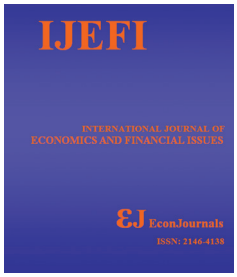

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Trade Performance and Specialization Dynamics of the Five Most Traded Products between Bangladesh and the Rest of the SAARC Countries

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ABSTRACT

This study focuses on the trade specialization of significant products in Bangladesh's trade basket from 2008 to 2021 in forming SAFTA under SAARC (South Asian Association for Regional Cooperation). The study utilized the Lafay Index to identify trade specialization; the prime products of Bangladesh are determined based on the continuous presence of any specific product within the list of top 10 products of Bangladesh each year during the study period. The study concluded that four of the five significant products are from the Garments sector, and the remaining one is from the Vegetable Oil sector. The significant products identified exhibited a relatively high degree of trade specialization in the context of SAARC and faced stiff competition from its neighbouring country, India. The post hoc Games-Howell test also revealed that most of the differences are statistically significant for all the major products. Based on the findings, this paper also offered the policy prescription for SAFTA. This research looks at the dynamics of specialisation and trade performance in Bangladesh in comparison to other SAARC countries. It helps shed light on the trading dynamics inside one of the most populous and economically varied areas of the world by centring on the local setting.

Keywords: SAARC, Lafay Index, SAFTA, Bangladesh, Trade
JEL Classifications: B17, C13, F14, N55, Q17

1. INTRODUCTION

The trading system has a great history of development, which started from the "Barter System" notion. As a matter of course, it is well-thought-out as the cornerstone of human civilization. The trading system was augmented steadily with globalization, change in the global economy, cultural exchange, and continuous advancement in transportation, communication, and technology. At this time, trade beyond the domestic border is one of the vital factors of economic growth and a measure of position in world diplomacy. Focusing on this issue, global economic integration and collaboration have become the centre of attention for every nation. Trade volume has increased notably over time and aligns with global economic integration and collaboration. Economic integration is now crucial for a country's progress and long-term prosperity (Cairncross, 1960). This integration also aid economies in recognising a range of problems that promote commerce by decreasing national incompetence (Varma and Ramakrishnan, 2014). However, simultaneously, it also increased the complexities in global trade which is why the emergence of trade blocs became another point of attention where groups of nations collaborate by signing regional trade agreements intending to uplift regional

cooperation, for obtaining political stability, ensuring economic growth and also to reduce tariffs in terms of trade of their desired products. Several trade blocs succeeded in ensuring the goals and objectives mentioned above, e.g., EU, NAFTA, ASEAN, SAARC, BIMSTEC, Economic development, social and political-cultural ties, cooperation, peace, and security among South Asian nations were the primary goals of SAARC's formation. When it comes to regional collaboration, economic progress, and prosperity, Bangladesh has consistently been a reliable friend to its neighbours (Gazi, 2021). The South Asian Association for Regional Cooperation (SAARC) represents the collective resolve of the South Asian population to collaborate in addressing shared challenges. This collaboration is driven by a sense of camaraderie, trust, and comprehension, with a focus on mutual gains, respect, fairness, and the benefits of partnership.

Bangladesh has been a member of the South Asian Association for Regional Cooperation (SAARC) since its establishment (ITC, 2021). Shedding light on the Asian trade blocs, SAARC is one of the influential trade blocs, established in 1985 with seven founding members: Bangladesh, India, Pakistan, Nepal, Bhutan, Maldives, and Sri Lanka. Later, Afghanistan joined the trade bloc in 2007, and its member nations turned eight. Likewise, the other trade bloc, SAARC, also had a similar manifesto to enhance regional cooperation by reducing trade barriers towards sustainable economic growth of every member nation in the long run. The implementation of a free trade agreement among South Asian countries will have a beneficial effect on regional trade, as stated (Jain, 1999; Ewing-Chow and Islam, 2007). Enhancing access to global markets is of utmost importance to every country in the region (Rahapakse and Arunatilake, 1997). The effectiveness of SAARC as a trade bloc was immensely increased right after the launch of the South Asian Free Trade Agreement (SAFTA) in 2006. The elimination of trade barriers and the underlying rigidity brought about by opposing ideological relations can greatly enhance intra-SAARC trade (Rahman et al., 2006). Pakistan has consistently gained from trade with Bangladesh. Many people recognise Bangladesh's export potential to South Asia and India (Hossain, 2009). Among South Asian trading partners, Bangladesh ranks highest for India, while India ranks second for Bangladesh. Historic trade imbalances with India have plagued Bangladesh since its independence (Gazi et al., 2022). The main goal of this agreement was to enhance economic cooperation by reducing trade barriers, e.g., tariffs. Despite the political instability among its members, e.g., the political tension between India and Pakistan, SAARC is still an influential trade bloc that constitutes 21% of the world's population and 5.21% (US$4.47 trillion) of the world economy as per the statistics of 2021(FAOSTAT, 2021).

The export values of SAARC member nations in 2021 are as follows in Table 1.

The statistics shown above verily point the fingers at India and Bangladesh as a noteworthy exporter in terms of global trade. India is in the leading exporter position with an export value of USD 330 billion. In contrast, Bangladesh has an export value of USD 41 billion, although lower in comparison with India, which is significant compared to other member nations and

Table 1: Total export and import value of SAARC member nations

Country	Export value in 2021 (USD in Bn)	Import value in 2021 (USD in Bn)
India	330	578
Bangladesh	41	76.9
Pakistan	25	78.9
Sri Lanka	12	21.8
Nepal	1.1	15.3
Afghanistan	0.8	7.35
Maldives	0.3	2.84
Bhutan	0.2	1.12

Source: Compiled by the Authors' from the OEC database

regardless of the country size as India is about 22 times bigger than Bangladesh (World Bank). Pakistan and Sri Lanka have also notable performances in terms of export value as evident in the above table. As Bangladesh is a crucial role-playing member nation of SAARC after India, of course, its significance in this trade bloc is indispensable. This is why the study has established the objective to analyze the trade specialization of Bangladesh with the other SAARC member nations using different statistical analyses and methodological approaches demonstrated in the later sections. This research adopts a prevailing paradigm that places greater importance on regional economic development than on regional collaboration. An innovative aspect of this study is that researchers have successfully illuminated the status of trade between Bangladesh and SAARC countries inside a single study. Furthermore, this study would assess the bilateral trade between Bangladesh and the SAARC countries on specific products.

Six distinct sections make up the organisation of the current study. Section 1 of the paper discusses the introduction, while Section 2 delves into the literature. The materials and methodology used to assess trade intensity and trade specialisation are highlighted in Section 3 of the study. The trends and patterns of trade between Bangladesh and the other SAARC members were emphasised in Section 4. In contrast, Section 5 examined Bangladesh's Lafay index (LFI) profile in relation to the other SAARC countries. The entire discussion is covered in Section 6 and the conclusion and its consequences for policy are wrapped up in Section 7.

2. LITERATURE REVIEW

A literature review comprises of a thorough analysis of relevant studies that enables the study to justify the research gap and the scope of future research work. This section, gathering relevant research works, analysed trade networks of different products around different regions, countries, trade blocs, and throughout the world. In this present world, trade beyond the national border is highly significant in terms of obtaining competitive advantage, economic efficiency and advancement. It also plays noteworthy influence in the case of building and maintaining geopolitical relationship among nations. Hence, solely dependence on domestic production and consumption is highly unproductive for a nation. In addition, there is a significantly positive relationship between real foreign GDP per capita of trading partners with trade balance but a significant negative relationship exists between real domestic GDP

and trade balance (Falk, 2008). As a result, countries converge with one another and form a trade bloc for obtaining strong competitive advantage where a continuous competition remains among countries (Lewney et al., 2012). From another point of view, there exists export competitions among Spain, Belgium, Netherlands and Portugal in which Spain's clients are Germany, UK, France and Belgium but Netherlands is the direct competitor of Spain (Capobianco-Uriarte et al., 2021). For instance, the foreign trade flow between Estonia and the EU that caused the economic reform from Soviet Union to western countries through the expansion of commodity groups (Fainštein and Netšunajev, 2010; Fertő, 2008).

Russia, a highly substantial nation in world trade networks, appreciated the value of Russian Ruble despite the ongoing Russia-Ukraine war (Zhang, 2023). Russian trade is changing day by day in which exports become less diversified as a result of economic transformation and trade liberalization (Sargsyan, 2018; Benesova et al., 2017). Furthermore, trade patterns between the Slovak Republic and the EU-27 with Russia and Ukraine are stable for those product groups which have comparative disadvantages but those which have comparative advantages show significant variations (Qineti et al., 2009). Besides, the turnover of agricultural export has increased significantly over years where cereals, milk and dairy products, tobacco, manufactured tobacco substitutes and sugars and sugar confectionery have taken a noteworthy position in the world in terms of Lafay index (Burianova and Belova, 2012). Moreover, RCA analysis (revealed comparative advantages, also known as Balassa index) shows a trade balance deficit in global cereals trade has high RCA values for cereal preparations and at the same time, countries having a trade balance surplus in cereals noticing a low RCA values for cereal preparations (Istudor et al., 2022). Moreover, the value of agrarian exports is increasing not only in EU-12 but also the EU-15 countries from 2015 to 2019 and in crop and fishery sector. Vietnam is highly specialized but de-specialized in the livestock and processed-food sectors (Hoang, 2018; Svatoš et al., 2010). There needs a special attention in highly de-specialized sector but less attention to specialized sector. Alternatively, some countries were also found in losing their competitive position in agri-food trade where Russia and Slovakia are marked as such respectively (Drabik and Bartova, 2009; Smutka et al., 2019).

Concerning about food industry, there exists a positive TBI with comparative advantages with food products, such as crustaceans, cocoa, and oilseeds in accordance with the world, the EU28 and ECOWAS (Verter et al., 2021). Furthermore, in food industry, the beverage highlights positive Lafay index over the period of time and a regional differentiation is noticed in agricultural and Agri-industrial sector. In Europe, orange juice is leading factor than the sale of fresh orange (Platania et al., 2015). Besides, major revenue comes from frozen concentrated orange juice and Europe plays a leading role to generate the revenue (Allegra et al., 2019). In the case of coffee, Brazil, Vietnam and Colombia were found as the biggest exporters of coffee where unreasonable specialization patterns are noticed in Uganda, Ethiopia and Honduras (Torok et al., 2018). A positive value of primary products is found in comparative advantages in the cases of Romania, Austria, Germany, Hungary, Czech Republic, Slovakia, Slovenia, Ukraine and Bulgaria (Ignjatijević et al., 2013). However, Nigeria's comparative advantage in trading food products in the world market has declined from 1995 to 2017 where the food products having comparative disadvantages has increased (Verter et al., 2020). Despite the declining trading in food products, the performance of Nigeria is found better in trading with other ECOWAS countries than in trading with the overall world market where tobacco, edible products, maize and wheat play a vital role in creating the competitive advantage (Zdráhal et al., 2019). While shedding the light on technology industry, Spain and Japan both have obtained the highest competitive advantages in the automobile market internationally and at the same time USA, China, Japan, Canada are the largest producers of cars (Nagy and Jámbor, 2018).

Focusing on the trade specialization, Alessandrini et al. (2007) mentioned that the largest degree of trade specialization is noticed at Low-technology sectors, but high technology sector is mainly dependent on import. Again, the overall trade competitiveness of Azerbaijan is found low especially in high and medium-high technology goods but there exist only comparative advantages in the medium-low technology category (Falkowski, 2018). In terms of textile sector, Ethiopia is found in more competitive position, and it gives more emphasis on apparel sector because it is creating job opportunities for the growth of the economy (Rundassa et al., 2019). On the other side, Romania is in a comparative advantage in textile sector since 2003 but comparative disadvantages to the entire analyzed period (Tripa et al., 2016). From the perspective of intra-industry trend, Romanian trend moves to the opposite direction of worldwide trend (Mann et al., 2022). In addition, trade meat parts are declining in Romania but on the rise worldwide due to increasing competitiveness of the industry. Moving forward to Asian countries perspective, India and Bangladesh have witnessed with a clear indication that a good trade relation in which removal of non-tariff barriers and trade facilitation played the major role (Dhami and Kaur, 2016). China, an important trading country in Asia, boosted up an argentic confidence holding adaptive and nuanced approach of trading where India takes the position of reactive mode (Cooper et al., 2016). Moreover, trade specialization has significant positive impact on exports in Philippines and Malaysia (Karimi et al., 2018). Russia, as the largest country in the world, has obtained comparative advantage on its products specially on oil, agricultural and both primary and by-products. However, Asian countries are also obtaining this advantage due to its geographical location as well as good trade relations (Ishchukova and Smutka, 2013).

Concentrating on the trade of specific product in Asia, India and China are found as the largest exporters of peanuts in the world market (Jambor and Gibba, 2017). Nevertheless, Senegal, Nicaragua and Argentina are determined as the biggest exporters on basis of Balassa index. In pharmaceutical industry, India faces a comparative advantage and trade specializations in bulk medicines and medical technology equipment (Oberoi and Kansra, 2022). On the other hand, Pakistan has witnessed a high level of comparative advantage in leather products and faces medium to strong comparative advantage in agricultural cotton (Shahab and

Mahmood, 2013). Apart from that, in Indonesia, global cocoa trade obtains the highest comparative advantages from 1992-2015 and the role of the creative industry has a noticeable impact where the fashion industry is a mainstay of export in Indonesia's total export (Jambor et al., 2017; Lantu et al., 2021). Shifting the focus towards the trade blocs and their trade networks around the world, there are diverse significant trade blocs are active such as EU, NAFTA, ASEAN, BRICS, BIMSTEC, SAARC, CIS, and so on. In Asia, ASEAN, BIMSTEC and SAARC are effective in works. Moreover, Malaysia has an advantageous position in animals, vegetables, fat and oil while Brunei has the comparative advantages only in oil (Reyes, 2014). Only Thailand has competitive advantages in vehicles among all other ASEAN countries. In another study, it is found that intra industry trade between EU and ASEAN is moderate and trading is concentrated in a few countries but obtains comparative advantages in technological patterns (Zapata et al., 2023). Accordingly, the analysis framework is decided and presented below in Figure 1.

Most of the analysis of relevant studies above were conducted on focusing developed economies, outside the Asian region or related to ASEAN or BIMSTEC. No such study is found that is focused on the analysis of trade network among SAARC member countries. Hence, this study finds an incentive to conduct an analysis on the trade pattern of the SAARC member countries with one another and with others around the world.

3. MATERIAL AND METHODOLOGY

The present paper is purely established on the secondary data. For the accomplishment of objectives, online data sources viz. OEC database (Accessed from: https://oec.world/; Accessed on 20 February, 2023) at the country level for the years 2008-2021 were used to examine the trade specialisation of Bangladesh in comparison with SAARC member nations (OEC Database, 2021). Since, Afghanistan became a member of SAARC in the year 2007 so the data was collected from 2008 onwards. It has taken [HS Code (Harmonized System 1992 for 4-digit)] for five commodities namely Jute Yarn (HS: 5307); Jute and Other Textile Fibers (HS: 5303), other Pure Vegetable oils (HS: 1515), Non-Knit Men's Suits (HS: 6202), and Non-Knit Men's Shirts (HS: 6205) since they were present in the list of top exporting products from Bangladesh to SAARC nations during this study period.

The study examined trade specialisation using Lafay Index (LFI). According to Lafay (1992), index measures and analyse the changing pattern of the trade specialisation (Lafay, 1992). Lafay index is defined a country's trade specialisation with regards to a specific good as the difference between the trade balance of that good and the country's overall trade balance weighted by the goods share of the total trade (Oberoi and Kansra, 2022). The Lafay Index takes into account both the values of exports and imports (Zaghini, 2005).

$$LFI_j = 100\left\{\frac{x_j - m_j}{x_j + m_j} - \frac{\sum_{j=1}^{N}(x_j - m_j)}{\sum_{j=1}^{N}(x_j + m_j)}\right\}\frac{x_j + m_j}{\sum_{j=1}^{N}(x_j + m_j)}$$

where
Xj: Export of article "j" to world
Mj: Import of article "j" from world
N: Number of traded product.

A positive LFI value shows the trade diversification and higher the LFI value greater is the degree of trade specialisation and vice-versa indicates dependence on imports. A negative value, quite the reverse indicates a comparative disadvantage and low degree of specialization in that product. Given this definition, Lafay Index maintains symmetry across all products in the country and the sum of for all sectors of a given country must be zero. This specialization index of a product j in country i is thus related to the deviation of the product normalized trade balance and the country's overall trade balance and its share of trade. Although RCA indexes are relative measures, so results should be treated with caution and with understanding of their limitations, an analysis of revealed comparative advantage of the industrial sector is helpful in analyzing structural change in export specialization. LFI is the second most widely used indicator for assessing a country's international trade competitiveness, next to Balassa's RCA index. It's specific merit and advantage over Balassa's index is that by including imports, it helps keep in check intra-industry trade and re-export flows; in this sense it is better that the traditional Balassa's RCA index (Zaghini, 2003).

Afterwards, the Games-Howell *post hoc* test is applied. This test is generally applied after conducting an ANOVA to compare the means across multiple groups, especially when certain conditions are met. This test is particularly helpful if the groups have unequal variances, which violates the assumption of homogeneity of variances required for traditional ANOVA. It's also ideal when groups have different sample sizes. Unlike Tukey's HSD, which assumes both equal variances and sample sizes, the Games-Howell test is nonparametric and doesn't require these conditions, making it more robust for examining pairwise differences in means under unequal variance and varying sample size situations. As noted in the study of Ghose et al., (2024), if the ANOVA results show unequal variances, the Games-Howell test is a reliable choice for further analysing group differences.

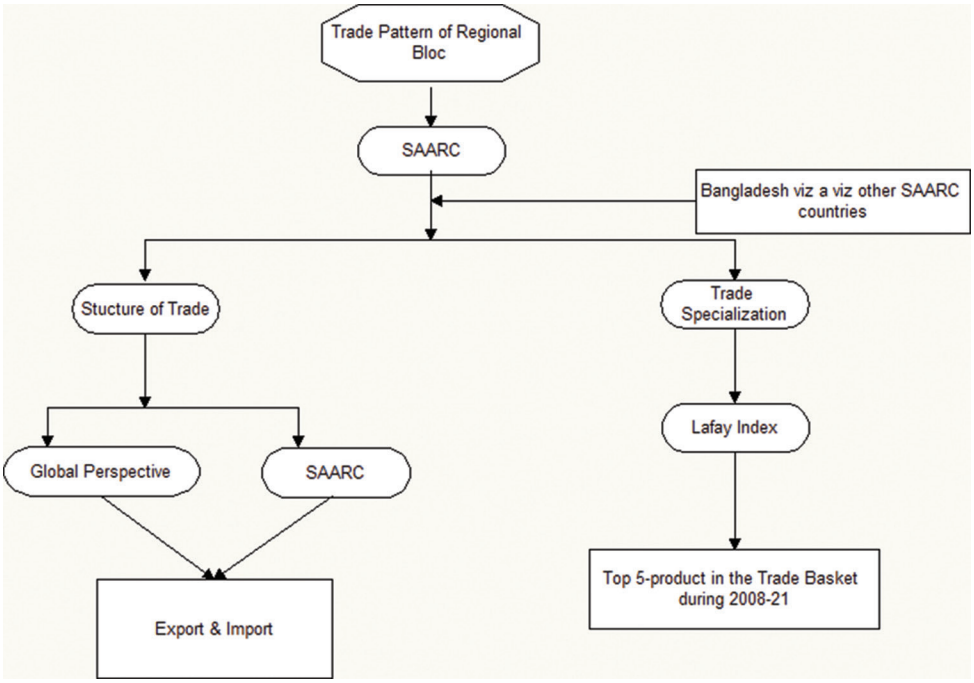
4. TRENDS AND PATTERN OF BANGLADESH-REST OF THE SAARC COUNTRIES TRADE ANALYSIS

In the present section, an attempt was made to examine the trend and pattern of Bangladesh's trade with the rest of SAARC member nations. The particular section of the paper discusses the Bangladesh- rest of the SAARC trade (export-import) analysis country-wise.

4.1. Export Analysis of Bangladesh in Comparison with the Rest of the SAARC Nations

The South Asian Association for Regional Cooperation (SAARC) member nations are crucial export destinations for Bangladesh, as illustrated in Table 2, which shows a generally increasing trend in exports. However, a slight decline was noted in 2009 due to the formation of a new political government, and a significant drop in export volume occurred during the 2012-2013 elections. The COVID-19 pandemic in 2020 further disrupted trade, resulting in negative growth

Figure 1: Theoretical framework of the study



Source: Authors' Construction

Table 2: Bangladesh's export globally and with other SAARC nations (2008-2021) ($bn)

Year	Export to SAARC ($bn)	Global export except SAARC ($bn)	Bangladesh's export growth to SAARC (%)	Bangladesh's export growth Globally except SAARC (%)
2008	0.448	17.752		
2009	0.369	18.631	-17.63	4.95
2010	0.495	21.705	34.15	16.50
2011	0.731	27.669	47.68	27.48
2012	0.701	27.999	-4.10	1.19
2013	0.609	31.391	-13.12	12.11
2014	0.618	32.982	1.48	5.07
2015	0.763	36.037	23.46	9.26
2016	0.793	37.007	3.93	2.69
2017	0.729	39.571	-8.07	6.93
2018	0.993	44.007	36.21	11.21
2019	1.33	45.67	33.94	3.78
2020	1.15	40.15	-13.53	-12.09
2021	2.06	50.64	79.13	26.13

Source: Compiled by the authors' from OEC database

in exports to both SAARC countries and globally. India is the largest importer of Bangladeshi products, with imports rising from $0.333 billion in 2008 to $1.72 billion in 2021, as shown in Table 3. Pakistan and Nepal also import Bangladeshi goods, but in much smaller volumes. Notably, Sri Lanka had no trade with Bangladesh in 2018, while Afghanistan, Bhutan, and the Maldives exhibited periods of no imports from Bangladesh between 2014 and 2021.

4.2. Import Analysis of Bangladesh in Comparison with the Rest of the SAARC Nations

Table 4 and Figure 2 present data on Bangladesh's imports from SAARC member nations and the rest of the world, highlighting a generally increasing trend. A decline in imports was noted in 2009, linked to the formation of a new political government. The global COVID-19 pandemic in 2020 further affected trade, with imports from SAARC countries decreasing by 5.97% and global imports by 15.30%. Despite these fluctuations, Bangladesh's overall import volume rose from $3.84 billion in 2008 to $6.88 billion in 2015, reaching $15.2 billion in 2021. This trend underscores Bangladesh's growing dependence on imports, reflecting its expanding economic activities and the need to support domestic consumption and production capabilities.

5. TRADE SPECIALISATION OF BANGLADESH IN COMPARISON WITH THE REST OF SAARC NATIONS (PRODUCT-WISE ANALYSIS)

5.1. Jute Yarn

Table 5 shows the Lafay Index (LFI) values for the Jute Yarn sector (HS Code: 5307), Bangladesh's Lafay Index (LFI) rose

Table 3: Bangladesh's export to other SAARC nations: 2008-2021($bn)

Year	India	Pakistan	Sri Lanka	Nepal	Afghanistan	Bhutan	Maldives
2008	0.333	0.091	0.0203	0.000794	0.00328	0.00282	0.000219
2009	0.252	0.0835	0.025	0.00539	0.00299	0.00237	0.000509
2010	0.376	0.0798	0.0223	0.0121	0.0041	0.00401	0.000895
2011	0.593	0.0845	0.0292	0.019	0.00459	0.00351	0.00162
2012	0.578	0.0648	0.0307	0.0204	0.00399	0.00507	0.00201
2013	0.506	0.0587	0.028	0.0146	0.00346	0.000171	0.00222
2014	0.51	0.058	0.0254	0.023	---	---	0.00178
2015	0.623	0.0631	0.0424	0.0242	0.00614	0.00244	0.00726
2016	0.668	0.0469	0.0291	0.0456	0.00142	---	0.00308
2017	0.578	0.0679	0.043	0.0372	0.00286	---	0.00293
2018	0.88	0.0684	---	0.0415	0.00581	---	0.00353
2019	1.19	0.0397	0.0404	0.0487	0.00715	---	0.00384
2020	1.01	0.0579	0.0475	0.0346	---	---	---
2021	1.72	0.0838	0.0879	0.116	---	---	0.00612

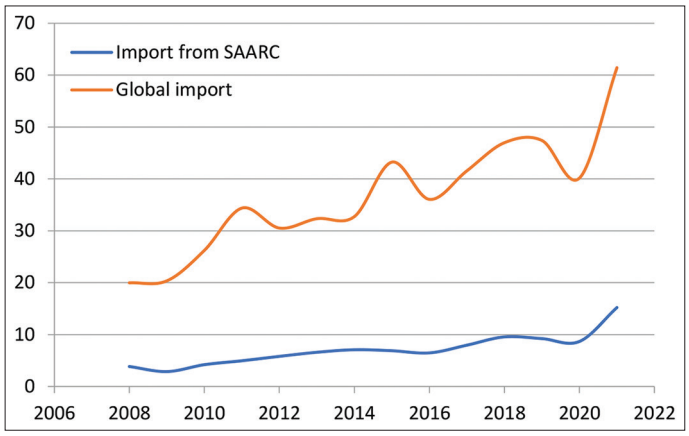
Source: Compiled by the authors' from OEC database

Table 4: Bangladesh's import globally and with other SAARC nations (2008-2021)($bn)

Year	Import from SAARC	Global import	Bangladesh's import growth to SAARC (%)	Bangladesh's import growth globally (%)
2008	3.84	23.8		
2009	2.86	23.2	−25.52	1.90
2010	4.19	30.4	46.50	28.86
2011	4.94	39.3	17.90	31.10
2012	5.79	36.3	17.21	−11.20
2013	6.58	38.9	13.64	5.93
2014	7.07	39.8	7.45	1.27
2015	6.88	50.1	−2.69	32.05
2016	6.46	42.5	−6.10	−16.61
2017	7.95	49.5	23.07	15.29
2018	9.54	56.5	20.00	13.02
2019	9.21	56.6	−3.46	0.92
2020	8.66	48.8	−5.97	−15.30
2021	15.2	76.6	75.52	52.96

Source: Compiled by the authors' from OEC database

Figure 2: Bangladesh's import from global



from 0.740 in 2008 to 1.05 in 2010 but declined to 0.511 by 2021, indicating a weakening comparative advantage. India's LFI dropped from 0.012 in 2008 to −0.0014 in 2021, reflecting a complete loss of its initial comparative advantage. Nepal showed positive growth, with its LFI increasing from -0.0002204 in 2008 to 0.0393 in 2021, indicating a modest comparative advantage. Conversely, the Maldives experienced a decline to −0.0000361, while Sri Lanka and Afghanistan exhibited decreasing LFI values, suggesting growing disadvantages in this sector.

5.2. Jute and Other Textile Fibers

Table 6 shows the Lafay Index (LFI) values for the Jute and Other Textile Fibers sector (HS Code: 5303), Bangladesh's Lafay Index (LFI) rose from 0.4475 in 2008 to 0.5503 in 2010 but declined to 0.149 by 2021, indicating a weakening comparative advantage. The Maldives and Sri Lanka exhibited inconsistent LFI values, while Bhutan showed steady improvement from −0.000116 in 2008 to −0.0000017 in 2021, suggesting gradual progress toward a comparative advantage. Although Pakistan and Nepal had upward trends, they remained negative, and India's declining LFI values further highlighted a weakening position. Overall, none of these countries established a significant comparative advantage in this sector.

5.3. Other Pure Vegetables Oil

Table 7 shows the Lafay Index (LFI) values for Other Pure Vegetable Oils (HS Code: 1515) among SAARC nations, revealing evolving trade specialization. Bangladesh's LFI improved from −0.0048 in 2008 to 0.1813 in 2021, indicating growing comparative advantage. India maintained a stable positive LFI, while Pakistan fluctuated, improving to 0.00083 in 2021. Nepal saw a decline, with its LFI dropping to −0.00025 by 2021. Despite negative values, Sri Lanka, Bhutan, and Afghanistan displayed increasing trade specialization. The Maldives also saw significant growth, with its LFI rising to 0.00035 in 2021. These trends highlight shifting comparative advantages in the sector.

Table 5: Lafay index score for Bangladesh and rest of the SAARC member nations for Jute Yarn

Country	Bangladesh	Bhutan	India	Pakistan	Nepal	Sri Lanka	Afghanistan	Maldives
2008	0.7404148	−0.0000124	0.0121853	−0.0048103	−0.0002204	−0.0023139	----	−0.0000001
2009	0.8691058	−0.0000153	0.0059735	−0.0033522	−0.0000228	−0.0043927	----	−0.0000072
2010	1.0588305	−0.0000037	0.0193061	−0.0052413	−0.0002717	−0.0065978	−0.0000712	−0.0000097
2011	0.8431655	----	0.0076736	−0.0011704	−0.0001009	−0.0015552	−0.0001975	−0.0000026
2012	0.7290786	----	0.0050426	−0.0014658	−0.0001095	−0.0039949	−0.0000879	−0.0000094
2013	0.7535204	----	−0.0016497	−0.0013722	−0.0000068	−0.0027502	0.0002162	−0.0000042
2014	0.6676540	----	−0.0011517	−0.0021839	0.0001800	−0.0017668	−0.0000010	−0.0000058
2015	0.6947425	----	−0.0031823	−0.0011952	0.0003453	−0.0040067	−0.0001229	−0.0001032
2016	0.6762437	----	−0.0094319	−0.0029927	−0.0000756	—0.0031043	−0.0000037	−0.0000145
2017	0.7230371	----	−0.0018453	−0.0011669	0.0530077	−0.0022682	----	−0.0000071
2018	0.5242898	0.0044135	−0.0015320	−0.0018395	0.0432193	−0.0000801	−0.0000696	−0.0000025
2019	0.4966869	−0.0000759	−0.0031009	−0.0011800	0.0365105	−0.0017883	−0.0004741	−0.0000185
2020	0.6455922	−0.0000732	−0.0036507	−0.0009661	0.0607700	−0.0048088	−0.0004448	−0.0000063
2021	0.5110253	−0.0001415	−0.0014726	−0.0007286	0.0393292	−0.0029198	----	−0.0000361
Mean	0.7095277	0.0005845	0.0016546	−0.0021189	0.0166110	−0.0030248	−0.0001257	−0.0000162

Source: Estimated by the authors' from OEC database

Table 6: Lafay index score for Bangladesh and rest of the SAARC member nations for Jute and other textile fibers

Country	Bangladesh	Bhutan	India	Pakistan	Nepal	Sri Lanka	Afghanistan	Maldives
2008	0.4475424	−0.0001160	−0.0000060	−0.0647834	−0.1207590	−0.0002186	----	−0.0000071
2009	0.4407819	−0.0000795	−0.0030490	−0.0706633	−0.1703450	0.0005181	0.0003528	−0.0000080
2010	0.5503152	−0.0000434	0.0025481	−0.0743485	−0.1425197	−0.0022115	−0.0002179	−0.0000139
2011	0.5366018	−0.0000440	−0.0067621	−0.0680003	−0.1024354	−0.0002343	−0.0000023	−0.0000029
2012	0.4260650	−0.0016341	−0.0058311	−0.0456489	−0.0653073	−0.0002065	−0.0000001	−0.0000118
2013	0.2458451	----	−0.0024939	−0.0409366	−0.0242608	0.0000521	−0.0000041	−0.0000620
2014	0.1728560	----	0.0003464	−0.0331826	−0.0409114	0.0001075	---	−0.0000014
2015	0.1883690	----	−0.0034512	−0.0360664	−0.0501829	0.0000429	----	----
2016	0.2583092	----	−0.0120219	−0.0272362	−0.0483514	−0.0002817	----	----
2017	0.1780032	----	−0.0030302	−0.0324537	−0.0284893	−0.0003313	----	−0.0000148
2018	0.1458794	−0.0000032	−0.0025546	−0.0308386	−0.0133001	0.0001149	----	−0.0000014
2019	0.1307671	−0.0000052	−0.0024772	−0.0186747	−0.0294436	0.0000263	−0.0000046	−0.0000020
2020	0.1526872	−0.0000329	−0.0006462	−0.0377921	−0.0494197	0.0006175	−0.0000015	−0.0000001
2021	0.1495977	−0.0000017	−0.0002366	−0.0299787	−0.0412329	−0.0000343	0.0000175	−0.0000002
Mean	0.2874015	−0.0002178	−0.0028332	−0.0436146	−0.0662113	−0.0001456	0.0000175	−0.0000105

Source: Estimated by the authors' from OEC database

Table 7: Lafay index score for Bangladesh and rest of the SAARC member nations for other pure vegetables oil

Country	Bangladesh	Bhutan	India	Pakistan	Nepal	Sri Lanka	Afghanistan	Maldives
2008	−0.0048510	−0.0444945	0.1188268	−0.0105971	0.1673828	−0.0102274	−0.0138231	−0.0387753
2009	0.0049218	−0.1761839	0.1208401	−0.0073222	0.0862927	−0.0081986	−0.0029937	−0.0438178
2010	0.0056976	−0.1024092	0.1407650	−0.0205058	0.0801087	−0.0031269	−0.0088247	−0.0494034
2011	0.0110235	−0.1265907	0.1463518	−0.0240971	0.0525901	−0.0133830	−0.0034727	−0.0562458
2012	0.0087070	−0.1884365	0.1277399	−0.0074149	0.0443423	−0.0057768	−0.0543291	−0.0908339
2013	0.0119603	----	0.1228427	−0.0107863	0.0455368	−0.0078057	−0.0030668	−0.0579713
2014	0.0101357	−0.0015264	0.1109456	−0.0038692	0.0158763	−0.0061545	−0.0015950	−0.0603436
2015	0.0075378	−0.0291284	0.1344226	−0.0043117	0.0132318	−0.0050081	−0.0034199	−0.0542593
2016	0.0054977	−0.1369819	0.1184794	−0.0048838	0.0139049	−0.0026139	−0.0095351	−0.0553165
2017	0.0047118	−0.0064170	0.1560897	−0.0002401	0.0021245	−0.0035158	−0.0160046	−0.0368624
2018	0.0037408	−0.0211798	0.1362612	−0.0034289	0.0020252	−0.0069645	−0.0086620	0.0001570
2019	0.0679794	−0.0159493	0.1400847	−0.0021661	−0.0012736	−0.0029640	−0.0124069	0.0007612
2020	0.1370497	−0.0207866	0.1425366	−0.0004372	−0.0010005	−0.0021769	−0.0242492	0.0010637
2021	0.1813270	−0.0324710	0.1280399	−0.0008331	−0.0002564	−0.002706	−0.0128326	0.0035478
Mean	0.0325314	−0.069427	0.1317304	−0.007206	0.0372061	−0.005758	−0.0124910	−0.0384500

Source: Estimated by the authors' from OEC database

5.4. Non−knit Men's Suits

Table 8 highlights trade specialization trends for Non-knit Men's suits (HS Code: 6203) among SAARC nations. Bangladesh maintained the strongest position, with its LFI rising from 6.705 in 2008 to 7.826 in 2013, before declining to 6.199 in 2021. India consistently held positive LFI values, showing a slight decline over time. Pakistan saw significant growth, with its LFI peaking at 3.108 in 2020, though slightly declining in 2021. Nepal and Sri Lanka exhibited mixed trends, with both improving initially but declining by 2021. Afghanistan and the Maldives

showed a consistently negative trend, reflecting decreasing trade specialization.

5.5. Non-knit Men's Shirts

Table 9 highlights the Lafay Index (LFI) values for Non-knit Men's shirts (HS Code: 6205) among SAARC nations, showing varying trade specialization trends. Bangladesh exhibited fluctuations, peaking at 3.27 in 2013 but declining to 1.59 in 2021. India maintained a stable comparative advantage, while Pakistan's LFI values steadily weakened. Nepal and Sri Lanka showed mixed trends, with initial increases followed by declines in 2021. Afghanistan and the Maldives consistently recorded negative trends, while Bhutan, despite negative values, improved over time. The LFI analysis offers a detailed view of trade specialization evolution in Non-knit Men's shirts across SAARC countries.

The study initially applied a one-way ANOVA model to test for significant differences in the Lafay Index (LFI) of various products among SAARC member nations across five sectors: Jute Yarn, Jute and Other Textile Fibers, Other Pure Vegetable Oils, Non-knit Men's Suits, and Non-knit Men's Shirts in the Table 10. However, due to the lack of normality (as indicated by the Shapiro-Wilk test) and homoskedasticity (as indicated by the Bartlett test), the study employed Welch's ANOVA with Games-Howell post-hoc estimation instead. The results revealed significant statistical differences among the countries in all sectors in the Table 11. For

Table 8: Lafay index score for Bangladesh and rest of the SAARC member nations for non-knit men's suits

Country	Bangladesh	Bhutan	India	Pakistan	Nepal	Sri Lanka	Afghanistan	Maldives
2008	6.7056968	−0.0206828	0.1954502	1.6020086	−0.4332190	1.8297310	−0.0019977	−0.0125475
2009	7.0986871	−0.0117120	0.2117741	1.9274170	−0.0455415	2.0807572	−0.0085055	−0.0111615
2010	6.6235486	−0.0248911	0.1484567	1.7130468	−0.0098561	2.0235640	−0.0038196	−0.0035709
2011	6.9353597	−0.0199492	0.1488899	1.7545823	−0.1153075	1.8019719	−0.0015661	−0.0096349
2012	7.4606637	−0.0044785	0.1467279	1.7610341	−0.0112926	1.8255195	−0.0068892	−0.0186408
2013	7.8268564	−0.0443325	0.1502705	1.7519491	0.0006302	1.7618394	−0.0064893	−0.0164011
2014	7.6933380	−0.005595	0.1482934	2.0078615	−0.2207146	1.6789101	−0.0109989	−0.0069397
2015	7.5434817	−0.0428730	0.1723715	2.4909363	−0.1854443	1.5229361	−0.0099360	−0.0143782
2016	7.8280334	−0.0116694	0.1918627	2.8284326	0.0093897	1.4443750	−0.0158636	−0.0111092
2017	7.6846958	−0.0120031	0.1685041	2.8083484	0.0317045	1.4116295	−0.0151713	−0.0159698
2018	7.4785896	−0.0093844	0.1193842	2.6234818	0.0068390	1.5593351	−0.0203849	−0.0096270
2019	7.3917857	−0.0258382	0.1304942	3.0806070	−0.0461734	1.3586343	−0.0234423	−0.0119119
2020	6.8978636	−0.0866883	0.1174366	3.1089175	−0.0075757	1.2636302	−0.0240648	−0.0195814
2021	6.1999199	−0.1530063	0.0942496	2.5680112	−0.0370028	1.2867222	−0.0365722	−0.0107215
Mean	7.2406086	−0.033793	0.1531547	2.2876167	−0.0759689	1.6321111	−0.0132644	−0.0122997

Source: Estimated by the authors' from OEC database

Table 9: Lafay index score for Bangladesh and rest of the SAARC member nations for non-knit men's shirts

Year	Bangladesh	Bhutan	India	Pakistan	Nepal	Sri Lanka	Afghanistan	Maldives
2008	2.8279889	−0.0087438	0.2043671	0.0493097	0.1469821	0.6600642	−0.0008526	−0.0020110
2009	2.7832674	−0.0142288	0.2135113	0.0388167	0.3463200	0.8052904	−0.0021073	−0.0027259
2010	2.8970465	−0.0039460	0.1771926	0.0454545	0.1293771	0.7031004	−0.0008897	−0.0004936
2011	3.1696004	−0.0073524	0.1764465	0.0565622	0.1293151	0.6444650	−0.0010216	−0.0066866
2012	3.3961516	−0.0063877	0.1598364	0.0424227	0.0508900	0.7233847	−0.0017876	0.0085659
2013	3.3548704	−0.1193284	0.1617451	0.0375017	0.0627050	0.7685089	−0.0035476	−0.0015335
2014	3.5124430	−0.0011077	0.1695980	0.0390269	0.0518985	0.7992699	−0.0073943	−0.0037495
2015	3.3402022	−0.0092429	0.2032888	0.0431325	0.0649666	0.8139977	−0.0097379	−0.0031075
2016	3.2756727	−0.0024339	0.2309655	0.0383935	0.0448901	0.8147998	−0.0148214	−0.0041551
2017	2.8335246	−0.0070446	0.2027950	0.0293690	0.0475006	0.7527494	−0.0113533	−0.0057260
2018	2.6854512	−0.0058683	0.1505624	0.0256879	0.0298693	0.8295493	−0.0050599	−0.0022478
2019	2.6344168	−0.0249490	0.1508762	0.0288716	0.0175310	0.7613603	−0.0096222	−0.0042995
2020	2.2465874	−0.0001665	0.1142169	0.0294214	0.0171093	0.4642746	−0.0083040	−0.0130222
2021	1.5970139	−0.0001742	0.0838321	0.0273035	0.0102807	0.3883954	−0.0045844	−0.0073968
Mean	2.8967312	−0.0150696	0.1713738	0.0379481	0.0821168	0.7092293	−0.0057917	−0.003470

Source: Estimated by the authors' from OEC database

Table 10: Summary of two parameters of ANOVA for all the products

Product	Checking the assumptions			
	Normality		Homogeneity of variances	
	Shapiro-Wilk normality test (W)	P-value	Bartlett's test (K-squared)	P-value
Jute Yarn	0.49387	0.00***	561.54	0.00***
Jute and other textile fibers	0.68675	0.00***	529.33	0.00***
Other pure vegetable oils	0.88926	0.01**	130.26	0.00***
Non-knit men's suits	0.88152	0.00***	282.72	0.04**
Non-knit men's shirts	0.57414	0.00***	356.85	0.00***

Significant codes: 0 "***" 0.001 "**" 0.01 "*" 0.05 "." 0.1 " " 1. Source: Compiled from the authors' estimation

Table 11: Summary of Games-Howell *post-hoc* estimation

Country	Bangladesh	Bhutan	India	Pakistan	Nepal	Sri Lanka	Afghanistan	Maldives
Bangladesh		JY; JOTF; OPVO; NMSU; NMSH	JY; JOTF; OPVO; NMSU; NMSH	JY; JOTF; NMSU; NMSH	JY; JOTF; NMS; NMSH U	JY; JOTF; NMSU; NMSH	JY; JOTF; NMSU; NMSH	JY; JOTF; OPVO; NMSU; NMSH
Bhutan			OPVO; NMSU; NMSH	JOTF; NMSU; NMSH	JOTF; OPVO; NMSH	JY; NMSU; NMSH		
India				JOTF; OPVO; NMSU; NMSH	JOTF; OPVO; NMSU; NMSH	OPVO; NMSU; NMSH	OPVO; NMSU; NMSH	JOTF; OPVO; NMSU; NMSH
Pakistan					NMSU	JOTF; NMSU; NMSH	JY; JOTF; NMSU; NMSH	JY; OPVO; NMSU; NMSH
Nepal						JOTF; NMSU; NMSH	JOTF; OPVO; NMSH	JOTF; OPVO; NMSH
Sri lanka							JY; NMSU; NMSH	JY; OPVO; NMSU; NMSH
Afghanistan								
Maldives								

Where, JY: Jute Yarn; JOTF: Jute and Other Textile Fibers; OPVO: other Pure Vegetable oils; NMSH: Non-Knit Men's Suits and NMSU: Non-Knit Men's Shirts

Jute Yarn, 12 out of 28 country pairs showed statistically significant differences, while for Jute and Other Textile Fibers, 17 pairs were significant. In the case of Other Pure Vegetable Oils, 14 pairs showed significant differences, while Non-knit Men's Suits had 22 statistically significant pairs. Finally, for Non-knit Men's Shirts, the study found 24 statistically significant pairs, highlighting the varying levels of comparative advantage among SAARC nations across these sectors. All findings are detailed in Table 11.

6. DISCUSSION

This study examined Bangladesh's trade with SAARC countries and the global market from 2008 to 2021. The findings indicated a general growth in Bangladesh's exports to SAARC nations, despite a brief decline in 2009 due to political changes and a significant drop during the 2012-2013 elections. The COVID-19 pandemic in 2020 further affected trade, resulting in decreased exports both regionally and globally. India emerged as the largest importer of Bangladeshi products, with imports increasing from $0.333 billion in 2008 to $1.72 billion in 2021. Pakistan and Nepal also engaged in trade with Bangladesh, albeit at lower volumes. Trade relationships within the SAARC region were inconsistent, with certain countries not trading with Bangladesh in specific years. Conversely, Bangladesh's imports steadily increased over time, though political changes and the pandemic caused temporary declines. Notably, imports from SAARC countries dropped by 5.97% in 2020, while global imports decreased by 15.30%. However, long-term trends showed import volumes rising from $3.84 billion in 2008 to $15.2 billion in 2021, reflecting an expanding economy. The study utilized the Lafay Index to assess Bangladesh's specialization in several product categories, including Jute Yarn, Jute and Other Textile Fibers, Other Pure Vegetable Oils, Non-knit Men's Suits, and Non-knit Men's Shirts. Throughout the period, Bangladesh maintained a strong advantage in Jute Yarn and consistently outperformed other SAARC countries in Jute and Textile Fibers. The study highlights Bangladesh's competitive advantages in key sectors, which have significantly bolstered its trade within the SAARC region, suggesting potential for further enhancing trade relations.

7. CONCLUSION

In conclusion, this research assessed Bangladesh's trade performance and specialization compared to other SAARC countries from 2008 to 2021. The findings indicate that Bangladesh has maintained a strong trading position in key products with SAARC nations and globally, despite experiencing declines due to political changes, elections, and the COVID-19 pandemic. Overall, Bangladesh's exports and imports have shown growth, with India as the largest importer of Bangladeshi goods, followed by Pakistan and Nepal. However, inconsistent trade relationships were evident, as some SAARC countries did not engage in trade with Bangladesh during certain years. Bangladesh has established a robust position in Jute Yarn and Jute and Other Textile Fibers, alongside improvements in Other Pure Vegetable Oils. The country has excelled in Non-knit Men's Suits and Non-knit Men's Shirts compared to its regional counterparts. Despite these successes, Bangladesh faces a trade deficit with India. To address this, the study recommends that Bangladesh prioritize sectors with lower import reliance and invest consistently in research and development (R&D) for cost advantages and quality improvements. Concurrently, India should enhance its focus on skill development and operational efficiencies. These insights can guide policymakers in enhancing Bangladesh's trade performance and strengthening relationships within the SAARC region, promoting greater self-sufficiency in manufacturing. Our analysis advises that the Bangladesh government, export promotion organisations, and other stakeholders find export prospects in SAARC's markets to improve Bangladesh's exports to SAARC. Bangladesh can sell more to SAARC as the Bangladesh economy

grows. To capitalise on rising prospects, Bangladesh must diversify its economy, produce new goods, and innovate to become more competitive.

7.1. Managerial and Policy Implications

For effective policy implementation, SAARC countries must invest in robust transport infrastructure to enhance trade efficiency. A mutual understanding is essential for strengthening trading relationships and protecting national interests. Additionally, trade negotiations should be prioritized to stimulate commerce among member nations. Productive policy discussions are necessary to address common challenges and improve collaboration. To lower trade costs, countries should focus on upgrading their infrastructure and logistics capabilities while reducing non-tariff barriers. To navigate regional and global economic uncertainties, SAARC members should diversify their export products. This is particularly important for Bangladesh, which recently became the 35th largest economy by GDP. With expectations from the UN General Assembly for Bangladesh to transition from LDC to Developing Country status by 2026, engaging more actively in international trade with neighboring countries and trade blocs will be beneficial, ultimately enhancing the country's economic position.

7.2. Limitation and Further Scope of Research

Future research should explore various aspects of trade specialization at different industry levels, such as technological dissemination and product quality sophistication, which this study overlooked. Utilizing additional econometric models like Revealed Comparative Advantage (RCA), OLS, Markov matrices, or the Product Sophistication Index (PSI) can yield unique insights. Focusing on sectors like agriculture, healthcare, and textiles allows for a deeper comparative analysis. Despite Bangladesh's progress in social and economic development relative to other SAARC countries, challenges remain that require both international and domestic cooperation. Continued regional collaboration under SAARC is essential for addressing shared issues and promoting inclusive development.

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