RESEARCH REPORT

A Study on "Opportunities and Challenges for Post Covid-19 in Selected Manufacturing Sectors of Bangladesh"

December, 2023

Ministry of Industries

Bangladesh Institute of Management (BIM)

& National Productivity Organization (NPO)

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Lamia Farha
Team Leader
Senior Management Counsellor &
Head, Research, Evaluation & Publication Division
Bangladesh Institute of Management (BIM).

Executive Summary

Bangladesh has a well-established manufacturing sector and plays a moderate role in the economy in terms of both the MVA as a percentage of GDP, as well as MVA per capita. The intensity of the manufacturing sector as relatively low and indicates there is room for growth and increase the contribution from such an important sector. In addition, during COVID-19 all businesses, particularly the manufacturing sector, faced challenges, with a real threat of substantial decline in revenues and job losses. It is even more challenging for micro, small and medium enterprises (MSMEs) to sustain their business operations. Bangladesh's manufacturing sector relies, to a large degree, on the apparel, textiles, leather and leather goods, food and beverages which contributed 97% of total industrial export in Bangladesh. Therefore, the main purpose of this research study is to identify the effect of Covid-19 and to find out the opportunities and challenges for post covid-19 in selected manufacturing sectors specially five high priority sectors such as Food processing & Agricultural tool, Ready-made garment, Pharmaceuticals, Leather and leather products, and Light engineering.

A mixed method approach combining both quantitative and qualitative research designs followed to have adequate information through which decisions could be made. Both primary and secondary data used to get adequate information for analysis. A list of manufacturing companies of selected high priority sectors collected from the BBS directory 2019. These lists of enterprises used as sampling frame and random sampling procedure applied in selecting proportionate number of companies. The study analyzes survey data collected from 447 respondents from five high priority sectors in Dhaka, Chattogram, Khulna and Rajshahi Division. Apart from this, 4 Focus group discussions and 5 KII were conducted in each Division to know the causes and effects of post covid-19 in manufacturing sectors.

The result indicates the most significant financial effect during the outbreak were salary, most of the organizations mentioned that reduction of order and shortage of funds were the major business challenges during covid-19 outbreak. Whereas most of the organizations mentioned about the private loan to overcome the business challenges during covid-19 outbreak. Majority organizations mentioned that they did not receive stimulus package due to banking procedural problem whereas few organizations mentioned they received loan as a stimulus package. Major challenges of post covid-19 mentioned by the organizations were financial planning, manpower planning, financial

support, price of raw materials and cash flow. Majority of organizations mentioned about long term loan and low rate of interest as a suggestions to overcome the challenges of post covid-19. Business opportunities such as local market enlarged was mentioned by most of the organizations after Covid-19.

The study will be useful for manufacturing sectors that can take additional initiatives to become market sustainable, such as diversifying their supply chains, exploring new markets and opportunities, either domestically or internationally, ensuring safety protocol, optimizing customer service to ensure customer satisfaction, and investing in digital technologies such as artificial intelligence, internet of things (IoT), robots, big data, and cloud computing. The government can take more steps to give long-term loans, more flexible interest-rate policies, and assistance in the development of new firms, which will aid manufacturing sectors in retaining and generating revenue, thereby affecting the country's GDP. A future study can be designed to discover new technology and skills gaps in order to solve IR 4.0 issues in various sectors.

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1.0 Background of the Study

1.1 Introduction

Manufacturing has the potential for higher levels of productivity, faster productivity growth, and quicker technical change than agriculture or many segments of the service industry. In addition, it can create jobs that offer higher wages due to a higher level of productivity. There is abundant empirical evidence to show that the manufacturing sector plays an important role in socio-economic growth globally, particularly when countries are at a relatively lower-income level.

Bangladesh has a well-established manufacturing sector and plays a moderate role in the economy in terms of both the MVA as a percentage of GDP, as well as MVA per capita. Its MVA as percentage of GDP stood at 20.6% in 2021. This increased by about 8.6 percentage points from 2000. Over a 21-year period, average MVA as a percentage of GDP was found higher compared to India (16.6%), Vietnam (18%) and Indonesia (20.1%). But its MVA as a percentage of GDP was still lower than Malaysia (22.7%), Thailand (25.8%) and China (28.1%). While MVA contribution to GDP increased 1.72 times, MVA per capita increased by 4.62 times between 2000 and 2021. Bangladesh's per capita MVA is even below the regional average of developing Asia ($1,572).This clearly reflects the intensity of the manufacturing sector as relatively low and indicates there is room for growth and increase the contribution from such an important sector (dhakatribune, 2022).

On the other hand, the global COVID-19 pandemic has impacted economies around the world, and the global economy's future is uncertain. The pandemic has hit Bangladesh's economy and labor market especially hard. Bangladesh has been severely hit by COVID-19's multidimensional macro-economic shocks which are likely to set back the steady economic progress the country has made over the last decade. Prior to the crisis, the economy had been growing close to 7 per cent annually, on average, over the past decade1. As COVID-19's impacts unfold, the Government of Bangladesh (GoB) projects the Bangladeshi economy to grow at a rate of 5.2 per cent in 2020, down from an earlier forecast of 7.5 per cent (IMF,2020). All businesses, particularly in the manufacturing sector, are facing challenges, with a real threat of substantial decline in revenues and job losses. It is even more challenging for micro, small and medium enterprises (MSMEs) to sustain their business operations.

Bangladesh's manufacturing sector relies, to a large degree, on the apparel sector. Apparel, textiles, leather and leather goods, food and beverages contributed 97% of total industrial export in Bangladesh in 2020, while 18 other industry sectors contributed only 3% in total export. On the other hand, these four industries contributed 22.3%, 34.6%, 9.7%, 15.5%, 26.9% and 14.8% of total exports in India, Indonesia, Malaysia, Thailand, Vietnam and China, respectively. It is clearly evident that Bangladeshi export basket is mainly dependent on few items compared to other countries in South Asia and Southeast Asia (dhakatribune, 2022).

Diversifying away to other potential sectors, such as leather, food processing, jute, light engineering and plastic, is therefore, not only a vital way for strengthening the manufacturing sector in terms of MVA, per capita export and competitiveness, but could also increase employment in manufacturing. Industrialization is only beneficial when it is inclusive and sustainable so that it contributes to the economy, to the wellbeing of people and communities, and protection of the environment and climate (dhakatribune, 2022).

Therefore, it is important to conduct a survey to identify the impacts of COVID-19 on the manufacturing sector, and to identify the post covid opportunities and challenges of manufacturing sectors specially focusing on high priority sectors.

1.2 Rationale:

The COVID-19 pandemic has triggered unprecedented disruptions globally, particularly affecting manufacturing sectors. Understanding the specific challenges and opportunities within the manufacturing landscape in Bangladesh is crucial in navigating the aftermath of this global crisis. In addition, Bangladesh holds a unique position in the global manufacturing arena, particularly in sectors such as textiles, garments, and pharmaceuticals. Analyzing the post-COVID challenges and opportunities within this context is vital for tailored and effective strategies.

Given the context, the 22nd meeting of the NPEC, presided over by the Senior Secretary of the Ministry of Industries, decided to conduct research on the impact and opportunities created by the next industrial sector of Covid-19. Accordingly, the initiative has been taken by NPO to conduct the research in the financial year 2022-2023. A MOU has been signed on 22nd December 2022 with BIM-NPO to conduct the research in this regard. The research program was sponsored by NPO research code 3256103.

1.3 Research Questions:

The main purpose of this research study is to identify the effect of Covid-19 and to find out the opportunities and challenges for post covid-19 in manufacturing sectors specially seven high priority sectors information e.g. shortage of cashflow, shortage of inputs, difficulties fulfilling commitment, shortage of workers, time series horizontal analysis of profit and loss, reduction of orders, disruption of logistics, value chain disruptions, inability to deliver, shortage of Loans from banks, pricing of raw materials, impact on revenue, impact of employment, expected time to return to normal business operations, beneficiaries of government support, types of support firms have received, usefulness of govt support to firm, policy, new procurement channel, new production channel, current govt. support scheme, promoting digitalization, innovation and technology approach, recovery plan for manufacturing sector, especially the affected manufacturing organization in the selected division of the Research area. The study results recommended a set of recommendations for the Research activities. The end-line evaluation study would be conducted keep in mind the following key questions:

Q1: What are the main effects of Covid-19 Pandemic on Selected Manufacturing Sector?
Q2: What are the challenges has been created in effect of Covid-19 Pandemic on Manufacturing Sector?
Q2: What are the opportunities has been created in post covid-19 on Manufacturing Sector?

1.4 Understanding the research study:

1.4.1 Relevancy of the Study:

- To what extent is the research design, as evidenced by its original ‘Result Framework’ components (Impact, outcomes, and outputs, identification of challenges and opportunities of the target industries), strategy and approach appropriate to address the objectives?

- Development of clear and useful result framework matrix, to remedy earlier deficiencies in design and methodology, and to provide a clear and useful document for further monitoring and evaluation of the research;
- Adequacy of criteria used for selection of beneficiaries. Is it appropriate and relevant to the research results and objectives?
- Are all activities relevant to the outcomes, output of the research? Any major activities have not been considered which could have better impact of the research.
- To what extent is the research's timescale/range of activities realistic with regard to beneficiaries' capacities and deliver the planned results in a sustainable way?
- Finding out the appropriateness and relevancy of research activities which were not mentioned in the research proposal but have been implemented by the research.

1.4.2 Efficiency of the Study:

- Evaluate the financial and technical inputs made available to implement the activities;
- Measure the efficiency of management of resources in a transparent and accountable manner;
- Assess the efficiency of the research monitoring system/framework with regard to aims, staff resources and outputs. Are the important progresses, process and benefit monitoring data being captured and fit for purpose? To what extent is the research baseline survey (BS) qualitative and adequate in terms of information? In carrying out the BS what lessons have been learned which can be used to improve the execution of the next update?
- Whether payments (skill, cash support etc.) to beneficiaries were made according to plan, timely and free of any leakage; appropriateness of research operating costs;

1.4.3 Effectiveness of the Study:

- How effective has the needs assessment process been in terms of beneficiary participation and satisfaction?
- Whether planned benefits have been delivered and received;
- Management response/flexibility to unforeseen the external factors affecting the research purposes;

- Any shortcomings due to a failure to take account of cross-cutting issues such as gender, environment etc.;
- What are the major lessons learned from this research and what are the implications for the research strategy?

1.4.4 Impact of the Study:

- How far has the research made impact against the objectives and results so far, and what is the likely impact against such by the end of the research and beyond?
- What are the non-tangible benefits created of the research? How the Research have addressed the cross cutting issues etc. and what are the impact?

1.4.5 Sustainability of the Study:

- Evaluate the relationship, networking and linkages among the Research staffs, community, service providers and beneficiaries. Is it appropriate and sufficient to ensure the financial and economic sustainability of the beneficiaries after the Research?
- Is the current research budget and duration adequate to achieve its purpose in a sustainable manner?
- How the research is sustainably contributing to identification of business opportunities and how these activities are appropriate for economic sustainability?

1.5 Objectives of the study:

1.5.1 Major Objective:

- To identify the opportunities and challenges for post covid-19 in manufacturing sectors of Bangladesh

1.5.2 Specific Objectives: The specific objective of the assignment includes the following:

- To find out the effects of the COVID-19 pandemic on Bangladeshi Manufacturing Sectors.

- To explore the opportunities and challenges for post covid-19 in the manufacturing sectors of Bangladesh.

1.5.3 List of Variables

- **Business Operation:** Present business status, Cash flow, Meeting deadline, Supply of logistics, Loans from banks, Pricing, revenue etc.
- **Government support:** Types of support firms have received, Usefulness of govt support to firm,
- **Challenges**: Use of advanced equipment's, Policy.
- **Opportunities**: New procurement channel, New production channel, Current govt. support scheme, Other support (rent/utility cost reduction/tax rate reduction/reduction of financing cost/improvement in load terms), Preferred type of policy measures, Promoting SME, productivity and competitiveness, promoting digitalization, Innovation and technology approach, Promoting registration of MSMEs and women led business, Recovery plan for manufacturing sector, Remote work.
- **Firm**: Firm Size, Firm type, Type of industry.

1.6 Scope of the study

The research has conducted in four divisions that is Dhaka, Khulna, Rajshahi and Chattogram as per TOR. Five priority sectors such as Food processing & Agricultural tool, Ready-made garment, Pharmaceuticals, Leather and leather products, and Light engineering were the scope of this study.

1.7 Duration of the study

The study commenced in January 2023, concluded in June 2023, and the conclusive report, inclusive of focus group discussion (FGD) and key informant information (KII) findings, was submitted to NPO in December, 2023.

1.8 Location of the baseline study.

The study was carried out in 04 divisions. Details are as follows:

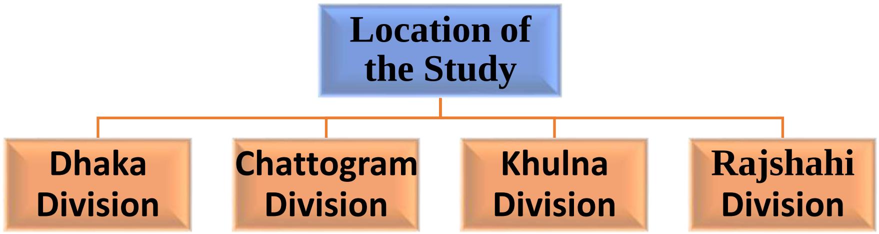

Figure 1: location of the Study

1.9 Demographic and Social Indicators of Bangladesh

Table-1 Socio-Economic Indicators of Bangladesh

General Geographical Location/Characteristics		**Gross Domestic Product (GDP), 2022-23 (Prov.)**	
Location	20^0 34' & 26^0 38' North Latitude	GDP at Current Price (In Cr. Tk.)	44,39,273
88^0 01' & 92^0 41' East Longitude		GDP at Constant Price (In Cr. Tk.)	32,18,031
Area (Sq. Km)	1,47,570	GDP Growth at Constant Price (%)	6.03
Standard Time	GMT+6	Per Capita National Income (In Tk.)	2,70,414
	Hours	Per Capita National Income (In US$)	2,765
Population (in million) 2001 (Census)	130.0	Per Capita GDP (In Tk.)	2,59,919
2011 (Census)	151.7	Per Capita GDP (In US$)	2,657
2022 (Census)	169.83	Savings and Investment (% GDP) 2022-23 (Prov.)	
		Domestic savings	26.02
Population Growth Rate (Percentage), 2021	1.3	National savings	30.22
Male-Female Ratio, 2021	98.1	Total investment	31.25
Population Density/Sq. Km, 2021	1,153	Public	7.61
Basic Vital Statistics		Private	23.64
Crude Birth Rate (Per 1000 Population), 2021	18.8	Balance of Payments, 2022-23 (July-Feb.) (In Million US$) (Prov.)	
Crude Death Rate (Per 1000 Population), 2021	5.7	Export Earning , fob	34,966
Infant Mortality Rate (Per 1000 Live Birth), (Below 1 Year of Age), 2021	22	Import Payments, fob	48,794
		Current Account Balance	-4,387
Total Fertility Rate (per woman aged 15-49), 2021	2.05	Overall Balance	-7,949
Contraceptive Prevalence Rate (%), 2021	65.6	Workers' Remittances (July-February)	14,013.4
Life Expectancy at Birth (Years), 2021, Total	72.3	Foreign Exchange Reserves (End February,2023)	
			32,267
Male	70.6	Budget 2022-23 (Revised)	
Female	74.1	Total Expenditure (In Crore Taka)	6,60,507
Mean Age at Marriage, 2021, Male	26.3	Total Expenditure (As Percentage of	
		GDP)	14.76
Female	20.7	Total Revenue (In Crore Taka)	4,33,000
Social Services		Total Revenue (As Percentage of GDP)	9.68
		Budget Deficit (Including Foreign Grants, % GDP)	5.0

Access to Water, Drinking (%), 2021	98.2	Budget Deficit (Excluding Foreign Grants, % GDP)	5.1
Improved Sanitation Facility (%), 2021	85.8	Financial Statistics Year (February,2023)	
Literacy Rate of Population 7 +yrs (%), 2021	76.4	Total Banks	61
Male	78.6	State Owned Commercial Banks	6
Female	74.2	State-owned Specialised Banks	3
Labour Force and Employment		Private Commercial Banks	43
Labour Force Survey, 2022 temporary		Foreign Bank	9
Total Labour Force (15 +yrs), (Crore)	7.34	Non-Bank Financial Institution	35
Male	4.75	Money Supply (In crore Tk.) End Feb.2023	
Female	2.59	Narrow Money (M1)	4,37,298.4
Percentage of Total Labour Force by Broad Sectors		Reserve Money	3,50,346.9
Agriculture Sector	45.33	Broad Money (M2)	17,63,032.0
Industry Sector	17.02	Capital Market (Share Price Index, as on end 16 May 2023)	
Service Sector	37.65	DSE Broad Index (Base=100)	6,277.21
Poverty Situation (Estimated), 2022		Chattogram Stock Exchange (Base=1000)	18,481.47
Incidence of Poverty (%)	18.7	Inflation (%) April 2023 (Point to Point)	
Incidence of Extreme Poverty (%)	5.6	General	9.24
Transportation (Km.), Up to February, 2023		Food	8.84
National Highway	3,991	Non-Food	9.72
Regional Highway	4,898	Exchange Rate Average 2022-23 (July-February)	
Feeder Road/Zila Road	13,587	Taka/US$	97.26
Total Road	22,476		
Railway	3,101		

1.10 Division wise basic information

Table-2 Division wise basic information

#	Name	Abbr.	Status	Area A (km²)	Population Census (C) 1991-03-13	Population Census (C) 2001-01-22	Population Census (Cf) 2011-03-15	Population Census (Cp) 2022-06-14
Dhaka division consist 13	**Dhaka**	**DHD**	**Div**	**20,509**	**23,964,789**	**29,180,051**	**36,433,505**	**44,215,107**
	Dhaka	DHA	Dist	1,464	5,839,642	8,511,228	12,043,977	14,734,025
	Faridpur	FAR	Dist	2,053	1,505,686	1,756,470	1,912,969	2,162,876
	Gazipur	GAZ	Dist	1,806	1,621,562	2,031,891	3,403,912	5,263,474
	Gopalganj	GOP	Dist	1,469	1,060,791	1,165,273	1,172,415	1,295,053
	Kishoreganj	KIS	Dist	2,689	2,306,087	2,594,954	2,911,907	3,267,630
	Madaripur	MAD	Dist	1,126	1,069,176	1,146,349	1,165,952	1,293,027

	Manikganj	MAN	Dist	1,384	1,175,909	1,285,080	1,392,867	1,558,024
	Munshiganj	MUN	Dist	1,004	1,188,387	1,293,972	1,445,660	1,625,418
	Narayanganj	NYG	Dist	684	1,754,804	2,173,948	2,948,217	3,909,138
	Narsingdi	NSD	Dist	1,150	1,652,123	1,895,984	2,224,944	2,584,452
	Rajbari	RJB	Dist	1,092	835,173	951,906	1,049,778	1,189,821
	Shariatpur	SHA	Dist	1,174	953,021	1,082,300	1,155,824	1,294,561
	Tangail	TAN	Dist	3,414	3,002,428	3,290,696	3,605,083	4,037,608
Chattogram division consist 11 districts	**Chattogram**	**CHD**	**Div**	**33,915**	**20,522,908**	**24,290,384**	**28,423,019**	**33,202,326**
	Bandarban	BAN	Dist	4,496	230,569	298,120	388,335	481,109
	Brahmanbaria	BBA	Dist	1,881	2,141,745	2,398,254	2,840,498	3,306,559
	Chandpur	CHA	Dist	1,645	2,032,449	2,271,229	2,416,018	2,635,748
	Chattogram	CHI	Dist	5,282	5,296,127	6,612,140	7,616,352	9,169,464
	Cumilla	COM	Dist	3,146	4,032,666	4,595,557	5,387,288	6,212,216
	Cox's Bazar	COX	Dist	2,492	1,419,260	1,773,709	2,289,990	2,823,265
	Feni	FEN	Dist	990	1,096,745	1,240,384	1,437,371	1,648,896
	Khagrachhari	KHA	Dist	2,749	342,488	525,664	613,917	714,119
	Lakshmipur	LAK	Dist	1,440	1,312,337	1,489,901	1,729,188	1,938,111
	Noakhali	NOA	Dist	3,686	2,217,134	2,577,244	3,108,083	3,625,252
	Rangamati	RGM	Dist	6,116	401,388	508,182	595,979	647,587
Khulna division consist 10 districts	**Khulna**	**KHD**	**Div**	**22,270**	**12,688,383**	**14,705,229**	**15,687,759**	**17,416,645**
	Bagerhat	BAG	Dist	3,959	1,431,332	1,549,031	1,476,090	1,613,079
	Chuadanga	CHU	Dist	1,174	807,164	1,007,130	1,129,015	1,234,066
	Jashore	JES	Dist	2,607	2,106,996	2,471,554	2,764,547	3,076,849
	Jhenaidah	JHE	Dist	1,965	1,361,280	1,579,490	1,771,304	2,005,849
	Khulna	KHU	Dist	4,394	2,010,643	2,378,971	2,318,527	2,613,385
	Kushtia	KUS	Dist	1,609	1,502,126	1,740,155	1,946,838	2,149,692
	Magura	MAG	Dist	1,039	724,027	824,311	918,419	1,033,115
	Meherpur	MEH	Dist	752	491,917	591,430	655,392	705,356
	Narail	NRA	Dist	968	655,720	698,447	721,668	788,673
	Satkhira	SAT	Dist	3,817	1,597,178	1,864,704	1,985,959	2,196,581
Rajshahi division consist 8 districts	**Rajshahi**	**RSD**	**Div**	**18,155**	**14,212,065**	**16,354,723**	**18,484,858**	**20,353,119**
	Bogura	BOG	Dist	2,899	2,669,287	3,013,056	3,400,874	3,734,300
	Chapai Nawabganj	NAW	Dist	1,703	1,171,469	1,425,322	1,647,521	1,835,527
	Joypurhat	JAI	Dist	1,012	765,011	846,696	913,768	956,430
	Naogaon	NAO	Dist	3,436	2,148,053	2,391,355	2,600,157	2,784,598
	Natore	NAT	Dist	1,900	1,387,761	1,521,336	1,706,673	1,859,921
	Pabna	PAB	Dist	2,376	1,919,896	2,176,270	2,523,179	2,909,622
	Rajshahi	RJS	Dist	2,425	1,887,015	2,286,874	2,595,197	2,915,013
	Sirajganj	SIR	Dist	2,402	2,263,573	2,693,814	3,097,489	3,357,708

1.11 Limitations of the study:

Regarding limitations, the study encompasses not only potential negative impacts on desired outcomes but also factors tha may not necessarily diminish the research’s usefulnss and validity. The ultimate impacts of limitations on research depend on the expertise, experience, and nature of the study. The limitation is therefore not necessarily anything/everything inimical and negative about a project. As opposed to delimitation/scope of the study, limitation deals with the issues that are sometimes beyond the control of the team but affects the outcome of the study. However, the following limitations were identified which may affect this present study.

- **Limited Time**

Needless to say, the time limit of 6 (six) months for this present study is considered a limit for the team to undertake all the required activities within the stipulated time. Although it is hard to maintain all the activity schedules whereas many unforeseen constraints may adversely impact on the limited time given for this study.

- **Limited Information**

Limitation of the information is also considered as the hurdle for this study. The project site is public property and not many socio-economic research studies have taken place wherefrom related data/information could be obtained as the source of secondary information for this present study.

- **Large Scope:**

The current research has a broad reach. It focuses on five sectors in four divisions, which is extensive within the time fram**e.** However, the consultant team has already prepared a possible strategic plan considering the above-mentioned limitations and constraints so as to overcome all these through adapting a Target Achieving Model Approach (TAMA) between the client and consultant team; and to accomplish the subject consultancy services within the stipulated timeframe.

Chapter-II

2.1 Approach and Methodology of the Study

In order to implement the tasks enshrined in the study objectives the following process has been followed:

- Initial discussion with Senior Secretary, Ministry of Industries, DG, NPO and DG, BIM.
- Collection and review of literature and documents.
- Collection and analysis of secondary data.
- Collection of primary data.
- Designing the study tools and instruments (questionnaire, checklist).
- Tools validation workshop and Focus Group discussions
- Compilation and processing of data generation of statistical outputs.
- Analysis and report preparation incorporating the findings and results of the study.
- Finalization of the report incorporating comments and suggestions from the Ministry of Industries.

2.2 Approach of the study

A mixed method approach combining both quantitative and qualitative research designs followed to have adequate information through which decisions could be made. Both primary and secondary data used to get adequate information for analysis. Extensive emphasize has been given on primary data to make the research work constructive. A rigorous literature review was conducted to gather the available information of different countries, collection of industry list and develop a thematic framework for the study. Descriptive type of research method has been utilized in the study. To conduct the research to its full potential it was divided into few viable phases. Each phase serves a distinct purpose to the research work.

2.2.1 Inception phase:

Senior Secretary, Ministry of Industries, DG, NPO, DG, BIM and other relevant team members of research team has been provided their guidelines for the research scope, methodology and tools to finalize the draft report. In the Research process, Ministry of Industries and NPO team have been included as extended team members to take assistance for preparing field visit plan and organizing the events as required by the Research team.

2.2.2 Research Planning Phase:

To accomplish the purpose of the work, the research were divided into few comprehensive phases. The principal research conducted discussion with consultant who are expert in research planning. Keeping BIM's research standard in mind the whole research was planned. Before kicking off the research work few learning tours and a comprehensive literature review has been conducted by the principal researcher to understand the circumstances and help developing research material. In this phase a proper methodology was determined to conduct the research work. The research team were responsible to design and prepare the overall research process using both qualitative and quantitative methods. The team of experts provided strategic and technical support to appointed filed team members, develop various quantitative and qualitative tools and determine the methodologies that are holistic in nature so that they can provide lessons to the implementers. The experts analyzed the information and write the research report in collaboration with the Research team. In the Research process, Ministry of Industries, NPO office can be included as extended team members to provide assistance for preparing field visit plan and organizing the events as required by the Research team. The experts improved enumerators' skills and knowledge regarding data collection and review process through an interview and orientation.

2.2.3 Research Tool and Instrument Development Phase

The necessary tools to conduct the research work was developed through the extensive review of relevant literature. A questionnaire was developed to collect information from the respondents for this research. Apart from conducting survey for primary data, relevant participatory tools (Focused Group Discussion, Key Informant Interview, financial auditing and consultation), best practice documentation/case studies were used to capture perspectives of different stakeholders from organizational level. Particular FGDs designed and used for division level to analyze and identify the causes and effects related to the manufacturing organization.

2.2.4 Data collection and management of fieldwork phase

During this step, the essential data gathered by fieldwork and visited to various selected manufacturing institutions to get information from the respondents. Data collected in the month of April and May, 2023. Data were gathered using a different method such as structured questionnaire, KII and FGD. The research team supervised the total process.

2.2.5 Data entry, management and triangulation phase

The data collected from selected divisions, districts and upazilla and then a coding-based analysis was performed. The entire data entering and analysis process carried out using MS Excel and SPSS. The qualitative data gathered through KII and FGD in order to meet the study's goal. The BIM experts/data analyst analyzed the information and team leader/lead experts write the research report in collaboration with the Research team.

2.2.6 Reporting

Based on the analysis of both quantitative data and qualitative information, a conceptual framework has been developed. This research conducted with sincere attention, reference documents and other strategic documents before and during the reporting process to ensure finding out the proper impact, challenges and opportunities of post-covid 19 in manufacturing sectors.

2.3 Sampling Frame, Sampling Method and Sample Size

2.3.1 Sampling Frame:

BBS directory of manufacturing companies 2019 were applied in the study. The sampling frame by sector and division are presented in table-3.

Table 3: Sampling Frame

Priority Sectors	Code	Chattogram Division	Dhaka Division	Khulna Division	Rajshahi Division	Total
	1010	10	-	1	1	12
	1020	11	-	30	3	44
	1030	2	60	4	42	108

Agriculture, Food processing & Agricultural tool	1077	20	2	-	-	22
	1079	70	15	10	10	105
	2821	-	11	13	20	44
Ready-made garment	1410	238	2,921	11	158	3328
Pharmaceuticals	2100	20	60	9	7	96
Leather and leather products	1511	1	12	2	1	16
	1512	5	36	1	10	52
	1520	44	413	4	38	499
Light engineering,	2220	40	433	15	45	533
	2822	2	41	-	2	45
	2819	-	2	-	-	2
	1315	-	576	7	1,760	2343
	4652	-	32	-	4	36
	2930	4	14	11	9	38
	4545	2	2	-	-	4
	4547	7	10	11	12	40
Total		**483**	**4,740**	**131**	**2,141**	**7406**

2.3.2 Sampling Technique:

A multistage stratified proportion sampling method was used for selecting sample. The sample size was stratified according to the high priority sectors of manufacturing companies. A systematic approach has been applied to select the companies within each region. Only those companies belong to 5 high priority sectors have bene recruited. A list of manufacturing companies of selected high priority sectors collected from the BBS directory 2019. These lists of enterprises used as sampling frame and random sampling procedure applied in selecting proportionate number of companies. To select the units, at the first stage we group them into districts based on their address for each division. Then we defined sector wise strata for each district. After defining strata, we selected manufacturing company randomly from each stratum proportionately. During the survey, if no qualified respondent is found in that very company, we selected another one until we reach our targeted sample size in each area. If not available more in that area, we consider another selected region to fulfill the targeted sample size. Finally, we collected over 500 data.

2.3.3 Sample Size

The sample size was determined using the following formula given by Krejcie and Morgan:

$$\text{Sample Size} = \frac{\chi 2NP(1\text{-}P)}{\{C2(N\text{-}1) + \chi 2P(1\text{-}P)\}}$$

Where X2 is the chi-square value for 1 degree freedom at some desired probability level: N is the population size (which gets more important as N gets smaller): P is the population parameter of a variable; and C is the confidence interval you choose.

$$\frac{(3.841)\ (N)\ (0.5)\ (0.5)}{\{(.05)2\ (N - 1) + X2\ P\ (1 - P)\}}$$

Study population is = 7406. Using the formula the minimum required sample size is = 365.

To collect the data from 365 manufacturing companies, over 500 companies from different administrative or geographic units of Bangladesh were selected. At present Bangladesh is divided into 8 divisions and 64 districts. Manufacturing companies are mostly concentrated in Dhaka, Chattogram, Khulna and Rajshahi division. The study selected manufacturing companies from these four divisions. The sample is representative of the population in subgroups of 5 high priority sectors like Food processing & Agricultural tool, Ready-made garment, Pharmaceuticals, Leather and leather products and Light engineering. Total 490 responese received from companies and after cleaning the data final sample was 447 which is presented in table-4.

Table 4: Sample Distribution

Priority Sectors	Code	Code wise sample	Chattogram	Dhaka	Khulna	Rajshahi	Sample (Total)
Agriculture, Food processing & Agricultural tool	1010	2	2	-	-	-	20
	1020	4	2	1	1	-	
	1030	6	-	5	-	1	
	1077	4	2	-	1	1	
	1079	2	1	1	-	-	
	2821	2	-	-	1	1	
Ready-made garment	1410	208	10	184	0	14	208
Pharmaceuticals	2100	3	-	2	1	-	3
Leather and leather products	1511	4	-	1	-	3	39
	1512	12	-	10	-	2	
	1520	23	1	20	-	2	
Light engineering	2220	26	2	20	3	1	177
	2822	2	-	2	-	-	
	2819	-	-	-	-	-	
	1315	141	2	38	2	99	
	4652	2	-	2	-	-	
	2930	3	-	1	2	-	
	4545	-	-	-	-	-	
	4547	3	-	-	2	1	
Total		447	22	287	13	125	447

2.4 Sources of data

To fulfil the set objectives of the proposed study, the data collected from both primary and secondary sources.

2.4.1 Primary sources

This study used structured questionnaires (SQ) as a quantitative tool for collecting data. Primary data about manufacturing company about infrastructure detailed, ownership types, employee size, production data, market share, raw materials/supply chain management, production capacity utilization, labor productivity rate, year wise business data including cost, profit/loss etc. which affected by covid-19 on business activities has been be collected through various participatory research tools like FGD, KII and stakeholder analysis.

2.4.2 Secondary sources

Second-hand, published accounts are called secondary sources. They are called secondary sources because they are created after primary sources and they often use or talk about primary sources. The published Survey of Manufacturing Industries-2019 from Bangladesh Bureau of Statistics, website, annual report and published list of different manufacturing sectors were used for secondary sources.

2.5 Data Collection Techniques:

2.5.1 Interviewer and field supervisor recruitment and training:

1 field coordinator and 4 field Supervisors for each division recruited and trained to supervise the interviewer and data collector.

2.5.2 Pilot Survey:

A pilot survey has been conducted to identify any problem before conducting the full survey to validate each question.

2.5.3 Field Work:

The field work carried out in the month of April and May. Four groups were created for four divisions headed by field supervisor to carry out the research work. Each supervisor was responsible for each division. A detailed plan for data collection, list of industries and list of data collector has been given to field supervisor. Supervisors supervised and monitor data collection process in each division as per plan.

2.5.4 Quality control:

The interview quality has been checked on a daily basis by the supervisor. The Quality Control Tool has been used to solve any potential problems on time. The supervisor travelled across survey regions to perform quality control tasks, to provide both technical and logistics, and to monitor the overall progress of the survey.

2.6 Data analysis:

Data analysis has been carried out by using Ms Excel and SPSS. The data has been analyzed by using descriptive and inferential statistics such as frequency, percentages, mean, regression etc.

2.7 Implications:

The present study identified the opportunities and challenges of manufacturing sectors specially focusing on 5 high priority sectors which will help to mitigate pandemics impact. This study also identifies the opportunities of this sectors which will help policy makers to make relevant policies that will support the stakeholders and governance to boost up country's growth and development. The research findings provides a strategic guidance to concerned ministries and sectors.

Chapter-III

3.0 Manufacturing Sectors in Bangladesh

Bangladesh is a developing country in Southern Asia. The country is about the size of Iowa and has a population of 163 million people, making it the 12th most densely populated country in the world. Growing at an annual rate of 7.4%, Bangladesh's economy is the 3rd fastest growing economy in the world and the fastest growing economy in Asia. Bangladesh expects to reach middle-income country status by 2021, and their manufacturing industry is one of the biggest contributing factors.

Country Specializations

Source: Anders, 2021

3.1.1 Environmental Awareness

The RMG industry, which is known for its negative impact on the environment, is the backbone of Bangladesh's manufacturing industry. The high levels of pollution, waste, and energy depletion caused by the industry are not sustainable. That's why Bangladesh is taking steps towards a greener future. This developing nation is leading the way in sustainable manufacturing. The country is home to 90 LEED green factories (Leadership in Energy and Environmental Design), 24 of which are considered platinum and 6 of which are in the top 10 in the world. These green factories are also much safer. The movement towards sustainability in Bangladesh has significantly improved the country's reputation. In one of the most environmentally negative industries, Bangladesh is striving to make a positive impact.

3.1.2 Production Capabilities

Bangladesh is a developing nation with plans to become developed by 2041. The country has seen significant economic growth and decreased poverty in the last decade. Bangladesh has made manufacturing development a priority since independence in 1971. Although the industry is young, it is relatively strong. According to the International Labor Organization, the RMG sector dominates the industry with more than 5,000 factories nationwide.

Right now, it's hard to find a manufacturer in Bangladesh for a product outside of the garment/textile industry—but that's changing. The government is pushing for manufacturing diversity, focusing mostly on the leather industry. Bangladesh's huge supply of livestock gives them a distinct advantage. They produce 50 million head of livestock a year, so sourcing is more direct and less expensive. The country is also prioritizing increased manufacturing in the automotive, agribusiness and pharmaceuticals sectors.

One downside to manufacturing in developing countries is the ease of doing business, or the lack thereof. Bangladesh is ranked among the lowest in the EODB (World Bank's Ease Of Doing Business Survey). When working with Bangladesh you may face difficulties like getting electricity or enforcing contracts. To help combat this problem, the government set up the BIDA (Bangladesh Investment Development Authority). BIDA will hopefully reduce the incidence of bribery and red tape in the industry and make it overall easier to do business. The language barrier can also cause difficulties, as the spoken language is Bengali and it's less common for factory management to be fluent in English.

The 2017-2018 Global Competitiveness Report ranked Bangladesh 109th in overall quality of infrastructure, and 99th in transportation. The government is well aware of how poor infrastructure will hinder their manufacturing industry and they're working actively towards improvements. The government plans to upgrade the roads from factory cities to ports, cutting travel time in half and decreasing transportation costs. They're also working towards nationwide electricity access in 2021.

Source: Anders, 2021

3.1.3 Country Cost

Bangladesh's biggest appeal is their extremely low cost of labor, even though the national minimum wage was last increased in December of 2018 and is now higher than ever before. Bangladesh still boasts a significantly lower cost of labor compared to China and other Asian countries. Bangladeshi garment workers make a minimum of US$94 per month while other non-industry-specific workers make a minimum of US$19 per month.

Minimum wage can be a good way to predict the cost of labor, but it's important to note that labor cost varies significantly depending on the factory and region. Labor will account for less than 20% of the final cost, but we can notice the difference. Other factors, like the complexity of product and the availability of materials needed, will play a role in the cost as well. Expensive materials and outsourcing will both raise the overall cost of your product. Shipping costs will vary greatly depending on location, courier, and method.

The United States has a free trade agreement with 20 countries, but Bangladesh is not one of them. This means Bangladesh will be paying customs duties on most goods they manufacture in Bangladesh. The amount of these duties depends on the goods that will be importing, as well as the quantity. The Harmonized Tariff Schedule is a code system that classifies goods into specific categories, dictating what the country pay. Therefore, Some goods from Bangladesh face disproportionately high tariffs from the United States, which will add to the overall cost of the product.

3.1.4 A Bright Digital Future

The government in Bangladesh is working hard to raise quality standards and bring more business to their manufacturing industry. In February of 2019, the government undertook the enormous and game-changing project of creating a digital directory of all of their garment factories. The project takes the form of a map (which can be found here). The country's goal is to have all factories in Bangladesh digitized by 2021.

3.2 Major Challenges of Doing Business in Bangladesh

It is no secret that launching and running a business in Bangladesh is a very challenging endeavor, not least because we lack some of the most basic infrastructure necessary to succeed in this field. In fact, according to World Bank Group's Doing Business 2019 report, Bangladesh ranks 176 globally in terms of ease of doing business. While the situation will definitely improve infrastructure-wise in the coming years thanks to some mega projects from the government (metro rail, matarbari power plants, elevated expressway, Padma bridge etc.), certain ingrained intangible aspects of our country's culture may still make it quite difficult for Bangladeshi ventures to truly stand out in the global context.

3.2.1 Short-termism mentality among vendors

Success in most businesses, especially product-based ones, depends on having a reliable network of vendors to serve many needs. For example, I have a food catering business, and we need vendors for supplying protein, vegetable, ghee, packaging, certain crockery and cutlery etc. To deliver the best experience to our clients and to also keep the business running smoothly, we need these vendors to match up to expectations as well. Unfortunately, in Bangladesh, it seems that most vendors suffer from a serious case of “short-termism”. Such short-termism mentality makes it almost impossible to develop continuing relationship with vendors. The problem is so acute, that the business in this country thinking of backward supply chain integration as a permanent solution. It is very difficult for such vendors to comprehend the value of a long-term business relationship.

3.2.2 Payment delays from corporate clients

When a business is dealing with a corporate as a client, especially a large one, it is not unusual even in other countries for payments to take time to be cleared. However, in Bangladesh, most corporate clients have taken the art of delaying vendor payments. Unfortunately, not all young ventures have the same luxury, and so many b2b ventures face severe cash flow crisis because of such unethical practices by corporate institutions.

3.2.3 Unskilled workforce

This one is controversial, and may pitch job-holders against entrepreneurs. On one hand, many job-seekers complain how there is a big dearth of jobs in the market. On the other hand, businesses complain how they struggle to fill their vacancies with quality hires. This is because of the great mismatch between present skills and expected skills in the market at the moment. Employees with 3-4 years of experience in the corporate world will struggle with rudimentary Excel tasks. In many cases, it takes an extended period of training and grooming to get a new hire up to speed with such

3.2.4 Immature consumer market

With a population size of about 168 million, Bangladesh has the 8th largest population in the world. So naturally, one would assume that that such a large market makes for a very lucrative business opportunity for most entrepreneurs. However, a large market does not necessarily mean a serviceable market. While the infrastructure issues are already known to us, it is the affordability aspect that may trick budding entrepreneurs into thinking we have a very big consumer market. Simply put, most of our population are too poor to afford anything other than the basic of necessities. More than 20% of the population are still living in poverty. Real signs of urban development within the whole country is still confined from Puran Dhaka to Uttara. Sylhet and Chattogram are slowly developing, but they are still far off from looking like major metropolises. At some point, growth will plateau because there simply isn't much more customers who can afford service. There is a reason why startups in countries like US and India manage to scale so fast and acquire crazy valuations. Consider this one simple statistic: the total size of the home appliance repair market in USA is 400 billion USD. On the other hand, the entire GDP of Bangladesh is 250 billion USD. Just let that sink in. Something as seemingly tiny as appliance repair has a market in US bigger than our country's entire GDP!

3.2.5 Corruption

While corruption is ubiquitous in Bangladesh, it does not make life easy for an entrepreneur. Even in some established and well-known multinationals, one needs to grease the palms of the procurement department to win contracts. Not only does it force pure-hearted entrepreneurs to take the unethical route, but often young ventures with superior products miss out on lucrative corporate contracts simply because they do not have as much bribing power as the big guns in the industry.

Corruption is not just a problem in the b2b scene. Even in the b2c markets, corrupt market players can make it extremely difficult for honest businesses to thrive.

3.3 Effects of Covid-19 on the manufacturing sector:

Bangladesh has the second largest clothing industry in the world, after China. Exports to the US and Europe bring in almost $35 billion a year, and about 4 million people, mostly rural women, work there. The clothing industry makes up 84.21 percent of all exports and 20 percent of the country's GDP (Antara, 2020). Rubana Huq, president of the Bangladesh Garment Manufacturers and Exporters Association, says that orders worth almost $3 billion were cancelled or put on hold because of the pandemic (Aslam, 2020).

Workers in the RMG industry are also worried about the future of their careers because of how uncertain the industry is. During the COVID-19 epidemic, there were reports of rapes and suicides by female RMG employees. This could have long-term effects on their mental health (Kabir, Maple, & Usher, 2021).

Because there aren't enough raw materials, manufacturers have to stop making things. A survey found that the epidemic caused raw material supplies to be late for 93% of Bangladeshi clothing manufacturers. A survey showed that 72.4% of Bangladeshi companies couldn't pay their workers during time off. When orders were cancelled and workers were let go, more than 80.4% of Bangladeshi suppliers said they couldn't pay them. (Anner, 2020)

During the COVID-19 pandemic, global health communities, the BGMEA, international brands/retailers, the GoB, and the International Labour Organization (Kabir et al., 2021) suggest that all parties work together right away in a coordinated way to protect employees' health and general well-being.

3.4 Post Covid-19 challenges of manufacturing sector

After COVID, it will be harder for industry managers to get their supply chain back on track and reach the SDGs by 2030, whose main goal is to "leave no one behind." In the time after COVID-19, all companies will have to use the social aspects of sustainability in their SCM in order to be sustainable. So, manufacturing companies should take a well-rounded approach to all the social problems caused by the COVID-19 pandemic, such as more layoffs, the development of health protocols, workplace safety, and changes in social and cultural patterns. The United Nations (UN) has already asked everyone involved to build a more inclusive society and sustainable economies, and it has also put forward a new strategic plan to help stop the COVID-19 pandemic from worsening social and economic conditions. In their study, Sarkis et al. (2020) said that making the world a place where people can live again will require new public policy, financial investment, complex thinking, new behavior, and careful action in the "new normal" world. Together, the government, practitioners, employees, and all other interested parties can make a company's SC more resilient to protect it from future disruptions like COVID-19.

3.5 Post Covid-19 opportunities of manufacturing sector

The resurgence of local spending, fueled in part by remittances from overseas, is a crucial factor behind the relatively mild economic consequences in Bangladesh. Maintaining a moderate rate of economic growth has also been aided by stimulus and social protection programmes, as well as the government's pragmatic approach to progressively easing the lockdown and insuring the continuance of economic operations (Manmohan Parkash, 2020).

3.6 High Priority Sectors:

According to the provisional data of the Bangladesh Bureau of Statistics (BBS), Bangladesh's economy has grown 7.25 per cent in the outgoing fiscal year of 2021-22. This is a remarkable achievement indeed considering the fact that the economy was hit by the coronavirus pandemic several times. Therefore, priority sectors should be focused for growth and development of Bangladesh. The National Industry Policy (NIP) (2016) designates the priority industries as follow (BIDA, 2021):

3.6.1 High priority sectors

1. Agriculture, food processing and agricultural tool, 2) Ready-made garment, 3) ICT/ software, 4) Pharmaceuticals, 5) Leather and leather product, 6) Light engineering, 7) Jute and jute product.

3.6.2 Priority sectors

1) Plastic, 2) Overseas employment (manpower export), 3) Shipbuilding, 4) Environment-friendly ship recycling, 5) Tourism, 6) Frozen fish, 7) Home textiles, 8) Renewable energy (solar power, windmill), 9) Active pharmaceutical ingredients (API) and radio pharmaceuticals, 10) Herbal medicine, 11) Radio-active (diffusion) application industry (e.g. developing quality/ decaying polymer, preservation of food, disinfecting medicinal equipment), 12) Polymer product, 13) Hospital and clinic, 14) Automobile manufacturing and servicing, 15) Handicraft and cottage

industries, 16) Energy efficient appliances, electronic goods, electronic materials, 17) Tea, 18) Seeds, 19) Jewelry, 20) Toys, 21) Cosmetics and toiletries, 22) Agar, 23) Furniture, 24) Cement.

4.0 MOU Signing

A MOU signed on 22nd December 2022 with BIM-NPO to conduct the research to identify the opportunities and challenges of post covid-19 in manufacturing sectors of Bangladesh. The cost of the research program will be borne by NPO's research code 3256103. The following officials were present at the ceremony:

Table-5 Officials in MOU Signing ceremony

#	Name	Designation
1.	Tahmina Akhter	Director General (Additional Secretary), BIM
2.	Muhammad Mesbahul Alam	Director General (Additional Secretary), BIM
3.	Md. Mahbub ul Alam	Senior Management Counsellor, BIM
4.	Tanvir Hossain	Senior Management Counsellor, BIM
5.	Lamia Farha	Senior Management Counsellor, BIM
6.	Most. Fatama Begum	Senior Research Officer
7.	Md. Razu Ahmmed	Senior Research Officer (CC)

4.1 Team Mobilization Meetings

At the outset of conducting the research an initial mobilization meeting was held in presence of the entire team. Various issues were discussed in the meeting that includes briefing the objectives of the research, methodology, time plan, deliverables, determining the variables for the report etc.

4.2 Comments on ToR

4.1.1 The Client will make available a dedicated counterpart research team of at least 2-3 senior management designated to the consultant for this assignment. This would not only ensure knowledge transfer but also allow decisions to be taken quickly;

4.1.2 Provide list of manufacturing sectors (big, medium & small), related documents, and a report previously prepared relating to this assignment to the consultant;

4.1.3 Provide access to officials within offices of clients and other government entities;

4.1.4 Provide access to related industries during the field visit, survey, FGD & KII.

4.1.5 Administrative support in setting up consultation meetings with the stakeholders and meetings with other government agencies.

Time Frame and Team composition

5.1 Commencement of works

The client invited the consultant by an official letter (**vide memo No: 36.10.0000.008.25.005. 21/ 479**) on 20th December 2022 to sign the contract, and subsequently, the contract signed on 22nd December 2022. The Consultant is to undertake all required steps to commencement of the works after signing the contract. On December 31, 2022, the first team mobilization meeting was place at BIM (the consultant). Following that, several team meetings were held to discuss the literature review, sample framework, research instruments, and analysis approaches. The sample framework was created in the second week of March using data from the Bangladesh Bureau of Statistics (BBS). Following that, a questionnaire and FGD checklist were created. On March 30th, the inception report was presented infornt of the Chief Adviser and Honourable Senior Secretary Ministry of Industries. The gracious instructions provided by the Hon'ble Senior Secretary were followed in revising the inception report. Following that, a questionnaire tool validation workshop was organized. Based on the feedback, the questionnaire was amended and sent out for the pilot survey. The questionnaires were revised following the pilot survey. Finally, data was collected in the months of April and May. The data was analyzed in accordance with the method. Four focus groups and five KIIs were conducted to gather more information. The final report was submitted in December.

5.2 Research Team:

The following is the combination of the research Team:

5.2.1 Core Team:

Table-6 Core Team members in Research Team

Sl.	Name & Designation	Role in the Research Team
1.	Senior Secretary, Ministry of Industries	Chief Advisor
2.	Director General, BIM	Advisor
3.	Director General, NPO	Advisor

4.	Lamia Farha, Head Research, Evaluation and Publication Division & Senior Management Counselor, BIM	Principal Investigator
5.	Tanvir Hossain, Senior Management Counselor, BIM	Co-Principal Investigator
6.	Md. Mahbub-ul Alam, Senior Management Counselor, BIM	Reviewer
7.	Akhund Shamsul Alom, Senior Management Counselor, BIM	Economic and Financial Management Expert, BIM
8.	Most. Fatama Begum, Senior Research Officer, NPO	Research Associate
9.	Md. Razu Ahmmed, Senior Research Officer (CC), NPO	Research Associate

5.2.2: Research Support Team:

Table-7 Support Team Members

SL	Role	No.
1.	Data Enumerators	16
2.	Data Entry Operator	3
3.	Data Analyst	2
4.	Translator	1
5.	Support Service	1

6.0 Data Analysis

6.1 Part-1 (Respondent Profile)

6.1.1 Age of Respondent

Table 8: Age of Respondent

Age Group	No. of Respondents	Percentage
25-30	61	13.65
30-35	76	17.00
35-40	73	16.33
40-45	66	14.77
45-50	66	14.77
50 and above	105	23.48
Total	447	100.00

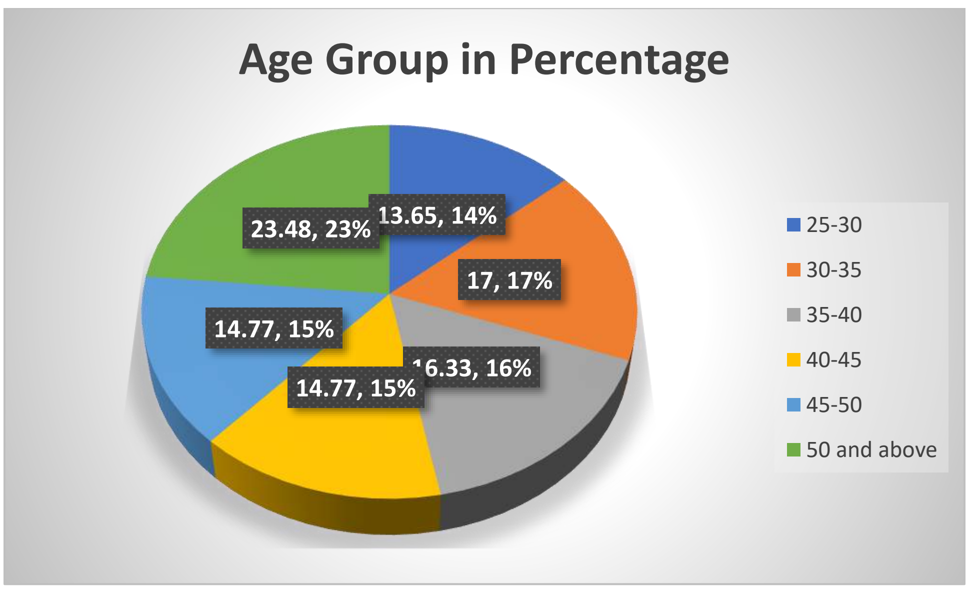

Figure 2: Age of Respondent

The vast majority of responders (23.49%) were over the age of 50. The age groups 30-35 and 35-40 had the second (17%) and third (16.33%) largest percentages of respondents, respectively. The age group indicates that the majority of the responses were from the top level of management.

6.1.2 Designation of the Respondents

Table 9: Designation of Respondents

Designation	Percentage
Supply chain manager	7.0
Factory manager	8.0
H.R Manager	9.0
Managing Director	1.0
Manager	6.0
Owner	67.0
Owner’s son	1.0
Production manager	1.0
Total	100.0

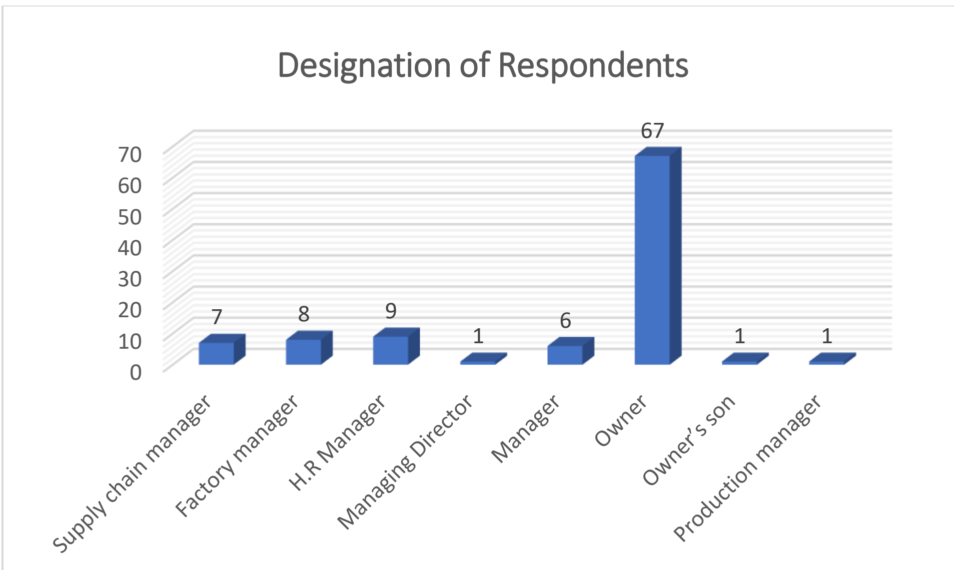

Figure 3: Designation of Respondent

The majority of respondents (67%) were manufacturing owners. Other respondents included an HR manager (9%), and a factory manager (8%).

6.1.3 Length of engagement in the business

Table 10: Length of Engagement in Business

Year of Engagement	Percentage
1-10 years	29%
11-20 years	36%
21-30 years	11%
30-above	24%
Total	100%

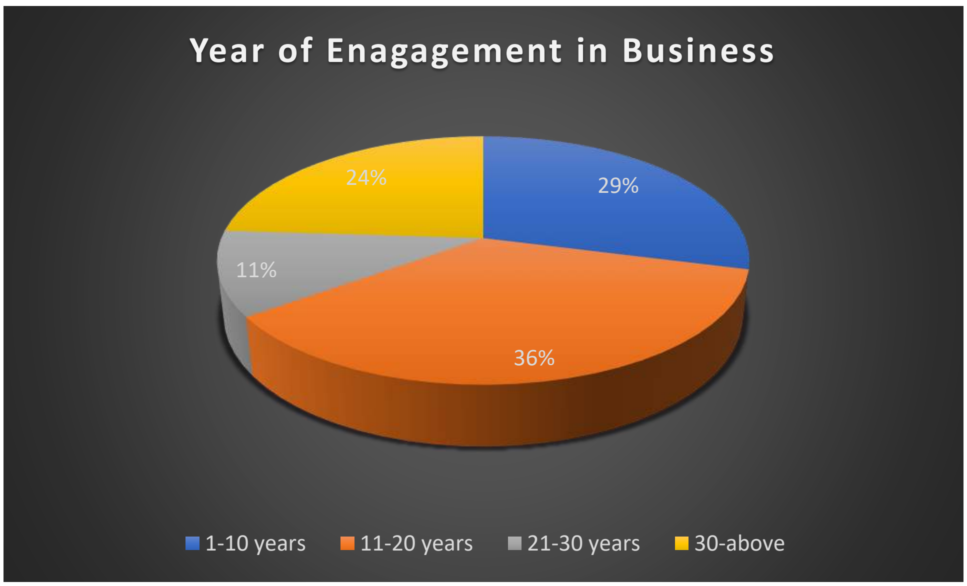

Figure 4: Length of Engagement in Business

The majority of responders (36%) have been in business for 20-30 years, while 24% have been in business for 30 years or more.

6.1.4 Gender

Table 11: Gender of Respondents

Gender	Number of Respondents	Percentage
Male	440	98.43
Female	07	1.57
Total	447	100

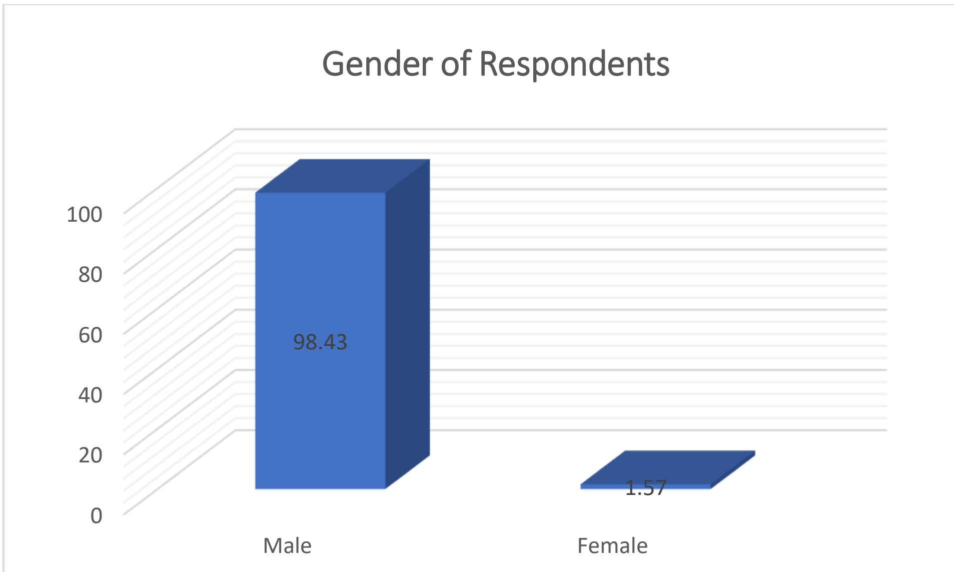

Figure 5: Gender of Respondents

98.43% respondents were male whereas only 1.57% respondents were female.

6.1.5 Type of Business Operation

Table 12: Type of Business

Types of Business	No. of Firms	Percentage
Micro	353	79.0
Small	75	16.8
Large	19	4.2
Total	447	100.0

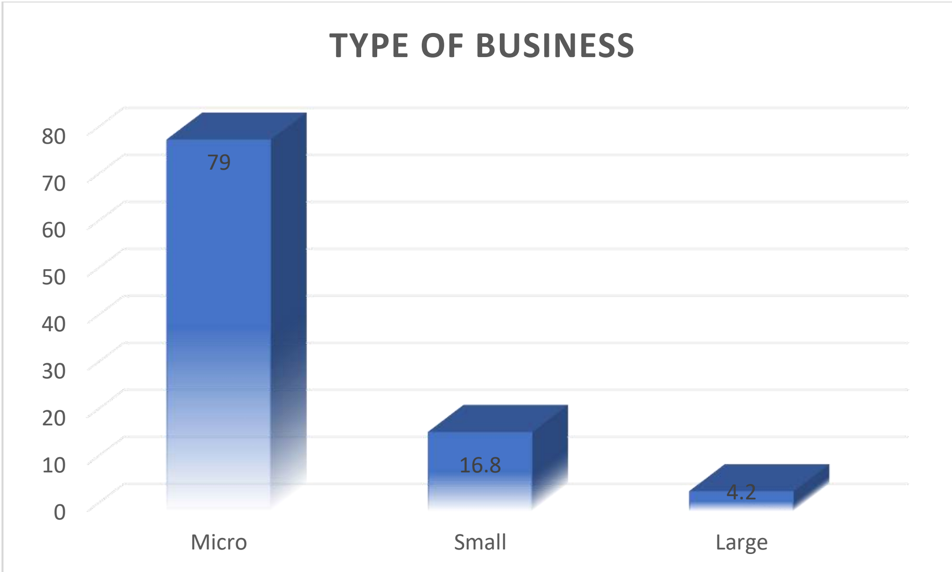

Figure 6: Type of Business

A total of 447 firms has been approached to collect data, among which 79% firms were micro, 16% firms were small and rest of 4.2% firms were large type.

6.2 Part-2 (Effect during Covid-19)

6.2.1 Supply of raw materials affected during covid-19 (2019-2021)

Table 13: Supply of Raw materials affected

Sectors	Supply of raw materials affected during covid-19 (2019-2021)				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Agri & Food	0.7%	0.4%	0.4%	1.8%	1.1%
RMG	12.1%	7.8%	2.7%	16.1%	7.8%
Pharma	0.2%	0.0%	0.0%	0.4%	0.0%
Leather and Leather Goods	3.6%	0.2%	1.1%	2.7%	1.1%
Light Engineering	10.3%	0.4%	1.8%	9.4%	17.7%

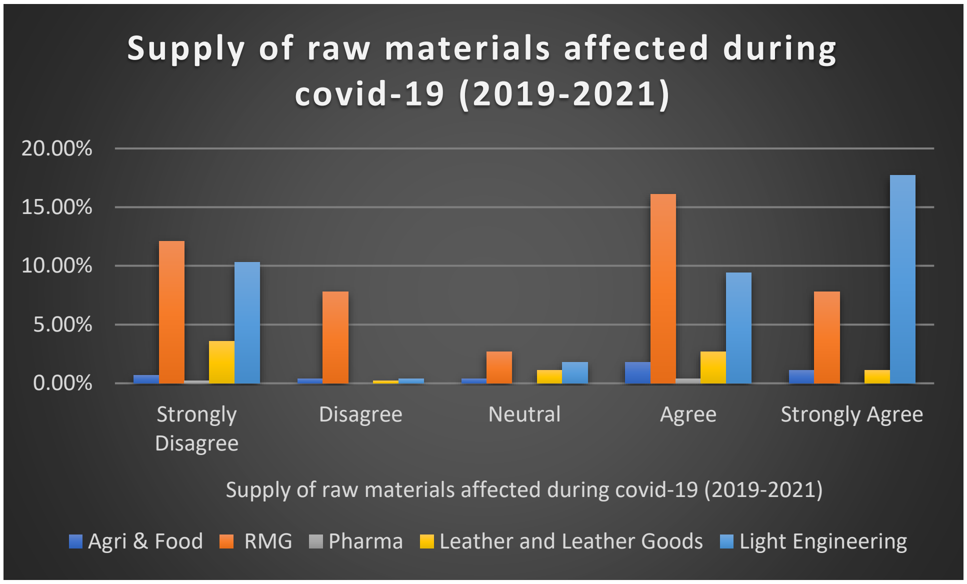

Figure 7: Supply of Raw materials affected

According to the above table, light engineering sectors have the highest percentage of raw material supply affected 17.7% (strongly agree) and 9.4% (agree), followed by RMG sectors 7.8% (strongly agree) and 16.1% (agree).

6.2.2: Causes of effect of raw materials:

Table 14: Causes of effect of Raw materials

Sectors	**Causes of effect during covid-19 (2019-2021)**									
	Availability		**Procurement Method**		**Fund**		**Market Demand**		Others	
	Yes	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**
Agri & Food	2.7%	1.8%	0.7%	3.8%	2.2%	2.2%	1.8%	2.7%	0.2%	4.1%
RMG	30.7%	15.7%	5.0%	41.2%	32.0%	14.5%	36.2%	10.3%	0.5%	45.9%
Pharma	0.2%	0.4%	0.5%	0.2%	0.2%	0.4%	0.4%	0.2%	0.0%	0.7%
Leather and Leather Goods	6.3%	2.5%	1.1%	7.7%	5.4%	3.4%	5.6%	3.1%	0.0%	8.6%
Light Engineering	30.0%	9.6%	6.1%	33.8%	32.0%	7.6%	29.8%	9.8%	0.5%	39.5%

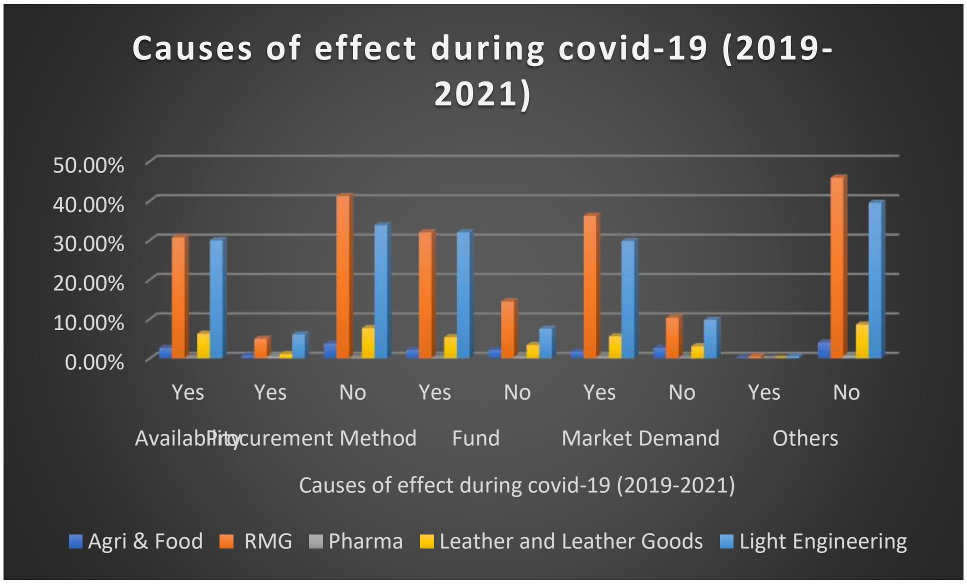

Figure 8: Causes of effect of Raw materials

30% of light engineering sectors said that COVID-19 had an impact on raw materials. The fund crisis was also mentioned in the RMG and light engineering sectors.

6.2.3: Raw materials that used in production process

Table 15: Raw materials that used in production process

Raw materials that used in production process				
Sectors	Raw materials that used in production process			Total
	Foreign	Local	Both	
Agri & Food	0	18	2	20
	0.0%	4.0%	0.4%	4.5%
RMG	3	146	59	208
	0.7%	32.7%	13.2%	46.5%
Pharma	0	2	1	3
	0.0%	0.4%	0.2%	0.7%
Leather and Leather Goods	0	33	6	39
	0.0%	7.4%	1.3%	8.7%
Light Engineering	8	150	19	177
	1.8%	33.6%	4.3%	39.6%
Total	11	349	87	447
	2.5%	78.1%	19.5%	100.0%

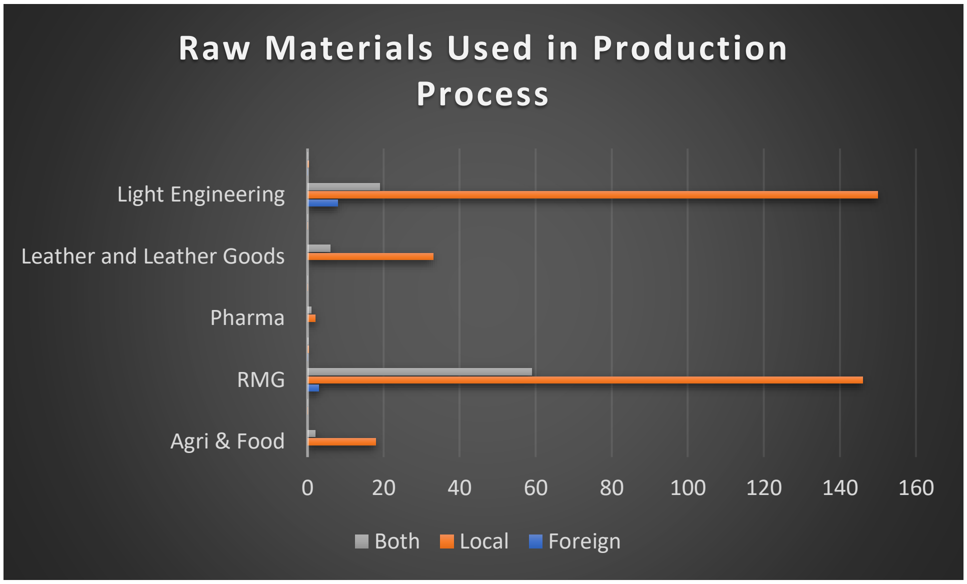

Figure 9: Raw materials that used in production process

Local raw materials were used in both the RMG (32.7%) and light engineering (33.6%) sectors, although they also employed a small amount of foreign raw materials in the manufacturing process.

6.2.4: Raw materials used in production process affected during Covid-19 (2019-2021) local/foreign

Table 16: Raw materials affected during COVID-19

Sectors	Foreign	Local
Agri & Food	2.3%	4.0%
RMG	55.8%	42.0%
Pharma	-	0.3%
Leather and Leather Goods	-	9.7%
Light Engineering	41.9%	44.0%
Total	100%	100%

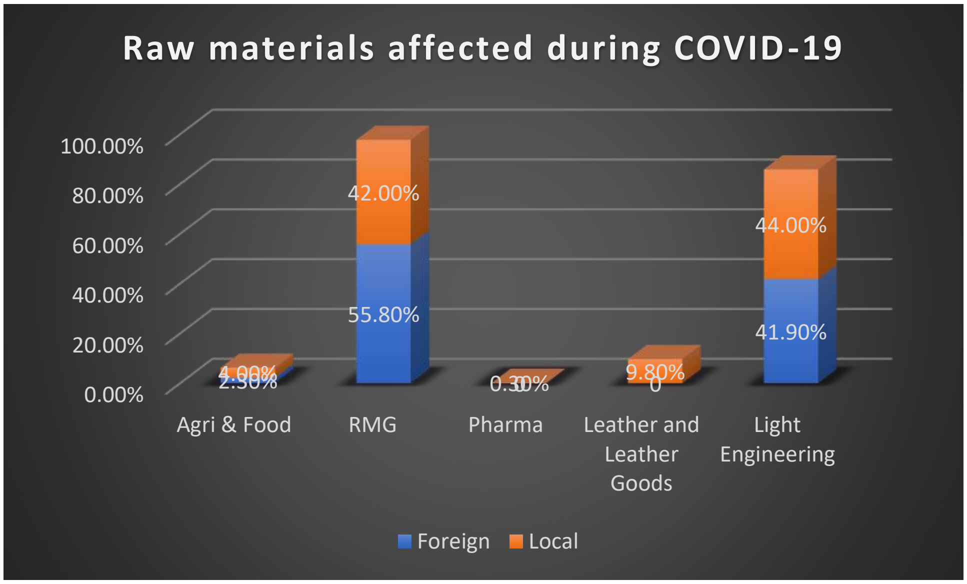

Figure 10: Raw materials affected during COVID-19

COVID-19 has an impact on both domestic and imported raw materials in the RMG (42%;56%) and light engineering sectors (44%;42%).

6.2.5: Effect on Financial Matter during the outbreak

Table 17: Effect on Financial matter effect during COVID-19

Factors	Effects (%)	No Effect (%)
Salary	91	9
Fixed Cost	52	48
Payment of Loans	52	48
Payment Schedule	57	43

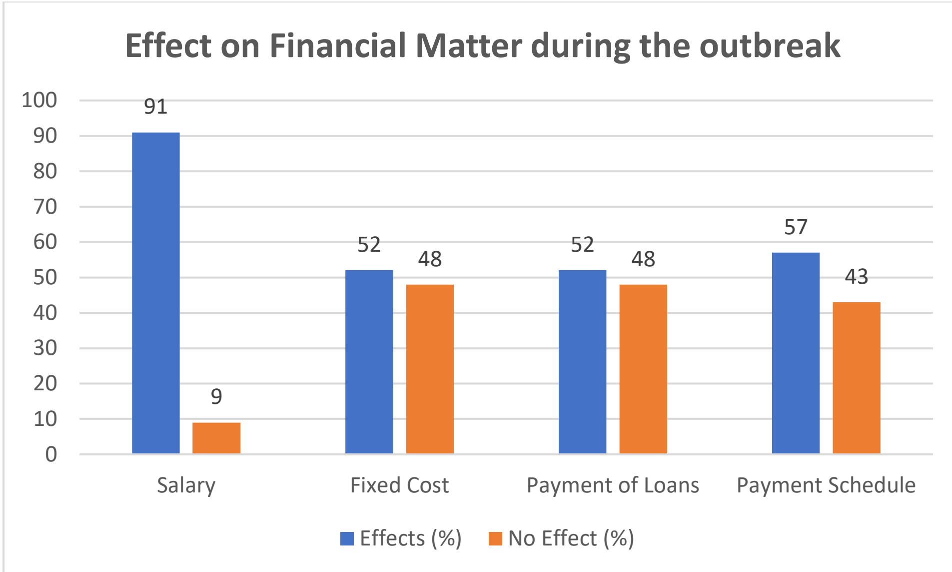

Figure 11: Effect on Financial Matter during the outbreak

The most significant financial impact mentioned by the respondents were salary (91%), payment schedule (57%) followed by fixed cost and payment of loans (52%).

6.2.6: Effect on Products marketing activities during COVID-19

Table 18: Effect on Product marketing activities during COVID-19

Effects	Effects (%)	No Effect (%)
Product Pricing	91	9
Value Chain	64	36
Brand Image	41	59
Customer Satisfaction	59	45
Market Messages	29	71

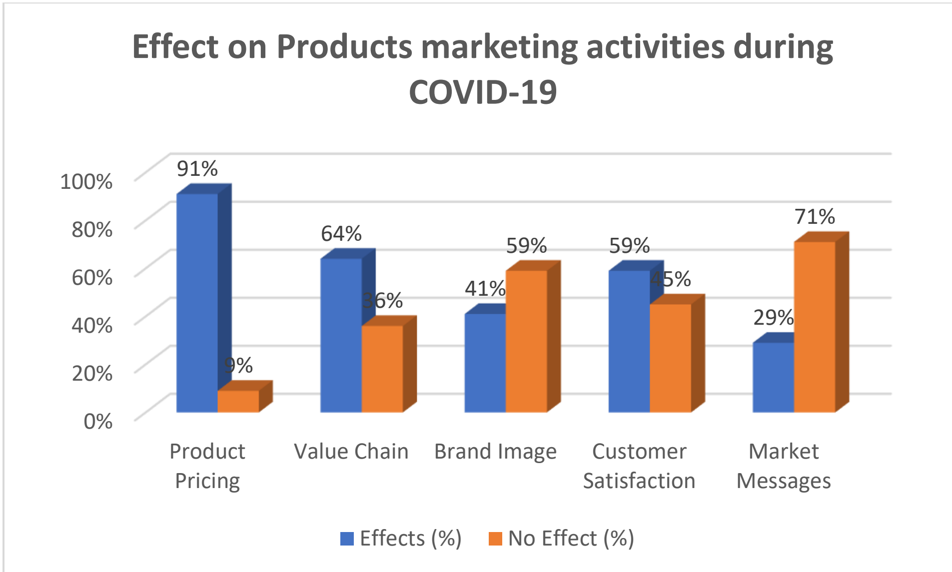

Figure 12: Effect on Product marketing activities during COVID-19

The most significant effects on product marketing activities mentioned by the respondents were product pricing (91%), value chain (64%) and followed by customer satisfaction (59%).

6.2.7 Business Problems Faced due to the Pandemic (2019-2021)

Table 19: Business problem during COVID

Response	Problem faced (%)	No Problem experienced (%)
Reduced Order	97	3
Inability to deliver existing orders	53	47
Increased difficulty of financing	85	15
Existing Loans period couldn't be extended	37	63
Disruptions of final product sales	50	50
Terminating contract of goods supply	30	70
Insufficient Protective Equipment (e.g. masks)	10	90

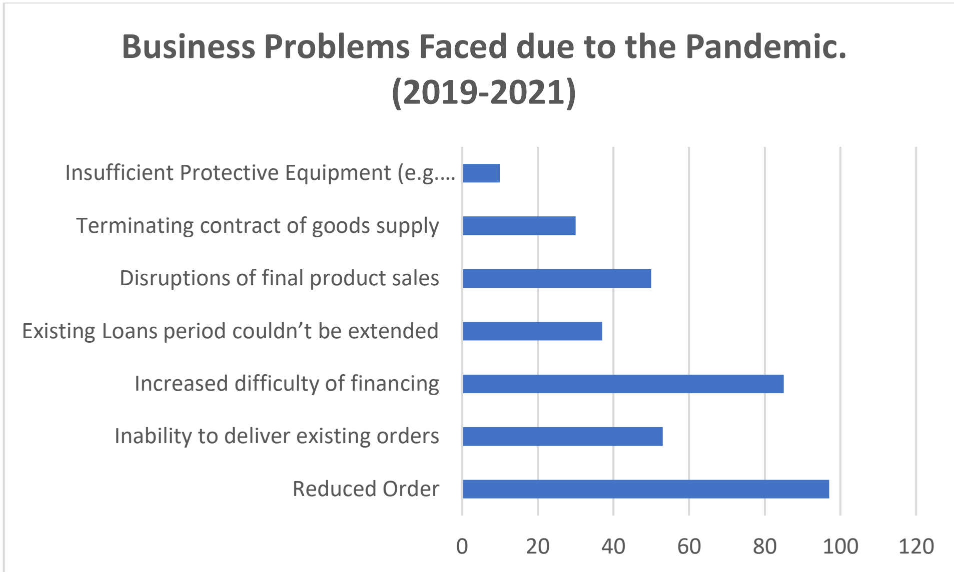

Figure 13: Business problem during COVID

Most of the respondents mentioned that they have faced Business Problems due to the Pandemic such as Reduced Order (97%), Increased difficulty of financing (85%) and Inability to deliver existing orders (53%).

6.2.8 Amount of effect/disruption on business activities since Covid-19 to till 2022

Table 20: Disruption on Business

Areas	Major Effect (greater than 50%)	Somewhat Effect (between 10 to 50%)	Very little Effect (between 5 and 10%)	Less than 5%	No Effect
Manufacturing Effect	36	49	8.5	2.9	3.8
Supply Chain Effect	30	29	28.9	6.7	5.1
Maintenance Effect	22.6	23.7	34.9	11.4	7.4
IT Effect	7.4	4.7	4.3	9.8	73.8
Inventory Effect	14	17	25	13	30
Service Effect	18	29	19	14	19.7
Marketing Effect	28.6	28.6	21.9	14	6.7

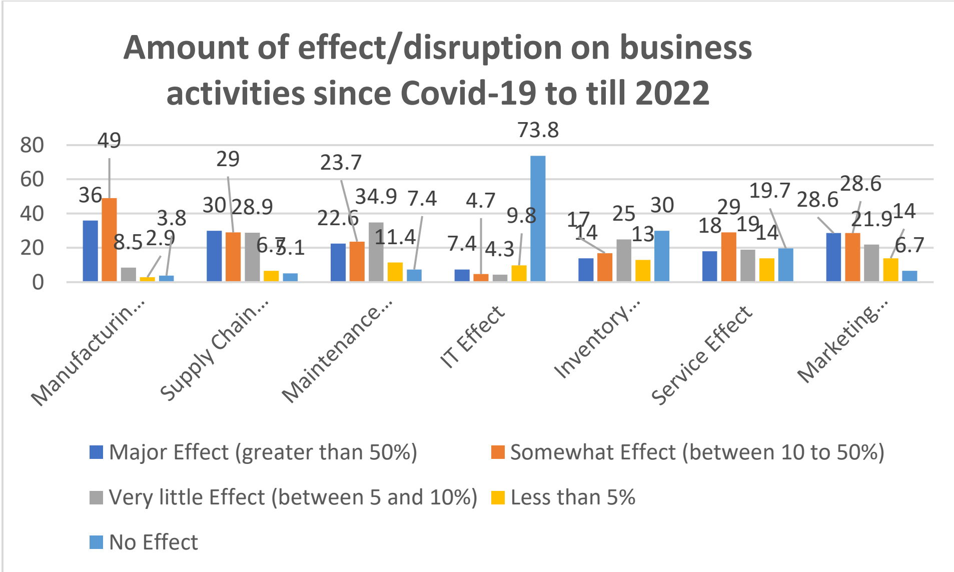

Figure 14: Disruption on Business

Most of the respondents mentioned about manufacturing (36%), supply chain (30%), marketing (29%) had a major effect, whereas no influence in IT (73.8%) and inventory (30%) since Covid-19 to till 2022.

6.2.9 Effect on Firm's Revenue during the Pandemic (2019-2021)

Table 21: Effects on Firm Revenue

Response	No. of Respondents	%
Decreased	432	97
Increased	6	1.3
Remained Same	6	1.3
No effect	3	.04
Total	447	100.0

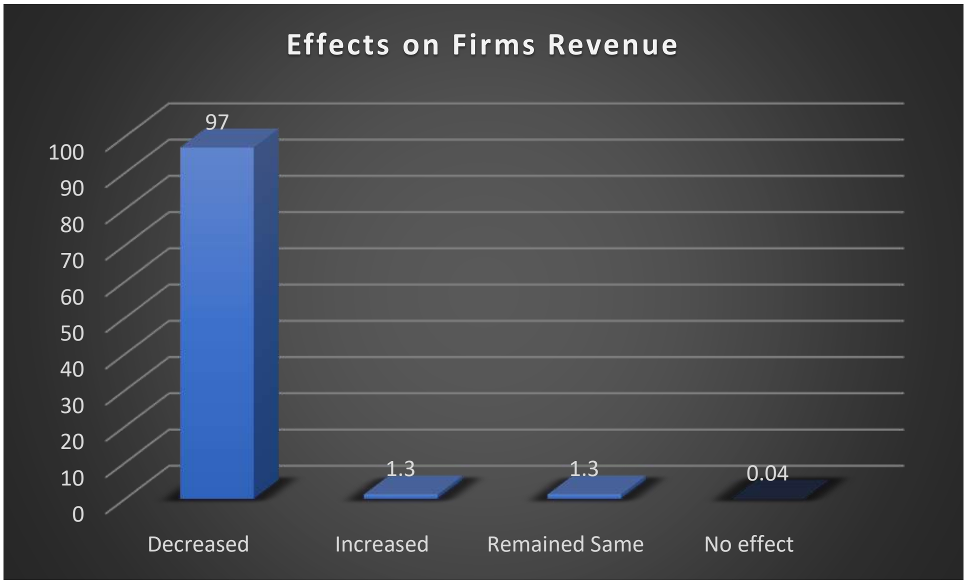

Figure 15: Effects on Firm Revenue

During the pandemic, 97% of respondents said their company's revenue declined, while only 1.3% said it increased.

6.2.10 Revenue decreased in percentage during covid-19

Table 22: Revenue Decreased

Decreased in Percentage	Number of Firms	Percentage
.00	3	.7
5.00	1	.2
10.00	10	2.2
15.00	7	1.6
16.00	1	.2
20.00	31	6.9
23.00	1	.2
25.00	21	4.7
29.00	1	.2
30.00	43	9.6
34.00	1	.2
35.00	8	1.8
36.00	1	.2
39.00	1	.2
40.00	48	10.7
41.00	1	.2
42.00	1	.2

43.00	1	.2
45.00	12	2.7
50.00	72	16.1
52.00	1	.2
53.00	1	.2
55.00	5	1.1
60.00	44	9.8
65.00	9	2.0
70.00	31	6.9
75.00	5	1.1
80.00	32	7.2
85.00	1	.2
90.00	40	8.9
100.00	4	.9
Total	438	98.0
No comments	9	2.0
Total	447	100.0

6.2.11 Means to Overcome the shortage of cash flows

Table 23: Means to overcome cash shortage

Means	Yes (%)	No (%)
Loans by Internet Finance	4	96
Loans by microfinance and non-bank financial institutions	35	65
Loans by private individuals	60	40
Negotiating with the lenders to avoid withdrawing loans	18	82
Equity Financing	6	94
Reduction of Operating Cost	17	83
No cash flow shortfalls problem	4	96

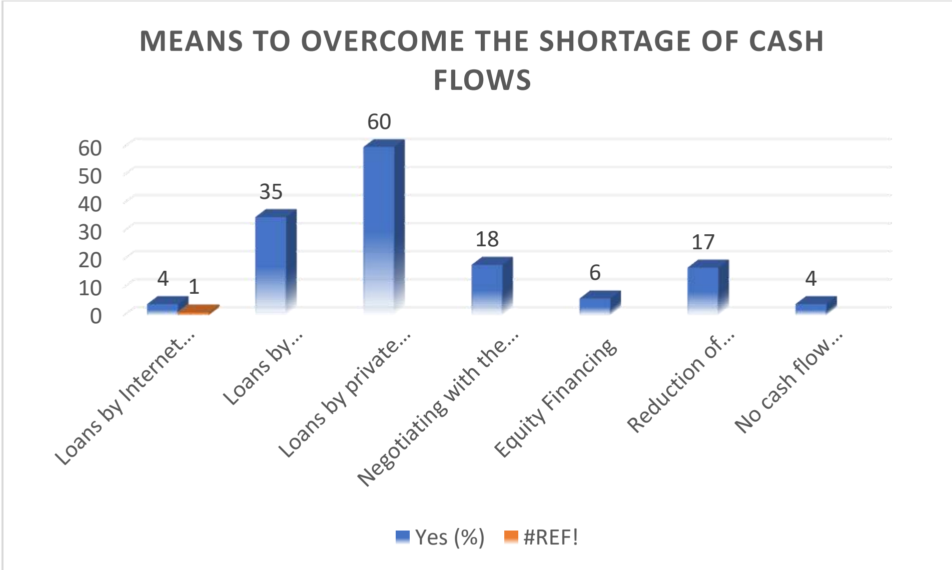

Figure 16: Means to overcome cash shortage

60% respondents mentioned that they took loans from individual and 35% mentioned about microfinance to overcome the shortage of cash flows.

6.2.12 Means to overcome the shortage of workers

Table 24: Means to overcome shortage of workers

Means	Yes (%)	No (%)
Increased wage	39	61
Use of advanced Equipment	5	95
Out sourcing of orders	21	79
Delay in delivery	35	65

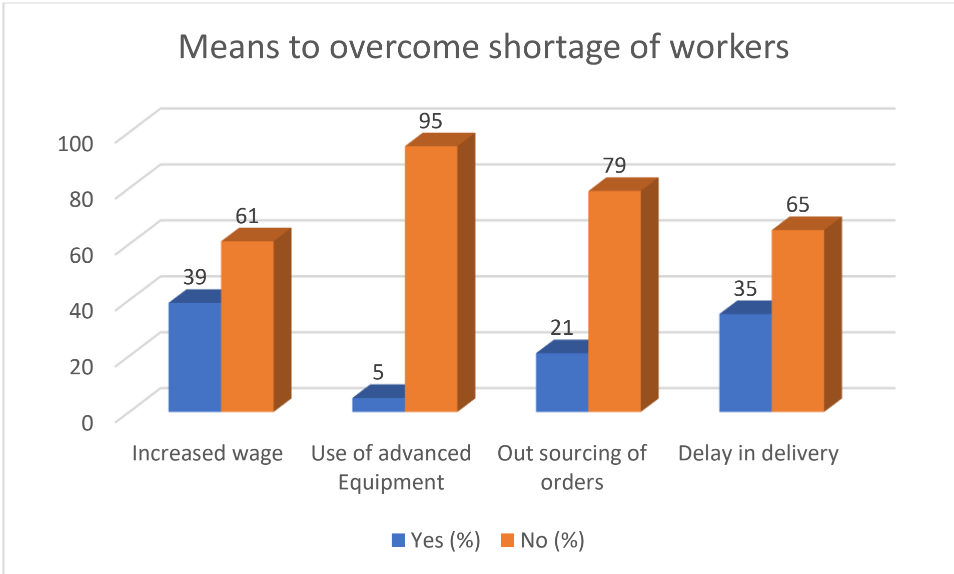

Figure 17: Means to overcome cash shortage

39 % respondents mentioned that they increased wages to overcome the shortage of workers.

6.2.13 Status of Receiving Stimulus Package

Table 25: Stimulus package

Status	No. of Firms	Percentage
Stimulus received	24	5
Stimulus not received	423	95
Total	447	100

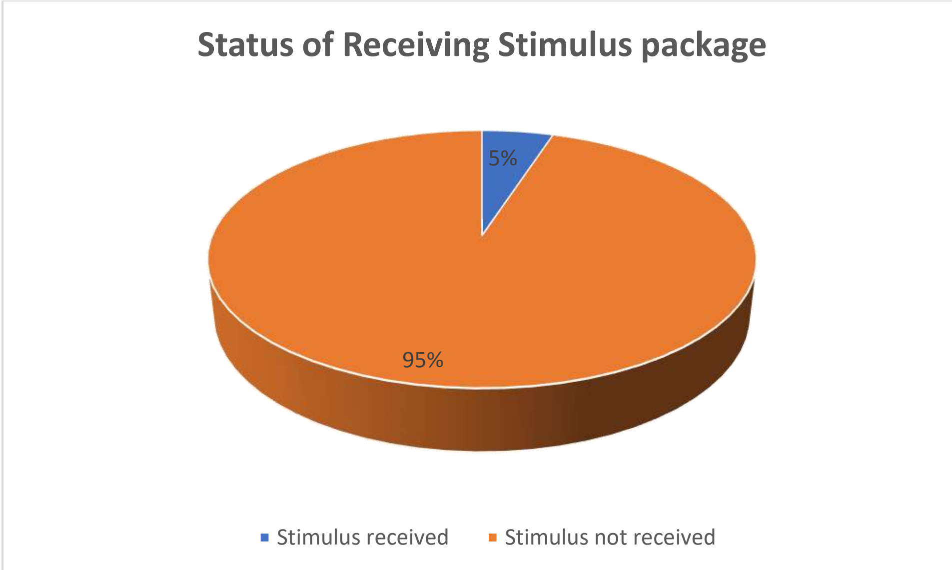

Figure 18: Stimulus package

Only 5% of the firms reported receiving a stimulus package, while 95% did not. The company that did not receive the stimulus package stated that the many firms was unable to present the bank with the necessary paperwork.

6.2.14 Types of Stimulus Received

Table 26: Types of Stimulus package

Types Stimulus	No. of Firms	Percentage
Loan	437	98%
Others	10	2%

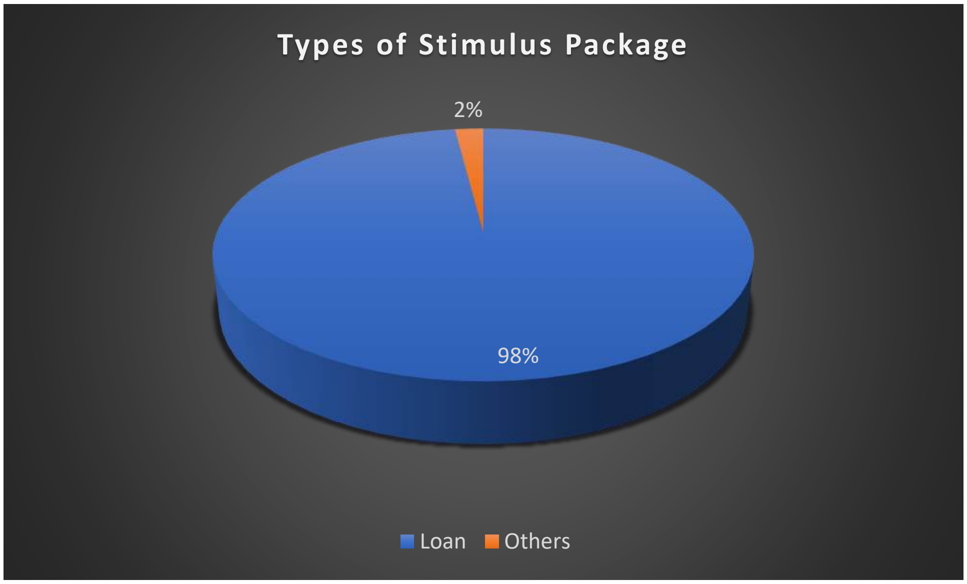

Figure 19: Types of Stimulus package

98% firms mentioned that they received loans from government.

6.2.15 Status of Usefulness of Stimulus support for the company

Table 27: Usefulness of Stimulus package

Opinion	Frequency	Percent
Strongly Beneficial	8	1.8
Beneficial	13	2.9
Neutral	3	0.6
Almost Beneficial	3	0.7
Not Beneficial	19	4.3
No response	401	89.7
Total	447	100.0

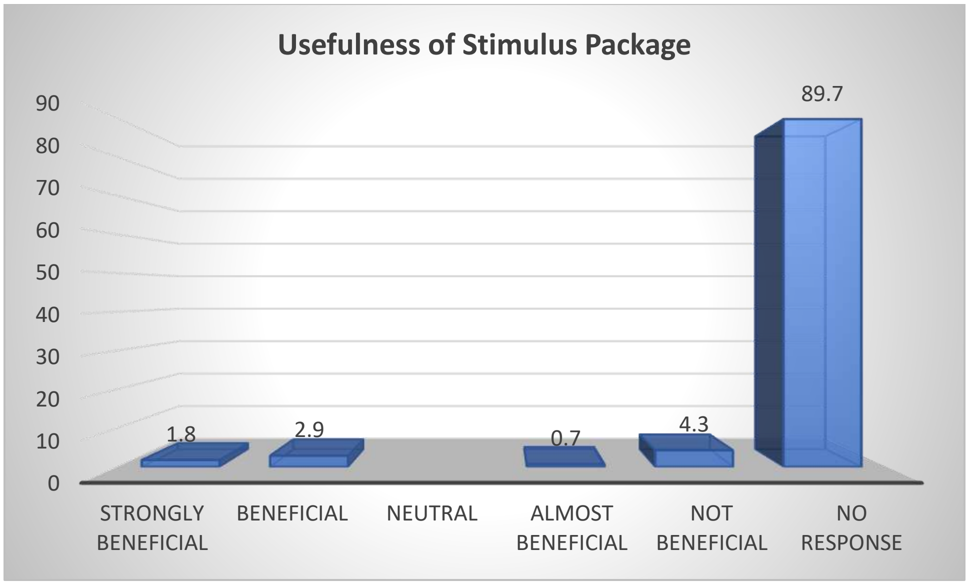

Figure 20: Usefulness of Stimulus package

Only 1.8% respondents mentioned that stimulus package was strongly beneficial whereas 89.7% respondents did not mention anything.

Part-3 (Challenges & Opportunities after Covid-19)

6.3.1: Challenging factors of Business after Covid-19

Table 28: Challenging factors

Challenging factors of Business	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
New Products	10	16	9	54	11
Frequent breakdown of machinery	8	13	17	56	6
Supply of raw-materials and other inputs	2	13	8	41	36
Quality of raw materials	2	18	24	29	27
Location, layout & material handling system affect production volume	7	13	24	41	15
Price of raw materials	2	7	7	39	45
Supply of energy/Natural resource shortage; Gas, electricity, fuel, water, etc	7	15	11	42	25
Manpower planning	4	12	28	46	10
Trained & skilled labor	3	22	25	40	10
Labor absenteeism	3	27	23	39	8

Innovation/ process upgrading initiatives	4	40	33	18	5
Change of technology & its lifetime	7	40	29	20	4
Promotion budget	3	31	27	34	5
Marketing planning	3	19	21	45	11
Market survey	6	22	29	37	6
Marketing facilities	2	19	20	44	14
Product distribution facilities	2	18	21	43	12
Product design	4	28	29	28	9
Loan volume reduces profitability	6	17	19	39	16
Financial management policies	2	14	26	42	14
Account management practice	3	18	26	37	13
Financial planning	1	15	21	46	15
Diversification of product	5	19	19	43	13
Interest rate on loans & debt	4	12	18	46	19
Continuous cash loss	2	11	16	46	26
Delay in decision making	2	23	24	39	10
Lack of experience and business outlook	8	39	26	20	5
Poor employee relations	11	38	16	27	8
Local raw material production	4	12	12	49	23
Financial support	4	4	11	38	37

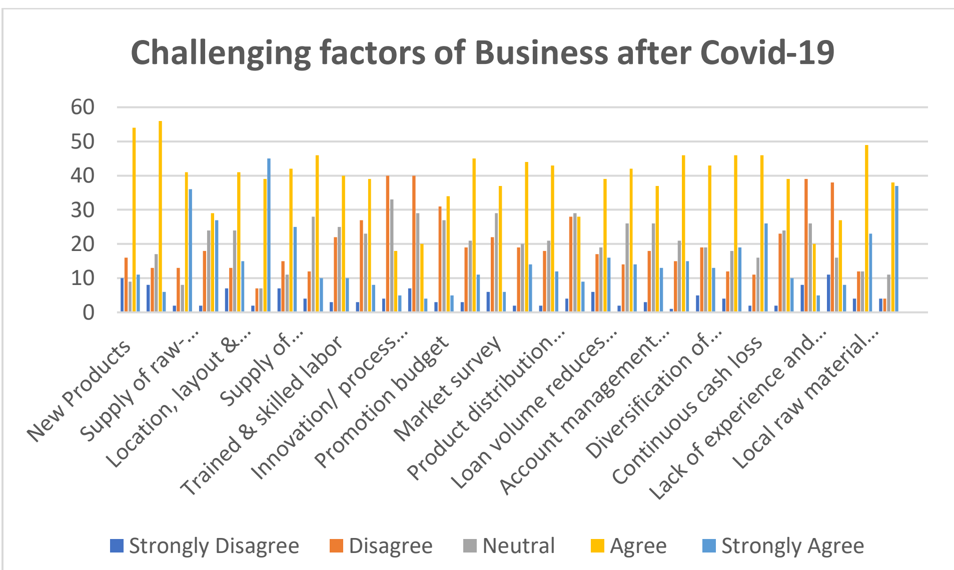

Figure 21: Challenging factors

Majority of the respondents strongly agreed that most challenging factors are price of raw materials (45%), financial support (37%), supply of raw materials and other inputs (36%). In addition, respondents also agreed frequent breakdown of machinery (56%), introduction of new product (54%), Insufficient local raw materials production (49%), High interest rate (46%), lack of marketing planning (45%), diversification of product (43%), continuous supply of natural resources (42%) and lack of skilled labor (40%) are the major challenges of business after COVID.

6.3.2 Opportunities for Business created in the post Covid-19 era

Table 29: Business Opportunities

Response	Percentage
No specific answer	46.0
Local Market enlarged/extended	36.0
Export Opportunities	2.0
Nothing notices as such	16.0
Total	100.0

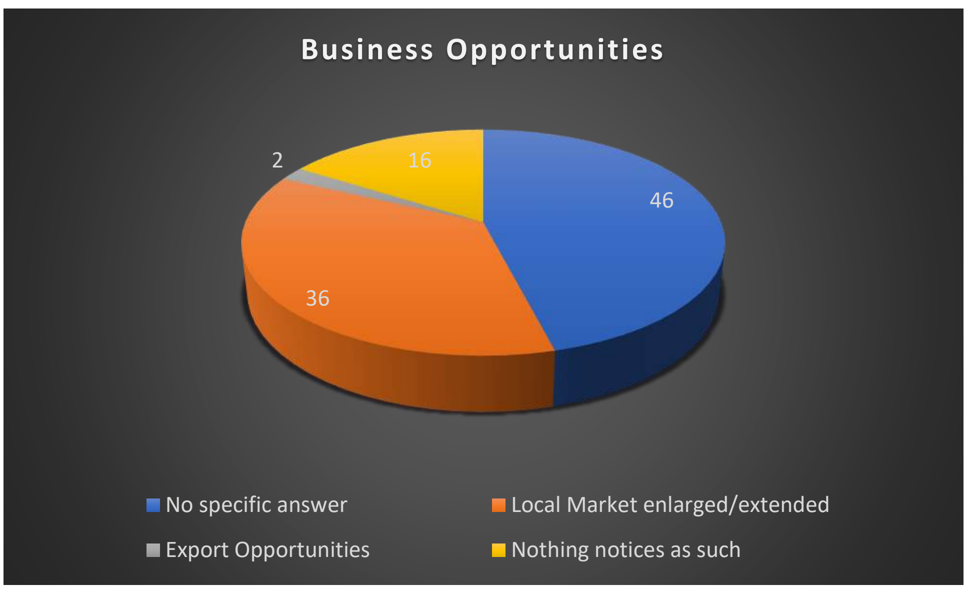

Figure 22: Business Opportunities

Majority respondents (36%) mentioned that local market extended after COVID which has created business opportunity.

6.3.3: Suggestions to Overcome the Challenges of Post Covid-19

6.3.3.1 Suggestions and Recommendations from Respondents:

- Banks should make loan documentation criteria more flexible for small industries.
- Constant support from the government to create an atmosphere that is business-friendly.
- After COVID-19, the government may offer long-term or low-interest loans to small businesses to help them survive in the market.
- In order for small businesses to survive in the market, the government can take steps to exempt them from taxes or vat for a certain period of time.
- Identification of the specific training and skill development requirements of entrepreneurs and startup organizations.
- To ensure that the labor force is prepared for the changing demands of the manufacturing industry, the government should lead the charge on upskilling and reskilling initiatives.
- In order to stabilize the market and avoid abrupt and erratic price swings that could upset businesses that depend on these raw resources, the government should take the initiative to regulate the price of raw materials.

6.4. Causal Analysis

Regression Model:

$Y = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5X_5$ ……………………….u_i

Y= Status of revenue during Covid-19 (Dependent Variable)

a = Constant

b = Regression Coefficient (Independent Variable)

x_1 = Lack of Fund (Independent Variable)

x_2 = Delivery Problem (Independent Variable)

x_3 = Delay in Decision Making (Independent Variable)

x_4 = Unavailability of raw material (Independent Variable)

x_5 = Customers Delay Payments (Independent Variable)

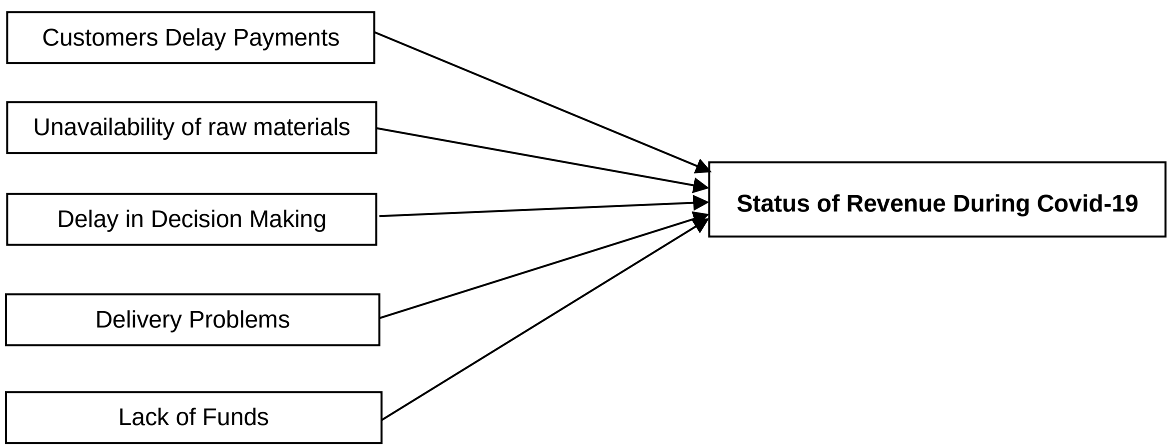

Table 31: Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.534[a]	.285	.277	.696
a. Predictors: (Constant), Lack of Fund (-), Unavailability of raw materials (-), Delay in Decision Making (-), Customers Delay Payments (-), Delivery Problems (-)				

Model summary shows that about 28% variation of dependent variable is explained by the independent variables that are included in the model.

Table 32: Anova

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	84.620	5	16.924	34.946	.000[b]
	Residual	212.602	439	.484		
	Total	297.222	444			
a. Dependent Variable: Status of revenue during COVID						
b. Predictors: (Constant), Lack of Fund (-), Unavailability of raw materials (-), Delay in Decision Making (-), Customers Delay Payments (-), Delivery Problems (-)						

The ANOVA table shows that the sig value is less than .05. It means that at least one of the independent variables is significant.

Table 33: Coefficients

Coefficients [a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.619	.185		19.557	.000
Customers Delay Payments (-)	-.310	.032	-.397	-9.530	.000
Unavailability of raw materials (-)	-.135	.029	-.198	-4.642	.000
Delay in Decision Making (-)	-.085	.033	-.105	-2.555	.011
Delivery Problems (-)	-.092	.035	-.116	-2.625	.009
Lack of Fund (-)	-.112	.030	-.155	-3.708	.000
a. Dependent Variable: Status of revenue during COVID					

The coefficient table shows that the sig values of all the independent variables are less than .05 and the value of "t" is greater than $\underline{+}1.96$. Hence all the independent variables significantly affect the dependent variable.

According to the above table:

One percent decrease in customer delay payments results in .31% increase in revenue.

One percent decrease in unavailability of raw materials results in .13% increase in revenue.

One percent decrease in delay in raw materials results in .08% increase in revenue.

One percent decrease in delivery problems results in .09% increase in revenue.

One percent decrease in lack of fund results in .11% increase in revenue.

6.5 Focus Group Discussion (FGD) Findings:

Four focus groups were held in the divisions of Dhaka, Chattogram, Khulna, and Rajshahi. The sector wise findings are following:

6.5.1 RMG Sectors:

6.5.1.1 Challenges:

- Lockdowns and restrictions in various countries disrupted global supply chains, affecting the import of raw materials, components needed for garment production and cancellation of orders.
- Transportation restrictions and delays impacted the timely delivery of goods.
- The closure of retail outlets and decreased consumer spending resulted in canceled orders and reduced demand for garments.
- Fashion trends and consumer preferences also shifted during the pandemic, leading to excess inventory and slower sales.
- The price of exporting goods and ships went up.
- The profit margin was outweighed by operating expenses.
- Following COVID, exports in the RMG sectors fell by 20% as a result of consumer demand for biodegradable cotton-based products from the USA, the EU, and other countries.
- Over 300 sub-contracting factories were closed down.
- Many organizations have been closed due to non-payment of salaries to officers and employees.
- Small and medium-sized enterprises (SMEs) within the sector, in particular, faced challenges in managing cash flow and sustaining operations.

6.5.1.2 Learning:

- In RMG sectors, most of the industry depend on big buyer however, due to order cancellation in Covid help them to learn to do business with small buyer also.
- Online business opportunity has been created.

- During Covid, the usage of technology expanded, and as a result, those who adapted to technology could survived.
- New markets are created.

6.5.1.3 Opportunities:

- Scope was increased through new market.
- Govt. incentive was a huge support.
- Orders have been cancelled or postponed especially from Europe & USA, but exports in Asia have not stopped.
- No layoffs of staffs during Covid they can meet their production demand.
- New market has been created like mask production.

6.5.2 Light Engineering Sectors:

6.5.2.1 Challenges:

- Loss of skilled workers due to Covid.
- Because the company has been closed for a long period, employees have been working in other places, resulting in a shortage of experienced workers.
- Workers were reluctant to work after Covid.
- Due to banking procedural requirements (shortage of mortgage /lack of linkage) several industries in the light engineering sectors did not receive the stimulus package.
- Lack of application of appropriate technology.
- Inability to restore worker efficiency even after providing training.
- Retrenchment of workers during and after COVID.
- Bank loan has been provided to syndicate members.
- Cost of production increased due to COVID.

6.5.2.2 Learning

- Saving tendency has been created due to Covid-19 which has a learning opportunity for the industry.
- Learn how to conduct business in adverse situation.
- Developed online platform
- Introduction of online business.
- Got the idea of how to run the online business.

6.5.2.3 Opportunities:

- Learn some market strategies to cope up with the changing situation.

6.5.3 Agri and Food processing sectors:

6.5.3.1 Challenges:

- Due to uncertainty in global markets, agricultural producers faced challenges in securing export contracts, leading to difficulties in opening LCs. Buyers were cautious about their import commitments.
- Lockdowns and travel restrictions disrupted the movement of goods, making it difficult to fulfill LC requirements, especially for agricultural exports. Transportation bottlenecks and delays affected the timely shipment of products.
- Some agricultural businesses faced difficulties accessing working capital, which is crucial for procuring inputs, maintaining operations, and fulfilling LC requirements.
- Changes in consumer behavior, such as increased online shopping and a shift in demand for certain types of agricultural products, posed challenges for producers.
- Lack of access to technology for some farmers and rural areas limited their ability to adapt to changing market dynamics and engage in e-commerce and digital marketing.

- Farmers faced challenges in accessing essential agricultural inputs like seeds, fertilizers, and pesticides due to supply chain disruptions.
- Disruptions in logistics and transportation systems led to delays and increased costs for the shipment of agricultural products.
- The pandemic created market uncertainty. Farmers and agricultural businesses had difficulty predicting demand, and price fluctuations affected their profitability.
- Many agricultural workers were unable to work due to lockdowns and health concerns. This led to labor shortages, especially during planting and harvest seasons.
- Many of the individual entrepreneur still using their personal saving to maintain the factory.
- Many of the industry did not get the stimulus package due to banking procedural requirement.
- Harassment of female entrepreneur in providing bank loan support.
- The trained workers who were lost did not get back.
- Investment recovery has not been possible.

6.5.3.2 Learning:

- New employment areas have been created through online platform

6.5.3.3 Opportunities:

- Online fish market has been crated.
- Diversified product has increased

6.5.4 Pharmaceuticals:

6.5.4.1 Challenges:

- After Covid-19, there was reluctance of medical representative to visit the doctors.
- New drug manufacture has been halted due to a ban on visits to doctors during the pandemic.
- Scarcity of raw materials due to supply chain disruption.
- The stocked raw materials were expired due to stoppage of medicine production.
- Many senior doctors were expired due to COVID which affect in decrease of prescription.
- The cost of exporting goods has been increased.
- Prices of medicines have increased.
- Due to the closure of the doctor's chambers, the sale of medicine has stopped due to non-prescription.
- Import of raw materials from China has stopped.
- Social distancing measures affected clinical trials and research and development (R&D) activities, causing delays in the development of non-COVID therapies.
- Pharmaceutical companies had to adjust to shifting market demands as healthcare systems were overwhelmed and elective procedures postponed.

6.5.4.2 Learning:

- Learn how to change the strategy to align with the market.

6.5.4.3 Opportunities:

- Production of certain medicine was increased during COVID.

6.5.5 Leather and Leather goods:

6.5.5.1 Challenges:

- Reduced consumer spending and economic downturns in key export markets led to a decline in demand for leather products, including footwear, garments, and accessories.
- Many leather manufacturing units had to shut down or operate at reduced capacity due to lockdowns, social distancing measures, and workforce shortages.
- As international buyers faced economic uncertainties, many orders were canceled or postponed, leading to financial losses for leather businesses.
- Payment delays from buyers added financial strain to the sector.
- The heavy reliance on international markets, especially in Europe and the United States, made the leather sector in Bangladesh vulnerable to the economic downturn and changing consumer behavior in those regions.
- Difficulty in getting LC due to COVID.
- Few factories got the stimulus package those who have bank loan but others could not avail it.
- Because of COVID, unsold final products have an impact on inventory management.
- Inability to create new market for sales.
- There existed a barrier between the bank and the customer, which prevented the average customer from obtaining loans or stimulus package.

6.5.5.2 Learning:

- New business opportunity has been created.
- Outsourcing opportunities have been created.

6.6 KII Findings:

Md. Motahar Hossain **RMG Expert**	During Covid-19 factories faced problems of factory operation. Due to the rapid spread of Covid-19, it creates panic among factory management. Even the buyer could not communicate with the factory about the production status and shipment. So, the factory could not ship goods to buyers on time. As a result, financially defaulting to the bank. At the same time the bank pressures them to pay back the loan. After post Covid-19, the factory did not have enough business due to buyers not opening their retail shop and not selling the outlet. So, no new orders were placed at the factory. As a result, factories lost their business. Even the Govt. side no assistance to continue business specially banking support to factories of RMG. Due to the global crisis of political issues European customers are not placing new business due to inflation of Russia-Ukraine war. At the same time all backward linkage businesses increase prices as well as the dollar crisis of Bangladesh Govt.
Dr. Golam Moula Shimul **DGM & Head of HR** **Biopharma**	The major challenges during COVID was the stock of raw materials were expired due to stoppage of medicine production and many senior doctors died due to COVID. After COVID there was reluctance of medical representative to visit the doctors. Govt. can help to arrange fares in outside of the country to create new market.
Malick Md Motiur Rahman **Leather Expert**	During COVID leather sectors face some problems, such as in the beginning of COVID we had to stop all our production but after that when government allows to run the factories, by that time we lose many orders. Another thing is we face the

	main problem in chemical import for leather processing. Because most of the chemicals we use to process leather are imported from China and other European countries, and in Bangladesh we don't have any chemical plant to produce chemicals. After COVID we also face some problems such as the buyers we lose during COVID some of them don't come back, for the CETP which is located at Hamayetpur is not working properly which affect to attract new customer in our Tannery and also there is bank related issues. Initiative should be taken to skill the workers as per demand and multiple opportunities should be explored so that this sector can survive in future.
Shirin **Shirin Agro Farm**	The major challenges during COVID was shortage of cash flow, raw materials and disruption in supply chain. Many of them did not get any stimulus package due to banking procedural requirement which affected after COVID as they are still using their own saving to sustain the business. Govt. can provide long term loan facilities and also provide training facility for the entrepreneurs as well as startup organizations.
Zahid hossen **AHJ Engineering workshop, Rajshahi.**	The major challenges during COVID was retrenchment of workers and they did not get any stimulus package. After COVID there are lack of skilled workers as the company has been closed for a long period, employees have been working in other places, resulting in a shortage of experienced workers. Govt. need to support in Entrepreneurship development, provide VAT free business and capacity development of workers.

7.1 Major Findings:

The major findings are given below:

- The vast majority of responders were over the age of 50. The age groups 30-35 and 35-40 had the second and third largest percentages of respondents.
- The majority of respondents were manufacturing owners.
- A total of 447 firms has been approached to collect data, among which 79% firms were micro, 16% firms were small and rest of 4.2% firms were large type.
- The highest percentage of raw material supply affected in light engineering sectors followed by RMG sectors during COVID-19.
- The major causes of effect of raw materials in light engineering and RMG sectors were availability and fund crisis. Whereas the most significant financial impact mentioned by the respondents were salary, payment schedule, fixed cost and payment of loans.
- The most significant effects of product marketing activities mentioned by the respondents were product pricing, value chain and customer satisfaction.
- Most of the respondents mentioned that they have faced Business Problems due to the Pandemic such as Reduced Order, Increased difficulty of financing and Inability to deliver existing orders.
- Majority of the respondents mentioned about manufacturing (36%), supply chain (30%), marketing (29%) had a major effect, whereas no influence in IT (73.8%) and inventory (30%) since Covid-19 to till 2022.
- During the pandemic, 97% of respondents mentioned that their company's revenue declined. Therefore, to survive during pandemic majority organizations took loan from bank and individual. In addition they increased wages to overcome the shortage of workers.
- Only few organizations get the stimulus package whereas majority (95%) organizatoions did not receive any stimulus package due to banking procedure which impact their savings.
- Majority of the respondents strongly agreed that most challenging factors are price of raw materials (45%), financial support (37%), supply of raw materials and other inputs (36%). In addition, respondents also agreed frequent breakdown of machinery (56%), introduction of new product (54%), Insufficient local raw materials production (49%), High interest rate

(46%), lack of marketing planning (45%), diversification of product (43%), continuous supply of natural resources (42%) and lack of skilled labor (40%) are the major challenges of business after COVID.

- Due to the global crisis of political issues European customers are not placing new business due to inflation of Russia-Ukraine war. At the same time all backward linkage businesses increase prices as well as the dollar crisis of Bangladesh Govt which impact the business.
- After COVID there are lack of skilled workers as the company has been closed for a long period, employees have been working in other places, resulting in a shortage of experienced workers.
- Online business opportunities has been created such as Agroo business.
- New market has been explored such as RMG sector.
- New business and outsourcing opportunities have been created.

Chapter- VIII

8.1 Conclusion:

The COVID-19 pandemic has had a tremendous impact on the manufacturing sector. Many manufacturers had to shut down their operations, leading to a loss in production and revenue. Businesses have had to adapt quickly in order to remain competitive and survive in a world that is emerging from the pandemic. This has included measures such as cutting costs, introducing digital technologies and automation, and exploring new ways of conducting business. Digital technologies such as artificial intelligence, internet of things (IoT), robots, big data, and cloud computing have become essential for businesses to survive and remain competitive in the post-COVID world. Businesses must explore these technologies for cost savings, fast manufacturing processes, and improvements. Manufacturing businesses will need to remain agile and innovative in order to survive and thrive in the post-COVID world.

8.1 Recommendations:

8.1.1 General Recommendations:

- Bank Loan: Government should provide long term and short-term loan to the manufacturers as per their needs to survive in the market.
- Investment in digital transformation: Manufacturing sectors should invest in digital technologies such as artificial intelligence, internet of things (IoT), robots, big data, and cloud computing. These technologies can help to improve speed, efficiency, quality, and cost.
- Diversify supply chains: Manufacturing sectors should diversify their supply chains, so they are not dependent on one source of raw materials. This could involve local suppliers, reducing risk and ensuring a safer supply of resources.
- Explore new markets: Manufacturing sectors should consider exploring new markets and opportunities, either domestically or internationally. This could involve expanding their product offerings, targeting new demographics, or exploring new markets.
- Improve safety protocols: Manufacturing sectors should ensure that they have the proper safety protocols in place in order to protect their employees and customers. This could involve maintaining social distance, proper hygiene practices, and introducing regular testing.
- Focus on sustainability: Sustainability is becoming an increasingly important factor in manufacturing, as customers expect ethical and sustainable practices from their suppliers. Businesses should consider ways of reducing their carbon footprint and waste, by investing in renewable energy sources or exploring green initiatives.
- Optimize customer service: Businesses should work to optimize customer service to ensure customer satisfaction. This could involve an omnichannel approach, personalizing the experience, or providing added services.

8.2.1 Sector-Specific Challenges, Recommendations and Actions (RMG):

Challenges	Recommendations	Actions
1. Cancellation of orders and loss of revenues as a result of relying only on large buyers.	Relationships should develop with both major and small buyers.	• To conduct market research to identify the distinct needs and preferences of small and big buyers. • Segment the offerings and production capabilities to cater to both market segments effectively.
2.Many of the factories were unable to thrive since they did not implement online tactics.	online business strategies should be adopted.	• Understand the target audience, their preferences, and the competitive landscape for online business. • Identify the niches or segments within the RMG market that can cater to effectively. • Invest in building a user-friendly, mobile-responsive e-commerce website. • Develop a digital marketing plan, including SEO, content marketing, email marketing, and social media advertising.
3.The use of technology proliferated, and those who adapted to it were able to survive.	Technology upgradation in RMG Sectors	• Embrace technology to streamline operations, from order placement to production and delivery. • Implement an efficient supply chain management system to monitor orders and inventory.
4.Loss of market	New markets need to be created for business survival and growth	• Collaborate with trade associations, industry groups, and chambers of commerce to access new markets and potential buyers.

		• Establish partnerships with small and large retailers or distributors to reach a broader customer base.
5.Small factories encountered financial difficulties in obtaining bank financing.	Bank documentation assistance is necessary. Long term VAT exemption is required to overcome the financial problems.	• Collaborate with industry associations and chambers of commerce to collectively address regulatory challenges and advocate for necessary changes. • Trade bodies can contact with government officials and negotiate to get a VAT (Value Added Tax) exemption for the Ready-Made Garment (RMG) sector. • Engage with policymakers and legislative bodies to advocate for reforms that simplify regulations and promote a more favourable business environment. • Banks should make loan documentation criteria more flexible for small industries.

8.2.2 Sector-Specific Challenges, Recommendations and Actions (Light Engineering)

Challenges	Recommendations	Actions
1.Shortage of experienced workers.	Light engineering sectors should focus on recruitment, capacity development and retention strategies.	• Establish partnerships with local technical and vocational training institutions to develop relevant curriculum and training programs that align with the needs of the light engineering sector. • Create apprenticeship programs that allow entry-level workers to gain practical, on-the-

		job experience while contributing to the workforce. • To provide on-the-job training programs for new hires to quickly integrate them into the workplace and develop specific skills required in the sector.
2.Several industries in the light engineering sectors did not get the stimulus package due to banking procedural constraints/ lack of mortgage/lack of connection.	Legislative authority services, such as city corporations, licensing authorities, tax and VAT authorities, and so on, should be streamlined.	• Streamlining legislative authority services for the light engineering sector involves enhancing efficiency, reducing bureaucracy, and promoting a business-friendly environment. • Create a forum for dialogue and collaboration to address industry-specific issues and streamline processes. • Conduct a regulatory impact assessment to identify and evaluate the impact of existing regulations and administrative procedures on the light engineering sector. • Review and simplify the application and approval processes for licenses, permits, and certifications related to the sector.
3.Inadequate use of relevant technology	Light engineering areas require technological advancement.	• Conduct a comprehensive technology assessment to identify areas where technology can be leveraged for efficiency and productivity improvements within the sector. • Allocate resources for research and development (R&D) to stay at the forefront of technological advancements and innovation within the sector. • The adoption of Industry 4.0 principles and smart factory concepts, including

		interconnected systems and the use of artificial intelligence in production processes. • Integrate technology for quality control and assurance, such as computer vision systems and machine learning algorithms for defect detection. • Incorporate supply chain management software to optimize inventory management, order tracking, and demand forecasting.

8.2.3 Sector-Specific Challenges, Recommendations and Actions (Agri and Food processing)

Challenges	Recommendations	Actions
1.Supply chain disruption	Reduce dependence on a single supplier or sourcing location. Establish strong relationships with logistics providers and carriers to ensure reliable transportation options and efficient routes. Improve infrastructure for transportation, storage, and irrigation to enhance the resilience of the	• Create a detailed map of supply chain, including all suppliers and sourcing locations. • Identify potential alternative suppliers both within and outside your current sourcing location. Consider local, regional, and international options. • Implement digital tools and platforms for supply chain management, such as inventory tracking, demand forecasting, and real-time monitoring of shipments. • Develop contingency plans and emergency response protocols in the event of infrastructure failures or disruptions.

	agriculture supply chain.	
2.Shortage of capital.	Launching group/individual loan for long term	• Identification of the specific funding needs of agricultural project or operation for group and individual. This could include working capital, investments in equipment, infrastructure, or expansion.
3.Lack of entrepreneurship development	To create training facilities for the entrepreneur as well as the startup organizations.	• Conduction a comprehensive needs assessment to identify the specific training and skill development requirements of entrepreneurs and startup organizations. • Collaboration with other stakeholders in the entrepreneurial ecosystem, including universities, local government agencies, and industry associations, to leverage their expertise and resources. • Creation of incubation and acceleration services to promising startups, providing them with intensive support and resources to help them grow rapidly.
4.Lack of new market/diverse product	Provide support to create new product markets	• Collaboration with local agricultural associations, research institutions, and government agencies to identify emerging product opportunities and trends. • Invest in research and development to create and test new agricultural products. Explore sustainable farming practices and innovative technologies to enhance product quality and value.

8.2.4 Sector-Specific Challenges, Recommendations and Actions (Pharmaceuticals)

Challenges	Recommendations	Actions
1.Decrease of sale	Marketing, sales and strategic initiative should be taken to increase sale.	• Conduction of market research to understand current trends, customer needs, and competitive landscape. • Identify growth opportunities and target markets. • Innovation and expansion of product portfolio with new drugs, formulations, or therapeutic categories. This can help meet evolving healthcare demands. • Collaborate with healthcare experts, epidemiologists, and public health agencies to identify research priorities, including key viruses and pathogens that pose a threat to human health. • Development of targeted marketing strategies to reach specific customer segments, such as healthcare professionals, hospitals, pharmacies, and patients.
2.The cost of exporting goods has risen.	Supply chain optimization and efficient inventory management can reduce cost of goods.	• Optimize supply chain to reduce transportation and logistics costs. It can involve revaluating distribution network, consolidating shipments, and negotiating better freight rates with carriers. • Implement efficient inventory management practices to minimize carrying costs while ensuring product availability. Just-in-time

		inventory systems can help reduce storage costs.
3.Reluctance of medical representative to visit the doctors.	To provide motivational strategies and training to medical representatives.	• Conduction a needs assessment to identify the specific training and motivation requirements of medical representatives. • Provide training to sales team on pharmaceutical products, industry regulations, and selling techniques. Equip them with the knowledge and skills to effectively communicate with healthcare professionals.

8.2.5 Sector-Specific Challenges, Recommendations and Actions (Leather and Leather goods)

Challenges	Recommendations	Actions
1.Impact on inventory management.	To improve inventory management system in leather sector.	• Development and implementation of clear SOPs for inventory management. • To evaluate and assess suppliers based on factors such as quality, reliability, lead times, and flexibility. • Investment in inventory management software to streamline tracking and control.
2.Lack of new business	Create new business opportunity.	• Initiate market research to identify opportunities and niches in the leather sector.
3.Lack of skilled workers	Identify skill gap and provide training	• Conduction a comprehensive skills assessment to identify the specific skill gaps and the types of skills required in the leather sector.

		• Arrange on-the-job and off the job training programs for new and existing employees to upgrade their skills. This could involve machine operation, product finishing, and quality assurance.

8.3 Suggestions for Future Research:

- A future study can be designed to discover new technology and skills gaps in order to solve IR 4.0 issues in various sectors.
- Future research might concentrate on assessing training needs for managers and workers in various sectors, as well as developing course content.
- Creating a competency framework for various industries.
- The future study can help identify new company prospects and potential buyers in one or different industries.
- Work environment and it’s impact on productivity.
- The future analysis can concentrate on certain industries such as plastic in order to identify future opportunities and difficulties.

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Annexure: 1

MOU Signing Ceremony

Inception Report Presentation

Tools Valiadation Workshop

FGD in Dhaka Division

FGD in Khulna Division

FGD in Rajshahi Division

FGD in Chattogram Division

Draft Presentation Meeting

Annexure: 2

Division wise Business Organization:

BARISHAL DIVISION	CHATTOGRAM DIVISION	DHAKA DIVISION	KHULNA DIVISION	MYMENSINGH DIVISI	RAJSHAHI DIVISION	RANGPUR DIVISION	SYLHET DIVISION	Total
6348	18778	40562	14497	6373	21126	13275	6083	127043

Detailed Division wise Business Organization:

Code	BARISHAL DIVISION	CHATTOGRAM DIVISION	DHAKA DIVISION	KHULNA DIVISION	MYMENSINGH DIVISION	RAJSHAHI DIVISION	RANGPUR DIVISION	SYLHET DIVISION	Total
111	4	9	24	8	1	20	18	10	94
112	2	2	1	0	0	1	0	0	6
113	0	0	0	0	0	0	1	0	1
114	0	0	1	0	0	0	2	0	3
116	0	0	1	1	0	1	3	0	6
118	0	0	0	0	0	0	1	0	1
119	0	0	0	0	0	0	1	1	2
126	0	0	1	0	0	0	0	0	1
127	0	0	3	0	0	0	2	55	60
130	0	2	5	2	2	1	3	1	16
141	0	4	14	6	2	14	6	3	49
143	0	0	1	0	0	0	0	0	1
144	0	0	1	1	0	0	0	0	2
146	3	26	29	17	8	34	58	3	178
149	0	0	1	1	0	1	0	0	3
150	6	2	0	0	0	8	6	5	27
161	1	0	0	0	0	3	0	0	4
162	0	1	0	0	0	1	0	0	2
163	0	0	0	0	0	0	1	0	1
164	0	1	1	3	0	1	4	0	10
210	0	1	0	0	0	0	0	0	1

Code	BARISHAL DIVISION	CHATTOG RAM DIVISION	DHAKA DIVISION	KHULNA DIVISION	MYMENSI NGH DIVISION	RAJSHAHI DIVISION	RANGPUR DIVISION	SYLHET DIVISION	Total
220	0	1	6	0	1	2	4	1	15
230	0	0	0	1	0	0	0	16	17
240	0	0	1	0	0	0	0	0	1
311	0	3	0	0	0	1	0	0	4
312	2	7	5	12	0	2	7	0	35
313	0	1	0	4	0	0	0	0	5
321	0	0	1	0	0	0	0	0	1
322	0	3	6	3	3	9	1	1	26
510	0	0	4	0	0	0	1	0	5
610	0	1	1	2	0	0	0	0	4
620	0	4	3	0	1	0	1	2	11
810	5	2	5	9	0	1	142	661	825
811	0	3	11	3	0	0	0	36	53
891	0	2	4	0	0	0	0	0	6
893	0	39	2	1	0	0	0	0	42
899	0	0	1	0	0	0	0	0	1
910	0	1	3	2	0	1	0	1	8
990	0	1	0	0	0	0	0	0	1
1010	0	10	0	1	0	1	1	1	14
1020	1	11	0	30	0	3	0	0	45
1030	1	2	60	4	1	42	41	0	151
1040	5	38	30	24	5	43	18	4	167
1050	12	43	77	25	16	28	28	16	245
1061	4	83	115	45	11	97	21	6	382
1062	2	3	6	12	0	17	14	6	60
1063	24	418	545	836	554	2637	1387	76	6477
1071	62	245	355	141	40	113	108	51	1115
1072	0	2	6	5	1	4	4	1	23
1073	4	15	22	3	1	11	11	3	70
1074	0	8	6	8	2	9	2	0	35
1075	1	4	2	0	0	6	0	0	13
1076	0	0	3	0	1	0	0	0	4
1077	0	20	2	0	0	0	11	50	83
1079	0	70	15	10	4	10	2	3	114
1080	1	13	39	19	17	48	5	0	142

Code	BARISHAL DIVISION	CHATTOG RAM DIVISION	DHAKA DIVISION	KHULNA DIVISION	MYMENSI NGH DIVISION	RAJSHAHI DIVISION	RANGPUR DIVISION	SYLHET DIVISION	Total
1101	0	1	0	0	0	0	0	0	1
1104	0	2	18	1	0	2	0	0	23
1105	0	4	3	0	0	2	0	0	9
1200	5	7	13	10	2	5	17	1	60
1201	2	5	10	13	8	6	27	1	72
1202	0	0	2	6	1	1	1	0	11
1203	0	2	0	6	1	0	4	1	14
1311	2	74	315	25	19	48	14	4	501
1312	0	15	1675	43	3	2650	11	2	4399
1313	0	19	386	1	0	11	2	0	419
1314	0	1	26	0	3	12	5	0	47
1315	0	0	576	7	1	1760	3	0	2347
1316	0	2	8	3	3	4	1	0	21
1317	0	3	9	0	0	2	0	0	14
1391	0	11	927	0	1	0	0	0	939
1392	1	5	592	12	5	5	7	1	628
1393	0	3	6	1	0	0	3	0	13
1394	7	8	58	7	0	8	0	0	88
1399	7	31	264	37	209	15	15	21	599
1410	2	238	2921	11	10	158	34	2	3376
1411	0	44	447	2	7	0	1	0	501
1420	0	6	220	0	5	1	3	0	235
1430	0	43	1029	0	7	6	52	0	1137
1511	0	1	12	2	0	1	1	0	17
1512	0	5	36	1	0	10	0	0	52
1520	3	44	413	4	1	38	0	0	503
1610	70	58	151	65	4	25	26	9	408
1621	0	1	12	4	0	0	3	0	20
1622	0	1	2	0	1	0	0	0	4
1623	0	2	2	0	0	0	1	0	5
1624	2	0	0	0	0	1	0	0	3
1625	0	3	14	0	6	1	1	0	25
1629	0	23	3	1	0	0	0	6	33
1701	0	10	95	1	0	5	2	0	113
1702	0	15	73	5	1	5	0	0	99

Code	BARISHAL DIVISION	CHATTOG RAM DIVISION	DHAKA DIVISION	KHULNA DIVISION	MYMENSI NGH DIVISION	RAJSHAHI DIVISION	RANGPUR DIVISION	SYLHET DIVISION	Total
1709	0	7	50	0	0	1	2	1	61
1811	2	9	139	1	0	11	3	2	167
1812	1	0	129	7	0	4	0	0	141
1820	0	0	1	0	0	0	0	0	1
1910	0	0	0	0	0	25	0	0	25
1911	0	0	1	0	0	0	0	0	1
1919	0	0	1	0	0	0	0	0	1
1920	0	5	0	0	0	1	0	5	11
2011	3	2	55	17	0	20	3	0	100
2012	0	2	6	13	2	0	0	1	24
2013	0	0	48	4	0	1	3	0	56
2021	0	1	8	7	0	3	1	0	20
2022	0	5	18	5	0	3	1	1	33
2023	2	12	22	0	1	6	4	0	47
2029	0	11	11	1	2	6	0	3	34
2030	1	0	0	0	0	1	0	0	2
2031	0	1	0	2	0	1	0	0	4
2100	3	20	60	9	4	7	0	3	106
2101	0	2	2	0	0	4	2	1	11
2102	0	0	0	1	1	2	1	0	5
2103	0	1	2	0	0	0	0	0	3
2104	0	0	1	0	0	3	0	0	4
2211	0	2	7	1	0	3	0	1	14
2219	0	8	19	3	0	1	0	4	35
2220	0	40	433	15	2	45	3	6	544
2221	1	3	23	4	0	0	0	0	31
2310	0	4	10	1	0	3	0	0	18
2391	0	0	1	2	0	0	0	0	3
2392	1	27	6	1	0	3	14	0	52
2393	1	0	25	2	0	0	3	2	33
2394	2	10	31	6	0	3	1	0	53
2395	0	7	29	6	9	48	1	1	101
2396	1	0	2	4	0	1	0	0	8
2397	397	934	1134	1011	141	879	815	131	5442
2399	0	0	2	0	0	2	0	0	4

Code	BARISHAL DIVISION	CHATTOG RAM DIVISION	DHAKA DIVISION	KHULNA DIVISION	MYMENSI NGH DIVISION	RAJSHAHI DIVISION	RANGPUR DIVISION	SYLHET DIVISION	Total
2410	0	35	131	5	0	4	1	0	176
2420	0	26	22	3	1	7	1	0	60
2431	0	1	30	1	0	8	0	0	40
2432	0	38	9	0	0	14	0	0	61
2511	0	60	185	33	2	73	17	17	387
2512	1	2	4	1	0	0	1	0	9
2513	0	0	5	0	0	0	0	0	5
2520	0	0	1	0	0	0	0	0	1
2591	0	0	2	1	0	1	0	0	4
2592	0	0	43	8	0	1	0	0	52
2593	1	10	97	6	0	18	4	0	136
2599	11	24	105	10	0	12	1	6	169
2610	0	0	7	0	0	0	0	0	7
2620	0	0	17	0	0	0	0	0	17
2630	0	1	2	0	0	1	1	0	5
2640	0	0	2	1	0	0	0	0	3
2652	0	0	1	0	0	0	0	0	1
2670	0	1	0	2	0	0	1	0	4
2710	0	0	11	1	0	0	0	0	12
2720	0	0	12	1	0	2	0	0	15
2731	1	4	2	1	0	0	0	0	8
2732	0	1	3	3	0	0	0	0	7
2733	0	0	2	0	0	0	0	0	2
2740	0	5	4	0	0	0	0	0	9
2750	0	5	23	1	0	0	0	0	29
2790	0	0	17	0	0	1	0	0	18
2811	0	0	8	0	0	0	0	0	8
2813	0	2	3	1	0	0	0	0	6
2814	0	1	1	0	0	0	0	0	2
2815	0	0	1	0	0	0	0	0	1
2816	0	2	1	0	0	0	0	0	3
2817	0	0	2	0	0	1	0	0	3
2819	0	0	2	0	0	0	0	0	2
2821	0	0	11	13	1	20	3	1	49
2822	0	2	41	0	0	2	1	0	46

Code	BARISHAL DIVISION	CHATTOG RAM DIVISION	DHAKA DIVISION	KHULNA DIVISION	MYMENSI NGH DIVISION	RAJSHAHI DIVISION	RANGPUR DIVISION	SYLHET DIVISION	Total
2823	0	0	18	1	0	4	0	0	23
2824	0	0	0	1	0	0	0	0	1
2825	0	0	0	1	0	1	0	0	2
2826	0	23	15	2	0	13	0	0	53
2829	0	2	12	0	0	0	0	0	14
2910	1	2	5	1	0	4	0	0	13
2920	0	0	6	1	1	0	0	0	8
2930	0	4	14	11	1	9	0	0	39
3011	4	10	19	3	0	0	0	0	36
3013	2	4	85	0	0	0	0	0	91
3020	0	0	0	0	0	1	1	0	2
3091	0	1	3	1	0	1	0	0	6
3092	0	1	1	0	0	0	0	0	2
3094	0	0	2	0	0	0	0	0	2
3100	2	58	59	12	2	16	4	5	158
3101	5	176	473	99	9	119	40	104	1025
3102	0	0	1	0	0	0	0	1	2
3103	0	0	9	0	1	0	0	0	10
3104	0	1	3	0	0	1	1	0	6
3105	0	1	11	1	3	2	0	1	19
3211	2	10	36	14	0	31	15	1	109
3212	0	0	0	0	0	1	0	0	1
3220	0	0	0	0	0	0	1	0	1
3230	0	2	2	3	0	0	0	0	7
3240	0	1	3	1	0	0	0	0	5
3250	0	4	2	0	0	0	0	0	6
3290	0	5	7	1	0	1	0	0	14
3311	0	1	2	3	0	0	0	0	6
3312	0	0	11	0	0	1	0	0	12
3313	0	0	1	0	0	0	0	0	1
3314	0	1	4	1	0	1	0	0	7
3315	1	8	9	5	0	0	0	0	23
3319	0	0	2	0	0	0	0	0	2
3320	0	0	2	0	0	0	0	0	2
3411	0	1	12	0	0	0	1	0	14

Code	BARISHAL DIVISION	CHATTOG RAM DIVISION	DHAKA DIVISION	KHULNA DIVISION	MYMENSI NGH DIVISION	RAJSHAHI DIVISION	RANGPUR DIVISION	SYLHET DIVISION	Total
3510	40	122	148	81	37	94	59	41	622
3520	4	22	32	1	3	12	1	8	83
3530	7	12	1	2	0	0	0	0	22
3600	2	7	18	7	3	7	5	3	52
3700	0	0	3	1	0	0	1	0	5
3811	0	1	2	1	0	1	0	0	5
3830	0	4	5	3	0	1	0	0	13
4100	2	41	102	7	5	16	8	5	186
4101	0	0	3	0	0	0	0	1	4
4210	4	18	29	5	2	9	5	1	73
4220	0	1	6	0	1	3	3	1	15
4290	1	4	2	0	0	0	0	0	7
4311	0	1	0	2	0	1	1	0	5
4321	0	0	2	1	0	0	0	0	3
4322	0	0	1	0	0	0	0	1	2
4329	0	0	1	0	0	0	0	0	1
4330	0	1	7	0	0	0	0	0	8
4390	0	72	3	1	0	0	114	55	245
4510	0	26	146	21	0	10	7	2	212
4520	1	24	102	11	1	4	3	2	148
4530	1	4	42	6	0	12	0	2	67
4540	0	4	13	26	3	7	4	1	58
4541	0	8	4	4	0	4	0	0	20
4542	0	5	5	3	0	0	5	2	20
4543	0	3	0	1	0	0	0	0	4
4544	0	1	0	0	0	1	0	0	2
4545	0	2	2	0	0	0	0	0	4
4546	0	1	6	1	0	0	0	0	8
4547	1	7	10	11	0	12	0	0	41
4610	2	9	39	7	3	3	6	5	74
4611	2	50	153	44	109	4	6	0	368
4620	0	7	8	2	3	8	6	2	36
4630	9	24	64	20	3	6	9	7	142
4631	2	2	16	59	2	0	3	0	84
4641	7	4	42	3	1	17	20	1	95

Code	BARISHAL DIVISION	CHATTOG RAM DIVISION	DHAKA DIVISION	KHULNA DIVISION	MYMENSI NGH DIVISION	RAJSHAHI DIVISION	RANGPUR DIVISION	SYLHET DIVISION	Total
4642	0	2	36	1	0	1	1	1	42
4643	0	0	2	0	0	0	0	0	2
4644	0	2	8	1	0	1	0	8	20
4649	0	6	59	7	0	5	10	0	87
4651	1	1	20	1	0	0	0	0	23
4652	0	0	32	0	0	4	2	1	39
4653	0	1	6	0	0	1	0	0	8
4659	0	2	9	0	0	1	0	0	12
4661	4	69	115	36	54	47	23	21	369
4662	0	1	8	0	0	0	0	0	9
4663	6	26	179	75	2	22	5	6	321
4664	3	0	1	1	0	5	0	0	10
4665	5	9	22	8	3	12	7	0	66
4666	0	1	4	2	0	0	0	0	7
4669	1	3	51	0	2	4	2	6	69
4690	1	19	14	1	9	20	10	4	78
4711	1	32	8	14	0	2	0	6	63
4712	0	0	2	1	0	1	0	0	4
4713	0	0	1	52	1	1	0	2	57
4714	0	1	3	2	2	1	1	2	12
4715	1	5	10	7	2	1	1	1	28
4716	3	17	63	28	3	3	2	22	141
4719	0	3	32	4	0	0	2	0	41
4721	1	5	19	8	0	0	0	23	56
4722	0	0	1	0	0	1	0	1	3
4723	0	0	0	2	0	0	0	2	4
4724	0	2	12	3	3	13	1	7	41
4730	1	27	77	8	5	13	5	11	147
4741	9	2	29	1	2	4	1	2	50
4742	1	0	8	1	0	2	0	0	12
4743	3	4	7	3	0	0	0	0	17
4751	2	15	73	5	0	4	2	2	103
4752	4	9	56	23	3	18	6	11	130
4753	1	1	5	0	0	1	0	0	8
4754	0	0	3	2	0	0	2	0	7

Code	BARISHAL DIVISION	CHATTOG RAM DIVISION	DHAKA DIVISION	KHULNA DIVISION	MYMENSI NGH DIVISION	RAJSHAHI DIVISION	RANGPUR DIVISION	SYLHET DIVISION	Total
4755	0	0	3	6	0	0	0	0	9
4756	0	0	3	2	0	0	0	0	5
4757	0	1	4	72	0	1	2	0	80
4759	1	9	131	19	2	18	1	1	182
4761	0	1	8	2	0	5	3	1	20
4763	1	1	1	0	0	0	0	0	3
4764	0	0	5	1	0	0	0	0	6
4771	5	1	54	26	0	5	4	9	104
4772	3	7	43	9	0	4	4	11	81
4773	0	2	20	3	1	2	0	0	28
4774	0	0	1	0	0	0	0	0	1
4781	0	1	0	0	0	0	0	2	3
4782	2	8	29	4	0	1	4	2	50
4789	0	0	3	0	0	0	0	0	3
4791	0	0	2	0	0	0	0	0	2
4799	0	1	2	0	0	2	0	0	5
4911	0	15	15	8	1	14	31	2	86
4912	0	1	0	0	0	0	0	0	1
4921	0	10	29	19	0	4	2	5	69
4922	0	11	8	10	1	13	8	1	52
4923	0	5	45	5	1	4	1	0	61
4930	0	0	0	1	0	0	0	0	1
5011	5	7	1	0	0	0	0	0	13
5012	1	12	4	3	0	0	0	0	20
5021	1	0	4	0	0	0	0	0	5
5110	2	3	41	0	0	4	0	4	54
5120	0	0	2	0	0	0	0	3	5
5210	6	52	81	25	12	67	57	9	309
5221	0	1	3	2	1	0	0	0	7
5222	0	1	0	0	0	0	2	0	3
5223	0	0	1	4	0	0	1	5	11
5224	0	2	6	0	0	0	0	0	8
5229	0	30	47	1	1	1	0	0	80
5310	11	30	46	26	10	24	12	13	172
5320	4	12	30	10	1	10	3	5	75

Code	BARISHAL DIVISION	CHATTOG RAM DIVISION	DHAKA DIVISION	KHULNA DIVISION	MYMENSI NGH DIVISION	RAJSHAHI DIVISION	RANGPUR DIVISION	SYLHET DIVISION	Total
5510	32	140	172	29	6	41	13	66	499
5520	2	1	12	1	0	2	1	0	19
5590	5	8	17	7	1	20	0	3	61
5610	66	524	919	98	36	154	229	183	2209
5611	8	49	219	3	0	8	9	12	308
5612	0	11	54	3	2	10	15	21	116
5621	0	1	6	0	0	0	2	2	11
5629	0	25	33	3	0	2	2	15	80
5630	0	2	7	1	0	0	1	0	11
5811	1	8	200	5	0	7	3	0	224
5813	0	2	12	2	0	5	4	10	35
5819	0	2	35	16	0	4	0	1	58
5820	0	2	18	0	0	3	0	1	24
5912	0	0	0	0	1	0	0	0	1
5913	0	1	7	0	0	0	0	1	9
5914	0	4	24	5	4	6	1	2	46
6010	1	3	10	4	0	3	3	1	25
6020	0	6	9	0	0	4	1	1	21
6110	4	24	27	10	3	8	9	5	90
6120	4	10	37	10	2	5	1	2	71
6130	3	18	16	10	0	13	1	6	67
6190	2	4	5	2	0	0	0	0	13
6201	0	0	8	0	0	0	0	0	8
6202	0	1	13	0	0	0	0	0	14
6311	0	0	3	0	0	0	3	0	6
6312	0	1	7	0	0	0	0	1	9
6391	2	5	6	3	2	3	2	0	23
6399	0	0	2	0	0	0	0	0	2
6411	1	4	3	2	0	0	1	1	12
6419	379	1536	2753	970	304	745	550	575	7812
6420	0	0	1	0	0	0	0	0	1
6430	0	0	1	0	0	0	0	1	2
6491	1	4	14	2	1	1	1	0	24
6492	51	56	55	15	42	58	28	9	314
6493	0	1	6	6	0	8	0	7	28

Code	BARISHAL DIVISION	CHATTOG RAM DIVISION	DHAKA DIVISION	KHULNA DIVISION	MYMENSI NGH DIVISION	RAJSHAHI DIVISION	RANGPUR DIVISION	SYLHET DIVISION	Total
6499	7	19	1	2	0	4	2	12	47
6511	67	223	310	177	27	79	58	59	1000
6512	10	93	116	75	9	65	20	0	388
6520	2	0	11	0	0	1	0	0	14
6530	0	0	1	0	0	0	0	0	1
6611	1	13	16	3	0	3	0	2	38
6612	0	13	95	1	0	0	0	1	110
6619	7	1	5	2	1	3	2	0	21
6621	1	2	0	0	0	1	1	1	6
6622	1	10	4	13	0	1	1	1	31
6810	0	3	111	1	0	2	0	0	117
6820	1	6	31	3	0	1	0	0	42
6910	8	4	17	7	8	8	6	12	70
6920	2	3	12	0	1	3	1	0	22
7010	2	12	70	1	0	0	2	0	87
7020	2	3	142	1	0	4	1	0	153
7110	0	5	31	4	0	2	0	2	44
7120	0	7	5	2	0	0	0	0	14
7210	5	26	35	13	3	10	13	6	111
7220	2	0	2	1	0	2	0	0	7
7310	0	1	22	0	0	2	0	0	25
7320	0	1	3	0	0	2	0	0	6
7410	0	1	17	0	0	1	1	1	21
7420	1	1	16	3	0	4	0	0	25
7490	0	3	1	1	0	2	5	0	12
7500	3	25	34	33	13	20	23	5	156
7710	0	2	4	1	0	0	0	0	7
7721	0	0	1	0	0	0	0	1	2
7722	0	0	1	0	0	0	0	0	1
7729	0	47	68	8	3	0	4	17	147
7730	0	5	18	1	0	1	1	2	28
7740	0	0	1	0	0	0	0	0	1
7810	0	0	3	0	0	0	0	0	3
7820	0	0	31	1	0	2	0	0	34
7830	0	0	19	0	0	2	0	0	21

Code	BARISHAL DIVISION	CHATTOG RAM DIVISION	DHAKA DIVISION	KHULNA DIVISION	MYMENSI NGH DIVISION	RAJSHAHI DIVISION	RANGPUR DIVISION	SYLHET DIVISION	Total
7911	0	13	52	1	0	0	0	3	69
7912	0	3	54	0	0	0	0	0	57
7990	0	3	4	0	1	3	1	1	13
8010	1	1	16	1	1	0	1	3	24
8020	0	1	0	0	0	0	0	0	1
8030	1	0	4	0	0	0	0	0	5
8110	0	0	0	3	0	0	0	0	3
8121	0	0	2	1	0	0	1	1	5
8129	0	0	0	3	0	0	0	0	3
8130	8	8	10	21	3	16	6	6	78
8211	2	12	40	9	11	14	14	1	103
8219	2	0	0	0	0	0	0	0	2
8220	1	3	8	2	0	1	4	3	22
8230	0	2	0	0	0	1	0	0	3
8292	0	3	15	0	0	1	0	0	19
8299	0	1	0	0	0	0	0	0	1
8411	519	1044	1248	809	439	974	838	391	6262
8412	159	561	814	415	110	282	232	120	2693
8413	134	192	401	244	66	264	229	55	1585
8421	0	21	32	4	0	3	9	3	72
8422	6	51	55	77	6	3	22	11	231
8423	137	348	323	418	99	236	229	110	1900
8430	7	7	11	18	5	18	8	8	82
8510	305	1609	2200	717	410	912	674	427	7254
8511	71	308	528	134	62	110	76	105	1394
8521	1506	3150	4687	2676	1568	3075	3168	875	20705
8522	25	47	113	62	30	134	67	5	483
8523	700	945	751	831	527	1001	938	337	6030
8524	136	401	612	306	154	395	412	131	2547
8525	0	4	6	1	2	1	1	1	16
8526	26	51	92	83	58	131	100	8	549
8527	120	233	156	154	85	150	150	48	1096
8530	154	209	268	223	117	290	237	92	1590
8531	4	35	100	43	47	75	16	11	331
8532	184	255	241	126	91	178	159	76	1310

Code	BARISHAL DIVISION	CHATTOGRAM DIVISION	DHAKA DIVISION	KHULNA DIVISION	MYMENSINGH DIVISION	RAJSHAHI DIVISION	RANGPUR DIVISION	SYLHET DIVISION	Total
8541	3	0	7	4	0	4	1	2	21
8542	0	4	16	16	0	2	1	0	39
8543	14	2	1	0	0	3	0	1	21
8544	11	14	51	23	12	40	9	12	172
8545	0	2	0	0	0	0	3	0	5
8549	10	93	243	89	40	51	20	24	570
8550	4	9	62	13	2	38	3	1	132
8610	158	758	1078	575	224	449	303	177	3722
8620	13	14	27	5	3	16	4	48	130
8621	0	4	5	7	1	0	5	4	26
8622	1	0	3	1	1	2	1	0	9
8623	3	0	11	3	0	7	0	18	42
8690	95	220	370	136	77	156	113	57	1224
8710	1	1	62	22	0	8	0	1	95
8720	1	3	16	10	1	2	2	0	35
8730	2	0	5	2	0	0	0	0	9
8790	0	7	22	12	6	5	9	1	62
8810	0	0	3	1	2	2	0	1	9
8890	4	1	4	2	0	1	1	0	13
9000	0	1	9	3	1	2	0	0	16
9101	1	1	9	3	1	3	0	0	18
9102	2	0	6	3	2	4	1	0	18
9103	0	0	2	0	0	1	0	0	3
9311	2	1	9	8	1	2	3	1	27
9312	5	13	58	21	0	21	5	4	127
9319	0	1	2	3	0	1	2	0	9
9321	1	9	10	7	0	6	4	4	41
9329	0	5	12	4	2	2	1	2	28
9411	2	17	13	3	0	2	3	0	40
9412	1	11	23	15	0	11	0	4	65
9420	3	7	45	22	1	36	7	7	128
9491	5	17	43	26	4	7	9	9	120
9492	3	3	11	3	0	7	1	1	29
9493	230	541	756	654	145	512	523	101	3462
9499	15	48	84	39	24	49	18	10	287

Code	BARISHAL DIVISION	CHATTOGRAM DIVISION	DHAKA DIVISION	KHULNA DIVISION	MYMENSINGH DIVISION	RAJSHAHI DIVISION	RANGPUR DIVISION	SYLHET DIVISION	Total
9511	0	2	11	3	0	0	1	0	17
9512	0	0	2	1	0	0	3	0	6
9521	1	1	6	2	0	3	0	1	14
9522	1	3	7	0	0	0	0	0	11
9523	0	0	0	0	0	5	0	0	5
9524	0	0	0	0	0	0	1	0	1
9529	0	1	2	0	0	2	0	0	5
9601	0	10	154	0	7	11	0	0	182
9602	0	8	61	1	0	9	1	0	80
9603	0	0	1	0	0	1	1	0	3
9606	2	13	103	39	5	19	13	1	195
9609	0	16	16	3	0	12	6	0	53
9900	0	1	0	0	0	0	0	0	1
	6348	18778	40562	14497	6373	21126	13275	6083	127042

Annexure:3

Sector wise Company List:

Name of the Industry (code-1) Agri and Food					
		Frequency	Percent	Valid Percent	Cumulative Percent
	Addin Fisheries	1	5.0	5.0	5.0
	Alin Food product Ltd.	1	5.0	5.0	10.0
	Bright Ice & Cold Storage	1	5.0	5.0	15.0
	Hena Solt	1	5.0	5.0	20.0
	Ispahani Foods Ltd.	1	5.0	5.0	25.0
	Khair Fishing	1	5.0	5.0	30.0
	M.H Elastics & Accessories Ltd.	1	5.0	5.0	35.0
	Millat Salt Industry	1	5.0	5.0	40.0
	Mocca Salt Crashing Industry	1	5.0	5.0	45.0
	New Eastern Cold Store	1	5.0	5.0	50.0
	Pathania fisheries	1	5.0	5.0	55.0
	Raj Cold Storage (Pvt) Ltd	1	5.0	5.0	60.0
	Resemco Foods Ltd	1	5.0	5.0	65.0
	Rige Agro	1	5.0	5.0	70.0
	Ripon borthers	1	5.0	5.0	75.0
	Riyad Solt Industry Ltd.	1	5.0	5.0	80.0
	Sanawara Cold Storage Ltd.	1	5.0	5.0	85.0
	Sharif Cold Stroge Ltd.	1	5.0	5.0	90.0
	Siddheswari cold Stroge Ltd.	1	5.0	5.0	95.0
	Younus Cold Storage Ltd.	1	5.0	5.0	100.0
	Total	20	100.0	100.0	

Name of the Industry (Code-2) (RMG)					
		Frequency	Percent	Valid Percent	Cumulative Percent
	Mridul Fashoin	1	.5	.5	.5
	Noorun Nahar Knitwear Ltd	1	.5	.5	1.0
	ABC Sarker Garments	1	.5	.5	1.4
	Abdullah Garments	1	.5	.5	1.9
	Abdullahs Collection	1	.5	.5	2.4
	Adiyan Garments	1	.5	.5	2.9
	Adorsho Fishring Khamar Beribadh	1	.5	.5	3.4
	AH Apparel	1	.5	.5	3.8
	Ahmmad Ali Garments	1	.5	.5	4.3
	Aji Sweter Ltd	1	.5	.5	4.8
	Akter Garments	1	.5	.5	5.3
	AL Sohel	1	.5	.5	5.8
	Al- Islam cloth Store	1	.5	.5	6.3
	Al-Jayed Fashion	1	.5	.5	6.7
	Al-Majib Garments	1	.5	.5	7.2
	Ali Hossen Garments	1	.5	.5	7.7
	Amena Garments	1	.5	.5	8.2
	Anabia Fashion House	1	.5	.5	8.7
	Angel Fashion	1	.5	.5	9.1
	Anik Garments	1	.5	.5	9.6
	Anika Choice	1	.5	.5	10.1
	Anowara pant fair	1	.5	.5	10.6
	Anwer Garments	1	.5	.5	11.1
	Archona Products	1	.5	.5	11.5
	Arfin pant House	1	.5	.5	12.0
	Ashraf Garments	1	.5	.5	12.5
	Ayan Fashion	1	.5	.5	13.0
	Aysha Fashion	1	.5	.5	13.5
	Aysha Garments	1	.5	.5	13.9
	BABA MAYER Dowa Garments	1	.5	.5	14.4
	Baishakhi Hosiery	2	1.0	1.0	15.4
	Beauty Fashion	1	.5	.5	15.9
	Bepary point and Garments	1	.5	.5	16.3

	Bichittra Pant house	1	.5	.5	16.8
	Bikrompur Garments	1	.5	.5	17.3
	Bilbila Fashion House	1	.5	.5	17.8
	Bismaillah Update Collection	1	.5	.5	18.3
	Bismillah finishing center	1	.5	.5	18.8
	Bismillah Garments	2	1.0	1.0	19.7
	Bissmillah Garments	1	.5	.5	20.2
	Buckle B	1	.5	.5	20.7
	Chadpur Enterprise	1	.5	.5	21.2
	Choice Colletion	1	.5	.5	21.6
	Choiti Fashion Jone	1	.5	.5	22.1
	CHOWDURY GARMENTS	1	.5	.5	22.6
	Concord Garments Ltd	1	.5	.5	23.1
	Cotton Viea	1	.5	.5	23.6
	Ctton line knit Garments	1	.5	.5	24.0
	Dekko Isho - 1	1	.5	.5	24.5
	Dekko Isho - 2	1	.5	.5	25.0
	Fabricon Fashion	1	.5	.5	25.5
	Fahim Fashion	1	.5	.5	26.0
	Faruk Garments	1	.5	.5	26.4
	Fashion Mekar	1	.5	.5	26.9
	Fatema Saree Bitan	1	.5	.5	27.4
	Firoza Garments	1	.5	.5	27.9
	G A Fashion	1	.5	.5	28.4
	GM Baby wear Garments	1	.5	.5	28.8
	GM Garments	1	.5	.5	29.3
	Habib Garments	1	.5	.5	29.8
	Harun Garments	1	.5	.5	30.3
	Hassa Fashion	1	.5	.5	30.8
	Howladar kint wear Garments	1	.5	.5	31.3
	Imran Garments	1	.5	.5	31.7
	Irfan Garments	1	.5	.5	32.2
	Islam Pant House	1	.5	.5	32.7
	Jahirul Islam Garments	1	.5	.5	33.2
	Jhuma Garments	1	.5	.5	33.7
	Jihad Garments	1	.5	.5	34.1

	Jishan Garments	1	.5	.5	34.6
	Jit Garments	1	.5	.5	35.1
	Johir Panjabi Fashion	1	.5	.5	35.6
	Jom Jom Cloth Sotre	1	.5	.5	36.1
	Jui Garments	1	.5	.5	36.5
	Kallyan Taxtile	1	.5	.5	37.0
	Kayanath Sharee Bitan	1	.5	.5	37.5
	Keniyat Textile	1	.5	.5	38.0
	Khan Garments	1	.5	.5	38.5
	Khandokar Garments	1	.5	.5	38.9
	Koala Elastic & Accessories Industries	1	.5	.5	39.4
	Lili Hosiery	1	.5	.5	39.9
	M/S Ahnaf Garments	1	.5	.5	40.4
	M/S Al-Khaladya Fashion	1	.5	.5	40.9
	M/S AR Garments	1	.5	.5	41.3
	M/S Arosh Garments	1	.5	.5	41.8
	M/S Fahmida Garments	1	.5	.5	42.3
	M/S Mojib Garments	1	.5	.5	42.8
	M/S Morshed Garments	1	.5	.5	43.3
	M/S Mridula Febrics	1	.5	.5	43.8
	M/s New Rakib Garments	1	.5	.5	44.2
	M/S Prime Garments	1	.5	.5	44.7
	M/S Santa Garments	1	.5	.5	45.2
	M/S Sara Garments	1	.5	.5	45.7
	M/S Yeasin Garments	1	.5	.5	46.2
	Ma Babar dowa Garments	1	.5	.5	46.6
	Ma Garments	1	.5	.5	47.1
	Ma-Babar doya pant House	1	.5	.5	47.6
	Manik Fashion	1	.5	.5	48.1
	Mark Design	1	.5	.5	48.6
	Mark Fashion	1	.5	.5	49.0
	Maruf Garments	1	.5	.5	49.5
	Masud Garments	1	.5	.5	50.0
	Mawla Garments	1	.5	.5	50.5
	Maxim Fashion Ltd.	1	.5	.5	51.0
	Maya Garments	1	.5	.5	51.4
	Mayer dowa Garments	1	.5	.5	51.9
	Mayer Doya Garments	1	.5	.5	52.4

	Mehedi Garments	1	.5	.5	52.9
	Mehedi Knit Wears	1	.5	.5	53.4
	Meherab Saree Bitan	1	.5	.5	53.8
	Mercy Apparel	1	.5	.5	54.3
	Mim Pant Fair	1	.5	.5	54.8
	Mocca Modina Trouser	1	.5	.5	55.3
	Mochafir Cloth Store	1	.5	.5	55.8
	Mohona Fashion Ltd.	1	.5	.5	56.3
	Mollah Kintwears Ltd	1	.5	.5	56.7
	Moriam Fashion	1	.5	.5	57.2
	Mukka Garments	1	.5	.5	57.7
	Nahid Garments	1	.5	.5	58.2
	New Adiba Fashion	1	.5	.5	58.7
	New Akhter Garments	1	.5	.5	59.1
	New B & B Hosiery & Garments	1	.5	.5	59.6
	New Busra Garments	1	.5	.5	60.1
	New Classic Garments	1	.5	.5	60.6
	New Mehedi Garments	1	.5	.5	61.1
	New Modern Garments	1	.5	.5	61.5
	New Nabna Dress Gerden	1	.5	.5	62.0
	New Quality Garments	1	.5	.5	62.5
	New R A Fashion	1	.5	.5	63.0
	New Rong Berong Garments	1	.5	.5	63.5
	New Sadia Garments	1	.5	.5	63.9
	New Saimon Collection	1	.5	.5	64.4
	New Shouad Fashion	1	.5	.5	64.9
	New Talha Fashion	1	.5	.5	65.4
	New Ujjal Hosiari & Garments	1	.5	.5	65.9
	Niloy Fashion	1	.5	.5	66.3
	Nirob Garments	1	.5	.5	66.8
	Nur Islam Garments	1	.5	.5	67.3
	Nurul Hoque Garments	1	.5	.5	67.8
	Oishy Fashion	1	.5	.5	68.3
	Oliullah Garments	1	.5	.5	68.8
	Parvez Garments	1	.5	.5	69.2
	R S Fashion	1	.5	.5	69.7

	R S Febrics	1	.5	.5	70.2
	Rabia Germents	1	.5	.5	70.7
	Rafi KintWear Ltd	1	.5	.5	71.2
	Raisa Pant House	1	.5	.5	71.6
	Rajib Production	1	.5	.5	72.1
	Rana Garments	1	.5	.5	72.6
	Rana Pant House	1	.5	.5	73.1
	Rezwan Fashion	1	.5	.5	73.6
	Riyaz Garments	1	.5	.5	74.0
	RJ Fashion	1	.5	.5	74.5
	Robin Fashoin World	1	.5	.5	75.0
	Robin Hood	1	.5	.5	75.5
	Rofiqul Garments	1	.5	.5	76.0
	Rojonigondha Garments	1	.5	.5	76.4
	Rokeya Garments	1	.5	.5	76.9
	Romana Garments	1	.5	.5	77.4
	Rongdhonu Orna	1	.5	.5	77.9
	Rose Valley Fashion	1	.5	.5	78.4
	Rupa Garments	1	.5	.5	78.8
	S Islam Garments	1	.5	.5	79.3
	S. R Garments	1	.5	.5	79.8
	S.M Prient	1	.5	.5	80.3
	S.S. Fashion	1	.5	.5	80.8
	Saif Fashion	1	.5	.5	81.3
	Sanjida Enterprise	1	.5	.5	81.7
	Sathi Fashion & Degin House	1	.5	.5	82.2
	Seeam Fashion	1	.5	.5	82.7
	Shaharia Garments	1	.5	.5	83.2
	Shahin and Brothers	1	.5	.5	83.7
	Shams Enterprice	1	.5	.5	84.1
	Shamtex International	1	.5	.5	84.6
	Sharif alaihi Garments	1	.5	.5	85.1
	Shohan Garments	1	.5	.5	85.6
	Shohidul Fashion	1	.5	.5	86.1
	Shoriful Garments	1	.5	.5	86.5
	Shuvo Garments	1	.5	.5	87.0
	Siyam Enterprise	1	.5	.5	87.5
	Siyam Garments	1	.5	.5	88.0

	Sohan Tailoring Center	1	.5	.5	88.5
	Sohel Garments	1	.5	.5	88.9
	Sonia Garments	1	.5	.5	89.4
	ST Fashion	1	.5	.5	89.9
	Standard Fashion	1	.5	.5	90.4
	SULAV FASHION	1	.5	.5	90.9
	Sumaiya Fashion	1	.5	.5	91.3
	SUMAIYA FASHION	1	.5	.5	91.8
	Sumi Garments	1	.5	.5	92.3
	Sun Moon Garments	1	.5	.5	92.8
	Tahashin Fashion	1	.5	.5	93.3
	Tamim Garments	1	.5	.5	93.8
	Tanvir Garments	1	.5	.5	94.2
	Tasfiya Garments	1	.5	.5	94.7
	Tex Asia Accessories	1	.5	.5	95.2
	Textrim International Ltd	1	.5	.5	95.7
	The Activewear Gamrments Ltd	1	.5	.5	96.2
	Tonni Fashion	1	.5	.5	96.6
	Toraj Fashion	1	.5	.5	97.1
	Triple Seven Apparels	1	.5	.5	97.6
	Urban Clothing	1	.5	.5	98.1
	Vesper Fashion	1	.5	.5	98.6
	Wave Fashion Garments	1	.5	.5	99.0
	Wearb Industy	1	.5	.5	99.5
	World Fashion	1	.5	.5	100.0
	Total	208	100.0	100.0	

Name of the Industry (Code-3) (Pharma)					
		Frequency	Percent	Valid Percent	Cumulative Percent
	Ad din Pharmaciticle	1	33.3	33.3	33.3
	BIO Pharma Ltd	1	33.3	33.3	66.7

	The IBN SINA Pharmaceuticals Industry PLC	1	33.3	33.3	100.0
	Total	3	100.0	100.0	

Name of the Industry (Code-4) (Leather & Leather Products)					
		Frequency	Percent	Valid Percent	Cumulative Percent
	Ahmed Bag Industry	1	2.6	2.6	2.6
	Akash Leather	1	2.6	2.6	5.1
	Al Fatih Leather Limited	1	2.6	2.6	7.7
	Ali Leather BD.Com	1	2.6	2.6	10.3
	Arfat Leather Belt Store	1	2.6	2.6	12.8
	Arif Shoe	1	2.6	2.6	15.4
	Bijoy Paduka Shoes	1	2.6	2.6	17.9
	Brothers Gallery	1	2.6	2.6	20.5
	Chowdhury Leather Craft	1	2.6	2.6	23.1
	Daimond Shoes	1	2.6	2.6	25.6
	Deshi Paduka Shoes	1	2.6	2.6	28.2
	Dola Leather Shoes	1	2.6	2.6	30.8
	Fox Fashion	1	2.6	2.6	33.3
	Hossen Karkhana	1	2.6	2.6	35.9
	Kausar Karkhana	1	2.6	2.6	38.5
	leather collection	1	2.6	2.6	41.0
	M.K Enterprise	1	2.6	2.6	43.6
	M/S Bismillah	1	2.6	2.6	46.2
	Mahi Leather	1	2.6	2.6	48.7
	Mahiuddin Karkhana	1	2.6	2.6	51.3
	Mahmud Leather	1	2.6	2.6	53.8
	Masud Karkhana	1	2.6	2.6	56.4
	Mondol Shoes Factory	1	2.6	2.6	59.0
	National Leather	1	2.6	2.6	61.5
	Nobi Hassain Karkhana	1	2.6	2.6	64.1
	Onu Shoe	1	2.6	2.6	66.7
	Pacific Leather Works	1	2.6	2.6	69.2
	Rajon Shoe	1	2.6	2.6	71.8

	Ronok Shoes	1	2.6	2.6	74.4
	Rony Leather	1	2.6	2.6	76.9
	Rudro Shoes	1	2.6	2.6	79.5
	Samiya Shoe	1	2.6	2.6	82.1
	Sanjit Shoes	1	2.6	2.6	84.6
	Sayem Leather Craft	1	2.6	2.6	87.2
	Seven star Shoe	1	2.6	2.6	89.7
	Shek Forid Leather	1	2.6	2.6	92.3
	Shishir Shoes	1	2.6	2.6	94.9
	Shuvo King Shoes	1	2.6	2.6	97.4
	Sikdar Leather Craft	1	2.6	2.6	100.0
	Total	39	100.0	100.0	

Name of the Industry (Code-5) (Light Eng.)					
		Frequency	Percent	Valid Percent	Cumulative Percent
	Ahmed Bag Industry	1	2.6	2.6	2.6
	Akash Leather	1	2.6	2.6	5.1
	Al Fatih Leather Limited	1	2.6	2.6	7.7
	Ali Leather BD.Com	1	2.6	2.6	10.3
	Arfat Leather Belt Store	1	2.6	2.6	12.8
	Arif Shoe	1	2.6	2.6	15.4
	Bijoy Paduka Shoes	1	2.6	2.6	17.9
	Brothers Gallery	1	2.6	2.6	20.5
	Chowdhury Leather Craft	1	2.6	2.6	23.1
	Daimond Shoes	1	2.6	2.6	25.6
	Deshi Paduka Shoes	1	2.6	2.6	28.2
	Dola Leather Shoes	1	2.6	2.6	30.8
	Fox Fashion	1	2.6	2.6	33.3
	Hossen Karkhana	1	2.6	2.6	35.9
	Kausar Karkhana	1	2.6	2.6	38.5
	leather collection	1	2.6	2.6	41.0
	M.K Enterprise	1	2.6	2.6	43.6
	M/S Bismillah	1	2.6	2.6	46.2
	Mahi Leather	1	2.6	2.6	48.7
	Mahiuddin Karkhana	1	2.6	2.6	51.3
	Mahmud Leather	1	2.6	2.6	53.8
	Masud Karkhana	1	2.6	2.6	56.4

	Mondol Shoes Factory	1	2.6	2.6	59.0
	National Leather	1	2.6	2.6	61.5
	Nobi Hassain Karkhana	1	2.6	2.6	64.1
	Onu Shoe	1	2.6	2.6	66.7
	Pacific Leather Works	1	2.6	2.6	69.2
	Rajon Shoe	1	2.6	2.6	71.8
	Ronok Shoes	1	2.6	2.6	74.4
	Rony Leather	1	2.6	2.6	76.9
	Rudro Shoes	1	2.6	2.6	79.5
	Samiya Shoe	1	2.6	2.6	82.1
	Sanjit Shoes	1	2.6	2.6	84.6
	Sayem Leather Craft	1	2.6	2.6	87.2
	Seven star Shoe	1	2.6	2.6	89.7
	Shek Forid Leather	1	2.6	2.6	92.3
	Shishir Shoes	1	2.6	2.6	94.9
	Shuvo King Shoes	1	2.6	2.6	97.4
	Sikdar Leather Craft	1	2.6	2.6	100.0
	Total	39	100.0	100.0	

Annexure:4

Survey Questionnaire:

"Opportunities and Challenges for Post Covid-19 in Selected Manufacturing Sectors of Bangladesh"

Survey Questionnaire

Code:				-			-				

PART 1: INDUSTRY PROFILE

1. Name of the Industry:
2. Type of Business operations:

Type of Business operations: (Micro = 01-25 workers, Small = 26-100 workers, Medium = 121-300 workers, For RMG maximum 1000, Large = More than 300 workers, For RMG more than 1000 workers)

Micro	☐
Small	☐
Medium	☐
Large	☐

Total Number of Employees

Employee		Male	Female	Others
Local				
Foreign				

3. Supply of raw materials affected during covid-19 (2019-2021)

Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)

4. Please indicate the causes of effect (please select all that apply):

☐ Availability

☐ Procurement method

- [ ] Fund
- [ ] Demand
- [ ] Others, please specify…………

5. Raw materials that used in your production process

- [ ] Foreign
- [ ] Local
- [ ] Both

6. Raw materials used in your production process affected during Covid-19 (2019-2021)

a) Foreign ………….. %
b) Local …………….. %
c) Both …………….. %

7. Please indicate the most significant financial Effect for your firm during the outbreak (Covid-19: 2019-2021). (please select all that apply):

- [ ] Salary
- [ ] Fixed costs, e.g. rent
- [ ] Repayment of loans
- [ ] Payments schedule
- [ ] Other expenses, please specify: _________________
- [ ] No specific problem

8. Please indicate business problems your firm faced due to the epidemic? (2019-2021). (please select all that apply):

- [ ] Reduction of orders
- [ ] Inability to deliver existing orders
- [ ] Increased difficulty of financing
- [ ] Existing loans cannot be extended
- [ ] Disruption of raw material and intermittent goods supply chain

- [ ] Disruptions of final product sales
- [ ] Terminating contract of goods supply
- [ ] Insufficient protective equipment (e.g. masks)
- [ ] Other, please specify: ___________________

9. Is there any Effect on your products marketing activities during COVID and Post-COVID period? (please select all that apply):

During COVID

- [ ] Product pricing
- [ ] Value chain Disruptions
- [ ] Brand Image
- [ ] Customer satisfaction
- [ ] Market messages
- [ ] Other, please specify: ___________________

Post- COVID

- [ ] Product pricing
- [ ] Value chain Disruptions
- [ ] Brand Image
- [ ] Customer satisfaction
- [ ] Market messages
- [ ] Other, please specify: ___________________

10. How much the COVID-19 pandemic Effected/disrupted your business over the rest of the year? (Please put √ Tick Marks)

#	COVID-19 pandemic Effected/disrupted your business	Major Effect (greater than 50%)	Some Effect (between 10 to 50%)	Very little Effect (between 5 and 10%	Less than 5%	No Effect
a	Overall Business effect					
b	Operations/ Manufacturing Effect					
c	Supply Chain Effect					
d	Maintenance Effect					
e	IT Effect					

f	Inventory Effect					
g	Services Effect					
h	Marketing Effect					
i	Other (please specify):					

11. What Effect did you face on your firm's revenue during the pandemic (2019-2021) ?

a) No Effect

b) Decrease

c) Increase

d) Remain same

12. If increased, please mentioned the ………. %

13. If decreased, please mentioned the ………. %

14. How did you overcome the shortage of cashflows?

- ☐ Loans by commercial banks
- ☐ Loans by Internet finance
- ☐ Loans by microfinance and non-bank financial institutions
- ☐ Loans by private individuals
- ☐ Negotiating with lenders to avoid withdrawing loans
- ☐ Equity financing (adding new shareholders or capital increase of former shareholders)
- ☐ Reduction of operating costs (e.g. layoffs and salary reductions)
- ☐ No cash flow shortfalls problem
- ☐ Other, please specify: ____________________

15. How did you overcome the shortage of workers?

- ☐ Wage increases

- [ ] Use of advanced equipment or software to reduce the amount of work
- [ ] Outsourcing of orders
- [ ] Delay in delivery
- [ ] No shortage of workers
- [ ] Other, please specify: ____________________

16. Did you receive any stimulus packages by your government that your company is benefiting from?

    Yes

    No

17. If yes, please specify what stimulus packages you received (such as no/low-interest rate, loan, vat/tax exemption, etc):

18. To what degree this support was useful to your company

- [ ] Strongly beneficial
- [ ] Beneficial
- [ ] Neutral
- [ ] Almost beneficial
- [ ] Not beneficial
- [ ] Other, please specify: ____________________

<u>Part 2: Enterprise Assessment</u>

Challenging factors of your Business after Covid-19: (Strongly Agree = 5, Agree =4, Not sure = 3, Disagree = 2, strongly Disagree =1)

Challenging factors of your Business after Covid-19:		Strongl	Disagre	Not	Agree	Strongl
29	New products	1	2	3	4	5
30	Frequent breakdown of machinery	1	2	3	4	5
31	Supply of raw-materials and other inputs	1	2	3	4	5
32	Quality of raw materials	1	2	3	4	5
33	Location, layout & material handling system affect production volume	1	2	3	4	5
34	Price of raw materials	1	2	3	4	5
35	Supply of energy/Natural resource shortage; Gas, electricity, fuel, water, etc.	1	2	3	4	5
36	Manpower planning	1	2	3	4	5
37	Trained & skilled labor	1	2	3	4	5
38	Labor absenteeism / labor turnover	1	2	3	4	5
39	Technology adaptation plan	1	2	3	4	5
40	Innovation/ process upgrading initiatives	1	2	3	4	5
41	Change of technology & its lifetime	1	2	3	4	5
42	Promotion budget	1	2	3	4	5
43	Marketing planning	1	2	3	4	5
44	Market survey	1	2	3	4	5
45	Marketing facilities	1	2	3	4	5
46	Product distribution facilities	1	2	3	4	5
47	Product design	1	2	3	4	5
48	Loan volume reduces profitability	1	2	3	4	5
49	Financial management policies	1	2	3	4	5

Challenging factors of your Business after Covid-19:		Strongl	Disagre	Not	Agree	Strongl
50	Account management practice	1	2	3	4	5
51	Financial planning	1	2	3	4	5
52	Diversification of product	1	2	3	4	5
53	Interest rate on loans & debt	1	2	3	4	5
54	Continuous cash loss	1	2	3	4	5
55	Delay in decision making	1	2	3	4	5
56	Lack of experience and business outlook	1	2	3	4	5
57	Poor employee relations	1	2	3	4	5
58	Local raw material production	1	2	3	4	5
59	Financial support	1	2	3	4	5
60	If others, please specify					

Part-3

61. Please provide any advice/suggestions to overcome the challenges of post covid-19:

a)

b)

62. Please mention any Business opportunities that you find in Post-covid-19 for your business?

a) Export

b) Local Market

63. Please provide recommendations for creating opportunities of Business in Post covid-19.

Respondent’s Profile:

Name of the respondent:

Designation:

Age:

Educational Background:

□ Male □ Female

Length of engagement in the business

Annexure:5

FGD & KII Checklist:

A Study on

"Opportunities and Challenges for Post Covid-19 in Selected Manufacturing Sectors of Bangladesh"

Checklist for FGD & KII

1. Has Covid-19 affected your business operations?
2. How has covid-19 affected your business?
3. Have you received support from any organization during Covid-19?
4. What has Covid-19 taught us about business management?
5. Has Covid-19 created any new opportunities for us to conduct business?
6. What challenges have you faced post-Covid-19?
7. How can stakeholders help us meet post-Covid-19 challenges?