

Received: October 2023 Accepted: December 2023
DOI: <https://doi.org/10.58262/ks.v12i1.182>

Impact of COVID-19 on the Economic Growth of Developing Countries: Evidence from the Readymade Garment (RMG) Sector in Bangladesh

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Abstract

Purpose: This study aims to evaluate the impact of the COVID-19 pandemic on the ready-made garment sector and the overall economy of Bangladesh as a developing country, employing innovative econometric methods. The primary focus is on understanding the consequences of the unique SARS-CoV-2 virus, which triggered the global COVID-19 pandemic. Design/Methodology/Approach: This study involves interviews with experts in the ready-made garments (RMG) industry to compile a comprehensive registry of COVID-19 pandemic response strategies. Balanced Weighted Mean (BWM) metrics are developed, and data is collected from industry experts. A Bayesian BWM analysis is applied to evaluate the survey data. Time series variables, including GDP, total export valuations (TEX), garment sector sales revenue (REVGs), garment sector employment (EMP), remittances (REM) inflow, and the unemployment rate in Bangladesh (UNR), are used to assess the consequences of the COVID-19 pandemic on the economy. Findings: The research revealed that the COVID-19 pandemic, marked as the most significant global economic crisis since the 1930s, severely impacted the RMG sector in Bangladesh. Also found that in FY 2019–20, the sector saw its smallest contribution to export earnings and GDP in the past six fiscal years. Export revenue dropped by 18.45% from the previous year, missing the target by \$10 billion. RMG export orders also decreased by \$3 billion, and Bangladesh's RMG exports to Vietnam declined by \$2.11 billion, causing a shift in rankings. Originality Value: This study provides a unique and comprehensive inquiry into the COVID-19 pandemic's influence on the RMG sector in Bangladesh, emphasizing the importance of this sector to the country's economy. It offers new insights into the economic consequences of the pandemic and presents valuable recommendations for the RMG sector's revival in the post-pandemic era. This research offers recommendations for the RMG sector's recovery from this economic downturn.

Keywords: COVID-19; Economic Growth; Impact; RMG Sector; Sustainable Growth

Introduction

Over the course of history, a multitude of pandemics have had a significant impact on economies, causing disruptions in labour markets, supply chains, and international trade, among other aspects. An exemplary instance is the Spanish Flu of 1918, an epidemic that precipitated an extensive worldwide economic recession. The severe labour scarcity caused by the high mortality rates during the Spanish Flu had a profound effect on productivity in numerous sectors. In contrast, the economic repercussions of the H1N1 pandemic that occurred in 2009 were comparatively less severe, albeit accompanied by supply chain disruptions and setbacks in sectors such as travel and tourism. Furthermore, the 2002–2003 SARS pandemic, which primarily targeted Asia, caused significant disruptions to global commerce and left enduring economic consequences for the regions that were impacted.

Multiple factors set apart the ongoing investigation titled "Impact of COVID-19 on the Economic

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Growth of Developing Countries: Evidence from the Readymade Garment (RMG) Sector in Bangladesh." To begin with, the current global economy is distinguished by an unparalleled level of interdependence, encompassing intricate trade networks and complex supply chains. In contrast to pandemics of the past, this study investigates how global connections exacerbate the effects of COVID-19 on developing economies such as Bangladesh. Furthermore, the pervasive implementation of technology in the present day enables specific industries, such as the RMG sector, to adjust to the demands of remote work and operational complexities. In conclusion, specific policy responses have been implemented by governments and international organisations in an effort to alleviate the economic repercussions of the COVID-19 pandemic. Comprehending these responses is of the utmost importance in evaluating the distinct obstacles encountered by developing nations; they offer a nuanced viewpoint on the peculiar characteristics of the present economic environment as opposed to past pandemics.

SARS, or severe acute respiratory syndrome, is a virus. It belongs to the family of viruses known as coronaviruses. Normally, it affects the bodies of animals, but in certain conditions, it can also affect the bodies of people (WHO, 2021; Al Masud et al., 2023). This virus, now known as a coronavirus, preys on human respiratory systems. Middle East Respiratory Syndrome (MERS), Extreme Acute Respiratory Syndrome (EARS), and SARS are all examples of the group of viruses known as coronaviruses that can result in fatal infections (WHO, 2021; Hossain et al., 2023). Recently, it has spread around the world, impacting 109.7 million people, killing over 2.41 million people, and increasing every day. By November 16, 2021, Bangladesh had 541,038 active cases, 488,000 total recovered, and 8,285 total deaths due to COVID-19, where the total tested was 1,037,323 (worldometer.info, 2021). It had initially spread from Wuhan, China. It quickly spread over the world, and today the coronavirus is present in 219 countries, including Iran, Italy, Brazil, China, France, Turkey, Russia, and the United States (worldometer.info, 2021). Typically, the virus causes pneumonia-like symptoms in the lower respiratory tract (Fahriani et al., 2022; Gazi et al., 2023). The coronavirus is primarily spread through tiny respiratory droplets produced by coughing, sneezing, or speaking to another person within a distance of 1 foot to 6 feet (WHO, 2021). This study will concentrate on COVID-19's economic effects on RMG sectors in Bangladesh. Bangladesh's RMG sector makes a major economic contribution and helps the nation achieve its goal of leaving the LDC category by 2024 (Gautam et al., 2022; Hossain et al., 2023). RMG will also be crucial in this. This study's key purpose is to achieve three goals. This study will first look at whether Bangladesh's RMG sector has benefited or suffered as a consequence of the COVID-19 epidemic. Second, this analysis will emphasize the actions taken by the RMG sector to address the pandemic and the issues they encountered.

The paper is structured in a coherent and orderly manner. Section 2 lays the groundwork by examining pertinent literature. Section 3 provides a detailed description of the data sources and methodological approaches used. Section 4 focuses on the core of the inquiry, presenting and carefully analysing the empirical data and discussion. Section 5 concludes the discussion and provides a concise summary of the main points.

Literature Review

COVID-19 has wave impacts on millions of garment workers and businesses along the supply chain (Saleheen & Habib, 2022; Nabi et al., 2022). The universal garment sector nearly collapsed in the second half of 2020, mostly in Asia, with 70% of buyer contracts being cancelled (ILO, 2020; Hossain & Alam, 2022). Bangladesh relies on oven-ready apparel for occupations, overseas reservations, and female authorization (Islam et al., 2021). Bangladesh's 11.2% GDP originates from garments. With 61% female employment, RMG is vital to female empowerment and gender equality. " Bangladesh exports 62% to the EU and 21% to the US and Canada, which is unusual (Asian Development Bank, 2021). A statewide

lockout, a reduction in global economic commerce, and buyer command abandonment have hampered Bangladesh's RMG sector (Bhattacharjee et al., 2021). In April 2021, Bangladesh Garment Manufacturing and Exporting Association (BGMEA)'s 900 million garment order samples totaling \$2.9 billion were cancelled or delayed (Dhaka Tribune, 2021), and BKMEA's orders worth more than \$3 billion were cancelled until July 2020 (Bhattacharjee et al., 2021). From March 2002 to May 2021, the exported value of RMG decreased 54.8% from \$8.2 billion to \$3.7 billion, with 1150 enterprises claiming that the denial of \$3.18 billion in agreements had an impact on 2.28 million employees (Karim & Shaw, 2022). Bangladesh promised exporters 5,000 crore (Kozłowska, 2020). On February 11, 2020, the WHO named the new disease COVID-19. Chinese Virus, Kung Flu, Wuhan Coronavirus was its previous name (WHO, 2021; Gazi et al., 2022). This pandemic is crippling economies everywhere. It is inevitable that the new coronavirus epidemic had a significant impact on the economy and society (UNCTAD, 2021; Lim et al., 2023). The worldwide transmission of this current coronavirus could cause a global public health epidemic, Stopped manufacturing, travel, and supply lines threatens the world economy. (UNCTAD, 2021).

The COVID-19 pandemic's effect on the economic progress of emerging nations, namely in the Readymade Garment (RMG) industry in Bangladesh, has garnered increasing attention from scholars. Authors such as (Kozłowska, 2020) and have emphasized the complex issues that developing nations confront in the global economy due to the epidemic. They specifically highlight vulnerabilities in global supply networks. Hossain and Alam (2022) conducted additional research that explores the distinct obstacles faced by emerging nations, such as trade disruptions and financial weaknesses, which directly hinder economic progress. With a specific focus on Bangladesh's Ready-Made Garments (RMG) sector, research conducted by (Karim & Shaw, 2022) emphasizes the industry's crucial significance in the country's economy. Therefore, it is essential to evaluate both the immediate and long-term impacts of this sector. The research conducted by (Rahman, 2022) provides a comprehensive analysis of the direct consequences, such as the closure of factories and disruptions in the supply chain. Furthermore, the literature proposes investigating the government's responses and interventions, as described by (Hossain & Alam, 2022) in order to comprehend the actions done to reduce the economic consequences on the RMG sector. According to (Munim et al., 2022), it is essential to comprehend the lasting consequences and adjustments in the RMG sector in order to evaluate the overall economic resilience and growth path of developing countries in the post-pandemic period. This research review aims to contribute to a thorough knowledge of the subtle consequences of COVID-19 on the economic growth of developing nations, specifically focused on the RMG sector in Bangladesh.

Methodology

This investigation considers RMG Bangladesh's actions and endowments. In Bangladesh, the ready-made garments (RMG) area has a greater ability than anything else to decrease hardship and boost the overall economy by creating jobs and bringing overseas currency (Saha et al., 2021). Bangladesh's 2020–2021 export revenue of USD 34.13 billion was 84% RMG. Bangladesh is the second-biggest RMG supplier after China (Annaldewar et al., 2021). RMG has struggled in Bangladesh despite its economic importance (Hossain et al., 2022). Politics, strikes, and incidents have plagued this industry since the 1980s. After the 2013 Rana Plaza collapse, global companies and shops have joined forces to protect employee health and safety (Khan & Rammal, 2022; Gazi et al., 2022). European and North American retailers founded the Bangladesh Agreement on Building and Fire Protection and the Coalition for Bangladesh Labour Protection in 2013. Since then, RMG industrial safety has improved and incidences have decreased (Russon, 2021). The Accord-Alliance will manage inspections, endowments, and workplace empowerment for five years (Swazan & Das, 2022). The Accord and Alliance ended in 2018, but members continued to promote regional institutions. On June 1, 2020, the RMG Stable Cabinet

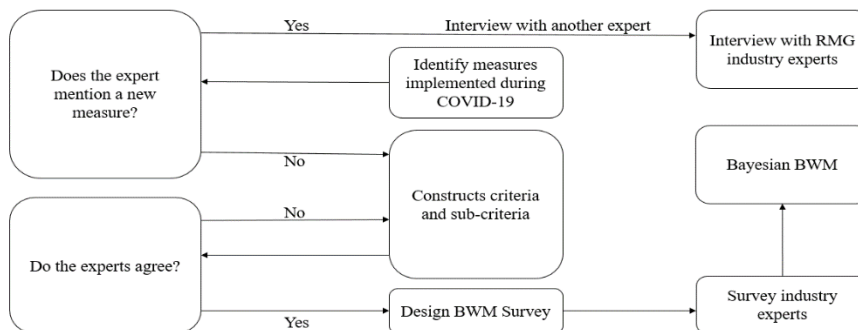
(RSC) obtained Bangladesh's agreement ministry (Perera, 2020). The table below lists study participants:

Table 1: Overview of Interview Participants.

Serial	Title	Education	Workers	Experience years	Firms Origin
1.	Manufacturing Planning Administrative	Master Degree	+10000/	5	MNC of South Korea
2.	Chairman	Bachelor Degree	+200/	10	Bangladesh
3.	Senior Dealer	Bachelor Degree	+28000/	9	Bangladesh
4.	Managing Director	Master Degree	+3000/	21	Bangladesh

COVID-19 has exposed the industry again, despite its apparent success. RISC (Regulating International Supply Chains) produced research on COVID-19's early and predicted implications for Bangladesh's RMG business (Rahman, 2022; Hossain & Alam, 2022; Gazi et al., 2022). The research addresses some of the industry's biggest issues, such as global brands cancelling orders, disrupting suppliers' finances, and limiting workers' lives (Munim et al., 2022). COVID-19 threatens Bangladesh's four million RMG workers' income, health, and safety. This research examines Bangladeshi RMG enterprises' strategies to continue operations throughout the pandemic (Islam & Halim, 2022; Ismail et al., 2023).

Figure 1: Conceptual Framework.



Survey Design

This study has three phases. Preliminary interviews with RMG experts determine a COVID-19 pandemic therapy list. The BWM survey and corporation-specialized data collection are the second steps (Htwe, 2020). Finally, the Bayesian BWM evaluates our data. Fig. 2 shows the study's three-stage process. We interviewed many industry specialists using purposive sampling to learn about COVID-19 factory operations. The BWM survey and corporation-specialized data collection are the second steps (Htwe, 2020; Nabi et al., 2022). Finally, the Bayesian BWM evaluates our data. Table 2 shows the study's three-stage process. We interviewed many industry specialists using purposive sampling to learn about COVID-19 factory operations. Interviews were sequenced. We sought supplier, staff, and buyer actions (Glavee-Geo et al., 2021). After the interview, we set metrics based on these three criteria. The second interview verifies and adds measurements. Four interviews were conducted similarly. Table 1 alphabetizes interviewees. Interviews lasted 45–75 minutes.

After interview classification, data saturation occurred, so no additional measures were added. As a result, we went through the complete 18 measures that were discussed by all four attendees in two iterations of a repetitive procedure, including providing in-building housing for employees and using cell phones to pay remuneration, and eliminated them due to a lack of execution (Chanyasak et al., 2021; Al

Masud et al., 2021). The BWM survey design is implemented when the four interviewees confirm classification. We grouped indicators into three categories: supplier, employee, and buyer. Table 2 lists the standards and substandards and Table 3 shows the overview of the respondents.

Table 2: Standard and Sub-Standard Consistent Lists.

Standard	Sub-Standard
Measures related to Suppliers	S1. Look for other regional or international sources. S2. Enlarged reliance on regional vendors. S3. Taking previously outsourced house activities. S4. Use digital technology to collaborate with vendors (for instance, producing clouds). S5. Reduce the number of products that must be transported.
Employee-Related Measures	E1. Make sure patients stay secure (such as in musk-free handwashing booths, heat monitoring booths, and purification booths). E2. The worker's journey should be minimized. E3. During working hours, provide staff with meals (lunch). E4. Working or factory hours should be reduced. E5. Continue to provide employees the same salary and benefits as before COVID-19. E6. Plastic between two production lines ensures social separation.
Measures related to buyers	B1. Assure that previous orders are delivered on time. B2. To reduce order cancellations, provide a lower. Current orders per unit price (35-50 percent). B3. Provide favorable terms for new orders (e.g., a longer payment cycle, a price reduction). B4. Contracts for post-epidemic supplies should be negotiated with customers. B5. COVID 19-related new goods, such as pipes, are now available.

Table 3: Overview Of The Respondents.

Respondent	Company size	Company Age (Year)	Accord- Alliance Participant	Credentials of ISO 9000	Education	Expertise	Experience years
1	Medium	10	No	No	Master Degree	Marketing & Sales	More than 10
2	Medium	10	No	No	Master Degree	Marketing & sales	More than 10
3	Large	20	Yes	Yes	Bachelor Degree	Marketing & sales	7-10
4	Large	15	No	No	Bachelor Degree	Supply Chain Management	7-10
5	Large	46	Yes	Yes	Master Degree	Marketing & Sales	1-3
6	Large	21	Yes	Yes	Bachelor Degree	Supply Chain Management	4-6
7	Large	15	Yes	Yes	Master Degree	Production & Operations Management	4-6
8	Large	34	Yes	Yes	Bachelor Degree	Production Planning & Coordination	1-3
9	Large	20	Yes	Yes	Master Degree	Production & operations Management	4-6
10	Medium	18	Yes	Yes	Bachelor Degree	Production & operations Management	More than 10
11	Large	34	Yes	Yes	Bachelor Degree	Production & operations Management	More than 10

Data Collection

Authentic journals, publications, web sites, policy analysts, media stories, press releases, and more provided information. Google Scholar and Research Gate searched academic papers. December 2021–February 2022 were the searches. "The research aims to provide a brief overview of Bangladesh's pandemic affected by the garment industry scenario" (Rahaman & Islam, 2021). Information gathering and literature analysis are important online (Annaldewar et al., 2021). (Antoniadis et al., 2022; Hossain et al., 2021). Newspapers are used during COVID-19 because no other RMG sector data is available (Ali et al., 2021; Hossain & Alam, 2022).

We created a BWM survey after establishing standards and substandards. BWM and MCDM surveys are more sophisticated than Likert-scale surveys (Munim et al., 2022). The biographers' RMG contacts in Bangladesh and executive RMG industry Facebook and LinkedIn groups received the inquiry. A virtual poll was the best option to collect data while the country was under government lockdown and gatherings were outlawed (Islam & Halim, 2022).

Analysis and Discussion

In this part, the categorization of applied factors calculated with the Bayesian BWM is provided. In every issue, a balanced, ordered graph is constructed. Any margin between A and B with an assurance level of d denotes that A is greater than B. Such a graph represents criteria, and their standard weights correspond to the w^* allocation's mean. Thus, the graph's every margin displays a rack placing orders, and the graph represents an assortment of standards' credal positions. Thus, we start with the conceptual placement of the primary requirements, displayed in figure 2. Buyer-related evaluations were taken most often (0.38705), subsequent to worker-related determinations (0.32628) and provider-related evaluations (0.32628) and (0.28667). With 0.91 confidence, buyer-associated estimates were more commonly executed than provider-associated actions. Employee-associated estimates were with 0.78 confidence, and provider-associated estimates were with 0.72 confidence. For clarity, we can use a 0.70 circuit to specify hardy confidence. Confidence based on probability scars border the figure. Since the purchaser-related measures have been frequently carried out, we rank them locally in Figure-2. The most significant step is quick fulfilment of current orders (0.24543), followed by providing reductions to current buyers to decrease cancellations of orders (0.2051) and appealing conditions for new purchases (0.22051). (0.18518). Using 0.70 criteria, ensuring smooth shipment of prior purchases was much more implemented than other purchaser-related actions. Figure 3 shows the executed measures' connections in various colours.

Figure 2: Buyer-Related Measures that Have Been Put in Place Are Ranked.

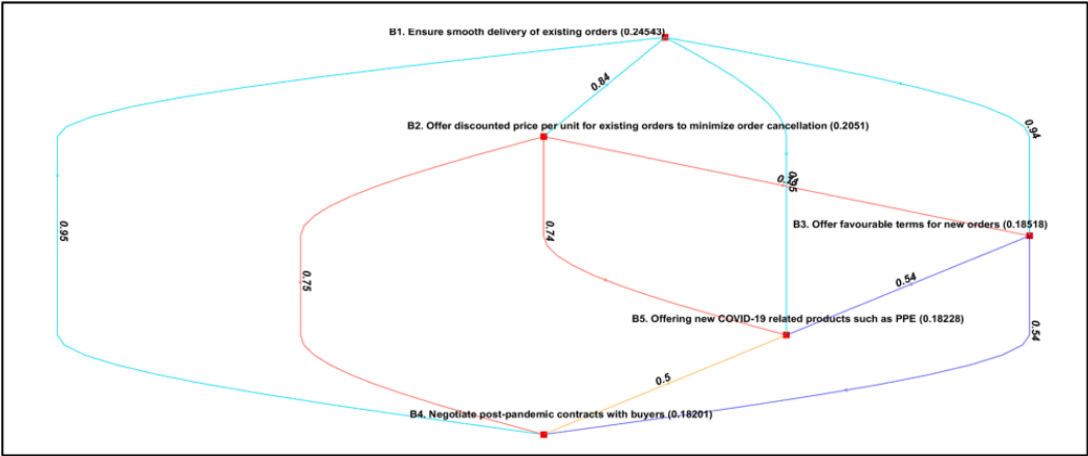


Figure-3: Employee-Related Measures that Have Been Put Into Place Are Ranked

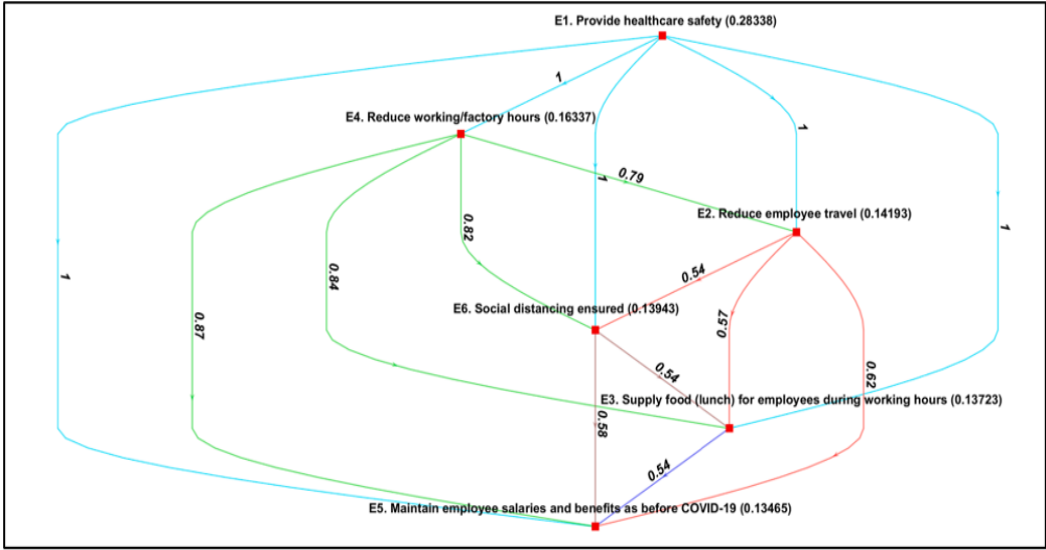


Figure-4: Displays Local Provider-Related Initiative Rankings.

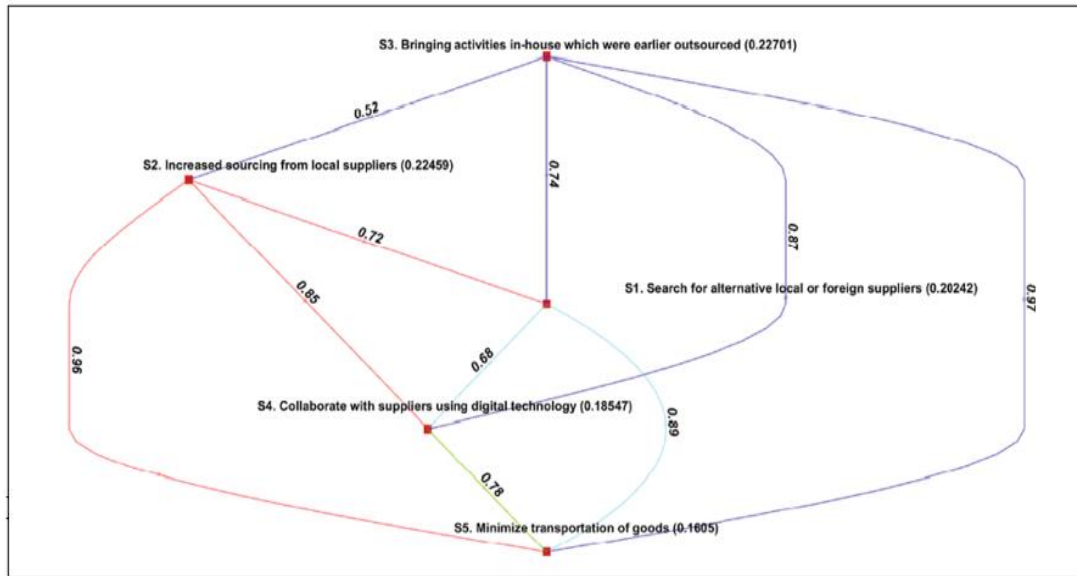


Figure 4 ranks employee-related measures locally. Healthcare safety for employees and workers (0.28338), cutting functioning/industry schedule (0.16337), and decreasing employee journey (0.13943) were the three most often taken actions under this criterion. Healthcare safety was the best-executed category, with confidence values ranging from 0.99 to 1.00. Figure 5 ranks supplier-related efforts by locality. The most common strategy was insourcing (0.22701). RMG makers increased their purchases from local vendors (0.22459) and aggressively sought substitute providers in domestic and overseas marketplaces (0.20242). When seeing the 0.70 circuit (0.52), carrying house operations were more executed than other provider-associated strategies.

Figure-5: The Implemented Measures Are Ranked Globally.

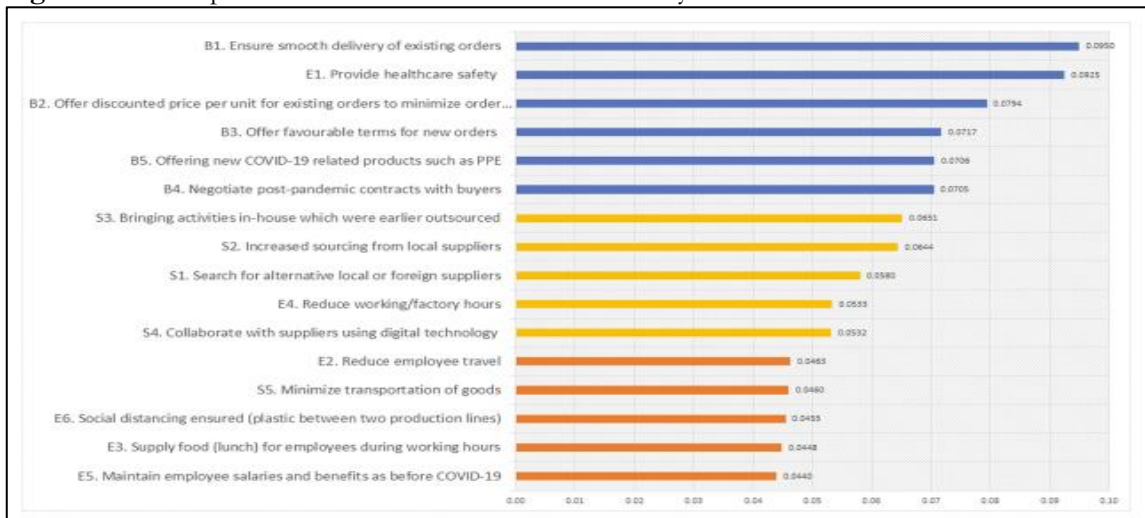


Figure confidence score matrices are in Tables 1–3 in the Appendix. Worldwide ordering of the 16 completed measurements is calculated by multiplying factor-level values by channel-criteria-level

regional values. Figure 5 shows the worldwide ranks. Managing workers pay and advantages before COVID-19 remains the procedure with the lowest adoption rate (0.0440), whereas ensuring seamless order fulfilment is the most implemented (0.0950).

COVID-19's effect on Bangladesh's Economy

The impact of COVID-19 on Bangladesh's economy is debated (Ali et al., 2021; Gazi et al., 2023). The World Bank and IMF are concerned about the current fiscal year's economic growth, which is likely to exceed 2.0 percent. Their prediction seems reasonable given developed and developing countries' declining growth. The government remains optimistic about the economy (Staritz & Whitfield, 2020; Al Masud et al., 2021). COVID-19's duration, spread, and government response will determine Bangladesh's economic damage. COVID-19 has harmed the world economy. Bangladesh follows suit (Gautam et al., 2022). As Dhaka prepares to leave the list of least developed countries in 2024, the pandemic will affect its economic strategies from a short-term perspective, according to an official document (Sifa et al., 2021). In 2020–21, Bangladesh will pay \$55.3 billion in loan interest. 68.1 billion taka in fiscal 2021–22 and 80.9 billion taka in fiscal 2022. Total 37.9% of the overall external debt will be Tk 5122.9 billion in 2021–22 (Staritz & Whitfield, 2020). The debt will be Tk 13,531.5 billion. 37.8% of GDP. 62.1 percent—Tk 8408.6 billion—will come from internal sources (Hossain et al., 2021). 36.8% of GDP. Interior roots donate Tk 7355.5 billion (63%) and foreign roots donate Tk 4322.8 billion (37%) (Staritz & Whitfield, 2020). "The Export Promotion Bureau of Bangladesh (EPB) reported that March export revenues were 44.14 billion takas (460.5 million, 520 million), down from 256.66 billion (2.68 billion, 3.03 billion) last year.

In the first two months of the lockdown, COVID-19 had a significant economic impact on Bangladesh (Hossain et al., 2021; Amin et al., 2020). The economic impact has been felt through three main channels: a drop in domestic economic activity following the March 26 shutdown; a drop in exports of ready-made garments, which account for more than 80% of Bangladesh's exports and have been severely impacted; and a drop in overall exports, which fell by 83% in April (Munim et al., 2022). Finally, the pandemic and falling oil prices have reduced Bangladeshi remittances from Middle Eastern countries (Table 4).

Table 4: Bangladesh Economy Five-Year Comparisons (Nordea, 2022)

Main Indicators	2018	2019 (e)	2020 (e)	2021 (e)	2022 (e)
GDP (billions USD)	264.020	303.540	327.760	338.380	37.570
GDP (Constant prices, annual % change)	8.90	7.20	3.80	5.40	8.90
GDP per Capital (USD)	1e	1	1	1	2
General Government Gross Debt (in % of GDP)	35.60	38.80	37.60	42.90	43.30
Inflation rate (%)	5.80	5.50	5.60	5.90	5.50
Current account (billions USD)	-8.570	-6.100	-5.850	-8.330	-6.080
Current account (In % of GDP)	-2.50	-2.70	-3.50	-1.80	-1.40

Source: The IMF's World Economic Outlook Database, October 2021. Note: (e) Estimated Data

According to the World Bank, 15% of Bangladesh's population earns more than \$6 a day, and more than 90% of labour is in the informal sector (Htwe, 2020). After the March 26 statewide lockdown, millions of rickshaw drivers, day labourers, and factory workers fled to their villages, leaving Dhaka's streets empty (Iraq, 2021; Amin et al., 2020). The government's 66 days of general holidays to fight the coronavirus cost about 36 million jobs, according to the Bangladesh Economic Association (BEA).

To cut costs, large ready-made garment (RMG) companies that buy from Bangladesh are closing doors, many permanently (Swazan & Das, 2022). H&M, Gap, Zara, Marks & Spencer, and Primark stores have all closed, even though they are all major buyers of Bangladeshi RMG products. RMG exports fell 54.8 percent from March to May 2020, to USD 3.7 billion, from USD 8.2 billion in the same period in 2019.

During this time, 1,150 factories reported order cancellations or suspensions totaling USD 3.18 billion, affecting approximately 2.28 million workers in the industry (Iraj, 2021). Since COVID-19's implementation, global purchasing has come to a halt as individuals do not spend on luxuries. Then, remittances sent by migrant workers, the other pillar of the Bangladesh economy, will undoubtedly suffer. The overwhelming majority of Bangladesh's 10 million foreign employees reside in the Near East, the US, the UK, and Malaysia (Htwe, 2020). As a result of travel bans, recessions in the economy, and deadlines in host nations such as Saudi Arabia, the United Arab Emirates, Qatar, Kuwait, Malaysia, the US, and the European Union, salaries are decreasing. The oil price decreased, and the Gulf States' industries declined to a halt (Khan et al., 2020). This caused concern in Bangladesh about the value of remittances.

Indeed, exports in April and May 2020 were only 29% of what they were in the identical era in 2019. Remittances for the identical era were 82% of what they were in 2019. The world after COVID-19 will never be identical. "Through new interfaces, the new normal may bring about changes in lifestyle, purchasing behaviour, and business practices (Echegaray, 2021). The post-pandemic solutions to the unique problems we are facing as a result of this pandemic may lay the groundwork for many business ideas and shape the future of our e-commerce industry in the coming years.

Bangladesh's economic growth has two perspectives (Russon, 2021; Nabi et al., 2022). Exports, private investment, government investment, and non-development government spending are the main drivers. As Western apparel sector news worsens, exports are unlikely to rebound until 2021 (Khan & Rammal, 2022). Private investment will not revive quickly in the coming year; domestic sales will be slow to indicate good returns for new investment; export capacity investment is premature; and banks are loath to issue SME or consumer loans due to interest rate limitations. The good news is that Bangladesh may be one of only two ASEAN and South Asian countries to develop in 2020, when the globe is virtually surely doomed to a severe recession caused by the coronavirus pandemic (Khan & Rammal, 2022). After the 2020 Bangladesh Global Research Briefing, South Asia Chief Economist Edward Lee and Standard Chartered's ASEAN said this: The worst may be gone, according to Standard Chartered's top economists.

According to a recent Asian Development Bank estimate, Bangladesh's GDP is predicted to expand 6.8% in 2020–21, while the governmental objective is 8.2% (Russon, 2021). The ADB reports a progressive improvement underpinned by a solid industrial foundation and expansion of export markets (Erman et al., 2021). The ADB's country director, Manmohan Parkash, announced that the government handled the dilemma "with appropriate economic stimulus and social protection measures". After the spring shutdowns, garment orders have rebounded, helping the Bangladesh economy (Khan & Rammal, 2022; Nabi et al., 2022). The country's primary export industry, apparel, expects US and other big-market Christmas orders. Remittances from Bangladeshi workers overseas have also rebounded, easing the spring epidemic quasi-shutdown (Erman et al., 2021). The Asian Development Bank expects economic growth. In the fiscal year ending June 2021, the GDP should grow 6.8% if current conditions prevail. However, recovery is visible. However, issues have arisen (Russon, 2021). The following few months will define the rehabilitation timeframe. Everyone encounters that incomparable question.

Covid-19 impacts on garments sector (RMG)

Bangladesh is the second-largest apparel producer. 4 million people—80% women—are directly involved. Before Corona, the apparel business faced many challenges. A bargaining impasse occurred, and orders are falling (Munim et al., 2022). Financial and infrastructure issues affected many garments. Industry shortages are long-term. The Rana Plaza collapse and Tazmin garment fire damaged the industry's reputation. COVID-19 has complicated this sector (Perera, 2020). Due to global market uncertainty and the European and US economic slowdowns, RMG shipments dropped. The US-China trade war is raising production costs and weakening dollar values, among other things (Apcho-Ccencho

et al., 2021). Utility shortages and high prices reduce manufacturing. The global market's price has plunged, resulting in undesirable effects.

Global issue. Poverty, hunger, and other challenges were considered (Rahman, 2022). New dresses are inappropriate. In March and April of last year, BGME's president reported cancelling three billion orders. Despite the issues, RMG industry entrepreneurs want to move forward, which requires effective actions from many stakeholders (Rahman, 2022). Bangladesh got its first COVID-19 patient on March 8, 2020. The administration and others misunderstood the issue. After March 17, the government declared general holidays (Perera, 2020). All public and private institutions sounded alarms. The garment industry also closed. Post-event possibilities are scarce. The results:

Corona Age 2020. It exacerbates the world's instability. Detailing daily activities. It changed many lives (Ngo et al., 2022). Economic collapse. Luxury and uniqueness must be given up. Disasters have plagued Bangladeshis. Closed factories. Export income fell (Kumar et al., 2021). Rubana Huq reported 3 billion cancellation orders in March, April, and May (Russon, 2021). Exports fell by 28.5%. RMG exports make Bangladesh money (Swazan & Das, 2022). In recent years, a difficult situation has evolved. We lost 28.5% of our export revenue last year. Covis-19 worsened it. Since the main revenue source has declined, garment exports have fallen, and the COVID position has grown more problematic (Swazan & Das, 2022). Rubana Huq, BGMEA President, said RMG exported 27.50 billion dollars this year. Rubana Huq, Bangladesh Garment Manufacturers and Exporters Association (BGMEA)'s president, said RMG exported 27.50 billion dollars this year (Swazan & Das, 2022). Due to global market uncertainty and weak European and US economies, RMG exports fell (Islam & Halim, 2022). The US-China trade war, higher production costs, and dropping dollar values are among the factors. Excessive costs reduce productivity more than the absence of utilities (Swazan & Das, 2022). International market prices have declined, resulting in unfavourable results (Mostafiz et al., 2022).

Non-RMG product export earnings for FY'20's April-June quarter were: agriculture (2.98%), leather and leather products (2.32%), frozen food (1.09%), jute goods (2.02%), raw jute (0.25%), chemical products (0.86%), and other manufactures (8.66%) (Kozłowska, 2020). In the fourth quarter of FY'20, woven clothing exports were USD 1892.02 million, down 56.31% from the earlier quarter and 53.79 percent from the previous year. The quarter's export target for woven garments was 61.67 percent lower. Quarterly export earnings from woven clothes are shown (Islam & Halim, 2022). At US\$2.59 billion, woven product exports declined 7.06 percent. The growth rate plummeted to -84.5 percent in April 2020 after February 2020. In April 2020, the growth rate began to recover, rising to -9.89% in June 2020 from -84.5% in April (Perera, 2020). The woven sector generated US\$2.79 billion in July-August 2019-20, growing 9.51 percent.

Bangladesh's major industry, knitwear, gained 6.64 percent in August. The knitwear industry generated USD 1953.45 million in the fourth quarter of FY'20, down 47.89% from the previous quarter and 52.21 percent from the same quarter the year before (Rahman, 2020). Knitwear exports are 59.37% below the quarterly goal (Swazan & Das, 2022). Knit exports grew over 10% in July. After that, the production rate reduced to -89.7% in April 2020, then increased to -3.41 percent in June 2020, showing that the knit wing of the RMG company will improve (Uddin, 2022). Treatable COVID-19 patients have increased. The vaccine programme also started. Last year, the government proclaimed national holidays (Islam et al., 2021). All businesses halted operations. Everyone should know the health rules. Poor people suffered more (Nundy et al., 2021). They preferred starvation to COVID-19.

Manageable COVID-19 patients have grown. The vaccine programme has accelerated things. Last year, major events proclaimed the nation's demise. (Nundy et al., 2021). Everyone should follow health and wellness guidelines. However, the poor have suffered longer (Green et al., 2021). They preferred

starvation to COVID-19. During the Corona Virus, many third-world countries, including Bangladesh, struggled to meet large population demands and wants (Nundy et al., 2021). Lack of jobs harmed the poor. The economy suffered. People then return to work.

According to World Bank information, just 15% of individuals make over Tk. 500 (5.90 dollars) a day to cover their needs. Bangladesh could experience the worst humanitarian disaster with an extended lockdown (Rahman et al., 2021). Due to rising consumer goods prices, the Inter Press Service (IPS) calculated that poverty earnings decreased by 80% in April and March, worsening the suffering of 7 million residents in slums. As an agrarian society, there is an enormous need for periodical workers in the grain firm, which is not reaching its peak nowadays. Because of being shut down, grains are unfavourable, and cultivators do not get their decent rates, which hurts the country's revenue." 20 percent of Bangladeshis depend on cattle and poultry; thus, the government is giving farmers \$589 million (Islam, Talukder, A.K., Siddiqui, & Islam, 2020). Mr. Abdus Salam Aref, a former secretary-general of the Bangladesh Travel Agents Association, claims that outbound and inbound tourists dropped by 70 to 80 percent and 35 to 40 percent on the first week, respectively, and were predicted to fall by 70 to 80 percent for inbound tourists at the end of March, which would impact the aviation and tourism industries (Sufian & Hoque, 2022).

This pandemic is causing depression, trauma, frustration, and despair. The number of unemployed rises daily, with the average workforce unemployment rate at 4.4 percent (Lai et al., 2021). About 70 percent of the population lives hand to mouth, and per-person earnings fell by 82 percent at the beginning of April to 0.32 dollars, down from 1.30 dollars in February due to COVID-19 for disadvantaged Bangladeshi citizens (Siam et al., 2021; Gazi et al., 2023). On March 9, 2020, the Dhaka stock exchange lost 279.32 points (6.5 percent), the most in 6–7 years. Since most raw materials come from China, the pandemic has prevented many factories from supplying ships with raw materials on time, which has affected our domestic market. Bangladeshi importers must wait or find alternatives as Wuhan, known for motorcycle parts, expands first (Raj et al., 2022). At the beginning of March, 894,931 jobs will be lost, wiping 3.02 billion dollars out of 300 billion dollars plus the economy and affecting the export industry and global exchange due to less raw material availability (Gupta et al., 2022). The EIU is hesitant to cut GDP by 4% next year. After the outbreak, unemployment, liquidity, export status, food shortages, factory closures, and others must be addressed. To alleviate the issue, Bangladesh's government has launched different aid packages in various areas.

Covid-19 and RMG Sector in Bangladesh

The economic crisis and employment market have been greatly impacted by COVID-19 (Yu et al., 2021). The pandemic has shut down all economic markets, including aircraft, public transportation, and consumer products (Tan et al., 2021). Bangladesh is not as afflicted as America or Italy, but the numbers are rising, shutting down most industries (Adler et al., 2022). Orders are being cancelled by importers and buyers. a year ago's garment exports were 26.23 billion (4.9 percent) greater than this year's in the same month, and only in February did exports dip by 3.31 billion (Munim et al., 2022). If this situation continues, global supply and demand will be disrupted, with revenue losses exceeding \$4 billion (Yu et al., 2021). The Export Promotion Bureau said that garment exports declined by 14.09 percent, woven garments by 14.32 percent, and knitwear by 13.85% from July to April 2020. Bangladesh's largest export industry, the garment industry, has grown significantly in the past two years (Kaniz Farhana et al., 2022). "The garment industry has given rural workers who had no organised workforce jobs. It reduces poverty, promotes gender equality, and boosts society. Bangladesh's corona outbreak prompted an indirect lockdown on March 26, 2021, which was extended six times until May 30, 2021. Schools, colleges, universities, factories, transit, manufacturing, and farming infrastructure were closed.

Table 5: Employments Under Threat of Being Lost (The Business Standard, 2021).

Serial	Industry	Number of Employment in Threat
1	RMG	10.50 million
2	Dairy	10.20 million
3	Poultry	5.0 million
4	Transportation	5.0 million
5	Tourism	1.0 million

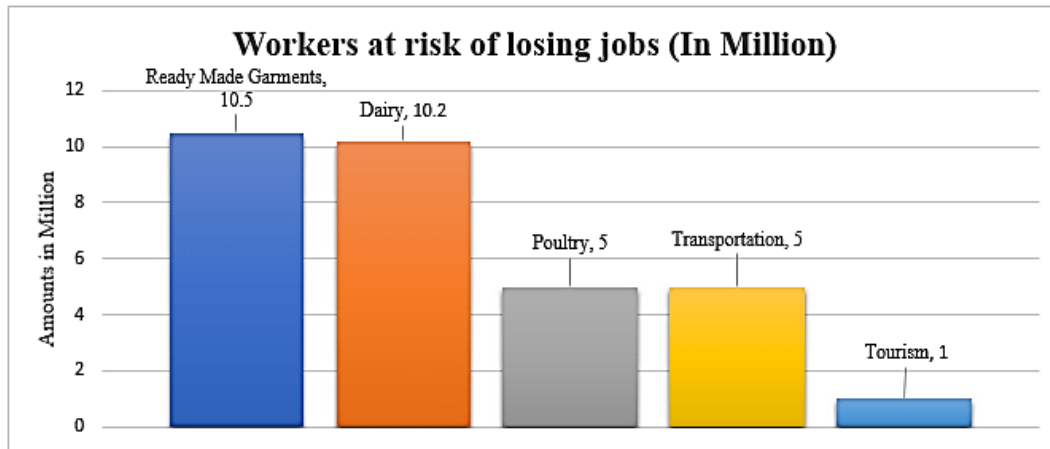
Figure 6: People Worldwide Face Job Losses (Source: Databd. Co., 2021).

Table 5 shows that many people in several areas face job loss. The RMG industry has the highest number of employees who could lose their employment. The COVID-19 epidemic could cost this business 10.5 million jobs.

Figure 6 shows that public transit is closed from March 16 to August 30, while millions are unemployed. Public activities and offices are closed. Security, emergency rooms, and clinics were opened (Chowdhury et al., 2022).

Topshop, Urban Outlet Stores, Asda, New Look, Sports Direct, Peacocks, and other significant businesses have withdrawn contracts for 3.4 billion US dollars in March and April. Bangladesh's exports were 84% garments before the outbreak. Employers aren't compensated. Sustainable Textiles of the Asian Region, or STAR, has attempted to coordinate a declaration by the clothing and accessory alliance of Bangladesh, Pakistan, Myanmar, Cambodia, Vietnam, and China (STAR, 2020; Nabi et al., 2022). Tanaz Fashion in Bangladesh has resolved to close its factory without payment or orders (Dhaka Tribune, 2021). The RMG Sustainability Council (RSC) managed 1600 textile manufacturers to gradually restore occupational safety measures and reduce COVID-19 damages (The Financial Express, 2020). 30% of BGMEA personnel recommended solely inviting non-industry workers to fix production units. The BGMEA inspection team found that over 50% worked on the position and 70–90% ignored COVID-19 instructions (The Financial Express, 2020). Profit plummeted 14% throughout the first ten months of the present fiscal year (July 19–April 20), the lowest in 50 years. May 2020 revenue is -55.7 percent. From March to June, 3.18 billion dollars were cancelled, with 982 million pieces and 2.28 million Bangladeshi workers at risk. Mackenzie estimates that Bangladesh's garments sector will lose 10 billion dollars, or 30% of COVID-19's 2020 damage. (BGMEA 2022). RMG exports, private investment, and COVID-19-related disruptions are likely to limit Bangladesh's GDP growth to 2.0 percent in FY 2019–2020, according to the IMF (Karim et al., 2022).

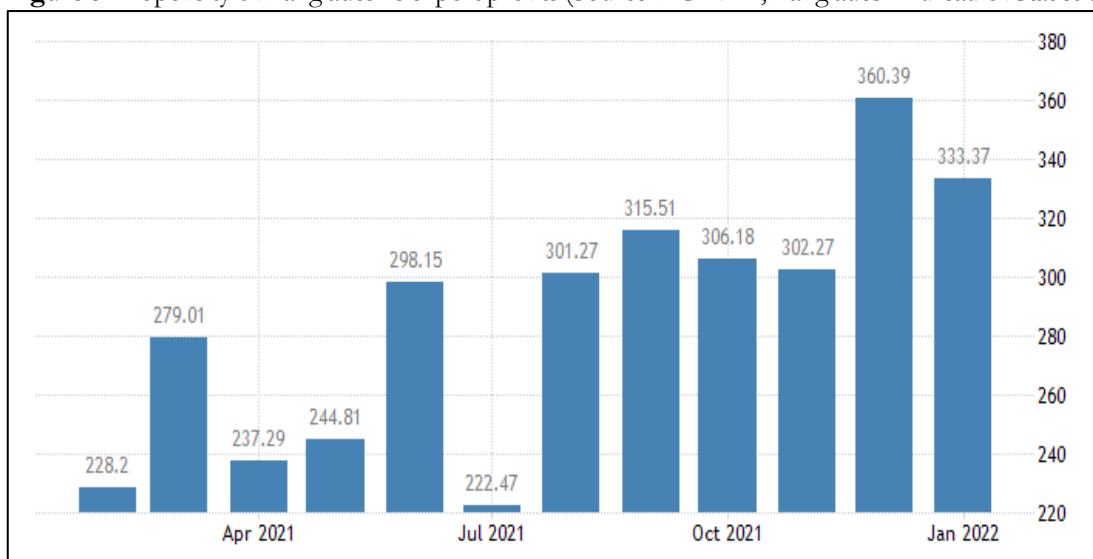
Figure 7: Propensity of Bangladesh's export profits (Source: BGMEA, Bangladesh Bureau of Statistics 2022)

Figure 7 shows Bangladesh's export profit pattern, with small ups and downs due to the economic crisis and a major increase in export growth over the past 10–15 years. Bangladesh's export potential makes it one of the developing world's fastest-growing economies. 1923 export earnings show a hopeful trend over the last 30 years. 1989–1990 saw a USD 7 billion revolution. In 2002–03, export growth suddenly slowed after ten years. Many export-oriented goods and the RMG market's growth are driving Bangladesh's export earnings (Bangladesh Bureau of Statistics, 2021).

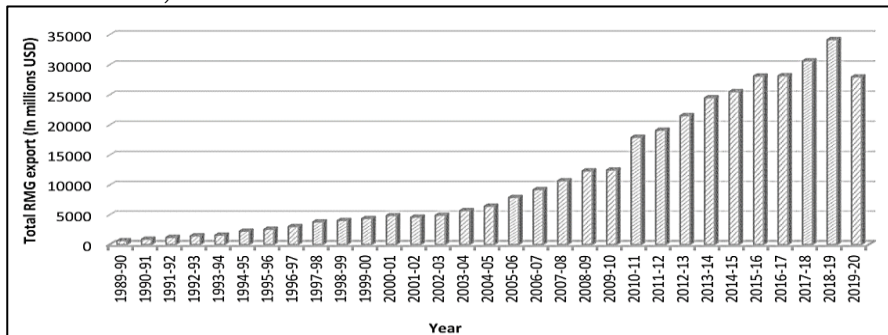
Table 6: RMG Exports Are Growing as A Percentage of Overall Exports. (Source: EPB, Bangladesh Bank, Compiled By BGMEA, 2022).

Year	Employment in million workers	Number of Garment factories	% of RMG to national export	Export of RMG (In million USD)
1990-91	0.34	759	40.96	624.16
1991-92	0.40	834	50.47	866.82
1992-93	0.58	1163	59.31	1182.57
1993-94	0.80	1537	60.64	1445.03
1994-95	0.82	1839	61.4	1555.78
1996-96	1.2	2182	64.17	2228.35
1996-97	1.29	2353	65.61	2547.13
1997-98	1.3	2503	67.93	3001.4
1998-99	1.5	2726	73.31	3783.63
1999-00	1.5	2963	75.67	4020.23
2000-01	1.6	3200	75.66	4352.39
2001-02	1.8	3480	75.15	4860.12
2002-03	1.8	3618	76.57	4583.8
2003-04	2	3760	75.01	4912.1
2004-05	2	3957	74.79	5686.09
2005-06	2.1	4107	74.15	6417.67
2006-07	2.2	4220	75.06	7900.8
2007-08	2.4	4490	75.64	9211.23
2008-09	2.8	4743	75.83	10699.8
2009-10	3.5	4925	79.33	12347.77
2010-11	3.6	5063	77.12	12496.72
2011-12	3.6	5150	78.15	17914.46
2012-13	4	5400	78.6	19089.69
2013-14	4	5876	79.61	21515.73
2014-15	4	4222	81.13	24491.88
2015-16	4	4296	81.68	25491.4

2016-17	4	4328	82.01	28094.17
2017-18	4	4482	81.23	28149.84
2018-19	4	4560	83.49	30614.76
2019-20	4	4621	84.21	34130.00
2020-21	4.1	4711	85.17	38133.00
2021-22	4.1	4823	85.19	39978.00

Table 6 shows Bangladesh's RMG market's potential export revenues. Numerous factories fueled RMG product production. RMG factories increased from 759 in 1990–91 to 4560 in 2020–21. RMG offers jobs to qualified and unskilled workers. In RMG industries, low-educated women dominate. Ready-made clothes employed around 4 million people in 2019–20 (BGMEA, 2022).

Figure 8: Trend of Bangladesh's RMG Export Earnings (Source: BGMEA, Bangladesh Bureau of Statistics 2021).



RMG's export revenues have grown, contributing significantly to Bangladesh's exports. Figure 8 shows RMG market export growth in Figure 12. more of Bangladesh's export profits The Export Promotion Bureau (2021) predicts 30615.75 million USD in readymade garment exports, 83.48% of Bangladesh's total.

Table 7: Export of Bangladesh RMG to major countries (Export Promotion Bureau, compiled by BGMEA, 2022)

Countries	Complete earnings from exports (In million USD)			Growth rate 2021-22 (%)
	2018-19	2019-20	2020-21	
USA	5452.07	6233.72	5246.53	-15.09
UK	3724.26	3859.15	3173.23	-17.77
Germany	5579.51	5840.91	4793.03	-17.94
Canada	963.15	1179.3	876.27	-25.7
Spain	2277.77	2407.13	2019.21	-16.12
Netherland	935.38	1024.46	872.21	-14.86
Japan	846.74	1091.43	961.94	-11.86
Poland	864.85	1180.88	1077.98	-8.71
Australia	634.01	719.78	601.14	-16.48
China	391.64	506.51	329.96	-34.86
Russia	427.93	488.58	440.88	-9.76
India	278.68	499.09	420.73	-15.7
Mexico	148.35	203.73	166.45	18.3
Brazil	158.38	160.51	106.63	-33.57

Table 7 forecasts Bangladesh's 2021–2022 RMG export growth rate and top export objective. The USA, Germany, the UK, and Spain are Bangladesh's main RMG export markets. Canada, the Netherlands, and others are interested in this field. Due to the economic crisis, RMG export revenues from the main export destination declined in 2020–21.

Figure 9: Import and Export Totals (By Month) (Source: Bangladesh Bureau of Statistics, 2022).

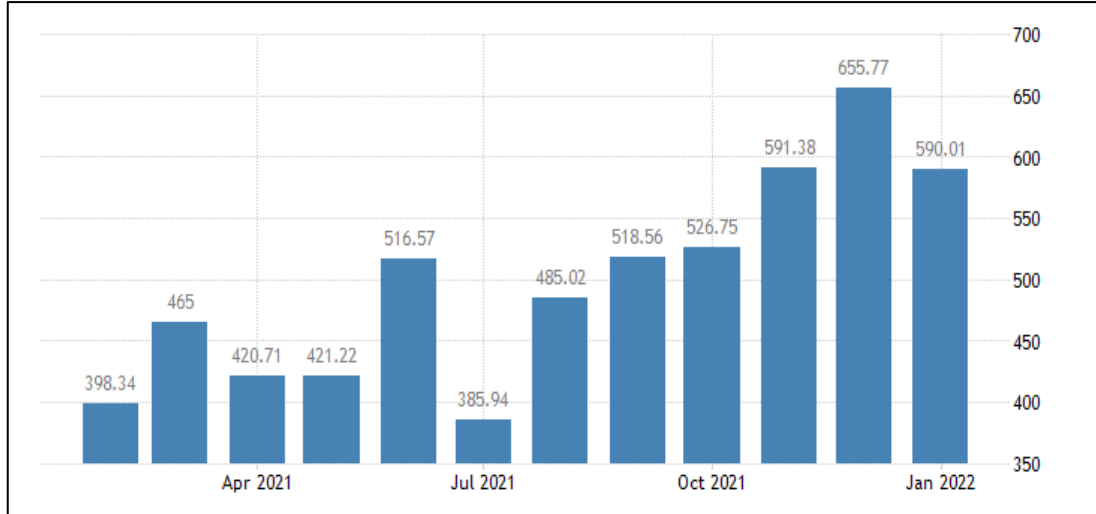


Figure 9 shows Bangladesh's 12-month export-import pattern. Despite a trade deficit, Bangladesh had a surplus in February 2022. The trade balance is shaky due to a huge trade imbalance, notably between March 2021 and March 2022 (Table-8).

Table 8: Bangladesh's RMG Exports to the Rest of the World for the Fiscal Years 2019-20 and 2020-21 (Source: Export Promotion Bureau, 2020-21).

Month	Overall exporting (Knit + Woven) 2019-20	Overall exporting (Knit + Woven) 2020-21	Growth rate (%)
July	3027.84	3320.58	9.8
August	2727.52	2416.11	-12.46
September	2466.61	2351.07	-5.7
October	3151.52	2529.22	-19.79
November	2863.21	2521.41	-12.98
December	2598.81	2935.33	1.26
January	3162.67	3049.72	-3.98
February	2958.97	2794.38	-4.28
March	2835.17	2366.2	-21.14
April	2549.38	375.77	-95.25
May	3253.28	1240.64	-63.06
June	2499.49	2250.36	-6.67

Table 9 shows RMG's 12-month export earnings. Bangladesh's economy suffers from RMG export revenues' decline. The study found that only 1143 factories were operational during the lockdown scenario, resulting in a notable decline in export growth for RMG export revenues and the cancellation of 970 million RMG goods worth 3.18 million dollars by April 20, 2021 (BGMEA 2022). These RMG export disparities panicked Bangladesh's export revenues during the pandemic. When 2.28 million RMG workers lose their jobs or have their earnings cut, the labour market panics. The COVID-19 pandemic undermines Bangladesh's export profits by hurting the RMG business.

Table 9: Brief View of RMG's Export Earnings for the Past Twelve Months (Source: Export Promotion Bureau, 2020-21).

Month	Woven Year		Knit Year		Total (Woven + Knit)	
	2019/20	2020/21	2019/20	2020/21	2019/20	2020/21
July	1732.42	1594.76	1778.26	1760.29	3510.58	3344.95
August	1173.33	1183.59	1292.69	1864.8	2486.01	2498.02
September	1091.90	1964.54	1949.39	1349.88	2371.07	2417.42
October	1161.69	987.50	1368.73	1368.22	2579.82	2723.72
November	1290.03	1170.12	1671.28	1354.47	2561.31	2644.59
December	1589.16	1251.05	1386.17	1389.82	2995.33	2690.87
January	1635.00	1399.23	1417.22	1472.94	3079.22	2868.16
February	1585.58	1282.65	1878.70	1552.64	2794.28	2695.29
March	1270.37	1147.48	1085.83	1372.43	2276.20	2554.91
April	197.55	1175.21	170.12	1371.77	374.67	2716.98
May	672.16	1290.58	609.38	1376.37	1260.54	2756.95
June	1085.31		1184.95		2340.26	
Total:	12985.88	13299.53	12753.05	15562.32	25758.93	28567.85

Corona reduced woven exports from July 2020 to March 2021. From July to December 2020, COVID-19 affects knitting. Improved since December. If the COVID-19 mortality rate drops, clothing exports should increase.

Conclusion

This study examined Bangladesh's RMG sector's economic impact from the COVID-19 pandemic. To assess RMG's economic impact, various economic indicators were discussed and analysed, including COVID-19's effect on Bangladesh's GDP growth, RMG's share of GDP, the export sector, cancelled orders, a deteriorating position in the international RMG market, factory closures, worker layoffs, and so on. Overall, COVID-19 hurt Bangladesh's RMG sector. RMG's contribution to Bangladesh's export earnings and GDP in FY2019–20 was the lowest in six years. Export earnings declined 18.45% year-over-year, missing the objective by US\$10 billion. Bangladesh lost \$3 billion in export orders and fell to second in RMG exports to Vietnam by \$2.11 billion.

Limitations of the Study

Although our study article provides insights into the effects of COVID-19 on the Readymade Garment (RMG) industry in Bangladesh, it is important to recognise certain constraints. First and foremost, the conclusions of the study are derived from the data that is currently accessible and may be affected by constraints in the data, such as mistakes in reporting or incomplete datasets, small sample size, and methods. Moreover, the ever-changing global economic environment and the ongoing evolution of the epidemic provide difficulties in accurately documenting the immediate and complete impacts. Furthermore, the study predominantly concentrates on the RMG sector, perhaps leaving out comprehensive coverage of other industries' intricacies. In addition, this study does not comprehensively take into account external factors such as government policies, geopolitical events, or fluctuations in global demand, which could have differing effects on the sector.

Future research directions

Expanding upon these constraints, there exist prospects for subsequent investigations to augment our comprehension of the topic. First, in order to present a more complete picture, researchers should

investigate more reliable data collection techniques that incorporate qualitative insights from industry stakeholders. An in-depth analysis of the RMG sector's recovery and resiliency following COVID-19 would provide important new information about its adaptive tactics. To provide a comprehensive understanding of economic resilience, future studies might compare the RMG sector with other important businesses in emerging nations. Furthermore, analysing the impact of particular trade agreements, governmental policies, and worldwide economic trends on the RMG industry will help us better understand how susceptible and flexible this industry is to outside influences. Finally, investigating how sustainable practices and technology developments influenced the RMG sector's post-pandemic trajectory may provide insights into the dynamics of the industry going forward.

Conflicts of Interest: Authors declare that there is no potential conflict of interest.

Funding: This research project was supported by the INTI International University, Malaysia.

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