Vulnerability, Resilience and Recovery in Readymade Garment Enterprises of Bangladesh
An Assessment of Impact and Implications of the COVID Pandemic

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Acronyms

BGMEA   Bangladesh Garment Manufacturers and Exporters Association

BKMEA   Bangladesh Knitwear Manufacturers and Exporters Association

CED   Centre for Entrepreneurship Development

CPD   Centre for Policy Dialogue

CSR   Corporate Social Responsibility

DIFE   Department of Inspection for Factories and Establishments

ILO   International Labour Organisation

MFS   Mobile Financial Services

MiB   Mapped in Bangladesh

MoLE   Ministry of Labour and Employment

m-o-m   Month on Month

NIAC   National Infrastructure Advisory Council

PPE   Personal Protective Equipment

RBC   Responsible Business Conduct

RI   Resilience Index

RMG   ReadyMade Garment

1. Introduction

The export-oriented apparels sector of Bangladesh has been struggling to recover from the COVID-19 related challenges. After the dip in export growth during April and May 2020 (m-o-m growth was: -81 per cent and -64 per cent respectively), the performance has been gradually improved in the following months (m-o-m growth in February, 2021 was -1.0 per cent). Despite such positive changes, the sector has been still confronting multiple shocks and vulnerabilities. Various steps of resilience and recovery have been undertaken at the enterprise level over the last several months (Moazzem et al., 2020). An important contribution has been made by the government through fiscal and monetary policy measures since the initial phase of the pandemic. In this backdrop, it is important to appreciate how much capacity of resilience and recovery has been gained by the Readymade Garment enterprises. Such an under testing will help understand the possible future path of recovery of these enterprises.

The study features resilience and recovery of the RMG enterprises – an important issue arises to an enterprise in the phase of its transition from the crisis. Since the outbreak of the COVID-19 in March, 2020, several studies have been undertaken to focus on different challenges of RMG enterprises and workers. These include studies on loss of businesses in RMG enterprises (ILO, 2020), level of rebounding of the businesses (Moutray, 2020; Fairlie, 2020), livelihood challenges of RMG workers (Human Rights Watch, 2020) and stimulus package for the RMG enterprises (ILO, 2020). By and large, these studies appreciate the level of shocks and vulnerabilities of the RMG sector during the crisis period. Since the industry has entered the phase of recovery in view of the gradual opening of economic activities across the world, it is important to study the level of resilience and recovery accrued by the enterprises from the COVID crisis.

In this backdrop, the study has been undertaken to identify the challenges of the RMG enterprises in resilience and recovery from their existing state of vulnerabilities. The study has estimated the level of resilience of recovery during the COVID period compared to that in the post-covid period. Based on the analysis, the study has put forward a set of recommendations with regard to policy and operational issues. The Centre for Policy Dialogue (CPD) has carried out this study in partnership with the Centre for Entrepreneurship Development (CED) of Brac University.

2. Literature Review

The resilience and recovery of an enterprise depend on its risk management strategies, initiatives and activities. Enterprises undertake measures to counter risks and vulnerability associated with physical, natural and complex interrelated issues etc. A better understanding and preparation during the pre-incidence period on resilience-related issues help enterprises to tackle a large-scale crisis in a better way. The level of resilience of an enterprise measures risk management, mitigation, responses and recovery (Diagram 1). The effectiveness of a resilient enterprise depends on its ability to anticipate, adapt to, and rapidly recover from a potentially disruptive event, whether naturally occurring or human-caused (NIAC, 2009).

Theoretically, the resilience of an enterprise is defined as its ability to reduce the magnitude and/or duration of disruptive events. The effectiveness of a resilient enterprise depends on its ability to anticipate, absorb, adapt to, and rapidly recover from a potentially disruptive event, whether naturally occurring or human-caused (NIAC, 2009). Here, anticipation and absorption capabilities reflect the capacity of the system to avoid a disruptive event or to decrease the detrimental impacts of that event. On the other hand, adaptation and recovery reflect the capacity of the system during an event to avoid or to decrease the importance of the consequences to the environment by quickly returning to a normal state of operation.

Diagram 1: Risk Management Process
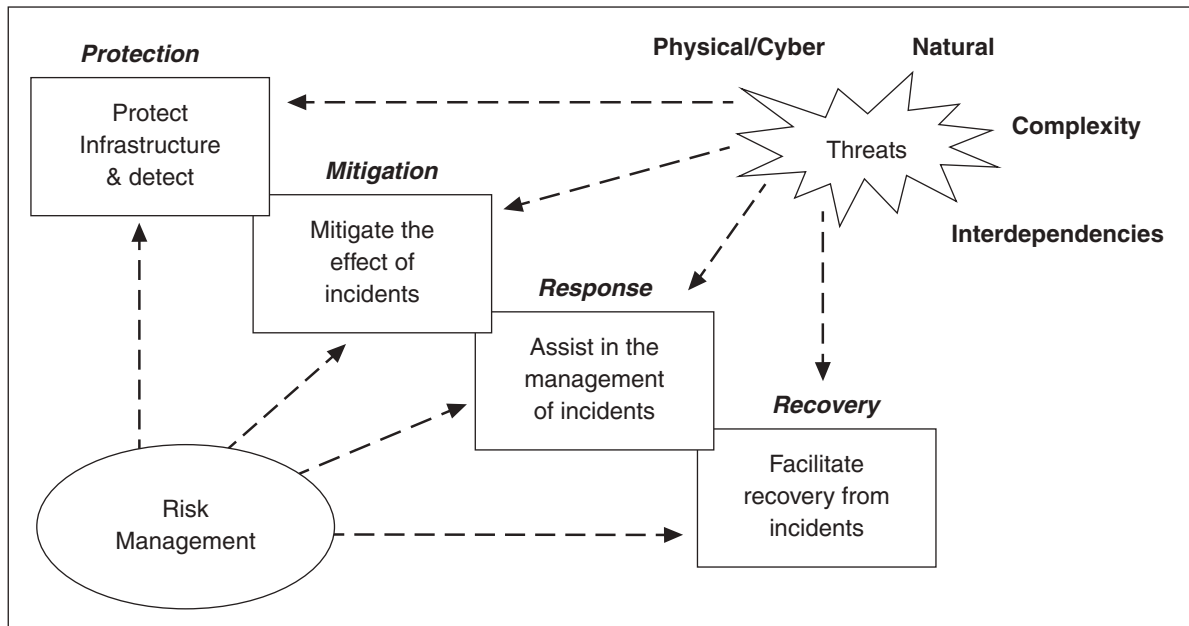
Source: Prepared based on Peerenboom (2002)

Besides, robustness is the ability to maintain critical operations and functions in the face of crisis (NIAC, 2009) which is directly related to the ability of the system to absorb the impacts of a hazard and to avoid or decrease the importance of the event that could be generated by this hazard. Enterprises' ability to return to and/or reconstitute normal operations as quickly and efficiently as possible after a disruption portray their strength of quick recovery (NIAC, 2009).

Different types of instruments have been applied as risk management tools during any global level crisis. After the COVID pandemic hits globally, many enterprises needed support to reinitiate operations and to gradually restore and reinvigorate productivity growth. Important factors in this phase include access to financial services, market recovery measures, alterative supply chains and a conducive business environment that enables enterprises to recover more quickly from the economic crisis (ILO, 2020). Supporting the private sector to maintain operations and achieving resilience is critical for the short-term recovery efforts. Hence, governments across the world declared various support measures for the private sector. Necessary reconfiguration in their policy settings was done for retaining more productive and decent employment during the recovery period.

Private enterprises, like in earlier global crisis, have confronted multiple shocks during the COVID pandemic. Consequently, a section of enterprises scaled down their operation and even in extreme cases, a section of enterprises was forced to close down their businesses. During the COVID-19 pandemic, it has been observed how the business community across the world has made an active effort to ramp up its capacities on business continuity, as well as to connect and learn from other peers (Morán, 2020). Firms that operate in global value chains have faced other types of challenges such as the 'bullwhip effect' which caused a huge amount of stock and inventory due to lack of sales at the retail market due to close-down of business operations owing to the COVID pandemic. Brands and buyers could contribute by quickly restoring the business contact and thereby ensuring inventory smoothing as well as extending more production orders. Such cooperation between brands and buyers with suppliers are mostly needed for small scale enterprises.

The literature review indicates that private sector enterprises confront different levels of shocks and challenges of recovery from global shocks. Hence, different strategies are required for different types of enterprises. Government support measures could contribute to this process. However, enterprises themselves, need to be prepared beforehand in terms of developing a business continuity plan and operationalise other safeguard mechanisms. At the same time, firms that operate in the global value chains face different types of difficulty where cooperation and partnership from the brands and buyers and sourcing countries are urgently required. Given the diverse impact on different categories of enterprises, the strategies, support from the government and partnership and cooperation with market players need to be customised taking into account the challenges of medium-term recovery of the enterprises.

3. Methodology

The analytical frame of the study focuses on' 'resilience and recovery' of the RMG enterprises from a large-scale crisis which usually beyond the control of the enterprises. To estimate the level of resilience of the RMG enterprises, the study considers a 'resilience index' based on Argonne, 2010. The index comprises three components which include- (a) robustness; (b) recovery; and (c) resourcefulness. Table 1 presents the list of components and sub-components of the resilience index.

Table 1: Major components and subcomponents of resilience index

Robustness	Recovery	Resourcefulness
• Redundancy	• Restoration	• Training/Exercises
• Prevention /Mitigation	• Coordination	• Awareness
• Maintaining key functions		• Protective measures
		• Stockpiles
		• Response
		• New resources
		• Alternative sites

Source: Prepared by authors.

To estimate the index, a nationally representative sample survey has been conducted. A stratified sampling method has been used to select the samples.[1]

Stratified Random Sampling Formula is — $n_i = (N_i / N) * n$

> n_i= Sample size for i stratum;
> N_i= Population size for i stratum
> N = Size of entire population;
> n = Size of entire sample.

These samples have been categorised into two strata – (a) sample member factories and (b) sample non-member factories. Three different categories of enterprises have been randomly selected from these two strata -
a. small scale factories (operating with workers less than 500);

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[1]In this case, all population units are grouped into homogeneous groups and simple random sampling method is used for selecting samples under each group. This method allows computing estimates for each of the strata with a specified level of precision. The sampling weights take care of the varying probabilities of selection across different strata (Ross, 2010; The World Bank, 2020).

b. medium scale factories (operating with workers between 500 and 2500); and

c. large scale factories (operating with workers higher than 2500).

The distribution of samples is presented in Table 2.

Table 2: Distribution of sample enterprises

Dhaka	*No. of factories (according to worker size)*			
	< 500	*501-2500*	*2501 and above*	*Total*
Member factory	98	84	8	190
Non-member factory	27	1	0	28
Total	**126**	**84**	**8**	**218**
Narayangonj	*No. of factories (according to worker size)*			
	< 500	*501-2500*	*2501 and above*	*Total*
Member Factory	50	26	3	80
Non-member Factory	34	1	0	35
Total	**84**	**27**	**3**	**115**
Gazipur	*No. of factories (according to worker size)*			
	< 500	*501-2500*	*2501 and above*	*Total*
Member Factory	55	97	20	172
Non-member Factory	20	4	1	25
Total	**75**	**101**	**21**	**197**
Chattogram	*No. of factories (according to worker size)*			
	< 500	*501-2500*	*2501 and above*	*Total*
Member Factory	26	23	2	51
Non-member Factory	18	1	0	19
Total	**44**	**24**	**2**	**70**

Source: CPD-CED Study, 2021.

The primary survey has been conducted in October-November, 2020 in four major RMG industrial clusters - Dhaka, Gazipur, Narayangonj and Chattogram. The Mapped in Bangladesh (MiB)- a digital mapping initiative of CED carried out the primary survey.

4. Basic features of surveyed enterprises

The study collected information on basic features related to surveyed enterprises which include membership status of the enterprises, their location, size and types of goods produced. A total of 610 RMG enterprises were covered under the survey which accounted for

Table 3: Distribution of enterprises in terms of membership

Membership Type	Freq.	Per cent
Only BGMEA	365	59.84
Only BKMEA	88	14.43
Both	47	7.7
Non-member	110	18.03
Total	**610**	**100**

Source: CPD-CED Survey, 2020.

19.0 per cent of the total 3211 listed enterprises in the MiB database. Among the surveyed enterprises 82 per cent are a member and 18 per cent are non-member enterprises (Table 3). The member RMG enterprises include those enterprises which are either members of Bangladesh Garment Manufacturers and Exporters Association (BGMEA) or Bangladesh Knitwear Manufacturers and Exporters Association (BKMEA) only or members of both organisations.

4.1 Location-wise distribution

The majority of enterprises are located in four major RMG clusters – Dhaka, Gazipur, Narayangonj and Chattogram (Table 4). Among those, two-thirds of the enterprises are located in Dhaka and Narayangonj where the former is largely woven-product based and the latter is knit-product based enterprises. Although a relatively smaller number of enterprises (18.7 per cent) are

Table 4: Location wise distribution of sample enterprises

Location	No of factories	% of total factories	% of total workers
Dhaka	223	36.6	35.4
Narayanganj	200	32.7	12.1
Gazipur	114	18.7	44.9
Chattogram	73	11.9	7.6
Total	**610**	**100.0**	**100.0**

Source: CPD-CED Survey, 2020.

selected from Gazipur, those include a sizable number of large-scale enterprises. Chattogram district comprises enterprises (11.9 per cent) that are largely small and medium-sized enterprises. Factories located in Narayangonj are largely members of BKMEA. On the other hand, factories mostly located in Dhaka, Gazipur and Chattogram districts are largely members of BGMEA. Non-member factories are sparsely located in different districts but they are high in number in the Narayangonj district. Such spatial distribution of enterprises has made differences in their business operations, competitiveness and capacity of resilience and recovery.

4.2 Size wise distribution

A size-wise distribution of factories indicates that small and medium-size enterprises comprised the majority of RMG enterprises. However, the distribution of workers is found in the opposite directions (Table 5). The small size factories (with worker size less than 500) is accounted for 53.8 per cent while these factories are accounted for only 13.8 per cent of total workers. Medium size factories (with workers between 501-2500) are accounted for 39.5 per cent of total factories with a share of employment of 55.4 per cent. Although large size factories (with employment over 2500 workers) are smaller in number (6.7 per cent), however, these factories are accounted for 30.8 per cent of total workers.

Table 5: Sample enterprises based on number of workers

Workers Size	No of factories	% of total factories	% of total workers
Small (< 500 workers)	328	53.80%	13.8
Medium (501-2500 workers)	241	39.50%	55.4
Large (2501 and above workers)	41	6.70%	30.8
Total	**610**	**100.00%**	**100.0**

Source: CPD-CED Survey, 2020.

The spatial distribution of the different size of factories indicates that small scale factories are mostly located in the Narayanganj cluster whereas, medium and large-scale factories are mostly located in the Gazipur cluster. A part of these small-scale factories is most likely to be non-member factories while most

of the medium and large-scale factories are likely to member factories. In terms of membership, BKMEA member factories are largely small or medium-scale factories. Thus, the level of vulnerabilities and the capacity to recover from the vulnerabilities of sample factories are reflected in different aspects related to size, membership (type of product produced) and location of factories.

The size of enterprises experienced a major change during the COVID pandemic compared to that in the pre-COVID period. During the COVID-19 pandemic, the operation of factories has squeezed due to a lack of sufficient production orders to meet the production capacity. The average number of workers in RMG enterprises during the pre-COVID period (December, 20219) was 886 which was declined by 10.4% during the COVID period (790 workers). The reduction of the workforce is largely happened in large enterprises (18 per cent) followed by small (12.4 per cent) and medium (6.5 per cent) size enterprises. Such reduction in the workforce was observed in all four industrial clusters at different levels (Figure 1).

The reduction in workers has almost equally affected the male and female workforce in the RMG enterprises during the pandemic period. It was apprehended that the gender balance in the garment factories would be affected due to the reduction of the workforce. However, the average number of female

Figure 1: Changes in female worker composition during the COVID period in major clusters
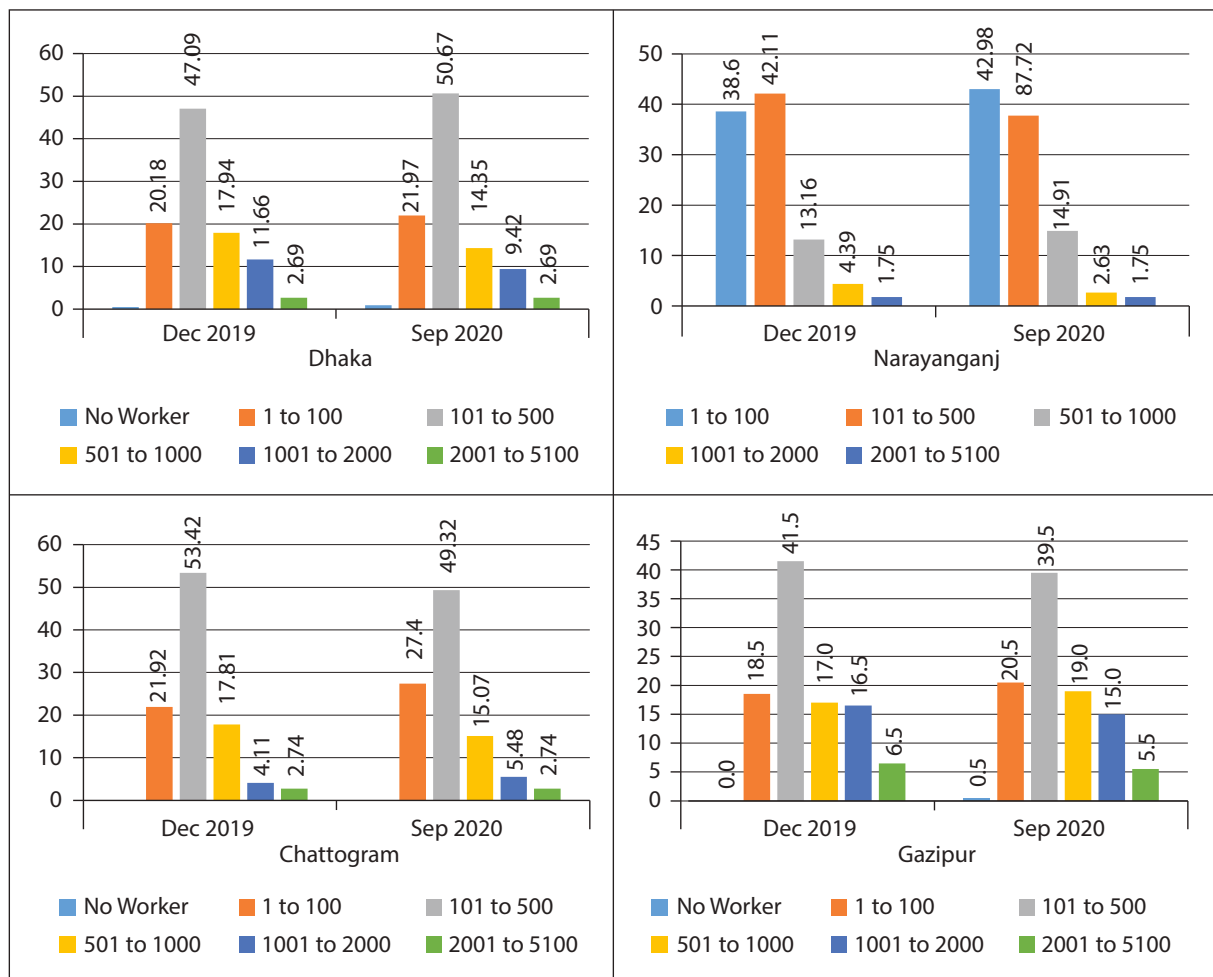
Source: CPD-CED Survey, 2020.

workers has reduced 12.5 per cent during the COVOID pandemic (September 2020) compared to the pre-COVID period (December, 2019). Similarly, the average number of male workers has been reduced by 11.9 per cent during the same period. Female workers were reduced relatively at a higher rate in Dhaka district compared to that in other districts such as the Gazipur, Narayamgonj and Chattagram.[2]

4.3 Business with buyers

The success in the business operation of suppliers depends on strong networking with a pool of brands/buyers working in the number of sourcing countries. The majority of suppliers do business with few buyers - over 50 per cent of the suppliers are doing business with a limited number of buyers (Figure 2). The share of the top-most buyer in suppliers' total export includes 7.4 per cent factories where the share of top most buyer is over 90 per cent, five per cent factories with the share of 80-90 per cent and about 12

Figure 2: Share of top-most buyer/brand/retailer in total orders shipped by factories and size of factories, 2019
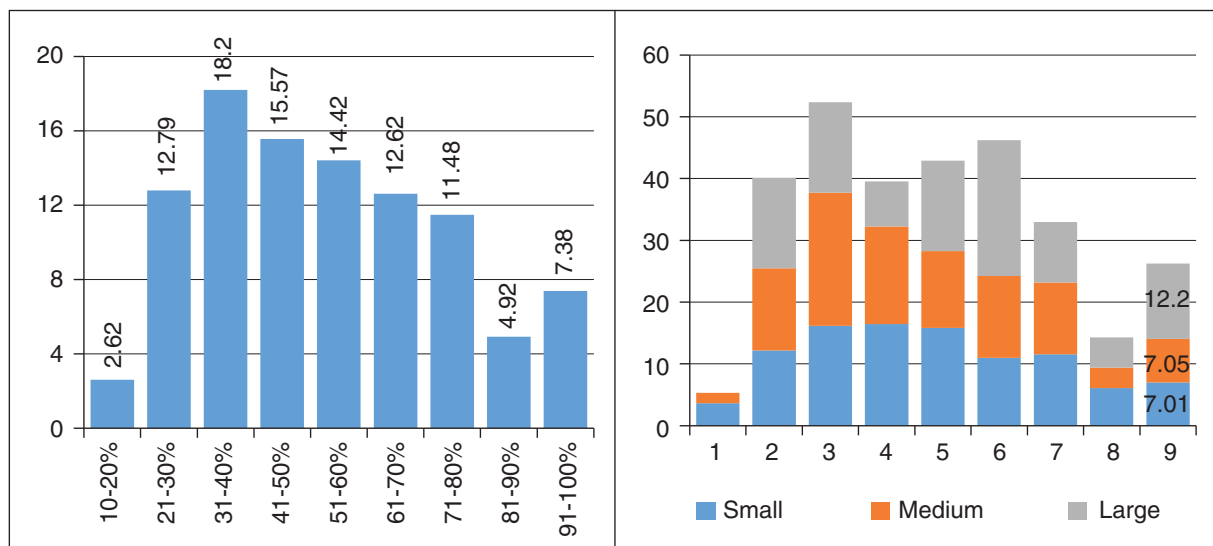
Source: CPD-CED Survey, 2020.

per cent factories with a share of 70-80 per cent. Such overwhelming dependence on the single buyer (90-100 per cent) is prevailed not only in small scale enterprises but also in medium and large-scale enterprises – the shares are seven per cent, 7.1 per cent and 12 per cent respectively. Dependence on a single source is higher in factories located in Narayanganj and Dhaka. Such high dependence on the limited number of sources is a major weakness particularly at a time of crisis which constrains those enterprises from exploring alternate buyers and markets within a short period.

4.4 Operation during the crisis period

The business operations in the garments sector in 'business as usual' scenario take place throughout the year except for weekends and official holidays. During the COVID pandemic, the factories were supposed

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[2]In Dhaka district, the rate reduction of female and male workers was 10 per cent and 7.4 per cent respectively. The comparative figures for other districts were 17 per cent each in Gazipur, seven per cent and six per cent in Narayanganj and five per cent and nine per cent in Chattogram respectively.

Figure 3: Operational status of factories during COVID period (size and location wise)
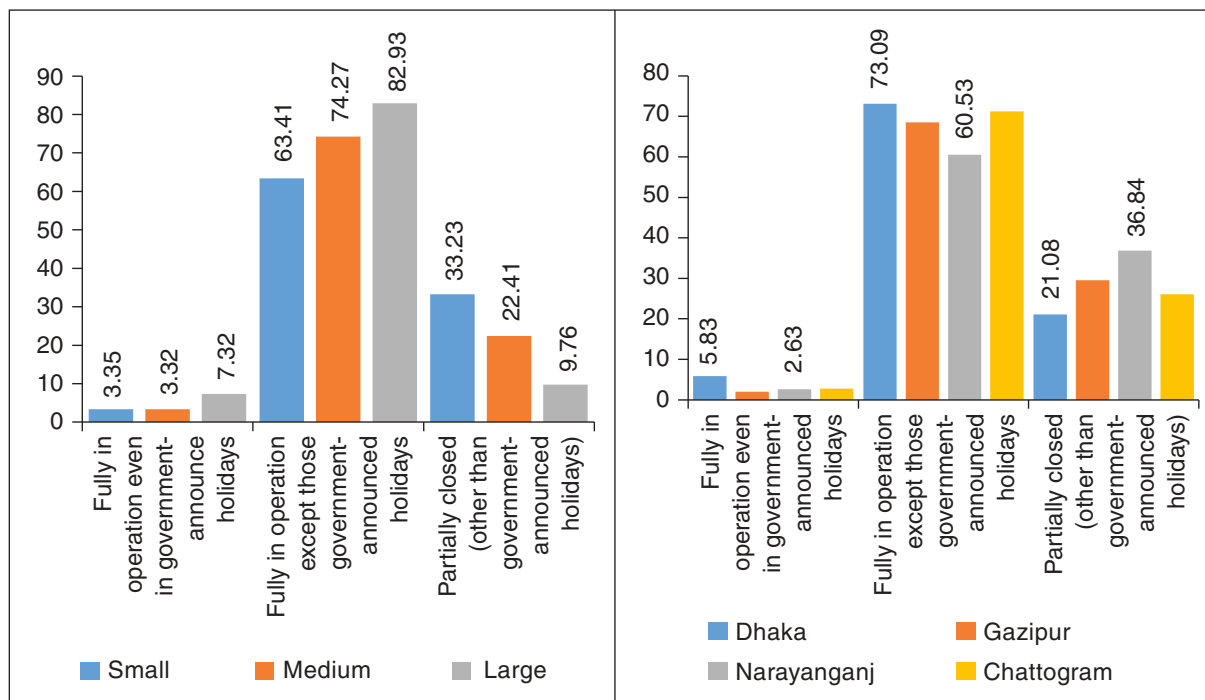
Source: CPD-CED Survey, 2020.

to close down due to public announcements of holidays from 29 March 2020 to 31 May 2020. However, the government has allowed export-oriented factories to continue their business operations to ensure the emergency shipment of export orders. According to the survey, the majority of factories (about 95%) were closed down their operations as per official instructions; a section of factories such as 3.4 per cent of small, 3.3 per cent of medium and 7.3 per cent of large enterprises did not close their factories even during the official holidays (Figure 3). A considerable number of small and medium-sized enterprises was partially closed during this period. Spatially, Dhaka-based enterprises were more in full operation (5.8 per cent) while Narayangonj-based enterprises were more partially closed during the official holidays. According to Obrenovic et al., 2020, enterprises across the world which could continue their operation during the crisis period, was found to be better survived perhaps due to have a continuation of business operations by undertaking better risk-coping strategies and internal resilient mechanism (Lee et al., 2013; Sheffi & Rice, 2005).

5. Enterprise level vulnerabilities during the COVID pandemic: Observations from the field survey

5.1 Most difficult months for businesses

The businesses face multiple difficulties during the pandemic period. However, the period to confront those difficulties is likely to be different for RMG enterprises because of their nature of engagement in the global value chain, formal structure of the business and likely to have an effective business continuity plan, financial soundness and availability of business orders etc. About 95 per cent of enterprises mentioned that they were in financial difficulty during this period (Figure 4). The majority of enterprises found April-May 2021 as the most difficult months mainly because of the closure of operations due

Figure 4: Most Troubled Month for Different Categories of Enterprises by size of factories
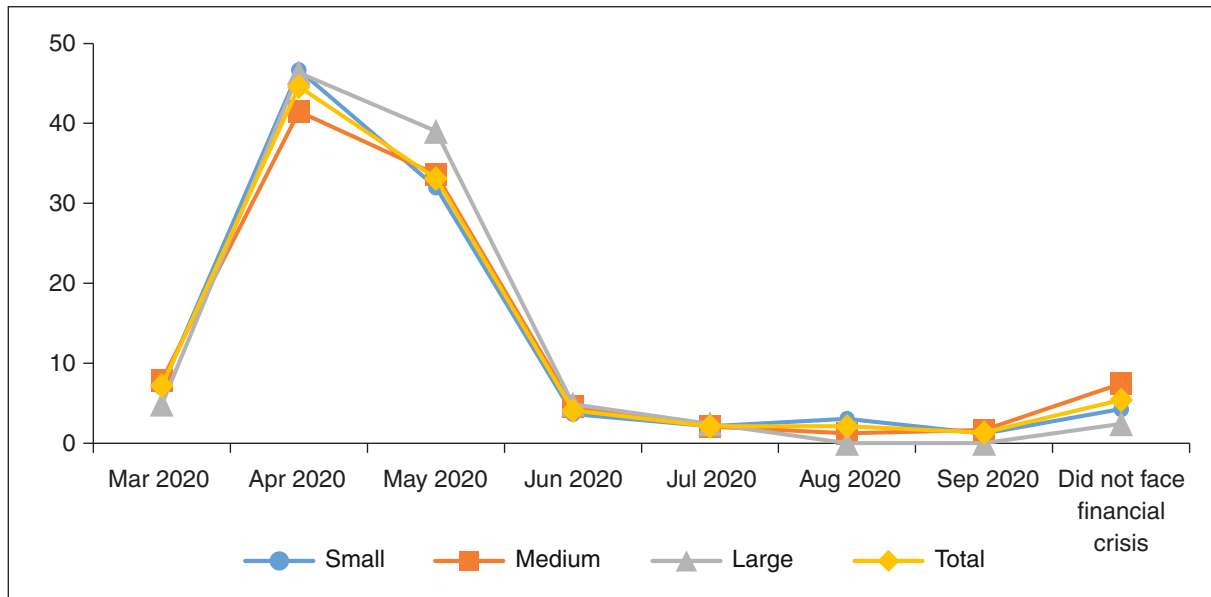
Source: CPD-CED Survey, 2020.

to official holidays and the shutdown of marketing and retailing activities across the world during this period. The problem has significantly eased since June 2020 onward mainly due to the official opening up of economic activities, slowly rising production and export and getting subsidised credit from the government to meet workers' wage-related expenditures.

Enterprises across the board including small, medium and large-scale enterprises found the first two months most difficult to deal with. This indicates a lack of contingency and business continuity plans in all categories of factories. Such a situation arises due to weak financial management which caused trouble to a majority of RMG enterprises to continue their operational activities. (CPD, 2018). No major difference is observed in factories located in different clusters in terms of financial difficulties in different months. However, non-member factories faced the cash-hit situation earlier compared to that of the member factories. The situation has aggravated for these non-member enterprises because of not getting subsidised credit support under the stimulus package as they were considered ineligible.[3] However, the financial difficultly has largely eased since June, 2020 onward perhaps because of a gradual rise in business activities as well as stimulus support extended to export-oriented enterprises to meet their most import working capital requirement – the cost of workers wages.

5.2 Cancellation and reinstatement of orders

The RMG value chain across the world has confronted the 'bull-whip effect', where the shock magnifies from the downstream to the upstream of the value chain. The usual approach of adjustment in the case of the 'bull-whip effect' is to pass on the burden of stock of inventories at the lower level- from retailers to suppliers and from suppliers to intermediate and raw material producers. This was observed in the case of the COVID-19 pandemic where the burden of retailers has been shifted to the suppliers in the form of cancellation and deferment of orders.

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[3]However, non-member enterprises were eligible for other non-monetary support (e.g. deferred payment facility of utility bills and repayment of loans).

About one-third of factories complained that at least some of their orders were cancelled and necessary payment related to the cost of production particularly raw material costs were not made (Table 6). Only a few suppliers (1.8 per cent of total suppliers) indicated that buyers have agreed to pay the raw material costs of the cancelled orders. In the majority of cases suppliers (51 per cent) indicated that buyers have either deferred the orders or deferred with early payment. Even a section of suppliers (15.9%) claimed that orders have been settled at a reduced price. In this regard, buyers have applied a 'force majeure' clause to cancel orders. This has been widely discussed and debated whether the application of such a clause is legally appropriate or not. Most importantly, such a practice is against the initiative of responsible business conduct (RBC) of the buyers. Given the pressure from the suppliers' end as well as from the governments of the sourcing countries, brands and buyers both individually and collectively committed to reinstating a part of cancelled orders. EU-based brands formed an alliance (ACT) under which they have committed to pay the costs of raw materials and orders that have been completed to be shipped. It is fact that a section of the buyers/brands permanently closed a part of their retail shops and some of them even got bankrupted during the pandemic period. The suppliers working with those buyers/brands faced the trouble most due to not getting their due payments.

Table 6: Status of cancellation of orders (by the size of factories)

Issues	Small	Medium	Large	Total
Orders cancelled and payment was not cleared by buyers	31.7	34.0	31.7	32.6
Orders cancelled and payment of raw materials and wage cost (both or one) will be cleared	2.7	0.8	0.0	1.8
Orders deferred by the buyers	24.4	35.3	36.6	29.5
Orders settled with deferred payment	21.7	19.1	19.5	20.5
Orders settled at reduced price	16.8	15.8	9.8	15.9

Source: CPD-CED Survey, 2020.

5.3 Business contact with buyers

A major challenge for suppliers during the pandemic is the discontinuation of contacts with the buyers. During the early phase of the pandemic (April, 2021) about 75 per cent of enterprises indicated that they were able to maintain normal business contact with buyers/brands; however, another 23 per cent indicated irregular contact and even a small percent of factories indicated about no contact with buyers (Figure 5). In other words, the majority of suppliers did not face major trouble in communicating with their buyers. The difficulty in maintaining communication was higher for small scale enterprises

Figure 5: Business contacts status with top brand/buyer during April, 2020 by size of factories
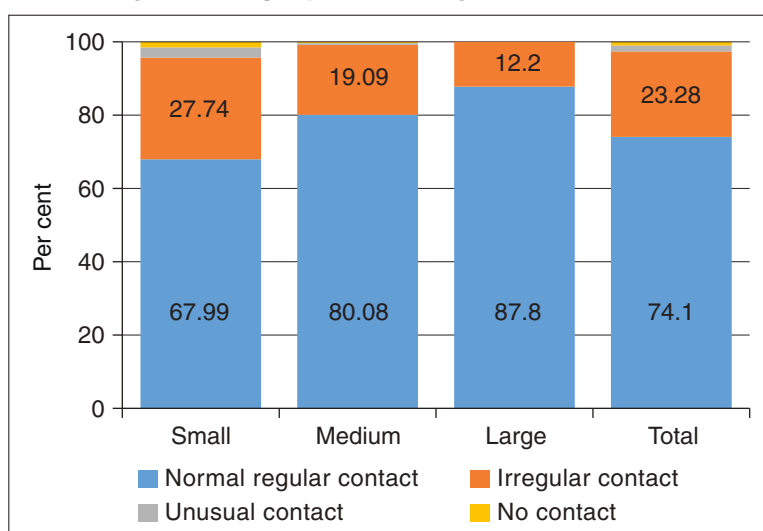
Source: CPD-CED Survey, 2020.

(27.7%) followed by medium-scale ones (10.1 per cent).[4] Similarly, difficulty in maintaining contact was rather high for Chattogram based factories (36 per cent) followed by those located in Narayangonj (27 per cent) (Figure 6). Factories that are overwhelmingly dependent on a limited number of brands and buyers faced more difficulty as lack of communication provided limited predictability about the prospect of businesses in the coming months. It is expected that buyers and brands are supposed to maintain normal business contact, particularly during the crisis period to discuss the issues and challenges confronted by the

Figure 6: Business contacts status with top brand/buyer during April, 2020 by location of factories

Source: CPD-CED Survey, 2020.

suppliers. Moreover, it is part of their responsible business practices (RBPs) to try to provide predictability to the suppliers about future orders, prices and market situation.
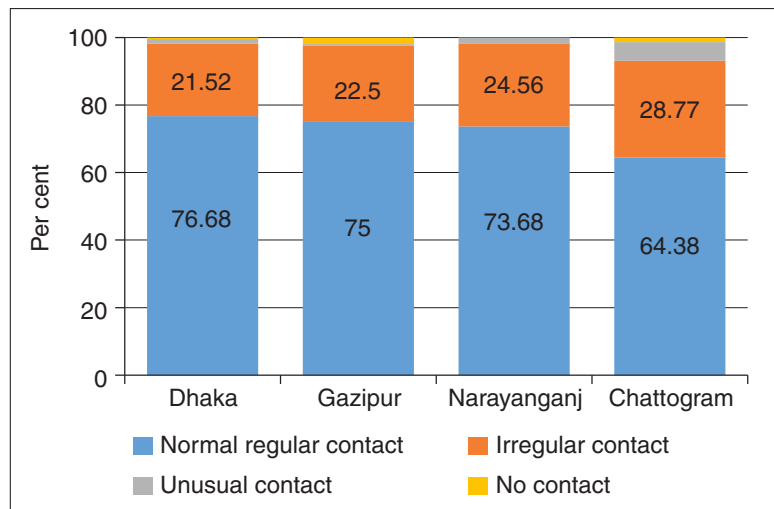
5.4 Coping up strategies

Enterprises have tried to cope up with the crisis through various means (Figure 7). According to the survey, the majority of factories depend on three sources which include approaches to banks for getting subsidised credit (60 per cent); borrowing from informal sources (33.7 per cent) and encashment of bank deposits of the factories (34 per cent). In other words, formal sector support was found to be inadequate for the majority of enterprises and a section of them did not depend on that and a large section of enterprises explore alternate and informal sources for coping up with the risks and vulnerabilities.

Given the differences in risk coping levels and in access to finance from different sources, different types of enterprises undertook different coping strategies. Small scale enterprises were found to be dependent more on informal credit sources and encashment of their deposits (53 per cent) mainly because of limited access to stimulus packages as well as their low financial capacities. On the other hand, ninety per cent of large-scale enterprises applied for stimulus package which favoured them against using informal costly sources. Interestingly, about 15 per cent of non-member factories have applied for subsidised credit under the stimulus package though they were not eligible for those loans. From a spatial point of view, Narayangonj and Chattogram based factories dependent more on informal credit and encashment of their deposits.

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[4]The difficulty in large scale enterprises was rather less than half of that of small-scale enterprises (12.2 per cent).

Figure 7: Factories coping up through different means by size
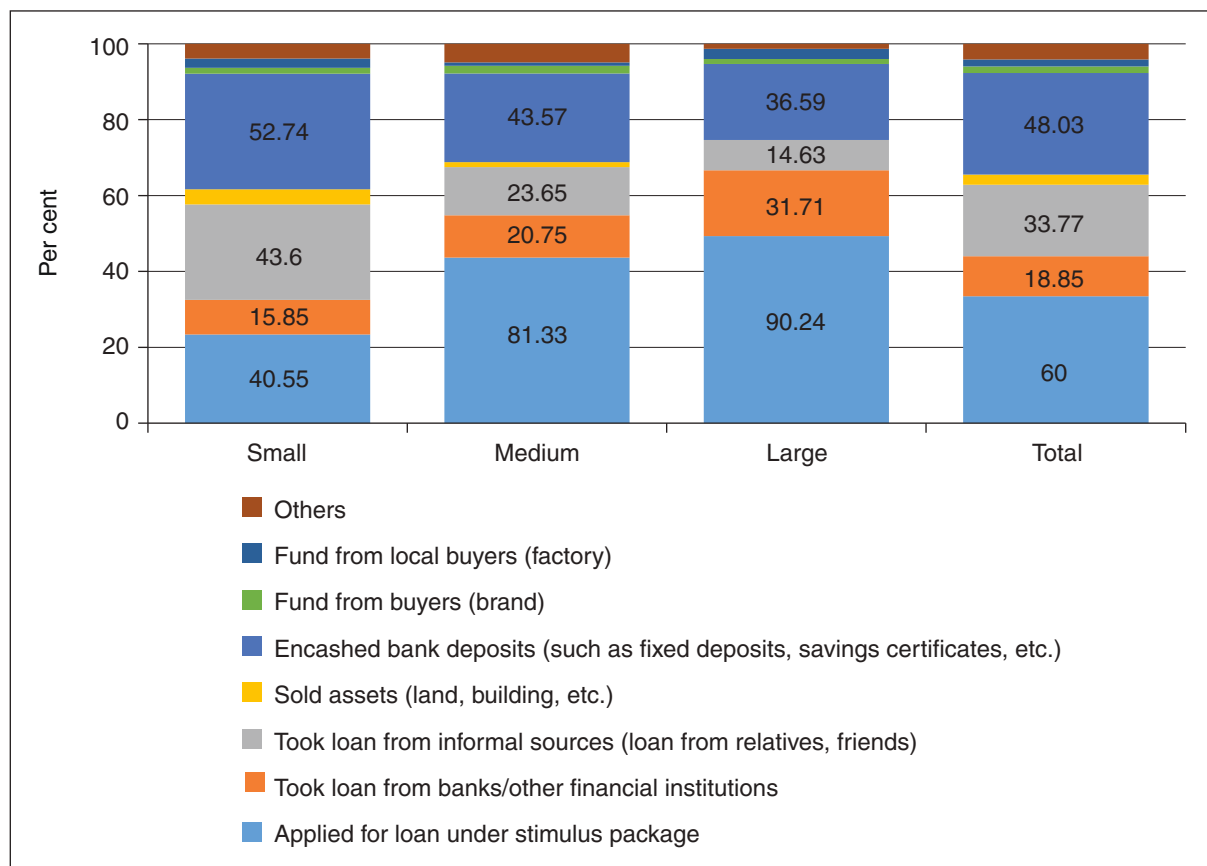
Source: CPD-CED Survey, 2020.

5.5 Reduction of operational expenses by the retrenchment of workers

During the crisis period, enterprises often tried to reduce operating costs through various means. Reduction of wage costs is often considered by enterprises a mechanism to reduce the burden. However, without having a proper social security mechanism, the retrenchment of workers has caused a huge social burden. During the COVID-19 pandemic, such adjustment of wage costs through reduction of workers was likely to happen.

The study analyses the issue with changes in total employment at the enterprise level as well as changes in the male-female employment ratio. Comparing the employment in RMG enterprises between pre-covid (December 2019) and covid period (September 2020), over 50 per cent of enterprises have fewer workers in September 2020 compared to what they had in December 2019. Given the size of the enterprises, a higher number of workers were retrenched from large scale enterprises (22.6 per cent) followed by small scale enterprises (11.8 per cent) and medium-size enterprises (6.6 per cent). Overall, workers who lost jobs during this period was 13.9 per cent. In other words, out of 25,62,383 workers working in the RMG factories (according to the MiB database) 357,450 workers were lost their jobs during the pandemic period (Table 7).

Retrenchment in terms of different gender categories shows that female workers are retrenched more than male workers. Among the total workers retrenched, 61 per cent are female workers and 39 per cent

Table 7: Job loss in RMG enterprises by gender

Issues	Percentage of total retrenched workers	Percentage of total workers under different categories
Total Job Loss	13.96	13.96
Male Worker Lost Job	38.62	14.17
Female Worker Lost Job	61.38	13.83
Total	**100.00**	

Source: CPD-CED Survey, 2020.

Table 8: Changes in Male-female worker ratio during the COVID pandemic

Types of changes	No of factories
Unchanged	218 (35.7%)
Higher ratio for Male	195 (31.9%)
Higher ratio for Female	197 (32.3%)
Total	**610**

Source: CPD-CED Survey, 2020.

Figure 8: Terms of termination benefits provided in most cases of terminated non-production staffs by the location of factories
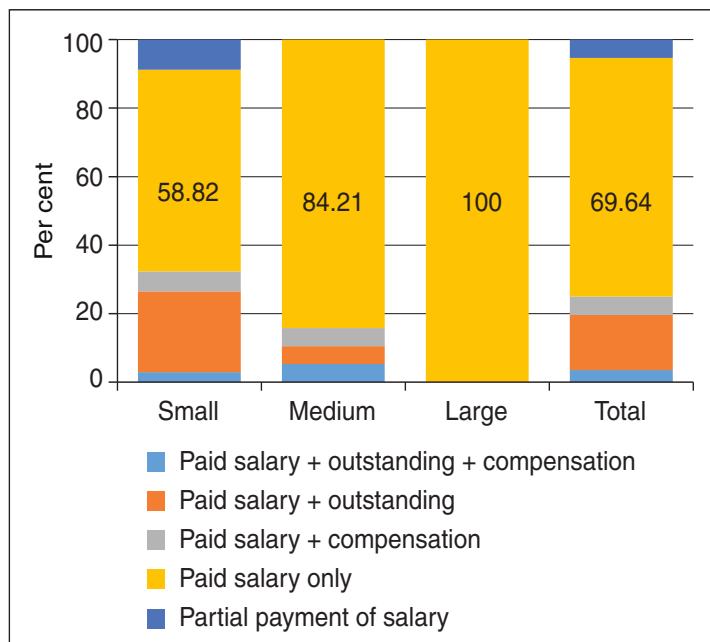
Source: CPD-CED Survey, 2020.

are male workers (Table 8). However, considering female-dominated gender composition of the labour force in the RMG sector, retrenchment of female workers was not so high compared to that of the male workers (14.2 per cent vs. 13.8 per cent). Hence, the male-female ratio of workers in sample enterprises has observed minor changes during the COVID period; even 36 per cent of enterprises did not experience any change in the ratio. Despite that, about 32 per cent of factories experienced a higher share of male workers and 32.2 per cent of factories experienced a higher share of female workers during the crisis period. It is important to examine why one-third of factories experienced a lower ratio of female workers compared to that of the pre-covid period.[5]

The majority of factories claimed very few 'laid-off' of workers during the COVID pandemic period as the share was only 2.2 per cent of total workers. The factories which laid off/retrenched workers did not follow the lay-off and termination rules since only 3.6 per cent complied with the compensation principle (i.e. paid a salary, outstanding financial claims and compensation benefits) (Figure 8). In the majority of cases (about 70 per cent) factories paid the salary only. In other words, factories did not comply concerning payment of laid-off and retrenched workers. The level of such non-compliance is much higher in large scale factories as well as factories located in Narayangonj (Figure 9). Lack of proper disclosure of retrenchment of workers by the factories is perhaps related to their tendency to avoid maintaining compliance in terms of payment for laid off workers.

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[5]Retrenchment of male workers was relatively high (10% or more) in case of the Narayangonj and Chattogram districts.

Figure 9: Terms of termination benefits provided in most cases of terminated non-production staffs by the location of factories
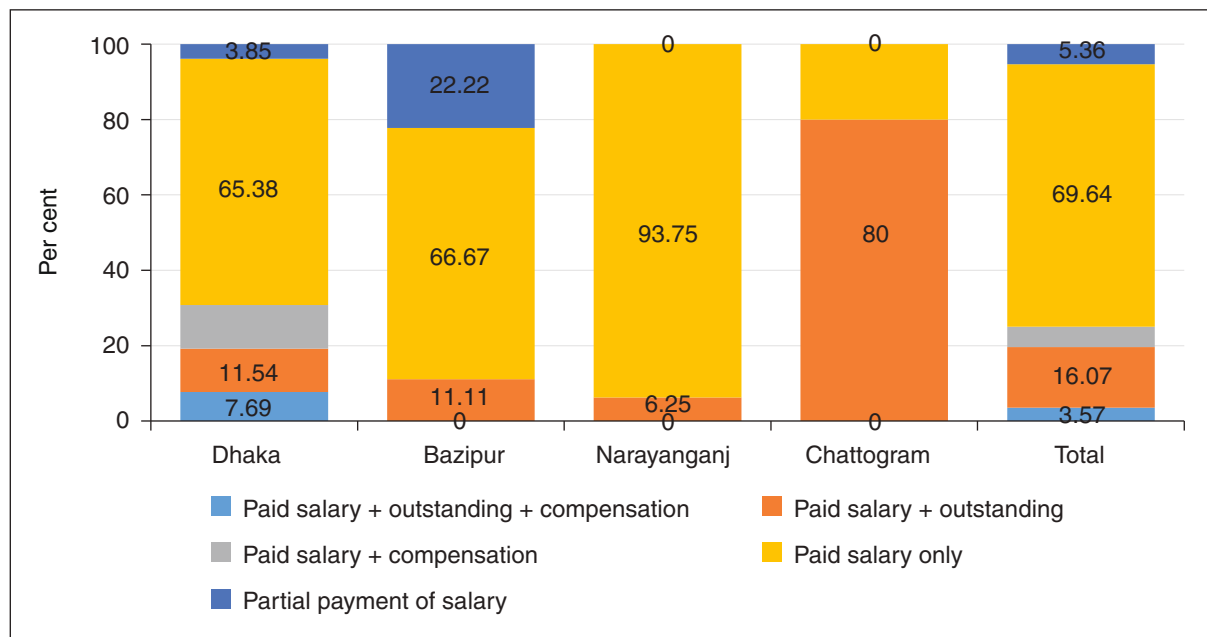
Source: CPD-CED Survey, 2020.

5.6 Recruitment of workers

Table 9: Newly recruited workers who had been recruited between March, 2020-September, 2020, were working in September, 2020 by the size of factory

Scale of Factory	No Workers Recruited	Recruited	Total
Small	43.9	56	100
Medium	36.1	63.8	100
Large	36.6	63.4	100
Total	**40.3**	**59.5**	**100**

Source: CPD-CED Survey, 2020.

Table 10: Newly recruited workers who had been recruited between March, 2020-September, 2020, were working in September, 2020 by membership status

Scale of Factory	No Workers Recruited	Recruited	Total
Only BGMEA	39.2	60.7	100
Only BKMEA	34.1	66	100
Both	42.6	57.5	100
Non-member	48.2	51.9	100
Total	**40.3**	**59.5**	**100**

Source: CPD-CED Survey, 2020.

Since the RMG sector has quickly rebound after the immediate shocks, the factories have started to receive orders and therefore they required to recruit workers to enhance capacity utilization. According to the survey, about 59.5 per cent of factories have recruited new workers during the COVID period (Table 9). All categories of factories recruited workers during this period. BKMEA member factories recruited more which is consistent with the positive growth maintained by knit factories during the COVID period. Non-member factories recruited fewer workers due to their limited scale of operation. Recruitment of workers was high in Dhaka and Gazipur districts since these regions are comprised of relatively large-scale enterprises (Tables 10 & 11). It is alleged that a section of

enterprises recruited their retrenched workers at a lower wage rate and on a temporary basis perhaps to avoid the financial obligations associated with regular recruitment.

5.7 Safety measures in the workplace

Maintaining workers' safe at the workplace particularly from covid-related contaminated diseases was a major challenge. Factories largely

Table 11: Newly recruited workers who had been recruited between March, 2020-September, 2020 were working in September, 2020 by location

Location	No Workers Recruited	Recruited	Total
Dhaka	38.6	61.5	100
Gazipur	35.5	64.5	100
Narayanganj	46.5	53.5	100
Chattogram	49.3	50.7	100
Total	**40.3**	**59.5**	**100**

Source: CPD-CED Survey, 2020.

followed three types of measures for workplace safety against the corona virus. These include (a) checking body temperature, (b) sanitising workers and (c) wearing masks. However, over time application of all these protective protocols and other measures has declined. Wearing face masks which were most applied in April 2020 was found in 96 per cent of factories; but its use has reduced to 80 per cent in September 2020 (Figure 10). Currently, sanitising workers and checking body temperatures have reduced to almost half compared to the initial period. Gradually, the practice of safety measures declined in all categories of factories where the small-scale factories observed the highest drop in all kinds of measures. As high as 13.3 per cent of factories reported to have no measures taken during September 2020. Given the limited number of causalities among the COVID-infected workers in the RMG sector, both entrepreneurs and workers put less attention regarding the safety measures and safety protocol to be maintained in the workplace in the latter months of the pandemic. Less monitoring of the DIFE regarding the maintenance of the safety protocol was partly responsible for such a poor state of compliance.

Figure 10: Changes in Health and Safety Measures by the size of factories
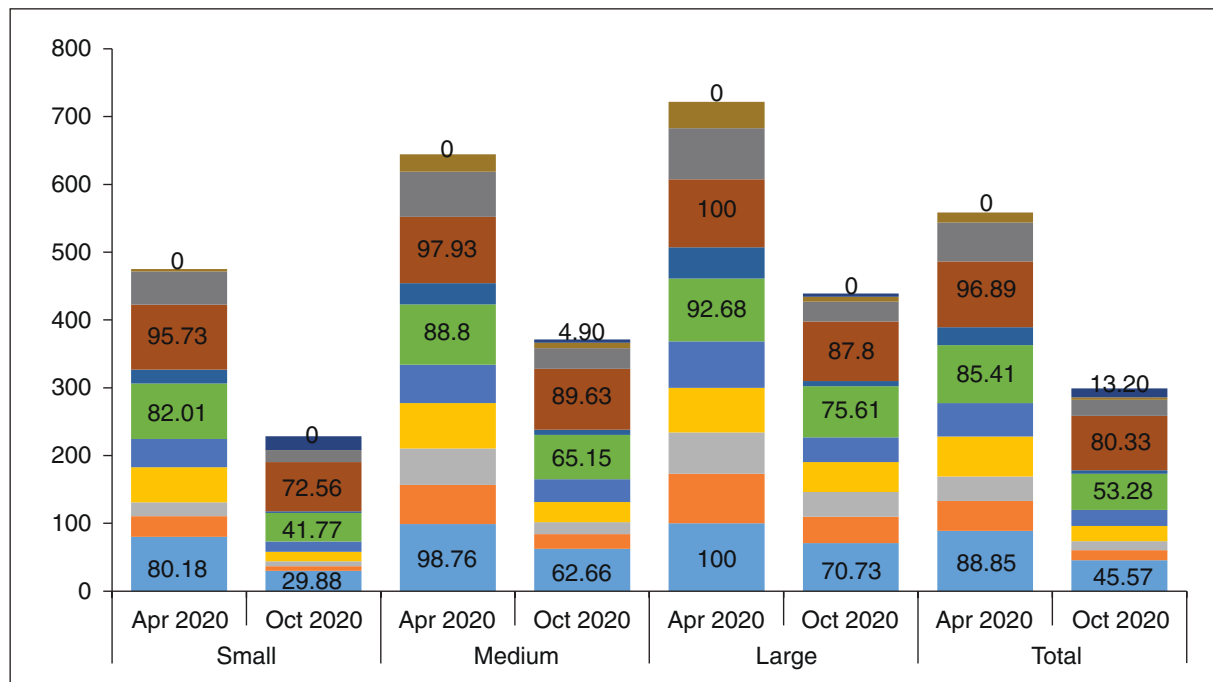
Source: CPD-CED Survey, 2020.

6. Emergency support for the RMG enterprises and responses of the entrepreneurs

6.1 Fiscal and monetary policy support

The fiscal and monetary policy supports were given to the RMG sector in the form of a packaged loan at a subsidized rate, a waiver from payment of VAT and allowing delayed payment of utility bills and bank loans etc. These supports have been extended to coping up with the immediate adverse effects induced by the pandemic. The most important support was subsidised credit for workers for a period of four months (which was initially for two months) – April-July, 2021. Besides, the RMG enterprises were allowed to apply for term loan facility under another stimulus package of BDT 30000 crore allocated for large scale enterprises (Table 12). Besides, enterprises have received support in the form of delayed payment facility for utility service charges (till June, 2020), extended loan repayment facility, VAT waiver (till June, 2020). A major thrust of these facilities was to support the cash-crunch state of enterprises as well as get not to retrench workers from their jobs.

Table 12: Factories received any other loan under stimulus package (e.g loan for SMEs, loan for large scale industries, loan from export development fund)

Received another stimulus loan	Freq.	Per cent
Yes	8	1.31
No	315	51.64
Eligible but did not apply	205	33.61
Not eligible	80	13.11
Others (e.g., pending)	2	0.33
Total	**610**	**100**

Source: CPD-CED Survey, 2020.

Table 13: Taking the facility of a delayed payment of bank loan (Other than loan provided under stimulus package) installment till December, 2020

Taking the facility of delayed payment of bank loan	Freq.	Per cent
Yes	200	32.79
Partial	68	11.15
No	342	56.07
Total	610	100

Source: CPD-CED Survey, 2020.

Table 14: Taking the facility of a delayed payment of different utility bills (e.g., electricity bill, gas bill, water bill, VAT payment) from April to June, 2020?

Taking the facility of delayed payment of different utility bills	Freq.	Per cent
Yes	283	46.39
No	327	53.61
Total	**610**	**100**

Source: CPD-CED Survey, 2020.

According to the survey, about 46 per cent of factories took the facility of a delayed payment of utility bills (Table 14). Given the cash constraints, such deferment in payment helped the entrepreneurs to maintain the utility facilities without any pressure from paying the bills immediately. Delayed payment of bank loan, on the other hand, was taken by only 33 per cent of factories - medium-size factories have taken this facility most (56 per cent) (Table 13). A large number of factories located in Narayanganj did not take the deferred payment facility (74 per cent); similarly, 80 per cent of non-member factories did not take this facility. A large section of enterprises did not take the differed payment facility although they faced constraints of flows of cash. Since the deferred payment facility was provided only for a

Table 15: Factories received any other loan under stimulus package (e.g., loan for SMEs, loan for large scale industries, loan from export development fund) by size

Responses	Small	Medium	Large	Total
Yes	0.61	1.66	4.88	1.31
No	51.22	50.21	63.41	51.64
Eligible but did not apply	23.48	47.72	31.71	33.61
Not eligible	24.39	0	0	13.11
Others (e.g., pending)	0.3	0.41	0	0.33
Total	**100**	**100**	**100**	**100**

Source: CPD-CED Survey, 2020.

short period which was likely to have the pressure of payment of an accumulated amount, later on, many factories did not take the facility despite having their immediate demand.

As mentioned, RMG factories were eligible to get the subsidised credit facility under the stimulus package of BDT 30000 crore. However, only a few have taken that facility- mainly those of large-scale enterprises (5 per cent) followed by medium and small enterprises. The majority of factories did not apply for that (51.6 per cent)- of which 33.6 per cent of enterprises claimed that they were eligible but did not apply for such loan. These are mainly medium (47 per cent) and large-scale enterprises (32 per cent). Since these loans were term loans, entrepreneurs demanded less of such loans during the COVID-pandemic period due to limited production-related activities.

6.2 Working capital support for payment of workers' wages

The subsidised credit facility largely taken by the factories were working capital provided for the payment of workers' wages. Initially, it was provided for the payment of two months' wages which later on extended for another two months. According to the survey, about 70 per cent of factories applied for subsidised credit under the government's stimulus package (Table 16). Of which 65 per cent factories were applied for the package of four months and four per cent factories were applied for the package of two months loan. About 92 per cent of factories who applied have received the credit. In addition to that, 17 per cent factories indicated that they did not apply as they were non-eligible for not being member of any trade bodies (BGMEA/BKMEA). Given the cash strap situation of the majority of enterprises, such exclusion of non-member factories put them in trouble to survive and rebound.

Table 16: Factories applied for credit for workers' wages under the government stimulus package

Responses	Freq.	Per cent
Yes (for four months)	398	65.25
Yes (for two months)	24	3.93
Non-eligible and did not apply	102	16.72
Eligible but did not apply	70	11.48
Others	16	2.62
Total	**610**	**100**

Source: CPD-CED Survey, 2020.

A major part of enterprises (58 per cent) did not apply for subsidised credit because of complicated procedures to get the loan (Table 17). These include a large number of small-scale enterprises. A section of large-scale factories did not apply because they did not need the fund (80 per cent). Interestingly, a small segment of small factories (6.6 per cent) did not apply as they apprehended not to pay the installed

Table 17: The reason for not applying for stimulus package loan even being eligible by size

Reasons	Small	Medium	Large	Total
Did not need fund/ Had enough own fund to pay salary and other expenses	26.23	57.69	80.00	38.04
The application procedure was complicated	67.21	42.31	20.00	57.61
Not capable to pay installed amount	6.56	0.00	0.00	4.35
Total	**100.00**	**100.00**	**100.00**	**100.00**

Source: CPD-CED Survey, 2020.

amount in due time and thereby avoid raising financial burden. A section of enterprises mainly those located in Chattogram and Dhaka, mentioned procedural complexity for applying for a subsidised loan.

According to the circular issued by Bangladesh Bank, the payment of wages under the subsidised credit facility was disbursed directly from the companies' bank accounts to workers' bank accounts or MFS accounts (Table 18). Hence, factories needed to submit a comprehensive list of workers to the banks. These lists were needed to be vetted by the BGMEA/BKMEA and to be approved by the Ministry of Labour and Employment (MoLE). After the declaration of the package, the suppliers/factory owners created 2-2.5 million MFS accounts for their workers in 25 days. Such quick development of payment of workers' wages through MFS accounts is considered as a major development in the financial transaction through digital devices.

Table 18: Workers received wages through bank account/mobile financial services in September 2020 by location

Issues	Dhaka	Gazipur	Narayanganj	Chattogram	Total
Workers did not receive	50.22	36	70.18	54.79	49.84
Workers received	49.78	64	29.82	45.21	51.16

Source: CPD-CED Survey, 2020.

From the survey, it was found that about 50 per cent of total factories did not provide wages through bank account/mobile financial services. Using of MFS/bank accounts was the lowest in Gazipur and Dhaka and the highest was in Narayangonj – the latter were mostly BKMEA based factories. Out of 850 member factories of BKMEA, 519 factories were applied and 420 factories received the loan. The facilities were largely used by large (87.8 per cent) and medium factories (72.6 per cent) where it is used at the lowest level in small factories (29 per cent) (Table 19).

Table 19: Workers received wages through bank account/mobile financial services in September 2020 by size

Wage received through MFS	Small	Medium	Large	Total
Workers did not receive	71.04	27.39	12.2	49.84
Workers received	28.96	72.61	87.8	51.16

Source: CPD-CED Survey, 2020.

Unfortunately, a large section of factories (29.3 per cent) that have provided wages through bank accounts under the stimulus package did not continue that afterwards. As many as 44.5 per cent of small-scale factories which provided wages through MFS/

Table 20: Number of workers received wages by MFS if factory applied for loan to pay wages by size

Number of workers received wages by MFS	Small	Medium	Large	Total
Not Received	44.53	22.17	13.51	29.27
1 to 100	3.65	0	0	1.3
101 to 500	51.09	6.6	2.7	22.02
501 to 1000	0.73	28.3	0	15.8
1001 to 2000	0	35.85	2.7	19.95
2001 to 5000	0	6.6	67.57	10.1
5001 & Above	0	0.47	13.51	1.55
Total	**100**	**100**	**100**	**100**

Source: CPD-CED Survey, 2020.

bank accounts did not continue that; this has been followed by medium scale enterprises (22 per cent) and partly large-scale enterprises (14 per cent) (Table 20). Factories should continue providing wages through bank accounts which ensures transparency and accountability.

6.3 Capacity to repay the credit

Monthly credit received by factories varied because of differences in the number of workers and their rate of wages (Table 21). The instalment of credit received was the highest within the ranges of BDT 50 lac-1 crore (22 per cent of total credit). In case of small-scale factories, the highest amount of loan was within the range of Tk.10-20 lac. The range of loan for medium scale enterprises was within BDT 1-2 crore and for large scale enterprises was within BDT 2-5 crore.

Table 21: Monthly average amount of credit received under the stimulus package by size of factories

Amount	Small	Medium	Large	Total
BDT 2.5 lac to 10 lac	13.14	0.47	0	4.94
BDT 10 lac to 20 lac	22.63	0.47	0	8.3
BDT 20 lac to 30 lac	21.9	2.83	0	9.34
BDT 30 lac to 40 lac	18.98	7.54	0	10.89
BDT 40 lac to 50 lac	6.57	7.06	0	6.23
BDT 50 lac to 1 crore	13.87	31.11	2.7	22.32
BDT 1 crore to 2 crore	1.46	32.05	5.41	18.68
BDT 2 crore to 5 crore	1.46	11.78	56.75	12.46
BDT 5 crore to 30 crore	0	6.58	35.12	7.02

Source: CPD-CED Survey, 2020.

Majority of factories need to pay a monthly instalment of credit within the range of **BDT** 20-50 lac (23 per cent), **BDT** 10-20 lac (21 per cent) and **BDT** 5-10 lac (20.8 per cent) (Table 22). Monthly instalment for small scale factories is relatively lower (**BDT.** 5-10 lac) followed by medium factories (**BDT** 20-50 lac) and large factories (**BDT** 50 lac-1 crore). Thus, instalments are at a moderate level for payment considering

Table 22: Monthly instalments as % of monthly income by location of the factories

Instalments	Dhaka	Gazipur	Narayanganj	Chattogram	Total
>0% to 5%	38.41	29.53	47.46	10	33.42
>5% to 10%	33.33	36.91	18.64	50	34.2
>10% to 25%	14.49	21.48	11.86	35	18.91
>25% to 40%	2.9	1.34	8.47	5	3.37
>41% to 50%					
>51% to 65%					
>65% to 80%	1.45	0.67	0	0	0.78
>80% to 95%	0.72	0.67	1.69	0	0.78
>95%	8.7	9.4	11.86	0	8.55
Total	100	100	100	100	100

Source: CPD-CED Survey, 2020.

the monthly income. In the majority of cases, this monthly instalment of credit was within the range of 5-10 per cent of total monthly income. Despite that, a section of small factories did not apply for a loan due to a lack of capacity to pay the monthly instalment. To make it easier, the Bangladesh Bank has extended the initial grace period from sixmonths to eight months.

7. Enterprise level preparedness against vulnerability and risk-coping strategies

7.1 Business continuity plan

Entrepreneurs are likely to have a business continuity plan to address the adverse impact on current and forthcoming business successes (Fabeli, et.al., 2020). According to Quarantelli, Lagadec, and Boin (2007), management and planning processes are important during disasters and crisis where management indicates contingency tactics used to deal with crises and planning refers to the methods that must be applied in dealing with the forthcoming scenario. A crisis recovery plan, which includes the resumption and reconstruction of operations, is typically included in a business continuity plan (Cook, 2015a).

It is found that approximately 60 per cent factories have some form of business continuity plan in written form or emergency plan or contingency plan in written form (Table 23). Factories located in Gazipur are found to be with having such plans more (68 per cent) while the factories located in Narayanganj having the lowest of such plans (40 per cent). Large and medium-size enterprises (93 per cent & 79 per cent respectively) are way ahead in case of having such plans compared to that of small enterprises (40 per cent). Such differences in having or not having business plans would partly indicate the level of business performance during the COVID pandemic period. It is to be noted that in less-developed countries about 75 per cent of businesses have no business continuity plan which falls within three years after a disaster or crisis strikes (Cook, 2015b).

The management responsible for business continuity related issues should be properly trained to undertake their responsibility (Table 24). Such training need to be implemented through in-depth discussions, preparation and training, checking and exercising the ways to assess and validate the soundness of business plans and procedures. A major objective is to ensure a high degree of business continuity awareness, daily communication and undertaking training programmes (Tammineedi, 2010).

Table 23: Having a business continuity plan (written), emergency plan (written) and contingency plan (written) for the crisis period by size and location of the factories

Parameters	Clusters	Yes	No	Total
Size of Enterprises	Small	39.94	60.06	100
	Medium	78.84	21.16	100
	Large	92.68	7.32	100
	Total	58.85	41.15	100
Location of Enterprises	Dhaka	62.33	37.67	100
	Gazipur	67.5	32.5	100
	Narayanganj	40.35	59.65	100
	Chattogram	53.42	46.58	100
	Total	58.85	41.15	100

Source: CPD-CED Survey, 2020.

Table 24: Providing training on business continuity plan/emergency action plan to the senior or mid-level management by the size, location and membership of the factories

Parameters	Clusters	Yes	No	Total
Size of Enterprises	Small	42.68	57.32	100
	Medium	75.93	24.07	100
	Large	95.12	4.88	100
	Total	59.34	40.66	100
Location of Enterprises	Dhaka	60.99	39.01	100
	Gazipur	69	31	100
	Narayanganj	35.96	64.04	100
	Chattogram	64.38	35.62	100
	Total	59.34	40.66	100
Membership Status of Enterprises	Only BGMEA	70.14	29.86	100
	Only BKMEA	47.73	52.27	100
	Both	68.09	31.91	100
	Nonmember	29.09	70.91	100
	Total	**59.34**	**40.66**	**100**

Source: CPD-CED Survey, 2020.

According to the survey, factories provided training with regard to business continuity plan/emergency action plan to the senior or mid-level management. However, the training has been conducted mainly by large and medium-size enterprises and enterprises located in the Gazipur and Dhaka, whereas, small scale enterprises and Narayanganj based enterprises were far behind.

Since the mere presence of plans does not inherently ensure the "preparation of enterprises," the ability to think, schedule, execute, and properly assess exercises will improve the resilience of organisations (Table 25). The key challenges in executing a programme of this scale and complexity are the need to systematically change in their implementation, being able to incorporate more and more operations, with a specific emphasis on the participation of strategic decision-makers and top management, which

Table 25: Factories exercised/executed business continuity plans if provided training by the size and location of the factories

Parameters	Clusters	Yes	No	Total
Size of Enterprises	Small	95	5	100
	Medium	97.81	2.19	100
	Large	100	0	100
	Total	96.96	3.04	100
Location of Enterprises	Dhaka	98.53	1.47	100
	Gazipur	94.93	5.07	100
	Narayanganj	100	0	100
	Chattogram	95.74	4.26	100
	Total	**96.96**	**3.04**	**100**

Source: CPD-CED Survey, 2020.

is considered necessary for crisis resolution (CIRED, 2019). The organisation shall exercise and test its business continuity procedures to ensure that those are consistent with its business continuity objectives (International Standard, 2012). According to the survey, all categories of factories that have these types of plans have exercised those. There is little difference observed between factories in terms of size, location and membership.

7.2 Vulnerability/security threat assessment

A large section of factories has assessed with regard to vulnerability/security threat related to the large-scale crisis. According to the survey, the practice is rather high in case of BGMEA member factories compared to that in BKMEA factories. Narayangonj-based factories are behind (47 per cent) in this regard (Table 26). In terms of vulnerability and security threat assessment, small scale enterprises are behind than medium and large-scale factories. Even under a better business environment, many small enterprises face challenges such as meeting payroll, maintaining customers, and making long term plans, (Myles, 2010). These and other challenges are much worse during tough economic times. According to Muranda (2003), small to medium enterprises are largely constrained by size, experience and they tend to avert risks.

Table 26: Vulnerability/ security threat assessment of factory considering any large-scale crisis by the size, location and membership status of the factories

Parameters	Clusters	Yes	No	Total
Size of Enterprises	Small	60.37	39.63	100
	Medium	73.03	26.97	100
	Large	73.17	26.83	100
	Total	66.23	33.77	100
Location of Enterprises	Dhaka	71.3	28.7	100
	Gazipur	70.5	29.5	100
	Narayanganj	47.37	52.63	100
	Chattogram	68.49	31.51	100
	Total	66.23	33.77	100

(Table 26 contd.)

(Table 26 contd.)

Parameters	Clusters	Yes	No	Total
Membership Status of Enterprises	Only BGMEA	71.23	28.77	100
	Only BKMEA	59.09	40.91	100
	Both	72.34	27.66	100
	Non-member	52.73	47.27	100
	Total	**66.23**	**33.77**	**100**

Source: CPD-CED Survey, 2020.

In the event of a business interruption, a dedicated business management team is needed to ensure the effective continuation of business operations. People who understand the organisation, technology, processes, and business risks evaluator should be on the team. The team as a whole adds to the organisation's expertise (Tammineedi, 2010). According to the survey, 54 per cent factories assigned special officer/team in case of taking preparation vulnerability/ security threat related crisis which was mainly undertaken in case of large-scale factories followed by medium-sized ones and lesser in case of factories located in Narayangonj (Table 27).

Table 27: Special assignment officer/team in case of taking preparation on vulnerability/ security threat related crisis by the size and location of the factories

Parameters	Clusters	Yes	No	Total
Size of Enterprises	Small	39.02	60.98	100
	Medium	67.22	32.78	100
	Large	90.24	9.76	100
	Total	53.61	46.39	100
Location of Enterprises	Dhaka	55.16	44.84	100
	Gazipur	56.50	43.50	100
	Narayanganj	43.86	56.14	100
	Chattogram	56.16	43.84	100
	Total	**53.61**	**46.39**	**100**

Source: CPD-CED Survey, 2020.

7.3 Identified redundancies

As part of resilience theory, 'redundancy' examines the capacity to move between several viable alternatives outside optimal design. Exploring the available redundancy in business environments help to prevent performance failure through unexpected circumstances or in response to varying user needs (Stevenson, et.al., 2016). About 70 per cent of enterprises have identified at least some redundancies in their factories particularly in case of utility usages, wastages, machine capacities and others between 2017—2019 (Table 28). This is mainly observed in the case of large and medium-size factories. Majority of factories that claimed to be identified redundancies have taken action against those in order to reduce their cost and out of those, a large number of factories benefitted by taking measures to reduce per unit/ per month cost during 2017-2019.

Table 28: Cost mitigation strategies in factories between 2017—2019 by the size of the factories

Steps to reduce cost	Size of enterprise	Yes	No	Total
Identifying cost redundancy	Small	61.28	38.72	100
	Medium	78.84	21.16	100
	Large	87.8	12.2	100
	Total	70	30	100
Undertaking Cost Reduction measures if identified redundancies	Small	95.02	4.98	100
	Medium	96.84	3.16	100
	Large	100	0	100
	Total	96.25	3.75	100
Benefitted after undertaking cost reduction measurements	Small	93.72	6.28	100
	Medium	95.65	4.35	100
	Large	100	0	100
	Total	**95.13**	**4.87**	**100**

Source: CPD-CED Survey, 2020.

7.4 Recycling/cost-saving technology use

Focusing on recycling activities/cost-saving technologies would be one strategy to reduce the cost of production during the time of pandemic (Table 29). The key areas of focus for reduction of costs include premises cost of wastes, capital cost for collection or transfer vehicles or treatment facilities, labour cost, operators and management cost, fuel and other energy used by collecting wastes, waste processing and storage cost, and compliance cost vis-à-vis may save this money simply by instaling cost-saving technologies.

Table 29: Undertaking any initiative to recycle wastages /excess inputs generate between 2017 and 2019 by the size of the factories

Recycle wastages	Small	Medium	Large	Total
Yes	35.98	41.91	65.85	40.33
No	64.02	58.09	34.15	59.67
Total	**100**	**100**	**100**	**100**

Source: CPD-CED Survey, 2020.

Table 30: Installation of any cost-saving technologies between 2017 and 2019 by the size of the factories

Recycle wastages	Small	Medium	Large	Total
Yes	39.63	61	68.29	50
No	60.37	39	31.71	50
Total	**100**	**100**	**100**	**100**

Source: CPD-CED Survey, 2020.

Despite having policies, few initiatives have been undertaken by factories so far. Only 40 per cent factories mentioned that they took initiatives to recycle wastages/excess inputs generated during 2017-2019 (Table 30). Only 50 per cent factories mentioned that these factories installed cost-saving technologies. Small scale enterprises are behind compared to of other categories of enterprises. Similarly, Narayangonj based and partly Chattogram based factories is found to be behind.[6]

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[6]About 89 per cent of factories took major management decision immediately after the crisis.

7.5 Alternate sources for procurement of raw materials

During a crisis time, procurement of raw materials from alternate sources is considered as a mechanism to make the enterprises resilient (Argonne, 2013). This is mainly because of managing shortages of raw materials from main sources. During January-March, 2020 about 15 per cent factories were in trouble due to shortages of raw materials, among them the large factories which required a bulk amount of raw materials, fall in trouble more in this case. According to the survey, a large number of factories (43 per cent) do not have alternate sources for procurement of raw materials in case regular sources are found to be unavailable (Table 31). This is a major problem for over 50 per cent of small factories, 35 per cent of medium factories and 29 per cent of large factories. A sizable number of enterprises has procured raw materials from alternate sources – 56.8 per cent of enterprises procured raw materials from alternate sources. As expected, large enterprises procured more from alternate sources compared to that of other categories of enterprises (Table 32). Although a relatively small number of Narayangonj-based enterprises have alternate sources for procurement, these enterprises procured more compared to enterprises of other locations from those sources.

Table 31: Having alternate sources for procurement of raw materials in case regular sources are found to be unavailable by the size and location of the factories

Parameters	Indicators	Yes	No	Total
Size of Enterprises	Small	48.48	51.52	100
	Medium	65.15	34.85	100
	Large	70.73	29.27	100
	Total	56.56	43.44	100
Location of Enterprises	Dhaka	65.02	34.98	100
	Gazipur	58	42	100
	Narayanganj	43.86	56.14	100
	Chattogram	46.58	53.42	100
	Total	**56.56**	**43.44**	**100**

Source: CPD-CED Survey, 2020.

Table 32: Procuring raw materials from any alternate sources by the size and location of the factories

Parameters		Yes	No	Total
Size of Enterprises	Small	59.18	40.82	100
	Medium	51.72	48.28	100
	Large	60	40	100
	Total	56.82	43.18	100
Location of Enterprises	Dhaka	59.38	40.63	100
	Gazipur	50	50	100
	Narayanganj	68.75	31.25	100
	Chattogram	50	50	100
	Total	**56.82**	**43.18**	**100**

Source: CPD-CED Survey, 2020.

7.6 Covid-19 related health safety guideline

Maintaining occupational safety and health (OSH) in the RMG enterprises has been a major challenge during the COVID pandemic. About 40 per cent of factories mentioned that they arranged training for all staffs/workers following the Covid-19 related health safety guideline prepared by DIFE/BGMEA (Table 33). The majority of large enterprises did the training while the rate was almost half for small scale enterprises. In the case of spatial point of view, Chattogram based factories were far behind in providing training to workers. Thus, in-house preparation of factories to reduce contamination is rather low. Lack of data on the spread of contamination had made it difficult to apprehend how such poor safety arrangement affected the factories and thereby affected workers.

Table 33: Conducting training for all staffs/workers based on the Covid-19 related health safety guideline shared by DIFE/BGMEA by the size and location of the factories

Parameters	Clusters	Yes, all	Yes, partial	No	Total
Size of Enterprises	Small	32.62	28.35	39.02	100
	Medium	48.55	29.88	21.58	100
	Large	60.98	26.83	12.2	100
	Total	40.82	28.85	30.33	100
Location of Enterprises	Dhaka	43.05	22.87	34.08	100
	Gazipur	41	31.5	27.5	100
	Narayanganj	51.75	34.21	14.04	100
	Chattogram	16.44	31.51	52.05	100
	Total	**40.82**	**28.85**	**30.33**	**100**

Source: CPD-CED Survey, 2020.

7.7 Brands/buyers' supportive measures

As a responsible business practice and to make a sustainable supply chain, the role of the brand and buyers to the suppliers and its workers are inevitable, especially during a crisis period like the COVID-19. However, it dismays rather a murky state since the majority of factories (86 per cent) indicated that brands/ buyers did not take supportive measures during the period of pandemic (Table 34). Not only the suppliers' side but also with regard to factories' financial and workers' health-related concerns were overlooked by the brands/buyers. About 10 per cent of small factories indicated few measures undertaken by factories including providing health safety equipment, paid medical expenses and provided training on ways to avoid getting infected.

It is important to note that brands and buyers despite having the responsibility to support factories either from the CSR point of view or from the responsible business conduct (RBC) point of view. However, very few brands buyers took initiative to support their member suppliers in addressing their crisis. As high as 86 per cent of enterprises mentioned that brands/buyers did not provide any support to them. Only 3.3 per cent enterprises have received support in the form of receiving health safety equipment including sanitizer, gloves, masks, face shields etc. Few factories (1.9 per cent) mentioned about receiving medical expenses for infected workers. Overall, the practice of RBC or CSR in the apparels sector is disapproving and need to be improved.

Table 34: Brands/buyers helped factories in any non-financial ways by the size of the factories

Help from brands/buyers	Small	Medium	Large	Total
Yes, paid for the medical expenses related to the Covid-19	2.9	0.81	0	1.9
Provided health safety equipment for the workers (sanitiser, gloves, masks, face shields, etc.)	4.06	2.83	0	3.32
Provided training on ways to avoid getting infected	2.61	3.64	2.44	3
Not applicable (e.g., subcontract factory)	10.43	0.4	0	5.85
No, the brands did not help	80	92.31	97.56	85.94
Total	**100**	**100**	**100**	**100**

Source: CPD-CED Survey, 2020.

7.8 Exploring new types of orders

New orders dried up during the early stages of the COVID pandemic due to the global drop in demand for RMG products. However, a handful of factories were reopened to continue operations and produce health-related equipment for emergency need. About 12 per cent factories received new types of orders during the time of the COVID crisis which included the production of face masks (48 per cent), Personal Protective Equipment (PPE) and face mask (28 per cent) and PPE (21 per cent) (Tables 35 & 36). Such new product orders partly helped factories to maintain their business operation during the COVID period. It brought new opportunities for the non-member factories which helped them to survive and rebound.

Table 35: Received orders for new types of products (other than what is usually ordered) from the brands/ buyers during the Covid-19 period by the size of the factories

Orders for the new product received	Small	Medium	Large	Total
Yes	13.72	10.37	2.44	11.64
No	86.28	89.63	97.56	88.36
Total	**100**	**100**	**100**	**100**

Table 36: Factories received new product orders by the size of the factories

New product ordered	Small	Medium	Large	Total
Face Mask	44.44	56	0	47.89
Face Mask, PPE	31.11	20	100	28.17
Jacket	0	4	0	1.41
PPE	22.22	20	0	21.13
Tops	2.22	0	0	1.41
Total	**100**	**100**	**100**	**100**

Source: CPD-CED Survey, 2020.

7.9 Production related activities for the continuation of businesses

Due to a lower level of revenue and uncertainty in the financial part, most businesses have found it difficult to keep their financial wheels turning during the lockdown period. Diverse practices observed among enterprises to cope up with the crisis (Table 37). A good number of factories took orders during April-

Table 37: Per centage of orders taken between April - September, 2020 that did not cover the production cost by the location of the factories

% of orders	Dhaka	Gazipur	Narayanganj	Chattogram	Total
1 to 5	14.55	5.88	33.33	0	11.45
6 to 10	16.36	14.71	13.33	18.52	16.03
11 to 15	10.91	14.71	13.33	7.41	11.45
16 to 20	10.91	26.47	20	29.63	19.85
21 to 30	16.36	20.59	20	11.11	16.79
31 to 50	16.36	8.82	0	25.93	14.5
51 to 100	14.55	8.82	0	7.41	9.92
Total	**100**	**100**	**100**	**100**	**100**

Source: CPD-CED Survey, 2020.

September 2020 which were not even covered their production cost. About 10 per cent factories indicated that they had taken 50-100 per cent of their orders which did not cover their costs. Such tendency is rather high in the case of factories located in Dhaka and Gazipur –mainly woven factories. This rather raised the purchasing practices of buyers as well as the weak negotiation capacity of the suppliers.

8. Enterprise level resilience and recovery from the COVID crisis

8.1 Contact with new buyers/brands

During the crisis time, shock absorption capacity or the resilience capacity determines the ability of enterprises to innovate and diversify their product base and so are the choices of the buyers from whom to buy and trade with. From the survey, it has been found that about half of the enterprises (52.3 per cent) tried to contact new buyers/brands with whom they did not do business during the last three years (2017-19) (Table 38). The tendency is slightly higher in the case of small-scale enterprises (53 per cent) followed by medium-scale enterprises (52 per cent). Out of those 52.3 per cent factories who contacted new brand/ buyer for orders, 25 per cent of them were successful in receiving orders. Besides, the share of small-scale enterprises (29 per cent) prevailed over those of medium and large-scale enterprises. Such access to orders supports enterprises to revive their businesses during the time of limited opportunities for export orders (Table 39).

Table 38: Trying to contact new buyers/brands (whom a firm did not do business in 2017-2019) for orders during March-September, 2020 by the size of the factories

Contact with new brand/buyer	Small	Medium	Large	Total
Yes	53.35	51.87	46.34	52.3
No	46.65	48.13	53.66	47.7
Total	**100**	**100**	**100**	**100**

Source: CPD-CED Survey, 2020.

Table 39: Factories contacted with new buyers/ brands, and received orders from them during April – September, 2020 by the size of the factories

	Small	Medium	Large	Total
Yes	28.57	21.6	15.79	25.08
No	71.43	78.4	84.21	74.92
Total	**100**	**100**	**100**	**100**

Source: CPD-CED Survey, 2020.

8.2 Capacity utilisation

Capacity utilisation of enterprises has improved over time with the rise in production orders. Such improvement in capacity utilisation indicates a positive development about the recovery of the businesses. Consequently, the zero capacity utilisation which was as high as 89 per cent in April 2020 came down to only 1.3 per cent in September 2020 (Figures 11 & 12). The pace of reduction of zero capacity was slower

Figure 11: Rate of capacity utilization (70 per cent and above) by the size of the factories
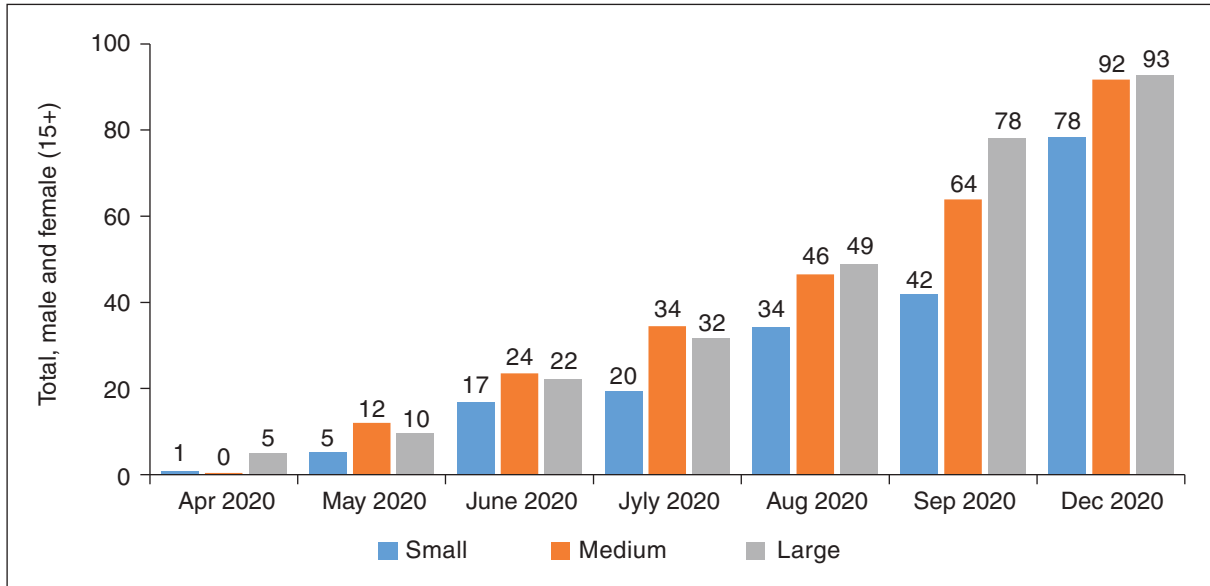
Source: CPD-CED Survey, 2020.

Figure 12: Zero Capacity Utilisation Rate by the size of the factories
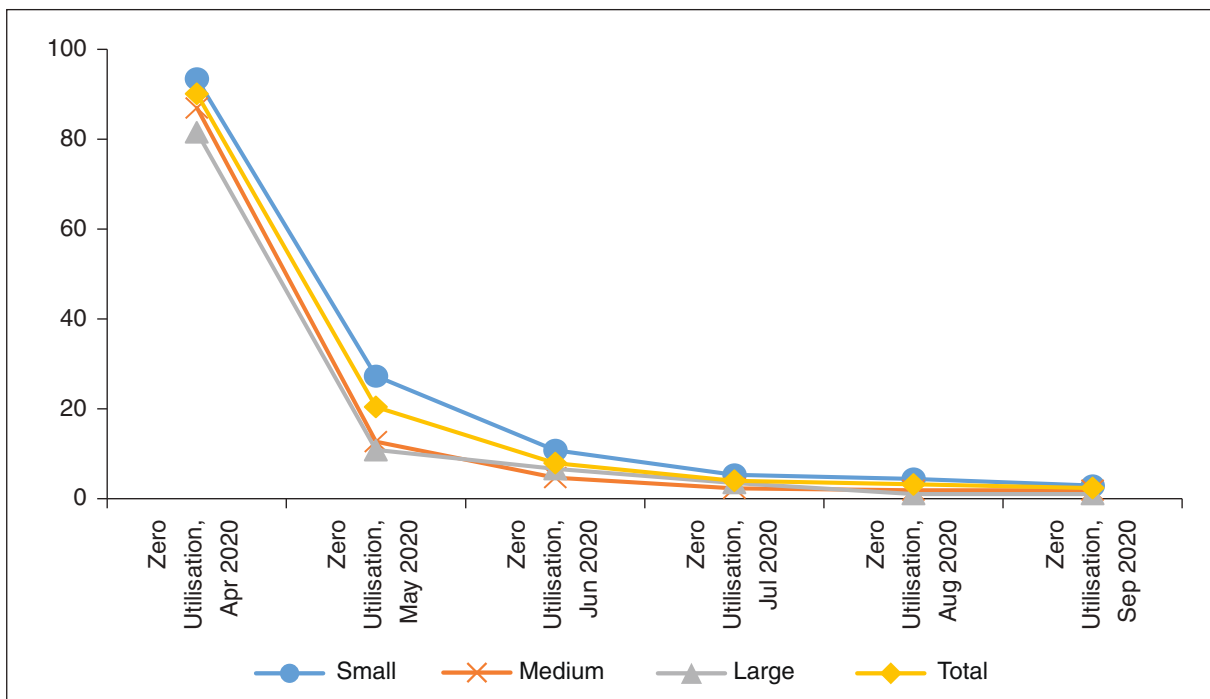
Source: CPD-CED Survey, 2020.

for small scale factories and factories located in Narayanganj. The gap in capacity utilisation between large and small factories have been widened over time meaning that the process of recovery is slower in the case of small factories.

8.3 Restoring business contact with buyers

Over time suppliers have restored their business contacts with the buyers. The level of normal business contact which was declined to 68 per cent in April 2020 have gradually improved and reached 93 per cent and above in September 2020 (Figure 13). Restoring business contract provides better understanding about the future export orders and predictability about the businesses. Despite that few has reported irregular contact (5.8 per cent to 2.4 per cent) in September 2020. Usually, small scale enterprises fall into trouble more quickly during such a crisis and time to recover from the crisis also takes time. Getting back to normalcy was happened mainly because of brands/buyers' proactive move to be more engaging with suppliers. It is expected that brands and buyers will provide better predictability about the businesses for the future.

Figure 13: Changes in level of contacts between suppliers and buyers by the size of the factories
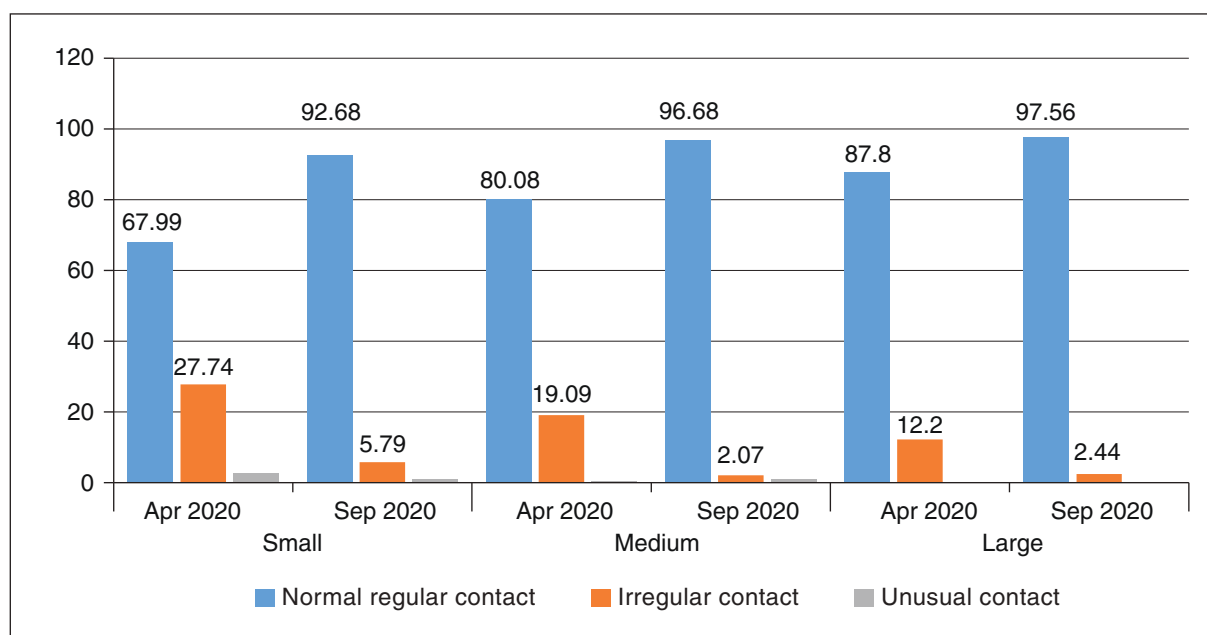
Source: D-CED Survey, 2020.

8.4 Orders for the next six months

he prospect of businesses during the time of crisis understands better through-flow of orders for the upcoming months. The entrepreneurs were asked about the situation of orders for the next six months (November, 2020- April, 2021). Only 44 per cent factories claimed that they have certainty in orders; while the rest 56 per cent have different levels of uncertainty - even 11 per cent factories indicated high level of uncertainty (Table 40). These factories are mainly small-scale and partly medium scale factories. Factories located in Chattogram are in poorer condition with regard to export orders.

Table 40: Condition of orders for the next six months (November, 2020-April, 2021) by the size and location of the factories

Parameters	Clusters	Highly Uncertain	Moderately Uncertain	Certain	Total
Size of Enterprises	Small	16.16	46.04	37.8	100
	Medium	6.22	45.23	48.55	100
	Large	2.44	29.27	68.29	100
	Total	11.31	44.59	44.1	100
Location of Enterprises	Dhaka	11.66	41.26	47.09	100
	Gazipur	10	47.5	42.5	100
	Narayanganj	12.28	36.84	50.88	100
	Chattogram	12.33	58.9	28.77	100
	Total	**11.31**	**44.59**	**44.1**	**100**

Source: CPD-CED Survey, 2020.

8.5 Cost of production

Price of raw materials: The majority of enterprises mentioned that the price of raw materials was higher in September 2020 compared to that in March 2020 (Table 41). This is likely because of a sudden rise in demand for raw materials (including the rise in the forward purchase of raw materials) across the apparel value chain which raw materials-sourcing countries found difficult to accommodate. Small and medium-size enterprises who usually dependent on the spot market for purchasing raw materials confronted the problem most. This mainly happens to factories located in Narayanganj based factories which are knit factories.

Table 41: In September, 2020 change in the price (per unit of order) of the raw materials compared to that in before March, 2020 by the size and location of the factories

Parameters	Clusters	The price of raw materials is lower than before	The price of raw materials is higher than before	Same as before	Total
Size of Enterprises	Small	1.22	72.56	26.22	100
	Medium	2.07	70.95	26.97	100
	Large	0	56.1	43.9	100
	Total	1.48	70.82	27.7	100
Location of Enterprises	Dhaka	1.35	73.99	24.66	100
	Gazipur	2.5	69.5	28	100
	Narayanganj	0.88	86.84	12.28	100
	Chattogram	0	39.73	60.27	100
	Total	**1.48**	**70.82**	**27.7**	**100**

Source: CPD-CED Survey, 2020.

Shipment cost: Rising shipment cost is another indication of returning back of businesses towards normalcy (Table 42). Likewise, with rising costs of raw materials, shipping costs have increased as shipping companies are under pressure to ship sudden rise in orders from major supplying countries particularly from China and Hong Kong, which put pressure on other supplying countries including Bangladesh to ship their supplies on time. This is partly related to the relatively less number of ships available immediately

after the sluggish trend in businesses. Chattogram-based factories have not experienced higher shipping cost perhaps these are closely located to the port area and take the advantage of quick loading and unloading of their supplies.

Table 42: In September, 2020 change in the price (per unit of order) of shipping cost compared to that before March, 2020

Parameters	Clusters	The shipping cost is higher than before	The shipping cost is lower than before	Same as before	Total
Size of Enterprises	Small	61.28	4.27	34.45	100
	Medium	63.07	2.07	34.85	100
	Large	60.98	0	39.02	100
	Total	61.97	3.11	34.92	100
Location of Enterprises	Dhaka	61.43	3.59	34.98	100
	Gazipur	66.5	2.5	31	100
	Narayanganj	71.93	5.26	22.81	100
	Chattogram	35.62	0	64.38	100
	Total	**61.97**	**3.11**	**34.92**	**100**

Source: CPD-CED Survey, 2020.

Wage cost: The majority of factories indicated that wage cost remained at the same level in September 2020 compared to that in the pre-COVID level (Table 43). It was apprehended that wage cost would reduce during the COVID period because of reduced wage payment, rising production target and lesser number of workers in factories. However, the cost was almost at the same level mainly because of the annual increment provided to workers and partial payment of festival bonuses for the Holy Eid-ul-Adha which might be keep the wage cost at the same level in September, 2020. The suppliers complained that buyers' offered price was so low that it was difficult for factories to accommodate the relative pressure of meeting the wage cost during the COVID period.

Table 43: In September, 2020, change in the price (per unit of order) of wage cost compared to that before March, 2020

Indicator	Small	Medium	Large	Total
Wage cost				
The wage cost is lower than before	3.66	0.83	0	2.3
The wage cost is higher than before	34.45	27.39	24.39	30.98
Same as before	61.89	71.78	75.61	66.72
Total	100	100	100	100
Non-industrial costs				
Non-industrial costs (interest payment, other charges) are lower than before	1.22	1.24	0	1.15
Non-industrial costs (interest payment, other charges) are higher than before	46.65	58.09	48.78	51.31
Same as before	52.13	40.66	51.22	47.54
Total	**100**	**100**	**100**	**100**

Source: CPD-CED Survey, 2020.

8.6 Recruitment of workers during the Covid period

As the businesses are rebounding, demand for workers has started to rise and factories have started to recruit new workers. About 58.7 per cent of factories recruited new workers during March-September 2020. Factories of all categories have recruited new workers 56 per cent of small factories, 64 per cent of medium factories and 63 per cent of large factories (Table 44). The number of recruitment of workers depends on the size of factories and the demand for workers. The highest share of factories recruited workers are located in Dhaka and Gazipur districts whereas less recruitment observed in Chattogram based factories. At the same time, a good number of factories did not even recruit a new worker – this is largely happened in case of small-scale factories (43.9% of small factories) followed by large factories (40.4 per cent) and medium factories (36%).

Table 44: New recruit of workers during the COVID by size of factories

Level of recruitment	Number of factories			
	Small	**Medium**	**Large**	**Total**
No New Recruitment	144	87	15	246
1-20 Worker	86	7	0	93
21-40 Worker	35	15	0	50
41-60 Worker	31	26	2	59
61-80 Worker	11	6	0	17
81-100 Worker	10	13	2	25
101-200 Worker	7	48	6	61
201-1200 Worker	4	39	16	59
Total	**328**	**241**	**41**	**610**

Source: CPD-CED Survey, 2020.

A large share of factories has both retrenched workers in an early period of the covid due to lack of export orders and later recruited workers with the rise in export orders. About 37 per cent of factories have been identified which have both retrenched and recruited workers during the COVID period (Table 45). All categories of factories have recruited at the same level (which have a retrenchment record as well). Though recruitment is higher for Dhaka and Gazipur based factories and lower for Chattogram based factories, and highest recruitment took place in BKMEA-member factories followed by BGMEA member factories. Given the better export

Table 45: Number of factories recruited and retrenched workers by size, location and membership

Parameters	Clusters	Recruitment & Retrenchment
Size of Enterprises	Small	115 (35%)
	Medium	96 (39%)
	Large	15 (36%)
	Total (Ret. & Rec.)	226 (37%)
Location of Enterprises	Dhaka	92 (41.3%)
	Gazipur	80 (40%)
	Narayanganj	37 (32.4%)
	Chattogram	17 (23.2%)
	Total (Ret. & Rec.)	226
Membership Status of Enterprises	Both	13 (27.7%)
	Non-member	35 (31.8%)
	Only BGMEA	141 (38.6%)
	Only BKMEA	37 (43,5%)
	Total (Ret. & Rec.)	**226**

Source: CPD-CED Survey, 2020.

performance by knit factories, recruitment in knit factories are likely to be higher. Interestingly, a sizable share of non-member factories also recruited workers. In the case of recruitment, factories preferred to recruit their workers whom they retrenched during the early period of the covid due to lack of export orders. However, it is alleged that factories that recruited their retrenched workers at a lower wage or downgraded terms and conditions (e.g., lower pay, lower grades, and on a contractual basis). The newly recruited retrenched workers in the same factories lost their entitled benefited to be accrued due to discontinuation of the jobs for a period.

8.7 New business opportunities

Availing new businesses: During the time of crisis, new business opportunities usually emerge which entrepreneurs intend to avail themselves. Unfortunately, only 4 per cent of entrepreneurs mentioned that during April-September period 2020 they have started some new businesses within RMG or in non-RMG related activities (Table 46). This has happened in case of large-scale enterprises which are largely located in the Dhaka district.

Table 46: Factory owners started any new business (e.g.: RMG/ Non-RMG/other sectors/factory expansion) during April-September, 2020 by size and location

Parameters	Clusters	Yes	No	Don't know	Total
Size of Enterprises	Small	4.27	81.71	14.02	100
	Medium	2.49	80.08	17.43	100
	Large	9.76	63.41	26.83	100
	Total	3.93	79.84	16.23	100
Location of Enterprises	Dhaka	5.83	74.89	19.28	100
	Gazipur	2.5	80	17.5	100
	Narayanganj	3.51	78.95	17.54	100
	Chattogram	2.74	95.89	1.37	100
	Total	**3.93**	**79.84**	**16.23**	**100**

Source: CPD-CED Survey, 2020.

Table 47: Explored new markets (Geographical market) during April-September, 2020

Parameters	Clusters	Yes	No	Total
Size of Enterprises	Small	51.52	48.48	100
	Medium	64.73	35.27	100
	Large	60.98	39.02	100
	Total	57.38	42.62	100
Location of Enterprises	Dhaka	60.54	39.46	100
	Gazipur	63	37	100
	Narayanganj	50	50	100
	Chattogram	43.84	56.16	100
	Total	**57.38**	**42.62**	**100**

Source: CPD-CED Survey, 2020.

Exploring new markets: A large share of entrepreneurs explored businesses in new markets and buyers whom they did not do business in the last three years – about 57.4 per cent of entrepreneurs explored new markets during March-September 2020. Dhaka and Gazipur based enterprises were ahead in exploring new markers and buyers compared to those of Narayangonj and Chattogram based enterprises (Table 47). Suppliers could not make

businesses for online stores as very few have such capacity and limited contacts with the buyers of the online stores. The survey found that less than two per cent factories mainly of large-scale enterprises have experienced producing and shipping products for online stores (Table 48).

Participation in online sales: Because of poor record in the past in participating online sales, no noticeable improvement happened for factories in selling online stores (1.64 per cent) (Table 49). Interestingly, Narayanganj and Chattogram-based factories have never sold products for online stores. It is to be noted that the online market caters to demand for fast fashions with small scale orders with a requirement of different types of raw materials. Moreover, making the orders delivered on time is an important prerequisite in participating in this market. Given the weaknesses in timely delivery of products based on imported raw materials, often suppliers expressed less interest in online sales.

Expand online market exposure: Given the rising demand for online markets among the consumers, most of the factories that earlier participated in online markets, are planning to expand their online market exposure. Out of less than two per cent enterprises, those have participated and shipped product for online markets in the past, all large and medium scale enterprises are interested to expand their infrastructure for online market sales (Table 50). Interestingly almost half of the small enterprises are also interested to participate in online market sales and exposures.

Table 48: Factories have made products for online stores (international/export market) before March 2020 (before the Covid-19) by size and location

Parameters	Clusters	Yes	No	Don't know	Total
Size of Enterprises	Small	1.83	92.68	5.49	100
	Medium	2.07	88.38	9.54	100
	Large	2.44	78.05	19.51	100
	Total	1.97	90	8.03	100
Location of Enterprises	Dhaka	3.14	89.69	7.17	100
	Gazipur	2.5	88.5	9	100
	Narayanganj	0	86.84	13.16	100
	Chattogram	0	100	0	100
	Total	**1.97**	**90**	**8.03**	**100**

Source: CPD-CED Survey, 2020.

Table 49: The Table repeated, please check Factories have shipped products for online stores during April-September, 2020

Parameters	Clusters	Yes	No	Don't know	Total
Size of Enterprises	Small	1.52	93.6	4.88	100
	Medium	1.66	91.7	6.64	100
	Large	2.44	80.49	17.07	100
	Total	1.64	91.97	6.39	100
Location of Enterprises	Dhaka	2.69	93.27	4.04	100
	Gazipur	2	90	8	100
	Narayanganj	0	87.72	12.28	100
	Chattogram	0	100	0	100
	Total	**1.64**	**91.97**	**6.39**	**100**

Source: CPD-CED Survey, 2020.

Table 50: Factories that has shipped products for the online market are planning to expand their infrastructure for the online market (export market) in the next three years by size

	Small	Medium	Large	Total
Yes	60	100	100	80
No	40	0	0	20
Total	**100**	**100**	**100**	**100**

Source: CPD-CED Survey, 2020.

Out of 90 per cent of factories who have not made and shipped any products for an online market, only 13 per cent factories have the plan to set up online based IT infrastructure in their factories within the next three years (Table 51). In this regard, Narayanganj based factories have a limited level of plan to create IT-based infrastructure for the online market. Besides, factories need to invest in setting up infrastructure which would be able to deliver a smaller number of orders producing products with different types of raw materials.

Table 51: Factories that have never made and shipped any product for online markets are planning to set up online based IT infrastructure in a factory in the next three years

Parameters	Clusters	Yes	No	Total
Size of Enterprises	Small	11.33	88.67	100
	Medium	14.48	85.52	100
	Large	18.18	81.82	100
	Total	12.97	87.03	100
Location of Enterprises	Dhaka	13.88	86.12	100
	Gazipur	11.05	88.95	100
	Narayanganj	11	89	100
	Chattogram	17.81	82.19	100
	Total	**12.97**	**87.03**	**100**

Source: CPD-CED Survey, 2020.

8.8 Impact of Variation or Business-Related Activities on the Factory Level Income (NIPE)

Net income per worker (NIPE) indicates the profit earned by factories regarding its total employees. During the COVID pandemic, the business-related operational activities were hampered resulting in a poor financial capacity of the factories. Thus, to eatimate the impact of various business operation related activities on the net income per employee also addressed as factory level profit, a linear regression analysis has been conducted. The analysis considers the mixture of both the quantitative and qualitative variables. In this context, the dependent variable is quantitative in nature and independent variable consist with both the nominal scale/dummy variables and quantitative variable as the covariate in the model or control variable.

Rationale for choosing qualitative variables

In regression analysis the dependent variable, or regressand, is frequently influenced not only by ratio scale variable (e.g., income, expenditure, output, credit amount received, per cent of capacity utilised, etc) but also by variables that are essentially qualitative or nominal scale, in nature, such as size of the factories, operational status during lockdown, contract nature of suppliers with their brand/buyer, having emergency plan for crisis time or not, geographical region, etc). For example, holding all other factors constant, factories operated even during the holidays earn more than their other counterpart who operated during the weekdays or operated business activities partially throughout the week, or factories who have explored new markets during the crisis time are found to earn higher than those who have not explored. This pattern may result from operating business activities or exploring new markets, but whatever the reason, qualitative variables such as these seem to influence the regressand and clearly should be included among the explanatory / independent variables, or the regressors. These variables usually indicate the presence or absence of a quality or an attribute and are essential to classify data into mutually exclusive categories.

ANCOVA Models: Equation, Results and Description

Regression models containing a mix of quantitative and qualitative variables are called analysis of covariance (ANCOVA) models and provide a method of statistically controlling the effects of quantitative regressors, called covariates or control variables.

The equation for ANCOVA model stands as—

$$Y_i = \alpha_1 + \beta_2 D_{2i} + \beta_3 D_{3i} + \ldots + \beta_k D_{ki} + \beta_k X_{ki} + U_i$$

Where, hypothetically assuming the variables—

Y_i	=	Dependent variable
α_1	=	intercept
β	=	slope coefficient
D_{2i}	=	1 if the factories have business plan
	=	0 otherwise (i.e., do not have plan)
D_{3i}	=	1 if the business activities are ongoing
	=	2 if the business activities are closed
	=	3 if the business activities are partially closed
X_{ki}	=	Covariate or control variable or quantitative variable
U_i	=	stochastic disturbances or error term

Now, considering the following model based on the above equation to appreciate the factors associated with NIPE (Net income per worker in September 2020) of the RMG factories–

Y_i (NIPE) $= \alpha_1 + \beta_2 OS_{2i} + \beta_3 BC_{3i} + \beta_4 Plan_{4i} + \beta_5 FSRM_{5i} + \beta_6 VSTA_{6i} + \beta_7 Train_{7i} + \beta_8 RBC_{8i} + \beta_9 RONP_{9i} + \beta_{10} Contact_{10i} + \beta_{11} Explore_{11i} + \beta_{12} Location_{12i} + \beta_{13} Size_{13i} + \beta_{14} Capacity_{12i} + U_i$

Where,

Y_i (NIPE)	=	Net income per worker during September, 2020
α_1	=	the intercept
β	=	slope coefficient
OS	=	Operational status of factory during early April, 2020 to end-September, 2020
BC	=	Business contacts status with top brand/buyer during September, 2020
Plan	=	Have business continuity plan (written), emergency plan (written) and contingency plan (written) or not for the crisis period
FSRM	=	Facing shortages of raw materials during January-March, 2020
VSTA	=	Vulnerability/ security threat assessment of factory considering any large scale crisis
Train	=	Conducting training for all staffs/workers based on the Covid-19 related health safety guideline shared by DIFE/BGMEA
RBC	=	Brands/buyers asking about the health safety practices of your factory during Covid-19
RONP	=	Received orders for new types of products (other than what is usually ordered) from the brands/buyers during Covid-19 period
Contact	=	Trying to contact new buyers/brands (whom a firm did not do business in 2017-2019) for orders during March-September, 2020
Explore	=	Explored new markets (Geographical market) during April-September, 2020
Location	=	location of the factories
Size	=	Size of the factories
Capacity	=	Capacity utilisation rate in sept'20

The results drawn from the above model fitted strongly and most of the cases found with strong relationship with dependent variable. Operational status of factories, having business plan or not, factories faced raw materials shortages or not, factories done vulnerability assessment or not, trained workers regarding health safety or not, brands asked about health and safety practices during the crisis or not, tried to

contact with new brand/buyer or not, explored new markets or not, location in different districts, and size of the factories found with significant relationship with the dependent variable.

Each of these dummies are associated with at least 2 or more than 2 types of attributes (e.g., Yes, no, do not know; or closed, open, and partially open; or various location and sizes). Impact of these dummies on the dependent variable was compared based on each of their corresponding categories; for example, operational status of factories, those who operated even in the govt. announced holidays was in the level form or as a benchmark. Compared to this attribute, indicators within the same variables were compared to the benchmark attribute whether the difference of the mean values are different from any other.[7]

It has been found that the mean values of the NIPE of the factories "operated business activities except in govt holidays" earned statistically significantly less than the benchmarked factories (operated business factories even in govt. announced holidays) by BDT 7985, on an average and holding all other things constant. Though the mean NIPE of "partly closed factories except in govt. announced holidays" were less by BDT 159 than the benchmark factories, though it is insignificant, and we do not reject the null hypothesis that the difference in the mean values of attributes are different.

Factories having different kinds of business contact status (normal, irregular, unusual, and no contract) have found with no significant relationship with the changes in NIPE. Hence, we do not reject the null hypothesis and there is no difference in the mean values of the various factories having various types of business contact status with their buyers.

Moreover, on an average, ceteris paribus, factories who has assessed the vulnerability or security threat considering any large-scale crisis, earned higher by BDT 24862 than those who have not.

In terms of providing training to the workers based on COVID related health and safety guideline, factories who have complied, earned higher than those who have not or have partially done that. Even in both cases, on an average, ceteris paribus, factories who have given training to the workers, their NIPE was higher by BDT 9928, and BDT 3525 than those who have not provided training and those who have provided partially, respectively. Though, those who conducted partially may not be true since it is found insignificant, either their differences in the mean values are same (not rejecting the null hypothesis) or the number of observations in partially training provided factories are lower. It could have been different otherwise.

On an average, ceteris paribus, factories who have received orders for new types of products (other than what was usually ordered) by the brands and buyers during COVID pandemic, their NIPE was higher by BDT 4373 than those who have not received, though it may not be true as the coefficient is statistically insignificant. The difference in NIPE can be the same in case of both factories.

Interestingly, in terms of strategic point of view, factories who have contacted with new brands or buyers (whom a firm did not do business in the last 3 years) have earned higher by BDT 6944 than those who have not tried, on an average, ceteris paribus.

Likewise, factories who have been explored new markers have earned higher by BDT 16036 than those who have not explored during the April to September 2020, on an average, ceteris paribus.

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[7](null hypotheses = H0: the difference of each attributes mean value are same; alternative hypothesis = H1: difference of the attributes' mean values within a single dummy are different. of the corresponding attributes).

Based on geographical aspect, factories who are located in outside of Dhaka, have been found with significantly (except for Narayanganj) at higher income strata. Factories located in Gazipur and Chattogram have earned higher NIPE by BDT 10798 and BDT 17801, respectively, on an average, ceteris paribus.

It is important to note that the small factories are way ahead in case of NIPE compared to their other counterpart (medium and large-scale factories). On an average, ceteris paribus, NIPE of medium and large-scale factories are less by BDT 12858 and BDT 16447, respectively, compared to the small-scale factories.

The coefficients which have been received from these dummies help to understand whether there is any difference in the mean values exist within the attributes and is there any relationship between these dummies and the dependent variable. These do not explain the reason of impact except the differences.

8.9 Future strategies

The future strategies for businesses are diverse among the sample enterprises (Tables 52 & 53). The highest share of entrepreneurs indicated that they will explore new buyers/brands (28 per cent), followed by exploring new markets (23 per cent), and expanding production capacity (22 per cent). In other

Table 52: Coefficient values from the ANCOVA regression model and its significance with attributes

Variables	Attributes within variables	Coefficient	Benchmark assigned as	Level of significance
a1_Operational status of factory during early April, 2020 to end-September, 2020	Fully in operation except those government-announced holidays	-7984.711*	Fully in operation even in government-announced holidays	Significant at 6% error margin
	Partially closed (other than government announced holidays)	-159.2539		Insignificant
a10_Business contacts status with top brand/ buyer during September, 2020	Irregular contact	464.503	Normal regular contact	Insignificant
	Unusual contact	9563.886		Insignificant
	No contact	6077.803		Insignificant
b22_Vulnerability/ security threat assessment of factory considering any large scale crisis	No	-24862.09***	Yes	Very highly significant at 5% error margin
b24_Conducting training for all staffs/workers based on the Covid-19 related health safety guideline shared by DIFE/ BGMEA	Yes, partial	-3525.415	Yes, all	Insignificant
	No	-9927.755**		Significant at 5% error margin
b25_Brands/buyers asking about the health safety practices of your factory during Covid-19	Yes, some buyers	18426.73***	Yes, all buyers/ brands	Very highly significant at 5% error margin
	No	19587.44***		Very highly significant at 5% error margin

(Table -52 contd.)

(Table 52 contd.)

Variables	Attributes within variables	Coefficient	Benchmark assigned as	Level of significance
b27_Received orders for new types of products (other than what is usually ordered) from the brands/ buyers during Covid-19 period	No	-4373.455	Yes	Insignificant
b29_Trying to contact new buyers/brands (whom a firm did not do business in 2017-2019) for orders during March-September, 2020	No	-6944.126**	Yes	Highly Significant at 5% error margin
b32_Explored new markets (Geographical market) during April-September, 2020	No	-16035.6***	Yes	Very highly significant at 5% error margin
Location of factories (Dhaka is the benchmark)	Gazipur	10797.86**	Dhaka	Highly Significant at 5% error margin
	Narayanganj	1046.499		Insignificant
	Chattogram	17801.4***		Significant at 5% error margin
Size of the factories (Small factories are the benchmark)	Medium	-12857.89***	Small	Significant at 5% error margin
	Large	-16446.61**		Significant at 5% error margin
Capacity utilisation of firms	b16_capacity utilisation in sept'20	56.35205	Quantitative variable	Insignificant
	Constant	9992.013		Insignificant

Note: * $p<0.01$, ** $p<0.05$, *** $p<0.001$

Table 53: Future strategy for expanding businesses in next three years by size

	Small	Medium	Large	Total
Introduction of new product line	14.09	14.75	12.5	14.26
Expansion of production capacity	21.3	22.58	22.22	21.93
New management set up	6.89	7.14	7.64	7.06
Productivity led measures	14.71	12.44	13.89	13.66
Pollution management	3.29	7.14	9.72	5.44
Exploring new brands/retailers/buyers	30.97	25.69	26.39	28.33
Exploring new markets	23.46	22.7	21.53	22.98
Total	**100**	**100**	**100**	**100**

Source: CPD-CED Survey, 2020.

words, the majority of entrepreneurs will continue their existing business operations and production of the existing set of products and will try to expand their current base. Such a plan indicates a setback in

upgrading the RMG sector owing to the adverse impact on businesses. The majority of entrepreneurs have expressed less interest in upgrading their enterprises through the development of new products, productivity enhancement and pollution management. A large share of enterprises perceived that their enterprises need not require to scale down the operation. Only five per cent enterprises have thought of squeezing their operation - mainly those of small-scale enterprises and are those mainly located in the Gazipur district.

9. Resilience performance of RMG enterprises: estimated resilience index

The study estimated the 'resilience index (RI)' of sample RMG enterprises following the method of Argonne, 2010.[8] This index comprises three components which include – 'robustness', 'recovery' and 'resourcefulness'. The RI approach delves into decision-making on risk management, crisis time recovery, and business continuity planning. The RI assesses critical infrastructure's ability to minimize the severity and/or length of impacts from problematic upshots.

The estimates indicate that RMG enterprises' resilience performance is below the mid-level marks (43.4 out of 100) (Table 54). Enterprises are relatively better in the case of the 'recovery' sub-index (48) but are poor in terms of the 'robustness' sub-index (38). Better performance is observed in the case of 'coordination and awareness' related issues. The weakest performance is observed in the case of 'maintaining key functions' and 'alternative sites'. In other words, enterprises are weak in dealing with immediate shocks due to having limited capacity in maintaining key functions and alternate sites.

Table 54: Factories scaling down/contract operation in next one year (from now till December, 2021) by size and location

Parameters	Clusters	Yes	No	Total
Size of Enterprises	Small	5.18	94.82	100
	Medium	4.15	95.85	100
	Large	2.44	97.56	100
	Total	4.59	95.41	100
Location of Enterprises	Dhaka	4.04	95.96	100
	Gazipur	5.5	94.5	100
	Narayanganj	4.39	95.61	100
	Chattogram	4.11	95.89	100
	Total	**4.59**	**95.41**	**100**

Source: CPD-CED Survey, 2020.

It is interesting to note that despite major differences in business operations, resilience performance is not widely varied between different categories of factories. Large enterprises are modestly above compared to other categories of enterprises (Table 55). Large scale enterprises are relatively better in the case of sub-indices such as redundancy (82.3), training exercises (86) and protective measures (90.2). On the other hand, small scale enterprises are found to be behind in the case of a number of sub-indices which include marinating key functions (14.6), lack of alternate sites (17.7), new resources (27.4) and restoration (21.3). Even in few areas, all categories of factories are almost at a similar weak state where they need further improvement - these include maintaining key functions, lack of alternate sites and restoration.

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[8]Detailed discussion on methodology is presented in section 2.

Table 55: Factories performance on overall resilient indices

Indices	Overall (out of 100)
RI: Resilience Index	43.4
Pillar 1: Robustness	38
Redundancy	60.5
Prevention/Mitigation	40.3
Maintaining key functions	13
Pillar 2: Resourcefulness	44.9
Training Exercises	54.9
Protective measures	53.6
Awareness	66.2
Alternative sites	18.7
New resources	30.7
Pillar 3: Recovery	47.7
Coordination	75
Restoration	20.1

Source: CPD-CED Survey, 2020.

Table 56: Factories performance on various resilient indices by size

	Small	Medium	Large
RI: Resilience Index	37.8	49.2	54.2
Pillar 1: Robustness	32.5	43.6	49.1
Redundancy	52.5	67.5	82.3
Prevention/Mitigation	30.1	51.1	58.6
Maintaining key functions	14.6	12	6.1
Pillar 2: Resourcefulness	37.1	52.6	61.5
Training exercises	40.9	68.7	86
Protective measures	39	67.2	90.2
Awareness	60.4	73	73.2
Alternative sites	17.7	19.3	23.9
New resources	27.4	34.6	34.2
Pillar 3: Recovery	44.2	51.7	52.1
Coordination	66.8	83.9	88.2
Restoration	21.3	19.2	15.7

Source: CPD-CED Survey, 2020.

As per the membership status of factories, BGMEA factories are better performer compared to that of of BKMEA factories. Poor maintenance of key functions is the weakest part for all categories of factories (Table 56). Non-member factories are least resilient in a large number of areas- particularly they are way behind in case of maintaining key functions and alternative sites for procuring raw materials and stock of goods, and restoration.

Table 57: Factories performance on various resilient indices by membership status

	BGMEA	BKMEA	Both	Non-Member
RI: Resilience Index	47.6	39.2	45.9	31.8
Pillar 1: Robustness	42.3	32.9	40.2	26.7
Redundancy	65.5	55.1	66	45.5
Prevention/Mitigation	47.2	32.2	48.2	20.6
Maintaining key functions	14	11.4	6.4	14.1
Pillar 2: Resourcefulness	50.3	39.9	50.4	28.7
Training exercises	62	51.1	65.2	30
Protective measures	62.7	46.6	66	23.6
Awareness	71.2	59.1	72.3	52.7
Alternative sites	20.3	15.2	17	17.1
New resources	35	26.8	31.2	19.5
Pillar 3: Recovery	50.5	45.2	47.5	40.3
Coordination	80.7	74	77.9	55.7
Restoration	20	16	17	24.6

Source: CPD-CED Survey, 2020.

10. Conclusions

The unprecedented crisis confronted by Bangladesh's RMG sector has put challenges to maintain its pace of growth in the global apparel value chain during the COVID pandemic period. This has been exposed in a number of weaknesses particularly in addressing the vulnerabilities and ensuring resilience and recovery. For the first time, the level of resilience of RMG enterprises has been estimated in the context of Bangladesh's apparels enterprises. The overall resilience performance of enterprises is below the mid-level mark (score is 43.4 out of 100). Though its major strengths were in coordination and awareness-raising, its weaknesses are spread across various issues most important in the case of maintaining key functions and alternate sites. Despite having major differences in business operations, resilience performance is not so widely different between large- and small-scale enterprises. Henceforth, a new level of preparation is required considering the varied types of disruptions in order to be resilient and to ensure quick recovery of RMG enterprises.

The study has conducted a sample survey over a nationally representative sample of RMG enterprises (610 enterprises). The survey portrayed that the RMG sector is overwhelmingly burdened with poor resilience performance. This is particularly important in the case of small-scale factories, non-member factories, and factories located in Narayanganj and Chattogram. The dependence of a very small number of buyers (and brands/retailers) is a major weakness not only for small scale enterprises but also for large scale enterprises. In this context, associations should encourage to diversify their buyers/suppliers base by including small-scale buyers/brands of different sourcing countries.

Due to the disruption caused by the COVID pandemic, the size of the operation of factories had scaled down. The average number of workers in a factory during December 2019 was 886 which reduced to 790 in September 2020 (reduced by 10.8 per cent). Although sample enterprises reported that 2.7 per cent of workers were laid off from their enterprises, however total job sloss during this period was as high as 13.95 per cent. In other words, 3.57 lac RMG workers were lost their jobs during this period. Ensuring legally entitled payment for retrenched workers needs to be ensured. Besides, necessary initiatives need

to be undertaken in order to include the retrenched workers under the newly introduced social safety net programme for RMG workers – mainly with the financial support of the German and EU countries.

Despite having lots of discussion about the gendered impact on female workers in the RMG enterprises, the study revealed that overall gender composition did not change in the sector. However, about 33 per cent factories have a lower share of female at present compared to that in pre- COVID period. DIFE needs to ensure that factories follow instructions on payment of the wages to workers as per service rules and also put focus on recruitment of old workers, not below their earlier status. BGMEA and BKMEA should take special measures and awareness programmes with regard to ensuring compliance with regard to retrenchment and recruitment of workers. Government should make it part of the compliance requirement for factories to pay workers' wage payment through MFS/bank account/accounts in agent banks.

A large share of factories tried to accommodate their retrenched workers during the COVID pandemic by re-recruiting them. It is expected that these factories will recruit these workers considering their job experience and skill not below the rank, grade, wages and terms that were earlier applied on. However, any exceptions are needed to look into those issues and take the necessary action by the association of enterprises (BGMEA and BKMEA) alongside DIFE.

As per the survey, about 232 factories were closed during the COVID period which is about 6.9 per cent of total factories (3342 factories). It is worthy to note that, 232 factories those were closed during the COVID period, among those188 are BGMEA member factories (9.8 per cent). It is important to examine how many of these factories can return to business and what kinds of support can be facilitated to make these enterprises return to the business.

The survey observed that the financial management of RMG enterprises is very poor. The majority of factories including those of large-scale enterprises did not have adequate financial backup including not even plans to cope up with the immediate crisis. Without government emergency financial support and production orders received from the brands/buyers, it was difficult for enterprises to rebound from the crisis. Timely declaration and distribution of subsidised credit for export-oriented enterprises under the stimulus package helped the enterprises to address the cash-strapped situation during April-June 2021. Furthermore, the gradual rise of production orders helped factories to stimulate their business activities as well as their financial capabilities. Financial management of enterprises should emphasize the financial sustainability plan of RMG enterprises. In this regard, associations should put pressure on their members to develop or follow up their financial sustainability plans.

The loan amount distributed under the stimulus package covered the loan request of about 70 per cent of enterprises. In other words, about 30 per cent enterprises were left out of the package – these were mostly small and non-member factories. Despite having the need for financial support, a section of small and non-member factories did not apply because of procedural difficulties and lack of capacity to repay the monthly instalment of the credit. Bangladesh Bank and commercial banks need to revisit the loan distribution process - how to make the process easier for small scale and non-member factories. Besides, any future package for the sector needs to be customised considering priorities regardless of the size and non-membership status of enterprises.

The study observed spatial differences in case of business performance as well as coping risks and ensure rebound and recovery. Factories located in Chattogram and Narayangonj are behind in terms of business performance as well as taking measures against risks and vulnerabilities. In this backdrop, special development programmes need to be designed for factories located in these two districts. The proposed programme could include financial support for technological up-gradation, investment

for the online platform and technical support for the improvement of management including financial management. These enterprises need support for better buyers' networking as well. The technology up-gradation fund which is set up by the Bangladesh Bank for export-oriented enterprises could be used targeted way for enterprises of these districts.

The survey found that workplace safety in RMG enterprises particularly to reduce the contamination of virus inside the factories was in a weak state. Hence, safety measures within the enterprises need to be upgraded in order to ensure a safe working environment for workers. In this connection, DIFE should improve its monitoring with regard to workplace safety measures. Enhancement in monitoring and enforcement is particularly required in Chattogram based factories which were behind in terms of safety measures. BGMEA and BKMEA should put special attention to factories located in the Chattogram region. DIFE office in Chattogram should strengthen its monitoring.

According to the survey, brands and buyers have increased their regular contact with suppliers. It is expected that they will more proactively engage with small scale manufacturers in order to facilitate their upgradation in the value chain providing technical know-how and other business-related advices and support. Likewise, brands and buyers should ensure better buying practices with their suppliers. In that connection, sourcing country governments should come forward to ensure responsible business practices (RBPs) under the responsible business conduct guideline.

Enterprises have claimed that brands and buyers were less helpful about providing orders and less flexible about a timeline for the shipment before and interim period of the pandemic. It is expected that buyers and brands will provide more predictability to the suppliers with regard to future demand and orders. It is important to note that small scale enterprises have been recovering at a slower pace compared to that of medium and large-scale enterprises. The process of recovery of these enterprises would stall unless these enterprises receive a sufficient number of orders in the coming months. Hence, buyers should provide better predictability of order to local suppliers.

It is important to consider making necessary changes in the financial incentive structure currently provided to all categories of factories. A major focus should be given to redirecting those incentives to SMEs and non-member RMG factories in order to facilitate their upgradation. The upcoming national budget FY2021-2022 could take due measures in this regard. It is expected that a large part of RMG enterprises will target the online market and therefore make the necessary investment for developing IT infrastructure at the factories where the technology upgradation fund could facilitate the process.

It appears that the COVID-19 has changed the focus of enterprises and halt their forward-looking perspective. In the immediate future, these factories will not only invest in the expansion of business operation but also will not focus on productivity improvement through the improvement of the management, product line development. Garment associations should mandate the minimum academic qualifications for key management professions with a mandatory skill requirement.

The resilience and recovery of enterprises in a crisis period will require proper planning and development with regard to robustness, resources and recovery related issues. Most importantly factories need to diversify their sources of industrial raw materials and ability to maintain their key functions even during the crisis period.

BGMEA and BKMEA which are the representative of garment enterprises should cooperate with the government and development partners in identifying the actual number of laid-off workers and submit the list for making necessary payment under the social safety net, especially, under the EU-German support

for the retrenched workers of export-oriented factories. DIFE should facilitate this process and mediate between the factory owners and trade union leaders to identify and provide support to those unemployed workers. Garment association have a database of retrenched workers which could help in this regard.

The government along with stakeholders should introduce unemployment insurance for RMG workers. BGMEA/BKMEA should discourage its member factories not to retrench workers on a gendered point of view and DIFE should examine the status of female employment in factories to ensure the labour related compliance issues. Garment association should gradually register the non-member factories in their association first as 'associate member' followed by 'member'. Central Bank should allow them to apply for various stimulus packages from which these enterprises were deprived.

It is important to make the application process for stimulus packages easy particularly for small scale enterprises. Despite making the terms easier, a section of enterprises did not apply due to their inability to pay monthly instalments. Against this background, how these enterprises survive and continue their business operations, needs to be explored further.

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