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# Prospects of Export Diversification of Bangladesh: A Product-Level Analysis

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**Abstract:** This study explores the export diversification opportunities for the potential products from the different industries of Bangladesh. The study uses quantitative data from ITC Trade Map and Market Access Map. Fifty products are selected as the research sample, which is indicated by the 4-dight HS code. The total amount exported over the last five years (2015-2019) is collected to analyze the export performance of the selected products and rank them according to their higher export performance. Tariff data of 300 export destinations is collected and observed which market is more feasible to enter considering these countries' lower tariff and tariff conditions. The findings indicate that the products' annual growth has increased significantly over the last 5 years, and the ad valorem tariff for the selected products is not too high for different destinations. Most of the Asian countries have applied lower tariffs. So, after considering the analysis on this topic, we can conclude that Bangladesh can export different products from various sectors in other export destinations.

**Keywords:** Export diversification; Bangladesh; product-level analysis; export markets; export destinations.



# INTRODUCTION:

## 1. Introduction

Export diversification is a simple and stable strategy for developing countries contributing to higher per capita growth and sustainable development. As export is key to international trade and enhances the growth for emerging countries, exporting various products and services strengthens a country to gain substantial foreign currencies, which is considered the major earning for the country. A narrow basket of exportable products threatens a country of unstable economic conditions and export earnings. Hence, export diversification is one of the major mechanisms to overcome these problems by increasing exporting products. Export diversification in the context of Bangladesh refers to an increase in exports of various products such as pharmaceutical products (medicines), light engineering products, fish, glass, leather, and leather made products, ceramics, cement, smartphones, ships, and IT related products, apart from the ready-made garments (Nahar, 2020).

Bangladesh is one of the fastest-growing economies globally, with a recent lucrative GDP growth rate of over 8.0 per cent. Most of the contribution to GDP is driven by the export of goods and services as it is highly concentrated on export. In 2019, Bangladesh's Gross Domestic Product (GDP) was worth 302.57 billion US dollars (World Bank and projections from Trading Economics). However, the country's exports are highly concentrated on RMG products. According to Bangladesh bank's July-September data, 86 percent of total export was RMG products, whereas jute and jute-related products came 2nd with only 2.6 percent of total export in that period (Nahar 2020). The major exporting sectors of Bangladesh in 2019 are Knit or crochet clothing, clothing, footwear, miscellaneous textiles, worn clothing paper yarn, woven fabric, fish, leather plastics. According to the data collected from the Export Promotion Bureau of Bangladesh, major exporting products of Bangladesh for the financial year of 2020-2021 (July-September) are frozen and live fish; agricultural products such as tea, vegetables, tobacco; manufactured commodities such as cement, salt, stone; chemical products such as pharmaceuticals, chemical fertilizer; plastic products; rubber; leather and leather products, handicraft, etc. Besides, major export destinations for Bangladesh are European Union, United States, Japan, Canada, India, Australia, China, and Southeast Asia. Therefore, exported products are narrowly diversified as RMG products contribute over 80 percent of total export with the government subsidy, and export destinations for the products are also highly concentrated mostly in the USA and European countries.

Export diversification and Market diversification are the major concern of the Government. Export diversification is one of the gateways to increase sustainable economic growth and diversify the risk of vulnerable circumstances in Bangladesh. In this consequence, focusing on different sectors and major exporting products may enhance the growth of exported products. The primary purpose of the research is to identify and analyze the potential products from the different industries which have positive growth and export feasibility for export diversification of Bangladesh. The specific objectives of the research are to identify the potential products for export by analyzing trade indicators and export performance, to figure out the growth of the selected products for export from Bangladesh, and to find out the relevant tariff data of the selected products from the different export destinations.

This study is expected to provide necessary insight to the exporters of Bangladesh about potential products that can be exported to various markets by analyzing the product's exported amount over the year and their growth. Tariff data of different markets are also analyzed to realize which markets provide lower tariffs. This will support exporters to understand the market situation and the scope of export diversification of different markets. Different export sectors such as Leather & Leather Products, Agricultural products, Jute & Jute products, Home textile, Frozen and Live fish, etc. have the possibility to higher export along with the RMG sector. This study reflects the prospects of existing exportable products that can increase export to the various markets apart from depending on the RMG sector only. Hence the population of the study will be the all the products under different sector that have prospects to exports that drives the export diversification of Bangladesh. This study selected fifty products as the sample under a 4-digit harmonized code (HS code).

## 2. Literature Review

This study aims to identify and analyze the potential products from the different industries that have positive growth and export feasibility for export diversification of Bangladesh. Samen (2010, p. 04) shows the basic understanding of diversification, such as the critical concept of export diversification, why countries should go for export diversification, and the relationship between export diversification, export growth, and overall growth. This paper defines export diversification as the change in the composition of a country's existing export product or service mix or export destination in various countries (Ali, Alwang and Siegel, 1991).

### 2.1 Previous studies conducted on the potential products for export by analyzing export performance

A study examines how ECOWAS (Economic Community of West African States) members could improve export-led economic growth by using export diversification measures. Additionally, this analysis demonstrates that ECOSOC members are heavily reliant on commodity exports and thus sensitive to external shocks. Therefore, export diversification is one of the most effective strategies for increasing trade and ensuring the stability of export revenues, both of which contribute to per capita income growth. This article concludes that the typical export promotion approach, emphasizing the overseas marketing of finished goods, is no longer practical. Nonetheless, diversification strategies may include resource-based production and processing of primary products (Odularu, 2018).

For the Middle East and North Africa, (Nicet-Chenaf & Rougier (2008) present robust evidence that Foreign Direct Investment (FDI) doesn't have a significant effect on diversification growth. They simply showed that FDI does have a connection with value and employment rather than the effects of technological transfer. However, this connection needs further verification. Alwang and Siegel (2007) showed the potential for export diversification for Malawi, Tanzania, and Zimbabwe that helps to meet the goals of sustained export earnings and enhanced stability. This paper explores that there is a tenuous relationship between increased diversity and export performance.

### 2.2 Previous studies on export diversification and economic growth

Agosin (2009) examines the export diversification and growth in the emerging economies concerning the divergent growth experience of East Asian, Latin American, and Caribbean countries. The result shows that the countries with diversified export structures have higher export growth than the countries whose exports are largely confined to a few products. To analyze the export diversification hypothesis, an empirical growth model is developed. This paper examined the selected countries' positive/ negative growth from 1980 to 2003 and the relationship between export growth and GDP using different statistical tools.

Herzer & Lehnmann (2007) explores the relationship between export diversification and economic growth. In this regard, this paper attempts to test the hypothesis by conducting the unit root test and cointegration test to determine the long-run relationship and dynamic interaction between variables. The test results show that export diversification plays a vital role in economic growth. In Malaysia, Arip, Yee, and Karim (2010) analyze the link between export diversification and economic growth. This study uses annual data from 1980-2007 to analyze long-run relationships and dynamic interactions among variables using cointegration and Granger causality tests. The study found that Malaysia should diversify its export commodities and increase social and economic interaction with countries that need Malaysian products.

Sepehrdoust and Khodaee (2014) identified that export diversification has mostly a positive effect on the economic growth of these countries. They also consider factors such as GDP of those countries, physical capital stock, labor stock, and export diversification index of 23 countries to show the relationship and whether they positively or negatively affect economic growth using the GMM methods. This paper recommended diversification of goods for export to avoid drops in export prices and export earnings instability. Nwosa, Tosin and Ikechukwu (2019) used Auto-Regressive Distributed Lag (ARDL) in their research and showed that export diversification doesn't significantly affect the economic growth in Nigeria. The pot sink for economic growth is the oil sector, as the economy heavily relies on it.

A study conducted by Naude and Rossouw (2010, p. 123) shows a U shape relationship for GDP per capita and export diversification which have a good influence on South Africa, China and a less intense relationship for India but a strong relationship for Brazil. For these four countries, the development type differs a lot. An AGE model is used for simulating two scenarios to show how export structures will affect the economic development of these countries.

### 2.3 Previous studies on the export diversification opportunities under different model

Giri, Quayyum and Yin (2019) examine the variation in export diversification across countries by identifying critical factors from many potential determinants and uses Bayesian Model Averaging (BMA), which addresses the issue of model uncertainty. They analyzed the question of how to diversify. It addresses some of the key factors that predispose them toward lower export diversification. Their analysis suggests that policymakers should prioritize human capital accumulation and reduce barriers to trade for diversification.

To assess the degree of export diversification across CIS nations and other countries, we will utilize the gravity model, which has been shown to describe regional trade patterns among countries effectively. Shepotylo (2009) examines the export pattern at the industry level by estimating the gravity model while considering the selection and asymmetry biases associated with zero-trade flows and company heterogeneity. The study concludes that the trade patterns of the CIS (Commonwealth of Independent States) members are mostly consistent with what the gravity model predicts. The real data for the model matches the expected geographical and industrial composition quite successfully.

Kniahin (2014) analyzes different modifications, including adjusting RCA (Revealed Comparative Advantage) with a growth and a trade balance component to develop product space methodology of international trade. The main focus of this study is its potential to predict instances of new product appearance in a country's specialization set as part of an ongoing export diversification process. The analysis is done using the data collected from the BACI dataset covering 1995-2011 and consists of discrete performance checks using product rankings and regression analysis. The key findings are that the inclusion of country weights enhances the predictive performance of the product space framework, while the inclusion of intertemporal aspects only enhances it for LDCs. In order to identify the new export product, this study compares the RCA index and export potential index as the benchmark predictors. Cuyvers et al. (1995) have analyzed export promotion activities of 1990-1992 of three public export promotion institutions in Belgium. The major finding of this paper is that around 50% of the export promotion activities are not corresponding to the current, realistic opportunity and a major portion of practical opportunities remain unexplored.

### 2.4 Previous studies on the assessment of the trade potential considering different factors (especially tariff)

Helmers & Pasteels, (2006) assessed trade potential between trading partners at the product level and analyzed the importance of key determinants of trade potentials and factors which play an important role in the assessment. They have demonstrated an example to analyze bilateral trade potential considering two countries named Mongolian export to China using real-world export and tariff data by comparing the data with other trading partners. Another study by Melchior, Zheng & Johnsen (2009) identified the impact of the tariff on Norway's exports in 2007 by analyzing trade and tariff data of around 150 countries. They find that existing tariffs have a significant effect on export, such that a 1 percent tariff reduces exports by about 4 percent. They have the trade potential by eliminating tariffs which may increase by 4.2-12.9 billion NOK equivalent to 1.2- 3.7% of Norway's non-oil exports in 2007. Major export destinations are BRICs and the USA, and their primary sectors are minerals, fish, machinery, and chemicals with greater prospects. Aditya and Acharyya (2013) showed that the composition of exports and diversification are more important than other factors like lagged income, investment, etc. Fonchamnyo and Fonchamnyo (2016) showed that the export diversification for the Sub- Sahara African region is significantly determined by trade openness, value-added in manufacturing, value-added in agriculture, etc. Besides, foreign direct investments with an emphasis on agricultural and manufacturing sectors can increase export diversification.

### 2.5 Previous Studies on Export Diversification Opportunities in Developing Countries

Fortunato, Razo & Vrolijk (2015) shows the concept of product space and export diversification using a methodology concerning the most promising sectors

and products that are to be developed given the productive capabilities of an economy. Houthakker and Magee (2017) conduct an analysis of the calculation of demand elasticities for imports and exports concerning income and price for a number of nations, the majority of which are developed. Even if all nations grew and inflated simultaneously, certain countries' trade balances would still be vulnerable to secular improvement or deterioration due to income elasticity of demand for imported goods.

Donges and Riedel (1977) conclude that developing countries are more concerned about economic policy to promote trade expansion and diversification. If the gains from trade are to be realized, Government must take the initiatives to provide the proper incentives rather than go for import substitution for export expansion. This paper also analyzes that the market for LDC export is growing though artificial trade barriers exist in the market. However, developed countries continue to impose tariff and non-tariff barriers, and it becomes the major concern in the present scenario. According to Harrison and Clare (2009), developing nations can benefit by abandoning policy neutrality when it comes to trade, FDI, and resource allocation across industries. They explore the theoretical underpinnings of industrial policy and conduct an empirical assessment of the research on the link between trade FDI and growth. The article concludes that it is difficult for countries to gain from "hard" measures that distort pricing in order to address Marshallian externalities, export-led learning, and knowledge spillovers from FDI. They propose a series of alternative "soft" industrial strategies in areas with a comparative advantage.

### 2.6 Previous studies conducted on the impact of comparative advantage on export diversification

Hausmann & Klinger (2006) examined the pattern of comparative advantage in the product space and its consequences for improving structural transformation. The study found that a country with having a good revealed comparative advantage in goods has the right to produce those goods and export successfully. Songwe and Winkler (2012) explore the effects of export and export diversification on the growth and post-crisis export strategies. They have also concluded the impact of export and export diversification on conditional and unconditional labour demand, labour productivity, and value-added demand. The study mentions that export destinations greatly influence growth and employment.

Boschma & Capone (2015) illustrates the industrial diversification of the European Union (EU-27) and European Neighbourhood Policy (ENP) nations from 1995 to 2010 using world trade data from the BACI database and the Hausmann, Hidalgo, and Klinger proximity method. The study's primary result is that both EU-227 and ENP nations retain a competitive advantage in intrinsically linked items to their present productive structure. Additionally, this study examines how their imports will influence those nations' future export arrangements. While both the EU-27 and ENP nations have a competitive advantage in items closely connected to their imports, only the EU countries demonstrate a high capacity for diversification into new import areas. Additionally, geographical closeness affects the diversification process.

### 2.7 Previous Studies in Bangladesh

Sumi and Riaz (2020) attempted to explore the comparative analysis of Bangladesh's export performance. They presented a combination of cross-cutting analysis based on data from secondary sources such as World Bank databases, analysis drawn from a peer-reviewed academic paper, Bangladesh Bureau of statistics. This report compares the export basket between Bangladesh and Vietnam, the Philippines, Malaysia, China, and India. It also analyses some other factors to identify the export performance of Bangladesh, such as ease of doing business, LPI score, and the number of tariff agreements and key regulations undertaken to facilitate trade, regulatory barriers, workforce, etc.

Islam & Chowdhury (2017) examines the export-oriented industry of Bangladesh to facilitate export diversification. In order to find the high potential sector of Bangladesh Revealed Comparative Advantage of the different products from the period 2001 to 2015 is calculated using the formula developed by Bela Balassa (1965). This paper also analyzes the country-wise export to find out the export market for the potential products. Products including bi-cycle, cereals, corn flakes, waste, parings, and scrap of plastic, vessels and other floating structures for breaking up, trunks, handbags, briefcases, suitcases, wallets, cigarette cases, and other leather products should be prioritized within the specific sectors for export.

As an LDC, Bangladesh is getting duty-free and quota-free access to developed countries, especially in the EU countries and the USA, which is an excellent advantage for Bangladesh to expand trade and investment in other potential sectors other than the apparel sector. Hence instead of thinking about the loss and benefits of graduation from LDC to developing countries, Bangladesh should utilize opportunities of LDC and enhance export diversification (Mahmud, 2019). A part of the diversification strategy, Bangladesh focuses on various factors such as preferential tariffs to the different export destinations so that market access can be possible. FDI plays an important role in capital advantage, high-performance technology, and market knowledge. Trade policy includes different advantages regarding domestic industry protection and enhances trade to focus on products and services exports (Sattar, 2015).

From the above studies, whether the country is developed or developing, export diversification plays an important role in economic growth. In addition, different factors affect the growth of export negatively or positively. Various models are used to identify export diversification opportunities. Some studies are shown the impact of Revealed Comparative Advantage on export diversification on the product level analysis. Moreover, some studies show the pattern of export diversification in developing countries and studies conducted in Bangladesh for export diversification, representing some selected sectors focused on export diversification. However, as an emerging country, Bangladesh can enhance export diversification by increasing its export basket. Products with high potential for export diversification are not specified. A few research was conducted on Bangladesh, considering different factors such as export performance, export growth, and tariff data. Therefore, this can create an opportunity to research this topic.

## 3. Research Methods

This section aims to assist in organizing and analyzing data and information through a systematic process to achieve the ultimate goal and objectives of the study. The following sections illustrate the research design, sample and sampling technique, data source and collection methods, and data analysis technique.

### 3.1 Research Design

The approach of this study is descriptive because, in this study, prospective products from different sectors will be identified and analyzed for export diversification of Bangladesh. In order to conduct this study quantitative research method is selected as all the collected are quantitative data. The quantitative research method is selected for identifying potential products for export, whether the products have negative or positive growth, by demonstrating the relationship between the last 5 years growth factor and Tariff data of 300 countries are also collected to realize the trade cost with those countries.

### 3.2 Sample and Sampling Technique

The participant of this study are products from a 4-digit HS code where 50 products are picked up as a sample. They were selected from various sectors of Bangladesh, such as garments products, including women's items, babies' items, etc., jute and jutes products, bicycles, vegetable fats and oils, jojoba oils, leather products, etc. This study uses the Non-probability Sampling (convenience sampling) method as a sampling technique. Convenience sampling attempts to obtain a sample of convenient elements. The main advantage of this sampling is the least expensive and least time-consuming of all sampling techniques. The sampling units are accessible, easy to measure, and cooperative. The limitations of this technique include data bias and generating incorrect parameters.

### 3.3 Data Collection

Some related articles are studied to understand the export diversification process and the way it has been used. For collecting information about the export diversification opportunities of Bangladesh, data is collected from secondary sources. To collect the export performance data of selected products and the annual growth of the products, the International Trade Centre (ITC) Trade Map is used to find out the products with higher export performance and growth for diversification. ITC trade map involves trade-related information of different countries and products in the form of table, graphs, and maps that indicates the export performance, international demand and alternative markets and competitive markets. Ad valorem tariffs of 300 countries are collected from ITC Market Access Map to find out countries with a lower tariff.

### 3.4 Data Analysis

In order to obtain objective 1 of the study, a statistical tool like Statistical Package for Social Sciences (SPSS version 22.0) has been used to analyze and interpret data. The export performance of the selected (50) products is analyzed using descriptive statistics for objective one. Total amount exported in the year (2015-2019) of those products is also collected from the ITC trade map. Using descriptive statistics, Mean value and Standard Deviation is calculated. After getting the mean of selected products, products are ranked according to their highest mean value, indicated as 'Rmean'. Up to mean and down to mean are calculated by adding consecutively 1 standard deviation and subtracting 1 standard deviation. These two means indicate the range of the total amount exported of every single product, representing the stability of the amount exported in 2015 from 2019.

The annual growth of selected products is analyzed using descriptive statistics as well. The paired sample t-test is calculated of the total exported amount of 2015 and 2019 of all selected products to analyze the growth of the selected products. In order to test whether there is any positive growth of amount exported, hypothesis for paired sample t-test is developed which are as follows -

**H0:** There is no significant change in the export of products over the last 5 years. H1: Export of these products has increased significantly over the previous 5 years.

Statistical Package for Social Sciences (SPSS version 22.0) has been used to analyze and interpret data. To analyze tariff data of the selected products 3 major markets for every product (total 150 destination countries) are selected from the Trade Map and Export Potential Map. Other 3 markets for 50 products (150 countries) are selected to identify the tariffs applied by different countries for export. After that, the ad valorem tariff of those countries of the selected products is collected from the ITC Market Access Map using a 4-

digit product HS Code. This tariff is identified based on the minimum rate of the partner country.

## 4. Findings and Analysis

This chapter aims to describe the analysis of data followed by a discussion of the research findings. The findings relate to the research objectives that guided the study. To analyze the study, some of the factors of export diversification are used as variables to fulfil the purposes such as export performance of last 5 years, annual growth of the products, tariff data of the products to the different markets. This data was analyzed using descriptive statistics and tabulated in the sections that follow.

### 4.1 Analysis of the potential products for export

In table 1 the descriptive statistics of the export performance of the last five years of the selected products that are from 2015 to 2019 are calculated and presented. The table shows the calculated mean, standard deviation, rank of mean, up to mean, and down to the mean. From the table, the higher mean shows the higher export performance of the selected products. The rank of the mean is calculated to show which products are performing. Up to mean and down to mean represent the range of the export performance. The mean that falls within the range represents the stable situation of the export in the last five years. The products are arranged according to their higher export performance, which is identified by descriptive statistics. The product with HS code 6203 has the mean value of 6452670.20 dollars, calculated by considering the total amount exported in the last 5 years. 6203 products have the highest mean value representing the highest export performance, represented by ranking the mean that is 1. Up to mean value is calculated by adding one standard deviation with the mean and the value is 6932966.65.

On the other hand, down to mean is calculated by subtracting one standard deviation with the mean which is in value 5972373.75. if the mean value in between these two values (up to mean and down to mean) this value represents the stability in the total amount exported in each year. In the case of 6203, we can conclude that the mean value is within the range of up to mean and down to mean.

**Table 1:** Descriptive Statistics

| HS code of products | Mean | Standard deviation | Rank of mean | Up to mean | Down to mean |
|---|---|---|---|---|---|
| 6203 | 6452670.20 | 480296.45 | 1 | 6932966.65 | 5972373.75 |
| 6109 | 6291599.40 | 533091.30 | 2 | 6824690.70 | 5758508.10 |
| 6110 | 4665490.80 | 1069355.36 | 3 | 5734846.16 | 3596135.44 |
| 6204 | 4403045.80 | 766916.90 | 4 | 5169962.70 | 3636128.90 |
| 6205 | 2416305.40 | 92332.73 | 5 | 2508638.13 | 2323972.67 |
| 6104 | 1849630.60 | 608154.95 | 6 | 2457785.55 | 1241475.65 |
| 6105 | 1010096.20 | 148114.81 | 7 | 1158211.01 | 861981.39 |
| 6108 | 880097.80 | 189012.37 | 8 | 1069110.17 | 691085.43 |
| 6206 | 808693.80 | 141747.90 | 9 | 950441.70 | 666945.90 |
| 6111 | 724295.00 | 322220.43 | 10 | 1046515.43 | 402074.57 |
| 6403 | 651388.20 | 107428.24 | 11 | 758816.44 | 543959.96 |
| 6202 | 601693.20 | 268674.35 | 12 | 870367.55 | 333018.85 |
| 6201 | 575162.60 | 376977.16 | 13 | 952139.76 | 198185.44 |
| 6107 | 575010.80 | 116521.64 | 14 | 691532.44 | 458489.16 |
| 6103 | 570785.40 | 82570.88 | 15 | 653356.28 | 488214.52 |
| 6302 | 542500.00 | 60145.87 | 16 | 602645.87 | 482354.13 |
| 5307 | 531124.40 | 55055.02 | 17 | 586179.42 | 476069.38 |
| 6210 | 495696.00 | 130491.41 | 18 | 626187.41 | 365204.59 |
| 0306 | 473483.20 | 65641.94 | 19 | 539125.14 | 407841.26 |
| 6212 | 471226.60 | 123537.34 | 20 | 594763.94 | 347689.26 |
| 6209 | 353720.60 | 130531.72 | 21 | 484252.32 | 223188.88 |
| 6106 | 322897.80 | 105428.09 | 22 | 428325.89 | 217469.71 |
| 6211 | 282366.20 | 115514.53 | 23 | 397880.73 | 166851.67 |
| 6114 | 257054.60 | 142479.21 | 24 | 399533.81 | 114575.39 |
| 6505 | 255219.20 | 106028.49 | 25 | 361247.69 | 149190.71 |
| 4202 | 254764.00 | 69137.63 | 26 | 323901.63 | 185626.37 |
| 6102 | 207279.80 | 85322.79 | 27 | 292602.59 | 121957.01 |
| 6306 | 201792.00 | 31798.11 | 28 | 233590.11 | 169993.89 |
| 6404 | 183451.40 | 57584.00 | 29 | 241035.40 | 125867.40 |
| 6305 | 154604.80 | 24877.99 | 30 | 179482.79 | 129726.81 |
| 5303 | 150992.40 | 31693.51 | 31 | 182685.91 | 119298.89 |
| 6101 | 133596.20 | 50452.69 | 32 | 184048.89 | 83143.51 |
| 6112 | 110768.80 | 47861.99 | 33 | 158630.79 | 62906.81 |
| 4104 | 103416.80 | 42967.89 | 34 | 146384.69 | 60448.91 |
| 6402 | 101172.40 | 27503.40 | 35 | 128675.80 | 73669.00 |

| | | | | | |
|---|---|---|---|---|---|
| 3004 | 91724.60 | 21189.11 | 36 | 112913.71 | 70535.49 |
| 8712 | 89262.60 | 11842.68 | 37 | 101105.28 | 77419.92 |
| 2401 | 86806.00 | 26512.88 | 38 | 113318.88 | 60293.12 |
| 6207 | 75794.00 | 5185.58 | 39 | 80979.58 | 70608.42 |
| 5310 | 70309.20 | 14183.38 | 40 | 84492.58 | 56125.82 |
| 4107 | 68881.80 | 17887.07 | 41 | 86768.87 | 50994.73 |
| 6310 | 66346.40 | 18186.23 | 42 | 84532.63 | 48160.17 |
| 6704 | 62026.00 | 33004.99 | 43 | 95030.99 | 29021.01 |
| 6208 | 61969.20 | 10733.57 | 44 | 72702.77 | 51235.63 |
| 9999 | 61413.60 | 39523.96 | 45 | 100937.56 | 21889.64 |
| 9404 | 44904.20 | 13322.29 | 46 | 58226.49 | 31581.91 |
| 9503 | 43636.20 | 25621.78 | 47 | 69257.98 | 18014.42 |
| 7404 | 40517.40 | 14781.70 | 48 | 55299.10 | 25735.70 |
| 8802 | 28073.60 | 33199.07 | 49 | 61272.67 | -5125.47 |
| 1515 | 16433.40 | 22966.03 | 50 | 39399.43 | -6532.63 |

### 4.2 Estimating the growth of the selected products for export from Bangladesh

In order to figure out the growth of the selected products, a paired-sample t-test is computed using descriptive statistics. For this study, the selected products exported in the year 2015 and 2019 are taken as the variable. Hypothesis for paired sample t-test to find out the growth of the selected products are as follows-

**H0a:** There is no significant change in the export of products over the last 5 years. H1a: Export of these products has increased significantly over the previous 5 years.

The following three tables, table 2, table 3, and table 4 are the results of the paired sample t-test. Table 2 shows that the mean score of the two variables exported in 2015 and 2019 is a significant difference, followed by the standard deviation and the standard error mean.

**Table 2:** Paired Sample Statistics

| Pair 1 | Mean | N | Std. Deviation | Std Error Mean |
|---|---|---|---|---|
| Product exported in year 2015 | $593,845.86 | 50 | $1,315,786.672 | $186,080.336 |
| Product exported in year 2019 | $907,771.88 | 50 | $1,682,868.122 | $237,993.492 |

Table 3 shows the number of variables is used to calculate the correlation and the significance level.

**Table 3:** Paired Samples Correlations

| Pair 1 | N | Correlation | Sig |
|---|---|---|---|
| Product exported in year 2015 and product exported in year 2019 | 50 | .969 | .000 |

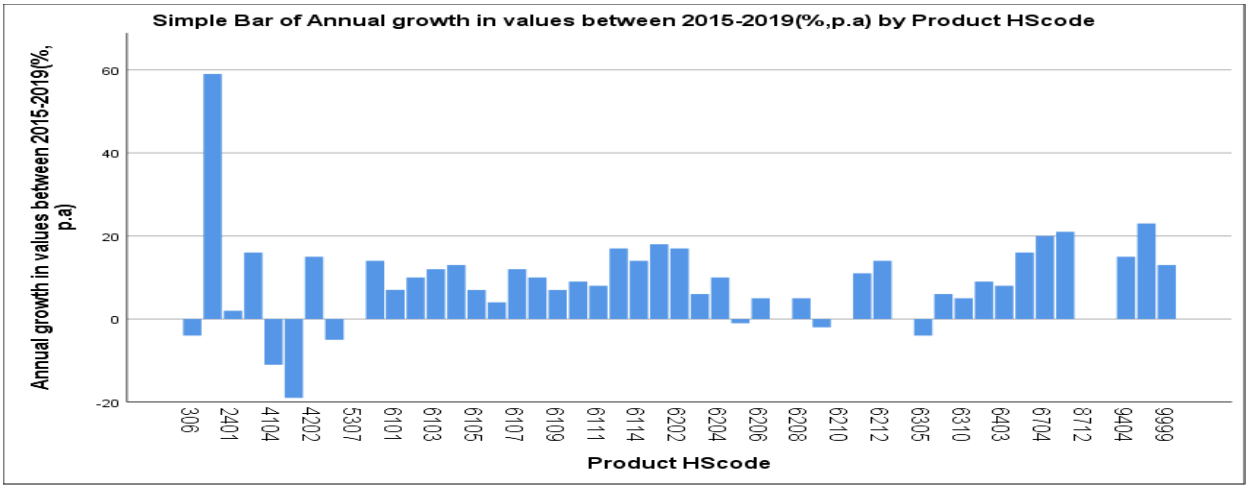
Table 4 represents the mean difference of the two-mean calculated by considering two variables the mean difference of the two variables is -313926.020, followed by the difference of standard deviation is $523479.060. t statistics are negative value that is -4.240 whereas the p-value is .000which is less than the level of significant .05 .so we will reject the H0 hypothesis and accept the H1 hypothesis. This means export of the selected products has increased significantly over the last 5 years.

**Table 4:** Paired Samples t-Test

| Paired Difference | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Pair 1 | mean | Std. Deviation | Std. error mean | 95% interval difference | confidence of the | t | df | Sig(2-tailed) |
| | | | | lower | upper | | | |
| Product Exported in Year 2015 And product Exported in Year 2019 | -313926.020 | 523,479.006 | $74,031.111 | -462697.108 | -165154.923 | -4.240 | 49 | .000 |

The following graph shows the pattern of annual growth of the selected products over the last five years between 2015 and 2019 which is represented by the product HS code. The annual growth list is

included in appendix 2, representing the products list with negative and positive annual growth. Besides, products are ranked according to the highest to lowest growth of the last five years. The table shows that, out of 50 products, 36 products have a positive growth over the last 5 years, 5 of them with 0 growth and 7 products represent negative growth. However, these growth factors are also found from the ITC trade map which is analyzed by the SPSS to rank them according to the highest growth to the lowest and are represented in the following graph.




**Graph 1:** Annual growth of values in between 2015-2019 by-product HS code (author's creation)

**4.4. Analysis of the relevant tariff data of the selected products from the different export destinations.**
In table 5, the valorem tariff of the selected products is observed and listed in the table considering different destinations**.**

**Table 5:** Ad valorem tariff of the selected products of different markets

| HS Code | Product description | Export destination | Ad valorem tariff |
|---|---|---|---|
| 6203 | Men's or boys' suits, ensembles, jackets, blazers, trousers, bib and brace overalls, breeches, and shorts (other than swimwear) | India | 0.208287 |
| 6109 | T-shirts, singlets and other vests, knitted or crocheted | Germany | 0.25 |
| 6110 | Jerseys, pullovers, cardigans, waistcoats, and similar articles, knitted or crocheted | Singapore | 0.25 |
| 6204 | Women's or girls' suits, ensembles, jackets, blazers, dresses, skirts, divided skirts, trousers, bib and brace overalls, breeches, and shorts (other than swimwear) | Russian federation | 0.25 |
| 6205 | Men's or boys' shirts | Thailand | 0.25 |
| 6104 | Women's or girls' suits, ensembles, jackets, blazers, dresses, skirts, divided skirts, trousers, bib and brace overalls, breeches and shorts (other than swimwear), knitted or crocheted | Chile | 0.25 |
| 6105 | Men's or boys' shirts, knitted or crocheted | Kuwait | 0.25 |
| 6108 | Women's or girls' slips, petticoats, briefs, panties, nightdresses, pajamas, negligées, bathrobes, dressing gowns, and similar articles, knitted or crocheted | India | 0.137377 |
| 6206 | Women's or girls' blouses, shirts, and shirt blouses | Malaysia | 0.25 |
| 6111 | Babies' garments and clothing accessories, knitted or crocheted | Portugal | 0.25 |
| 6403 | Footwear with outer soles of rubber, plastics, leather, or composition leather and uppers of leather | Argentina | 0.25 |
| 6202 | Women's or girls' overcoats, carcoats, capes, cloaks, anoraks (including ski jackets), windcheaters, wind jackets, and similar articles, | Ukraine | 0.25 |

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|---|---|---|---|
| | other than those of heading 6204 | | |
| 6201 | Men's or boys' overcoats, carcoats, capes, cloaks, anoraks (including ski jackets), windcheaters, wind jackets, and similar articles, other than those of heading 6203 | Indonesia | 0.25 |
| 6107 | Men's or boys' underpants, briefs, nightshirts, pajamas, bathrobes, dressing gowns and similar articles, knitted or crocheted | Mexico | 0.25 |
| 6103 | Men's or boys' suits, ensembles, jackets, blazers, trousers, bib and brace overalls, breeches and shorts (other than swimwear), knitted or crocheted | Sweden | 0.25 |
| 6302 | Bedlinen, table linen, toilet linen and kitchen linen | Costa Rica | 0.25 |
| 5307 | Yarn of jute or other textile bast fibers of heading 5303 | Jordan | 0.25 |
| 6210 | Garments made up of fabrics of heading 5602, 5603, 5903, 5906 or 5907 | Bahrain | 0.25 |
| 0306 | Crustaceans, whether in shell or not, live, fresh, chilled, frozen, dried, salted or in brine; smoked crustaceans, whether in shell or not, whether or not cooked before or during the smoking process; crustaceans, in shell, cooked by steaming or by boiling in water, whether or not chilled, frozen, dried, | Netherlands | 0.25 |
| | salted or in brine; flours, meals, and pellets of crustaceans, fit for human consumption | | |
| 6212 | Brassieres, girdles, corsets, braces, suspenders, garters, and similar articles and parts thereof, whether or not knitted or crocheted | Colombia | 0.25 |
| 6209 | Babies' garments and clothing accessories | Saudi Arabia | 0.25 |
| 6106 | Women's or girls' blouses, shirts and shirt blouses, knitted or crocheted | Myanmar | 0.25 |
| 6211 | Tracksuits, ski suits, and swimwear; other garments | Bhutan | 0.085256 |
| 6114 | Other garments, knitted or crocheted | United States of America | 0.25 |
| 6505 | Hats and other headgear, knitted or crocheted, or made up from lace, felt or other textile fabric, in the piece (but not in strips), whether or not lined or trimmed; hairnets of any material, whether or not lined or trimmed | Guatemala | 0.25 |
| 4202 | Trunks, suitcases, vanity cases, executive cases, briefcases, school satchels, spectacle cases, binocular cases, camera cases, musical instrument cases, gun cases, holsters and similar containers; traveling bags, insulated food or beverages bags, toilet bags, rucksacks, handbags, shopping bags, wallets, purses, map cases, cigarette cases, tobacco pouches, tool bags, sports bags, bottle cases, jewelry boxes, powder boxes, cutlery cases and similar containers, of leather or of composition leather, of sheeting of plastics, of textile materials, of vulcanized fiber or of paperboard, or | Sri Lanka | 0.25 |
| | wholly or mainly covered with such materials or with paper | | |
| 6102 | Women's or girls' overcoats, carcoats, capes, cloaks, anoraks (including ski jackets), windcheaters, wind jackets, and similar articles, knitted or crocheted, other than those of heading 6104 | Pakistan | 0.05 |
| 6306 | Tarpaulins, awnings, and sunblind's; tents; sails for boats, sailboards, or land craft; camping goods | United Arab Emirates | 0.25 |

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|---|---|---|---|
| 6404 | Footwear with outer soles of rubber, plastics, leather, or composition leather and uppers of textile materials | Qatar | 0.25 |
| 6305 | Sacks and bags, of a kind used for the packing of goods | Sudan | 0.25 |
| 5303 | Jute and other textile bast fibers (excluding flax, true hemp, and ramie), raw or processed but not spun; tow and waste of these fibers (including yarn waste and garnetted stock) | China | 0.25 |
| 6101 | Men's or boys' overcoats, carcoats, capes, cloaks, anoraks (including ski jackets), windcheaters, wind jackets, and similar articles, knitted or crocheted, other than those of heading 6103 | Finland | 0.25 |
| 6112 | Tracksuits, ski suits, and swimwear, knitted or crocheted | Bahrain | 0.122927 |
| 4104 | Tanned or crust hides and skins of bovine (including buffalo) or equine animals, without hair on, whether or not split, but not further prepared | Korea, Republic of | 0.25 |
| 6402 | Other footwear with outer soles and uppers of rubber or plastics | Turkey | 0.25 |
| 3004 | Medicaments (excluding goods of heading 3002, 3005, or 3006) consisting of mixed or unmixed products for therapeutic or prophylactic uses, put up in measured doses (including those in the form of transdermal administration systems) or forms or packings for retail sale | Philippines | 0.041077 |
| 8712 | Bicycles and other cycles (including delivery tricycles), not motorized | Congo | 0.25 |
| 2401 | Unmanufactured tobacco; tobacco refuse | Italy | 0.25 |
| 6207 | Men's or boys' singlets and other vests, underpants, briefs, nightshirts, pajamas, bathrobes, dressing gowns, and similar articles | Liberia | 0.25 |
| 5310 | Woven fabrics of jute or of other textile bast fibers of heading 5303 | Iran (the Islamic Republic of) | 0.25 |
| 4107 | Leather further prepared after tanning or crusting, including parchment dressed leather, of bovine (including buffalo) or equine animals, without hair on, whether or not split, other than leather of heading 4114 | Japan | 0.25 |
| 6310 | Used or new rags, scrap twine, cordage, rope and cables and worn out articles of twine, cordage, ropeor cables, of textile materials | Oman | 0.25 |
| 6704 | Wigs, false beards, eyebrows and eyelashes, switches and the like, of human or animal hair or textile materials; articles of human hair not elsewhere specified or included | Jamaica | 0.25 |
| 6208 | Women's or girls' singlets and other vests, slips, petticoats, briefs, panties, nightdresses, pajamas, negligées, bathrobes, dressing gowns, and similar articles | Austria | 0.25 |
| 9404 | Mattress supports; articles of bedding and similar furnishing (for example, mattresses, quilts, eiderdowns, cushions, pouffes and pillows) fitted with springs or stuffed or internally fitted with any material or of cellular rubber or plastics, whether or not covered | Nepal | 0.24561 |
| 9503 | Tricycles, scooters, pedal cars and similar wheeled toys; dolls' carriages; dolls; other toys; reduced-size ('scale') models and similar recreational models, working or not; puzzles of all kinds | Spain | 0.25 |
| 7404 | Copper waste and scrap | Japan | 0.05 |
| 8802 | Other aircraft (for example, helicopters, | Viet Nam | 0 |

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|---|---|---|---|
| | airplanes); spacecraft (including satellites), and suborbital and spacecraft launch vehicles | | |
| 1515 | Other fixed vegetable fats and oils (including jojoba oil) and their fractions, whether or not refined, but not chemically modified | Australia | 0.1 |

In table 5, fifty products are listed under the 4-digit product HS code. In order to export to different markets ad valorem tariff should be considered as it raises the product cost and can create barriers to entry to a specific country. A total of 300 countries are selected as the export destination from the ITC Trade Map. Among them, 3 major exporting countries are selected for individual products (total 150 countries) based on which countries are importing more of those products from Bangladesh to observe the tariff implied for Bangladesh. On the other hand, some other 150 destination countries are randomly selected from the ITC trade Map among which countries are importing from Bangladesh. Ad valorem tariff is identified based on the minimum rate of the partner country from ITC Market Access Map. From the above table, we can see that most Asian countries have lower tariff barriers, such as India has applied a tariff of 0.208287 for the product code of 6203 and the product code of 6108 they have the tariff of 0.137377. Bhutan has applied a tariff of 0.085256 for the product code of 6211. Pakistan has applied 0.05 for the product of 6102, followed by Nepal, Vietnam, and Australia have a lower tariff compared to other countries. The above table contains most of the countries with a tariff of 25%.

As we mentioned above, the ad valorem tariff of 300 countries is identified, divided into two parts. These two lists are attached in the appendix. In appendix 3, the ad valorem tariff of the major 3 countries is shown. This list represents most of the developed countries as the partner countries. According to the ITC Trade map data, major importers of these 50 products are unites states of America, Germany, the United Kingdom, which means most European Union countries, India, china, japan, etc. By analyzing the tariff data, it is identified that most of the countries apply a 25% ad valorem tariff for Bangladesh. On the other side, Appendix 4 also shows the tariff data which is identified by considering the developing countries for the diversification purpose as major importers are the developed countries and mostly concentrated to the limited countries. In order to investigate the other markets tariff condition who are still importing from Bangladesh but in a limited amount, they are mostly implied lower ad valorem tariff to Bangladesh. But their demand is not too high. Most of the countries apply a 25% or lesser ad valorem tariff. From the above discussion, a number of things become apparent. The findings show the descriptive statistics of the total amount exported over the last five years to identify the export performance of the selected products, where products with higher export performance are ranked according to their higher mean value. The paired sample t-test is conducted for growth analysis which shows that export of the selected products has increased significantly over the last 5 years. Lastly, tariff data of different markets are identified to find out the feasibility of export diversification of Bangladesh of some selected items, representing that most of the countries apply 25% or lesser ad valorem tariff that indicates the considerable amount for export of the selected products. The data analysis clearly indicates that Bangladesh has the opportunity for export diversification by analyzing different products to different markets.

## 5. Conclusion

The study aims to identify and analyze the potential products from the different industry that have positive growth and export feasibility for export diversification of Bangladesh. For this study, 50 products are selected from the ITC trade map under different sectors. This study represents only a limited number of product information regarding export. The data was collected from ITC Trade Map, Market Access Map. The export performance of the selected products is analyzed considering the total amount exported over the last five years using descriptive statistics. Products with a higher mean value of the last five years (2015-2019) are ranked to the higher export performance. This study found that the annual growth of the products has increased significantly over the last 5 years. We have also found that out of 50 products, 36 products have positive growth, showing export feasibility. Lastly, the ad valorem tariff of 300 destination countries is analyzed from the ITC Market Access Map, representing that most partner countries have applied not more than 25% tariff. Most of the Asian countries have applied less than that such as India, Nepal, Bhutan, etc. So, after considering all the facts and observations, it can be concluded that Bangladesh has the opportunity to export different products to different export destinations.

This study is conducted based on the major 3 factors: the export performance of the selected products, an annual growth factor that can be positive or negative, and a minimum rate of ad valorem tariff applied by the partner countries regarding export diversification of Bangladesh. Researcher claims that the major limitation of this study is that it cannot consider the non-tariff barriers of different markets, which can also create barriers to entry. This result can be used in further research in the export diversification of Bangladesh with some other export sectors. Besides, further research can be conducted to analyze the non-tariff barriers, distance, transportation, etc.

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