of the exhibiting research gap in the mentioned area, this research will have significant contribution to fill up the space. In this study, we analyzed RCA and Spearman Rank Correlation coefficient (r_s) of Textile and Apparel (T&A) industry of Bangladesh to explore following issues:

(1) For Bangladesh and China, which products in the T&A industry have higher revealed comparative advantage in global market?
(2) What kind of inter-temporal variation in RCA in the T&A industry took place f from 2000 to 2015 for both Bangladesh and China in the global market?
(3) Regarding to the international trade relationship between this two countries in T&A, do they competitive or complementary in global market?

3. THE METHODOLOGY AND MODEL

3.1 Data

The analysis is based on the annual time series data of textile and apparel exports, obtained from several sources. For Analyzing the RCA, we World Trade Organization (WTO) database and UN COMTRADE database [17], database over the period of 2000 to 2015. We had to use multiple data sources because of data

unavailability of some recent years especially for the case of Bangladesh. The authors compiled the data from those mentioned sources to analyze the RCA of Bangladesh's part. The data is used in the form of 2-digit HS (Harmonized System) Code listing of 14 products of textile and apparel industry of Bangladesh and China. MS Excel has been used to analyze the Revealed Comparative Advantage (RCA) data and SPSS statistical tool has been used to analyze the Spearman Rank Correlation Coefficient (r_s).

We also used the database of Bangladesh Garments Manufacturing and Exporters Association [1], Bangladesh Knitwear Manufacturing and Exporters Association [29] China Textile Import and Export Chamber of Commerce [6] to show some statistical trends of the T&A industry for the both nations.

3.2 Revealed Comparative Advantage

Revealed comparative advantage indices (RCA) use the trade pattern to identify the sectors in which an economy has a comparative advantage, by comparing the country of interests' trade profile with the world average. In other words, it is the ratio of the exports of the commodity from the source to total exports from the source, over the same ratio for the world [48]. In this paper we used Balassa's (1965) RCA model to measure the relative export performance by country and industry/commodity, defined as a country's share of world exports of a commodity divided by its share of total world exports [63,64]. The index for country i commodity j is calculated as following:

$$RCA_{ij} = \frac{\dfrac{X_{ij}}{X_{wj}}}{\dfrac{X_t}{W_t}} \qquad (1)$$

Where

RCA_{ij} is revealed comparative advantage of country i for Product j,

X_{ij} denotes export by country i of Product j ,

X_{wj} denotes total amount of global exports of Product j

X_t denotes total global exports of country i

X_w denotes total amount of global exports.

Range of values: The index of revealed comparative advantage RCA_{ij} has a relatively simple interpretation. It Takes values between -∞ and +∞. The value may be equal, greater or less than 1.

If it is greater than one; $RCA_{ij} \rangle 1$ it means the country i has a comparative advantage in exports of commodity j because its market share is larger in the commodity than its share in total exports and vice versa. If the value $RCA_{ij} \langle 1$ it interprets the vice versa.

The advantage of using the comparative advantage index is that it considers the intrinsic advantage of a particular export commodity and is consistent with changes in an economy's relative factor endowment and productivity. The disadvantage is that it cannot distinguish improvements in factor endowments and pursuit of appropriate trade policies by a country [35,66,67,68].

3.3 Spearman Rank Correlation Coefficient (r_s)

The Spearman's Rank Correlation Coefficient is non-parametric technique for evaluating the degree of linier association of correlation between two independent variables.

There are advantages of using the Spearman's Rank Correlation Coefficient over the more common product moment correlation coefficient. It is a nonparametric technique so it is unaffected by the distribution of the population. Because of the technique operates on the rank of the data it is relatively intensive to outliers and there is no requirement that the data be collected over regularly spaced intervals. It can be used with very small sample sizes and it is easy to apply. The disadvantages are that there is a loss of information when the data are converted to ranks and, if the data are normally distributed, it is less powerful. The idea the Spearman's Rank Correlation Coefficient is simple. Each variable is ranked separately from lowest to highest (e.g. 1, 2, 3,…etc.) and the difference between ranks for each data pair is recorded. If the data are correlated, than the sum of the square of the difference between the ranks will be small. The magnitude of the sum is related to the significance of the correlation
.

In this paper, we calculated the Spearman's Rank Correlation Coefficient from the generated value of RCA for Bangladesh and China to explain the competitiveness or complementariness between the two nations [56,53,57,54,52].

The Spearman's Rank Correlation Coefficient is calculated according to the following equation:

$$r_s = 1 - 6 \sum_{i=1}^{n} \frac{d_i^2}{n(n^1 - 1)} \qquad (2)$$

Where d_i^2 = [RCA (BD)$_i$–RCA (CN)$_i$]^2

RCA (BD) and RCA (CN) are respectively Bangladesh's and China's RCA.
n=total selected years

Range of values: The value of r_s is ranged from-1 to +1.

A higher and positive value of the coefficient reflecting the fact that both the countries are contesting for a share in the world market is indicative of a competitive relationship between the two countries in the export market. A high negative coefficient in a similar fashion is indicative of complementarity in export specialization in the concern product between the two economies. A value of zero for the spearman correlation coefficient implies no relationship.

4. RESULTS ANALYSIS AND DISCUSSION

4.1 Comparative Analysis of RCA of 14 Products T&A for Bangladesh and China

The following Figs. from 7(a) to 7(n) explain the analyzed result of the revealed comparative advantage (RCA) of 14 products between China and Bangladesh.

Fig. 7(a) HS 50- Silk

Fig. 7(b) HS 51- Wool, Fine Coarse Animal Hair

Fig. 7(c) HS52-Cotton

Fig. 7(d) HS53-Vegetable Textile Fibers

Fig. 7(e) HS54-Man-made Filaments

Fig. 7(f) HS55-Man-made Staple Fibers

Fig. 7(g) HS56-Wadding, Felt and Nonw oven, Yarns

Fig. 7(h) HS 57 - Carpets and other text..

Fig. 7(i) HS58-Special Woven Fabrics, Tufted Textile Fabrics

Fig. 7(j) HS59-Impregnated, Coated,…

Fig. 7(k) HS60-Knitted or Crocheted..

Fig. 7(l) HS61-Knitted Art of Apparel and Clothing Accessories

Fig. 7(m) HS62-Art of Apparel and Clothing Accessories

Fig. 7(n) HS63-Other Made Up Textile Articles

Fig. 7a-7n. The analyzed values of RCA

4.1.1 HS 50-Silk

The RCA value of HS 50-Silk for Bangladesh was 0.28 in the year of 2000 where its value decreased to 0.41 in 2015 Fig. 7(a) and the value interprets that Bangladesh has no significant comparative advantage in her export of HS 50-Silk to the global market. In terms of inter-temporal movements of RCA of HS 50 during 2000-2015 it shows Bangladesh's comparative advantage over HS 50-Silk is very insignificant, rather Bangladesh imports HS 50-Silk from other countries e.g. China and India (ITC). On the contrary, the RCA value of HS 50 for China was 7.68 in 2000 Fig. 7(a) which indicates China's strong comparative advantage over HS 50 in

global market. But according to the inter-temporal movements of RCA over the period of 16 years during 2000-2015 China has been losing gradually her comparative advantage which decreased to 4.95 in 2009 Fig. 7(a). In overall comparative analysis of RCA it shows that for the product HS 50, China placed more advantageously than Bangladesh in global market.

4.1.2 HS 51-Wool, Fine coarse animal hair and horsehair

The RCA value of HS 51-Wool, Fine Coarse Animal Hair and Horsehair for Bangladesh was 0.07 in the year of 2000 where its value

remained insignificant to 0.24 in 2015 Fig. 7(b) and it also interprets that Bangladesh has no comparative advantage in her export of HS 51 in global market. In terms of inter-temporal movement of RCA of HS 51 during 2000-2015 it shows very low comparative advantage of Bangladesh on HS 51- Wool, Fine Coarse Animal Hair and Horsehair, rather Bangladesh depends importing HS 51 from other countries e.g. China, India and central Asian countries. On the contrary, the RCA value of HS 51 for China was 2.04 in 2000 Fig. 7(b) which indicates China's strong comparative advantage over HS 51 in global trade. But according to the inter-temporal movements of RCA over the period of 16 years during 2000-2015 China has been losing her comparative advantage which decreased to 1.99 in 2015 Fig. 7(b). In overall comparative analysis of RCA it shows that for the product HS 51, China placed more advantageously than Bangladesh in global market and China still the top exporter of HS 51- Wool, Fine Coarse Animal Hair and Horsehair in 2015 (ITC).

4.1.3 HS 52-Cotton

The RCA value of HS 52-Cotton for Bangladesh was 0.20 in the year of 2000 where its value increased to 1.21 in 2015 Fig. 7(c). But from 2004 to 2007 the RCA value was greater than 1 which means Bangladesh gained her comparative advantage on HS52 over the period but Bangladesh again lost her comparative advantage after 2007. Being high demand of HS52 and decreasing local production of cotton Bangladesh lost her comparative advantage in exporting of HS52 in global market. In order to keep the comparative advantage on HS 52, Bangladesh government should put more initiative in growing more cotton to meet up the increasing demand in her local market as well as to export. In terms of inter-temporal movements of RCA of HS52 during 2000-2015 it shows Bangladesh yet has no comparative advantage on HS 52, rather Bangladesh depends on importing HS52 from other countries e.g. China, Pakistan, India and central Asian countries. On the contrary, the RCA value of HS 52 for China was 2.35 in 2000 Fig. 7(c) which indicates China's quite strong comparative advantage over HS52 in global market. But according to the inter-temporal movements of RCA over the period of 16 years, China gained a little comparative advantage which decreased to 2.57 in 2009 Fig. 7(c). In overall comparative analysis of RCA it shows that for the product HS 52, China placed more advantageously than Bangladesh in global market.

4.1.4 HS 53-Textile fibers

The RCA value of HS 53-Vegetable Textile Fibers for Bangladesh was 71.90 in the year of 2000 where its value increased to 122.49 in 2015 Fig. 7(d). That interprets the very high comparative advantage for Bangladesh in global market. In terms of inter-temporal movements of RCA of HS 53 during 2000-2015 it shows that the comparative advantage decreased during 2003 to 2005 but it again increased from 2006 and it has been increasing sharply after 2007. On the contrary, the RCA value of HS 53 for China was 3.84 in 2000 Fig. 7(d) which indicates China's quite strong comparative advantage over HS 53- Vegetable Textile Fibers in global market. But according to the inter-temporal movements of RCA over the period of 16 years, China has been losing her comparative advantage which decreased to 2.39 in 2015 Fig. 7(d). In overall comparative analysis of RCA it shows that for the product HS 53, Bangladesh placed more advantageously than China in global market. Bangladesh is also the second largest exporter of HS 53 after China in 2015 (ITC).

4.1.5 HS 54-Man-made filaments

The RCA value of HS 54-Man-made Filaments for Bangladesh was 0.06 in the year of 2000 where its value remained same to 0.27 in 2015 Fig. 7(e) and it also interprets no comparative advantage for Bangladesh in global market. In terms of inter-temporal movements of RCA of HS54 during 2000-2015 it shows that the comparative advantage increased during 2004 to 2007 but it again decreased from 2008 and remained insignificant. On the contrary, the RCA value of HS54 for China was 0.81 in 2000 Fig. 7(e) which indicates China had no comparative advantage over HS 53 in global market but gradually the RCA of China increased sharply from 2002 and it reached 1.28 in 2015 that interprets China gained her comparative advantage over HS 54-Man-made Filaments. In terms of inter-temporal movements of RCA of HS54 for China during 2000-2015 it shows that the comparative advantage increased during 2002 to 2011 and again decreasing from 2012 to 2015. In overall comparative analysis of RCA it shows that for the product HS 54, China placed more advantageously than Bangladesh in global market.

4.1.6 HS 55-Man-made staple fibers

The RCA value of HS 55-Man-made Staple Fibers for Bangladesh was 0.11 in the year of 2000 where its value increased a little to 0.66 in 2015f. 7(f) and it also interprets no comparative advantage for Bangladesh in global market. In terms of inter-temporal movements of RCA of HS 55 during 2000-2015 it shows that the comparative advantage increased during 2004 to 2007 but it again decreased from 2008 and remained 0.66 in 2015. On the contrary, the RCA value of HS 55 for China was 1.85 in 2000 Fig. 7(f) which indicates China had quite high comparative advantage over HS 53- Vegetable Textile Fibers in global market. In terms of inter-temporal movements of RCA of China, the analysis shows that the RCA decreased a little from 2002 to 2005 and it again increased from 2006 reached 1.59 in 2015 Fig. 7(f). In overall comparative analysis of RCA it shows that for the product HS 55, China placed more advantageously than Bangladesh in global market.

4.1.7 HS 56-Wadding felt and NON-woven yearns

The RCA value of HS 56-Wadding Felt and Non-woven Yearns for Bangladesh was 1.10 in the year of 2000 where its value decreased to 0.89 in 2015 Fig. 7(g) and it also interprets for Bangladesh lost her comparative advantage in global market. In terms of inter-temporal movements of RCA of HS 56 during 2000-2015 it shows that the comparative advantage increased during 2002 to 2007 but it again decreased from 2008. On the contrary, the RCA value of HS 56 for China was 0.84 in 2000 Fig. 7(g) which indicates China had no comparative advantage over HS56 in global market up to 2007. In terms of inter-temporal movements of RCA of China, the analysis shows that China gained her comparative advantage from 2008 and its value reached 1.16 in 2015 Fig. 7(g). In overall comparative analysis of RCA, it shows that for the product HS 56, China placed more advantageously than Bangladesh in global market.

4.1.8 HS 57-Carpets and other textile floor covering

The RCA value of HS 57-Carpets and other Textile Floor Covering for Bangladesh was 0.27 in the year of 2000 where its value increased to 1.32 in 2015 Fig. 7(h) and it also interprets for Bangladesh's gaining comparative advantage in global market. In term of inter-temporal movements of RCA of HS 57 during 2000-2015 it shows that the comparative advantage has been increasing from 2007 to 1.32 in 2015. On the contrary, the RCA value of HS 57 for China was 1.11 in 2000 and increased to 1.23 in 2015 Fig. 7(h) which indicates China has been maintaining her comparative advantage over HS 57 in global market. In term of inter-temporal movements of RCA between China and Bangladesh in the mentioned 16 years period; Bangladesh dramatically gained her comparative advantage over HS 57 from 2013. In overall comparative analysis of RCA it shows that for the product HS 57, Bangladesh placed more advantageously than China in the global market.

4.1.9 HS 58-Special woven fabrics, tufted textile fibers

The RCA value of HS 58-Special Woven Fabrics, Tufted Textile Fibers for Bangladesh was 0.18 in the year of 2000 where its value decreased to 0.02 in 2015 Fig. 7(i) and it also interprets for Bangladesh having no comparative advantage in global market. In term of inter-temporal movements of RCA of HS 58 during 2000-2015 it shows that the comparative advantage increased dramatically from 2003 to 2007 but its value again decreased from 2008 and it continued. On the contrary, the RCA value of HS 58 for China was 1.77 in 2000 Fig. 7(i) which indicates China had quite good comparative advantage over HS 58 in global market and it had been increasing sharply reached 3.39 in 2009 Fig. 7(i). In overall comparative analysis of RCA it shows that for the product HS 58, China placed more advantageously than Bangladesh in global export.

4.1.10 HS 59-Impregnated coated, covered laminated textile

The RCA value of HS 59-Impregnated Coated, Covered Laminated Textile for Bangladesh was 0.02 in the year of 2000 where its value didn't change significantly Fig. 7(j) and it also interprets for Bangladesh having no comparative advantage in global market. In terms of inter-temporal movements of RCA of HS 59 during 2000-2015 it shows that Bangladesh didn't get comparative advantage over HS 59 over the mentioned 16 years period. On the contrary, the RCA value of HS 59 for China was 0.61 in 2000 Fig. 7(j) which indicates China had no comparative advantage over HS59 in global market in 2002 but gradually the RCA value

increased sharply and reached 2.50 in 2015 Fig. 7(j) that means China gained her comparative advantage over HS 59 from 2005. In overall comparative analysis of RCA it shows that for the product HS 59, China placed more advantageously than Bangladesh in global market.

4.1.11 HS 60-Knitted or crocheted fabrics

The RCA value of HS 60-Knitted or Crocheted fabrics for Bangladesh was 0.07 in the year of 2000 where its value remained very similar to 0.09 in 2009 Fig. 7(k) and it also interprets for Bangladesh having no comparative advantage in global market. In terms of inter-temporal movements of RCA of HS 60 during 2000-2015 it shows that the RCA value advantage increased a little from 2004 and Bangladesh gained comparative in 2007 but its value again decreasing from 2008. On the contrary, the RCA value of HS 60 for China was 2.39 in 2000 Fig. 7(k) which indicates China had good comparative advantage over HS 60 in global market in 2002 and its value smoothly increased a little to 3.13 in 2015 Fig. 7(k). In overall comparative analysis of RCA, it shows that for the product HS 60, China placed more advantageously than Bangladesh in global market.

4.1.12 HS 61-Knitted art of apparel and clothing accessories

The RCA value of HS61-Knitted or Crocheted fabrics for Bangladesh was 19.75 in the year of 2000 where its value increased sharply to 39.1 in 2015 Fig. 7(l) and it also interprets for Bangladesh having quite high comparative advantage in global market. In terms of inter-temporal movements of RCA of HS 61 during 2000-2015, it shows that the comparative advantage increased sharply from 2002 up to 2015 and its value decreased a little in 2009 Fig. 5(l). On the contrary, the RCA value of HS 61 for China was 3.57 in 2000 Fig. 5(l) which indicates China also had good comparative advantage over HS 61 in global market in 2002 and its value decreased significantly to 2.68 in 2015 Fig. 7(l). It's because of the relocation of Chinese clothing firms to abroad due to her economic shifting and labor cost [32]. In overall comparative analysis of RCA it shows that for the product HS 61, Bangladesh and China both placed equally advantageous in global market. But Bangladesh's performance of export is comparatively favorable position than China. In the terms export value in global market Bangladesh placed in the second position after China in 2015.

4.1.13 HS 62-Art of apparel clothing accessories

The RCA value of HS 62-Art of Apparel Clothing Accessories for Bangladesh was 25.33 in the year of 2000 where its value increased sharply to 32.35 in 2015 Fig. 7(m) and it also interprets for Bangladesh having quite high comparative advantage in global market. In terms of inter-temporal movements of RCA of HS 62 during 2000-2015 it shows that the comparative advantage increased sharply from 2005 up to 2008 and its value decreased a little in 2009 Fig. 7(m). On the contrary, the RCA value of HS 62 for China was 3.66 in 2000 Fig. 7(m) which indicates China also had good comparative advantage over HS 62 in global market in 2002 and its value decreased significantly to 2.41 in 2015 Fig. 5(m). In overall comparative analysis of RCA it shows that for the product HS 62, Bangladesh and China both placed equally advantageous in global market. For HS 62 also Bangladesh's performance of export is comparatively favorable position than China and in the terms export value in global market Bangladesh placed in the second position after China in 2015.

4.1.14 HS 63-Made up textile articles

The RCA value of HS 63-Made up Textile articles for Bangladesh was 10.59 in the year of 2000 where its value increased to 12.11 in 2009 Fig. 7(n) and it also interprets for Bangladesh having quite high comparative advantage in global market. In terms of inter-temporal movements of RCA of HS 63 during 2000-2015 it shows that the comparative advantage increased smoothly to 14.15 in 2015 Fig. 7(n). On the contrary, the RCA value of HS 63 for China was 3.72 in 2000 Fig. 7(n) which indicates China also had good comparative advantage over HS63 in global market in 2002 and its value decreased significantly to 2.51 in 2015 Fig. 7(n). In overall comparative analysis of RCA it shows that for the product HS 63 that Bangladesh and China both placed equally advantageous in the global market. But Bangladesh's position is more competitive than China according to the RCA value.

Table 1. The analysed result of Spearman's rank correlation coefficient (r_s) of 14 products of T&A industry between Bangladesh and China according to their values

HS	Name of Product	Value of r_s
Higher value: r_s =(0.50-1); Exhibit Higher Competition between Bangladesh and China		
57	Carpets and other textile floor covering	0.879
62	Art of apparel clothing accessories	0.655
61	Knitted art of apparel and clothing accessories	0.530
Modest value: r_s=(0.01-0.49);Exhibit Modest Competition between Bangladesh and China		
63	Made up textile articles	0.315
53	Vegetable textile fibers	0.297
56	Wadding felt and non-woven yearns	0.157
60	Knitted or crocheted fabrics	0.139
58	Special woven fabrics, tufted textile fibers	0.127
59	Impregnated coated, covered laminated textile	0.109
Lower value: $r_s \langle$ -1, Exhibit complementary between Bangladesh and China		
51	Wool, fine coarse animal hair, horsehair	-0.145
54	Man-made filaments	-0.176
50	Silk	-0.239
55	Man-made staple fibers	-0.373
52	Cotton	-0.730

4.2 Analysis of Competitiveness of 14 Products of T&A for Bangladesh and China

In Table 1, the degree and nature of competition between Bangladesh and China in the world market over 2000-2015 have been evaluated by calculating the (SRC) Spearman's Rank Correlation coefficients for RCA indices for Bangladesh and China in the world market for the products of Textile and Apparel. The aim is to identify, the products where Bangladesh and China compete/complement in the global market.

Before analyzing the SRC, we conducted test to find out the out the monotonic relationship between the two variable and both of them passed the test having significant monotonic relationship. We measured the two variables in interval scale having 3 point scale; higher competition, modest competition and complementary. As following, the SRC value ranged from 0.50-1 reveals the higher competition between two nations for the specific product, SRC value ranged from 0.01-0.49 reveals modest competition between two nations for the specific product and *SRC value $\langle$ -1* reveals complementary between two nations for the specific product.

The analyzed result of SRC of 14 products (Table 1) shows that; higher competition exhibit in 3 products out of the 14 products including HS 57, HS 62, and HS 61 that also interprets highest competitiveness between two countries among those goods in the global market.

On the other hand, modest competition exhibit in 6 products respectively; HS 63, HS 53, HS 56, HS 60, HS 58 and HS 59 out of the 14 products between China and Bangladesh which also means medium level of competitiveness between the two economies. The products are categorized according to their value of SRC showed in the (Table 1).

On the contrary, there exhibits complementariness in five remaining products; respectively HS 51, HS 54, HS 50, HS 5, and HS 52 between Bangladesh and China in global market. Among them, HS52, HS56, and HS63 were the three top ones with the highest level of complementariness, especially the product of HS 52.

5. CONCLUSIONS AND RECOMMENDA-TIONS

In this paper revealed comparative advantage has been analyzed at the two digit level of HS classification for both Bangladesh and China. Our analysis reveals that among the selected 14 products; Bangladesh placed more advantageously than China over 5 products respectively; HS 57, HS 62, HS 61 HS 63 and HS 53. On the other hand China placed more advantageously than Bangladesh over 9 products respectively; HS 50, HS 51, HS 52, HS

54, HS 55, HS 56, HS 58, HS 59 and HS 60 in global market; Bangladesh and China both countries equally placed advantageous over 3 products respectively; HS61, HS62 and HS63 in global market.

According to the inter-temporal variation of RCA in the mentioned period; Bangladesh improved her comparative advantage over 5 products respectively; HS 53, HS 57, HS 61, HS 62 and HS 63, lowered over 7 products respectively; HS 52, HS 54, HS 55, HS 56 HS, HS 58, 59 and HS 60; remained quite unchanged over 2 products respectively; HS 50 and HS 51 whereas China improved her comparative advantage over 10 products respectively HS 50, HS 51, HS 52, HS 53, HS 54, HS 55, HS 56, HS 58, HS 59 and HS 60; lowered over 4 products respectively HS 57, and HS 60, HS 61, HS 62 and HS 63. From the results, it reveals that the T&A Sector in Bangladesh is mostly dominated by the Ready Made Garments industries which are mainly the final products of this industry. On the other hand the T&A industry of China revealed strong positions both in textile and apparel products.

Furthermore; based on the analyzed result of Revealed Comparative Advantage and Spearman's Rank Correlation coefficients, the policy related recommendations are as following;

- Products showed higher competition between Bangladesh and China:
  According to the competitiveness analysis of the 14 products; 3 products (Table 1) exhibit higher competition. As Bangladesh has some advantages regarding low labor cost and labor availability, the competitiveness of these products could be kept for the time being. But for the long term competitiveness, the industry should accumulate with advance technology, backward linkage industries and labor compliances. Especially increasing efficiency along with the value chain such as integration between textile and apparel; and improving social and environmental compliance by introducing better human resource practices could provide sustainable development for Bangladesh's T&A industry. By promoting FDI for textile and apparel and adopting clear and transparent policies on foreign ownership within export processing zones and special economic zones and investment in infrastructure, education, and trade support, Bangladesh could sustain her comparative

advantage on these products. In the case of China, the shrinking of labor and increasing labor cost forcing China to mover her labor intensive T&A factories to other developing countries and this trend will continue. Besides, focusing more on the high end technology based products could sustain the competitiveness of the mentioned product group of China in the global market.

- Products showed modest competition between Bangladesh and China:
  In this group, 6 products (Table 1) exhibit modest competition. To improve the competitiveness, more focus should be given on backward linkage industry of T&A for Bangladesh. Because of having strong raw resources and technological advancement, China revealed a strong competitor in the most products of this group in the global market. Though Bangladesh has absolute advantage in producing vegetable textile fiber, the advantage can be sustained supporting the farmers to cultivate the vegetable fiber (jute) with all subsidies. It is crucial also for Bangladesh's T&A sector's competitiveness to continue investment in transportation infrastructure and relocation of factories to improve lead times and facilitate trade. Besides, developing and implementing supportive policies, and improving governance at the national and factory levels are crucial measures to be implemented to keep the competitiveness of the industry. On the other hand for the industry of China, the product group showed the comparative advantage for long period of time. China has been improving her competitiveness through industry relocation as well as innovation and technology adaptation. China could continue her level of competitiveness focusing on the mentioned areas of continual development.

- Products showed lower competition between Bangladesh and China:
  The rest of the 5 products (Table 1) exhibit complementary between two nations and they are mutually benefited by exporting and importing these products among the industry between Bangladesh and China. Being abundant in producing cotton and other raw materials and technological advancement, China revealed herself a very strong competitor in world market producing and exporting the mentioned

products. These products group are mainly produced in China and Bangladesh imports the products from China for her readymade garments to produce the final products of the apparel. The recent statistics of WITS shows the significant increasing (2.96 Million USD in 2005 to 58.21 Million USD in 2015) trends of Bangladesh's export of T&A products to China. The T&A export products share of Bangladesh to China also very significant (45.46% in 2005 to 72.42% in 2015). The causes behind the rapid export growth of T&A of Bangladesh to China are; firstly, after China providing zero tariff treatment to 4762 products originated from Bangladesh and other 32 Least Developed Countries in 2010 which includes the most of the products T&A and secondly, the economic shifting of China from labor intensive industry to technology based industry in T&A. Besides the existing facilities, Bangladesh should establish a healthier labor market adjusting with higher wages labor rights and better training which will provide the sustainable growth of Bangladesh's T&A sector. Further initiatives would help the T&A sector become more productive over the longer term to be compete in the global markets and competitors. Therefore, increasing the number of skilled workers, capacity building and making sophisticated items could move Bangladesh's T&A sector toward higher-valued manufacturing to continue her export growth and sustainability.

6. LIMITATIONS

The limitation we faced for this study is; availability of data for different indicators of Bangladesh side in latest couple of years. At last it could be managed by compiling data from ITC, UN COMTRADE, Bangladesh Garments Manufacturing and Exporters Association (BGMEA) and Bangladesh Knitwear Manufacturing and Exporters Association (BKMEA) databases.

Further research is advisable to better understand the factors that contribute to the presented results. Especially, designing a questioner, survey and interview is needed to explore the raw information from the industry stakeholders of both countries to find more policy level recommendations and implications.

7. ORIGINALITY AND VALUE OF THE RESEARCH

This article is one of the few studies addressing the 2 digit Harmonized System (HS) 14 products (all) of Textile and Apparel industry between Bangladesh and China. Also, this paper highlights the degree of competition for individual product level which would be helpful to the industry stakeholders and policy makers for the both nations. It is expected that this research will contribute to the existing gap of literature, further knowledge on competitiveness analysis for textile and apparel industry and the literature of international trade between Bangladesh and China.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. BGMEA (Bangladesh Garments Manufacturers Association). About garment industry of Bangladesh; 2016.
   Available:http://www.bgmea.com.bd/home/about/AboutGarmentsIndustry
   (Accessed 14 November, 2016)
2. BIDA (Bangladesh Investment Development Autority). Key statistics of RMG sector; 2016.
   Available:http://www.bida.gov.bd/site/page/c9ffe4ad-1b7e-4c85-b77e-b7d9427d4533/Garments-&-Textiles
   (Accessed in 14th November, 2016)
3. Ara LA, Rahman MM. The competitiveness and future challenges of Bangladesh in international trade. Tokyo, Japan: Aoyama Gakuin University; 2009.
4. Ramesh Kurpad M. Made in Bangladesh: Challenges to the ready-made garment industry. Journal of International Trade Law and Policy. 2014;13(1):80-96.

5.   Haider MZ. Competitiveness of the Bangladesh ready-made garment industry in major international markets. Asia-Pacific Trade and Investment Review. 2007;3(1).

6.   CCCT. China Textile & Clothing Trade by Country/Region. Beijing, China: China Chamber of Commerce for Import and Export of Textile and Apparel (CCCT); 2016.

7.   Eloot K, Huang A, Lehnich M. A new era for manufacturing in China. McKinsey Quarterly. 2013;1.

8.   Gelb BA. Textile and apparel quota phase-out: Some economic implications. CRS Report for Congress. Order Code RS20889, Updated June 10; 2005.

9.   ITC. Trade performences HS by country; 2016.
     Available:http://tradecompetitivenessmap.intracen.org/RS_TP_CI.aspx?RP=004&YR=2015
     (Accessed in 8th November, 2016)

10. WITS. World Integrated Trade Solution (WITS); Textiles and Clothing Exports By Country and Region. In: WITS, ed. 2000-2015.
     Available:http://wits.worldbank.org/
     (Accessed in November 2016)

11. Hossain ME, Dechun H, Tran Q. Competitiveness of textile and apparel industry of Bangladesh with China in international trade. Paper Presented at: International Conference on Information, Business and Education Technology; Beijing, China. (ICIBIT); 2013.

12. Yuan TX Fu. China's textile industry international competitive advantage and policy suggestion. Journal of the Washington Institute of China Studies. 2007;2(1):84-97.

13. Batra A, Khan Z. Revealed comparative advantage: An analysis for India and China. Indian Council for Research on International Economic Relations. 2005;168:1-85.

14. Lau CK, To KM, Zhang Z, Chen J. Determinants of competitiveness: Observations in China's textile and apparel industries. China & World Economy. 2009;17(2):45-64.

15. Karaalp HS, Yilmaz ND. Comparative advantage of textiles and clothing: Evidence for Bangladesh, China, Germany and Turkey. Fibres & Textiles in Eastern Europe; 2013.

16. Robin BD, Dunford M, Liu WM. Globalisation, cost competitiveness and international trade: The evolution of the Italian textile and clothing industries and the growth of trade with China. European Urban and Regional Studies; 2013.

17. Comtrade U. UN comtrade database: HS classification by scetion; 2016.
     Available:https://comtrade.un.org/
     (Accessed in 11th November, 2016)

18. USDC. US Department of Commerce; 2016.
     Available:http://www.census.gov/foreign-trade/data/index.html
     (Accessed 14th November, 2016)

19. Berg AH, Saskia Kempf, Sebastian Tochtermann, Thomas. Bangladesh's ready-made garments landscape: The challenge of growth. McKinsey & Company; 2011.

20. Mirdha RU. Export diversification: A way to sustainable overseas trade. Dhaka, Bangladesh. The Daily Star. Vol March 26, 2013

21. Malouche SKaM. Toward new sources of competitiveness in Bangladesh: Key insights of the diagnostic trade integration study. In: Trade ed. Vol October 2015 Washington DC, USA: World Bank; 2015.

22. BKMEA. Market research analysis of potential market for Bangladesh's textile and apparel; 2016.
     Available:http://www.bkmea.com/market_research1.html
     (Accessed in 18th November, 2016)

23. Sattar Z. Strategy for export diversification 2015-2020. Dhaka, Bangladesh: Policy Research Institute of Bangladesh; 2015.

24. ILO. Textiles, clothing, leather and footwear sector; 2016.
     Available:http://www.ilo.org/global/industries-and-sectors/textiles-clothing-leather-footwear/lang--en/index.htm
     (Accessed in November 2016)

25. ILO. Wages and productivity in the garment sector in Asia and the Pacific and the Arab States. Thailand: International Labour Organization; 2016.

26. Huynh P. Employment, wages and working conditions in Asia's garment sector: Finding new drivers of competitiveness. Bangkok: ILO Regional Office for Asia and the Pacific; 2015.

27. Haque A. Bangladesh as an emerging economy and lessons from East Asian Miracles. Paper Presented at: APEA Conference South Korea; 2011.

28. ZAF, Anne G, Audrey S. The paradox of export growth in areas of weak

governance: The case of the ready made garment sector in Bangladesh. World Development. 2014;56:258-271.

29. BKMEA. Export Performance of RMG of Bangladesh; 2016.
Available:http://www.bkmea.com/facts-figures.html
(Accessed 5th November, 2016)

30. TEXPROCIL. Overview of current trade in TEXTILES & CLOTHING. India: The Cotton Textiles Export Promotion Council of India; 2015.
Available: http://www.texprocil.org/

31. Tao Y, Fu X. China's textile industry international competitive advantage and policy suggestion. Business and Public Administration Studies. 2007;2(1):84.

32. Miao Z, Xin K, Chenayah RS. The transformation of the clothing industry in China. Asia Pacific Business Review. 2016;22(1):86-109.

33. Fang C. Analysis of the international trade competitiveness of China's textile and apparel industries in post-quota era: An empirical analysis based on the intra-industry trade. Journal of Chongqing Technology and Business University (Social Science Edition). 2012;6:4.

34. Rasiah R, Kong XX, Vinanchiarachi J. Moving up in the global value chain in button manufacturing in China. Asia Pacific Business Review. 2011;17(02):161-174.

35. Ruan J, Zhang X. "Flying geese" in China: The textile and apparel industry's pattern of migration. Journal of Asian Economics. 2014;34:79-91.

36. Quy-Toan, DoLevchenko, ARaddatz A, Claudio. Comparative advantage, international trade, and fertility. Journal of Development Economics. 2016;119:48-66.

37. Macleans Mzumara ACaRK. An analysis of the revealed comparative advantage in Southern African development community member states. Journal of Sustainable Development in Africa. 2013;15(4).

38. Liesner HH. The European common market and British industry. The Economic Journal. 1958;68(270):302-316.

39. Yue C, Hua P. Does comparative advantage explains export patterns in China? China Economic Review. 2002;13(2002):276-296.

40. Balassa B. Trade liberalization and "Revealed" comparative advantage. The Manchester School. 1965;33(2):99-123.

41. Balassa B. Revealed comparative advantage revisited: An analysis of relative export shares of the industrial countries, 1953-1971. The Manchester School of Economic & Social Studies. 1977;45(4): 327-344.

42. Balassa B. The changing pattern of comparative advantage in manufactured goods. The Review of Economics and Statistics. 1979;259-266.

43. Bela B. Comparative advantage in manufactured goods: A reappraisal. The Review of Economics and Statistics. 1986;68(2):315-319.

44. Shafaei R. An analytical approach to assessing the competitiveness in the textile industry. Journal of Fashion Marketing and Management: An International Journal. 2009;13(1):20-36.

45. Ullah S, Muhammad, Kazuo I. Dynamics of comparative advantage and export potentials in Bangladesh; 2012.

46. Utkulu U, Seymen D. Revealed comparative advantage and competitive-ness: Evidence for Turkey vis-à-vis the EU/15. Paper presented at: European trade study group 6th annual conference, ETSG; 2004.

47. Hinloopen J, Marrewijk Cv. Dynamics of Chinese comparative advantage: Tinbergen Institute; 2004.

48. Fertő I, Hubbard LJ. Revealed comparative advantage and competitiveness in Hungarian agri-food sectors. In: Sciences IoEHao, ed. Discussion papers new series. Budapest, . Budapest, Hungary: Institute of Economics Hungarian Academy of Sciences; 2002.

49. Batra A, Khan Z. Revealed comparative advantage: An analysis for India and China. New Delhi, India: Indian Council For Research on International Economic Relations; 2005.

50. Havrila I, Gunawardana P. Analysing comparative advantage and competitive-ness: An application to Australia's textile and clothing industries. Australian Economic Papers. 2003;42(1):103-117.

51. Vixathep S. Cambodia's comparative advantage patterns and trade structure from 1985 to 2010. Journal of Southeast Asian Economies (JSEAE). 2013;30(3): 278-293.

52. Amir Mahmood. Export specialization and competitiveness of the malaysian manufacturing: Trends, challenges, and prospects. Fifth Annual Conference on International Trade Education and Research, Melbourne; 2000.

53. Gautheir TD. Detecting trends using Spearman's rank correlation coefficient. Environmental Forensics. 2001;2(4):359-362.

54. Shyam Upadhyaya. Composite measure of industrial performance for cross-country analysis. UN Industrial Development Organization (UNIDO) Report; 2003.

55. Mohan Kathuria L. Analyzing competitiveness of clothing export sector of India and Bangladesh: Dynamic revealed comparative advantage approach. Competitiveness Review: An International Business Journal. 2013;23(2):131-157.

56. Susana Franco, et al. Methodology and findings report for correlation analysis between cluster strength and competitiveness indicators. European Cluster Observatory Report; 2014.

57. Svetlana Ignjatijević, et al. Revealed comparative advantages and competitiveness of the processed food sector for the Danube Countries. Custos e. 2014;10(3).

58. Rahman M, Anwar A. Bangladesh apparels export to the US market: An examination of her competitiveness vis-à-vis China: Centre for Policy Dialogue; 2006.

59. Joarder MAM, Hossain AKMN, Hakim MM. Post-MFA performance of Bangladesh apparel sector. International Review of Business Research Papers. 2010;6(4): 134-144.

60. Mottaleb KA, Sonobe T. An inquiry into the rapid growth of the garment industry in Bangladesh. Economic Development and Cultural Change. 2011;60(1):67-89.

61. Hasan J. The competitiveness of ready made garments 2 industry of Bangladesh in post MFA era: How 3 does the industry behave to face the 4 competitive challenge? 2013;5.

62. Alam MS, Natsuda K. The competitive factors of the Bangladeshi garment industry in the post-MFA era. Canadian Journal of Development Studies/Revue Canadienne d'études du Développement. 2013;1-21.

63. Bela Ba. Comparative advantage in manufactured goods: A reappraisal. The Review of Economics and Statistics. 1986;68(2):315-319.

64. Seyoum B. Revealed comparative advantage and competitiveness in services: A study with special emphasis on developing countries. Journal of Economic Studies. 2007;34(5):376-388.

65. De Benedictis L, Tamberi M. A note on the Balassa index of revealed comparative advantage. Available at SSRN 289602; 2001.

66. Sanidas E, Shin Y. Comparison of revealed comparative advantage indices with application to trade tendencies of East Asian countries. Paper presented at: 9th Korea and the World Economy Conference, Incheon; 2010.

67. Hanson GH, Lind N, Muendler MA. The dynamics of comparative advantage: National bureau of economic research; 2015.

68. FAO. RCA Indices. Banckok FAO (Food and Agricultural Organization of United Nations); 2015.

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