Paper on
'Ongoing Upgradation in RMG Enterprises:
Preliminary Results from a Survey'[1]

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Presentation by

Dr Khondaker Golam Moazzem

Research Director, CPD

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CPD Study Team

Dr Khondaker Golam Moazzem, Project Director, CPD-RMG Study

Dr Fahmida Khatun, Executive Director, CPD

Mr Abeer Khandker, Visiting Research Associate, CPD and Senior Lecturer, East West University

Engr Faruk Ahmed, Industrial Engineer, CPD-RMG Study and Senior Lecturer, BGMEA University of Fashion and Technology (BUFT)

Ms Shamima Pervin, Gender Consultant, CPD-RMG Study

Mr Faijan Bin Halim, Research Associate, CPD-RMG Study

Ms Tahsin Farah Chowdhury, Research Associate, CPD-RMG Study

Ms. Mastura Safayet, Programme Associate, CPD-RMG Study

Mr Minhaz M Reza, Programme Associae, CPD-RMG Study

Ms Syeda Samiha Azim, Programme Associate, CPD-RMG Study

Md Arfanuzzaman, Programme Manager, CPD-RMG Study

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1. Introduction and Objectives of the Study

In the global apparel value chain, issues of firm level competitiveness are being increasingly linked with factors beyond economic and technological upgrading. This is no less true for issues of social compliances, particularly in view of recent developments. Gender dimensions also occupy an important place in this discourse. This renewed focus on competitiveness in terms of economic, social and gender embedded upgrading got prominence in the global value chain with the tragic incidence of the collapse of Rana Plaza in April, 2013 which caused deaths of over 1000 garments workers. In other words, the Rana Plaza tragedy symbolized the poor state of sustainable development of apparel value chain in Bangladesh and other supplying countries. Consequently, Bangladesh's apparels sector has put in place various restructuring and reform measures particularly addressing social and physical compliance related issues. Over the last five years, RMG enterprises in Bangladesh have focused not only social concerns but also on economic and other issues with a view to rebuilding their image and competitiveness and thereby getting ready to compete in the global market under a new paradigm of competitiveness. In this backdrop, it is important to analyse the state of ongoing activities at the enterprise level, in the areas of economic and social upgrading, their implications for competitiveness of RMG enterprises with a view to assess their improvement in capacity to compete in the global apparel market. Thus, the paper seeks to address the following issues.

The overall objective of the study is to assess the capacity of apparels enterprises to undertake economic transformation as well as to upgrade physical and social compliances and thereby to continue maintaining its competitiveness in the global market. Economic transformation at the enterprise level is reflected through economic upgrading by upgrading its manufacturing base from low-end and mass-level products towards a combination of low and medium to high end products. This will be related with enterprises ability to raise the level of productivity, efficiency, technological readiness, market and product diversity etc. The social upgrading is more related with the ability to undertake necessary restructuring of physical and social compliances. Based on this assessment, the study would like to put forward necessary policy suggestions with regard to long term economic upgrading along with social upgrading targeting sustainable development of apparels enterprises.

This interim study highlights only a part of the above-mentioned objectives; four issues that are highlighted in this study include: a) to analyse the benchmark condition of RMG enterprises particularly with regard to structure and composition of ownership, management, workers and their organisations and technologies etc; b) to estimate the level of upgrading of RMG enterprises with regard to social, economic and gender-embedded upgrading in order to assess their level of progress; c) to analyse the enterprise-level upgradation in terms of size, location and other variables with a view to appreciate the dynamics and changes of upgradation; d) to review the possible impact of firm's upgradation on its overall competitiveness particularly in terms of price and profitability.

2. Literature Review on Enterprise Level Upgrading and Its Implications on Overall Performance

The competitiveness of firms in the global value chains has been increasingly interpreted beyond economic issues. Different social issues related to workers job, work place safety and workers' rights are part of firm level competitiveness. Hence firms are increasingly putting emphasis both on economic and social upgradation. Economic upgrading can be defined as the process through which firms move from low-value added to high-value added activities along the global value chain (Gereffi, 1999), or, in other words, value-added increasing innovation (USAID, 2006). It is considered as 'key means of success for actors in global value chains' (Moazzem and Sehrin, 2016). The key indicators of economic upgrading include process upgrading, product upgrading and functional upgrading which include technological changes in case of machineries, techniques, products, research and development and functions.

On the other hand, ILO has defined social upgrading in the context of decent work with its four pillars that include employment, standards and rights at work, social protection and social dialogue (ILO, 1999). According to Elliot and Freeman (2003) and Barrientos and Smith (2007) social upgrading consists of measurable standards and enabling rights. Measurable standards are the easily observable and quantifiable aspects of workers' well-being, while enabling rights includes freedom of association, right to collective bargaining, non-discrimination, voice and empowerment. These two concepts are also interrelated: lack of access to enabling rights weakens workers' ability to negotiate improvements in working conditions, while measurable standards are generally outcomes of bargaining processes driven by the rights of workers.

Traditionally, it was assumed that economic upgrading within the global value chains would bring social upgrading with it. In fact, if neoclassical theory is considered, labour demand and wages are determined by technology, and 'this connects economic to social upgrading' (Milberg and Winkler, 2011). However, recent work suggests that economic upgrading is generally a necessary, but not a sufficient condition for social upgrading (Salido and Bellhouse, 2016), and economic upgrading leading to social upgrading varies across countries and GVCs (Milberg and Winkler, 2013). From their extensive reviews of issues in this area, Barrientos et al (2010) and Milberg and Winkler (2011) suggest that economic upgrading 'only sometimes translates into improvements for workers'.

The empirical evidence dealing directly with economic and social upgrading is limited, and the ones that study the two concepts are more recent and sector specific. While some authors suggest that economic upgrading ultimately leads to social upgrading in the long run, and the process is not automatic (UNCTAD 2013, 2014), the empirical literature is highly divided on this issue. Recent work suggests that economic upgrading is generally 'a necessary, but not a sufficient condition for social upgrading' (Salido and Bellhouse, 2016). Moreover, Bernhardt and Milberg (2012) suggest that there appears to be a positive correlation between economic and social upgrading, but there are some examples where economic upgrading led to social downgrading. Also, there are different factors that influence the interrelationships of economic and social upgrading, such as particularities of specific industries, position within the global value chain, typology of labor, status of workers, etc. (Salido and Bellhouse, 2016). Some studies have found that economic upgrading brings social benefits to permanent workers and social downgrading to irregular workers. (Lee, Gereffi and Nathan, 2013; Rossi, 2013; Bernhardt and Milberg, 2012). Governance and lead firm policies can also have a huge effect on the quality of life of workers at all levels of the value chain (Nathan and Sarkar, 2011; Rossi, 2013).

However, current literature (as highlighted in Table 1) has not reached a consensus on a single model that explains the connection between economic and social upgrading (Milberg and Winkler, 2013; Salido and Bellhouse, 2016). While the general assumption is that economic upgrading leads to social upgrading, the exact correlation and form is not yet clear. However, factors such as collective bargaining and labor rights, economic sector, kind of economic upgrading and other contextual issues impact social upgrading require further investigation.

Table 1: Recent Studies on Social and Economic Upgrading

Positive Association between Social and Economic Upgrading	Negative Association between Economic and Social Upgrading	No/Ambiguous Association between Economic and Social Upgrading
Funcke et al (2014); Ahmed and Nathan (2014); Sarkar et al (2013); Staritz and Morris (2013); Verhoogen (2007)	Coe and Hess (2013); Bhaskaran et al (2013); Barrientos et al. (2011); Carr and Chen (2004); Chen et al. (1999); Collins (2003); Hale and Wills (2005); Knorringa and Pegler (2006); Oxfam International (2004); Raworth and Kidder (2009); Standing (1999)	Evers, Amoding and Krishnan (2014); Evers et al (2014); Maree et al (2013); Plank and Staritz (2013); Barrientos and Visser (2012); Brown and Medoff (2013); Locke et al (2007); Plank, Rossi and Staritz (2014); Donald and Humphrey and Schmitz (2000)

Source: Author's own compilation

Bangladesh's RMG sector has become a major supplier of apparels because of its competitive strength on various economic issues. The performance in social issues had often been criticized particularly with regard to workers' wages, work place safety and workers' rights issues. The sector has largely been experienced with addressing social issues after the tragic industrial accidents in 2012 and 2013 which followed up with various institutional measures. In other words, such measures have made significant influence on social upgradation in RMG enterprises. Through these measures the issue of competitiveness has been taken a new approach where market-based approach has been blended with institutional approach in determining the competitiveness of firms. Hence, the sustainability of this approach of competitiveness particularly how those measures of social upgrading influence the overall competitiveness of firms is important to understand.

3. Methodology

The study aims at collecting data from a randomly selected sample of readymade garments factories in and around Dhaka and Chittagong. The main objectives of the survey include – providing indicators of economic, social and gender-embedded upgrading levels in the apparel sector of Bangladesh, address different issues relating to the upgrading levels in the sector, build a database which would make possible to understand the current scenario in the garments sector and provide important inputs on garments sector reforms Hence, the main target of generating the sample of garments factories is to benchmark the economic, social and gender-embedded upgrading levels of the sampled factories.

3.1 Baseline Survey

The study has been carried out on the basis of the primary data collected from the RMG enterprises. Given the lack of availability of population data of RMG enterprises, CPD-RMG study has prepared a comprehensive database for the population of RMG enterprises and workers which called 'Data Universe'. A significant time was spent on cleaning and merging these separate datasets resulting in a single compiled database consisting of 6821 factories (henceforth referred to as the 'harmonized dataset'). From that dataset, factories who are still operational were identified through thoroughly investigating each data, resulting in a master dataset contains 3648 factories (Table 2). As EPZ factories have largely different rules and regulations and are not comparable with the other factories, they were excluded from the population for more focused studies later, and the remaining number of factories were 3596. The geographical area of the factories encompass greater Dhaka and Chittagong, including Gazipur, Narayangonj, Mymensingh, etc.

Table 2: Population Distribution of Factories and Workers under Different Categories

	Enterprises	Workers
Small	1739 (48.36%)	669403 (19.1%)
Medium	1592 (44.27%)	1868020 (53.0%)
Large	265 (7.36%)	963800 (27%)
Total	3596 (100)	3504728 (100%)

Source: CPD-RMG Study, 2017

3.2 Sample Size

As the CPD RMG study intended to collect data on multiple sub-indicators from the sampled factories, the decision to use the exact formula for calculation of minimum sample size becomes complicated, as different indicators have different characteristics. However, most of the indicators would be measured in proportions, as what percent of the firm's remediation has been completed, or what percent of workers receive training, etc. So the sample size has been determined using the following formula (which is the formula for calculating minimum sample size for estimating proportions in a population):

$$n = \frac{z_{\frac{\alpha}{2}}^2 \; P(1-P)}{e_0^2 + z_{\frac{\alpha}{2}}^2 \frac{P(1-P)}{N}}$$

where,
N= population size = 3596
P = population proportion = 0.33 or 33%

e_0 = desired level of precision = 0.05
α = confidence interval = 90%
$z_{\alpha/2}$ = z-value corresponding to a level of significance in two-tailed test = 1.96

Since there are three categories of factories under consideration, and in the absence of a comprehensive database at the national level detailing sizes of factories, the population proportion has been assumed to be 1/3 or 33.33%.

On the other hand, while the desired level of precision is considered to be 5%, a 90% confidence interval has been used given the data limitations, time and budget constraints. However, a 90% confidence interval is also popularly used across the world. For example, the World Bank Enterprise Surveys conducted by the World Bank all around the world uses a 90% confidence interval and a 7.5% level of precision. Moreover, this study utilizes a good level of precision as well, which is relatively better than that used by the Enterprise Surveys Methodology. The formula yields a sample size of 226 RMG factories.

3.3. Sampling Frame

This study has applied a stratified multistage sampling procedure. As outlined in Jain and Hausman (2006), it entails stratifying the population into groups and using a hierarchical structure of randomly sampled units for each stratum. In each stage, the sampling unit would be different.

As mentioned earlier, in the first stage, the primary sampling units are RMG factories. The population is divided into three sub-populations: small, medium and large factories. Data limitations didn't allow more detailed sub-divisions of the population. Using proportional stratification, the population and the sample distribution across strata has been shown in Table 3.

Table 3: Distribution of Sample Enterprises

Size	Population		Stratified Sampling	
	Frequency	**Percent**	**Frequency**	**Percent**
Small	1739	48.36	109	48.36
Medium	1592	44.27	100	44.27
Large	265	7.36	17	7.36
Total	**3596**	**100**	**226**	**100**

Source: CPD-RMG Study, 2017

As can be seen from the Table 3, the population proportions have been maintained in the sample, as is the rule of proportional stratified sampling. Here, it is quite clear that according to proportion, the number of large factories is quite low. So, for separate focused studies (conducted as part of the study but not the main theme of upgrading) there is a need for more large factories. Considering the time and budgetary flexibility, the number of large factories has been extended to 36, extending the sample size to around 252. The number of large factories could be further increased depending on time and budgetary considerations. However, that

would depend mostly on the level of cooperation of sampled factories in this regard. Moreover, for analyses on the whole database, the proportions of the sample would be kept intact to avoid any bias.

In the second stage, the sampling units are workers, and workers from each factory are randomly selected. Using 95 percent confidence interval with 2% margin of error and a population proportion of 33% (as before), the minimum number of workers required in the sample is 2122 (given a total population of 3504728 workers of the whole data universe). Given the worker distribution (Table 4) of the population, it is clear that medium factories employ roughly 3 times more workers than small factories and 2 times more workers than large factories. To maintain this ratio, and due to rounding up of the fractions, we obtain a sample of 2123 workers.

Table 4: Distribution of Sample Workers

| Size	Population (No. of Workers)		Sample (No. of Workers)		No. of Factories	
	Frequency	Per cent	Frequency	Per cent	Frequency	Per cent
Small	669403	19.1	408	19.2	109	48.36
Medium	1868020	53.3	1131	53.3	100	44.27
Large	963800	27.5	584	27.5	17	7.36
Total	3504728	100	2123	226	226	100

Source: CPD-RMG Study, 2017

Given the sample, we have to select 408 workers from 109 small factories, 1131 workers from 100 medium factories and 584 workers from 17 large factories. However, now we have 36 large factories in the sample, since the sample size was extended to 36, as mentioned previously. So, the primary target was to select 4 workers from each small factory, 11 workers from each medium factory and 17 workers from each large factory. But since there might be errors in reported data from workers, given the budget constraints, time limitations and factory level cooperation, 8 workers from each small factory, 12 workers from each medium factory and 18 workers were sampled from each large factory.

Now, in each garments factory, workers are divided into lines or blocks (Figure 1). Generally, workers in same positions of different lines have the same grade and the same training, so taking one worker from each line wouldn't represent too much variation. Hence, the target was to select 4 workers from each line in order to ensure variability and some level of divisibility. The lines were selected given the number of workers in the factory and in each line. For example, let us suppose that 12 workers from a certain medium factory are to be selected, where there are 18 lines, with 40 workers in each line. Since 4 workers from each line are to be chosen three lines would be chosen from the available number of lines (12/4=3). Let us suppose the number of lines in the factory is 18, with 40 workers each. Then firstly, we divided the total no. of lines by 3 and we selected the lines based on the quotient interval i.e. the 6th, 12th and 18th no. line. Secondly, for each line, we divided the total number of present workers of the

each line by 4 and selected the workers based on the quotient interval i.e. 40/4=10 (if we have 40 worker present in line 6). Here, the workers selected will be 10th, 20th, 30th and 40th. Considering the male-female ratio of workers in sample enterprises, sample workers have been selected randomly from the selected lines. For example, if male-female ratio in sample factory is 40:60 and total number of sample workers is 8, then 40% of 8 i.e. 3 male workers and 60% of 8 i.e. 5 female workers have been selected.

Figure 1: Line and worker selection criterion for the baseline survey
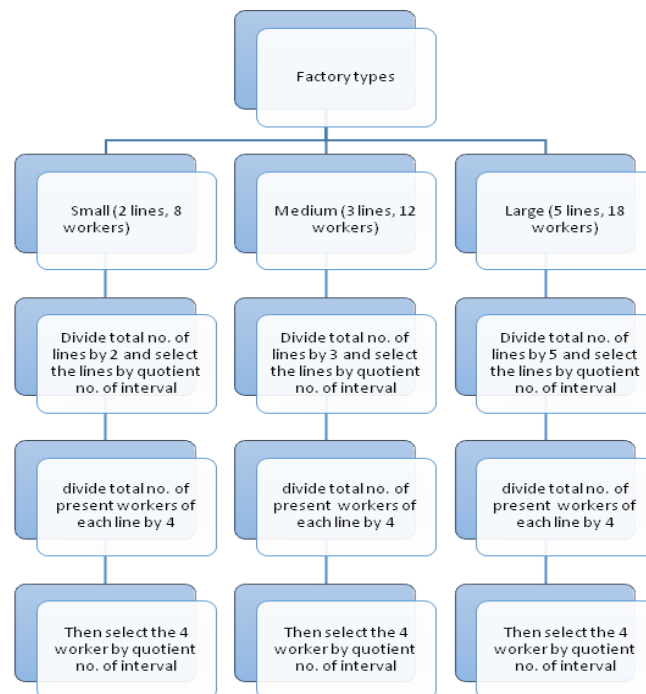
Source: CPD-RMG Study, 2017

3.4 Conducting High Frequency Data Survey (HFDS)

High frequency data survey collects data on a regular basis for the issues that are concurrently changing. The need for high frequency survey is that sometimes average response may not be meaningful rather there are some issues for which we need to collect concrete observation regularly in order to project the changes occur on the concerned issue. In that respect, high frequency data survey is currently used worldwide in lieu of paper based survey because baseline survey sometimes do not provide accurate answers what we seem to have only through regularly monitoring the aspects that we mainly concerned with.

Present study conducted HFDS on issues related to RMG enterprises such as Standard Minute Value (SMV) where production of various components of different apparel products varied widely on a daily basis because of variances in workers' level of productivity,

working environment, efficiency of machineries and management practices etc. Standard Minute Value (SMV) survey intends to scrutinize the efficiency level of the RMG workers and generate credible information on multiple factors affecting workers' productivity. The survey process of SMV is designed based on the observation and evaluation method as well as preparing short questionnaire. To collect consistent and reliable information for SMV calculation, the efficiency related data of the workers is collected in three (3) consecutive days. At first, two different lines are selected from the factory based on the identical style and buyer. Then the process name, worker ID, worker grade, machine name and brand name are recorded on the SMV sheet. After that, the surveyors collect seven (7) production cycles of the workers based on the time scale and evaluate the overall performance of the workers. At the same time workers basic and daily information are collected successively through a tab-based survey questionnaire. At the last stage workers' height, weight, height of knee and chair height were measured and recorded. Workers height, weight and measurement related information are collected only on the first day and during 2nd and 3rd days, workers SMV, daily and basic information are collected.

3.5 Estimation Methods

3.5.1 Upgradation Index: The estimation of upgradation of manufacturing enterprises is a unique approach. While there is conceptual clarity with regard to economic, social and gender-embedded upgrading of enterprises in the value chain, there is no such comprehensive initiative to estimate individual enterprise-level upgradation of apparels enterprises. This study has taken an attempt to measure upgradation of individual sample enterprises and thereby to appreciate their level of progress.

For the purpose of estimating the indices, a methodology was developed following relevant literature (Standing, 2003). Upgrading levels of factories have been divided into three parts: economic upgrading, social upgrading and gender embedded upgrading. Economic upgrading shows the advancement levels of firms in terms of productivity and technology; social upgrading shows development of rights and entitlements of workers, while gender embedded upgrading shows how much of the upgrading has been gender neutral.

Based on Standing (2003), present study measure firm's social benchmark level through a composite index of three key sub-index.

Firms' Social Benchmark Level Index = Employment sub-index (ESI) + Standard sub-index (SSI) + Rights sub-index (RSI) + Non-Discrimination Index (NDI)

Where the Employment sub-index (ESI) is defined as ESI = Human Resource Development Enterprise Index (HRDEI)[2] + Work Security Index (WSI)[3] + Employment Security Index (ESI)[4]

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[2] Human Resource Development Enterprise Index (HRDEI) = (TR + TRF) + (RETR + RETRF) + (UPTR + UPTRF) + TR.INST where TR = 1 if training was usually provided to newly recruited workers, 0 otherwise; RF = 1 if TR was apprenticeship or off-the-job training in classroom or institute, 0 otherwise; RETR = 1 if there was training provided for established workers to improve job performance or transfer between jobs of similar skill, 0 otherwise; RETRF = 1 if that retraining was formal, in class or institute, 0 otherwise; UPTR = 1 if training was provided to upgrade

Standard sub-index (SSI) is defined as SSI= Electrical compliance sub-index (ECI) + Fire compliance sub-index (FCI) + Structural compliance sub-index (SCI)[5]

Rights sub-index is defined as RSI= Economic Equity Index (EEI)[6] + Economic Democracy Index (EDI)[7]

On the other hand, firm's benchmark level of economic upgrading can be measured as follows:

Firm's benchmark level of economic upgrading = Weighted index of process upgrading sub-index+ Weighted index of product Upgrading sub-index+ Weighted index of functional upgrading sub-index

Process upgrading sub-index=Line/Worker Ratio + Line/Machine Ratio+ Machine/Worker Ratio+ Machine/Output Ratio/Line+ Labor/Output Ratio/Line+ New department+ Wastage, Stock lot+ Absenteeism+ Job switching+ Use of sophisticated machineries+ Firm investment+ Investment in new buildings+ Investment in new machinery and technology+ Rank of investments+ Majority share of firm investment distribution

Product upgrading sub-index= Simple and basic design+ Changes in basic design + Fancy and Fashionable design+ Fancy and Fashionable design + New Products Developed

Functional upgrading sub-index= Extent of forward linkage activity+ Branding+ Advanced R&D facility+ Fashion and designing+ Warehousing facility abroad+ Marketing facility abroad+ Firm own Brand+ Firm own shop+ Place of own shop+ Availability of Design and Marketing Departments

On the other hand, gender embedded upgrading is measured as follows:

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workers, 0 otherwise; UPTRF = 1 if that retraining for upgrading was in class or institute, 0 otherwise; TR.INST = 1 if the firm paid for trainees at institutes, directly or indirectly, 0 otherwise.

[3]Work Security Index (WSI) = SC + ACC + ILL Where SC = 1 if the firm has a department or formal worker-employer committee responsible for safety and health at work, 0 otherwise *(input/process indicator)*; ACC = 1 if the number of accidents in the workplace in the past year, expressed as a ratio to total employment, was less than 50 per cent of the sectoral mean, 0 otherwise *(outcome indicator)*; ILL = 1 if the number of work days lost through illness or injury in the past year was less than 50 per cent of the sector's mean average, 0 otherwise.

[4] Employment Security Index (ESI) = R + N + RB + D where, R = 1 if the percentage share of the workforce without regular employment contracts was less than 10 per cent, 0 otherwise; N = 1 if the firm provides workers being retrenched with notice, 0 otherwise; RB = 1 if the firm provided workers being retrenched with any benefits other than severance, 0 otherwise; D = 1 if dismissal procedures are covered in the firm's collective agreement, 0 otherwise.

[5] All components of the sub-index will be calculated based on the enterprise-level information collected by the ACCORD, ALLIANCE and the ILO.

[6] EEI = Min/Emp + M + AW/AWM + FB where, Min./Emp = 1 if the percent of the total workforce of the firm paid the minimum payment is below 5 per cent, 0 otherwise; M = 1 if the minimum wage paid was greater than 50 per cent of the average paid in the firm, 0 otherwise; AW/AWM = 1 if the average wage in the establishment was above the average wage for the industrial sector, 0 otherwise; FB = 1 if the firm paid selective fringe benefits, 0 otherwise.

[7] EDI = TU + COLL + WF + SH + P where, TU = 1 if there is a recognized trade union in the firm with more than 50 per cent of the workforce in the union, 0 otherwise; COLL = 1 if there is a collective agreement operating in the firm, covering wages and other labour matters, 0 otherwise; WF = 1 if there is a Work Forum (or the equivalent) in operation, 0 otherwise; P = 1 if there is a bargained profit sharing payment scheme for workers, 0 otherwise.

Firms' Gender Embedded Social Benchmark Level Index = Gender Embedded Employment sub-index (GEESI) + Standard sub-index (GESSI) + Gender Embedded Rights sub-index (GERSI) + Non-Discrimination Index (NDI)

Where the Gender Embedded Employment sub-index (GEESI) is defined as GEESI = GE Human Resource Development Enterprise Index (HRDEI) + GE Work Security Index (WSI) + GE Employment Security Index (ESI)

Standard sub-index (SSI) is defined as SSI= Electrical compliance sub-index (ECI) + Fire compliance sub-index (FCI) + Structural compliance sub-index (SCI)[8]

GE Rights sub-index is defined as RSI= GE Economic Equity Index (EEI) + GE Economic Democracy Index (EDI)

For details, please see Annex 1.

3.5.2 Estimating Technological Readiness of Sample Enterprises: Technological upgradation owing to overall economic upgrading is determined by the right mix of product, process, and functional upgrading. Given the constraints of categorizing firm's level of technological progress, price of the machineries being used in the production process is considered as a selective indicator to determine the level of technology of the firms. As an interim practice, of total, some 187 factories have been taken into account to assess the capacity of apparels enterprises to undertake economic transformation. Categorization of technology is calculated, however, according to the percentile emerged from the mean prices of all the machines used commonly by most of the factories. The resultant percentile value is then compared with the given weighted mean value of the machines for each factory to make the factories to be categorized into –'Advanced' as to above the 75th Percentile, 'Moderately High' as to in between 50th and 75th percentile, 'Moderate' as to in between 25th and 50th percentile , and 'Low' as to below 25th percentile.

Specialized machines are not accounted for the above calculation, since the distribution of the prices and usages are not even enough across the factories. However, the ratio of specialized machines usage to the total number of specialized machines used in the garments industry (according to the sample) is employed in order to have a complementarity effect especially to ameliorate the existing level of technology. About 69% benchmark level is considered for a particular factory to be qualified to the upper next category from the prevailing category of technology. The results are congruous to the hypothesis of the study with the fact that more technologically 'advanced' and 'moderately high' factories are distinguishingly disposed to the usage of more specialized machines in the process.

4. Sample Enterprises and Workers: Preliminary Findings

Present study covers a sub-set of samples (193) out of the total target number of sample enterprises (226). Since this is an interim study based on the findings of data collected from three-fourth of total samples, the results need to be interpreted accordingly.

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[8] All components of the sub-index will be calculated based on the enterprise-level information collected by the ACCORD, ALLIANCE and the ILO.

4.1 Distribution of Sample Enterprises and Workers

The distribution of sample enterprises is by and large similar to that of cluster based samples derived from the population (Table 5). Out of 193 surveyed enterprises, majority of enterprises are either 'small' scale (32.8 per cent) or medium scale enterprises (51.1 per cent). On the other hand, about 16.1% enterprises are large scale enterprises unlike their share in the population. This higher share of samples helps to analyse upgradation related issues with necessary representativeness. The sample enterprises are located in major RMG clusters such as Dhaka (45 per cent), Chittagong (31 per cent), Gazipur or Savar (12.3 per cent) and Narayanganj (11.5 per cent). The distribution of enterprises in terms of location more or less similar to that of population.

Table 5: Distribution of Sample Enterprises (193) and Sample Workers (2270)

Size	Sample Enterprises		Sample Workers	
	Frequency	**%**	**Frequency**	**%**
Small	61	32.0	488	22.0
Medium	99	51.0	1188	52.0
Large	33	17.0	594	26.0
Total	**193**	**100**	**2270**	**100**

Source: CPD-RMG Study, 2017

4.2 Ownership of Sample Enterprises

The structure of ownership of RMG enterprises has experienced changes towards a corporate structure (Table 6). Unlike the earlier period, about three-fourth of RMG enterprises are legally private limited companies (66.7%) and 18.2 per cent are sole proprietorship companies[9]. Rahman et al. 2008 conducted a survey on Bangladesh's RMG enterprises where the share of private company and proprietorship were reverse - 71.6 per cent and 7.4 per cent respectively. However, the share of public limited companies is still very low (3.1 per cent). Such ownership structure prevails in the manufacturing sector of other competing countries such as Sri Lanka, India and China. The McKinsey Emerging Market Investor Opinion Survey (2001) coined the term "emerging market corporate governance model", which is characterized by having highly concentrated ownership, insider boards and limited disclosure. Bangladesh is a good representation of this model, because among the RMG enterprises aligned with private and public limited companies. Of the enterprises having private and public limited companies, about 89 per cent of them have boards which comprises on average four board members of whom three are from the same family. The enterprises are still directed by the families in taking major

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[9] According to World Bank's Enterprise Survey (2013), 58.7% of RMG firms are operating with legal status of Sole Proprietorship in Bangladesh.

decisions, since major shareholders are comprised of family groups. In addition, for tighter control over firms' decisions, families often dominate the boards in most companies, taking up positions as executive directors, and CEOs or Chairpersons (Farooque et. al., 2007). However, unlike the past, owners are increasingly allowing factory management to take/participate in decision making process such as production planning, target setting and workers' grievances; however, owners are still playing the major role in price negotiations with buyers. Hence, the ownership and management in the garment enterprises are experiencing modest changes towards positive direction.

Table 6: Legal Status of Company

Particulars	Frequency	Percentage
Sole Proprietorship	35	18.2
Partnership (Local)	19	9.9
Private Limited Company	128	66.7
Public Limited Company	6	3.1
100% Foreign Owned	1	0.5
Joint Venture	3	1.6
Total	192	100

Source: CPD-RMG Study, 2017

The role of group of companies is increasingly visible in the RMG sector (Table 7). According to the survey, about 61 per cent of enterprises are sister concerns of different groups. These groups comprise not only RMG based enterprises but also non-RMG based enterprises. Interestingly, a part of 'small' and 'medium' sized enterprises are subsidiaries of different groups. Of the total number of enterprises under different categories, 43 per cent of total small enterprises, 65 per cent of total medium enterprises and 100 per cent of total large enterprises are subsidiaries of group of companies. Hence, there is a growing concentration of RMG enterprises under different groups and emergence of such groups in the RMG sector would provide financial and non-financial benefits to subsidiary companies. Such a situation may lead to uneven competition in the domestic market where small enterprises outside the group would find it difficult to operate. On the other hand, a large section of group of companies have enterprises other than RMG - about 64 per cent of groups have non-RMG enterprises. Such diversification of businesses by RMG entrepreneurs both vertically and horizontally would portray complex business operation. Operation of firm under a group usually provide benefit in terms of financial and non-financial issues and thereby reduce risks and improve the competitiveness.

Table 7: No. of Factories Operating Under Group

No. of Factories	Small	Medium	Large	Total
2 to 5	19	40	21	80
6 to 10	3	11	4	18

>10	4	11	5	20
Total	**26**	**62**	**30**	**118**

It is said that owners' visit to the factories with having intensive use of labour is very important. According to the survey, owners of about 43 per cent enterprises visited their factories on a daily basis while owners of another 17 per cent enterprises visit more than once a week (Table 8). In contrast, owners of 40 per cent enterprises are not so regular in visiting their factories and owners even 15 per cent cases visit their factories once a month or above. Such a pattern of sporadic nature of visit by the entrepreneurs need alternate network channel with the management of the factories.

Table 8: Frequency of Factory Visit by Owner		
Time Period	**Frequency**	**Percentage**
Everyday	82	43
More Than Once a Week	32	17
Once a Week	24	13
More Than Once a Month	25	13
Once a Month	7	4
Less Than Once a Month	22	11
Total	**192**	**100**

4.3 Establishment and Operation of Sample Enterprises

According to the survey, the highest number of sample RMG enterprises (about 41 per cent) were established during 2005-2012 - after the end of multi-fibre arrangement (MFA) (Table 9). Interestingly, a large share of RMG enterprises were established during 2013-2016 i.e. after the collapse of the Rana Plaza. This indicates that entrepreneurs have kept their confidence on investing in the sector despite having adverse situation owing to poor reputation after the collapse of the Rana Plaza. On the other hand, such investment for setting up new factories create employment opportunities at the time when a good number of enterprises were closed down because of problems of non-compliance with regard to work place safety and security.

Table 9: Year of Establishment of Sample RMG Enterprises

Year	No.	%
Up to 1985	16	8.3
1986-1995	20	10.4
1996-2004	43	22.4
2005-2012	78	40.6
2013-2016	35	18.2

		192	100.0
Total			

Source: CPD-RMG Study, 2017

A considerable share of entrepreneurs operate their enterprises in rented spaces which is as high as 41 per cent of total sample enterprises. About 34 per cent of the factories operate in shared buildings where about 63 per cent are RMG related establishments and the rest 37 per cent are non-RMG related establishments. About 37.5 per cent of RMG enterprises operate in shared buildings where establishments of the same owners as well as other owners are found. This is particularly found to be difficult if the establishments are owned by other persons; the share of such percentage of enterprises is as high as 25 per cent (Table 10). Thus ensuring safety in a section of RMG enterprises operate from shared building remain in vulnerable state. Since factories in shared buildings with having non-RMG establishments are usually considered riskier from the safety point of view, those RMG enterprises may need to relocate in safer buildings. About 16 per cent of sample entrepreneurs have mentioned that they will either relocate or close the factory which would happen within 1 to 5 years.

Table 10: Other Businesses in the Same Building

Particulars	Frequency (Yes)	Percentage
RMG Enterprises Owned by Same Group/Owner	29	40.3
RMG Enterprises Owned by Another Group or Owner	17	23.6
Non-RMG Enterprises	8	11.1
Non-RMG Enterprises Owned by Another Group/Owner	18	25.0
Total	72	100

Source: CPD-RMG Study, 2017

4.4 Management of Sample Enterprises

The weak management is always mentioned as a major stumbling block for improving competitiveness of RMG enterprises. According to the survey, the quality of management is found to be mixed. Following the Global Management Survey index, the average score of management quality of sample enterprises is 69.8 (Figure 2). The highest share of enterprises are within the score of '61-70' (40 per cent) followed by the category '51-60' (34 per cent). There is a very small share of enterprises in two extreme - either in lower category (2.7 per cent) or in upper category (3.7 per cent).

Figure 2: Management Score Index of Sample Enterprises

Management Quality of Sample Enterprises
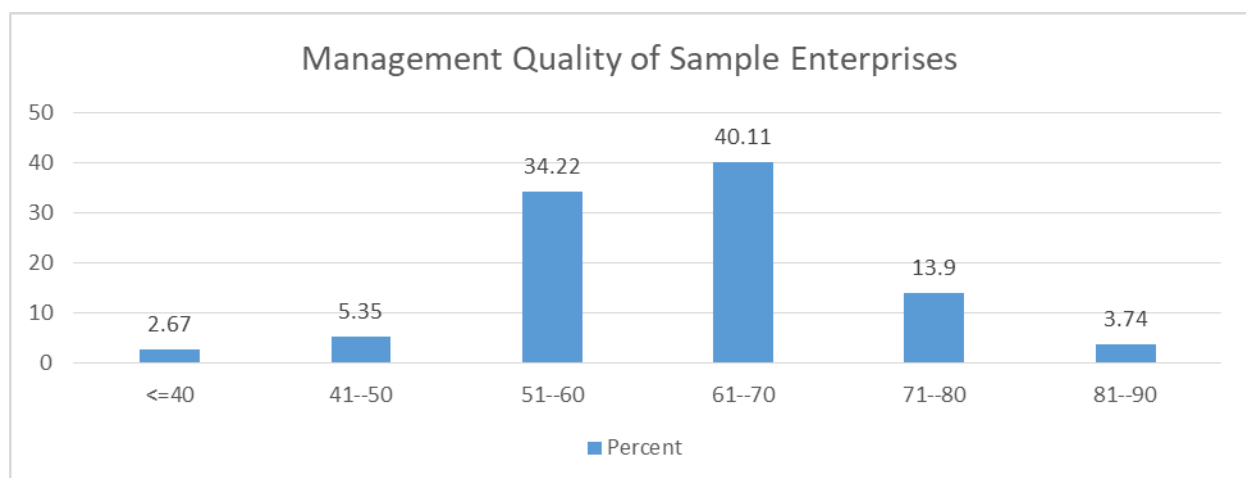
Source: CPD-RMG Study, 2017

The quality of management largely depends on capacity and efficiency of operational head of RMG enterprises which is largely influenced by the academic qualification and professional efficiency of the managers and other mid-level staffs (Table 11 and 12). According to the survey, the managers are still found with diverse academic background. While about 50 per cent of the managers have post-graduate degrees and 20 per cent of them have graduation degrees, a large section of the managers graduated in disciplines which have little relevance with management and operation of industrial enterprises. Interestingly, there is a large share of RMG enterprises (about 22 per cent) where managers have academic qualification below the graduation level; even in cases, managers have qualification of below SSC or SSC. In terms of distribution, less educated managers are more found in small scale enterprises followed by medium and large scale enterprises. The same is true for other management professionals including HR managers and other mid-level management professionals. However, a large number of managers and mid-level managers took special training on management related issues.

Managers are overwhelmingly male and high level of gender-imbalance in the management profession in RMG enterprises continued (Table 13). About 99.5 per cent of managers and 90.7 per cent of HR managers are found to be male in the sample enterprises. Hence, women are still behind in the job-ladder which is a major concern.

Table 11: Manager: Academic Qualification

Academic Qualification	Small	Medium	Large	Total

Below SSC		1		1
SSC	3	5	1	9
H.S.C	10	12	2	24
Diploma	4	1		5
Post-Graduate Diploma	1	2	2	5
Graduate	15	18	6	39
Post Graduate	26	49	20	95
Others	3	9	1	13
Total	**62**	**97**	**32**	191

Source: CPD-RMG Study, 2017

Table 12: Human Resource Manager: Academic Qualification

Education	Frequency	Percentage
HSC	4	2.1
Graduate	35	18.0
Diploma	134	69.1
Post-Graduate	4	2.1
Other	16	8.8
Total	**193**	**100**

Source: CPD-RMG Study, 2017

Table 13: Managerial Position: Sex Distribution

	Managers		HR Managers	
Sex	Frequency	Percentage	Frequency	Percentage
Male	190	99.5	176	90.7
Female	1	0.5	17	9.3
Total	**191**		**193**	**100**

Source: CPD-RMG Study, 2017

4.5 Workers in Sample RMG Enterprises

The employment growth in RMG enterprises has somewhat decelerated in recent years. According to the CPD-RMG survey, average yearly growth was only 3.02 per cent. Such growth was lower than the average yearly growth during 2005-2012 as reported in the Survey of Manufacturing Industries (4.01 per cent per year).

The size of RMG enterprises, in terms of number of workers, has getting marginally bigger - average number of production workers in sample enterprises has increased by 2.5 per cent between 2012 and 2016. In terms of distribution of workers in different sections, the sewing section continues to have the highest concentration in terms of employment (53.5 per cent)

followed by finishing section (15.5 per cent) and cutting/knitting section (7 per cent). Overall gender balance among production workers in RMG enterprises have become less female dominated. According to the survey, sample RMG enterprises have 60.8 per cent of female workers which varies in different sections from as high as 73.9 per cent in sewing section to only 22.7 per cent in cutting section (Table 14). The gradual deceleration of share of female employment has been evident in other studies and national statistics.

Table 14: Gender Balance among Production Workers in Different Sections

Section	Male	Female	Total	% of total	Female as per cent of total workers
All Production Workers	551	855	1406	100	60.8
Cutting/Knitting section (total)	77	23	99	7.0	22.7
Sewing section (total)	196	556	752	53.5	73.9
Finishing section (total)	90	128	218	15.5	58.6
Others	188	150	338	24.0	44.3

Source: CPD-RMG Study, 2017

Workers' composition in RMG enterprises has experienced changes (Table 15). Between 2012 and 2016, there is a gradual rise of workers in upper grades- the share of workers in upper grades such as Grade I-III (from 13.7 per cent in 2012 to 14.7 per cent in 2016) and Grade IV-V (from 40.7 per cent in 2012 to 44.4 per cent in 2017). On the other hand, workers' share in lower grades (Grade VI-VII) has been decelerating (from 45 per cent in 2012 to 40.3 per cent in 2016). In terms of gender point of view, share of female employment in upper and middle grades are slowly rising particularly in case of Grade III, Grade IV and Grade V. Female workers remain scant in top grades such as Grade I and II. Other than grades I and II, the majority of workers in the garment industry are female, both at the unskilled and semi-skilled categories (Haque and Bari, 2015).

Table 15: Grade wise Distribution of Employment

Grade	2012			2016		
	Av. no. of workers	% of total	Female as a share of male	Av. no. of workers	% of total	Female as a share of male
I	6	0.5	0.2	9	0.7	0.2
II	19	1.4	0.6	32	2.3	0.5
III	161	11.8	1.2	163	11.7	1.3
IV	290	21.4	1.3	340	24.4	1.5
V	263	19.3	1.8	278	20.0	2.1
VI	215	15.8	1.5	218	15.6	1.4
VII	397	29.2	1.8	344	24.7	1.9
Apprentices	8	0.6	1.9	8	0.5	5.3
Total	1358	100.0	1.5	1392	100.0	1.6

Although workers' average age did not make changes (average age overall, male and female workers are 24.9 years, 25.8 years and 24.4 years), the composition of workers under different age groups has experienced major changes (Table 16). Workers who work at less than 18 years usually term as juvenile workers are found at a small number in sample enterprises – only 2.7 per cent. According to Rahman et al. (2008), RMG workers at the age group of 16-20 years were found to be 18.3 per cent which was a significantly high share. According to the survey, the highest share of workers are at the age group of 19-25 years (50.9 per cent) followed by the age group of 26-31 years (32.4 per cent) and 31-36 years (9.8 per cent). The composition of workers in those groups has also changed. Compared to male workers, female workers are still high as juvenile workers as well as in 19-25 age groups. Male workers are more appeared in older age groups. Such changes in the age structure has direct relationship with workers' marital status.

Table 16: Age Distribution of Production Workers

Age distribution	Total	Female (%)	Male (%)
<15	0.0	0.06	0.00
15-18	5.3	6.64	2.68
19-25	56.4	59.12	50.91
26-30	27.3	24.69	32.40
31-35	7.4	6.20	9.87
36-40	2.8	2.61	3.05
41-45	0.5	0.56	0.49
46-50	0.2	0.06	0.37
51 and above	0.1	0.06	0.24
Total	100.0	100.00	100.00

Source: CPD-RMG Study, 2017

Workers' marital status have gradually changed with increasing share of married workers working in the garments industry (Table 17). About 67.7% of garment workers are found to be married in sample enterprises while about 30 per cent workers are unmarried. According to Haque and Bari (2015), the share of unmarried and married workers in BGMEA's member factories was 40 per cent and 57 per cent respectively. Rise of married workers in the garments industry indicates a positive change of employers' attitude towards workers' skill and their family obligations. The rise of married workers as well as relatively aged workers with declining share of juvenile workers as well as lower grade workers indicate that employment in the RMG sector is more focusing on skill and productivity. It is interesting to examine whether such changes have taken place with the pressure of reducing the cost of production after significant rise of workers' wage in 2013.

Table 17: Current marital status

Marital status	Female		Male		Total	
	Frequency	%	Frequency	%	Frequency	%
Unmarried/Single	409	25.4	312	38.0	721	29.6
Married	1139	70.7	508	61.9	1647	67.7
Widow/Widower	20	1.2	NA	NA	20	0.8
Divorced	29	1.8	1	0.1	30	1.2
Separated	15	0.9	NA	NA	15	0.6
Total	1612	100.0	821	100.0	2433	100.0

Source: CPD-RMG Study, 2017

Foreign professionals are playing an important role in sections where domestic professionals are found to be inadequate with necessary skill and quality. The survey found considerable presence of foreign professionals in different sections of sample enterprises (Table 18). About 16 per cent sample enterprises employed foreign professionals who have been working in almost all sections particularly in production planning (37.3 per cent of total foreign professionals), merchandising (20.1 per cent), quality assurance (11.9 per cent) and washing sections (8.2 per cent). Besides they appear in industrial engineering and administration sections as well. On average, their share is less than 0.5 per cent among the officials in RMG enterprises with as high as 1.8 per cent in washing section. However, the share of foreign professional's salary accounts for 1.41 per cent of total labour cost of firms.

Table 18: Foreigners Working in Different Sections

Department	Foreigner (no.)	Number of enterprises	Foreigners per enterprises	Share of foreigners work in different sections	Total officers	Foreigner as % of total officer
Merchandising	27	9	3.0	20.1	1693	1.5948
Production, Planning	50	18	2.8	37.3	3224	1.5509
Sewing Department	4	4	1.0	3.0	7624	0.0525
Knitting Department	4	2	2.0	3.0	1397	0.2863
Washing Department	11	5	2.2	8.2	602	1.8272
Quality Assurance	16	15	1.1	11.9	4452	0.3594
Finishing and Packaging	1	1	1.0	0.7	2451	0.0408
Maintenance Department	3	3	1.0	2.2	2987	0.1004
Admin	8	4	2.0	6.0	2545	0.3143
Industrial Engineering	8	6	1.3	6.0	855	0.9357
Research and Development	2	2	1.0	1.5	359	0.5571
Total Officer	134	31	4.3	100.0	28189	0.4754

Source: CPD-RMG Study, 2017

According to the survey results, workers' monthly salary are on average BDT 7270 for male workers and BDT 7058 for female workers (Table 19). The difference between male and female salaries is around BDT 200 (only 3 per cent), which indicates a lower gender-wage gap than expected. Upon segmenting the wages according to the grade structure, it can be observed that female workers within grades III, IV and V, are paid lower than their male counterparts on average. For grades II, VI and VII, female workers received higher salary, although the difference is not very significant from the male workers. It should be noted that the majority of workers are concentrated within grades 3, 4, 5 and 6, out of which female workers are earning a higher salary only at the grade 6 level. Hence, the majority of women working in the RMG factories are facing a gender-wage gap.[10]

Table 19: Workers' Average Monthly Salary (without overtime and bonus)

Grade	Male	Female
Mean wage	**7192.3**	
	7269.6	**7057.5**
Grade 2		8700
Grade 3	7562	7481.2
Grade 4	7288.7	6966.0
Grade 5	6997.8	6944.5
Grade 6	6446.2	6545.8
Grade 7	5300.0	5577.2

Source: CPD-RMG Study, 2017

4.6 Machinery Use

Technology use in sample RMG enterprises appear to pass a transitional phase. Using more automated machines by replacing semi-automated machines for regular operational works is a common tendency among the sample enterprises. Besides specialized machineries have been used in different specialized activities. However, use of technology varies widely between low to high levels of use of technologies. Average number of machines used for regular activities vary from 260 in small scale enterprises to 1780 in case large scale enterprises (Table 20).

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[10] When comparing the average nominal monthly wages (in USD) of the GTF (garments, textiles and footwear) sector between South Asian economies, Bangladesh's wage is $164 for male workers and $162 for female workers, as of 2013. In comparison, India's wage for male workers is $129 and for female workers it is $82, as of 2012. For Cambodia, the wage is $111 for male workers and $93 for female workers as of 2012, implying progress in terms of its wage gap. Vietnam's wage gap is also impressively low, with $235 for male workers and $212 for female workers as of 2016. In 2013, it was $205.7 for male workers and $174.9 for female workers, which indicates that the wage gap has fallen over three years from $30 to $23 approximately. On the other hand, in Sri Lanka, female workers earn a higher wage than the male workers by $33, as of 2013. While male workers receive $132 on average, female workers are receiving around $165 *(ILO's Asia-Pacific Garment and Footwear Sector Research Note (Issue 8), October 2017).*

Table 20: Use of Machineries by Factories						
Factory Size	Av. number of machines in different sections					Total
	Sewing	Cutting	Finishing	Fusing	Other	
Large	1637	11	25	11	96	1780
Medium	657	6	12	3	15	693
Small	221	6	3	1	29	260

Note: Figures represent average number of machines

Source: CPD-RMG Study, 2017

The study has prepared an index based on the level of technology used by sample enterprises (Figure 3). The results show that less than 20 per cent of sample enterprises have 'advanced' level of technologies while 41 per cent of enterprises have 'moderately better' technologies. Small scale enterprises are behind those of large and medium scale enterprises in terms of using advanced technologies. About 47 per cent of large scale enterprises and 25 per cent of medium scale enterprises are using advanced level of technologies at their enterprises. Interestingly, a small section of large and medium scale enterprises are still behind in terms of technology use which is likely to affect their overall productivity and level of efficiency.
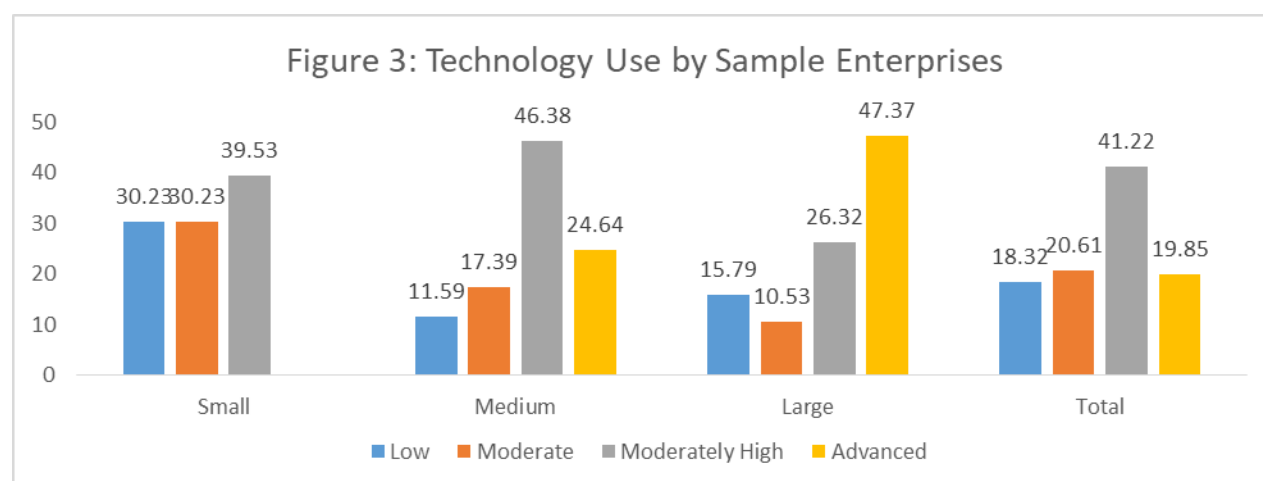
Source: CPD-RMG Study, 2017

A section wise use of specialized machineries shows that 61 per cent enterprises have specialized machines in sewing sections, 34 per cent in finishing section, 22 per cent in cutting sections and 17 per cent fusing section (Table 21). Frequency of using specialized machineries is relatively high in large enterprises followed by medium and small enterprises. The use of specialized machines has increased over time as the share of firms having advanced machineries in 2006 was only 19.6 per cent (Rahman et al., 2008).

Table 21: Use of Specialized Machines

Sections of S. Machines	Number of Factories having Specialized Machines	
	Frequency	Percentage
Sewing	115	61.50
Cutting	42	22.46
Finishing	65	34.76
Fusing	32	17.11
Other	81	43.32

Source: CPD-RMG Study, 2017

Female workers are proportionately less knowledgeable about operating different machines compared to that of male workers (Figure 4). Except single needle and double needle machines, female workers are behind those of male workers in operating other machines such as over lock, flat lock, feed of the arm, button hole, bar tack etc. However, both male and female workers have limited knowledge to operate various other machines such as blind stich, auto welt pocket, snap button etc. Majority of workers have limited knowledge about multiple machines. Lack of workers' knowledge about diverse set of machineries would create constraints in upgrading technological of the factories.
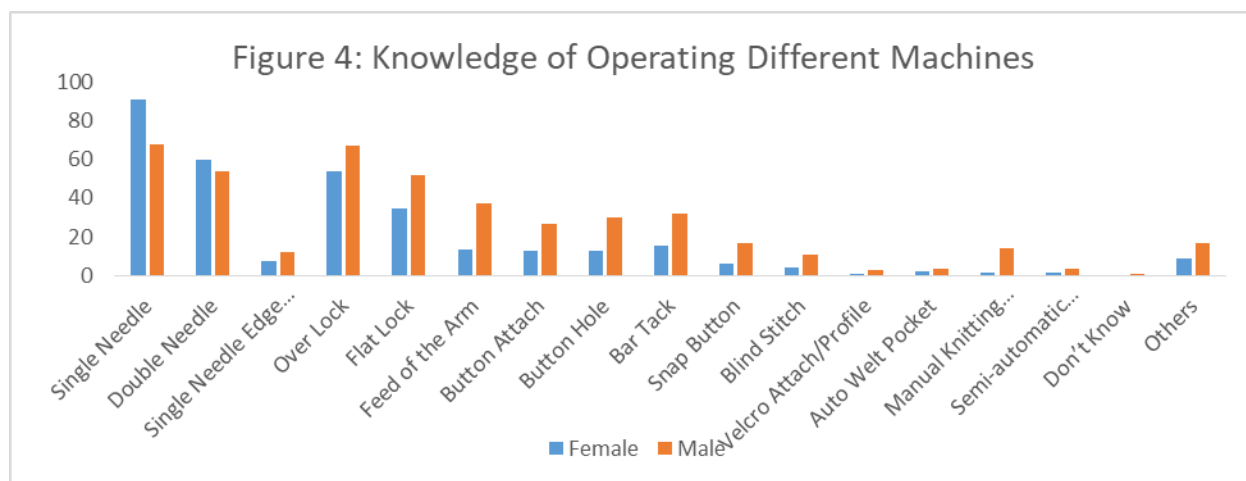
Source: CPD-RMG Study, 2017

4.7 Buyers and Exports

The composition of contractual arrangement between suppliers and buyers has experienced major changes (Table 22). Unlike the past, majority of suppliers have contracts with brands and retailers. Only a small section of firms have a part of contracts with buying houses along with

those of brands and retailers. Over 60 per cent of enterprises have contracts only with brands while another 30 per cent have contracts with brands and retailers. Rise of brands and retailers in providing contract is a major qualitative improvement in the RMG value chain in Bangladesh. However, there is still a number of small and medium scale suppliers who takes a part of their orders from buying houses. According to the survey, the work orders have increased by about 20 per cent between 2012 and 2016 (Table 23); most importantly, orders from international buyers such as (brands, retailers) have increased by 27.9 per cent per year while orders received from local buyers have declined by 12.6 per cent. Average lead time for firms is still very high (4.6 months) – only half of the sample enterprises has lead time less than or equal to three months while as many as 34 per cent firms have taken lead time over 7 months (Table 24). Given the high competitive pressure in the retail market, such long lead time push the enterprises behind in terms of competitiveness.

Table 22: Distribution of Major Clients Based on Factory Size				
Major Clients	Factory Size			
	Large	Medium	Small	Total
Brand	14 (53.85)	51 (60)	33 (67.35)	98 (61.25)
Brand + Retailer	11 (42.31)	29 (34.12)	9 (18.37)	49 (30.63)
Retailer	0 (0)	2 (2.35)	2 (4.08)	4 (2.5)
Buying House	0 (0)	1 (1.18)	0 (0)	1 (0.63)
Brand + Buying House	0 (0)	2 (2.35)	4 (8.16)	6 (3.75)
Retailer+ Buying House	0 (0)	0 (0)	1 (2.04)	1 (0.63)
Brand+ Retailer+ Buying House	1 (3.85)	0 (0)	0 (0)	1 (0.63)
Total	**26 (100)**	**85 (100)**	**49 (100)**	**160 (100)**

Note: Figures in parenthesis indicate column percentage
Source: CPD-RMG Study, 2017

Table 23: Number of Orders Received/ Shipped in 2016 and 2012			
Orders Received/ Orders Shipped	Average number of orders		Yearly % change between 2012 to 2016
	2012 (Unit)	2016 (Unit)	
Total Orders Received	76.28	135.27	19.3
Total Order Shipped	76.25	136.87	19.9
Total Order Received from Int'l Buyers	61.16	129.43	27.9
Total Orders from Local Buyers	37.46	18.63	-12.6
Total Order Received from local Suppliers (Subcontracting)	369.75	271.14	-6.7

Source: CPD-RMG Study, 2017

Table 24: Average Lead Time (Frequency Distribution)			
Average Lead Time (Month)	Frequency	Percentage	SD
Less than and equal to 3	70	50.36	0.94
more than 3 and equal to 5	21	15.11	0.48
5 and above	48	34.53	1.81

Total		**139**	**100**

Sub-contracting activities are gradually losing its importance (Table 25) – the orders received from local suppliers under sub-contracting arrangement has declined by 6.7 per cent. About 17 per cent enterprises are found to have either partial or full sub-contracting activities and their volume and value of subcontracting have declined by -45.6 per cent and -41.9 per cent respectively.

Table 25: Total Subcontracting in 2012 and 2016			
Total Subcontracted	**Year**		**% change from 2012 to 2016**
	2016	**2012**	
Total Subcontracted (in pcs)	272949.7 (32)	501728.4 (12)	-45.56
Total value of Subcontracting (US $)	495193.4 (29)	852940.4 (11)	-41.94

Note: Figures in parenthesis indicate number of factories
Source: CPD-RMG Study, 2017

4.8 Workers' Organizations

Most of the firms have workers participation committee (91 per cent) while trade unions are almost non-existent (only 3.3 per cent) (Table26)[11]. WPCs are highest in medium scale enterprises (49 per cent) followed by small and large scale enterprises. On the other hand, trade unions are found in medium scale enterprises; there is no trade union in large scale enterprises. In location point of view, larger share of workers' organizations are found in Chittagong both in case of WPC and trade union. It is interesting to see why workers' organsiaitons are high in Chittagong and relatively less in Dhaka and Gazipur where concentration of workers' organizations are much higher.

Table 26: Worker's Participation Committee and Trade Union

	Workers' Participation Committee (WPC)	Trade Union
Small	45 (25.7)	1 (0.55)
Medium	86 (49.1)	5 (2.76)
Large	29 (16.6)	0 (0.0)
Total	160 (91.4)	6 (3.31)

Note: Figures in parenthesis indicate percentage of total no. of factories under each category
Source: CPD-RMG Study, 2017

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[11] According to Kutruvalli & Erickson (2002), most of the Asian countries (except China) trade union density is still below the level of 20 per cent.

According to the amended labor act 2013, members of the WPC shall be elected by workers' vote. The Survey shows that 68.9 per cent workers mentioned that workers in their factories have been elected by vote (Table 27). Besides, there is joint selection by worker-management (26 per cent) and selection by management (5 per cent). While in medium and large enterprises, WPCs have been formed mostly through election (79.1 per cent and 79.3 per cent respectively), in small enterprises almost half of the enterprises WPCs formed through selection process. In other words, despite the rise of election in the WPC, a considerable share of WPCs are still following selection method. On the other hand, the operation of trade union is almost non-existent. To address workers grievances, most firms have employed grievance officers.

Table 27: Formation of WPC in Sample Enterprises

WPC Chosen or Elected	Size of enterprises			
	Small	Medium	Large	Total
Elected By Worker	20 (43.48)	68 (79.07)	23 (79.31)	111 (68.94)
Joint Selection By Worker Management	23 (50)	14 (16.27)	5 (17.24)	42 (26.09)
Selected By Management	3 (6.52)	4 (4.65)	1 (3.45)	8 (4.97)
Total	**46 (100)**	**86 (100)**	**29 (100)**	**161 (100)**

Note: Figures in the parenthesis indicate column percentage
Source: CPD-RMG Study, 2017

According to the survey, more WPC in RMG factories are located in Chittagong and the mostly center near Dhaka such as Gazipur and Narayanganj. Among the factories survey, 68.94 per cent indicated that the committees are elected by workers, while 26.09 per cent indicated that they are jointly selected by workers and management and only 4.97 per cent are solely selected by management. According to the Labor Act of 2006, every WPC should have a meeting once in two months. In the meeting the workers and management discuss about some grievance and issues. It is observed that majority of workers did not avail services either from WPC or from trade unions – only 12.2 per cent of workers from WPC and 21.1 per cent workers from trade union availed some services (Table 28). The CPD survey investigated the main grievances of workers that are brought up in 2016. Late payment of wages, overtime, problem in fixing wage rate, over pressure for work, sexual harassment, leave benefits, other financial benefits, workers' association related problems or promotion related issues are seen as the main grievances, where most of them are resolved and few case are discussed and unresolved.

Table 28: Services availed by the Worker's Participation Committee and Trade Union

Services Availed or Not?	Workers' Participation Committee	Trade Union
Yes	243 (12.19)	4 (21.05)
No	1751 (87.81)	15 (78.95)

| Total | 1994 (100.00) | 19 (100.00) |

Source: CPD-RMG Study, 2017

Majority of firms have safety committee – about 93 per cent firms have reported to have safety committees (Table 29). These committees comprise both male and female members. These safety committees have been trained on various related issues such as identifying health hards, safety issues concerning machine operations, protection from health risks etc.

Table 29: Safety Committee in Sample Enterprises

Existence of Safety Committee	Size			
	Small	Medium	Large	Total
Yes	49	91	29	169 (93.37)
No	11	1	0	12 (6.63)
Total	60	92	29	181 (100.00)

Source: CPD-RMG Study, 2017

4.9 Overall Observation on Structure of Sample Enterprises

Overall, RMG enterprises have experienced changes in number of areas. Such changes have impact and implications on overall uppgradation of the enterprises. Major changes observed in case of ownership, workers and contractual arrangements with buyers. There is a rise in skill in RMG enterprises with more participation of aged workers. RMG enterprises are increasingly being governed by shareholder directors who are mostly from the same family. Unlike the earlier trend of having more proprietorship, enterprises are found to be registered more as private limited companies. Increasingly there is a tendency to delegate authority to factory management to number of issues which is a positive development. In case of workers, their composition in terms of age, grades and marital status indicate that factories are providing more importance to skill and productivity of workers. It is not clear whether such skill preferences by the owners is cost-push or demand-pull. A large section of enterprises have major share of contracts with brands and retailers; the share of international buyers has been increasing while sub-contracting has been declining. The enterprises are increasingly becoming part of groups of enterprises which further concentrate the businesses to limited number of groups. Such concentration in one hand, created opportunities for cross-subsidisation in case of risks; at the same time, may reduce engagement of owners in day to day activities. The top and mid-level management seems to be less dynamic as a large part of the managers have less academic qualification and have less training on relevant issues. Hence, dependence on foreign workers is likely to be growing – about 16 per cent of enterprises have employed at least one foreign professionals. Gender imbalance which is a concern in case of upper grades and professional jobs, have further aggravated in lower grade jobs. Overall gender balance in

production workers have gradually shifted from female-led operations to male-female balanced activities in the RMG sector. Despite the rise of machinery use particularly specialised machines in different sections, a large part of the enterprises could not in the advanced categories in machinery use. Thus, there is likely to have a gap in technology use between enterprises. In this backdrop, the upgradation initiatives undertaken by the enterprises after the Rana Plaza tragedy is likely to have differential impact and implications.

5. Overall Upgrading of Sample Enterprises

The study estimates individual sample enterprises' level of upgrading in terms of economic, social and gender point of view. Following the methodologies discussed in section 3, different types of upgrading have been estimated for individual enterprises. Each of the components of upgrading has been estimated by index values – the higher the index value the better the performance of the enterprise.

5.1 Economic Upgrading

The scores of economic upgrading index are low overall (Table 30) – average score is only 23.5 with a standard deviation of 15.4. Firms are relatively better in process upgrading (average score is 37.0) followed by product upgrading (26.0) and functional upgrading (10.0). However, wide variation exists between firms having maximum and minimum values both in overall economic upgrading and individual component wise upgrading. Unless enterprises make substantive progress in product and functional upgrading, it would be difficult to enhance overall economic upgrading.

Table 30: Economic Upgrading Score

Variable	Mean	Std. Dev.	Min	Max
Economic Upgrading Score	**23.57**	**15.41**	**4.73**	**64.88**
Process Upgrading Sub Index	37.0	18.0	12.0	81.0
Product Upgrading Sub Index	26.0	25.0	1.0	94.0
Functional Upgrading Sub Index	10.0	17.0	0.0	75.0

Source: CPD-RMG Study, 2017

According to Table 30, the highest share of enterprises are found to be within the category of low level of upgrading - a total of 56 percent enterprises have a score within the range of 0.1-20.0. This percentage becomes lower as we move up to higher scoring bands- around 23 per cent factories have scores in the 20-40 range, 19 per cent have scores in the 40-60 range and only around 2 percent have scores over 60. In fact, the highest score in terms of overall economic upgrading is around 65 out of 100. This shows enterprises are at poor state in terms of economic upgrading.

According to the survey, large enterprises lead the economic upgrading which is because of their financial capacity as well as capacity to take risks for introducing new technologies and innovation. Around 18 per cent of large factories have scores over 60, with none of the small and medium factories

in the sample reaching that level (Table 31). Even in the case of low scoring bands, the percentage of large factories is lower than that of small and medium factories of the sample. Especially for small factories, the economic upgrading score is predominantly low. In fact, around 97 percent of small factories have scores in the low 0-40 range, showing their lack of progress in terms of economic upgrading. While categorizing factories in terms of their broad product type, knit enterprises are technologically less upgraded compared to that of woven enterprises (Figure 5).

Table 31: Size wise Distribution of Economic Upgrading

Economic Upgrading Score	Size of Enterprises			Total
	Large	Medium	Small	
0.1-20.0	4 (36.36)	17 (42.5)	26 (78.79)	47 (55.95)
20.1-40.0	2 (18.18)	11 (27.5)	6 (18.18)	19 (22.62)
40.1-60.0	3 (27.27)	12 (30.0)	1 (3.03)	16 (19.05)
60.0 and above	2 (18.18)	0 (0.0)	0 (0.0)	2 (2.38)
Total	11 (100.0)	40 (100.0)	33 (100.0)	84 (100.0)

Note: Figures in parenthesis indicate column percentage
Source: CPD-RMG Study, 2017

Figure 5: Economic upgrading in Woven and Knit Enterprises
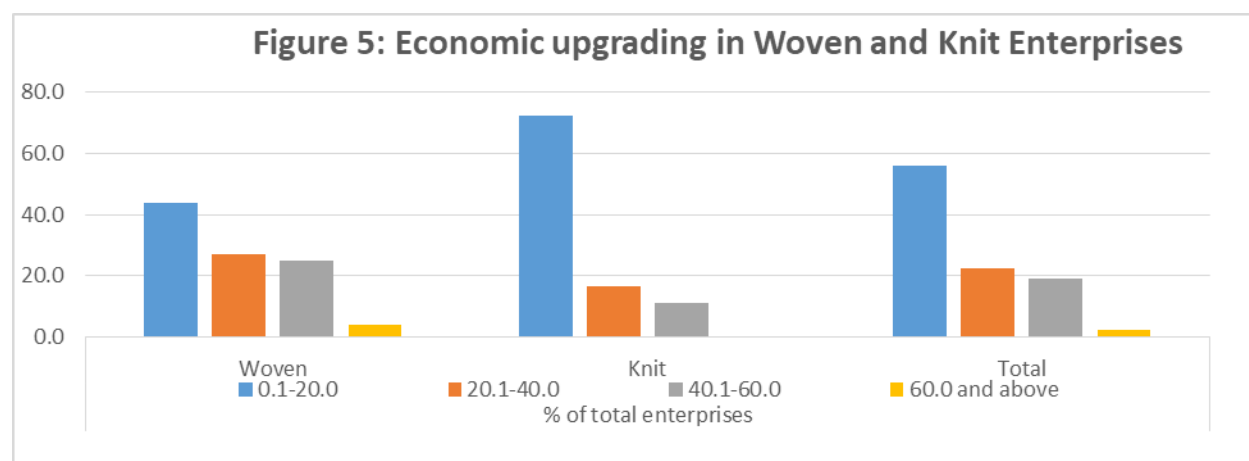
Source: CPD-RMG Study, 2017

It is usually assumed that changes in technology at the firm level is location neutral (Figure 6). However, the results of upgrading are mixed in terms of locational distribution of firms. While around 57 percent of factories have scores in the low 0-20 range, all factories in Narayangonj, 56 per cent factories of Chittagong and 42 percent of factories of Dhaka are within this range. On the other hand, a very small percentage of factories of Chittagong (around 4 percent) have scores over 60, while none of the factories of any other area have scores in this range. So, there is no clear leader in economic

upgrading if area of operation is considered. But, it is discerned that technological progress has not taken place at same pace in all locations and significant variation exists between them.

Figure 6: Economic Upgrading in Different Locations
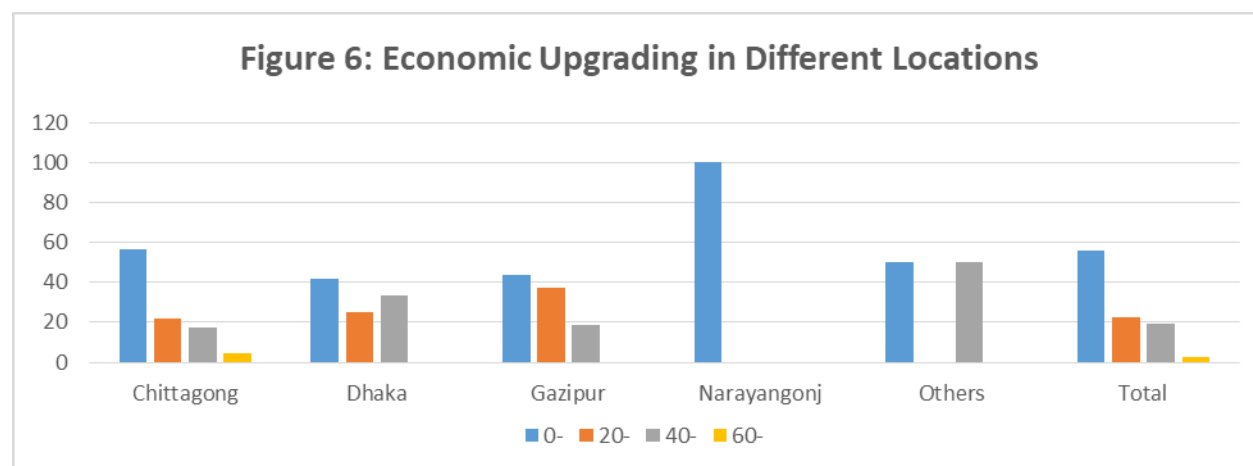
Source: CPD-RMG Study, 2017

5.2 Social Upgrading

Social upgrading is the area where enterprises make significant progress with an average score of 60.9 and low standard deviation (8.4) (Table 32). The better value of social upgrading is mainly influenced by impressive performance with regard to standards sub-index (90.0) followed by non-discrimination (66) and employment security sub-indices (74). However, the performance with regard to rights sub-index is very poor (22) which indicates areas for further improvement.

Table 32: Social Upgrading Score

Variable	Mean	Std. Dev.	Min	Max
Social Upgrading Score	60.9	8.36	38.19	78.82
Non Discrimination Index	66.0	13.0	25.0	0.75
Rights Sub Index	22.0	13.0	0.0	0.56
Standards Sub Index	90.0	16.0	0.33	1.0
Employment Security Index	74.0	13.0	0.34	1.0

Source: CPD-RMG Study, 2017

Social upgrading scores basically show a wholesome picture of improvement of employment, safety and privileges of workers, and so from the overall scores and its patterns it can be safely concluded that there has been considerable improvement in social issues in RMG enterprises. In fact, the performance of different firms in social upgrading is far better than performance in economic upgrading. Almost half of all the factories in the sample have scores in the moderately high 60-80 range, and the rest of the factories have scores in the 40-60 range (Figure 7). This indicates that almost all the baseline requirements of social upgrading have been met by the factories in the sample.

There is some variation among factories with regards to their size in terms of social upgrading scores. In the high scoring range of 60-80, there are only 17 percent of small factories and around 72 percent of large factories. Medium factories have better scores than small factories but lower scores than large factories. So, there is sort of a relationship of social upgrading with size – the larger the factories, the higher seems to be the level of social upgrading, while the smaller the factory, the lower is the level of social upgrading. While only 28 percent of large factories have moderate scores (40-60), around 74 percent of small factories have scores in this range. However, data of this table only is not enough to establish a direct causal relationship between social upgrading levels and size of firms, since there are other variables which can affect this relationship as well.

Figure 7: Size wise Distribution of Social Upgrading
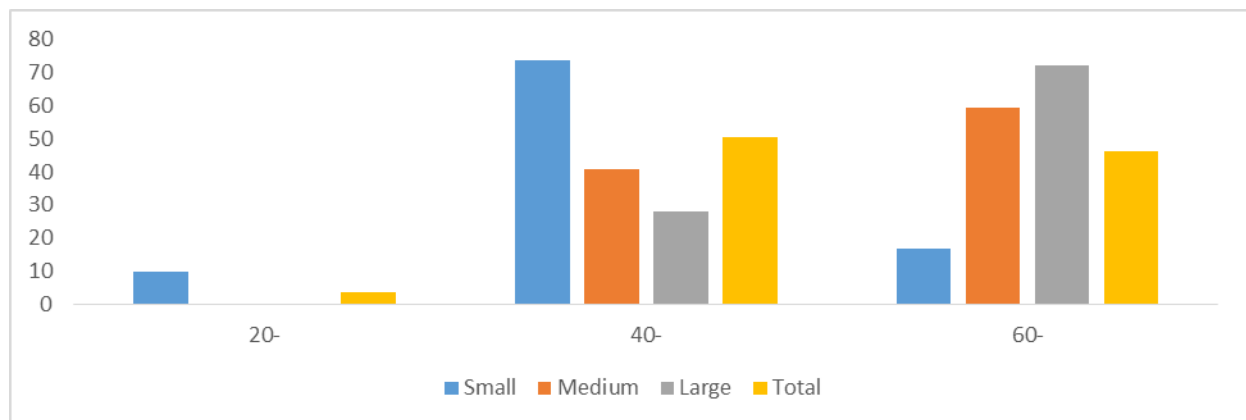
Source: CPD-RMG Study, 2017

There is no clear trend in variation of social upgrading according to type of factory. While more percentage of knit factories in the sample have scores in the moderate range of 40-60, as compared to woven factories, there are more percentage of woven factories in the high 60-80 range than knit factories (Figure 8). However, in terms of high scores, knit factories are not far behind. This is indicative of the fact that regardless of type of factory, there is some level of uniformity among the factories with regards to overall social upgrading levels. Very few woven and knit factories have scores in the low range of 20-40. Hence, in this case also, it is apparent that the basic requirements of workers entitlements are somewhat being met.

Figure 8: Social Upgrading Score in Different Categories of Enterprises
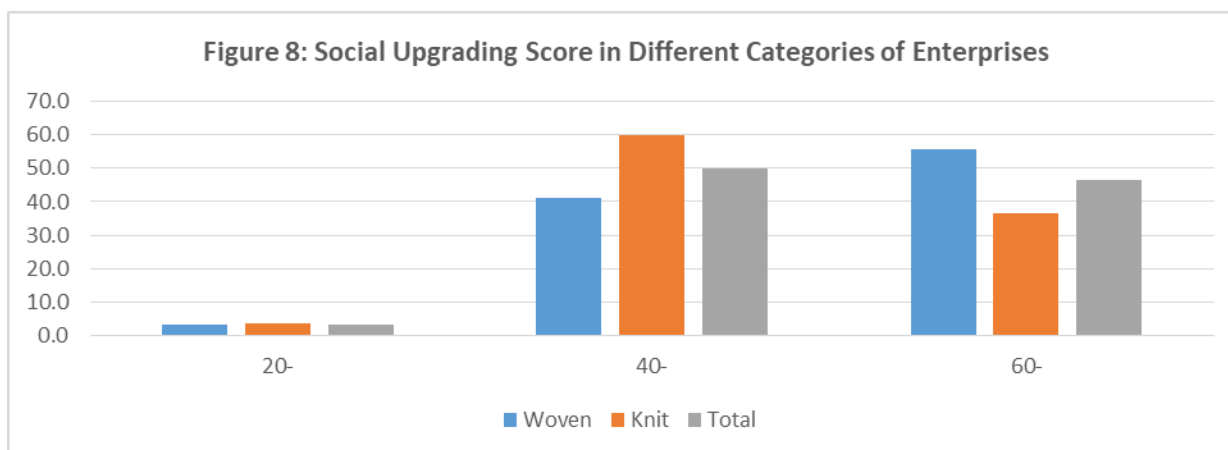
Some variation in social upgrading scores is discerned according to area (Figure 9). As is evident from the table, around 6 percent of factories of Chittagong have scores in the low 20-40 range, while none of the factories in other areas have scores in this range. However, almost 94 percent of factories of Chittagong and almost all the factories of Dhaka and Gazipur have scores in the 40-80 range. Chittagong has the highest percentage of factories in the high scoring range of 60-80, followed by Gazipur and Dhaka. Chittagong is the area with sharp contrast in terms of social upgrading which need to be taken into account.

Figure 9: Area wise Distribution of Social Upgrading
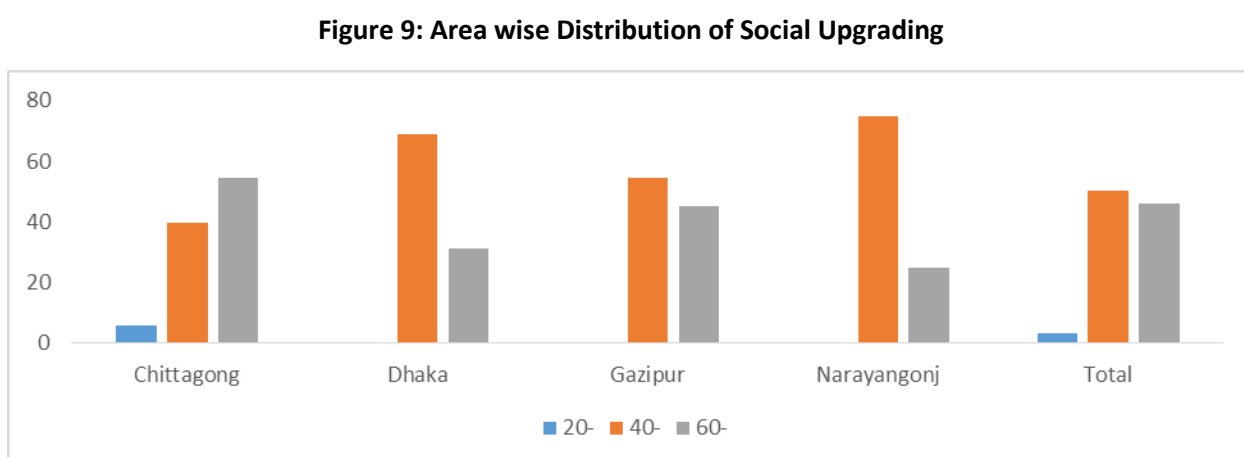
5.3 Gender Embedded Upgrading

Gender related issues are increasingly getting importance in firm's competitiveness. The overall performance of sample firms in gender embedded social upgrading is moderate (Table 33). The average score of this upgrading is 51.7 with low standard deviation (7.5). The scores of different sub-indices have little variations between each other with highest score in gender embedded right based sub-index (59) followed by gender embedded employment security sub-index (53) and gender embedded non-discrimination index. It is interesting to note that gender-embedded upgrading index are behind those

of social upgrading index. Hence the effort of firms to improve social upgrading index is not adequate to make firm gender-sensitive; more effort will be needed in order to transform the firm gender-sensitive.

Table 33: Gender Upgrading Scores

Variable	Mean	Std. Dev.	Min	Max
Gender Embedded Social Upgrading	51.7	7.54	27.28	70.83
Gender Embedded Rights Sub Index	0.59	0.13	0.04	0.91
Gender Embedded Non Discrimination Index	0.42	0.15	0.17	0.83
Gender Embedded Employment Security Index	0.53	0.06	0.37	0.68

Source: CPD-RMG Study, 2017

There is little variation of firms in terms of gender sensitivity point of view. Majority of firms are within the category of 'moderate' level of upgrading (Figure 10). Approximately 85 percent of all firms lie within the 40-60 range. Large firms dominate in this case, followed by small and medium enterprises. A good share of small enterprises are found with low scores in gender upgrading. There is little variation among woven and knit factories with regards to gender embedded social upgrading. In almost all the cases, around 82-84 percent of the factories have scores within the range of 40-60.

Figure 10: Gender Embedded Social Upgrading
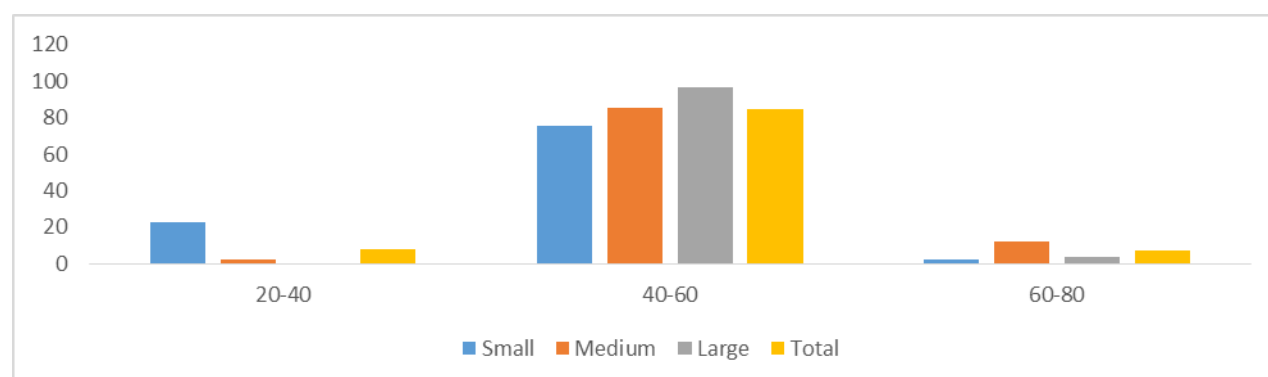
Source: CPD-RMG Study, 2017

In terms of gender embedded social upgrading, the progress has been moderate for all garment clusters (Figure 11). The progress in Chittagong and Gazipur is better than Dhaka, followed by Narayangonj. This is signified by the fact that around 90 percent of the factories of Chittagong have scores in the 40-60 range, with around 5 percent around the 60-80 range, which is higher than any other area of the sample. Likewise in social upgrading, Chittagong possesses contrasting performance of low and high level of upgrading.

Figure 11: Area wise Gender Upgrading
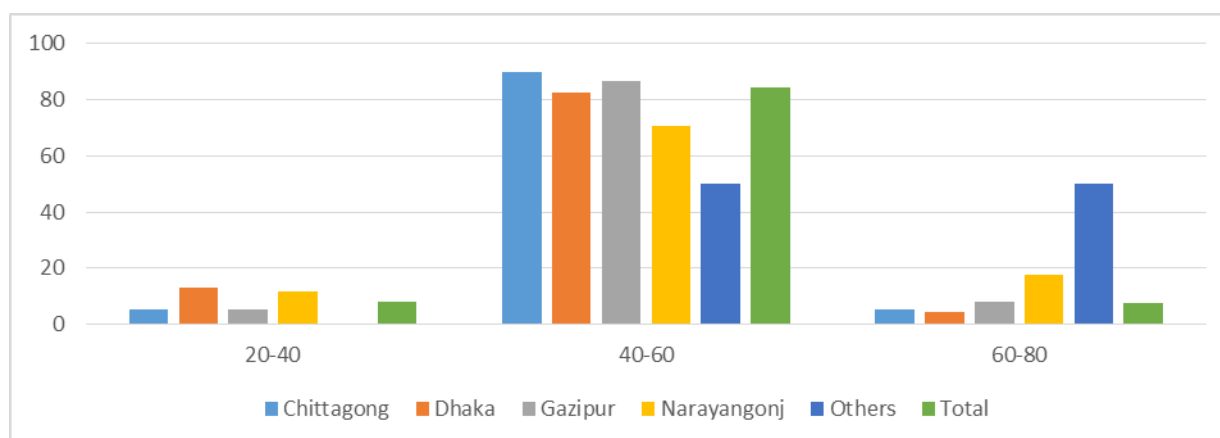
Source: CPD-RMG Study, 2017

6. Upgrading in Different Components

6.1 Components of Economic Upgrading

There is sharp difference exists in terms of product, process and functional upgrading of sample enterprises. As mentioned earlier, process upgrading is better compared to product and functional upgrading.

6.1.1 Process Upgrading: The process upgrading includes components such as line-worker ratio, no of machines, use of specialized machines and introduction of new departments etc. The overall performance of the sample factories in terms of process upgrading is though better compared to other sub-indices, but it does not show progress (Table 34). Around 40 percent of all the factories have scores in the 0-0.4 range, while around 37 percent have scores as low as in the 0.01-0.2 range. This is due to lack of infrastructure that can lead to better production processes, such as well-developed Industrial Engineering (IE) departments, low capital-labour ratios and poor efficiency levels. According to Table 35, only 28 per cent enterprises have introduced new department such as industrial engineering which are mostly evident in large enterprises followed by medium enterprises.

Table 34: Process Upgrading Sub Index

Process Upgrading Sub Index	Small	Medium	Large	Total
0.01-0.20	66.67	22.81	0	36.29
0.21-0.40	10.42	1.75	0	4.84
0.41-0.60	22.92	66.67	94.74	54.03
0.61-0.80	0	7.02	5.26	4.03
0.81 and above	0	1.75	0	0.81
Total	100	100	100	100

Source: CPD-RMG Study, 2017

Table 35: Presence of IE Department

	Small	Medium	Large	Total
No	41	41	8	90
	(83.67)	(71.93)	(42.11)	(72.0)
Yes	8	16	11	35
	(16.33)	(28.07)	(57.89)	(28.0)
Total	49	57	19	125
	(100)	(100)	(100)	(100)

Source: CPD-RMG Study, 2017

Both in the case of knit and woven factories, process upgrading scores have been moderate. Around 32 percent of woven factories have scores in the low 0 – 0.2 range, while around 49 percent of knit factories have scores in this range. This percentage is also very high for flat knit/sweater factories category as well. Woven factories lead in terms of process upgrading if the scores in the 0.4-0.6 range is considered. There are also no knit factories at the high scoring ranges.

6.1.2 Product Upgrading: Product upgrading of firms usually refers to capacity to develop design of basic and normal designed products, changes in basic designs, in-house capacity to produce fashionable products as well as new products etc. Product upgrading scores are mostly on the lower side (in the 0 - 0.2 range), which is signified by the fact that about 61 percent of the factories have scores in this very low range (Figure 12). An analysis of prices of products show that weighted average settled price of products in sample enterprises was only $4.5 which was ranged between less than $2 to as high as US$14. Enterprises with having level of product development capacity offer products of different qualities, thereby offer prices which finally settled through negotiation with buyers.

There is a very low incidence of factories having an established facility for product development (Table 36). However, the performance of large factories is better in this regard, with a few factories showing moderate progress. This is due to the presence of some large factories producing higher priced products than the other factories in the sample. But they too don't have well developed facilities for product development research. As can be seen from the table, only around 27 percent factories have facilities for product designing. The percentage is slightly better for large factories, and very low for small and medium factories.

Figure 12: Product Upgrading Sub-index
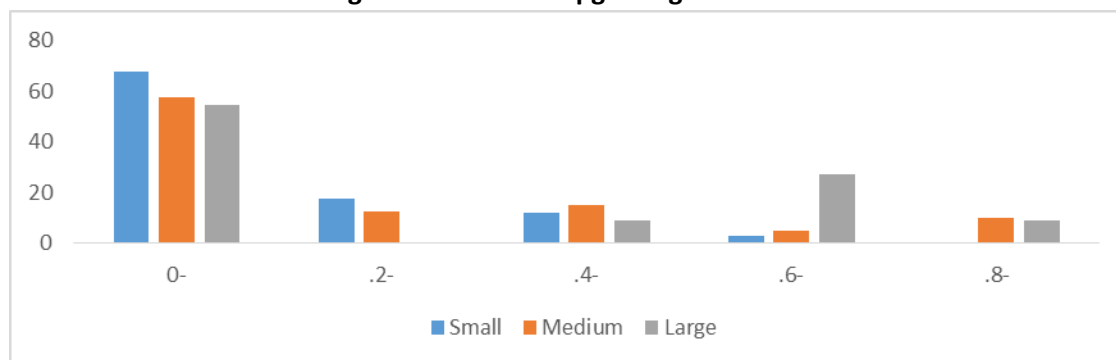
Source: CPD-RMG Study, 2017

Table 36: Factory has a Product Design Facility

|	Small	Medium	Large	Total
No	40 (81.63)	43 (75.44)	8 (42.11)	91 (72.8)
Yes	9 (18.37)	14 (24.56)	11 (57.89)	34 (27.2)
Total	49 (100)	57 (100)	19 (100)	125 (100)

Source: CPD-RMG Study, 2017

According to the sample data, there is not much variation in product upgrading scores according to type of factory. Woven factories have shown slightly better scores, but this is largely due to the types of products and their prices. But the overall picture remains the same; the relative performance of woven and knit factories in terms of product upgrading remains at very low levels. Almost 49 percent of woven factories and 86 percent of knit factories have scores in the 0-0.2 range, with only around 10.64 percent of woven factories having scores at the high 0.8-1 level. There are no knit factories with high product upgrading scores. As noted earlier, this is largely due to the price variation among products produced by different factories in the sample, thus showing the different levels of different factories. However, the data doesn't show huge differences in product upgrading among types of factories, given that the overall performance in terms of product upgrading of garments factories is not satisfactory.

When location is considered, the factories of Chittagong has scored much lower than factories of Dhaka in product upgrading. While almost 61 percent factories of Chittagong have scores in the 0-0.2 range in terms of product upgrading, around 54 percent of factories of Dhaka have scores in that range. In terms of high scores also, factories of Dhaka are slightly ahead. The factories of the rest of the areas lag behind in this regard.

6.1.3 Functional Upgrading: Functional upgrading usually refers to extent of forward linkage facilities, branding of products, facilities for having advanced R&D, warehousing and marketing facility abroad and availability of design and marketing departments etc. The overall performance in functional upgrading for all factories is very low (Figure 13). Around 67 percent of all the factories have scores between 0.01 – 0.2. Most factories do not have necessary infrastructural and logistic facilities abroad including design development facilities and wholesale or retail facilities abroad. In fact, in both the cases, around 90 percent of all the factories have responded that they have none of these facilities. This shows that they are mostly at the lowest level of functional upgrading. Large factories have shown slightly better progress in terms of functional upgrading, with around 42 percent of them scoring in the lower range of 0-0.2, as compared to 68 percent of medium factories and 76 percent of large factories. Some large factories (11 percent) have shown progress, scoring in the moderately high 0.6-0.8 range, with none of the small or medium factories having scores in this range.

Figure 13: Functional Upgrading Scores
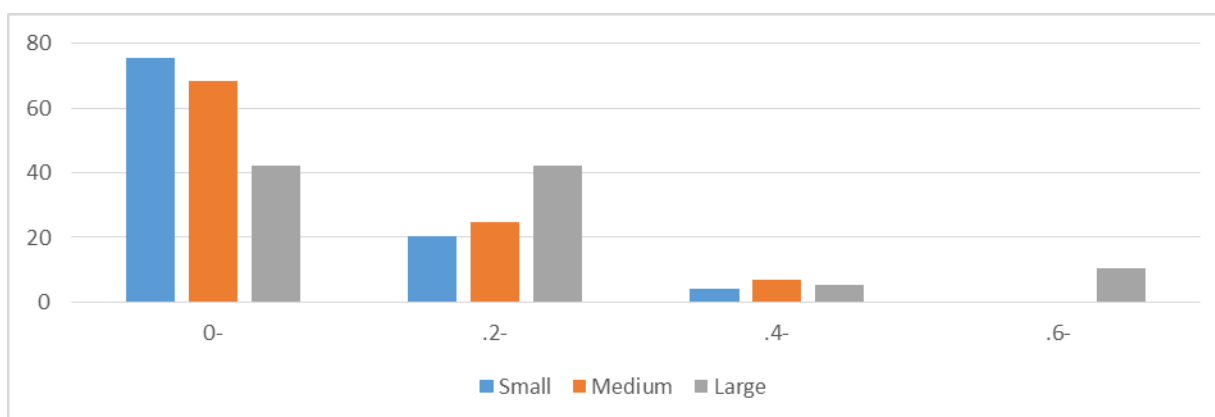
Source: CPD-RMG Study, 2017

There is variation among woven and knit factories in terms of functional upgrading. Around 63 percent of woven factories have scores in the low 0-0.2 range, while this number is around 80 percent for knit factories. This is due to the fact that only one or two knit factories in the sample have replied that they have some sort of warehousing facility abroad, and the number is higher for woven factories. However, be it woven or knit factory, the overall performance of factories in terms of functional upgrading remains poor.

Functional upgrading has significant variations according to area of operation of the factories. The factories of Chittagong are lagging behind in this regard, with around 72 percent of factories having scores in the 0.01-0.2 range, while 50 percent of factories of Dhaka and 62 percent factories of Gazipur have factories in this range. However, some factories of Chittagong (around 4 percent) have scores in the range of 0.6-0.8, showing their progress. So, the results are mixed, and there is no clear leader in functional upgrading among different areas of operation in the sample.

6.2 Components of Social Upgrading

6.2.1 Employment Security Sub index: Employment security sub-index includes issues such as having training facilities, for newly recruited workers, apprenticeship facility, having committee for workplace safety, incidences of accidents, employment contract and assurance of retrenchment benefits etc. The employment security sub-index scores for the factories in the sample are quite impressive (Table 37). Around 87 percent of all the factories of the sample have scores above 0.6, with approximately 35 per cent scoring in the high range of 0.8 – 1.0 range. This performance has been possible due to good performances of factories with having training facilities, establishment of safety committees, and low accident and illness rates, etc. Also, many factories now provide regular contracts (according to both management and workers). Large and medium factories have performed better in this regard, while small factories are lagging behind a little.

Table 37: Employment Security Index

	Small	Medium	Large	Total

0.21-0.40	1 (2.38)	0 (0.0)	0 (0.0)	1 (0.85)
0.41-0.60	6 (14.29)	5 (8.77)	2 (11.11)	13 (11.11)
0.61-0.80	26 (61.9)	28 (49.12)	8 (44.44)	62 (52.99)
0.81- above	9 (21.43)	24 (42.11)	8 (44.44)	41 (35.04)
Total	42 (100.0)	57 (100.0)	18 (100.0)	117 (100.0)

Source: CPD-RMG Study, 2017

Woven and knit factories both show impressive performance in terms of employment security index scores. Most of the factories score over 0.6 in Employment Security Index, and there is no significant variation among woven and knit factories. Around 90 percent of all woven and knit factories have scores over 0.6, while around one-third of them having scores over 0.8. Hence, it is evident that with regards to employment security index, which comprises of providing retrenchment benefits, regular contracts etc, the performance of most firms is quite impressive.

The performance of factories of Chittagong is better than factories of the rest of the areas in the sample. The data shows that around 44 percent of factories of Chittagong has scored within the 0.8-1 range, while 32 percent of factories of Dhaka and only 19 percent of factories of Gazipur have scored in this range. The factories of Dhaka and Gazipur have moderate scores, as 69 percent of factories of Dhaka and 68 percent of factories of Gazipur have scores in the moderate 0.6-0.8 range.

6.2.2 Rights Sub-Index: The Rights Sub Index includes issues such as firms having paid selective fringe benefits to workers, minimum wage paid was 50 per cent of the average paid in the firm, having recognized trade unions, collective agreement covering wages and other labour matters, operational work forum and provision for profit sharing scheme etc. According to the Survey, the scores for the factories in the sample are relatively poorer - around 53 percent of all the factories have scores between 0.01 – 0.2, which is quite low (Table 38). This is largely because of lack of trade unions or any form of written agreement among workers/worker organizations and management outlining different terms and conditions of work along with some sort of profit sharing mechanism. However, workers are paid selective fringe benefits, which have helped the scores for some factories. Large factories and some medium factories have shown better performance in this regard than small factories.

Table 38: Rights Sub-index

Rights Sub Index	Large	Medium	Small	Total
0.01-0.20	7 (38.89)	21 (35.59)	28 (66.67)	56 (47.06)
0.21-0.40	10 (55.56)	30 (50.85)	12 (28.57)	52 (43.7)
0.41-0.60	1 (5.56)	8 (13.56)	2 (4.76)	11 (9.24)
Total	18	59	42	119

	(100.0)	(100.0)	(100.0)	(100.0)

Source: CPD-RMG Study, 2017

The performance of rights sub index shows more or less the same performance for woven and knit factories. Both types of factories have shown relatively worse performance in terms of rights sub index. This is because while empirically there is a debate about whether trade unions are effective or not, theoretically the most effective worker organization is considered to be trade unions, as they have significant bargaining power. However, in the sample used in this study, only six factories reported that they have trade unions in their factories. This has resulted in a very low number of factories having moderate scores. There are also no collective agreements or profit sharing systems in those factories, which has reduced their rights sub index scores even further

The rights sub index scores are the poorest in Dhaka, while Chittagong leads in this case. There are no factories in Dhaka city (in this sample) with a score of 0.4 -0.6, as compared to 15 percent of Chittagong and 5 percent of Gazipur. All the factories of Dhaka have a score of below 0.4. The overall picture of establishment of worker organizations is more or less the same for all areas represented in the sample.

6.2.3 Standard Sub-Index: Standard sub-index include compliances with regard to electrical, fire and structural issues of sample enterprises. Overall, sample factories have good scores in standards sub index. Many of the factories have completed their remediation activities and some are nearing completion. Hence, about 57 percent of the factories have scores in 0.8 – 1.0 range. Large factories have performed better in this regard, followed by medium and small factories (Table 39).

Table 39: Standard Sub-index

	Large	Medium	Small	Total
0.21-0.40	1 (5.56)	0 (0.0)	5 (11.9)	6 (5.04)
0.41-0.60	1 (5.56)	0 (0.0)	2 (4.76)	3 (2.52)
0.61-0.80	2 (11.11)	10 (16.95)	20 (47.62)	32 (26.89)
0.81-above	14 (77.78)	49 (83.05)	15 (35.72)	78 (65.55)
Total	18 (100.0)	59 (100.0)	42 (100.0)	119 (100.0)

Source: CPD-RMG Study, 2017

Woven factories in the sample have shown better progress in remediation activities than knit factories. While more woven factories have scores within the 0.8 – 1 range, most knit factories have a score within 0.6-0.8 range. However, there is no clear overall trend in the scores, and no definite difference in the index values across type of factory.

In terms of standards sub index, the difference across areas in different factories is not too significant. However, the factories of Chittagong are slightly ahead in this regard. While around 69 percent of factories of Chittagong have scores in the high 0.8-1 range, around half of the factories of Dhaka have scores in this range. In all areas, the score is moderate in terms of standards sub index.

6.2.4 Non-Discrimination Index: The non-discrimination index includes issues such as no preference for men or women in the recruitment process, non-preference in case of providing training to workers, presence of female in managerial positions etc. The overall performance in terms of non-discrimination index has been relatively better for all factories. Almost all the factories (98 percent) have a score within the 0.5 – 0.8 range (Table 40). Large factories lead with around 66 percent scoring in the 0.7-0.8 range, followed by medium and small factories. The moderate progress has been possible due to the fact that discrimination in the workplace among workers has improved. However, there are still some cases where there are gender preferences for certain types of work.

Table 40: Non-Discrimination Index

NDI tab	Large	Medium	Small	Total
0.21-0.40	0 (0.0)	1 (1.69)	1 (2.38)	2 (1.68)
0.41-0.60	6 (33.33)	36 (61.02)	35 (83.33)	77 (64.71)
0.61-0.80	12 (66.67)	22 (37.29)	6 (14.29)	40 (33.61)
Total	18 (100)	59 (100)	42 (100)	119 (100)

Source: CPD-RMG Study, 2017

There is no significant variation among woven and knit factories in this regard. Both have scored relatively better in non-discrimination index. The percentage of firms scoring in the medium 0.4-0.6 range is slightly higher for woven factories, while the percentage of factories scoring within the 0.6-0.8 range is higher for knit factories than that of woven factories.

The variation in performance of factories in different areas is not too clear cut. A higher percentage of factories of Dhaka have scores within the low 0.2-0.4 range as well as within the high 0.6-0.8 range. So, area wise, there is no clear leader in terms of non-discrimination index scores.

6.3 Components of Gender Embedded Upgrading

Gender Embedded Employment Security Index: The Gender embedded employment security index includes issues such as female share in newly recruited workers, training received by female workers, ratio of female in apprenticeship, paid training facility for female workers etc. In gender embedded employment security index also, large and medium firms lead in terms of index scores (Table 41). Almost 86 percent large and 81 percent medium factories have scores in the moderate 0.4-0.6 range, while around 15 percent of large factories as well as small factories have moderately high scores (0.6-0.8).

Table 41: Gender Embedded Employment Security Index According to Size

Gender Embedded Employment Security Index	Large	Medium	Small	Total
0.2-0.4	0 (0.00)	3 (3.57)	4 (8.16)	7 (4.35)
0.4-0.6	24 (85.71)	68 (80.95)	37 (75.51)	129 (80.12)
0.6-0.8	4 (14.29)	13 (15.48)	8 (16.33)	25 (15.53)
Total	28 (100.00)	84 (100.00)	49 (100.00)	161 (100.00)

Source: CPD-RMG Study, 2017

Composite Knit factories have done better than woven factories in terms of gender embedded employment security index scores. However, different types of woven factories are not lagging behind too much. Hence, there is variation among types of factories with regards to gender embedded employment security index, but the results are mixed.

The performance of Chittagong with regards to employment security index is also relatively better than that of the rest of the areas considered in the sample. Around 90 percent factories have scores in between 0.4-0.6, compared to 80 percent factories of Dhaka, 88 percent of Narayangonj and 63 percent of Gazipur. However, Gazipur leads with high scores, as around 26 percent of all the factories have scores within the high 0.6-0.8 range.

6.3.1 Gender Embedded Rights Sub Index: Gender embedded right sub-index includes fringe benefits for female and male workers, recognized trade unions with significant share of female members, collective bargaining covering women workers demand, workers forum for male and female employees etc. In terms of rights sub index, large and medium factories have very high scores as compared to small factories (Table 42). While 81 percent large factories and 85 percent medium factories have scores within the 0.6-0.8 range, only 54 percent small factories have scores in that range. Only 5 percent of medium factories have scores within the 0.8-1 range.

Table 42: Gender Embedded Rights Sub Index According to Size

Gender Embedded Rights Sub Index	Large	Medium	Small	Total
0-0.2	0 (0.00)	0 (0.00)	2 (3.51)	2 (1.10)
0.2-0.4	3 (9.38)	6 (6.52)	13 (22.81)	22 (12.15)
0.4-0.6	3 (9.38)	3 (3.26)	11 (19.30)	17 (9.39)
0.6-0.8	26	78	31	135

	(81.25)	(84.78)	(54.39)	(74.59)
	0	5	0	5
0.8-1	(0.00)	(5.43)	(0.00)	(2.76)
	32	92	57	181
Total	(100.00)	(100.00)	(100.00)	(100.00)

With regards to rights sub index, woven factories have scored much better than knit factories. Around 75 -80 percent of woven factories have scores within the 0.6-1 range, while around 67 percent knit factories have scores in the 0.6-0.8 range.

In terms of Rights sub index, Gazipur and Chittagong has performed well relative to other areas. Around 86 percent of Gazipur factories and around 84 percent of Chittagong factories have high scores. But the relative performance of Dhaka is not satisfactory. In fact, it lags behind all the other areas in this regard.

6.3.2 Gender Embedded Non Discrimination Index: This is index is almost similar to what is used as non-discrimination sub-index under social upgrading index. The gender embedded non-discrimination index scores are low for all factories. It is exceptionally low for large factories. While 38 percent of medium and 39 percent of small industries have scores in the 0.2-0.4 range, almost 53 percent of large factories have scores within this range (Table 43). Moreover, no large factory has a score in the range of 0.8-1.0.

Table 43: Gender Embedded Non Discrimination Index

Gender Embedded Non Discrimination Index	Large	Medium	Small	Total
	2	5	12	19
0-0.2	(6.25)	(5.43)	(21.05)	(10.50)
	17	35	22	74
0.2-0.4	(53.13)	(38.04)	(38.60)	(40.88)
	10	36	17	63
0.4-0.6	(31.25)	(39.13)	(29.82)	(34.81)
	3	14	5	22
0.6-0.8	(9.38)	(15.22)	(8.77)	(12.15)
	0	2	1	3
0.8-1	(0.00)	(2.17)	(1.75)	(1.66)
	32	92	57	181
Total	(100.00)	(100.00)	(100.00)	(100.00)

Woven factories also lead in gender embedded non-discrimination index values. Around 52 percent of woven factories and 33 percent of woven factories with wet processing have scores in the moderate 0.4-0.6 range, while around 18 percent have scores in the 0.6-0.8 range.

6.4 Overall Observations

The RMG sector has experienced two streams in terms of structure and composition as well as upgradation - in one stream very limited level of changes is discerned and in other stream significant changes is observed. In case of structure and composition of RMG enterprises, changes are visible in case of ownership and partly in management of the enterprises while more changes are discerned in case of composition of workers, skill composition and contractual arrangement between buyers and suppliers. A large share of enterprises are operating as part of group of companies which include a significant share of small scale enterprises. There is very limited changes discerned in quality of management as senior management still has limited exposure to modern management related knowledge and techniques. A sizable share of enterprises recruited foreign professionals in different technical and management related activities. Technological changes are visible but there is wide variation between different types of enterprises in case of using advanced technologies. Workers' organizations in the form of WPC is more visible however, trade unions are almost non-existent. There is growing number of enterprises with having elected WPCs. These committees discussed various grievance issues including late payment of wages, overtime, problems in fixing wage rate, over pressure for work, sexual harassment, leave benefits, other financial benefits, workers' association related problems or promotion related issues. The structure of RMG enterprises give an indication that a sizable share of enterprises have the potentials to 'take off' provided they could improve in terms of technological readiness, improved management practices, further improvement of workers skill particularly that of female workers etc.

On the other hand, upgrading in RMG enterprises reveal a diverse pattern. The upgradation is most prominent in case of social issues particularly with regard to standards, non-discrimination and employability issues but very poor in rights issue. A moderate level of upgrading is discerned in case of gender embedded upgrading. In contrast, economic upgrading of sample enterprises in general are very behind particularly because of poor performance in product and functional upgrading related issues. In other words, post-Rana Plaza initiatives drive firms to undertake various kinds of upgrading; however, such upgrading is visible mainly in social upgrading and limited or no progress is discerned in case of economic upgrading. The upgradation as discerned have size issues where large enterprises are found to be ahead of medium and small enterprises with regard to economic, social and gender related upgrading. In case of social upgrading, all types of enterprises are found to be in better condition. In some cases, woven enterprises are ahead of knit enterprises particularly in case of economic upgrading point of view. There is location variation of upgardation – Chittagong has sharp contrasts in terms of upgradation while enterprises located there are behind in terms of economic upgrading on the other hand, these enterprises are ahead of other regions in case of social and gender embedded upgrading.

In other words, an institution-driven upgradation in social issues which had been undertaken over the last five years have yet to establish its natural link with economic issues. In that consideration, an unbalanced upgradation has been taken place with limited focus on economic and technological issues, particularly those in small and medium enterprises. Such an unbalanced growth usually have limited positive implications in terms of firm's overall competitiveness especially those are behind.

7. Implications of Upgradation on Firm's Overall Performance

Any kind of upgradation at the enterprise level is expected to have different kinds of impact and implications on the concerned enterprises particularly with regard to their structure and composition as well as their overall performances. Since sample RMG enterprises have experienced with diverse level of upgradation in economic, social and gender related issues, such dynamics and changes are expected to have impact and implications on RMG enterprises. Most importantly, the social upgradation which has undertaken by most of the RMG enterprises through targeted investment over the last five years, is expected to generate return to sample enterprises.

7.1 Price of Production Orders

The suppliers usually expect that the investment in upgradation is most likely reflected in the price that is settled with the buyers. In that consideration, price of the products (i.e. final settled price-CM value) could be a good indicator to appreciate how buyers take into cognizance in overall improvement of firms. Analysis of survey reveals that the relationship between price and upgradation is rather weak both in case of economic and social upgrading (Table 44). More importantly, relationship between price and social upgrading is rather weaker than that of economic upgrading. Needless to mention that price of product is influenced by various factors including those not related with the suppliers.

**Table 44: Relationship between Price and Upgrading**

	Economic Upgradation and Final Settled Price	Social Upgradation and Final Settled Price
Correlation Coefficient	0.3071	0.1039
Significance Level	0.0087	0.3352

Source: CPD-RMG Study, 2017

7.2 Suppliers' Profit

Suppliers' profit rate is estimated in terms of net profit over gross revenue per year. According to the survey, average profit rate has declined between 2012 and 2016 – from 6.6 per cent to 6.0 per cent. However, there is wide variation between firms in terms of profit rate. Similar result is evident in other literatures (Liliac et al.,2017). It is interesting to examine how firm's profit is influenced because of ongoing upgradation in economic and social issues.

The survey shows that there is apparently no trend in the relationship between economic upgrading scores and profitability. However, there is some indication that firms with positive profits have performed better in economic upgrading as compared to factories who have been incurring losses. But for firms with profitability over 20 per cent, economic upgrading scores seem to be more on the lower side (Figure 14). Most factories in the sample have profitability in the 0% to 5% range, but among those factories, half have economic upgrading scores in the 0-20 range. So, there seems to be no apparent relationship with profitability and economic upgrading.

Figure 14: Relationship between Economic Upgrading and Profitability Ratio
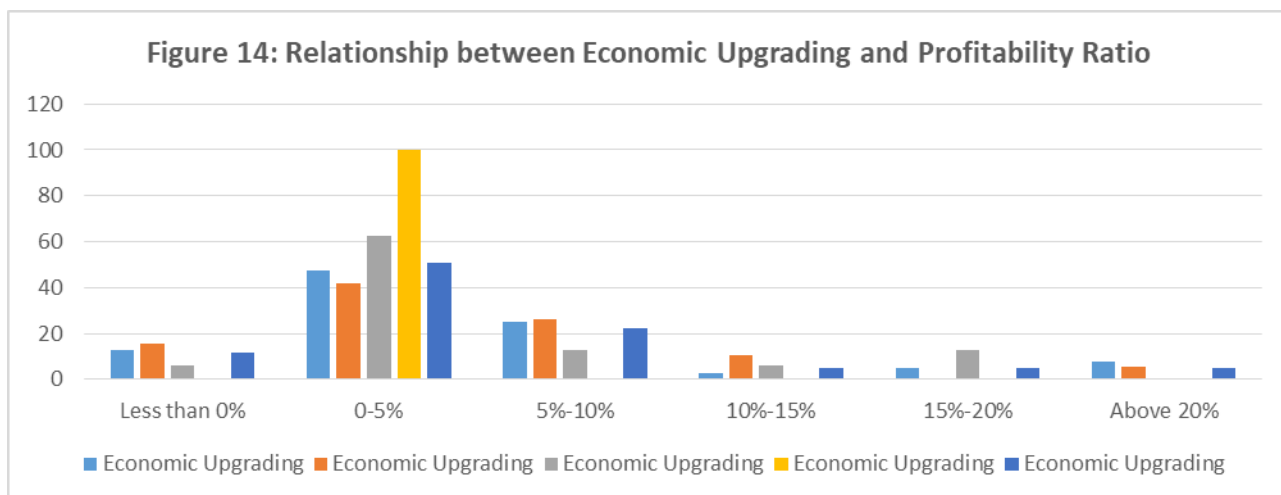
Source: CPD-RMG Study, 2017

With regards to social upgrading, there seems to be some indication that higher profitability has helped in higher levels of social upgrading, or, in other words, firms with better profitability have better social upgrading scores. Most firms have profitability in the 0%-5% and 5-10% ranges, and among those firms, almost half of the factories have social upgrading scores in the high 60-80 range, while half of them are in the moderate range (Figure 15). At the over 20% profitability levels however, the social upgrading scores are moderate. But the number of firms having high profitability is limited, however.

Overall the relationship between firm's profit and economic and social upgrading is not so strong. More specifically, investment in social upgrading over the last several years has yet to ensure benefits for the firms through higher level of profit.

Figure 15: Relationship between Social Upgrading and Profitability Ratio
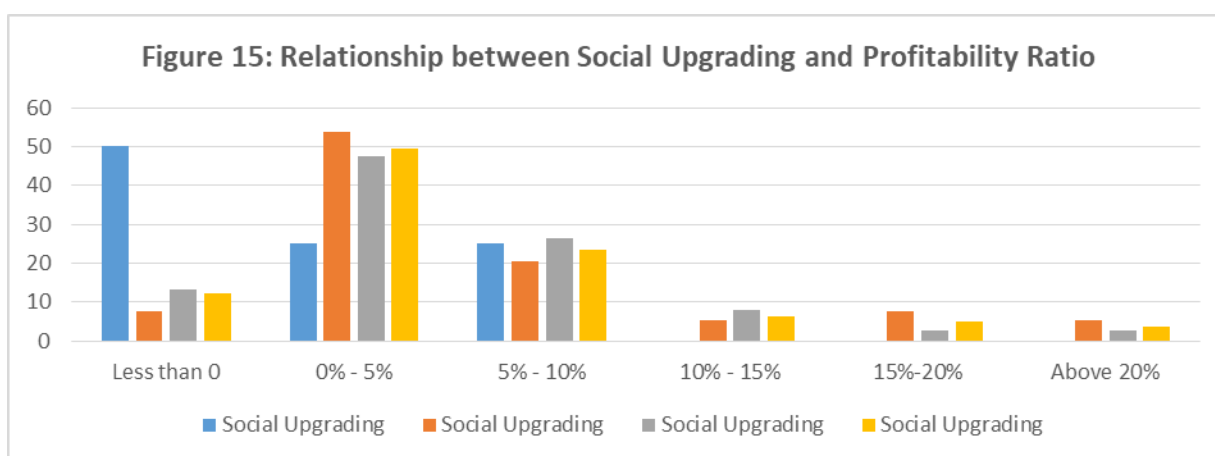
Source: CPD-RMG Study, 2017

7.3 Distribution of Margin in the Value Chain

On the other hand, distribution of margin in the value chain remain the same as observed earlier. There is huge difference in the margin received by buyers and suppliers. According to the survey, of the weighted average tagged price of US$21, buyers' margin is about US$16.8 which is 78.9 per cent of the total value of the product (Table 45). On the other hand, the rest US$4.5 has been distributed for costs of fabrics (US$2.3), accessories (US$0.8), labour cost (US$0.97) and owner's markup (US$0.13). In terms of distribution of margin the share of buyers is as high as 79 per cent, the share of suppliers on the other hand is only 21 per cent. Out of the share of suppliers, share of cost of fabrics, accessories and labour are accounted for 10.8 per cent, 3.8 per cent and 4.6 per cent respectively (Table 46). The suppliers' markup is only 0.6 per cent. However, there is considerable difference between suppliers' mark up in small, medium and large scale enterprises which also have implications on buyers' margin as well. Investment in social upgrading by sample enterprises appear to have limited implications on the final settled price as well as their mark up and labour costs.

Table 45: Distribution of Margin between Buyers and Suppliers in the Value Chain

	Overall	Small	Medium	Large
Price Tag	21.3	21.9	21.5	20.1
% of tagged price	100.0	100.0	100.0	100.0
Buyer's Margin	78.9	82.2	77.8	72.4
Suppliers' Margin	21.1	17.8	22.2	27.6

Source: CPD-RMG Study, 2017

7.4 Line and Worker Efficiency

There is wide variation in efficiency in sample enterprises. CPD-RMG study conducts an exercise of line efficiency of selected enterprises. The line efficiency related data was collected from selected set of enterprises for three to five days by collecting high frequency data from all the workers of selected lines. The line efficiency varies widely both within and between lines (Table 47). The average line efficiency is found to be 52.2 with maximum and minimum values are 94.0 and 15.0 respectively. Although a large share of lines have 'high' level of efficiency, however a sizable share of enterprises have very low level of efficiency (21 per cent) and another 21 per cent have moderate level of efficiency. Such variance of efficiency would have adverse impact on overall cost of production as well as their competitiveness.

Similarly, Workers' individual efficiency is found with wide variation. While the average level of efficiency is 62.21 with maximum and minimum values are 133 per cent and 7 per cent respectively. Over 50 per cent workers have 'high' level of efficiency; on the other hand, the rest half of workers have diverse level of efficiency.

Table 47: Likewise and Worker wise Efficiency (based on HFDS)

	Line Efficiency	Worker Efficiency
Very Low (below 30%)	18.5	8.2
Below Average (30-40%)	3.7	12.9
Moderate (40-50%)	18.5	12.7
Moderately High (50-60%)	18.5	13.1
High (60% and above)	40.7	53.1
Total	100	100

Source: CPD-RMG Study, 2017

8. Conclusion

Present paper is an interim output of the CPD-RMG study titled 'New Dynamics of Bangladesh's Apparels Enterprises: Perspectives on Restructuring, Upgradation and Compliance Assurance'. This is prepared based on the results from a primary survey derived from a sub-set of target number of samples. Therefore, the findings of this paper need to be interpreted with due caution. While the overall objective of the study is to assess the capacity of apparels enterprises to undertake economic transformation as well as to upgrade physical and social compliances with a view to continue maintaining its competitiveness in the global market, the scope of the present paper is rather limited. Its focus is mainly on analysing the benchmark condition of sample RMG enterprises, estimating the level of upgrading of RMG enterprises with regard to social, economic and gender related issues, and reviewing the possible implications on firm's upgradation on their overall competitiveness.

The CPD-RMG survey observes a number of changes in management and operational issues of RMG enterprises. RMG enterprises are increasingly being governed under private limited company; however, the directors in most cases are family members of same family. This is different compared to earlier trend of having more proprietorship in RMG sector. However, increasingly there is a tendency to delegate authority to factory management on number of issues which is a positive development. Despite that quality of management is still a major concern as reflected in poor academic attainment and lack of relevant training of a large section of management professionals working in sample enterprises. Hence, dependence on foreign workers is likely to be growing – about 16 per cent of enterprises have employed at least one foreign professionals and expense for foreign professionals is about 1.4 per cent of their total labour cost. The enterprises are increasingly becoming part of groups of enterprises which indicate further concentrate the businesses to limited number of large entrepreneurs. Such concentration in one hand, created opportunities for cross-subsidization of various fixed costs as well as help to reduce risks. In case of workers, their composition in terms of age, grades and marital status indicate that factories are providing more importance to skill and productivity of workers. It is not clear whether such skill preferences by the owners is driven by cost-push or demand-pull factors. A large section of enterprises have major share of contracts with brands and retailers; the share of international buyers has been increasing while sub-contracting has been declining.

Gender imbalance is a concern in case of upper grades and professional jobs. Overall gender balance among the production workers have gradually shifted from female-led towards male-female balance (60.8 per cent). Despite the rise of machinery use particularly specialised machines in different sections, a large part of the enterprises could not in the advanced categories in machinery use. Thus, there is likely to have a gap in technology use between enterprises. Workers' organizations in the form of WPC is more visible in sample enterprises; however, trade unions are almost non-existent in sample enterprises. There is growing number of enterprises with having elected WPCs. These committees discussed various grievance issues including late payment of wages, overtime, problems in fixing wage rate, over pressure for work, sexual harassment, leave benefits, other financial benefits, workers' association related problems or promotion related issues. However, the discussion with the members of the WPC (conducted as part of the study) raises doubt about effective functioning of these organisations.

The survey found that upgrading in RMG enterprises is of diverse nature. The upgradation is most prominent in case of social issues particularly with regard to standards, non-discrimination and employability point of view but very poor in case of rights. A moderate level of upgrading is discerned in case of gender embedded upgrading. In contrast, economic upgrading of sample enterprises in general are far behind particularly because of poor performance in product and functional upgrading. In other words, post-Rana Plaza initiatives drive firms to undertake various kinds of upgrading; however, such upgrading is visible mainly in social upgrading and limited or no progress is in case of economic upgrading. The upgradation has link with size of enterprises where large enterprises are found to be ahead of medium and small enterprises with regard to economic, social and gender related upgrading. In case of social upgrading, all types of enterprises are found to be in better condition. In some cases, woven enterprises are ahead of knit enterprises particularly in case of economic upgrading. There is spatial variation in case of upgardation – Chittagong has sharp contrasts in terms of upgradation. Enterprises located there are behind in terms of economic upgrading; on the other hand, they are ahead of enterprises of other regions in case of social and gender embedded upgrading. Overall, an institution-driven upgradation targeting social issues which had been undertaken over the last five years have yet to establish its natural link with economic upgradtion and less so with gender related upgradation. In that consideration, an unbalanced upgradation has been taken place with limited focus on economic and technological issues, particularly those in small and medium enterprises. Such an unbalanced growth is likely to have limited positive implications in the long run particularly in terms of firm's overall competitiveness especially those which are behind. This is evident in through firms' performance in terms of price and profit. The study found weak relationship between price settled at suppliers end and their level of social upgrading, low share of suppliers in overall margin and deceleration of their rate of profit. On the other hand, the survey shows that there are weaknesses in areas where the enterprises claimed about upgradation. For example, a large section of workers received wages less than the stipulated amount as per official rates. Such cases are evident in other areas.

As it appears that RMG sector has experienced two streams of changes in case of structure and composition of enterprises as well as their level of upgradation. The structure of RMG enterprises give an indication that a sizable share of enterprises have the potentials to 'take off' provided they could improve in terms of technological readiness, improved management practices, further improvement of

In that context, there is specific role to play by key stakeholders including government, manufacturers, buyers/brands and development partners for ensuring balanced level of upgrading across all enterprises particularly small and medium scale enterprises.

Annexure

Annex 1: Variables considered for Index Calculation
-   Prices of Biggest Five Orders of Last Year
-   Volumes of Biggest Five Orders of Last Year
-   Presence of Product Development Facilities
-   Total Sales Revenue
-   Total Production Workers
-   Total Investment in Machinery, Plants and Equipment
-   Presence of IE Department
-   Presence of warehousing facilities abroad
-   Presence of wholeselling facilities abroad
-   Presence of retailing facilities abroad
-   Presence of design facilities
-   Number of workers with disabilities
-   Number of women working in the factory
-   Total number of production workers
-   Gender Preference in recruitment
-   Gender preference in training
-   Presence of trade union
-   Presence of participatory committee
-   Presence of profit sharing mechanism
-   Benefits Received by Workers other than Salary
-   Presence of regular contracts
-   Provision of notice before worker layoffs
-   Coverage of Worker Dismissal Procedure in Collective Agreement
-   Presence of Safety Committee
-   Safety Committee Related Training

- No. of Accidents
- No. of Workers Reporting Ill
- Providing Training to New Workers
- Training Provided to Established Workers
- Training provided in Institute
- Retraining provided in institute
- Factory Funding of Worker Training
- Total Estimated Expenditure on Fire Safety
- Total Estimated Expenditure on Electrical Safety
- Total Estimated Expenditure on Structural Safety
- Total Expenditure on Fire Safety till 2016
- Total Expenditure on Electrical Safety till 2016
- Total Expenditure on Structural Safety till 2016
- Total Number of Female Respondents
- Total Number of Female Respondents reporting they received training
- Total Number of Female Respondents reporting they received formal training
- Total Number of Female Respondents reporting they received institutional training
- Female members in Safety Committee
- Number of female workers reporting ill
- Number of female workers reporting they have regular employment contracts
- Number of female workers reporting they receive notice before retrenchment
- Notice Period
- Number of female employees
- Number of female disabled workers
- HR Policy with provisions for non-discrimination
- Presence of Maternity Leave Provision
- Day Care Facility
- Provision of Day Care Facility in HR Policy
- Department/committee for sexual harassment protection
- Presence of female members in Department for harassment protection
- Written harassment protection policy
- Fringe benefits received (as reported by workers)

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