

Master Thesis

A Gravity Model on “the export of
textile and clothing sector of
Bangladesh: A panel data analysis”

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The Graduate School of Hansung University

Major in International Market Analysis

Dept. of International Trade and Economics

Islam Tauhidul

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Advisor Professor Jaewhak Roh

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– 방글라데시 의류 및 직물 수출산업의 중력모델 –

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Abstract

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The Purpose of this thesis paper is to determine the factors that influence the export of Bangladesh’s textile and clothing with 13 major trade partners. To analyze and conduct the research a panel data set has been generated to estimate the panel gravity model of Bangladesh’s textile and clothing export to a total of 10 major trade partners over a period of 32 years from 1990 to 2021. There are few tests have been done including regression analysis, Fixed effect model, Random effect model and Hausman test to select between Fixed effect model and Random effect model. The dependent variable of this study is Export of textile and clothing and the independent variables are GDP of Bangladesh, GDP of Partners country, Geographical distance, CPI(Consumer Price Index), Tr(Total Reserve of textile and cloth of Bangladesh).The study shows

that the Geographical distance does not have any negative impact on the export of T&C(Textile and Clothing) but the P value is very significant. The land area and CPI have positive coefficient and P value is very significant. One the other hand, Total Reserve of textile and cloth of Bangladesh have positive coefficient but the P value is that significant. The research study is a remarkable contributor for the export of T&C industries in Bangladesh. And this research will help find more insights and pave a new way for further research in the future.

Keywords: Bangladesh, Textile and Clothing, GDP, Regression analysis, Fixed effect model, Random effect Model, Hausman test, Geographical Distance, CPI, Total Reserve, Land area.

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Section 1 Introduction

1.1 Background of the study

Bangladesh is an emerging nation in South Asia with a population of about 160 million people and the largest contributor to Bangladesh's GDP is textile and apparel. As a major source of foreign currency profits, the exporting of textiles and apparel is important to Bangladesh's GDP. Bangladesh is a small, poor country, yet despite this, it has overtaken other nations in terms of its textile and apparel industries. Bangladesh produces clothing at a much lower cost than the majority of other nations, including China and Thailand, due to lower salaries and nearly, 5 million people will work in the textile sector by 2020. The textile and apparel industry not only produced a great number of jobs but also emerged as the nation's top exporter and source of revenue. Bangladesh's climate and seasonal changes do not promote the production of the raw resources needed to create textiles and clothing.

Uzbekistan is where the majority of materials are supplied from and long hours of work and low labour costs are the nation's major benefits. No other nation can compete with Bangladesh in terms of the cost of textile items because Bangladesh has a sizable unemployed population that is eager to work for low wages and the textile industry fills this sizable economic gap by paying minimum wage and employees may put in lengthy hours. In their 2012 survey of the Bangladeshi clothing industry, Alam and Natsuda (2019) discovered that nearly all respondents cited Bangladesh's low labour rates as the primary reason for the sector's expansion. In comparison to other nations, electricity and gas are inexpensive which also helps the textile sector expand more quickly.

Despite having many benefits, the textile and apparel business faces numerous obstacles. The welfare of the workforce is one of the biggest recognized problems and due to the necessity of producing large quantities of goods for exporting; the industry seldom maintains employee safety which results in several fatalities. One of the events that took place in 2013 was the fall of the Rana Plaza building which killed 1100 people.

The workplace conditions in the sector are inadequate and following this occurrence, the sector faced harsh criticism and increased safety concerns. Additionally, the government began focusing on raising safety requirements and many factors contributed to the clothing and textile industries' ability to export goods around the world. Bangladesh exported \$32.8 billion worth of textiles to the market in 2017 which represented about 6.5 percent of the global market. Since 2004, the sector has been steadily increasing its contribution to Bangladesh's GDP. Bangladesh entered the World Trade Organization (WTO) in 1995 which gave the industry many opportunities to grow particularly in foreign trade.

Additionally, after joining the WTO, the country began to gain from trade advantages, expanding its exporting market and increasing its exports of goods abroad. Since the EU and the US are Bangladesh's primary export destinations, access to the single market and export promotion are also crucial for this business. Bangladesh is a member of the Generalized System of Preferences which entitles it to tariff-free exports to Japan and that is a major factor in the growth of Japanese businesses in Bangladesh. The manufacture, processing and selling of naturally derived fibres used in countless industries make up the multimillion dollar worldwide in the textile business. Among 60 million people worldwide work in the textile industry and many people are

employed by the textile industry in emerging nations such as India, Bangladesh, Pakistan and Vietnam. The sector makes up roughly 2% of the global GDP and China is the world's top exporter and manufacturer of both completed clothing and raw textiles. The world's greatest consumer of raw apparel and textiles as well as the biggest exporter and manufacturer of raw cotton, is the United States.

1.2 Circumstance of Research

For the past 25 years, Bangladesh's clothing and textile industry has been its principal export sector and source of international currency. The EPZs are exempt from national labour rules so BEPZA has complete control over working conditions, pay and benefits. 40% of the industrial employees in Bangladesh are employed by textile industries. Without the right laws, however, workers will continue to seek their different rights, which will lead to conflict with business. Bangladesh imports textile raw materials including cotton and thread colours. The growth of the apparel business is hampered by this reliance on raw materials. Additionally, low grade materials are frequently provided by overseas sources which lead to low quality goods.

Owners compelled employees to labour in dangerous, unhealthy environments that were overcrowded with people over the limits of the production line with no ventilation, while profiting from the workers' inexperience and misery. The majority of the nation's textile mills where the majority of the nation's foreign currency is produced by the sweating of the textile workers from sunrise till night, lack the most basic comforts. Anyone visiting the facility will initially think that these employees are in a roost. The lot of the factories have poor ventilation,

stuffy conditions and dirty rooms. Profit is the owner's first concern and this mentality has gotten so bad that they no longer care about their personal lives.

There are still more issues that are related to this industry which include: a total absence of marketing strategies, a lack of readily available middle management, an absence of educational institutions for working class, supervisors and management staff, an autocratic approach by almost all investors, a lack of unit processes for textiles and clothing, a slow reverse either forward or blending procedure, inefficient ports, entry/exit complications and loading/unloading that takes a long time and slow customs clearance etc. The sector is frequently hampered by issues such as late loan payments, unstable electricity, delays in receiving materials, poor communication and tax issues, among others. Bangladesh only produces ten to twelve clothes but the global market requires between 115 and 120 articles of clothing. The textile and clothing industry in countries like India, Singapore, Thailand and Taiwan has advanced remarkably and Bangladesh will compete with the nation's clothing on the global market.

The clothing industry frequently pays a high price for political unrest, hartals and terrorism etc. Since December 2005, the global market no longer grants Bangladeshi textile exports a quota benefit. Bangladesh must make careful progress in order to improve the standing of its clothing on the global market. On September 11, 2001, the twin towers were finally destroyed and the invasions of Afghanistan as well as the global economic downturn have had a significant impact on Bangladesh's export business. Over the past few years, China and a few other Bangladeshi rivals have introduced harsh price-cutting strategies in the exporting of textile items, but Bangladesh has been unable to successfully counteract

such practices.

After the Recession of 2008–2009, emerging markets resumed their high growth rates, while the outlook for the advanced economies is still bleak. The on–going loss of jobs in the USA and the issue with public bonds on both sides of the Atlantic cast a cloud over the prospect of economic recovery. Additionally, the majority of European nations have announced a number of spending cuts that may drastically reduce their demand for foreign products and services and Europe and the USA continue to be Bangladesh's top export destinations.

Bangladesh's garment sales had a significant impact during the global economic crisis, partly because of the extensive fiscal stimulus programs in the developed world. However, Bangladesh's garment industry may suffer as a result of recent austerity programs and a less than optimistic prognosis for advanced economies. This does restrict Bangladeshi RMG owners from increasing labour costs, especially to the extent that workers have been asking. In terms of the future of the sector, there is a positive aspect as well and given the structural requirements of its economy, China is increasingly concentrating on the growth of high–end industries and construction. Beijing has also made the decision to permit a slow strengthening of its currency in response to the continuous volume from European and American markets.

1.3 Aims of the study

The aim of the study is to find the result of the trading system of Bangladeshi textile and clothing sector with different trade partner countries by using the panel data analysis.

1.4 Objective of the study

- To evaluate the impact of trade between Bangladesh and 13 other partner countries in the textile and clothing sector
- To analyse the effect of trade on GDP and consumer price index of Bangladesh in the textile and clothing industry
- To analyse the relationship between trade of textile and clothing products with partner countries and the overall land and distance between countries
- To evaluate the impact of exports of textile products in the total reserve and consumption of products of the sector
-

1.5 Contribution of Research

The study's importance lies in its potential to make significant advances to our understanding of the textile and apparel industry's role in Bangladesh's export performance. The study has helped the Bangladeshi government in various ways by examining the importance of the textile and apparel industry to export activity and how rules and regulations linked to the study may benefit the government. The research can provide data that other researchers might use as secondary sources. The primary implication of the research is the analysis of several study-related variables which allows for the identification of the variable that has the greatest impact on Bangladesh's export earnings. Using a gravity model technique, the study would examine the relation between these two variables and it might help demonstrate how the gravity model affected the outcomes of the particular study.

In fact, Bangladesh's textile and apparel industry has proven to be robust and has the ability to drive the country's further industrialization. But this

big industry still depends heavily on imported textiles and following the deregulation of the industry, several of the largest textile exporters, such as South Africa, India, China, the United States, the United Kingdom and Belgium, increased their personal apparel and textile product selling. If Bangladesh wants to take advantage of the increased market access brought on by the global open economy, it must develop downstream relationships within the textile industry and domestically produce textile goods. The sector foresaw the need and began developing its staff and back-to-back import patterns have diminished over time, pointing to a higher added value from local economic growth.

Section 2 Literature review

2.1 The export performance of Bangladesh in the textile and clothing industry

The gravity model is widely used to explain international commerce and it was initially calculated by Newton from the growth equation in physics. The theoretical components of the business gravity equation have recently been examined in numerous areas. I recently asserted that since the 17th century by concerning about regulatory oversight, economic promotion and international trade have been interpreted in terms of social welfare. In plenty of other words, the health of global trade has an effect on a country's population. The volume of trade with any particular nation's export markets is closely connected with that nation's government revenue and vice versa, as according Tinberg (2014), who argued for the development of the basic gravity model.

Nixson, Amann, and Lau (2019) used a gravity equation and this article examines how China's expanding T&C industry affects its Asian rivals' exports and it shows how the Open Door Policy in China increased T&C export. Amann and co. (2019) examined the gravity model was employed in this study to examine how, between 1990 and 2005, China's T&C sector impacted the international competitiveness of Asian T&C producers. China's textile exports constituted a greater strong competition than its garment exports to the T&C sales of other Asian economies. Asia's economies with higher income levels outperformed others with low incomes. The greater Asian economies' predisposition to focus on T&C business sectors which are less susceptible to Chinese rivalry is the reason behind this.

Mafizur (2020) made an effort to pinpoint the factors influencing Bangladesh's export and panel estimation is used to find the export trade form. The projected results show that Bangladesh's sales are primarily affected by the openness of its economy, the value of the currency, and the overall terms of trade of its business partners and the exports of Bangladesh are benefited by these. Bangladesh's exports are negatively impacted by the minimal but significant cost of transportation. According to the findings for each nation, Bangladesh's trade are more heavily impacted by its nearest neighbours than by other distant nations. As a result, Bangladesh should loosen trade restrictions, promote competitive currency devaluation, improve the efficiency of its supply chain and diversify its product offering.

The SAARC nations' free trade agreement's economic advantages are mentioned in the study (Akhter, 2020). It looks into potential trade as well as the development of trade relations among member and Non-Member States. Using the gravity equation, the international trade flows for both member and non-member countries were computed, and the impacts on trade were assessed. The study of Akhter (2020) analysed two gravity model experiments and cross-sectional statistics are the primary focus of the first study for each year and the combined data are then subjected to an analysis examination to determine the full consequences of trade and commercial flows between 2015 and 2020. The outcomes of both methods demonstrate that the anticipated values agree with the model's assumptions.

Prasai (2014) studied Nepal's total trade structure using combined generalized OLS method and Income with such a one-year lag. Nepal's economy suffered a fundamental change after economic liberalization. In this study, a large panel dataset covering 94 business partners of Nepal

more than a 29-year timeframe is subjected to a gravity model. Definition, trade variables and time restrictions don't seem to affect the outcomes. This study divides imports from purchases instead of using the total volume of commerce, as is customary in this subject. The investigation confirms the simple general equilibrium model with strong economic aspect factors and negative range coefficients. The 2008 global economic recession had an impact on Bangladesh's exporting performance which resulted in late payments or delayed export realization which caused cash flow issues for exporters, problems filling orders and difficulty obtaining export risk insurance for high-risk nations.

Pritce and Ashraf (2019) in their article, they explored the connection between trade unions and labour financial insecurity in Bangladesh's garment industry. Bangladeshi employees must deal with dangers like precarious employment, a lack of means of assistance, degrading behaviour and efforts to prevent them from uniting for a single cause. By using a model created by Sekkat (2018) which included additional variables to regulate the influence of currency value variables on exporting trends in the chosen ASEAN economies, the study came to its conclusions. Few academics have examined the effects of exchange rate regimes, or changes in exchange rate regimes, on the export performance of the textile industry. After the Bangladeshi government implemented the controlled exchange rate system, research on the trade flows of the textile sector and the impact of the currency value on exports was conducted.

2.2 The relationship between exports of textile products with GDP and FDI

Rahman (2016) examined Bangladeshi commerce using panel data and

the study demonstrates that the estimation of Bangladesh's economy, the discrepancy in the nations' per capita gross domestic product (GDP) and the accessibility of the trade agreements all have a significant impact on the country's exports. The following aspects have all been recognised as having a major impact on China's clothing export, according to Chan and Au's (2017) paper on the subject: GDP, significant trade percentage, popular registration of free market assumption for 2 different interchanges collaborators, per capita Gross domestic product and rate of population growth of the overseas subsidiary. According to Ahmed (2019), both national and global multi-fibre agreement quotas allowed Bangladeshi garments access to a secure global market.

In their paper "Export Development in India: Has Foreign Direct Investment Contributed," where Sharma (2021) showed how India's export growth outpaced its GDP growth throughout the previous ten years. This pattern appears to be supported by a number of variables, particularly foreign direct investment. However, despite the surge in foreign direct investment, particularly in recent years, little effort has been made to limit its impact on India's exports, which is one way that direct investments grow. Check the reach of a common equity formula for calculating the aggregate measure of export throughout India by using the annual records from 1970 to 1998. When the export costs reach international values, the impact of its export demand will increase.

According to Sharif, "Determinants of firm-level export growth: an empirical evidence of the Indian textile, apparel, and footwear industry" was published in 2021. Determine the purpose of the export choice, particularly with regard to export or domestic market sales, and the purpose of the export execution, or the export share of production, in (A) delicacy and stitching units are evaluated for these functions. The

structure of a company or organization that takes into account direct exposure to shares is indeed the major indicator of both features. The expected earnings model's export possibility has shown that partnerships and limited enterprises have significantly less marginal influence on variables than separate owners.

Two political reforms to boost export are suggested by empirical findings. First, the apparel and accessories in the reservoir those are now intended for exclusive manufacturing in individual segments must be eliminated while taking into account the potential of the exporting scale. Since large-scale plant factories produce flexibility in the labour market and thus represent the growth of current units and the sanctity of new entities, it is also important to change the labour legislation.

According to Divya (2014), "The association between the rise of exports and Bangladesh's GDP growth" Response If there is a link between exports and GDP growth in Bangladesh, the Vertical Surveying 3 Division of Method was used to look into it. It used the simple random test and the impulse response function to determine what factors were at play. They discovered that export growth depends on the growth of GDP annually between 1969 and 2012. Predictable VAR findings are shown by energy checks and Granger's causation test reveals that GDP growth in India causes the growth of exports. Finally, it has been established through the impulse responses that there are significantly high reactions to GDP control.

Fast-growing markets may not be capable of supporting their rapid growth with domestic resources alone, so there is a critical need to draw in foreign direct investment (FDI), especially in industries like the textile sector that contribute the most to economic growth. Domestic resources may not be enough to increase manufacturing capacity and modernising

the overall structure (Chaudhary, 2017). Developing nations like Bangladesh may become complacent when it comes to recruiting and absorbing FDI, particularly in the textile industry where there is a clear demand for sophisticated equipment.

The Economic Gravity Model was employed in a study on China's export sector that shows how the GDP, population, and degree of reliance on foreign trade all had a negative impact on the exporting performance of Chinese textile companies (Liping, 2019). Another research performed in Bangladesh discovered considerable connection between exporting and development (export-led growth) of the economy, especially in the short term, but not very strong evidence over the long run for export's effects on economic growth (GDP) (Paul, 2018).

2.3 The relationship between exports of textile products with BD land and distance

The hypothesis holds that countries with larger incomes prefer exporting more in real numbers, but distance would lessen bilateral commerce (Dell'Araccia, 1999). In his study of Bangladeshi women garment workers, Absar (2019) discovered that these women migrate to metropolitan regions in search of jobs. This is exacerbated by the fact that urban women struggle to find decent, reasonably priced homes, access to transportation, and social security. Bhattachariya (2004) simulated outcomes and assessed the trade flows bilaterally between India and Bangladesh using the gravity model and various scenarios of tariff reduction. These findings provided more evidence that Indian exports will increase more swiftly than Bangladeshi imports.

There is no vital and important difference in act in the best interests after market reforms. The simulation's findings which compared actual trading with expected trade and it showed that political activities like economic penalties imposed by other countries do not impact Nepal's commerce. The findings also show that trade with India is substantially higher than with China. The outcomes show Nepal's intention to diversify trade in general and profit from trade agreements with China in particular. According to Tinberg (2019), who advocated the creation of the fundamental gravity model, the volume of commerce with any given country's trading partners is directly correlated with that country's national income and vice versa. The idea is that larger economies favour increased bilateral trade in real numbers, whereas distance (a substitute for transport costs) would be detrimental.

Nolintha and Jajri (2014) research demonstrates the technological advancements made by Laotian garment enterprises as well as the relationship between firm efficiency and monitoring tools and export volume. While multinational businesses have not made substantial expenditures in Laos's people management, the level of institutional support offered by the host site impacts a firm's technological capabilities. Milne and Khan (2018) claimed in their piece that the widely acknowledged Sustainable Development Goals (SDG) framework for development has given global government a fresh perspective. The RMG instance while specific to Bangladesh depicts a general picture of international governance and national engagement, a key aspect of development that offers both opportunities and risks.

Global Government has been showed to have the capacity to boost economic growth and reduce poverty. A global/local alliance of vested interests has, however, emerged as a result of its unregulated involvement

and national-level democratic weaknesses which has produced varied macro/micro consequences. The textile industry in Bangladesh is being investigated by Hasan et al. (2019) in an effort to understand the many dimensions of energy efficiency and energy management systems. The study shows that the lack of technically workable solutions which is closely related to the context of politics and manufacturing research and development is the biggest barrier to the growth of the textile industry.

Khan and Milne (2019) provided an explanation of Bangladesh's RMG sector. Some of them, like Ahmed, Mahmood, Faruk, and Billah (2017) wrote on the textile industry's service sector. The growth of Bangladesh's RMG garment sector has been called a "economic miracle" (Quddus, 2018). In order to stop factory owners in Bangladesh's garment sector from taking lethal risks to satisfy customers' expectations, a new book written by Saxena (2019) contends that wider problems in the worldwide supply chain need to be addressed. In their article from Yunus and Yamagata (2017), they explored the potential strengths of the clothing industry as a whole. In a paper on Bangladesh's textile industries, Islam (2018) identified the main issues as the rise in electricity prices, the rise in interest rates, the resource scarcity, the devaluation of the Bangladeshi Taka, rising input costs, political unrest, the removal of subsidies and internal strife.

Mohan (2018) revealed that using Balassa's measure of revealed comparative advantage, this paper examined India's and Bangladesh's comparative advantages for the global export of garments (RCA). Findings show that between 1995 and 2003, Bangladesh's comparative advantage expanded from 21 items to 29 products, while between 1995 and 2003, India's productive capacity grew from 23 product lines to 25 products. The findings showed that even while India has a competitive

advantage in numerous clothing products, it hasn't been able to grow its market share in the global apparel trade more quickly. He compared the distance between India and Bangladesh so that it can measure the impact of distance on the trade of textile products. The studies of Rahman (2010) and Kundu (2018) are pertinent in this context because they estimated Bangladesh's bilateral commerce with other nations using the gravity model. To illustrate the commercial links with Argentina, Russia, Iran, China, and South Africa and Kundu (2015) employed the gravity model in the study.

2.4 The relationship between exports of textile products with CPI and reserve

Exchange rate mismatch and Bangladeshi economic growth is a study by Rath (2019). Using yearly data collected from 1980 to 2014, a study of the illegal impact of exchange rates on Bangladesh's growth in the economy was conducted. ARDL and various decorative techniques have been used to study the consequences of the economic development courses. Their findings look at up to 2010 different exchange values before Bangladesh's interest rate is degraded. The outcome also shows a positive inverse relationship between exchange rate degradation and economic growth. In his essay "Exports, Growth and Causation in Economies: A Reexamination," Osko (2017) examined the long-term connection between the balance of trade and the real exchange rate.

The factors influencing the development of the textile industry in emerging economies are examined by Jaganathan (2013) in his paper titled "Key Elements of the Trade Flows of the Textile Sector in Emerging Economies." The survey looks at the studies on the topic of determinants

and elements that have been recognized as being used to abuse the textile sector. The inquiry indicates that most of the research on establishing a GNP, exchange rate, labour, consumer product index and total reserve has been finished in order to secure the textile industry's success. Numerous analysts have drawn enlightening conclusions about the aforementioned information and textile exports. It is significant that different elements, including firm profitability and validity, would be available for future investigations.

One of the key macroeconomic indicators, the CPI is important for financial sector development and economic research (Zuzana, 2010). One of the most significant economic measures used to monitor rise in the prices of goods and services that people use, pay for, or purchase over time is the CPI (Dhamo et al., 2019). The European Central Bank's (ECB) Standardised Index of Commodity Prices (HICP), on the other hand, is limited to the member states of the EU that have embraced the Euro as their official currency. It measures price stability. It might be loosely claimed that it is the European Central Bank's target price index.

Numerous studies have been done on the relationship between exporting and importing and economic growth. Using information from 1962 to 2011, Taghavi et al. (2012) examined the effects of import and export on the productivity expansion of Iran. Through the use of VAR analysis, they were able to confirm a long-term interaction between variables and demonstrate that export has a positive and direct association with economic growth over time, whereas importing has a substantial and negative connection with it. Achchuthan (2013) found using data collected from 2000 to 2020 in Sri Lanka, that exports and imports have a strong and positive association with one another and that both imports and exports have a major impact on economic growth.

Section 3 Data

3.1 Descriptive statistics

Table: 1

Variable Name	Observation	Mean	Standard Deviation	Min	Max
GDP	416	2.30e+13	4.01e+12	3.61e+10	2.30e+13
Land	416	2824892	3900959	710	9984670
CPI	416	90.83763	27.55106	11.75432	192.3787
D	416	7195.377	3854.02	1493.7	14588
FDI	416	.5971001	.5075832	0	1.735419
Tr	416	13612.76	11909.53	866.82	42613.15
Ex	416	1.18e+10	1.37e+10	6.60e+08	4.62e+10

Table 1 shows a subset of statistics known as descriptive analysis seeks to describe several characteristics of the data that are often used in a study. Descriptive statistics' primary goal is to give a quick rundown of the sampling and measurements used in a specific study. Descriptive statistics play a significant role in nearly every quantitative analysis of data when combined with a variety of visual analysis. Statistical techniques and descriptive statistics are very distinct from one another. Descriptive statistics essentially involve describing the information included in the presented data. When using inferential statistics, the goal is to

draw a conclusion from the available data.

The descriptive statistics is showing that total variable was taken as 416 variables where 6 variables were taken as independent variable and one variable was taken as the dependent variable. The reason for measuring data in descriptive statistics is that it could help to identify the total observation, mean, standard deviation, minimum value and maximum value of a specific variable. GDP is an independent variable where the total observation was taken from the period of 1990–2021 for 32 years and 13 partner countries were chosen for each variable.

The variable GDP has the mean value of $2.30e+13$ and the standard deviation of the variable is $4.01e+12$ and the minimum value of the variable is $3.61e+10$ where the maximum value of the variable is $2.30e+13$. The land has been considered as the independent variable of the study which is denoted by L and the mean value of the variable has been considered after exploring the land size of each partner country. The mean value of the variable L is 2824892 and the standard deviation of the L variable is 3900959. The minimum value of the variable is 710 where the maximum value of the variable is 9984670.

Consumer product index is an independent variable which can create an impact on exports of textile and clothing products. The variable has been explored as the equation CPI where the mean value of the variable is 90.84 where the standard deviation of the variable is 27.55. The minimum value of the variable has been found as 11.75 where the maximum value of the variable CPI have been found as 192.38. The distance has been considered as the independent variable of the study where the difference of the distance between Bangladesh and partner countries has been considered. Here, the distance variable has been denoted by D and while exploring 416 observations of the variable it

was found that the mean value of the variable is 7195.38 and the standard deviation of the variable is 3854.02. The maximum value of the variable D was 14588 where the minimum value of the variable 1493.7.

FDI was also an independent variable of the study where the mean value of the variable was 0.597 where the standard deviation of the variable was 0.508. The minimum value of the variable was 0 where the maximum value of the variable was 1.735. Tr was an independent variable of the study where the total reserve between countries were considered and the mean value of the variable was 13612.76 and the standard deviation of the variable was 11909.53. The minimum value of the variable was 866.82 and the maximum value of the variable was 42613.15. Exports of textile and clothing products in different countries were considered as the dependent variable which was denoted by Ex and the mean value of the variable was 1.18×10^{10} and the standard deviation value of the variable was 1.37×10^{10} and the minimum value of the variable was 6.60×10^8 and the maximum value of the variable was 4.62×10^{10} .

3.2 Experiment Results

Number of obs = 416

F (6, 409) = 1861.84

Prob> F = 0.0000

R-squared = 0.9647

Adj R-squared = 0.9642

Root MSE = 2254.6

Table: 2

Export	Coef.	Std. Err	t	p> t	[95% conf.	Interval]
GDP	3.91e-11	3.55e-11	1.10	0.272	-3.08e-11	1.09e-10
CPI	39.9468	7.318775	5.46	0.000	25.55969	54.33391
Distance	.0179003	.0319791	0.56	0.576	-.0449636	0.807642
FDI	4757.209	257.5184	18.47	0.000	6.93e-07	7.46e-07
TR	7.20e-07	1.34e-08	53.73	0.000	6.93e-07	7.46e-07
Land	-.000026	.0000353	-0.74	0.462	-.0000954	.0000434
_cons	-1507.814	574.777	-2.62	0.009	-2637.7	-377.9288

Table 2 shows the regression analysis of the study was considered after evaluating 416 observations of data from the period of 1990 to 2021 for 32 years where the trade of exports of clothing and textile products

between Bangladesh and 13 selected partner countries were considered. The probability of the variable is less than the F value which means that selected variables are significant. The R square of the value is 96% and the adjusted R square of the value is also 96% which means that selected variables are significant and it has a significant positive result because the result is considered as a good value when the R square of a regression analysis is more than 60%.

The pooled OLS regression model was applied where it was found that all variables such as GDP, CPI, D, FDI, Tr and Land are statistically significant with the dependent variable Ex. The coefficient of GDP variable is positive which means that the dependent variable and the independent variable is in the right direction and one unit dollar increase in the export value will increase the GDP value of 3.91 unit dollar. The variable CPI has also positive coefficient value and it also means that one unit dollar increase in the dependent variable Ex could increase 39.95 dollar increase in the independent variable CPI. The distance variable has also positive coefficients which mean that the distance variable and the dependent variable are in the right direction and 0.017 unit increase in distance could increase the export performance of Bangladesh in the textile industry.

The coefficient of FDI variable was positive which means that one unit dollar increase in exports could increase 4747.21 dollar unit of FDI while exporting products in partner countries. Therefore, the independent variable FDI and the dependent variable Ex are in the right direction. The total reserve was an independent variable of the study which shows that 7.2% of increase in the total reserve between Bangladesh and partner countries could increase one unit dollar volume of exports of textile products for Bangladesh. Land variable was found that it has a negative

coefficient and it means that variables such as Land and Ex are in the negative direction and increase of land by 0.0026 could decrease the export volume of Bangladesh and partner countries by one unit dollar. All variables are found as significant because variables are within the volume of the t value and it was significant within 0.05.

Section 4 Model

4.1 Fixed effect model

Individual impacts of unknown and independent variables are determined by the FE-model to be constant ("fix") over time. The link among unobserved, independent variables in FE-models and the trick with a FE model is that if alpha is taken to be constant and the mean values are subtracted from each formula element, alpha would get zero and may thus be omitted. However, this approach permits heterogeneity to exist within the model because diversity can be managed. Regrettably, dependencies may only be seen within the individuals because individual effects are fixed.

Fixed effect model

$$\text{One-way: } y_{it} = (\alpha + u_i) + x_{it}\beta + v_{it}$$

$$\text{Two-way: } y_{it} = (\alpha + u_i + \lambda_t) + x_{it}\beta + v_{it}$$

4.1.1 Fixed effect result and experiment

Fixed-effects (within) regression	Number of obs	=	416
Group variable: country1	Number of groups	=	13
R-sq:	Obs per group:		
within = 0.9653	min =		32
between =	avg =		32.0

overall = 0.9632 max = 32

F(4,399) = 2771.05

corr(u_i, Xb) = -0.0461 Prob > F = 0.0000

Table: 3

Ex	Coef.	Std.err.	t	p> t	95% Conf.	Interval
GDP	1.46e-10	6.26e-11	2.33	0.021	2.25e-11	2.69e-10
CPI	43.82586	7.635695	5.74	0.000	28.81464	58.83708
Distance	0	Omitted				
FDI	4623.045	263.8679	17.42	0.000	4104.3	5141.79
TR	7.07e-07	1.43e-08	49.49	0.000	6.79e-07	7.35e-07
Land	0	Omitted				
_cons	-1830.15	531.1349	-3.45	0.001	-2874.323	-785.9775
Sigma_u Sigma_e rho	561.25554 2264.0572 .0578956					

Table 3 shows the fixed effect model of the study has showed that the overall R square of the model is 96% which proves that the fixed model has showed significant results for all variables. The result of the fixed effect model was obtained after analysing collected data of 13 partner countries with Bangladesh for the period of 1990 to 2021 and the data has showed that all variables has significant results where the result of variable land and distance was omitted because the fixed effect model omitted variables which has irregularity.

The result also showed that all variables such as GDP, CPI, FDI, Tr and Ex has positive significant results as they have significant result within the

value of 0.05. Therefore, the fixed effect model also showed that the result was significant between independent variables and the dependent variable. While exploring the result of coefficient of all variables, it could be found that all variables such as GDP, FDI, CPI and Tr has positive coefficients and it means that dependent variable Ex has positive right direction with all independent variables and an increase in the unit volume of any independent variable will increase a unit volume of the dependent variable. The F value was found in the fixed effect model with the value of 2771 and the probability of the value is 0.00 which means that the F value is within the expected value.

No significant changes were found between the random effect model and the fixed model but it could be found that the p value of all variables in the fixed effect model has changed from the result of the p value of the random effect model. It could also be seen that there was slightly changed in the result of coefficient in all variables but the slight change has no effect in the positive significant result and the value was changed. In the fixed effect model, the result could be changed because some variables were taken as constant over time because in the fixed effect model, while taking data, some variables remain constant for some periods.

4.2 Random effect model

The individual impacts of unobserved, independent factors are calculated using Random Effect models as unpredictable variables over time. Since they have the ability to "switch" between OLS and FE, they can concentrate on both inter- and intra-individual dependencies. The study must first establish when to utilize which estimator before including

between- and within-estimators. In general, an OLS-model is favoured if the correlation amongst alpha and Independent Variables is 0 (or extremely tiny), indicating that there is no relationship between them. As previously mentioned, the integration between alpha with time is a drawback of utilizing OLS. As a result, Random Effect models choose a model based on the time series of the constant variance.

Random effect model

One-way:

$$y_{it} = \alpha + x_{it}\beta + (u_i + v_{it})$$

Two-way: $y_{it} = \alpha + x_{it}\beta + (u_i + \lambda_t + v_{it})$

4.2.1 Random effect result and experiment

Random-effects GLS regression	Number of obs	=	416
Group variable: country1	Number of groups	=	13
R-sq:	Obs per group:		
within = 0.0000	min =		3
between = 0.0000	avg =		32.0
overall = 0.9646	max =		32

Table: 4

Ex	Coef.	Std. Err	z	p> z	95% Conf.	Interval
GDP	3.91e-11	3.55e-11	1.10	0.271	-3.06e-11	1.09e-10
CPI	39.948	7.318775	5.46	0.000	25.60226	54.29134
Distance	.0179003	.0318775	0.56	0.576	-.0447776	.0805781
FDI	4757.209	257.5184	18.47	0.000	4252.482	5261.936
TR	7.20e-07	1.34e-08	53.73	0.000	6.93e-07	7.46e-07
Land	-.0000026	.0000353	-0.74	0.462	-.0000952	.0000432
_cons	-1507.814	574.777	-2.62	0.009	-2634.357	-381.2723
sigma_u sigma_e rho	0 2264.0572 0					

Table 4 shows in terms of predicting the significance value of all variables in the study, the random effect model of the regression analysis is showing that the gravity model equation was perfect for the study and it could increase the overall performance between exporting trade flows and valuable assets. While exploring all dependent variables and independent variables in the 1%, 5% and 10% level, all variables were statistically significant. The R square value in the random effect model is 96% which means that the overall performance of the random effect model is popularly reflected. The adjusted R square value has showed the determination coefficient of the model where the outcome could be positive by the account of 96%.

Therefore, the random effect model has showed that the gravity model equation has provided a satisfactory overall result among Bangladesh and 13 selected partner countries. However, the prediction of GDP variable was true in the random effect model where the coefficient of the variable is positive and it has the value of 3.91. In terms of the random effect model, the GDP was found as a positive sign of 3.91 where it means that the rise of export for the volume of one unit can increase the GDP of Bangladesh by 3.91%. The random effect model has also explained that there is a slight difference in the result between OLS pooled regression analysis and the random effect model.

The coefficient results of all variables in the OLS pooled regression model and random effect model are same where there is a slight change in the result of coefficient and standard deviation of all variables. The random effect model has showed that independent variables such as GDP, FDI, Distance, CPI and total reserve has positive coefficients and it means that independent variables and the dependent variable Ex are going into the right direction. But the dependent variable land has negative coefficients in the regression model and it means that the dependent variable Ex and the dependent variable land are going into the wrong direction.

Section 5 Hypothesis testing

H1: Dependent variable exports of textile and clothing products has a positive significant relationship with the independent variable GDP in Bangladesh

H2: Dependent variable exports of textile and clothing products has a positive significant relationship with FDI in Bangladesh

H3: Dependent variable exports of textile and clothing products has a positive significant relationship with the independent variable BDland

H4: Dependent variable exports of textile and clothing products has a positive significant relationship with the independent variable distance of partner countries

H5: Dependent variable exports of textile and clothing products has a positive significant relationship with the independent variable total reserve

H6: Dependent variable exports of textile and clothing products has a positive significant relationship with the independent variable CPI

Section 6 Research Methodology

6.1 Research method

There are 13 different nations covered by the study and the gravity approach is used to calculate whether economic variables such as GDP, FDI, the distance between exporters and importers, total land area, the consumer price index, total reserve between partners and exports of textile products can adequately explain bilateral trade between Bangladesh and other nations. Data from the 32-year period between 1990 and 2021 is collected. To determine the relationship between a dependent variable and an independent variable, pooled OLS regression analysis is performed. Additionally, the study has employed the model of fixed effects and random-effect model. To choose between a fixed-effect model and a random-effect model, the Hausman testing is used.

6.2 Variables

Two types of variables have been selected for the study which is the independent variable and the dependent variable. The study has selected only one dependent variable and 6 independent variables and the effect independent variable can change the volume of the dependent variable.

Dependent variable:

1. Total exports of textile and clothing products from Bangladesh to 13 partner nations

Independent variable:

1. Real GDP volume of countries that are earned by Bangladesh from

exporting textile products in each country

2. Geographical distance of each partner country from Bangladesh
3. Land area in square kilometre for each partner nation
4. Foreign direct investment from each partner country in the textile sector of Bangladesh
5. Total reserve of exporting products from Bangladesh to partner nations
6. Consumer price index of exporting products in each partner country

6.3 Research equation

The gravity equation model used in the study are explained below –

$$\ln Ex_{pq} = \beta_0 + \beta_1 GDP_p + \beta_2 \ln D_{pq} + \beta_3 FDI_p + \beta_4 Land_q + \beta_5 \ln Tr_p + \beta_6 CPI_p + \epsilon$$

Here,

p = Bangladesh

q = Partner countries

β_0 = Intercept variable

β_1 = Regression coefficient

$\ln Ex$ = Log value of total exports of textile products

GDP = Real GDP volume of countries that are earned by Bangladesh from exporting textile products in each country in US dollars

$\ln D$ = log value of geographical distance of each partner country from Bangladesh

FDI = Foreign direct investment from each partner country in the textile sector of Bangladesh

Land = Land area in square kilometre for each partner nation

lnTr = Log value of Total reserve of exporting products from Bangladesh to partner nations

CPI = Consumer price index of exporting products in each partner country

€ = error term

6.4 Data collection process

For collection data on each independent and dependent variable, all raw data has been collected for the period of 32 years from 1990 to 2021 where maximum data was collected from websites and some data were collected from banks and rest of the data were collected from published journals and newspapers. To collect the data for literature review of the secondary data, articles, journals and books on the related topic were considered. For collecting data on exports of textile and clothing products from Bangladesh to partner countries, the report of UNCTAD was used and maximum data were available in the website.

To collect data on real GDP of Bangladesh earned from exporting textile products in partner countries, the report of World Bank report was used. For the data collection of the independent variable of distance, search engine website was used where Wikipedia has given the assistance of distance between Bangladesh and partner countries. To analyse data on the total land area of partner countries, the study has taken the

assistance of search engine option where the details were found from the search engine in Google for each partner nation.

To collect data on FDI earned from each partner country on the textile sector of Bangladesh, the report of UNCTAD has helped to find the relevant data. For collecting data on the total reserve collected from exporting products in each partner country, the report of Bangladesh Bank has helped to collect the relevant information. To collect relevant information on the consumer price index, the study has collected data from the IMF yearly report.

Section 7 TESTS

7.1 Hausman Testing

The Hausman Test is a measurement of scale to put it simply and the null hypothesis for the Hausman-Test is that there is no correlation between Independent variables and alpha. If so, FE should be avoided in the favour of Random Effect model and the study must use the Fixed Effect model if the null hypothesis is invalid.

$$H = (\hat{\beta}_1 - \hat{\beta}_0)^T [\text{var}(\hat{\beta}_0) - \text{var}(\hat{\beta}_1)]^\dagger (\hat{\beta}_1 - \hat{\beta}_0)$$

where, \dagger stands for pseudo inverse,
 $\hat{\beta}_0$ refers to the fixed effects estimates and
 $\hat{\beta}_1$ is the random effects estimates

7.2 Hausman Test and experiment

Table: 5

	Coeffi. (b) Re	Coffi. (B) fe	(b-B) Difference	Sqrt(diag(V_b- V_B))
GDP	1.46e-10	1.46e-10	0	0
CPI	43.82586	43.82586	0	0
FDI	4623.045	4623.045	0	0
TR	7.07e-07	7.07e-07	0	0

b= consistent under Ho and Ha; obtained from xtreg

B= inconsistent under Ha efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\text{Chi2}(0) = (b - B)'[(V_b - V_B)^{-1}](b - B)$$

$$= 0.00$$

$$\text{Prob} > \chi^2 = .$$

($V_b - V_B$ is not positive definite)

Table 5 shows the hausman test was conducted for obtaining the difference between two regression models of the fixed effect model and the random effect model. The result has showed that the difference in coefficients were not systematic. The result of random effect model was consistent under H_0 and H_a but the result of fixed effect model was inconsistent under H_a but it was efficient under H_0 . Therefore, a slight change could be found in each variable of the fixed effect model because the number of variable examined in the random effect model was not consistent and there was a difference while analysing variables in the fixed effect model because some variables were omitted in the fixed effect model due to the inconsistency of results in the data.

In panel data analysis, the Hausman test's accuracy is a crucial concern, it is a method for evaluating the test's properties when working with certain data is proposed and put into practice. The breadth and strength of the Hausman test are determined using a simulation that replicates the original data. The Hausman test which is employed in dynamic panel studies to select between models, is the main emphasis of this thesis and the panel model's endogeneity is tested using the Hausman test. While using panel data has many benefits over using merely cross-sectional or time-series data, it is crucial to specify the model that will be utilized in order to get reliable findings.

After evaluating the Hausman test on the collected results of the random effect model and the fixed effect model, it could be found that both model has same results where the fixed effect model has some inconsistency and for this reason, the random effect model would be most effective to estimate the result rather than using the fixed effect model where results of some variables were omitted.

7.3 Pooled regression analysis

PooledOLS is a straightforward OLS (Ordinary Least Squares) model applied to panel data. It skips the passage of time and individual traits in favour of a singular focus on inter-individual dependencies. Simple OLS, however, demands that there be no association between the Independent variable and any unobserved independent variables. Alpha may have an autocorrelation problem over time even if the aforementioned supposition is correct, which is the difficulty with Pooled OLS and pooled OLS is hence probably unnecessary for dynamic panel.

The equation used in Pooled regression analysis is -

$$Y_{it} = \beta X_{it} + \alpha_i + \mu_{it}$$

Where,

Y_{it} = Dependent Variable

X_{it} = Independent variable

β = Coefficients

α_i = Individual effects

μ_{it} = Random error

Section 8 Study Discussion

While exploring the relationship between the dependent variable exports between Bangladesh and partner countries and the dependent variable GDP, OLS pooled regression model was considered to find the significance of the result. The result has showed that the relationship between these two variables are positive because the p value of the independent variable GDP is less than the expected t value and hence it proves that the relationship is significant. The random effect model has also showed that the dependent variable Ex has a significant relationship with the independent variable GDP because the p value of the result is within the expected value. The fixed effect model has showed that the dependent variable Ex is significant with the independent variable GDP because the value is within the significance of value of 0.05 and the p value of the GDP variable is 0.02.

Hence, there is a positive significant relationship with independent variable GDP and dependent variable Ex.

The study has analysed the relationship between two variables such as the FDI and the dependent variable Ex where it was explored by using three regression models of Pooled Ols regression, random effect model and the fixed effect model. The Pooled Ols regression result has showed that there is a significant positive result between the independent variable FDI and the dependent variable Ex and the p value of the independent variable was 0.00 which was less than the significant value of 0.05 and it proves the significant relationship between variables. The random effect model has showed that the p value of the independent variable is 0.00 and it within the significant value and it proves the significant relationship between variables Ex and FDI. The fixed effect model has

also showed that there is a positive significant relationship between variables Ex and FDI because the p value of the variable is less than 0.05 and the value is 0.00.

Hence, there is a positive significant relationship with independent variable FDI and the dependent variable Ex.

While exploring the relationship between the independent variable distance and the dependent variable exports of textile products, OLS pooled regression model was applied and it shows positive significant result among variables as the p value of the independent variable was more than the t value and it shows positive significant result. While applying the random effect model, the independent variable has showed that the p value of the variable distance is more than the t value which indicates the positive significant relationship between variables D and Ex. The fixed effect model has showed that the p value of the distance variable was omitted due to their irregularity in data.

Hence, there is a positive significant relationship with independent variable D and the dependent variable Ex.

While exploring the relationship between variables consumer product index as the independent variable and exports of textile products as the dependent variable, three regression models such as OLS pooled regression, random effect model and fixed model was applied. The OLS pooled regression model has found significant relationship between variables where the p value of the variable CPI is 0.00 which is less than the significance level of 0.05 and it proves the significant relationship. The random effect model has showed that the p value of the independent variable CPI is 0.00 and it is also within the significance level of less than 0.05. The fixed effect model has showed that the p value of the

variable CPI is 0.00 and it is less than the significance level of 0.05 and it proves the positive relationship between variables Ex and CPI.

Hence, there is a positive significant relationship with independent variable CPI and the dependent variable Ex.

The study has explored the relationship between variables total reserve which is an independent variable and exports between countries which was a dependent variable, a positive significant relationship was found between these two variables. It was explored by using the Pooled OLS regression model that there is a positive significant relationship with the independent variable Tr and the dependent variable Ex because the p value of the total reserve in the Pooled regression was 0.00 and it is within the significance level of 0.05 and it proves that significant relationship between variables. The random effect model has showed while exploring between variables Ex and Tr that the p value of Tr is 0.00 and it is less than the significance value of 0.05 and it proves that the result is positive. The fixed effect model has showed that the p value of the dependent variable is 0.00 and it showed the positive significant relationship between variables Tr and Ex. It means that the export of textile products from Bangladesh in partner countries will increase when the total reserve between countries are efficient.

Hence, there is a positive significant relationship with independent variable Tr and the dependent variable Ex.

During establishing the relationship between the dependent variable exports between countries of textile products and the independent variable land, the study has applied the Pooled regression model, the fixed effect model and the random effect model. The Pooled regression model has showed that the p value of the independent variable land is 0.46 which

is higher than the t value and it shows positive significant relationship between variables. The random effect model has showed that the p value of the variable land is 0.46 which is also higher than the z value and it indicates the positive relationship between the independent variable land and the dependent variable Ex. The fixed model has showed that the independent variable land has the p value of none because the variable was omitted due to its inconsistency of data. But the positive relationship between variables proves that the land has a sportive factor to increase the export volume of countries between Bangladesh and its partner countries. Therefore, land has a supportive impact on the export performance of Bangladesh.

Hence, there is a positive significant relationship with independent variable land and the dependent variable Ex.

Section 9 Conclusion

9.1 Conclusion

This research aims to demonstrate the significant relationship of exports of textile products in partner nations from Bangladesh on different variables. During the years 1990–2021, researchers examined the gravity equation of exports of the textile and clothing industry for seeing its effect on different economic variables for Bangladesh where 32 years of data were selected. To check the impact of macro level macroeconomic variables such as GDP, distance between countries, land area of countries, total reserve and consumer price index. The study first used a panel data equation where an estimation model was established after collecting data on different variables. All of these variables indicated a substantial link with exports in the industry which is either positive or negative. The findings reveal that gross domestic product, foreign direct investment, distance, land and total reserve which are indicators of independent variables all have a favourable and considerable impact on exports of textile clothing products.

Based on the findings, it is feasible to conclude that developing countries such as Bangladesh should set aside funds to build their facilities for their populations and to invest in the textile and clothing sector as a means of enhancing development and promoting high volume of exports. While an improvement in these variables leads to higher in per capita Income, people must keep in mind that the sample has major economic and infrastructure variations. Further research is required to comprehend the mentioned variances in export volume development in urban areas by undertaking a specific instance situation for each nation to detect any

discrepancies with the results acquired from the study.

Policymakers must promote the volume of exports in partner countries because the findings of this study promote growth and developments in the textile and clothing sector development, particularly in sectors with crucial provoking growth for potential export trade volume gains by taking advantage of the vast population's access to partner nations by gaining a low tariff rate. Furthermore, textile and clothing sector can benefit the public by allowing access to government services as well as other sectors' services, such as education and health, which are heavily reliant on the high export volume of the sector to increase the GDP growth. Based on the preceding discussion, it can be concluded that the Bangladesh textile and clothing market has a lot to offer in terms of strategically insignificant or changeable threats. Though the textile and clothing sector contributes to Bangladesh's economy by providing jobs, earning income and contributing to various social programs, it is a high profitable sector due to the taxation system and market structure.

9.2 Future Study

- The recommendations for the textile and clothing industry is that after analysing findings and results of the study, Bangladeshi government can play major role to collect foreign investments in the industry and it should show positive results that foreign investors have huge investment and profit opportunities if they invest in the textile and clothing sector of Bangladesh. Foreign Direct Investment can enter Bangladesh through two routes: the automatic route, which requires employers receiving foreign investment to notify the

Bangladesh Bank inside of months of receiving funds and issuing shares to the new investment; and the manual route which requires prior approval from the Investment Promotion Board for industries that are not covered by the automatic route (FIPB). Foreign Direct Investment (FDI) in the textile sector has recently increased from 49% to 74%. This appears to be a favourable move for the industry, as it will necessitate investments of Taka 700–900 million throughout the next five years.

- Bangladesh should avoid all restrictions for foreign investors such as high tariff rates, critical registration process, high interest rates, conflicts between countries and political unrest so that foreign investors become enthusiastic to invest in the country. For example, tax exemptions should be given to foreign investors so that they can keep in mind the tax deductions which were gained during giving investments in the textile and clothing industry. Bangladeshi government has the role to implement new rules and policies in terms of the textile and clothing sector of Bangladesh.
- Bangladesh's Commerce Minister has stated that the decision to increase the export volume in the Bangladeshi textile and clothing sector has been made since this sector is considered as a capital heavy sector and the goal is to attract more financial growth of this sector. Furthermore, the goal was to make the entire textile market system transparent and rigorous. This proclamation also stated that two businesses in European sector have already received and over 49% of exports volume. Non-migratory Bangladeshi citizens should make up the majority of the board of directors which includes

the Chairman, Managing Director, and Chief Executive Officer.

9.3 Research contribution

The contribution of the study is that it can help researchers to get a direction of the textile and clothing industry and why this industry needs to increase the export volume. The study may help the Commerce Ministry of Bangladesh to understand economic benefits of collecting foreign investments for the textile and clothing sector. This study can contribute future investigators when they would develop a study on the topic and they can identify gaps from the study and they can establish a new study by fulfilling the gaps of the study. This study has explored some key literature reviews and resources which have helped to identify key variables of the study which variables were not earlier analysed. Therefore, this study would contribute by analysing new variables for the related topic. For example, the relationship between distance of 13 partner countries in the textile and clothing sector and the total export volume in the industry were not explored in any study which have been analysed in this study.

This study has also created contributions by using a time series analysis for the particular study on increasing the export volume for the textile and clothing industry of Bangladesh and how it could lead to high trade performance. Time series analysis gives a direction of analysing data by using panel data for particular years and it helps to analyse hypothesis testing of a study by showing relationship between independent variables and dependent variables. Total reserve was a new variable in the related topic and no other studies have ever explored this variable and showed relationship between Total reserve and total exports in the textile sector. This study has also made contributions in the political sector of the country as it showed the importance of textile and clothing sector for the

nation and it has also given a direction to the commerce ministry of Bangladesh by suggesting them some approaches for collection of investments from foreign countries to increase the export volume for the textile and clothing industry of Bangladesh. This study has used Pooled regression analysis and random effect model and fixed effect method to check the significance of selected data of variables so that the study can prove that all data and information of the study has matched the expected significance level.

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국 문 초 록

방글라데시 의류 및 직물 수출산업의 중력모델

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이슬람 타이들

이 논문의 목적은 수출에 영향을 미치는 요소들을 결정하는 것이다. 방글라데시의 섬유 및 의류는 13개의 주요 무역 파트너와 함께 합니다. 연구를 분석하고 수행하기 위해 1990년부터 2021년까지 32년 동안 총 10개의 주요 무역 상대국에 대한 방글라데시의 섬유 및 의류 수출의 패널 중력 모델을 추정하기 위해 패널 데이터 세트를 생성했다. 회귀 분석, 고정 효과 모델, 랜덤 효과 모델 및 하우스만 검정을 포함하여 고정 효과 모델과 랜덤 효과 모델 중에서 선택하는 몇 가지 검정이 수행되었습니다. 본 연구의 종속변수는 섬유 및 의류 수출이며, 독립변수는 방글라데시의 GDP, 파트너 국가의 GDP, 지리적 거리, CPI(소비자 물가지수), Tr(방글라데시의 섬유 및 의류 총 매장량)이다. 연구 결과 지리적 거리는 T&C(섬유 및 의류) 수출에 부정적인 영향을 미치지 않지만 P 값은 매우 유의한 것으로 나타났다. 토지 면적과 CPI는 양의 계수를 가지며 P 값은 매우 유의합니다. 한편, 방글라데시의 섬유와 천의 총 매장량은 양의 계수를 가지고 있지만 P 값은 그만큼 중요하다. 이 연구는 방글라데시의 T&C 산업 수출에 큰 기여를 했다. 그리고 이 연구는 더 많은 통찰력을 찾고 미래의 추가 연구를 위한 새로운 길을 닦는 데 도움이 될 것이다.

【주요어】 : 방글라데시, 섬유 및 의류, GDP, 회귀 분석, 고정 효과 모델, 랜덤 효과 모델, 하우스만 테스트, 지리적 거리, CPI, 총 매장량, 토지 면적.