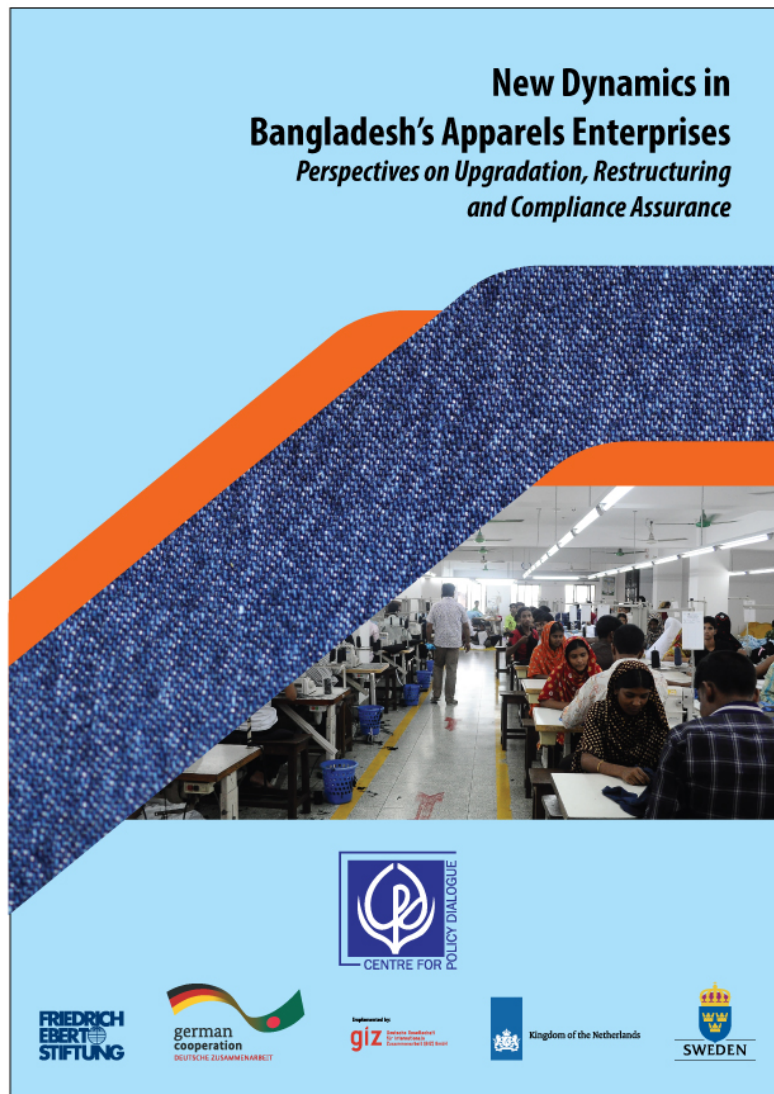


'New Dynamics in Bangladesh's Apparels Enterprises: Perspectives on Upgradation, Restructuring and Compliance Assurance'



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**New Dynamics of Bangladesh's Apparel Enterprises:
Perspectives on Upgradation, Restructuring and Compliance Assurance**

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Study Team

Dr Khondaker Golam Moazzem

Project Director, CPD-RMG Study and
Research Director, Centre for Policy Dialogue (CPD)

Dr Atonu Rabbani, Ms Shamima Pervin, Abeer Khandker, Kishore Kumer Bashak, Saifa Raz, Md Arfanuzzaman, Laila Firdaus, Kazi Sayem Jayed, Syed Mahtab Uddin Ahmed, Sk. Faijan Bin Halim, Marzuka Radia Ahmad, Akashlina Arno, Tahsin Farah Chowdhury, Mastura Shafayat, Md Minhaz Mohaimim Reza, Anika Bakht, Samiha Azim, Shahjahan Ali, and Faruque Abdullah Ferdows

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Preface

Background of the Study

The CPD-RMG Study was motivated by a tragedy, and inspired by a conviction to contribute to national and global efforts to ensure that such a tragedy never happens again. The Rana Plaza industrial disaster which had taken the lives of more than twelve hundred workers shook the global apparels value chain to its core. Consequently, all involved stakeholders across the value chain - workers, entrepreneurs, brands/buyers, consumers, right-based organizations, consumer groups, governments and sourcing countries – engaged soul-searching, asking how such a disaster could happen and looking for measures to avoid its repetition. A number of global initiatives were put in place to address the underlying reasons that led to the tragedy. A major initiative in this context was the Sustainability Compact, as part of which the government of Bangladesh had designed and a national plan of action which was implemented over the last six years. Key buyers had implemented their own plans, most notably under the Accord and Alliance-led initiatives. Thanks to these initiatives, major restructuring and remediation initiatives were undertaken to improve the state of compliance in the apparels sector of Bangladesh which received high appreciation both nationally and globally. On their part, the enterprises also have undertaken various initiatives as part of the restructuring process. The broad-based macro and meso-level initiatives as also enterprise level ones have multi-dimensional implications for enterprises, entrepreneurs and workers. As a result of the cumulative impact, apparels enterprises have experienced multi-dimensional changes over this period, most prominently in the areas of social and economic upgrading. However, a deeper appreciation of these initiatives is needed in order to capture the initiatives of these on various dimensions of the work of the apparels value chain. The CPD-RMG Study titled '*New Dynamics of Bangladesh's Apparels Enterprises: Restructuring, Remediation and Compliance Assurance*' was designed to generate insights as regards efficacy of the various sections taken during the follow-up period of the Rana Plaza tragedy with a view to examine to what extent these initiatives have been successful in upgrading the apparels value chain.

The Volume

The volume is comprised of eleven chapters under four specific parts. Part A discusses analytical frame and methodology of the study and structure of the sample survey. Based on a detailed literature review on economic and social upgrading of firms in the buyer-driven value chain, the study identifies economic and social upgrading components at the enterprise level in the value chain, the nature of inter-relationship between these two and the research gaps. The analytical frame of the study highlights social, economic and gender-embedded upgrading in the apparel value chain and their possible interrelationships towards ensuring sustainable development of the apparel sector of Bangladesh. To address the related issues, a baseline survey was conducted following standard survey method, a high frequency data survey (HFDS) was carried out and a number of case studies on different issues was conducted.

Part B highlights different aspects of economic upgrading in apparel enterprises and their implications on operation, management and technology use. Discussions and analyses presented in the two chapters under this part have been based on the findings of the data collected from the enterprise survey. The analyses have identified the changes in the ownership structure of apparels enterprises with further dominance of group of companies, changes in corporate practices, operational modalities and priorities concerning worker management. Following the methodology of the world management survey, the study has measured the level of management performance of sample enterprises and identified the factors responsible for different management quality by undertaking regression analysis. Additionally, the impact of management practices on enterprise level performance has been analysed. A detailed analysis of technological aspects of economic upgrading of sample apparels enterprises have been presented in the volume which addresses various features of upgrading and

level of technological development of sample enterprises and its implication on employment. Based on the high frequency data survey, worker level efficiency has been measured to find out if the level of efficiency has improved compared to what is popularly mentioned.

Part C discusses social upgrading in apparels enterprises and their possible implications for decent work related issues. The chapter discusses changes relating to the different components of decent work in sample enterprises during the post-Rana Plaza period. These include employment opportunities, living wages and livelihood issues, workplace safety and security and workers' rights. A number of notable changes could be discerned with regard to gender composition of production workers, spatial distribution of labour force, composition in the production lines, enforcement of workers' minimum wages, perception about workplace safety and security and workers' rights. The changes in decent work related issues was observed in terms of size, location and contractual arrangement with buyers etc. A regression analysis has been carried out with a view to identify factors influencing expected length of work. A detailed case study has been presented on challenges of institutionalization of workers' organizations in the apparels sector.

Part D presents the estimation of enterprise level upgrading index and testing of different hypotheses and presents policy recommendations. Based on Standing (2003) the study formulated a set of indices for estimating economic, social and gender embedded upgrading in sample enterprises. Using the different upgrading indices, it is found that level of upgrading varies both horizontally such as in terms of size, location, and contractual arrangements and vertically in terms of economic, social and gender-embedded upgrading. The study has examined the nature of relationship between economic and social upgrading, at the level of apparels enterprises and also carried out test of hypotheses. Finally, the study has put forward a set of recommendations on eight areas which include entrepreneurship development, management practices, technological changes, productivity and efficiency, employability, wages and livelihood issues, workplace safety and security and workers' rights and workers' organisations etc. Majority of recommendations are medium to long term with a view to ensure sustainable development of the apparels sector of Bangladesh in the coming years.

Major Contributions of the Volume

The study has made a number of unique contributions to the discourse on relevant issues and the concerned policy debate in the context of sustainable value chain in apparels particularly focusing on the changing dynamics during the post-Rana Plaza period. The contributions of the study relate to - focus of the study, methodological issues dealt with, survey related issues, organization and procedural issues and a number of findings and policy recommendations.

Focus of the study - enterprise-level dynamics explored: A number of initiatives have been undertaken during the post-Rana Plaza period with a view to address the challenges in the governance of the value chain, strengthening domestic legal and institutional structure and improvement of decent work related issues at the enterprise and sectoral levels. While such initiatives concerned macro and meso levels, their impact and implications at the enterprise levels have not been investigated in an in-depth way due to lack of relevant evidence and data. The study is the first of its kind which has examined enterprise level dynamics and changes from the perspective of upgrading the apparel value chain in Bangladesh during the post-Rana Plaza period. In this sense, it is a definitive benchmark study on post-Rana Plaza developments in the apparels sector of Bangladesh. In spite of several studies carried out on post-Rana Plaza issues lacked comprehensiveness and national representativeness. The present study has made an attempt to address this gap by undertaking a nationally representative sample survey on enterprises and workers and dealt with the involved issues in a wholesome way to come up with concrete policy recommendations.

Methodological issues – developing upgrading index to estimate enterprise level performance: The study has developed three sets of indices to measure enterprise level upgrading in the apparels sector of Bangladesh. Based on Standing (2013), different indices have been modified in the context of

apparels sector value chain and necessary questions have been added to the questionnaires for the baseline survey of enterprises and workers. Such an exercise helped to appreciate specific values of economic, social and gender embedded upgrading in Bangladesh's apparel value chain. Based on the analysis it was possible to recommend specific measures to be undertaken at the enterprise level with a view to address long term sustainability issues.

Survey related issues – developing data universe and conducting sample survey: In view of lack of data on the dynamics of changes taking place at the level of apparels enterprises, the study has developed data universe concerning population of apparels enterprises and workers based on nine different datasets available at the national level. The comprehensive data universe has been able to clarify a number of popular misconceptions regarding the number of enterprises in operation, gender composition of apparel workers, spatial distribution of apparel enterprises and enterprises working in EPZs etc. This database has been used to select the sample enterprises to conduct the baseline survey. Besides, a high frequency data survey (HFDS) was carried to estimate line and worker level efficiency in different categories of enterprises and relating to different categories of workers. Overall, this sector-wide survey is a first of its kind which was based on nationally representative samples of entrepreneurs and workers.

Organization and procedural issues – the study is guided by a high-level advisory committee: One of the unique features of the study has been that the study team was guided by a well-represented and experienced advisory committee which was closely involved with the study over its entire duration. The eighteen member advisory committee was chaired by (successive) Secretary, Ministry of Labour and Employment (MoLE). Other members of the committee included representatives of the ILO, president and vice president of BGMEA and BKMEA, president of National Garment Workers Federation (NGWF), executive director of BILS and renowned trade union leader, heads of H&M and Walmart in Dhaka. The committee provided important guidance at different phases of the study, including concerning sampling strategy for selecting enterprises of various size categories, selection of workers, checking the authenticity of workers' responses, review of preliminary findings of the survey and process of validation of the survey. As part of the study, a number of appreciation workshops were conducted both in Dhaka and Chittagong, in collaboration with the BGMEA. At the initial phase, a number of expert group meetings were conducted with different groups of stakeholders including entrepreneurs and workers. The idea was to get their views about various aspects of the study including issues to be covered in the survey. A dissemination session was arranged with a group of stakeholders which included managers of apparels enterprises with view to get their feedbacks on the findings of the study related ownership, management and overall progress of upgrading at the enterprise level. A day-long validation event was organised with participation of all relevant stakeholders in different sessions including high level policymakers. The discussion was held at dedicated sessions with the discussants, panelists and participants providing feedbacks and important suggestions. These were addressed in the final report.

Major findings and policy recommendations - Identified some key weaknesses in the process: The study identified a number of weaknesses that were revealed, and challenges that were experienced in the process of changes being undertaken in the apparel sector value chain during the post-Rana Plaza period. Firstly, an institution-driven social upgrading which has been undertaken over the last five years was yet to establish link with economic upgrading, and less so with gender related upgrading. The need for undertaking substantive investment for economic upgrading came out quite clearly. Secondly, both economic and social upgrading in RMG enterprises are not necessarily location-neutral. There is spatial variation in case of upgrading – enterprises located in clusters such as Chittagong and Narayangonj are found to be behind in economic upgrading compared to Dhaka and Gazipur clusters. Thirdly, the structure of RMG enterprises provide an indication that a sizable share of those has the potential to 'take off' provided they are able to improve in terms of technological readiness, management practices, workers' skill particularly in case of female workers etc. More specifically, the study has put forward a number of recommendations with regard to entrepreneurship

development, management practices, technological changes, productivity and efficiency, employability, wages and livelihood issues, workplace safety and security and workers' rights and workers' organisations. These initiatives need to be implemented by undertaking short, medium and long term initiatives.

It is hope that the findings and conclusions derived from the study would help stakeholders involved in the apparel value chain of Bangladesh to design medium to long term plan of action in specific areas that will contribute to ensuring long term sustainability of this flagship sector of Bangladesh.

Acknowledgement

The CPD-RMG Study has been a rather exclusive exercise that involved many contributors. We owe all of them a debt of gratitude. To complete such a study required proper guidance, planning, directions, support from the partners, setting up of competent teams, commitment and hard work of team members, coordination with concerned ministries, departments and other offices as well as with different private sector organizations. We were fortunate to have the unfailing support of all concerned.

The 'Advisory Committee of the CPD-RMG Study' played an important role in steering the study in the right directions. The 18 member Advisory Committee included high level policymakers, representatives of our four development partners who were so generous in providing the necessary support without which the study would not have been possible, and key stakeholders groups. The Committee was chaired by the Hon'ble Secretary of Ministry of Labour and Employment (MoLE). Other members of the Committee were Joint secretary of Ministry of Labour and Employment, joint secretary of Ministry of Commerce, President of BGMEA, Vice-President of BKMEA, head of RMG section of ILO, representatives of consortium partners of the study including Resident Representative of FES Bangladesh, Cluster Coordinator of GIZ, Programme Manager of Embassy of Sweden, Dhaka and Programme Manager of the Embassy of the Kingdom of the Netherlands in Dhaka, Executive Director of BILS, President, National Garment Worker Federation (NGWF), Country-head of two renowned brands, H&M and Walmart and Distinguished Fellows of CPD. Throughout the study period, the Committee has been closely involved sharing insights and providing feedbacks and coming up with useful suggestions. In this connection we would like to register our deep appreciation to the two Chairs, Mr Mikail Shipar and Ms Afroja Khan, who served as Secretaries of the Ministry of Labour and Employment (MoLE) when the study was carried out. Their genuine interest in the study was shared by the members of the Advisory Committee and together they played an important role in successful implementation of the study, helping with sample selection, supporting field survey and in organizing meetings and helping address the various challenges in implementing the study.

We would like to particularly mention that our four consortium partners - the Embassy of Sweden, Dhaka, Embassy of the Kingdom of the Netherlands in Dhaka, GIZ-Bangladesh and FES Bangladesh, have been helpful not only with their very generous support, but also with their keen interest in the progress of the work. Our special thanks go to Excellency Charlotta Schlyter, Ambassador of Sweden, Bangladesh, Excellency Johan Frisell, former Ambassador of Sweden, Bangladesh, Excellency Harry Vewej, Ambassador of the Kingdom of Netherlands, Bangladesh, Excellency Leoni Cuelenaere, former Ambassador of the Kingdom of Netherlands, Bangladesh, Ms Tina Marie Blohm, resident representative, FES-Bangladesh, Ms Franziska Korn, former resident representative of FES Bangladesh, Mr Werner Lange, Cluster Coordinator of GIZ, and Ms Monika Lueke, programme coordinator, social and labour standards in the textile and garments sector in Asia, GIZ. In this connection, we would like to express our sincere appreciation to our consortium partners for agreeing to our request for no-cost extension of the study which was required in view of more time for the field survey than we had initially anticipated and for giving the study its final shape. Despite their busy schedule, representatives of the partner organizations have attended various events organized in Dhaka and Chittagong.

The study team will fail in its duty if we do not put on record deep indebtedness to the CPD management for doing everything towards successful implementation of the study. In this connection we would like to register our sincere gratitude to Professor Rehman Sobhan, Chairman, CPD for his interest in the study and for offering his guidance to situate the study in the broader context of prevailing political economy that governs apparels value chain. Dr Debapriya Bhattacharya and Professor Mustafizur Rahman, Distinguished Fellows of CPD were source of inspiration and guidance in the course of the entire exercise, helping the team enrich the study bringing methodological clarity and strengthening analytical rigour and through sound advice in dealing with day to day challenges of

implementing such a complex study. They were actively involved at every stage of the study starting from conceptualization and development of analytical frame of the study and ending with ensuring the quality delivery of the outputs. We would like to register our deep appreciation to Dr Fahmida Khatun, Executive Director of CPD who besides providing intellectual guidance also ensured that the team received CPD institutional support to the fullest extent.

Conducting the baseline and follow-up surveys, have been are the main components of the study, could not have been possible without the support extended by a host of organizations. They have been with us at every stage of the study, from identification of issues, preparation of draft questionnaires, providing feedbacks on draft questionnaire, pre-testing of the questionnaire, finalization of the questionnaire and conduct of the survey. In this connection we are very grateful to particularly BGMEA, BKMEA, BILS, ILO, DIFE, DoL, Accord Bangladesh, Alliance for Workers' Safety and Buyers' Forum. The extensive survey work would not have been possible with the excellent cooperation of the two leading business associations in the RMG sector such as BGMEA and BKMEA. The leaders of these two organisation, as also individual members were extremely helpful in extending support in the form of providing feedback on draft report which was prepared based on the surveyed data. The respondents who provided information during the field surveys included managing directors, managers, HR managers, and other senior officials. The workers of the sample enterprises were also forthcoming in sharing their views and insights. To all of them we are in profound debt. Participants of various key informant interviews (KIIs) and expert group meetings provided important insights and inputs which have enriched our study and we would like to express sincere thanks to all of them.

The study team received technical support from a number of renowned specialists both from home and abroad. Dr Israt Rayhan, Professor, Institute of Statistical Research and Training (ISRT), Dhaka University has graciously reviewed the sample frame for the baseline survey and provided important inputs for its improvement. He also organized a special session at the ISRT to discuss the preliminary findings of the study a significant number of teachers and students of the ISRT were present and shared their views on the findings of the study. Our heartfelt appreciation to Dr Rayhan for his important contribution to the study. A group of four eminent scholars with extensive expertise in apparels issues has workers as 'panel of reviewers' for the study. They were Professor Ahmed Mushfiq Mobarak, Professor of Economics, Yale University, Mr. Yamagata Tatsufumi, Chief Senior Researcher, Development Studies Center, Institute of Developing Economies (IDE), Japan External Trade Organization (JETRO), Ms. Naomi Hossain, Research Fellow, Power and Popular Politics Cluster, Institute of Development Studies, UK and Prof Dr. Hansjorg Herr, Professor, Department of Business and Economics, University of Economics and Law, Berlin. The panel provided detailed comments on the different chapters of the study report. They also came up with very insightful suggestions to improve the analytical rigour of the draft. We are very grateful to each of them.

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events and ensuring excellent outreach through welcoming and webposting, organisnis blogs and helping with documentation, editing and publishing of various study. Special thanks goes to Ms Mayeesha Azhar who did copy-editing of one of the working papers.

Undertaking of such a multi-year survey-based study, which involved collaborations with a host of organisations and individuals, was a formidable task. The team tried to do justice to the task entrusted to them. We were fully conscious about the demands in the areas of generation of quality data and timely implementation of the survey, rigour of the analysis, quality of outputs and policy relevance of the recommendations. If there are gaps, the team alone is responsible and we do apologise most sincerely for those.

Dr Khondaker Golam Moazzem

Project Director, CPD-RMG Study and
Research Director, Centre for Policy Dialogue (CPD)

On behalf of-

Dr Atonu Rabbani, Ms Shamima Pervin, Abeer Khandker, Kishore Kumer Bashak, Saifa Raz, Md Arfanuzzaman, Laila Firdaus, Kazi Sayem Jayed, Syed Mahtab Uddin Ahmed, Sk. Faijan Bin Halim, Marzuka Radia Ahmad, Akashlina Arno, Tahsin Farah Chowdhury, Mastura Shafayat, Md Minhaz Mohaimim Reza, Anika Bakht, Samiha Azim, Shahjahan Ali, and Faruque Abdullah Ferdows

Executive Summary

1. Introduction and Objectives of the Study

The post-Rana Plaza initiatives, which are popularly known as ‘the Bangladesh Model’ for improving decent work in the apparels sector, has different impact and implications for both the sector and the value chain. While its short term impact and implications are well-appreciated at macro and meso levels, the medium to long-term scenario seems ambiguous. Most importantly, the micro-level impact at the enterprise-level with regard to ensuring workplace safety and security, decent wages and workers’ rights, among others, remained unattended. The present study focuses on enterprise-level changes on social and economic issues during the post-Rana plaza period and their implications on economic and social upgrading of the apparel enterprises. The study is the first of its kind, which is based on primary data collected from a nationally representative set of sample enterprises and workers of the apparels sector.

The analytical framework of the study focuses on both competitiveness and sustainability of enterprises in the global value chain (GVC). This has been done by examining the nature of relationship between ‘market-based profit maximisation’ principle of industrial enterprises and ‘institution-led enterprise development’ in the context of post-Rana Plaza developments in the apparels sector of Bangladesh. Theoretically, the primary motive of any firm is profit maximisation; hence, firms have a general inclination towards ‘economic upgrading’. The question is whether economic upgrading would ultimately lead to social upgrading. Researchers are divided on this issue. This study attempts to contribute in this contesting aspect by examining the nature of relationship of upgrading of apparel enterprises of Bangladesh. It aims to assess the capacity of apparel enterprises in undertaking economic transformation, to upgrade physical and social compliances, thereby continuing to maintain international competitiveness. Based on this assessment, the study would like to put forward necessary suggestions with regard to long-term economic upgrading along with social upgrading that targets sustainable development of apparel enterprises.

2. Methodology of the Study

This study is based on a primary survey conducted in the apparel enterprises of Bangladesh. Due to poor availability of data, a ‘data universe’ of the population of apparel enterprises of Bangladesh has been developed based on nine different datasets available to different public and private organisations. A total of 3,856 enterprises have been identified as operational, with a total workforce of about 3.6 million. The sampling frame of the study applies a stratified multistage sampling procedure as outlined in Jain and Hausman (2006). Using 95 percent confidence interval with 2 per cent margin of error and a population proportion of 33 per cent, a total of 226 enterprises and 2123 workers were surveyed in the sample. Out of 226 sample enterprises, 48.2 per cent were small enterprises (109 enterprises), 44.2 per cent were medium in size (100 enterprises) and 7.5 per cent were large enterprises (17 enterprises). The distribution of workers is consistent with the national population. Besides, the study has conducted a separate high frequency data survey (HFDS) to measure workers’ level of efficiency. A number of detailed case studies have been done with regard to inter alia—workers’ organisations, enterprises operating in export processing zones (EPZs), institutionalisation of factory monitoring systems and sub-contracting enterprises.

3. Key Features of Sample Enterprises and Sample Workers

The majority of sample enterprises have been established in the past decade or so, with 63 per cent of these having been established on or after 2005. More importantly, a sizable number of these enterprises (about 19 per cent of total enterprises) were established after the Rana Plaza tragedy, which are mostly small (24 per cent of total small enterprises) and medium-sized enterprises (15 per cent). Despite having been pressurised for maintaining compliance by making additional investment

during the post-Rana Plaza period, entrepreneurs have set up new enterprises indicative of their positive attitude towards new investment in a sector in crisis, and at the same time, portrays buyers/brands continued confidence on working with suppliers of Bangladesh's readymade garments (RMG) sector. A majority of the enterprises have exclusive contractual arrangements with brands/retailers (59.8 per cent), and only a small fraction of enterprises work exclusively with buying houses.

Sample enterprises have been getting bigger over the years. In 2016, the average size of enterprise in terms of employment was 1,363 workers—this was 8.5 per cent higher than that in 2012 (1,016 workers). The average number of production lines in small, medium and large enterprises are 6, 13 and 47 respectively, which means that in terms of operating size, medium and large-scale enterprises are nearly twice as large as—and nearly eight times larger than small-scale enterprises respectively. Overall, the average number of operators work per line has declined compared to previous years as a result of improvements in machinery and better skills on the part of the workers, among others.

Sample enterprises have ensured sizable share of growth of their export since the Rana Plaza tragedy despite various challenges—the average gross revenue of sample enterprises has increased by 9.6 per cent per year since 2012. The growth of gross revenue is higher for small enterprises, followed by large and medium-sized enterprise. The majority of sample enterprises produce different types of basic and medium-end products such as t-shirts, children's wear, ladies' tops, bottoms, jackets, polo shirts, tank-tops, trousers, cargo trousers, skirts, swimwear, hoodies, leggings, medical tops, bottoms and socks.

4. Changes in Ownership Structure and Management Practices in the Sample Enterprises

The structure of ownership and management of RMG enterprises have experienced modest levels of changes over the years. The RMG enterprises have been further firmed up, as family-based private limited companies with substantive role is likely to be played by second and third-generation family members. About two-thirds (65 per cent of total enterprises) of the enterprises are owned by private limited companies, followed by sole proprietorship companies (19 per cent). There is almost no change in the share of public limited companies (3 per cent). These family-based private limited companies are however, limited to a single family. In most cases, there are no independent directors in the company boards. Hence, the management and operational decisions of the companies are still decided by the members of these families. As the sector progresses towards maturity, the role of groups of companies in the RMG sector is becoming prominent—these groups comprise subsidiaries of both RMG and non-RMG enterprises of different categories. The number of subsidiaries under these groups vary—about 53 per cent of these enterprises belong to companies that own about 2 to 4 RMG enterprises, and 88 per cent of the enterprises have 1–5 non-RMG enterprises. Such an ownership structure indicates that more and more RMG enterprises are able to take advantage of its subsidiary position, particularly in terms of cross-subsidisation of various costs in order to retain their competitive edge in the market.

The RMG enterprises are increasingly moving towards corporate practices, owing to increasing levels of delegation of authority that is being shifted to the management. The directors are delegating the enterprise-level authority of production planning, target setting and workers' grievances to the general managers or the heads of the factories. Over 80 per cent of the General Managers (GM) mentioned taking decisions about above-mentioned issues. While the manager's role is still limited in the area of price negotiation, the participation of managers in price negotiation is increasing, as mentioned by 40 per cent of the GMs. We assume that delegation of authority to the managers at the factory level is mainly driven by 'push factors'. With the rise in family businesses as well as increasing presence of second-generation family members in the businesses, the management structure is likely to be more corporatised in the coming years.

The management of RMG enterprises is getting bigger with their rising operation. On an average, the number of senior and mid-management staff per factory is about 41.5 percent higher than that in 2012. This rise is mostly attributed to the rise of mid-level management staff, which increased by 51 per cent, while senior management staff has increased by only 4.1 per cent. Given the rise of management-related activities including workplace safety, security-related compliance, issues related to industrial relations and the pressure to be cost-competitive— enterprises have recruited more staff at the mid-level. However, the management professionals are not adequately equipped to handle such responsibilities. About 51 per cent of the managers have a post-graduate degree, which is impressive compared to managers of other countries. On the other hand, one-fifth of the managers who did not complete their bachelors/undergraduate level. Poor academic records of were more common among managers working in small and medium-sized enterprises. There were attempts to mitigate this constraint by organising training for the staff with lacklustre academic records. However, recruiting more foreign staff in various management and professional positions indicate that the local management staff are increasingly less capable of handling complex production and operation-related issues. About 13 per cent of the enterprises were reported to have foreign staff a large part of these staff members are known to be working in large enterprises (47 per cent of large enterprises). Foreign staff members are higher in number among woven enterprises in comparison to knit enterprises— about 19 per cent of woven enterprises and 10 per cent of knit enterprises have foreign professionals in their factories. Competent, well-trained and skilled management professionals are not being supplied by local management schools. If this situation is not dealt with, dependence on foreign professionals is likely to persist or increase in the coming years.

The RMG enterprises are not fully prepared with new forms of operational practices with regard to use of technologies, production process, merchandising and marketing. With a view to adjusting with complex forms of production, pressure on time and cost, new and specialised departments need to be introduced in the factories. About 76 per cent of group and 24 per cent of non-group enterprises have industrial engineering (IE) departments; most of the enterprises have introduced this department during the last 1 to 4 years. About 69 per cent of the enterprises maintain daily communication, while another 24 per cent of the managers mentioned about more frequent (e.g. hourly) communication with the IE department. A majority of the firms have a 3 to 6 month business plan—about 43 per cent of the enterprises each have a production plan of 3 months. Few enterprises have longer-term production plans (over 6 months to more than a year). Overall, the factories in Bangladesh have been working in shorter contractual arrangements with limited predictability about production orders and financial flows, which pressurises the firms to make long-term plans for enterprise development. The mode of taking orders has been changing over the years. A growing number of enterprises has been taking orders through the online platform (28 per cent) mainly by large-scale enterprises as well as through their own websites (10 per cent). Given the rise of online-based transactions through various online platforms such as Amazon and Alibaba, suppliers of apparels need to invest in order to be compatible with the global demand. Bangladeshi entrepreneurs are not fully ready to take advantage of these online-based markets. Companies need to invest in infrastructure development (installation of software) and ready for on time delivery etc. Enterprises are still taking excess orders and trying to accommodate the extra burden of work in-house; this is also found in case of factories working with brands and buyers. Among those dealing with excess orders, about 40 per cent complete the work by outsourcing within the group and about 31 per cent coordinate with other production orders within their factories, while 17 per cent manage the additional orders by increasing the work intensity or by doing over time.

In case of improving cost management, factories put emphasis on lower employee turnover (91 per cent), training initial workforce (86 per cent) and cross-training employees (77 per cent). Despite various efforts in reducing employee turnover, on an average, about 5.3 per cent of the workers were found to have resigned every month. Female workers were more likely to leave than male workers. This indicates a new trend of mobility and replacement, where more female workers leave their

current workplaces compared to their male counterparts. A part of this mobility is related to better opportunities through better access to information about jobs. Unless workers' retention is not linked with adequate financial incentives which would address the family concerns, factories would lose their workers, which may affect their overall output and cost. Factories are constantly working to control the production cost. Major activities undertaken by enterprises for controlling costs include waste reduction (86 per cent), elimination of excess inventory (84 per cent), using warehouse and distribution systems (78 per cent) and elimination of unnecessary production features (69 per cent). There is not much variation between large, medium and small enterprises in case of major activities for controlling costs.

The present study measures the management performance of sample enterprises by using the standard methodology of the world management survey. Large enterprises are better managed compared to medium and small enterprises—these enterprises are 14 percentage point more efficient compared to medium-sized enterprises and 21.9 percentage points more efficient than small enterprises. Overall, there is a lot of variation in the management practices between enterprises. There is locational variation in management practices—enterprises operating in Chittagong and Narayangonj are behind those of other regions, such as Gazipur. Factories under contractual arrangements with brands and retailers have performed better than those with contractual arrangements with buying houses and mixed nature of contracts. The former is about 6.2 and 3.7 percentage points better than those having contractual arrangements with buying houses and mixed of brands and buying houses.

Identifying factors responsible for management practices through regression analysis reveal that enterprises which are subsidiaries of groups of companies (4.9 percentage points higher), have trained human resource managers (2.9 percentage points higher) as well as foreign staff working in factories (4.6 percentage points higher) and thus, made significant contribution to the management practices of RMG enterprises. In another regression, it is revealed that better-quality management such as trained mid-level management professionals and foreign staff in the enterprise, made significant contributions to employers' margin.

5. Technological Changes in RMG Enterprises

A positive relation was observed between the size of an enterprise and the number of products it produces—small and medium-sized enterprises produced mainly two to three major products (32–35 per cent) while large enterprises focused on three to four major products (41 per cent). Domestic value-addition of apparel enterprises is still at the modest level, with only 37 per cent of the raw materials being domestically produced. The volume has been increasing over time and was up by 4 percent between 2012 and 2016. The knit sector continues to contribute more in domestic value-addition because of the backward linkage composite textile unit (about 59 percent of raw materials were procured domestically in 2016, which is a 6 per cent increase from 2012). In contrast, the woven sector has usually contributed less in domestic value-addition and has been decreasing over time (declined by 1 percentage point). This decline is mainly attributed to lesser use of domestic fabric vis-à-vis their total requirement and lesser use of accessories unlike that of the knit sector. This contrasting scenario of domestic raw material use needs to be examined from the perspective of development of strong backward linkages in the country.

With the rise in productivity and efficiency by using multi-tasking and specialised machineries, the use of machines and workers in production lines is likely to decline. Unlike the past, factories were found to have used less workers per line. The highest number of operators working in a line was found in Chittagong (67.6 operators) while the lowest numbers were in Narayangonj (48.3) and Gazipur (44.4). Enterprises are increasingly putting emphasis on the reduction of cost and time through better production management.

Sample enterprises are widely diverged in technology use—about 21 per cent of the sample enterprises were found to be ‘advanced’ in the use of technology but another 16 per cent of the enterprises were found to be lagging behind (‘low’) in technology use. A large number of enterprises were found to be using technologies which are in between these two categories. Overall, there has been a difference in technology use between different categories of enterprises. Factories across the board have been using basic machineries based on their requirements. In contrast, a wide variation exists between enterprises in case of using advanced machineries and technologies. It is important to examine whether a technologically laggard position would have adverse impacts on the growth of knit enterprises in the long run.

Most of the enterprises lack the facilities for functional upgrading. Only 21.7 per cent of the enterprises have mentioned that they have facilities for new design development. About 53 per cent of the large enterprises have mentioned about that facility while it is available in 23 per cent of the medium-sized and 16 per cent of small enterprises. Similarly, factories are lagging behind in the development new technologies, with only 16.4 percent of enterprises in our sample developing new technologies. Overall, Bangladesh’s entrepreneurs do not focus on functional development. There is potential for greater investment in these segments of functional upgrading, particularly in collaboration with brands.

Technological advancements have different kinds of implications on labour use in the RMG enterprises. Technological upgrading contributes to reductions in the use of labour— the reduction of capital–labour ratio is higher in woven enterprises (-14.4 per cent) compared to that in knit enterprises (-3.1 per cent) which portrays a higher technological upgrading in woven enterprises vis-à-vis that of knit enterprises. In case of enterprises of various sizes, medium and small enterprises have experienced a reduction of capital–labour ratio, with the exception of large enterprises. Overall, technological upgrading contributes to reductions in the use of labour. Since factories having advanced technologies are likely to be more productive and more efficient compared to other factories, hereby making them more competitive—this decline may not affect the overall demand for labour if the factories continue expanding operations. All categories of enterprises have experienced higher levels of growth of workers per year, indicating that technological advancement is yet to be considered as labour displacing. However, the growth of workers in factories experienced a higher level of technological advancement compared to those with modest levels of technological progress. In fact, the growth of labour was slow in factories with low levels of technologies.

An analysis of efficiency data reveals that sample enterprises’ line level efficiency is 58.4 percent, with a standard deviation of 0.21. This portrays an improvement of line efficiency of RMG enterprises over time, although the efficiency is lower compared to that of other competing countries. Woven enterprises are more efficient compared to that of knit ones (3.1 per cent more efficient), which indicate their comparative advantage in terms of using technology, better management and other issues. The females are ahead of males in terms of level of efficiency (by about 0.29 per cent). It was found that upper-grade workers, particularly senior operators, are more efficient than mid and low-skilled workers (operators and assistant operators). The higher the level of academic attainment, the more workers are efficient—the gap of level of efficiency between workers who passed HSC and above, with those of workers who passed SSC, JEC, PEC and illiterate are 11.4 per cent, 13.9 per cent, 22.7 per cent and 26.2 per cent respectively. The level of efficiency increases if the workplace is free from health hazards such as dust or waste. Workers working in non-hazardous working conditions are 24.6 per cent more efficient compared to workers working in less clean environments; similarly workers working in less noisy and dusty places are 14.9 per cent and 10.8 per cent respectively are more efficient compared to those working in noisy and dusty places.

6. Decent Work in Sample Enterprises

The decent work-related issues have experienced diverse nature of changes over the years—a part of these changes are structural and institutional. However, some of the issues did not experience any changes. Not all of these changes can be attributed to various reforms undertaken in the post-Rana Plaza period. The changes in the structure and composition of the workforce in the RMG sector are major issues in the context of employability. In 2016, the average enterprise employed 1,363 workers—this was 8.5 per cent higher than that of 2012 (1,016 workers). Worker composition in the garment sector has experienced changes over time—the percentage of female workers has reduced from 58.4 per cent in 2012 to 53.2 per cent in 2016. Female employment still comprises a higher share in woven enterprises compared to knit enterprises. Male employment is increasing in large and small enterprises. Male workers comprise 31 per cent of total employment in large enterprises. This was only 28 per cent in 2012. Interestingly, the share of female workers are relatively higher in Narayangonj and Chittagong (76.6 per cent in total employment). This is partly because most enterprises based in Chittagong are woven enterprises. However, the female-led characteristics of the garment industry have been fading in recent years.

No major change has been observed in workers' biometric information such as workers' age, marital status, family-size and earning members. The average age of workers is 24.9 years, almost the same as a decade ago (Rahman *et al.*, 2008). The marital status of workers did not change much—about 67 per cent of the workers are married. Female workers (70 per cent) are more likely to be married than male workers (63 per cent). There is no major difference in marital status between workers in knit and woven enterprises. A growing number of garment workers—90 per cent of the female workers and 72 per cent of the male workers—live with their families. Irrespective of the size or location of their factories, female workers tend to live with their families more often compared to male workers.

Retaining such a high share of married workers in an increasingly complex production process indicates that factory managements value workers' experience and skill despite their marital status. Recruitment of juvenile and adolescent workers (less than 18 years old) has been declining (about 0.6 per cent). The share of female workers has decreased in lower and lower-mid grades—Grades VII, VI and V, mainly in large and small-scale enterprises. The share of female workers in grades III and IV has increased for these two categories. Overall the composition of workers has gradually shifted from being overwhelmingly female-led to a moderately female-led employment structure. A growing share of workers employed in lower-middle grades is reflective of the rise in skill composition of workers in the RMG enterprises. Female workers are still lagging behind their male counterparts in the upper grades, mainly because of their poor educational attainment, low levels of skill-orientation as well as various social obligations.

Workers' educational attainment has improved over time but remains low on average. About 96 per cent of sample workers have completed some level of education compared to 90 per cent in 2006; about 38 per cent of workers have completed primary education and 31 per cent has completed secondary education. Only 1.8 per cent of workers completed higher secondary education. Female workers are still not as educated as male workers. Being better educated gives male workers an advantage when getting jobs in terms of learning complicated techniques and getting promoted to higher grades. The level of aspirations of female workers to become supervisors is low due to increased responsibility, long working hours or insufficient salaries (including loss of over time benefit for not being eligible).

Although workers are supposed to receive the 5 per cent annual increment if they work for one year in a particular factory, a section of workers did not enjoy the benefit. During the time of the survey (2017) sample workers' average wage (without other financial benefits) was Tk.6637 per month (US\$84.2). It is important to note that workers do not receive wages as stipulated in the circular of the Minimum Wage Board of 2013. Grade VII workers have been receiving Tk.329 less than their stipulated

amount per month. A large section of workers did not receive their payment (including over time payment) as per the stipulated timeline. Only 53 per cent of enterprises pay wages within the first week of the month. More importantly though, these wages are not adequate to ensure basic necessities, covering only 49 per cent of their total expenditure leading them to depend on other means of income. Overtime hours have reduced from earlier, and this is within the stipulated limit (2 hours per day). In recent years, slow growth in export reduced the demand for excess work. Interestingly, workers are willing to work overtime during working days and holidays because wages are not enough to meet family expenses. Most workers have to support their families with a deficit or only a modest surplus in household expenditures, with only 28.7 percent of workers in this category.

In terms of safety and security, most workers have expressed their satisfaction about workplace safety and security. Almost 100 per cent of the workers feel safe with regard to fire, electrical and structural hazards. This corroborates with their familiarity with emergency exits, members of emergency response teams and regular fire drills. About 90 per cent of the workers knew about safety measures available in the factories. Most of the workers noted that there is a safety committee at their factories (88 per cent) and these committees have been working. This corresponds to their familiarity with emergency exits, emergency response team contacts and regular fire drills. However, factories are still reluctant to improve other facilities including day care, female washrooms, treatment facilities, sitting and meeting facilities and training and learning facilities, among others. The quality of these services remain poor in most of the cases. While sexual harassment has decreased as a result of increasing awareness of workers and management, harassment is likely to remain a major concern. Workers expressed mixed reactions about access to written contracts, service books and experience certificates, among others.

The problem of sexual harassment in sample apparels enterprises although exists in different forms but it is found to be difficult to quantify in full due to lack of proper reporting of the incidences and lack of clarity among the survey respondents particularly workers regarding the sexual harassment as per the directives of the Supreme Court in 2009 and other related laws. The survey asked the workers about physical violence, verbal abuses and denouncement before other workers. About 93 per cent of workers did not hear about outright physical sexual harassment at their current factory. About 5 per cent of the workers claimed it was a rare occurrence; less than 1 per cent claimed that they themselves have faced outright physical sexual harassment. However, about 3.6 per cent of workers mentioned that they knew about instances of outright physical sexual harassment involving other workers at the factory. A part of harassment is observed in sample enterprises as 'disguised production management' in the form of verbal reprimand, denouncing before other workers along with financial punishments (e.g. losing performance bonus and deducting a share of monthly wages etc.). About 11 per cent of workers faced punishment for failure to meet the work targets and for other non-compliances. The extent of punishment is higher for female workers compared to that for male workers (11.4 per cent vs. 9.63 per cent respectively). Among different forms of punishment, verbal abuse comprises the highest share followed by denouncement before other workers.

Workers' organisations continue to remain in either weak or non-functional states. After the amendment of labour laws, workers' representatives in the participation committees have been determined by election. Despite ensuring their presence in the factories, the effectiveness of these committees remain in a weak state. Factories working with brands are more likely to have desktop computers (85 per cent) compared to those working with buying houses (between 58–78 per cent). In contrast, trade unions in garment factories are almost non-existent—97.5 per cent of the factories do not have trade unions. A separate case study on problems of institutionalisation reveals that the standard operating procedures as introduced in case of the registration of trade unions partly facilitate the process. However, formation of trade unions has faced a number of obstacles beyond the usual

process, which needs to be addressed. Even the offices responsible for registration are not out of question in dealing with corruption related issues.

7. Estimating Enterprise Level Social, Economic and Gender-embedded Upgrading

This study attempted to estimate the level of benchmark condition needed for the upgrading of RMG enterprises of Bangladesh, and using the data, tried to untangle the interrelationships among economic and social upgrading. The results have been mixed; firstly, most RMG enterprises lag behind in economic upgrading; and this is due to their lagging behind mainly in terms of the components of economic upgrading, especially functional upgrading. In other words, most factories belong to the OEM category, and they have no evident facilities that would enable them to reach the next level in the value chains (ODM level or OBM level); hence, many have the lowest possible scores in functional upgrading. However, factories have made progress, mainly in social and gender-embedded upgrading; this is mainly due to various remediation activities undertaken by the factories in the past five years. Large enterprises have outpaced medium and small enterprises in terms of economic upgrading, mainly because of their advantage in product and process, and partly in functional upgrading. However, a section of small and medium-sized enterprises have also shown progress in this regard.

The exactly opposite picture can be seen in terms of social upgrading, in which factories have made significant progress, primarily because of large investments in fire, electrical and structural safety over the last five years. There is little variation among different categories of enterprises in safety-related issues. However, data shows the absence of different elements of freedom of association in those factories, as many still do not feel comfortable with giving workers the right to form trade unions that would help in the social dialogue process. Enterprises having contractual arrangements mainly with brands/retailers are ahead over those with contractual arrangements with buying houses and those with both brands and buying houses. Also, there is geographical variation in the benchmark condition of upgrading, and such spatial variations of improvement of upgrading necessitates more investment in order to ensure a balanced level of upgrading in all areas. So, one underlying message from the analysis of the indices suggests that there is an inherent imbalance in the upgrading levels, as social and gender-embedded upgrading is apparently more advanced than economic upgrading.

Secondly, the tests of the three hypotheses have found some indications of a positive effect of social upgrading on economic upgrading; however, the effect of economic upgrading on social upgrading as well as the relationship among gender-embedded upgrading and economic upgrading is still not clear, as the tests show no significant trends. Even the regression analysis shows weak association of profits with wage costs and remediation costs (two indicators of improved working conditions). Hence, while a weak positive correlation between investment in compliance for social upgrading and level of productivity has been found, other relationships have not been found to be significant. Tests of other secondary hypotheses have not provided clear cut results as well: prices received for manufacturing products have little impact on enterprise's upgrading, while gender-embedded upgrading does not show any significant relationship with upgrading capacity and different variables. Overall, there is no strong association between social and economic upgrading in the RMG sector of Bangladesh, and this could be due to the fact that the efforts to improve the working conditions in the garments factories of Bangladesh are basically considered as investments by the factory owners, and would require a little bit of time before it takes full effect.

8. Conclusion and Policy Recommendations

The overall observations of this study are as follows. First, an institution-driven upgrading targeting social issues, which had been undertaken over the last five years, have yet to establish its natural link with economic upgrading and less so with gender-related upgrading. In that consideration, an unbalanced upgrading has taken place with limited focus on economic and technological issues,

particularly those in small and medium-sized enterprises. Such an unbalanced upgrading is likely to have limited positive implications in terms of a firm's overall competitiveness in the long run, particularly for those which are lagging behind. Hence RMG enterprises need to undertake substantive investment for economic upgrading in case of advanced machineries, design and product development, new departments, non-cotton textiles and development of IT based merchandising and marketing facilities. A 'technology upgrading' fund could be developed to facilitate enterprises in undertaking those initiatives.

Second, both economic and social upgrading in RMG enterprises are not necessarily location-neutral. There is spatial variation in case of upgrading—enterprises located in clusters like Chittagong and Narayangonj are found to be behind in economic upgrading and partially in social upgrading compared to that of other clusters such as Gazipur, Savar Upazilla and Dhaka etc. Hence, enterprise development initiatives are required for those located in clusters such as Chittagong and Narayangonj. Such initiatives should focus on management, technology, employability, skill development and networking with brands and buyers.

Third, the structure of RMG enterprises gives an indication that a sizable share of enterprises have the potential to 'take off', provided that they improve in terms of technological readiness, management practices, workers skill, particularly that of female workers, among others. At the same time, there is apprehension that without ensuring a balanced level of upgrading, a section of enterprises (small and enterprises outside the group) would find it difficult to maintain their competitiveness. Hence, both balanced and targeted approaches will be required with a view to addressing specific needs of enterprises at different levels of upgrading and development.

Fourth, the RMG sector needs a 'gender-embedded upgradation strategy'. Taking this into account, the sector needs investment on female education, training on new machineries and technology, specialized skills for working in upper grade skill-oriented jobs, awareness about rights and entitlements and awareness about harassment and their remedies. Besides, targeted initiatives are required for ensuring opportunities for women in mid- and senior level management and professional positions. Making the workplace free from any kinds of harassment and violence particularly those of the female workers should be a major initiative of the gender-embedded upgradation strategy.

The specific observations and recommendations are as follows:

8.1 Entrepreneurship Development

An efficient and functional corporate governance model in family-based enterprises/groups need to be established. Efforts should be made gradually to separate the involvement of the board in day-to-day management and operational matters. The role of the independent directors in the family-based corporate enterprises need to be devised, with a view to getting independent perspectives from outside the family. BGMEA and BKMEA should develop 'model' cases of corporate governance on family-based enterprises and should promote these among their member factories. Moreover, associations should undertake special initiative to convert the proprietorship-based enterprises into private limited companies.

The scopes and responsibilities of the subsidiaries and the mother companies need to be distinguished. In this connection, necessary amendment could be undertaken under the Company Act 2013 by including separate clauses and provisions on group of companies and its subsidiaries related to roles and responsibilities of enterprises, with regard to ownership structure, management and operation related issues. The cross-country experiences would be helpful in formulating related provisions on process of documentation, reporting system and disclosure mechanism.

8.2 Management related Issues

The corporate management practices in the RMG sector need to be well-structured with proper organogram, job responsibilities and delegation of authority. The service rules for non-production staff should delineate job responsibilities of top, middle and junior management staff. The qualification of the management needs to be earmarked in order to standardise the level of the staff, which may include minimum academic qualification, basic training and level of work experience. A separate salary structure with entitled benefits need to be set for the management staff. The guideline for the recruitment of foreign professionals can be included in the service rules. A blanket nature of recruitment of foreign staff in all sections needs to be checked. The concerned associations should take lead roles in terms of ensuring corporate management practices at the factory level. Taking the precedence of other countries, the associations should formulate a 'model' structure of corporate management for the enterprises. Extensive awareness-building activities need to be undertaken at the enterprise level with a view to promoting standard corporate practices.

Promoting standardised management practices require minimum benchmark standards in academic qualifications and training of management professionals. The association should consider making compulsory about the minimum academic degrees and training for senior and mid-level management professionals such as masters' degrees in business administration, business studies, industrial engineering and human resource management for the position of senior management positions and special degrees/training on industrial engineering, human resource management and compliance management. for the jobs under the department of HR management, compliance and industrial engineering. The associations such as BGMEA and BKMEA are expected to undertake necessary initiatives for effective industry–university collaboration for development of management and other professionals. Given the limited offer of those specialised degrees/training sessions at the national level, the associations should discuss these with concerned authorities of public and private institutes and universities to offer such degrees/training, help develop curricula in line with the requirements of the industry. In this connection, the activities of the BGMEA University of Fashion and Technology (BUFT) of BGMEA and Institute of Apparel Research and Technology (iART) of BKMEA need to be expanded further. Local universities and other academic organisations can explore joint venture initiatives with globally reputed management schools and universities to set up similar facilities in the country.

In order to improve the management level efficiency in Chittagong and Narayangonj, better educated and trained management professionals need to be recruited by the factories located in those regions. Academic institutes located in these regions should be encouraged to introduce customised management degrees/training so that a local-supply base of management-related professionals could be ensured in these regions. Besides, enterprises of these regions need to attract qualified management staff with attractive financial packages and other benefits. The recruitment of foreign professionals needs to be streamlined with a view to providing more scope for local professionals to the same positions. Bangladesh embassies/high commissions in different countries should be taken into cognisance while providing visa clearance to foreign professionals for working in Bangladesh.

8.3 Technology related Issues

A set of targeted fiscal and budgetary measures are needed with a view to promoting technological upgrading of apparel enterprises. The existing fiscal incentives provided to the RMG sector needs to be reviewed and should be redesigned addressing the changing needs of the enterprises, entrepreneurs and workers. First, fiscal incentives should be given to factories for promoting technological development, productivity improvement and skill development of workers and professional staff. Second, a 'technology upgrading fund' needs to be developed with the objectives of promoting technologies, upgrading products, diversifying markets, supporting small and medium-sized enterprises and enterprises located in Chittagong and Narayangonj. Third, a part of the 'technology upgrading fund' should be of a low-interest revolving credit facility for the enterprises in

order to modernise, upgrade and introduce new and advanced technologies and machineries in the garment factories. Fourth, the fund could be used for investment in backward linkage diversified textiles (e.g. non-cotton yarn and fabric), design development and brand development. Fifth, low interest credit facility from the 'technology upgrading fund' needs to be made for enterprises located in Chittagong and Narayanganj as well as small-scale enterprises who are interested to invest in state of the art technologies, machineries and development of design centres. Sixth, BGMEA and BKMEA should maintain a comprehensive database, which would include enterprise-level information on production capacity, products produced, use of machineries and technologies, skill composition of workers, major export markets and composition of management professionals etc. This database could be used to devise tools for providing fiscal support to the targeted enterprises. However, the promotion of technological advancement in RMG factories needs to be done in such a way that it would take into account the level of job displacement due to the use of advanced machineries and technology.

8.4 Productivity and Efficiency-related Issues

Promoting technological advancement in RMG factories need to be done in such a way that it would take into account both improvement of productivity, efficiency as well as ensure modest job displacement. It is important to follow how much jobs would be replaced by the use of machines in specific sections and how much additional jobs could be created through the use of better technologies in the factories. Each enterprises will inform to the associations about the changes in machinery use and labour use pattern in their factories.

Better academic attainment and training to advanced machineries, particularly to female workers, needs to be ensured. A minimum benchmark of academic attainment could be set up for the entry-level workers in garment factories. This benchmark level could be passing the junior secondary school certificate (level eight) for entry-level workers. Training for workers, particularly female workers in different kinds of machines need to be made mandatory. There should be training facilities at the enterprises to train the workers about different machineries and technologies. BGMEA and BKMEA should set targets for factory management to attain the training levels for workers in each factory. The government should provide financial support to factories to provide technical training for workers.

8.5 Decent Work: Employability

Regular monitoring of the changes in the composition of workers in the garment factories is very important, particularly focusing on changes in composition in terms of gender, grades, movement from one factory to another factory, working hours including overtime and leaves etc. Since two national biometric databases of RMG workers have been prepared at the BGMEA and BKMEA, these databases need to be properly used and updated on a monthly basis. Based on the databases changes in the structure and composition of workers could be monitored properly. Instead of managing by the associations, these biometric databases need to be managed and monitored by a tri-partite committee in order to ensure transparency in the database management.

The associations should promote the standardisation of workers' basic qualification and skills with a view to ensuring long-term development of the sector. In this connection, DIFE in collaboration with the associations, should fix the minimum educational qualification for workers (for example, to pass the junior secondary level to be eligible for entry-level jobs). In order to create more job opportunities for female workers, DIFE and associations should fix a minimum proportion of workers under each grade to be female workers, particularly in middle and upper grades (grades 3 to 5).

In order to ensure skill upgradation of existing workers, each factory must have its internal training facilities for workers, where workers will get training for different machines, compliances and other necessary issues. The associations should set standards for factories to be complaint with regard to providing training to workers and this should be monitored by the associations on a regular basis. Similarly, the promotion criteria for workers should be fixed based on skill and performance. Workers'

working hours should be differentiated properly between mandatory working hours and overtime working hours. The overtime working hours should be made voluntary and to be decided by the workers as per his/her will. On the other hand, factories may also think of better management of work which could reduce the cost for overtime hours for workers.

Female workers, especially those who are currently working in the factories and the prospective workers for the garment sector, need special care about skill development. Female workers need to be trained on new and advanced machineries on a regular basis. Necessary awareness building activities need to be undertaken among the factory workers, particularly female workers about the changes in the machineries and technologies and consequent changing demand for labour. Department of Labour along with worker participation committees, trade unions and worker-related NGOs should undertake necessary initiatives in this regard.

8.6 Decent Work: Wages and Livelihood Issues

The proper enforcement of workers' minimum wage announced by the Minimum Wage Board, and should be ensured at the enterprise level; in this case, DIFE, DoL and associations should monitor the level of enforcement at the enterprise level. In case enterprises are not complying with the laws, necessary punitive measures should be undertaken against those enterprises. Workers' organisations such as participation committees and trade unions need to follow up the enforcement of minimum wage-related provisions properly at the enterprise level and they should discuss with the factory management in case irregularities are noticed, and in case of enforcement of minimum wage-related provisions. If the factory management is reluctant to take the necessary measures, workers organisations should report the irregularity to the DIFE and DoL. Besides, DIFE/DoL should introduce 'apps' for workers to communicate with the authorities about different irregularities including those related to workers' wages, leaves and other financial entitled benefits. Given the limited income, workers need non-wage support in order to accommodate the inadequacy in their wages. Factories may introduce zero-interest credit facility to support workers for their household needs. The private commercial banks could introduce customised financial products targeting the garment workers under which workers could open salary accounts, deposit their savings and get credit from the banks. Considering the poor housing condition of workers, the housing projects in major worker-clusters need to be developed by the private sector/individual land owners. In this case, the commercial banks/public or private house-building financial organisations could extend the necessary credit facility to the land owners for building multi-storied apartments at a low cost. Besides, the government in collaboration with NGOs should arrange more facilities for better education for the children of workers and specialised health/medical services for workers and their families.

8.7 Decent Work: Workplace Safety and Security

Local public authorities need to upgrade their inspection process in the following areas: harmonising inspection guidelines with that of international ones; setting up standard operating procedures (SOP) for monitoring and inspection; creating inspection-related databases for better monitoring; ensuring transparency in the inspection process; and recruiting skilled professionals and providing them with the necessary training. Besides, a number of initiatives need to be undertaken in order to develop sustainable inspection processes which include: a) introduction of broad-based consultation for finalising National Action Plan; b) implementation of integrated SOP for better transparency and accountability; c) reviewing draft National Inspection Strategy; d) ensuring effective functioning of the Coordinating Body; e) developing a new institutional structure for monitoring and inspection; and f) developing a 'Remediation and Relocation Fund'.

8.8 Decent Work: Workers' Rights and Workers' Organisations

It is important to create an environment for developing trade unions, which requires building trust between factory management and workers. An initial step for this is to make the participatory committees functional with a view to creating a trained and educated workforce in the factory that could ultimately take the lead in the trade unions. In this context, all kinds of logistical, technical and

financial support from the factory management needs to be ensured to make the participation committees functional. The WPCs and trade unions and national-level workers' federations should work jointly with factory management in order to prepare the workers and members working with participation committees for achieving an environment for developing trust-building trade unions at the factory level in the long run.

A. Analytical Frame, Methodology and Structure of Sample Survey

1. Introduction

Bangladesh's export-oriented apparels sector has experienced major restructuring and reforms with a view to addressing the weaknesses and challenges concerning the poor governance of the value chain that was exposed through the Rana plaza tragedy in 2013. A major drive of those initiatives is to socially upgrade the apparel sector of Bangladesh by ensuring workplace safety, employability, decent living and workers' rights. Traditionally, social upgrading in the value chain is considered to be a set of issues which were partly addressed through economic upgrading and mostly addressed through regulatory measures. The nature of intervention that has been undertaken over the last five years both by the public sector and private sector stakeholders during the post-Rana plaza period in Bangladesh's RMG sector depicts the possibility of setting interlinkages between institutional aspects and market-related aspects under the framework of competitiveness in the apparel value chain.

Such interventions and initiatives have developed a new model of development of the value chain, which may be called 'the Bangladesh Model'. While the short-term impact and implications of these initiatives are positively appreciated, the scenario in the long term of these initiatives remains ambiguous. The stakeholders of the apparels sector value chain have been waiting to know the long-term implications of these initiatives, most importantly, whether it was possible to ensure the sustainable growth of production, export and decent jobs through these initiatives. Moreover, stakeholders of the global value chain (GVC) are interested to appreciate the possible scope for replication of these initiatives in apparel supplying countries. Hence, there is a strong demand among the stakeholders for appreciating the level of social and economic upgrading at the enterprise levels that have taken place during the post-Rana Plaza period, and their potentiality in the sustainable development of the apparel value chain.

The knowledge base on social and economic upgrading of Bangladesh's apparels sector value chain has improved due to constant interest on the progress made under the different initiatives. While the knowledge base helped to appreciate the macro and meso level development of the apparels sector, but this would not be able to appreciate the micro level changes particularly at the enterprise level. Hence, there is a strong demand to understand the social and economic upgrading in the apparel enterprises of Bangladesh. The present study focuses on the changes in social and economic issues at apparel enterprises during the post-Rana plaza period, possible interlinkages between economic and social upgrading and their implications on enterprise-level performance in terms of efficiency, profitability, decent employment and workers' rights. The study is the first of its kind, being based on primary data that was collected from a nationally representative set of sample enterprises and workers of the apparels sector of Bangladesh.

2. Literature Review: ‘Economic and Social Upgrading of Firms in the Buyer-driver Value Chain: A Critical Review’

2.1 Introduction

Over the past few years, stakeholders have changed how they perceive competitiveness in buyer-driven GVCs. A number of industrial disasters, especially in the fashion industry in the last decade, have raised questions about the sourcing practices of buyers and brands. This has, in turn, pushed them to show increasing commitment towards socially compliant sourcing practices (USFIA, 2017). Hence, the question of how improvement in workplace safety, workers’ rights and their entitlements are to be incorporated with the commercial interests of manufacturers at lower levels of buyer-driven value chains has become a key issue of discussion.

Theoretically, the primary motive of any firm is profit maximisation¹; hence, firms have a general inclination towards ‘economic upgrading’. This is a ‘process’ through which firms ‘move from low-value to relatively high-value activities in global production networks’ (Gereffi, 1999) conditional upon higher risk-adjusted returns from upgrading (USAID, 2016). In a buyer-driven value chain, economic upgrading is conditional on the terms and conditions set for production at the buyers’ end. On the other hand, country-specific rules and regulations, level of enforcement and sourcing market conditions regarding social issues determine the level and associated costs of social upgrading of the manufacturers. This, in turn, has its own effect on profitability and the competitiveness of firms. The question is whether economic upgrading would ultimately lead to social upgrading. Researchers are divided on this issue. There is a sizable literature on the components of social upgrading, such as wages, working conditions, freedom of association and their impact on profitability and productivity, which serve as preconditions of economic upgrading. However, the literature on impact and implications of firm-specific characteristics on the interrelationship between economic and social upgrading are still not large in number.

In this context, this study aims to critically review the available literature from the perspective of a firm with detailed analysis of the theoretical and empirical literature related to the components of economic and social upgrading and their effects on firms. The review would concern itself solely with issues related to manufacturers who operate in the lower levels of the buyer-driven GVCs, as it aims to uncover the complex interrelationships among the lead firms who set the standards and act as the principal buyers. This review would cover governance from actors inside and outside the value chain, and firm-level characteristics of manufacturers which shape the social and economic upgrading of the manufacturers. Hence, the study broadly examines the recent literature on ‘economic upgrading’ and ‘social upgrading’ at the enterprise level, their components and determinants. At the same time, it aims to arrive at a conclusion about the complexities of these two issues, and identify major points of reflection for further research.

2.2 Different Levels of Upgrading in the Buyer-driven Value Chains

2.2.1 Economic Upgrading and Factors Responsible for Economic Upgrading

Economic upgrading is defined as the process through which firms move from low value-added to high value-added activities or value-added innovation (Gereffi, 1999; USAID, 2006). There are two different ‘schools’ within the GVC literature that deal with the subject of economic upgrading: the *internationalist approach* mainly analyses GVCs through a macro perspective, while the *industrialist approach* adopts a micro founded framework.²

¹ See Samuelson and Nordhaus, 2009, for details

² The *internationalist* school consisting of the North-American school on GVCs, represented by Gary Gereffi, Kaplinsky, Gibbon etc.; and the *industrialist* approach, represented by Humphrey, Schmitz, etc. (Morrison, Pietrobelli and Rabellotti, 2008).

While there might be different approaches, there is a general consensus on the types of upgrading in the value chain (e.g., Barrientos, Gereffi and Rossi, 2010; Humphrey and Schmitz, 2002; Barrientos *et al.*, 2011, etc.), which are:³ product upgrading⁴, process upgrading⁵, functional upgrading⁶ and chain upgrading.⁷

Different factors have different effects on economic upgrading. Firm level economic upgrading is affected by inter-firm heterogeneity. Lall (1992) suggests that firms cannot be assumed to be operating on a common production function, and technological knowledge is not equally shared among firms or easily transferred across firms; the adoption of new technology requires skills, effort and investment. Thus, different levels of technological knowledge accrued by different types of firms are the vital determinant of economic upgrading.

The available literature on the factors leading to the better performance of firms in value chains (leading to economic upgrading) identify learning-by-doing by entering export markets, technology adoption, and the transfer of knowledge down the value chain as primary determinants. According to Shepherd (2013) firms take part in GVCs through exporting because of each firm's 'productivity-based self-selection' (i.e. firms decide on exporting based on productivity and costs) and 'learning-by-doing' (i.e. learning new techniques from entering the export market), implying a two-way relationship. This view, however, is contested by Milberg and Winkler (2013), who suggest that participation in international markets through exporting does not guarantee better performance. Bernard and Jensen (1999) emphasise 'self-selection', focusing on the fact that better and more efficient firms take part in the export markets. Van Beisebroeck (2005), De Loeckher (2007), Brambilla *et al.* (2012) focus on the 'learning-by-exporting' relationship. Studies such as Alvarez and Lopez (2005) suggest the presence of both effects, while Haidar (2012) contends that exporting has very little or no effect. Hence, Milberg and Winkler (2013) comments that various studies over different countries and time periods cannot solve the question of whether better and more efficient firms export—or are exporters better and more efficient due to 'learning-by-exporting'⁸. Wagner (2007), from a detailed literature review, concludes that exporters are more productive and there is also proof of self-selection, but the evidence does not necessarily suggest that exporting improves productivity. Thus, the available literature does not provide a clear indication of whether more productive firms participate in GVCs, or participation in value chains increases productivity.

³ The current review would limit itself to broadly the first three types, as it is only concerned with upgrading along the value chain. The fourth type involves shifting towards a whole new value chain altogether.

⁴ It is the introduction of 'advanced types' of products (Barrientos, Gereffi and Rossi, 2010) and quality improvement of products for generating higher value-added and higher revenue (Salido and Bellhouse, 2016).

⁵ It is the 'transforming of inputs into outputs more efficiently by production reorganisation or technological improvement' (Humphrey and Schmitz, 2000).

⁶ It involves changes in the mix of activities of firms in order to perform higher value-added tasks. The major levels of functional upgrading (in the case of apparel manufacturers) are Cut, Make and Trim (CMT), Original Equipment Manufacturing (OEM), Original Design Manufacturing (ODM) and Original Brand Manufacturing (OBM). Cut, Make and Trim (CMT) = Manufacturers only assemble inputs according to buyers' specifications. Original Equipment Manufacturing (OEM) = Firm undertakes a broad range of activities, commonly known as full package production.

Original Design Manufacturing (ODM) = Supplier completes part of the pre-production process, such as designing or product development.

Original Brand Manufacturing (OBM) = Supplier fully develops products under its own brand name

For details, please see Gereffi and Lee (2013).

⁷ It involves shifting towards more technologically advanced chains (Barrientos, Gereffi and Rossi, 2010).

⁸ For a detailed literature review on this issue, see Wagner (2007)

Adoption of ‘technological capabilities’ or the technological learning and progress at the firm level⁹ may affect economic upgrading. In fact, an empirical study on Chinese firms by Guifu and Hongjia (2009) provides evidence that technological shifting capability has a significant relationship with product upgrading, while technological operating capability and technological shifting capability are both positively associated with process upgrading. Lall (1992) suggests that the adoption of technological capabilities consists of investment capabilities, production capabilities and linkage capabilities.¹⁰ Another important issue for economic upgrading along GVCs is the issue of knowledge transfer, and Bustos (2011) argues that knowledge of new technology can be channelled to firms through trade liberalisation.

Corredoira and McDermott (2014), in their own literature review, suggest that it is not clear how local suppliers can benefit from technological capabilities. Recent research also suggests that suppliers with relatively ‘strong resources’ and ‘absorptive capacities’ are more likely to upgrade by learning from multi-national corporations (MNCs). Their review also points out that many local suppliers generally do not have learning relationships with MNCs, while weak collaboration between firms and backward institutions constrain suppliers in finding alternative knowledge resources.

2.2.2 Social Upgrading

The concept of social upgrading derives from the International Labour Organisation’s (ILO) decent work agenda. Wage, working conditions, freedom of association and occupational safety and health (OSH) are the main components of the work agenda (ILO, 1999). According to the ILO (2016), wages can refer to the price of labour service, workers’ income or to the cost to an employer. On the other hand, ‘working conditions cover many issues—from working time (i.e. hours of work, rest periods, and work schedules) to remuneration, as well as the physical and mental health’ (ILO, 2016). OSH refers to ‘the extent to which workers are protected from work-related hazards and risks’, working hours are defined by the Hours of Work (Industry) Convention, 1919 (No. 1) and the Hours of Work (Commerce and Offices) Convention, 1930 (No. 30) of ILO. Finally, freedom of association refers to the right of workers to ‘form and join’ any organisation, such as trade unions.

Generally, social upgrading consists of measurable standards—quantifiable aspects of workers’ well-being and enabling rights, which includes worker empowerment (Elliot and Freeman, 2003; Barrientos and Smith, 2007). These two concepts are also interrelated: lack of access to enabling rights weakens workers’ empowerment, while measurable standards are generally outcomes of worker empowerment. However, the literature provides no clear direction on how the two concepts are related, since current literature generally focuses on case studies (Salido and Bellhouse, 2016) that measure social upgrading at a particular level of aggregation, namely at the level of the nation (Plank, Rossi and Staritz, 2012), sector (Barrientos, 2014) or firm (Berger, 2005). This restricts applicability and comparability across sectors and countries.

Social upgrading also depends on which level in the GVC the firm is operating (Shepherd, 2013; Shepherd and Stone, 2013). There is a general concept in the literature known as the ‘exporter premium’ in employment, which suggests that firms participating in GVCs employ more workers (Van Beisebroeck, 2005; De Loecker, 2007; Rajan and Rayachaudhuri, 2011; Dai et al, 2011; Breinlich and Criscuolo, 2011). This indicates better social upgrading, with some studies, such as Menezes-Filho and Muendler (2011), reporting that participation in GVCs have a negative effect on exports and employments.

⁹ For a detailed literature review of TC approach with regards to GVCs, see Morrison, Pietrobelli and Rabellotti, 2008

¹⁰ Investment capabilities include skills to adopt technology, design, construct and equip staff, and establish a new facility (or expansion), etc. Production capabilities encompass basic skills such as quality control, operation and maintenance to adaptation, improvement, ‘equipment stretching’ etc., covering process and product technologies. Linkage capabilities refer to skills for receiving and transmitting information, skills and technology.

2.3 Interrelationship between Economic and Social Upgrading

Traditionally, it was assumed that economic upgrading within the GVCs would bring social upgrading with it (Table 2.1). 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). 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 a ‘necessary’ but not ‘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) (Table 1). 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’. 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 was accompanied by social downgrading.

Economic and social upgrading and their interrelationships also vary by type of industry (Barrientos, Gereffi and Rossi, 2010). Low-skilled, labour-intensive industries, such as apparel, are good for ‘ramping up’ output and exports (indicating better productivity and hence better process upgrading). The apparels industry attracts foreign investors, but at the same time is highly buyer-dependent with minimal local linkages, is low value-added and highly affected by buyers’ purchasing decisions. This means that these types of industries generate high quantities of jobs (especially for females), but pay lower wages. Employment is flexible and casual with no fixed working hours, job security or skill improvement. Especially in apparel value chains, fragmented and geographically dispersed production processes are characterised by shorter contract lengths, high supplier turnover, and a higher demand for quality products often without any increase in the contract price. These responsibilities of decent work are being distributed across many actors, who may not be qualified to handle the issues (Pickles, 2012).

Among the case studies on these issues, one is Bernhardt and Milberg (2011), who adopted a ‘parsimonious’ approach to measure the relationship between economic and social upgrading in the apparel, mobile phones, agrofoods and tourism value chains. Based on the results, Milberg and Winkler (2013) suggest that increased employment and declining real wages are commonly observed in the apparel sector data; but overall, excepting some cases, economic and social upgrading seem to have a positive association with each other in the apparels and agrofoods sectors.¹¹

Table 2.1 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 <i>et al.</i> (2014); Ahmed and Nathan (2014); Sarkar <i>et al.</i> (2013); Staritz and Morris (2013); Verhoogen (2007)	Coe and Hess (2013); Bhaskaran <i>et al.</i> (2013); Barrientos <i>et al.</i> (2011); Carr and Chen (2004); Chen <i>et al.</i> (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 <i>et al.</i> (2014); Maree <i>et al.</i> (2013); Plank and Staritz (2013); Barrientos and Visser (2012); Brown (2007); Locke <i>et al.</i> (2007); Plank, Rossi and Staritz (2014); Donald and Humphrey (2004)

Source: Based on literature review conducted for the study

¹¹ Milberg and Winkler (2013), from their analysis of a sample of thirty developing countries, reveal that the ‘connection between economic and social upgrading is weaker than the connection between export growth and economic upgrading’. Studies dealing exclusively with the relationship between economic and social upgrading are not readily available, and among the studies that are available, 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).

The different factors that influence the link between economic and social upgrading include particularities of specific industries, position within the GVC, typology of labour, status of workers, firm size and product mix etc. (Salido and Bellhouse, 2016; Pickles, 2012). 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).

The type of economic upgrading pursued is another determinant. Process upgrading is one of the three types of upgrading, as has been discussed before in this paper. Process upgrading sometimes leads to new technologies which replaces labour, so can negatively affect employment. Hence, economic upgrading has an ‘ambiguous and segmented’ social effect (Rossi, 2013).¹²

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). Theoretical and empirical evidence directly linking the two concepts are difficult to find.¹³

2.4 Economic and Social Upgrading at the Firm Level

Firms operating at the lower levels of buyer-driven GVCs tackle the competing pressures of maintaining quality while lowering costs. Hence, they can choose between a ‘low road’, characterised by economic upgrading and social downgrading, and a ‘high road’, involving both economic and social upgrading. However, those taking a high-road approach risk losing price competitiveness (Barrientos, Gereffi and Rossi, 2010).¹⁴ This compels firms to take the ‘low road’ of industrialisation, leading to various problems for workers. Barrientos (2007) reports that workers in garments factories of Bangladesh are not sufficiently aware of their rights, face occupational segregation and discrimination, wages and gender pay gap, employment insecurity, long working hours, compulsory overtime, lack of childcare or maternity leave, poor health and safety, overcrowding and poor working conditions. Hence, how factors such as collective bargaining and labour rights—a form of economic upgrading—impact social upgrading require further investigation.

2.4.1 Price Competition and Implications for Upgrading

The relationship between economic and social upgrading is complex. This is mostly because of the pricing practices and competition between buyers and brands in buyer-driven value chains. A major challenge for upgrading along GVCs is the buyer firms’ markup—a fixed level of difference of price over average cost. The markup is a function of the ‘the degree of monopoly of the firm position’

¹² There is also the example of the tourism industry, where gains were divided unevenly among formal and informal workers.

¹³ The only indications of theoretical links of some kind from the Porter Hypothesis. Porter (1995) suggests that greater regulation leads to innovation, which helps firms to become competitive. Successive empirical works have tried to prove the hypothesis, and on the basis of a review of related literature, Wagner (2003) suggested that the applicability of the hypothesis depends on a number of factors, such as capital structure and demand etc.

¹⁴ Gereffi (1999) defined firm upgrading to be the process in which firms move to more profitable and (or) more technical complex capital and technologically-intensive economic fields. Hence, the ‘technological capabilities’ approach applied by some studies also need to be considered, because it is basically used for firm-level analysis. Chain-level analysis and progress of local firm’s position vis-à-vis the lead firm is the main focus of the concept of upgrading along GVCs (Sato and Fujita, 2009). Morrison, Pietrobelli and Rabellotti (2008) point out that while GVC studies mention its importance, they do not deal with it in detail, and the issue was only implicitly mentioned in Gereffi (1999), Kaplinsky and Fitter (2004) etc. There are some exceptions, however, such as Kishimoto (2004), Nadvi (2004), Nadvi and Waltring (2004), Ponte and Gibbon (2005) and Quadros (2004), who study the types and nature of technological capability adoption, with their results being strictly specific to country and context.

(Kalecki, 1991). In buyer-supplier contracts such as these, an increase in the supplier's production efficiency almost always increases the buyer's optimal profit. This is because increased production efficiency drives down the optimal wholesale price. Therefore, a buyer would always prefer the more efficient supplier (Hochbaum and Wagner, 2015). On the other hand, an increase in the efficiency of the supplier firm is dependent on the increase in the associated fixed costs. Higher profits accrue to suppliers only when the fixed costs remain the same.

Moreover, although higher price markups can be obtained through higher product prices, lower input costs and higher productivity, the implicit costs of raising product prices are very high, given the increases in price competition. Hence, there is constant pressure on suppliers to lower their production costs as buyers constantly look for cheaper sources (Plank, Rossi and Staritz, 2014). Therefore, literature suggests that the major challenge of social upgrading is the constant cost pressure from buyers on manufacturers in the value chain.

The empirical literature suggests that these types of GVCs are generally characterised by captive relationships, and this encourages lead firms to lock-in suppliers in order to 'exclude others from reaping the benefits of their efforts' (Schmitz, 2004; Gereffi et al, 2005; UNCTAD, 2013, 2014). Hence, suppliers face significant switching costs and are considered to be 'captive', where they are confined to a narrow range of tasks. There is also the challenge of facing tough price competition at higher levels of the value chain. Gereffi (1995) gives an example from the Taiwanese computer industry, where Mitac came back from its decision to upgrade to OBM and remained at the OEM level, with lower profits but more security. Barrientos, Gereffi and Rossi (2010) give another example from Eastern and Central Europe (ECE), where apparel enterprises of more advanced economies (such as Slovakia) moved from OEM to ODM and OBM, while those of less developed countries (such as Bulgaria) have difficulty in doing so. Therefore, the literature suggests that price plays a vital role in upgrading along the value chains, especially because high price competition acts as a barrier for firms to do this.

2.4.2 Nature of Employment

Studies of Barrientos *et al.* (2011) and Barrientos and Smith (2007) have a greater focus on the employment dimensions of social upgrading. Studies conducted by Plank, Rossi and Staritz (2014) conclude that social upgrading is not 'linear' in the sense that it is not equally distributed among workers. It differs among regular and irregular workers, core plants and subcontracted plants, and gender. In fact, women face 'double discrimination' through their social and employment status when temporary or irregular workers are generally women.

Pressures of lowering costs on suppliers in Global Production Networks (GPNs) translates into lowering labour costs. This is accompanied by an increase in flexible and vulnerable labour arrangements, such as temporary, contract and migrant labour. Plank, Rossi and Staritz (2014) conclude that the strict requirements of buyers with respect to costs, speed, flexibility and quality ultimately lead to the existence of this parallel workforce. This workforce is not the core labour of the firms, so are left out of the scope of buyers' Corporate Social Responsibility (CSR) activities (Plank, Rossi and Staritz, 2014; Barrientos, 2008). For these categories of workers, participation in global production networks (GPNs) may have led to increased vulnerability and insecurity (Barrientos 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). Moreover, the existence of seasonal workers leads to labour contracting. While this can help in protecting continuity of production, it can also lead to the exploitation of workers (Barrientos, Gereffi and Rossi, 2010). Gereffi and Lee (2013) suggest that participation in GVCs increase employment, while Pickles (2012) comments that the globalised apparel production process has generated greater opportunities for employment in low-income countries, particularly for women.

With respect to the gender dimension of employment, Milberg and Winkler (2013) comment that existing research has 'for decades' found that globalisation leads to feminisation especially in developing countries. Standing (as cited in Milberg and Winkler, 2013) relates this to women providing cheaper and more flexible labour, allowing firms to expand exports, while minimising bargaining power because women have lower aspirations. There are also studies which have observed a defeminisation of manufacturing (Milberg and Winkler, 2013). One notable study of Tejani and Milberg (2010) observed a defeminisation trend in East Asian and Pacific countries, and a feminisation trend in Latin American and Caribbean middle-income countries during the period of 1985 to 2006. They attribute this to the fact that industrial upgrading, characterised by rising capital intensity, generally lowers female intensity of employment associated with a closing gender wage gap. However, the role of the gender wage gap is ambiguous. This phenomenon can be explained through the 'low-skill' trend, where historically women are associated with low skill employment. Therefore, industries taking the 'high road' of upgrading generally cause defeminisation while those taking the 'low road' generally lead to feminisation of employment.

So, the available literature identifies some vital points on relationships of upgrading along value chains with employment. Firstly, cost pressures sometimes lead to the existence of a parallel workforce (such as seasonal workers, contractual arrangements, etc.), who are generally deprived of the positive aspects of social upgrading enjoyed by the main workforce. Secondly, women are generally found more to be employed under flexible working contracts, and so do not get all the benefits of social upgrading. Thirdly, whenever the 'low road' of industrialisation is pursued with few or no technological upgrading, female employment rises, but technological upgrading generally leads to defeminisation.

2.4.3 Wage, Productivity, Minimum Wage Regulations and Social Upgrading

Economic theory links wage growth to productivity growth, and if wage growth represents social upgrading and productivity growth represents economic upgrading, economic theory can provide a link between the two concepts. The competing views in this case are neoclassical views and institutionalist views (Milberg and Winkler, 2013). Neoclassical theory suggests that in competitive markets, wages equal marginal revenue product of labour. Therefore, wages rise with rises in marginal productivity, or the increase in production due to a one unit increase in labour. That would mean economic upgrading leads to social upgrading. Milberg and Winkler (2013) mention the studies of Flanagan (2005), who found a strong correlation between pay and productivity growth in a sample of 45 countries from 1995 to 1999. Milberg and Winkler (2013) also mention Van Biesebroeck (2011), who found support of this theory only in Zimbabwe, one of the countries of his three-country sample.

On the other hand, the institutionalist perspective emphasises the importance of labour market regulations and enforcement, as wage is considered to be a function of relative power of labour and management (Milberg and Winkler, 2013). In that case, union density, bargaining rights, minimum wages and active labour market policies etc. become important in developed as well as developing countries. In cases where wage becomes the outcome of bargaining processes, social upgrading is 'delinked from technological change per se and associated with social institutions (Milberg and Winkler, 2013).

However, as pointed out in Nigel Meager and Stefan Speckesser (2011), the underlying limitation of short-run microeconomic analysis of this kind is that it does not allow wage-setting to influence productivity. Another limitation is the assumption of worker homogeneity, where all the workers are assumed to be like-minded and similar.

One improvement to the simple model can be found in efficiency wage models, such as the Shapiro-Stiglitz model of efficiency wages, as described in Shapiro and Stiglitz (1984). Assuming worker heterogeneity, these types of models suggest that paying higher-than-market wages (termed as efficiency wages) can actually help firms increase their productivity. Hence, as Nigel Meager and

Stefan Speckesser (2011) suggest, efficiency wage models imply a ‘reverse causality’—rather than wages being set according to productivity, they can be set at a particular level to achieve a targeted level of productivity. This indicates a positive effect of social upgrading on economic upgrading. Another deviation from the standard neo-classical assumptions of the labour market is asymmetric information, especially when workers’ productivity is not directly observable. In that case, other characteristics of workers, such as education (as shown in the job market signaling model of Spence, 1973) can be used as a predictor for productivity. For cases where workers’ efforts cannot be observable, tournaments (competition for promotion), increasing age-earning profile (where wages increase according to age of work), paying a piece-rate and rewarding sales agents with a commission etc. are practiced. Bolton and Dewatripont (2005) provide an example of the optimal linear contract—with a fixed payment plus a variable part that is a function of output.

So, a study of the literature on one of the components of social upgrading—wage—suggests a two-way causality. Productivity determines workers’ wages, while the probability of wage increases subject to workers’ efforts may increase labour productivity. Hence, it is probable that a two-way relationship exists between social and economic upgrading.

The Minimum Wage Controversy: To improve social upgrading levels, countries sometimes opt for minimum wages, and ILO (2016), in its minimum wage policy guide, suggests that minimum wages can contribute to higher labour productivity. In fact, a large number of studies examining the ‘efficiency wage’ theories suggest that the effect of minimum wages on workers’ motivation has been found to be positive. For example, Georgiadis (as cited in ILO, 2016) found that the national minimum wage operated as a kind of ‘efficiency wage’ in the residential care homes sector, while Owens and Kagel (as cited in ILO, 2016) found a positive association between minimum wages and workers’ efforts. Minimum wages can also lead to increased efficiency levels at the enterprise and macro levels (ILO, 2016).

However, the issue of impact of minimum wage is not yet a settled issue, and an exhaustive review of all empirical works have been done many times. The practice started from 1977, where the Minimum Wage Study Commission of the United States of America (USA) reviewed existing research on minimum wage in USA and Canada, and the conclusions suggested that increases in minimum wage reduced teen employment and employment of other younger workers. A decade later, in early 1990s, the ‘new minimum wage research’, characterised by ‘natural experiments’ (such as Card and Krueger, 1994) and cross-state variation in the ‘bite’ of minimum wage, tried to provide a positive view of the effects of minimum wage on employment. Meta-studies such as Doucouliagos and Stanley (2009), among others, found zero or no statistically significant impact of minimum wage on employment. Neumark and Wascher (2008), through their qualitative survey of literature, conclude that a majority of studies point towards a negative employment effects of minimum wages. There is also sizable evidence of labour-substitution. This is the hypothesis that a rise in the minimum wage prompts employers to hire a more-skilled workforce and hence, impacts the least-skilled more adversely than might be indicated by a standard employment study. Dube *et al.* (2011) employ a rigorous methodology and find “strong earnings effects and no employment effects of minimum wage increases.” This suggests that there is mixed evidence on the employment effects of increasing minimum wages.

2.4.4 Firm Size and Its Impact on Workers’ Wages

There is also a popular notion of ‘firm size wage premium’, suggesting that larger firms pay better wages (Moore, 1911; Belman and Levine, 2004; Evans and Leighton, 1989; Weiss and Landau, 1984; Lallemand and Plasman, 2005; among others). According to Table 2.2, the literature identified better employee productivity (i.e. larger firms pay more to induce better labour productivity), union avoidance (i.e. larger firms pay better wages to bypass collective bargaining pressure for wages), compensating differentials hypothesis (i.e. workers have to be compensated for bad working conditions with higher wages), increasing labour quality (i.e. by attracting better quality workers

through higher wages), and efficiency wages (i.e. wages paid to increase efficiency and decrease shirking) as possible reasons behind this.

Table 2.2 Empirical Evidence of Size-Wage Premium

Reason for Size Wage Premium in Firms	Notable Studies
Better Employee Productivity	Brown and Medoff (1989); Evans and Leighton (1989)
Union Avoidance	Kahn and Curme (1987); Donohue and Heywood (2004); Weiss (1966); Lallemand <i>et al.</i> (2007)
Compensating Differential Hypothesis	Masters (1969), Stafford (1980), Lester (1967), Scherer (1976), Mellow (1982); Lallemand <i>et al.</i> (2007)
Labour Quality Hypothesis	Hmermesh (1980); Griliches (1969); Foss (1981); Shinohara (1962); Oi (1983); Brown and Medoff (1989); Bayard & Troske (1999); Troske (1999); Feng (2009); Lluís & Ferre (2004); Silva (2004); Lluís (2008); Millimet (2005)
Efficiency Wages	Crisuolo (2000); Oi & Idson (1999); Doeringer and Piore (1971); Lazear (1995)

Source: Compiled from Shepherd (2013) and other studies

Hence, following Milberg and Winkler (2013), if it is considered that wage represents social upgrading, firms with better economic upgrading provide better wages, causing social upgrading.

2.4.5 Working Conditions and OSH

The relationship between working conditions and participation in GVCs is a highly debated issue (Table 3). While GVCs are seen to generate employment in some cases, the conditions of work generally remain poor, especially in the apparels sector (Pickles, 2012). Williams *et al.* (2015) suggest that complex subcontracting structures along GVCs limit the power of multinational corporations to enforce corporate codes related to better working conditions on manufacturers working at lower levels of the value chain. Modern human resource practices are generally not followed by firms because of ‘information failures’, ‘switching costs’ or a ‘prisoner’s dilemma-like coordination failure’. (Brown *et al.*, 2011). In fact, the analysis of Brown *et al.* (2013) suggests that poor working conditions come as a consequence of firms optimising. Some researchers even suggest that sweatshop conditions constitute a necessary stage of economic development. Furthermore, firms decide to become non-compliant primarily because of adjustment costs, combined with the uncertainty of outcomes.

With regards to health, Koopmanschap *et al.* (as cited in Hafner et al) suggest that generally ‘ill health’ is measured using ‘absenteeism’, or a measure of days absent at work, and ‘presenteeism’, a measure of ‘reduced productivity while at work’. Both are strongly influenced by workplace policies on sick pay, job stability, job role and workplace environment. Also, both absenteeism and presenteeism have effects on workers’ health, which, in turn, affect the productivity of the firm. So, common sense would dictate that investment in OSH should have a positive effect on productivity, so must generate positive returns.

ILO (2013) provides some theoretical views on establishing this ‘business case’ for higher levels of OSH and suggest that according to ‘the most extreme and reductionist version of neoclassical economics’, conflict of interest between employers and employees forces the employer to minimise costs. This restricts them from investing in good working conditions. ILO (2013) labels this the ‘common-sense’ model. Another view is the resource-based view (RBV), which views an enterprise as a bundle of tangible and intangible assets. Better financial performance can be achieved, given that valuable, rare, difficult to imitate and non-substitutable resources are available. This is why Croucher *et al.* (2013)

suggest that management should treat its employees like valuable assets and invest in training and development for financial performance. There is also the 'implicit gift-exchange' view, (Akerlof, 1982), where exchange is based on reciprocity and trust and relations are endogenously determined. ILO (2013) suggests that the 'major gifts' of an employer include giving excess remuneration to some employees and being lenient on work rules. In return, the employees' gifts to the employer are efforts in excess of formal work standards.

With regards to the application of higher levels of working conditions, Cutcher-Gershenfeld (as cited in ILO, 2013) state that bundles of practice more effectively translate into positive business outcomes than individual practices (ILO, 2013). There are different ways in which authors have defined it. ILO (2013) mentions one notable meta-analysis of different studies by Subramony (2009). He suggests that successful complementary bundles of practice are generally related to three central themes: employee empowerment, motivation and skill enhancement. They are shown to positively correlate with employee retention rates, operating performance and financial performance. One reason behind this, as suggested by Gooderham, Parry and Ringdal (as cited by ILO, 2013), is the complementarity of the practices in the bundle and they combine to send clear, coherent and comprehensive messages to employees.

There are numerous case studies which deal with the impact of poor OSH on productivity and firm performance (e.g, Safe Work Australia, 2014; ILO, 2013; Verbeek, 2009, etc.) (Table 2.3). The literature review of Brown *et al.* (2011) cites different works that provide evidence of productivity increases due to improvements in working conditions. However, after their analysis of the Better Factories Cambodia programme, they suggest that while productivity at the industry level and the firm level improved, it 'has yet to be specifically linked to improvements in working conditions'. Studies cited in ILO (2013), such as Dorman (2000), Kessler and Stang (2006), Mayer (2001), Ridge *et al.* (2008), Shalini (2009), and other extensive reviews of case studies such as Safe Work Australia (2014), Verbeek (2009) etc. provide strong evidence that occupational injuries and illnesses impact negatively on productivity, although health impacts are a long-term phenomenon and difficult to measure. However, according to Safe Work Australia (2014), there is a bias towards showing positive impacts of these kinds of interventions. The overwhelming majority of cost-benefit studies of worker health and safety (WHS) report positive results that need to be treated with caution. This is because of variations in the assumed rate of return on initial investment costs, and the time period over which the returns are calculated, including other technical issues¹⁵. While confirming the overall net benefit of promoting OSH in the workplace, Baxter *et al.* (as cited in Gahan, Sieverwright and Evans, 2014) also suggested that studies utilising more rigorous methodological measurement techniques reported less significant Return on Investment (ROI) findings. In fact, ILO (2013) reports that very few studies have attempted to provide robust econometric evidence utilising large and reliable datasets.

¹⁵ See Gahan, Sieverwright and Evans (2014) for details.

Table 2.3: General Impact of OSH on the Workers and the Company

Impact Variable	Non-Tangible	Tangible (Can be measured)
Workers	Pain and suffering Moral and psychological suffering (especially in the case of a permanent disability) Lowered self-esteem, self confidence Strain on relationships Lifestyle changes	Loss of salary and premiums Reduction of professional capacity Medical costs Loss of time (medical treatments)
Company	Presenteeism (employees are present at work but limited in their job performance by physical and/or mental problems) Company image Working relations and social climate	Internal audit Absenteeism Decrease of the production Damages to the equipment, material Quality losses Training of new staff Technical disturbances Organisational difficulties Increase of production costs Increase of the insurance premium or reduction of the discount Early retirement Administration costs Legal sanctions

Source: Adapted from De Greef *et al.*, 2011 (as cited in Hesapro, 2013)

Other studies, such as the literature review of Hesapro (2013) identifies that aligning company goals and motives with the OSH programmes bring better results. One study by Sheikh *et al.* (as cited in ILO, 2013), which used input–output evidence and a multi-industry approach to assess the relationship between OSH activities and economic performance in the United Kingdom, concluded that the ‘underlying process and linkages between OSH and sectoral performance are complex. This leads to no conclusive evidence of Porter Hypothesis—greater regulation stimulates innovation and enhances productivity—or OSH activity leads to fall in output and productivity as they struggle to cope with strict regulatory requirements’.

Many other studies have identified many other different issues, (as compiled in Croucher *et al.*, 2013), which include: the potential negative/contradictory outcomes of efforts to increase productivity through OSH (e.g. Goetzel *et al.*, 2003; James, 2006); how best to evaluate OSH measures in terms of increased productivity and potential economic benefits (e.g. Cagno *et al.*, 2013; Cutler and James, 1996; Lahiri, Gold and Levenstein, 2005; Oxenburgh, 1991; Oxenburgh and Marlow, 2005); and the need for a good level of cooperation between management and employees in order to ensure the success of OSH interventions and related increases in productivity. The use of sick days/absence as an outcome measure is problematic, given the evidence of widespread long-hour and sickness presenteeism due in part to job insecurity (e.g. Chatterji and Tilley, 2002; Goetzel *et al.*, 2004; Johns, 2011).

In sum, it is actually difficult to establish a business case for OSH, and so Safe Work Australia (2014), along with many other studies, suggest that the evidence is not conclusive enough to make a general argument in favour of a business case of the implementation of the OSH programmes.

ILO (2013) and Verbeek (2009) also conclude that it is difficult to demonstrate improved productivity due to enterprise-level OSH investments. This is because the issues are long-term in nature, the data is limited in the studies, regulatory and institutional influences are uneven and variably enforced (ILO, 2013). However, these conclusions need to be read with caution. First, these issues have their roots in the public good argument, which treats workplace safety and health as a public good. Moreover, there may be social, not economical, reasons for investing in workplace safety and health. Second, the

argument for supporting a business case for OSH is likely to apply differentially to businesses of differing sizes, operating in different industries with WHS risk profiles (Verbeek, 2009; ILO, 2013).

2.4.6 Working Hours and Its Effects

There have been many studies on the effects of long working hours and its effects on productivity¹⁶. Most of them find that long hours of work negatively impact the productivity of workers, where the effects can be both short-term and long-term. However, Caruso (2006) highlights the complexity of the factors involved in influencing the outcomes of working long hours. These are the characteristics of the worker and the job, including the work/schedule, and non-work responsibilities.

ILO (2013) suggests that the extent to which workers have the power to influence their working hours is significant in determining its effect on work performance. Beckers *et al.* (2008) differentiate between voluntary and involuntary overtime. They found that involuntary overtime had more negative effects. The argument that flexible working conditions create potential benefits for employers has been developed theoretically. Bradley, Royer and Eckardt (2008) analyse the literature on work–life balance (WLB) and strategic human resource management and suggest a link between WLB, supportive organisational cultures and firms' competitive advantage. Others simply assume that this case is established.¹⁷

ILO (2013), citing Bradley *et al.* (2008) and Golden *et al.* (2012) suggest that flexible working arrangements providing a link between WLB, supportive organisational cultures and firms' competitive advantage, can boost productivity. Golden (2012) concludes that flexible working arrangements which lead to long-term benefits are more effective, as they lead to better employee health, well-being and satisfaction without raising current labour costs. There are also studies which show that flexible working arrangements can lead to negative outcomes, such as adverse effects on health when workers are unable to influence the irregularity of work.

Although flexible work is generally considered to be family-friendly, the outcome actually depends on who or how decisions about flexibility are made with regards to length and timing of work. Also, irregular work generally means irregular earnings, This can have an impact on workers and their families because living expenses (including accommodation, transport, utilities and food) are largely fixed and irregular income makes it difficult to budget (Aronsson *et al.*, 2005). Hence, the effect of flexible working hours is highly context-sensitive, and it is unclear whether ultimately it leads to better productivity or economic upgrading.

2.4.7 Freedom of Association, Productivity and Workers' Compensation

Freedom of association, which is generally measured by the density of trade unions (ILO, 2016), is one of the basic elements of social upgrading, as mentioned earlier. However, trade unions have their own separate effect on social as well as economic upgrading. The empirical literature on trade unions is voluminous and has been reviewed extensively by different authors, so an exhaustive study of the literature would be redundant.¹⁸ However, the body of theoretical and empirical work is sharply divided on this issue (Table 4). There are scholars who suggest that a collective voice may not only raise problems related to work and advise how they may be solved, but also might reduce labour turnover and promote investment into the labour force. These positive effects have been categorised by Eberts and Stone (1991) into three effects: a compensation effect, productivity effect and factor use effect. The compensation effect entails an increase in worker compensation due to enhanced bargaining capabilities. The productivity effect arises from better cooperation between management and workers, turnover reductions and increased worker morale. The factor use effect arises from

¹⁶ See Allen, Slavin and Bunn, 2007; Dong, 2005; Hanna, Taylor and Sullivan, 2005; Shepard and Clifton, 2000; Tucker and Rutherford, 2005.

¹⁷ See for example Cetinel, Yola and Emeksiz, 2008 in their study of Turkish small and medium-sized enterprises.

¹⁸ See Turnbull (1991), Betcherman (2013) for details.

deviations from the least cost combinations. There are also many studies highlighting the positive impact of trade unions on OSH.

On the other side, labour unions may negatively influence productivity by resisting technological improvements that may replace labour. They may also misallocate labour force. Safe working contracts may in turn restrict employers to lay off workers when needed. However, the effects of trade union on productivity is highly context-sensitive, as detailed in Bellman (as cited in Betcherman, 2013). Moreover, productivity and compensation effects of unionisation sometimes imply a small net effect on cost of production, but employer resistance to unionisation leading to worker unrest may have larger effects.

Given the positive as well as negative nature of effects of trade unions, Betcherman (2013) suggests that 'unions are complex organisations with a range of functions and roles'. He also highlights the 'traditional economist view'. This is their ability to negotiate better compensation and working conditions than what would normally be the case if perfect competition prevails. Therefore, they can improve their members' living standards, but this is often associated with 'efficiency costs'. Betcherman (2013) refers to this as the 'monopoly role'. In the 'monopoly model', unions are expected to increase wages. Betcherman (2013) suggests that union wage premiums range from 5–20 per cent depending on country and period, and rises with higher union density. Economic theory would suggest that this would lead to smaller labour demand and reduced employment. However, if trade unions have a positive efficiency effect, this relationship might not be straightforward (Betcherman, 2013). He also mentions two other roles: the 'voice' role, which includes enhanced communication, cooperation, labour turnover reduction (Freeman and Medoff, 1984); and the 'political role', 'as a player in the political process and as a voice in political debates'. In some developing countries, this role 'overshadows' their other roles, where the effect can be positive (social upgrading) or negative (loss of efficiency or redistributive effects favouring trade union members at the cost of non-members). In fact, the impact of unions and Collective Bargaining Agents (CBAs) are country and context dependent, as interactions among institutions are also central to the level of effectiveness. Hence, Adit and Tzannatos (2002) suggest that differences between union and non-union firms with regards to technology adoption are not significant overall.

Turnbull (1991), from his extensive review of literature, contests this view on the grounds that there is limited empirical evidence supporting the 'Harvard thesis' that through giving workers a 'voice' and 'shocking' management in order to improve working conditions, trade unions can increase productivity (Table 2.4). He focuses on the 'neglect' of the Harvard model of the union objectives and the relationships between management and workers, which are important for productivity outcomes. In fact, there are a number of studies that show trade unions have a negative effect on the profits of firms and the outcome is generally dependent on market conditions and institutional contexts (Laroche and Wechtler, 2011). In a more recent review, Turnbull (2003) comments that after the work of Freeman and Medoff (1984), the large body of empirical literature focused less on economic theory. Turnbull (2003) also states that conventional assumptions related to trade unions should be contextualised with a comparative international view through an interdisciplinary approach. Doucouliagos and Laroche (2009) conducted a meta-regression analysis on forty-five major econometric studies. These reported 532 estimates of direct effects of trade unions on profits. Their results suggest that the overall effect of trade unions on profits is negative, and it is also statistically significant. They also found an indirect effect of trade unions on factor accumulation, where physical capital accumulation was depressed due to trade unions. Union voice, combined with efforts of management to enhance productivity can help introduce new technology. However, work rules that are negotiated between unions and management can act as a constraint if new technology translates to job loss, which would be opposed by unions. Hence, Adit and Tzannatos (2002) suggest that differences between union and non-union firms with regards to technology adoption are not significant overall.

Table 2.4: Impact and Implications of Workers' Trade Unions on Firms

Indicator	Findings	Comments
Aggregate employment and unemployment	Not conclusive for union density/coverage. Coordinated bargaining associated with modestly lower unemployment.	Results tend not to be robust to different model specifications.
Labour Market Dynamics	Unions reduce voluntary turnover and increase job tenure. Temporary layoffs higher in unionized firms.	
Adjustments to shocks	Not conclusive with respect to bargaining structure	
Wages	Unions increase wages. No significant effect of different bargaining structures.	Union wage premium ranges from 5–20%, depending on country and period. Wage premium is higher when union density high.
Wage distribution	Unions reduce wage inequality.	Reduce various types of differentials, including skill and gender. Equalising effect stronger where union density high.
Labour and multifactor productivity levels and growth	No consistent conclusion.	
Training	Positive effect	
Technological change	No consistent conclusion	
Reallocation of labour	Negative effect	

Source: Adapted from Betcherman (2013)

2.5 The Value Chain Governance: Implications on Firm Level Upgrading

Value chain governance consists of the 'inter-firm relationships and institutional mechanisms through which non-market coordination of activities in the chain take place' (Humphrey and Schmitz, 2002), and plays an important role in determining the relationship between economic and social upgrading. The GVC literature generally focuses on understanding the relationships between powerful global lead firms and local suppliers (Schmitz, 2006). In buyer-driven GVC operations, governance is generally considered 'central' (Humphrey and Schmitz, 2002; Morrison *et al.*, 2006) since 'parameters' or standards set by lead firms are followed by other firms in the value chain (Humphrey and Schmitz, 2002).¹⁹ To further elaborate the issue, Gereffi *et al.* (2005) proposed five types of governance. These are market governance²⁰, modular governance²¹, relational structure²², captive value chains²³; and hierarchical governance²⁴. The classification of governance types of Gereffi *et al.* (2005) is broader

¹⁹ Authors mentioned four basic 'parameters' generally set by the 'lead' firms: what to produce (the specific products to be produced), how to produce (methods through which they would be produced), when to produce and how much to produce. They also suggest that price may be added as a 'fifth parameter', as major buyers require manufacturers to organise their production processes such that a specific target price can be met.

²⁰ It indicates simple transactions, easy transmission of information on product specifications, and the capacity of producers to make products with minimum input from buyers.

²¹ It means firms in the value chain are involved in complex transactions which are relatively easy to codify.

²² It operates like a network, characterised by interactions between buyers and sellers, while reputation, social and spatial proximity, family and ethnic ties etc. act as regulators.

²³ It means small suppliers depend on few buyers with great levels of power and control and there is strict monitoring of buyers.

²⁴ It shows products are developed 'in-house' and includes vertical integration and managerial control within a set of lead firms.

than that of Hubert and Schmitz (2002). The latter had identified only two types. The first is the buyer-driven value chain, where buyers exercise considerable control over manufacturing firms with regard to setting parameters of production. The second is the producer-driven value chain, where manufacturers exercise control over resources and the value chain.

Considering all the stakeholders and how they can each affect economic and social upgrading, Gereffi and Lee (2013), building upon Puppim de Oliveira's (2008) distinctions, identify six 'potential trajectories' or paths of governance through which social and economic upgrading can be ensured:

(i) *Market driven path*, where the urge to remain competitive forces the suppliers to respond to the demand of consumers for products from suppliers who are compliant with social and economic standards. But if consumers are not concerned with social issues, this mechanism will not work.

(ii) *CSR driven path*, where the pressure imposed by buyers on suppliers for social upgrading comes from CSR activities in buyers' own firms. However, Gereffi and Lee (2013) cite the works of Locke (as cited in Gereffi and Lee, 2013) and Barrientos (2013) and suggest that CSR models have limitations in advancing social upgrading. This is because pressure from buyers force suppliers to squeeze costs with little or no support for compliance costs. According to Lund-Thomsen and Lindgreen (2014), buyers' code of conduct improved payment of minimum wages and OSH and reduced overtime work. However, the effect they had on less 'tangible' issues, such as freedom of association, collective bargaining rights, was minimal.

(iii) *Multi-stakeholder path*, which operates through the joint initiatives of different stakeholders, i.e. buyers, governments, suppliers, etc. While it is an improvement from other trajectories, there are challenges. These include the constrained participation of Southern actors, capacity building being limited to a few large firms as hazardous jobs shift down the supply chains etc. (Gereffi and Lee, 2013). Rossi (as cited in Plank et al, 2014) suggests that this trajectory can increase the suppliers' bargaining power while reducing the gap between 'sourcing and compliance requirements'. Lund-Thomsen and Lindgreen (2014) suggest that this practice may not be too widespread. One problem with this approach is that the different policies of stakeholders may either be complementary or may offset each other (Gereffi and Lee, 2013), and the lack of coordination and cooperation may hamper such initiatives.

(iv) *Labour-centred path*, which operates through workers' grievances and trade unions and their bargaining capacities. Gereffi and Lee (2013) suggest that the advocates of this path criticise both CSR and Multi-Stakeholder Initiative models 'regarding workers as a passive subject with little agency' (they cite Carswell and De Neve 2013; De Neve 2014 as studies which detail the arguments). This is because workers and trade unions are often active change agents. A challenge in this case is that in a segmented workplace, upgrading for one group of workers such as women, migrant, casual, or temporary workers, often comes at the expense of other groups.

(v) *Cluster-centred path*, initiated by cluster firms to improve working conditions within the cluster, takes into account local contexts and perspectives. Lund-Thomsen and Pillay (2012) suggest that this kind of upgrading would bring about new technologies with higher skill requirements. This might also cause unskilled workers and female home-based workers to lose jobs.²⁵

(vi) *Public governance path*, which operates through rules and regulations of the government. Gereffi and Lee (2013) suggest that despite some evidence of a proactive role of the state, it is unknown whether such models are applicable to a wide range of countries, different levels of government, and all sectors.

²⁵ For a detailed review, see Lund-Thomsen and Pillay (2012).

So, while literature confirms the role of different stakeholders along the GVC who play instrumental roles in economic and social upgrading of the firms, the best way to coordinate and combine their efforts to ensure a positive relationship between economic and social upgrading is yet to be defined.

2.6 Exploring the Future Areas of Research on Firm Level Upgrading

After a brief review of the extensive literature regarding upgrading along GVCs and its components, the question remains: what are the implications of the suggestions and conclusions of the available literature for apparel manufacturers in the GVCs? A general conclusion in the literature is that manufacturers operating in lower levels of the value chain face two constraints. Firstly, the manufacturer has to make a decision between upgrading and facing fierce price competition, and remaining at the current level of the value chain to maintain the market niche and secure a specific level of profitability. Secondly, buyer firms generally want to reserve their 'core competences', namely, branding, designing and marketing, as this allows them to dominate the value chain. However, the existing literature does not outline the exact mechanism as to how the buyers' tendency to protect their core competences hinder the progress of upgrading of manufacturers. There are some case studies that show how manufacturers have become successful in bypassing such immense pressure from buyers, but they are insufficient.

Captive Value Chains and Technology Transfer: Given the constraints, the captive relationships between buyers and manufacturers (as is generally observed in most buyer-driven value chains, suggested by Schmitz, 2004) lead to buyers 'locking in' suppliers so that others do not get access to them. Moreover, technological knowledge transfer along value chains is limited and not automatic, further contributing to the situation. The heterogeneity of buyers could have a diverse impact on firms. The literature is however, not explicit on how different types of buyers (based on markets, products, market size) could influence firm level adoption of technologies. Future research could explore the firm level dynamics in technology use considering heterogeneity of buyers as well.

Price Markup: There is also the issue of price markup by the lead firm in the apparel value chain, buyers generally are unwilling to raise prices of their products for fear of losing competitiveness. Thus, the apparel manufacturers supplying to the global buyers have to face the twin pressures of maintaining high levels of quality while minimising costs. So, the manufacturers have to choose between a 'high road' and a 'low road' of industrial upgrading. This twin pressure means that linking social upgrading and economic upgrading for an apparel enterprise is difficult. The heterogeneity of buyers in terms of market, products and size of operation could also influence which roads firms will choose.

Conflicting Effects of Elements of Social Upgrading: When social upgrading is considered with economic upgrading, a manufacturer has to take care of wages, worker rights, working conditions and issues related to employment. While these can be implemented as a 'policy bundle', all the components have their own effects on each other as well as on productivity. However, the level of switching costs combined with the uncertainty of the outcomes of the investment influence the firm owners' decision to invest in social upgrading. The literature highlights these complexities extensively, but does not provide sound conclusions on the directions of the relationships.

Wages, Productivity, Minimum Wages and Employment: Wages are generally theoretically linked with productivity, and there is evidence in the relevant literature on a positive relationship between the variables. But there is conflicting empirical evidence on the effect of minimum wages on employment, where the negative effect of minimum wage is the dominant opinion. Given the diverse types of production processes in the value chains (e.g. labour-intensive, capital-intensive), the impact of interactions between wage, productivity and employment is likely to be different. There is still a lack of consent between researchers with regard to the ultimate effect of minimum wages on employment as a whole.

Effect of Trade Unions: Empirical literature is divided on how trade unions influence the competitiveness of firms. Trade unions can help the firm to provide information about different issues not directly observable by the management, and act as a 'voice' for workers. On the other hand, a large portion of the literature highlights the negative effect of trade unions. Moreover, in developing countries, the 'political aspect' of trade unions sometimes gains salience, making it difficult for firms to increase productivity. Literature on trade unions is not explicit about how they interact with social dialogue, or how social dialogue could influence trade unions thereby changing the existing outcomes between trade unions and other economic variables.

Improvement of Working Conditions and Productivity: There is a business case for establishing better working conditions in the apparel manufacturing firm, as workplace injuries would hamper productivity. However, it is difficult to establish the fact that OSH leads to better productivity. As a result, firms improve occupational safety so that workers would be injured less often and cooperate better with the firm. The literature, however, agrees on the fact that the bargaining power of trade unions tends to pressurise the management to upgrade working conditions. It is important to further examine the effect of different levels of working conditions on workers' productivity and efficiency.

Non-linear Effects of Social Upgrading on Employment: On employment, the literature suggests that the pressure of meeting quality and cost minimisation leads the apparel manufacturer to opt for temporary or irregular workers (generally women in the apparels sector). This helps maintain the strict timelines imposed by buyers. Any improvements in wages and other benefits are generally directed towards the permanent workers. Thus, the temporary workers are usually left out of the social upgrading process. The purchasing practices of buyers and the timelines they impose would also affect the apparel manufacturer's decisions on working hours, and workers. In general, the literature shows that the domestic labour market, technological readiness and institutional set-up remains unchanged when a particular value chain experiences economic and social upgrading. It is not usually the case that a linear assumption about the domestic market usually prevails. Examining the intra-chain relationship between economic and social upgrading requires that the impact and implications with other major value chains operate in the country and vice-versa.

2.7 Conclusion

The body of available empirical literature dealing exclusively with the relationship between economic and social upgrading fails to identify a clear direction, although it is clear enough that economic upgrading does not necessarily lead to social upgrading. The governance structure, heterogeneity among firms, coupled with rules and regulations imposed on the firms, create complexities in the nature of the relationship between economic and social upgrading. Primarily, in the case of economic upgrading, firms at lower levels of the apparel value chain are faced with cost constraints, issues related to technological transfer and technology adoption. Firms with better productivity and larger sizes are generally more adept in these situations. However, participation in the GVC does not guarantee technological learning or productivity increase. Hence, the process of economic upgrading is not automatic.

The literature on the components of economic and social upgrading shows some evidence of causalities present within the components, but these causalities can have offsetting effects on each other. It is because of these different effects of the components identified previously that the results of economic and social upgrading differ from country to country and sector to sector. The positive effects of trade unions and minimum wages, coupled with improved working conditions might offset the negative associations within those variables given the enabling environment and appropriate policy frameworks. In that case, social upgrading could also lead to economic upgrading. Similarly, economic upgrading can translate to social upgrading through the management's efforts to improve working conditions, wages and worker rights in expectation of higher productivity in future. However, there might be cases where the conflicting effects cancel each other out, resulting in no significant

relationship between economic and social upgrading. Additionally, if the negative effects of trade unions and minimum wages overshadow the rest of the components, and the firm chooses a 'low road' of industrial upgrading, economic upgrading and social upgrading might show a negative association. Hence, future research in this area should focus on a comprehensive and methodologically rigorous analysis of applying the whole 'bundle of practice' for social upgrading. It should identify how all of them interact with economic upgrading at the firm level and ultimately retain the competitiveness of the sector of the supplying county.

References

1. Ahmed, Nazneen and Nathan, Dave (2014), "Improving wages and working conditions in the Bangladeshi garment sector the role of horizontal and vertical relations," Working Paper 40, Capturing the Gains.
2. Akerlof, George A.(1984), "Gift Exchange and Efficiency-Wage Theory: Four Views," *The American Economic Review*, Vol. 74, No. 2, pp. 79 - 83.
3. Alvarez, R. and R.A. López (2005), —Exporting and Performance: Evidence from Chilean Plants, *Canadian Journal of Economics*, Vol. 38(4), pp. 1384-1400.
4. Appelbaum, Richard P (2016), "From Public Regulation to Private Enforcement: How CSR Became Managerial Orthodoxy" In Appelbaum R.; Lichtenstein, N. ed. *Achieving Workers Rights in the Global Economy*, Cornell U.P.
5. Bair, J., & Gereffi, G. (2001). Local clusters in global chains: The causes and consequences of export dynamism in Torreon's blue jeans industry. *World Development*, 29(11), 1885–1903.
6. Barrientos, S (2013), "Corporate purchasing practices in global production networks: A socially contested terrain", *Geoforum*, 44(1), pp 44-51.
7. Barrientos, S and Smith, S (2007), "Do workers really benefit from ethical trade? Assessing codes of labour practice in global production systems," *Third World Quarterly*, 28(4), 713-29.
8. Barrientos, S., Gereffi, G. and Rossi, A. (2011). 'Economic and Social Upgrading in Global Production Networks: A New Paradigm for a Changing World'. *International Labour Review* 150(3–4), 319–40.
9. Barrientos, S., Gereffi, G. and Rossi, A. (2011). 'Economic and Social Upgrading in Global Production Networks: A New Paradigm for a Changing World'. *International Labour Review* 150(3–4), 319–40.
10. Barrientos, S., Mayer, F., Pickles, J., & Posthuma, A. (2011), "Decent work in global production networks: Framing the policy debate", *International Labour Review*, 150(3- 4), 297-317.
11. Barrientos, Stephanie and Visser, Margareet (2012), "South African horticulture: opportunities and challenges for economic and social upgrading in value chains," Working Paper 12, Capturing the Gains.
12. Bazan, Luiza and Lizbeth Navas-Aleman (2004). "The Underground Revolution in the Sinos Valley: A Comparison of Upgrading in Global and National Value Chains" in Hubert Schmitz ed.
13. Bernard, A.B. and J.B. Jensen (1999), —Exceptional Exporter Performance: Cause, Effect or Both?, *Journal of International Economics*, Vol. 47, pp. 1-25.
14. Bernhardt, Thomas and William Milberg (2012), "International trade and the relation between economic and social upgrading," *Capturing the Gains*, vol. Summit Briefing, December.

15. Betcherman (2013), "Labor Market Institutions: A Review of the Literature," Background Paper for the World Development Report, 2013, World Bank.
16. Bhaskaran, Resmi, Nathan, Dev, Philips, Nicola and Upendranath, C. (2013), "Vulnerable workers and labour standards (non-)compliance in global production networks: home-based child labour in Delhi's garment sector", Working Paper 16, Capturing the Gains.
17. Brambilla, I., D. Lederman, and G. Porto (2012), —Exports, Export Destinations, and Skills, *American Economic Review*.VOL. 102, NO. 7, DECEMBER 2012 (pp. 3406-38)
18. Breinlich, H. and C. Criscuolo (2011), —International Trade in Services: A Portrait of Importers and Exporters||, *Journal of International Economics*, Vol. 84(2), pp. 188-206.
19. Brown C. and J. Medoff (1989), "The employer size wage effect," *Journal of Political Economy*, Vol. 97, pp. 1027-1059
20. Bryson Alex, « The Effect of Trade Unions on Wages », *Reflets et perspectives de la vie économique* 2/2007 (Tome XLVI), p. 33-45 URL: www.cairn.info/revue-reflets-et-perspectives-de-la-vie-economique-2007-2-page-33.htm. DOI: 10.3917/rpve.462.0033.
21. Bustos, Paula (2011), Trade Liberalization, Exports and Technology Upgrading: Evidence on the Impact of MERCOSUR on Argentinian Firms, *American Economic Review*, Vol. 101 pp. 304-340.
22. Calvo, G. and S. Wellisz (1978), "Supervision, Loss of Control and the Optimal Size of the Firm," *Journal of Political Economy*, Vol. 86, pp. 943-952.
23. Carr, M. and Chen, M. (2004). Globalisation, Social Exclusion and Work: With Special Reference to Informal Employment and Gender. Integration Working Paper No. 20 (Geneva: ILO).
24. Carr, M. and Chen, M. (2004). Globalisation, Social Exclusion and Work: With Special Reference to Informal Employment and Gender. Integration Working Paper No. 20 (Geneva: ILO).
25. Chen, M., Sebstad, J. and O'Connel, L. (1999). 'Counting the Invisible Workforce: The Case of Homebased Workers'. *World Development* 27(3), 603–10.
26. Chen, M., Sebstad, J. and O'Connel, L. (1999). 'Counting the Invisible Workforce: The Case of Homebased Workers'. *World Development* 27(3), 603–10.
27. Coe, Neil M and Hess, Martin (2013), "Economic and social upgrading in global logistics," Working Paper 39, Capturing the Gains.
28. Collins, J. L. (2003). *Threads: Gender, Labor and Power in the Global Apparel Industry* (Chicago and London: Chicago University Press).
29. Collins, J. L. (2003). *Threads: Gender, Labor and Power in the Global Apparel Industry* (Chicago and London: Chicago University Press).
30. Coslovsky, S., & Locke, R. (2013), "Parallel paths to enforcement: Private compliance, public regulation, and labor standards in the Brazilian sugar sector," *Politics & Society*, 41(4), 497-526.
31. Cumbers, A., Nativel, C. & Routledge, P. (2008), "Labour agency and union positionalities in global production networks", *Journal of Economic Geography*, 8(3), 369-387.
32. Dai, M., M. Maitra and M. Yu (2011), —Unexceptional Exporter Performance in China? The Role of Processing Trade, Working Paper, available at:
http://www.columbia.edu/~mm3040/papers/JMP_MadhuraMaitra.pdf.
33. Dale Belman and David I. Levine(2004), "Size, Skill and Sorting," *Review of Labour Economics and Industrial Relations*, Vol. 18, No. 4, pp. 515-561.
34. De Loecker, J. (2007), —Do Exports Generate Higher Productivity? Evidence from Slovenia||, *Journal of International Economics*, Vol. 73, pp. 69-98.

35. Donohue, S. and Heywood, J. (2004), "Job satisfaction, comparison income and gender: evidence from the NLSY," *International Journal of Manpower*, Vol. 25, pp. 211–34.
36. Dorman, P. 2000. The economics of safety, health, and well-being at work: An overview (Geneva, ILO).
37. Eberts, Randall W and Stone, Joe A (1991), "Unionization and Cost of Production: Compensation, Productivity and Factor-Use Effects", *Journal of Labor Economics*, Vol. 9, No. 2, pp 171-185.
38. Evans, David and Linda Leighton (1989), "Some Empirical Aspects of Entrepreneurship," *American Economic Review*, Vol. 79, No. 3, pp. 519-535.
39. Evers, Barbara, Amoding, Flavia and Krishnan, Aarti (2014), "Social and economic upgrading in floriculture global value chains: flowers and cuttings GVCs in Uganda", *Capturing the Gains*, Working Paper 42.
40. Evers, Barbara, Opondo, Maggie, Barrientos, Stephanie, Krishnan, Aarti, Amoding, Flavia and Ndlovu, Lindani (2014), "Global and regional supermarkets: implications for producers and workers in Kenyan and Ugandan horticulture", Working Paper 39, *Capturing the Gains*.
41. Forth, J. and Millward, N. (2002). "Union effects on pay levels in Britain". *Labour Economics*, 9: 547-561
42. Freeman, Richard B. and James L. Medoff, 1984. *What Do Unions Do?* New York: Basic Books.
43. Funcke, André, Mascarenhas, Gilberto, Wilkinson, John and Pereira, Paulo (2014), "Social and economic up and downgrading in Brazil's hortifruiticulture," *Capturing the Gains Working Paper* 41
44. Gahan, Peter, Sievwright, Ben and Evans, Paul (2014), "Workplace Health and Safety, Business Productivity and Sustainability," *Safe Work Australia*.
45. Gereffi, G "International trade and industrial upgrading in the apparel commodity chain". *Journal of International Economics*, 1999, 48, pp 37-70.
46. Gereffi, G and Lee, J (2016), "Economic and Social Upgrading in Global Value Chains and Industrial Clusters: Why Governance Matters", *Journal of Business Ethics*, January 2016, Volume 133, Issue 1, pp 25-38.
47. Gereffi, Gary (1995). *Global Production Systems and Third World Development*. In B. Stallings (Ed.), *Global Change, Regional Response: The New International Context of Development* (pp. 100-142). Cambridge; New York and Melbourne: Cambridge University Press.
48. Gereffi, Gary (1999) "International trade and industrial upgrading in the apparel commodity chain", *Journal of International Economics*, Vol. 48, No. 1, pp 37-70.
49. Gooderham, P, Parry, E, Ringdal, K. (2008) "The impact of bundles of strategic human resource management practices on the performance of European firms", in *The International Journal of Human Resource Management*, Vol. 19, No. 11, pp. 2041–2056.
50. Haidar, J.I. (2012), —Trade and Productivity: Self-Selection or Learning-by-Exporting in India||, *Economic Modeling*, Vol. 29(5), pp. 1766-1773.
51. Hale, A. and Wills, J. (eds) (2005). *Threads of Labour* (London: Blackwell Publishing).
52. Hale, A. and Wills, J. (eds) (2005). *Threads of Labour* (London: Blackwell Publishing).
53. Helpman, E., M. Melitz, and S. Yeaple (2004), —Exports Versus FDI with Heterogeneous Firms, *American Economic Review*, Vol. 94(1), pp. 300-316.
54. Humphrey, J. and Schmitz, H. (2000) *Governance and Upgrading: Linking Industrial Cluster and Global Value Chain Research*, IDS Working Paper 120, Brighton: IDS

55. Humphrey, John and Hubert Schmitz (2002), "Developing Country Firms in the World Economy: Governance and Upgrading in Global Value Chains," INEF Report, vol. Heft 61.
56. International Labor Organization (2013), "Can better working conditions improve the performance of SMEs? An International Literature Review," International Labor Office, Geneva.
57. Isgut, Alberto, (2001), What's Different about Exporters? Evidence from Colombian Manufacturing, *Journal of Development Studies*, 37, issue 5, p. 57-82, <http://EconPapers.repec.org/RePEc:taf:jdevst:v:37:y:2001:i:5:p:57-82>.
58. Kahn, L. and Curme, M. (1987), "Unions and Nonunion Wage Dispersion," *Review of Economics and Statistics*, Vol. 69, pp. 600-607.
59. Kessler, R. C.; Stang, P. E. (eds). 2006. Health and work productivity: Making the business case for quality healthcare (Chicago, University of Chicago Press)
60. Khondaker Golam Moazzem & Farzana Sehrin (2016) "Economic Upgrading in Bangladesh's Apparel Value Chain during the Post-MFA Period," *South Asia Economic Journal*, Institute of Policy Studies of Sri Lanka, vol. 17(1), pages 73-93, March.
61. Knorringa, P. and Pegler, L. (2006). 'Globalisation, Firm Upgrading and Impacts on Labour'. *Tijdschrift voor economische en sociale geografie* 97(5), 470–79.
62. Knorringa, P. and Pegler, L. (2006). 'Globalisation, Firm Upgrading and Impacts on Labour'. *Tijdschrift voor economische en sociale geografie* 97(5), 470–79.
63. Kruse, Douglas L. (1992), "Profit Sharing and Productivity: Microeconomic Evidence from the United States," *The Economic Journal*, Vol. 102, No. 410, pp. 24-36.
64. Lall, Sanjaya (1992), Technological Capabilities and Industrialization, *World Development*, Vol. 20, No. 2, pp. 165 – 186.
65. Lee, Joonkoo, Gary Gereffi and Dev Nathan (2013), "Mobile Phones: Who benefits in shifting global value chains?" *Capturing the Gains*, vol. Revised Summit Briefin, N° 6.1, February.
66. Lester, Richard (1967), "Pay Differentials by Establishment Size," *Industrial Relations*, Vol. 7, pp. 57-67.
67. Lewis, H. G. (1986) *Union Relative Wage Effects: A Survey*, University of Chicago Press, Chicago, IL, USA
68. Lund-Thomsen, P., & Pillay, R. G. (2012). CSR in industrial clusters: An overview of the literature. *Corporate Governance*, 12(4), 568–578.
69. Lund-Thomsen, Peter; Lindgreen, Adam (2014), "Corporate Social Responsibility in Global Value Chains: Where Are We Now and Where Are We Going?" *Journal of Business Ethics*, Vol. 123, No. 1, 2014, p. 11-22.
70. MacInnes, J.; Cressey, P.; Eldridge, J. 1985. *Just managing: Authority and democracy in industry* (Milton Keynes, Open University Press).
71. Maree, Johann, Piontak, Rachel, Omwansa, Tonny, Shinyekwa, Isaac and Kamoth, Njenga (2013), "Developmental uses of mobile phones in Kenya and Uganda", Working Paper 39, *Capturing the Gains*.
72. Mayer, D. 2001. "The long-term impact of health on economic growth in Latin America", in *World Development*, Vol. 29, No. 6, pp. 1025–1033.
73. Mellow, Wesley (1982), "Employer Size, Unionism, and Wages," *Research in Labor Economics*, supplement 2, JAI Press.

74. Menezes-Filho, N.A. and M.A. Muendler (2011), —Labor Reallocation in Response to Trade Reform, Working Paper No. 17372, NBER.
75. Milberg, Willam, Winkler, Deborah (2013), “Outsourcing Economics: Global Value Chains in Capitalist Development,” Cambridge University Press, New York, USA.
76. Moore, H. L. (1911), "Laws of wages: An essay in statistical economics," The Macmillan Company.
77. Morrison, Andrea, Carlo Pietrobelli and Roberta Rabellotti (2008), “Global Value Chains and Technological Capabilities: A Framework to Study Learning and Innovation in Developing Countries,” *Oxford Development Studies*, 36(1):39-58.
78. Rahman, Mustafizur, D Bhattacharya and K G Moazzem (2008), *Bangladesh Apparels Sector in Post-MFA Period*, Centre for Policy Dialogue (CPD), Dhaka
79. Nathan, Dev and Sandip Sarkar (2011), “Blood on your mobile phone? Capturing the gains for artisanal miners, poor workers and women,” *Capturing the Gains*, vol. Briefing Note 2, February.
80. Oxfam International (2004). *Trading Away Our Rights: Women Working in Global Supply Chains* (Oxford: Oxfam International).
81. Oxfam International (2004). *Trading Away Our Rights: Women Working in Global Supply Chains* (Oxford: Oxfam International).
82. Pickles, John (2012), “Economic and Social Upgrading in Apparel Global Value Chains: Public Governance and Trade Policy”, Working Paper 13, *Capturing the Gains*.
83. Plank, Leonhard and Staritz, Cornelia (2013), “‘Precarious upgrading’ in electronics global production networks in Central and Eastern Europe: the cases of Hungary and Romania”, Working Paper 31, *Capturing the Gains*.
84. Plank, Leonhard, Rossi, Arianna and Staritz, Cornelia (2014), “What Does ‘Fast Fashion’ Mean for Workers? Apparel Production in Morocco and Romania” in Rossi, Luinstra and Pickles (ed.) *Towards Better Work: Understanding Labor in Apparel Global Value Chains*
85. Rafael A Corredoira and Gerald A McDermott (2014), Adaptation, bridging and firm upgrading: How non-market institutions and MNCs facilitate knowledge recombination in emerging markets, *Journal of International Business Studies* (2014) 45, 699–722.
86. Ranjan, P. and J. Raychaudhuri (2011), —Self-Selection Versus Learning: Evidence from Indian Exporting Firms, *Indian Growth and Development Review*, Vol. 4(1), pp. 22-37.
87. Raworth, K. and Kidder, T. (2009). ‘Mimicking “Lean” in Global Value Chains – It’s the Workers Who Get Leaned On’. In J. Bair (ed.), *Frontiers of Commodity Chain Research* (Stanford: Stanford University Press).
88. Ridge, M.; Bell, M.; Kossykh, Y.; Woolley, N. 2008. An empirical analysis of the effect of health on aggregate income and individual labour market outcomes in the UK, Health and Safety Executive (Norwich). Available at: <http://www.hse.gov.uk/research/rrpdf/rr639.pdf> [accessed 2 October, 2016].
89. Rossi, Arianna (2013), “Does Economic Upgrading Lead to Social Upgrading in Global Production Networks? Evidence from Morocco,” *World Development*, vol. 46, pp 223 – 233.
90. Salido Marcos, Joaquín & Bellhouse, Tom (2016), “Economic and Social Upgrading: Definitions, connections and exploring means of measurement,” Sede Subregional de la CEPAL en México (Estudios e Investigaciones) 40096, Naciones Unidas Comisión Económica para América Latina y el Caribe (CEPAL).

91. Sarkar, Sandip, Mehta, Balwant S and Nathan, Dev (2013), "How social upgrading drives economic upgrading by Indian IT majors: the case of telecom IT services", Working Paper 27, Capturing the Gains.
92. Sato, Yuri and Fujita, Mai (2009), "Capability Matrix: A Framework for Analyzing Capabilities in Value Chains", IDE Discussion Paper No. 219.
93. Schmitz, H (2006). Learning and Earning in Global Garment and Footwear Chains. *The European Journal of Development Research*, 18(4): 546-571.
94. Schmitz, H. (2004). *Local enterprises in the global economy: Issues of governance and upgrading*. Cheltenham, UK: Edward Elgar.
95. Schmitz, H. (2006). Learning and earning in global garment and footwear chains. *European Journal of Development Research*, 18(4), 546–571.
96. Schmitz, Hubert (2004), "Local Upgrading in Global Chains: Recent Findings," Paper to presented at the DRUID Summer Conference 2004 on Industrial Dynamics, Innovation and Development
97. Selwyn, Ben (2013), "Social Upgrading and Labour in Global Production Networks: A Critique and an Alternative Conception", *Competition and Change*, Vol. 17 No. 1, February 2013, 75–90.
98. Shalini, R. T. 2009. "Economic cost of occupational accidents: Evidence from a small island economy", in *Safety Science*, Vol. 47, No. 7, pp. 973–979
99. Shepherd, B. (2013), "Global Value Chains and Developing Country Employment: A Literature Review", *OECD Trade Policy Papers*, No. 156, OECD Publishing.
100. Shepherd, B. and S. Stone (2013), "Global Production Networks and Employment: A Developing Country Perspective", *OECD Trade Policy Papers*, No. 154, OECD Publishing.
101. Standing, G. (1999). 'Global Feminization through Flexible Labour: A Theme Revisited'. *World Development* 27(3), 583–602.
102. Staritz, Cornelia and Morris, Mike, "Local embeddedness and economic and social upgrading in Madagascar's export apparel industry", Working Paper 21, Capturing the Gains.
103. Stewart, M. B. (1987), "Collective Bargaining Arrangements, Closed Shops and Relative Pay", *Economic Journal*, 97 (385), 140-156.
104. Strand, J. (1987), "Long - term Union – Firm Contracts," Memorandum No. 12, Department of Economics, University of Oslo.
105. Sturgeon, Timothy and Ji-Ren Lee (2005), "Industry Co-Evolution: A Comparison of Taiwan and North American Contract Manufacturers" in Suzanne Berger and Richard Keith Lester eds. *Global Taiwan: building competitive strengths in a new international economy*, Armonk: M. E. Sharpe, Inc.
106. Subramony, M. 2009. "A meta-analytic investigation of the relationship between HRM bundles and firm performance", in *Human Resource Management*, Vol. 48, No. 5, pp. 745–768.
107. Troske, K.R. (1999), "Evidence on the employer size-wage premium from manufacturing," *Review of Economics and Statistics*, Vol. 81, pp. 15-26.
108. UNCTAD (2013), "Global Value Chains and Development: Investment and Value Added Trade in the Global Economy," UNCTAD, United Nations.
109. UNCTAD (2013), "Global Value Chains: Challenges, Opportunities and Implications for Policy," UNCTAD, United Nations.
110. USAID (2006), "Lessons Learned on MSE Upgrading in Value Chains", USAID.

111. Van Biesebroeck, J. (2005), —Exporting Raises Productivity in Sub-Saharan African Manufacturing Firms, *Journal of International Economics*, Vol. 67(2), pp. 373-391.
112. Verbeek, Jos, Pulliainen, Marjo and Kankaanpää, Eila (2009), “A systematic review of occupational safety and health business cases,” *Scandinavian Journal of Work, Environment & Health*, Vol. 35, No. 6, pp 403 – 412.
113. Verhoogen, Eric A (2007), “Trade, Quality Upgrading and Wage Inequality in the Mexican Manufacturing Sector,” Discussion Paper No. 6385, CEPR.
114. Wagner, M. (2003). The Porter Hypothesis Revisited. A Literature Review of Theoretical Model and Empirical Test. Lüneburg: Centre for Sustainability Management, 2003, p.2, CSM Lüneburg
115. Walter Y. Oi & Todd L. Idson (1999), "Workers Are More Productive in Large Firms," *American Economic Review*, American Economic Association, Vol. 89, No. 2, pp. 104-108.
116. Weiss and Henry Landau (1984), “Wages, Hiring Standard, and Firm Size,” *Journal of Labor Economics*, Vol. 2, pp. 477-499.
117. Yellen, Janet L. (1984), "Efficiency Wage Models of Unemployment," *The American Economic Review*, Vol. 74, NO. 2, pp. 200 – 205.

3. Analytical Frame and Objectives of the Study

3.1 Introduction

In the GVC, social upgrading is considered as a major instrument for competitiveness and sustainability of the value chain along with economic upgrading. While there is a direct relation between economic upgrading and competitiveness, the correlation between social upgrading and competitiveness is not as straightforward. This study intends to explore the complex nature of this relationship, taking into account the importance of upgrading in the apparel sector value chain in the backdrop of Rana Plaza tragedy in Bangladesh.

3.2 Defining the Variables—Social, Economic and Gender-embedded Upgrading in the Value Chain

Social Upgrading: This study uses the ILO definition of social upgrading which defines social upgrading in the context of decent work with its four pillars of employment, standards and rights at work, social protection and social dialogue (ILO, 1999). Of these four pillars, some are measurable while others are intangible (Elliot and Freeman, 2003; Barrientos and Smith, 2007). Measurable standards include category of employment (regular or irregular), wage level, social protection and hours worked, as well as gender and unionisation. Measurable standards are often the outcome of complex bargaining processes framed by enabling the rights of workers which include freedom of association, right to collective bargaining, non-discrimination, voice and empowerment.

Economic Upgrading: Economic upgrading of industrial enterprises is reflected through the upgrading of product, process and function upgrading. Different forms of upgrading depend on the firm's level of development in the production system. This includes assembly, original equipment manufacturing (OEM) and original brand manufacturing (OBM). The nature of economic upgrading in a buyer-driven value chain depends on its forms of governance (Gereffi, 1994; Humphrey and Schmitz, 2000 and 2002).²⁶ Four forms of governance are considered here: hierarchic, quasi-hierarchic, network-based and market-driven. Leading firms often operate in hierarchic and quasi-hierarchic forms of value chain. In a quasi-hierarchical value chain, firms can upgrade processes and products relatively faster; but these chains do not permit firms to upgrade functionally. Given the overwhelming presence of this form of value chain, most apparel sector value chains tend to be upgraded only in terms of products and processes.²⁷ A number of specialised services are required in the production process; hence, a firm's upgrading depends on its capability of garment preproduction in preparing samples, pattern, and marker making, as well as improved capability in fabric (dyeing and printing) and garment finishing (e.g., washing, distressing, embroidery) (Minor, 2008). Most of these activities are complicated and require capital investment in machinery and equipment, as well as upgrading the skillset of workers. According to "strategic management", the upgrading of value chain at the suppliers' end depends on three types of variables: complexity of transactions, ability to codify transactions and capabilities in

²⁶Mainstream academic literature generally follows two divergent trajectories as regards the value chain—the strategic management perspective (Gereffi & Lee, 2012; Gereffi, Humphrey & Sturgeon, 2005; Mudambi & Venzin, 2010) and internalisation theory perspective (Buckley & Casson, 2011; Costinot, Vogel & Wang, 2011; Casson, 2013). According to the strategic management, development of the value chain indicates economic upgrading, which generally takes place through the interaction of the major players in terms of level of power that they demonstrate at different stages of the value chain, including research and development, designing, production, marketing and distribution. The internationalisation perspective, on the other hand, indicates development of the value chain from the comparative advantage point of view, where interaction of market players towards improving the competitiveness would lead to upgrading of the value chain.

²⁷ In contrast, market-based value chain tend to facilitate functional upgrading more but may not facilitate adequately process and product upgrading.

the supply base. These variables are sometimes determined by the technological characteristics of products and processes and often depend on the efficiency of industry actors and the social processes characterising the development, dissemination and adoption of standards and other codification schemes.

Economic upgrading at firm level is comprised of upgrading the skillset of functions (assembly/ OEM/ ODM/ OBM/ full package), developing supply chain management skills, job composition, increased capital intensity and mechanisation, as well as product, process, functional and chain upgrading. When considering sector-level economic improvement, we need to take into account the change in productivity, value addition, profit and exports. We must also consider the difference in export market share, per capita growth of output and exports, increased capital and skill intensity of functions (assembly/OEM/ODM/OBM/full package), and lastly, the increased skill intensity of employment and exports.

Gender-embedded Upgrading: A value chain largely driven by a predominantly female labour force demands attention on gender-related issues and concerns. Therefore, the economic transformation in the GVC in the apparels sector through economic and social upgrading must incorporate the role gender. A gender-embedded social upgrading indicates an improvement of rights and entitlements of both male and female workers in the production process. This can be measured by following any of the methods followed by different studies, including the four pillars defined by ILO (ILO, 1999), Elliot and Freeman (2003) or Barrientos and Smith (2007). The method for estimating the benchmark level of social upgrading must also address gender-related issues in each of the stipulated variables. An underlying assumption in such an analytical framework would be that women and men operate in different power relations, which creates wider gender inequality in different activities of firms as well as entitlements and rights (Barrientos, 2014). From such a macro perspective, examining the gender issue in meso and micro levels requires deeper integration of gender-related issues in the process of production. Apart from those gender-related issues which are associated with economic and social upgrading, there are various other issues concerning gender integration in the value chain. Female workers often face various work hazards ranging from sexual harassment, health hazards, absenteeism, lack of parental protection to a lack or limited leave and vacation. Without improving the perspective on gender equality, those concerns will remain in the value chain. Such issues, though not directly related to upgrading, are worthy of consideration in the context of development of a gender-embedded apparel value chain.

3.3 Nature of Relationship between Economic, Social and Gender-embedded Upgrading

Economic and social upgrading is often entangled with one but does not necessary lead to the other (Barrientos *et al.* 2010). While upgrading the GVC focuses on economic upgrading, it fails to take into account social and gender-related upgrading. Since economic upgrading in the apparel value chain focuses mainly on lowering cost by enhancing productivity and improving quality, there is a disconnect between these three forms of upgrading. However, there is an opportunity of convergence between the three.

Social upgrading involves three major components—wages and employment, workplace safety and workers' rights. These are usually found to be less responsive towards economic-upgrading (Barrientos *et al.*, 2011). Labour-intensive upgrading occurs amongst workers who move to better types of labor-intensive work in better working environments. While higher-skill upgrading occurs among those workers who move to those jobs which are associated with progressive social upgrading. One aspect of quality-related issues is associated with consumer satisfaction with regards to worker's rights and work place safety and security; the improvement of quality issues portrays not only economic upgrading but social upgrading as well. The nature and extent of this kind of convergence between the two upgrading methods depend on the level of engagement of buyers and suppliers in

the production process. Buyers and suppliers tend to set strategies by deploying three different types of combinations: ‘low road’, ‘high road’ and ‘mixed approaches’ that involve different configurations of combining economic and social upgrading (Barrientos, Gereffi & Rossi, 2011). Driving the value chain in the right direction by ensuring upgrading on both accounts remains a major hurdle.

The upgrading process may improve in reducing excessive overtime and also lead to improvements in working environment, and regulated contracts; on the other hand, product upgrading can bring about skill upgrading for regular workers (Rossi, 2013). In contrast, functional upgrading might lead to an adverse impact on unskilled workers who may experience downward social mobility. Technological change could lead to a growing polarisation of employment structure and wages (Butollo, 2013). Attempts to overcome these imbalances of the old growth model must, therefore, be adjusted to account for the technologically focused path of industrial upgrading.

As garment firms are generally capable of increasing productivity, the appropriate increase of minimum wage and enforcement of labour compliance will contribute towards improvements in the welfare of workers and increase trust in export markets without impairing competitiveness (Fukunishi, 2014). But greater coordination among garment firms, the government and related organisations including labour unions, is required in order to provide public goods, including the training of workers, better business environment, and labour compliance institutions.

Wage-employment outcomes can be affected through the nature of collective bargaining operations in the production process. There are three structural drivers in pay determination which include productivity growth, de-unionisation and trade; this states that productivity gap, de-unionisation and trade plays a significant role in the labour income share (Judzik and Sala 2013). We find that there is positive correlation between trade union influence and pay; while we fail to find a connection between trade union activity and the rate of casual employment, training efforts or work–life balance policies (Olaverri and Huerta, 2011). The presence of unions is significantly associated with higher wage rates and pension coverage, as well as a wide range of other welfare indicators (Yao and Zhong, 2013).

A strong correlation exists between discriminating social attitudes toward gender equality and gender pay gaps within firms across regions. The gap is larger in regions where more people object against gender equality rights (Janssen, Sartore and Gellner, 2016)²⁸. Data indicates that increasing openness to trade is associated with larger wage gaps in India’s concentrated manufacturing industries (Menon and Rodgers, 2009)²⁹. A key driver of declining wage gap is an improvement in female educational qualifications—the gender wage gap shrinks at the lower end of the wage distribution than at the upper end. This is because women remain underrepresented in top leadership positions in work organisations, a reality that reflects a variety of barriers. However, some women do attain top leadership positions, leading scholars to probe under what conditions women are promoted despite seemingly intractable and well-documented obstacles. Diversity among decision makers significantly increases women’s likelihood of being promoted to top leadership positions (Cook and Glass).³⁰

3.4 Governance in the Value Chain and Upgrading

The interaction between global buyers and suppliers influences the upgrading of firms under uneven and unequal playing fields (Gereffi and Memedovic, 2003 and Humphrey and Schmitz, 2000 and 2002). Three variables—complexity of transactions, ability to codify transactions and capabilities in the supply base—play significant roles in determining how GVCs are being governed and changes occur.

²⁸ Simon Janssen, Simone Tuor Sartore, and Uschi Backes-Gellner, Discriminatory Social Attitudes and Varying Gender Pay Gaps within Firms, *ILR Review*, 69(1), January 2016, pp. 253–279.

²⁹ Nidhiya Menon and Yana Van Der Meulen Rodgers, International Trade and the Gender Wage Gap: New Evidence from India’s Manufacturing Sector, *World Development* Vol. 37, No. 5, pp. 965–981, 2009.

³⁰ Alison Cook and Christy Glass, Women and Top Leadership Positions: Towards an Institutional Analysis, *Gender, Work and Organization*. Vol. 21 No. 1 January 2014.

However, local and national structure and institutions also matter (Gereffi, Humphrey & Sturgeon, 2005). As organisational structure of cross-border production distribution takes place, 'Separation of ownership', which is also related with the governance of the GVC, must also be accounted for (Arndt and Kierzkowski, 2001). According to the internationalisation theory, upgrading the value chain in a multistage production depends on the level of improvement of specialisation at different stages in the production process. We find that complex tasks are often carried out by specialists who are more productive than generalists (Casson, 2013). Since the division of labor applies not only to physical processes but also to intellectual process, upgrading the value chain demands development on both accounts.³¹

Social issues are usually addressed through corporate social responsibility (CSR) and the social audit system of the lead firms. Given the limitations of this system in terms of ensuring workers' rights and safety, there is a growing drive to explore an appropriate institutional mechanism that would also ensure sustainable supply chain management in the apparel sector. In this context, a shared responsibility in the entire supply chain is increasingly given greater prominence, where the lead firm is to follow a code of conduct, monitor and audit firm-level practices not only by a third party but also by a first party. Setting up of international standard certification system is being increasingly urged by key stakeholders. Hence the role of the lead firms, as also suppliers, in developing sustainable value chain calls for a closer and more in-depth examination.

As global apparel value chains become more competitive, buyers put greater emphasis on setting up optimal supply chains where efficiency and flexibility in the supply chain management get greater prominence. In the future, supply chains in the apparels sector will depend more on capital intensiveness as well as information intensiveness. Leading firms will continue to hold their market power through size of sales, high-value activities in terms of design, marketing, consumers' issues and logistics. A number of leading firms have emerged along with the traditional market players including retailers, mass merchants, specialty apparels, brand marketers and brand manufacturers. The growing concentration of lead firms on product development and marketing has weakened its involvement in various aspects related to production and product-related functions. It must also be noted that leading firms face higher costs associated with brand development as a result of diversified products, shorter product life-cycles and more intensive international competition.

On the other hand, competition at the suppliers' end has been increasing both because of a rising number of suppliers in a single sourcing country, as well as the higher market entry of suppliers from new sources due to increasing trade integration between developed and developing countries. While global supply capacity has been increasing, the market continues to be consolidated, one where full-package suppliers are preferred over their competition. With the changing dynamics, new forms of coordination and management have emerged between lead firms and suppliers. In this context, upgrading the supply chain in any particular segment may become increasingly difficult due to specialisation emerging in different segments along the value chain.

3.5 Objectives of the Study

This study aims to assess the capacity of apparel enterprises in undertaking economic transformation as well as in upgrading physical and social compliances, thereby continuing to maintain its international competitiveness. 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 is related to an enterprises' ability to raise the level of productivity, efficiency, technological readiness, market and product

³¹ A part of the division of labour is associated with vertical intellectual division of labour through which innovations are planned and implemented, such as the chain linking basic research, product development and production. The upgrading of the value chain at the suppliers' end may not necessarily be associated with this.

diversity among others. Social upgrading is more closely associated with the ability to undertake necessary restructuring of physical and social compliances. Based on this assessment, the study put forward necessary policy suggestions with regard to long-term economic upgrading, along with social upgrading that targets sustainable development of apparel enterprises.

3.6 Major Hypotheses

This study intends to focus on changes in firm level capacity owing to various kinds of initiatives in order to undertake existing and future challenges of competitiveness not only at the national level but also at the international level and be able to make necessary upgrades. Moreover, such an assessment of enterprise-level economic and social upgrading will be cross-examined in terms of their gender-embedded nature, which could reveal possible impact and implications of the upgrading on gender-related issues in the apparel value chain of Bangladesh.

The study intends to test three hypotheses. These include social upgrading, economic upgrading and gender-embedded upgrading of the apparel value chain.

3.6.1 Hypothesis 1

The first hypothesis tests whether a changing cost structure owing to upgraded social and physical compliance will raise firms' overall cost of production. Given the diverse structure of cost and return, not all firms will be able to internalise these additional costs and therefore, a part of firms will exit from the market as they will no longer remain competitive; on the other hand, firms with the capacity to improve their productivity will remain competitive in the market.

3.6.2 Hypothesis 2

The second hypothesis looks into whether or not transformation of the apparels industry will be reflected in firms' upgrading capacity in the production process by enhancing their growth further in the lower-end segment of the product market and their ability to enter and grow in the upper-end segment. Not all firms will be able to upgrade in full due to differences in cost and returns on investment, level of productivity, product specialisation, net asset and nature of contractual arrangement.

3.6.3 Hypothesis 3

Lastly, the third hypothesis tests if the presence of gender inequality in the apparel sector value chain, economic and social upgrading of apparel enterprises will reduce the gap between male and female workers, both within and across enterprises in terms of entitlements, rights, access to employment and safety and security and job hazards including sexual harassment, among others.

3.7 Research Methodology

The main research question of this study focuses on measuring the benchmark conditions and capacity for upgrading in the value chain, which need to be measured: a) benchmark level of social upgrading of firms; b) benchmark level of economic upgrading of firms; c) capacity for economic upgrading of firms; d) factors responsible for the benchmark level of social upgrading, and lastly; and e) factors responsible for the benchmark level of economic upgrading.

3.7.1 Testing First Hypothesis

Our first hypothesis tests a firms' benchmark level of social compliance. We have measured this using Standing (2003) method. A composite index has been suggested, termed as 'Decent Workplace Enterprise index (DWE)' for different countries of different development strata.³²

Based on Standing (2003), the present study measured firm's social benchmark level in the context of the apparels sector of Bangladesh 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)³³.....1)

Where the Employment sub-index (ESI) is defined as ESI = Human Resource Development Enterprise Index (HRDEI)³⁴ + Work Security Index (WSI)³⁵ + Employment Security Index (ESI)³⁶

Standard sub-index (SSI) is defined as SSI= Electrical compliance sub-index (ECI) + Fire compliance sub-index (FCI) + Structural compliance sub-index (SCI)³⁷

³² DWE has been defined as: DWE = normalised value of (Human Resource Development Enterprise index + Work Security Index + Employment Security index + Non-discrimination index + Economic Equity index + Economic Democracy index). Normalisation is made by the following rule: $X_i = [X_{actual} - X_{min}] / [X_{max} - X_{min}]$

Where, X_i is the normalised value of the Index, X_{actual} is the actual value obtained by the firm, X_{min} is the minimum value attained by any firm, and X_{max} is the maximum value of the Index attained by any firm. As a result, values of each index range from a minimum of 0 to a maximum of 1. Details of his calculation is given in the annex.

³³ Non-Discrimination Index (NDI) = $R_s + T_s + T_{Fem} + FWC + D$. where ND is the index of non-discrimination, and $R_s = 1$ if the management has no preference for either men or women in recruiting production workers, 0 otherwise; $T_s = 1$ if management stated that they had no preference for either men or women in providing training for production workers, 0 otherwise; $T_{Fem} = 1$ if women's share of workers trained is equal to or greater than their share of total employment, 0 otherwise; $FWC = 1$ if the female share of employees (managerial, specialist or general service workers) was greater than 40 per cent, 0 otherwise; $D = 1$ if the firm employed workers with disabilities, 0 otherwise.

³⁴ 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 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.

³⁵ 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.

³⁶ 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.

³⁷ All components of the sub-index will be calculated based on the enterprise-level information collected by the ACCORD, ALLIANCE and the ILO.

Rights sub-index is defined as RSI= Economic Equity Index (EEI)³⁸ + Economic Democracy Index (EDI)³⁹

The ongoing information of a firm’s level of fire, electrical and physical integrity measured by the Accord, Alliance and ILO will be used to estimate the benchmark level. Estimating the benchmark level of a firm’s social upgrading of Bangladesh’s apparels sector will be another valuable addition.

Since social compliances are mandatory, those firms which are below the national standard need to upgrade their level as per requirement. Given the poor benchmark condition, most firms need to invest in different areas in order to improve the benchmark level. Therefore, an analysis of the cost of compliance and its impact on firms’ returns needs to be undertaken.

Cost for social compliance = Cost for selling, general and administrative (SGA) expenses and overhead which is related to compliance2)

A firm’s cost for compliance has been calculated using a profit function and thereby average cost, average variable and marginal cost have been estimated. This analysis helped us in understanding the implication of social compliance costs on the marginal cost of production. As firms invest on social compliance, its cost of social compliance changes and shifts the cost curves. Since firm’s marginal revenue does not change under the changing cost structure, its profit decreases and in some cases, puts the firm in a loss and in an extreme case, may push firm out of business. Firm level profit function indicates that

$$\text{Firm's profit, } \pi = \text{TR} - \text{TC} = (\text{P} - \text{AC}) \cdot \text{Q} \dots\dots\dots 3)$$

After investment for social compliance, the firm’s profit level will change to:

$$\pi' = \text{TR} - \text{TC}' = (\text{P} - \text{AC}') \cdot \text{Q} \dots\dots\dots 4)$$

The firm’s profit level reduces with the changes in fixed cost (i.e. new investment for compliance) and changes the equilibrium condition, $P > AC'$, where $AC' = AC + \Delta AC_F$. However, if $\Delta AC_F > P - AC$, a firm will make loss; will continue production till $P > AVC$.

On the other hand, profit level further reduces if variable cost rises (because of a rise in compliance-related operational costs). This phenomenon is the result of changes in costs as MC (Marginal cost) and AVC (Average variable cost). Under the new equilibrium condition, a firm continues to operate under losses till $P > AVC'$. However, it decides to shut down when $P < AVC'$. Such an analysis helps to identify which firm exits due to the high cost of compliance.

Hypothetically, social compliance positively influences firm-level productivity. As a result, firms’ costs for social compliance, particularly marginal and variable costs, internalise through rising productivity. Using the production function, the productivity of firms has been disaggregated in order to identify the contribution of social compliance in it.

$$y_{it}^c = \alpha_l^c l_{it}^c + \alpha_k^c k_{it}^c + \alpha_n^c n_{it}^c + \beta^c M_i^c + \gamma^c Z_{it}^c + u_{it}^c \dots\dots\dots 5)$$

³⁸ EEI = Min/Emp + M + AW/AWM + FB where, Min./Emp = 1 if the percentage 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.

³⁹ EDI = TU + COLL + WF + SH + P where, TU = 1 if there is a recognised 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.

Factors that might influence a firm's social upgrading will be analysed in order to understand their nature and extent of impact.

Social Upgrading = F (turnover, rate of return, level of yearly profit, mid-level management, debt/equity ratio, contractual relation, information access, economic upgrading, monitoring by the government, monitoring by the buyers)6)

3.7.2 Testing Second Hypothesis

For our second hypothesis, we look at a firm's capacity of economic upgrading depends on its benchmark condition. Economic upgrading takes place gradually from process to product and finally reaches functional upgrading. Firms can develop three levels of capacity for upgrading from its benchmark condition, which includes capacity for process upgrading only, capacity for process and product upgrading and capacity for process, product and functional upgrading.

A comprehensive index will be developed in order to estimate its benchmark condition as well as different levels of capacity for upgrading.

- a) Firm's benchmark process level = Weighted index of firm's level of use of different kinds of processes 7)
- b) Firm's benchmark product level = Weighted index of firm's use of different kinds of products8)
- c) Firm's benchmark functional level = Weighted index of firm's use of different kinds of upgraded functions9)
- d) Firm's overall benchmark level = Aggregate weighted indexes of processes, products and functional levels 10)

A set of indicators has been identified in order to estimate the benchmark level of firms' process, products and functions (Table 3.1). Based on the indicators, the benchmark condition of process, products and function will be estimated and finally, an overall benchmark condition will be identified (see equations 5, 5a, 5b and 5c). Measuring the benchmark condition of technological progress of firms will be one of the unique contributions of this study.

Table 3.1: Selected Indicators to Measure Benchmark Levels of Process, Product and Functional Upgrading

Indicators related to process upgrading	Indicators related to product upgrading	Indicators related to functional upgrading
Line/Worker Ratio	Simple and basic design	Extent of forward linkage activity
Line/Machine Ratio	Changes in basic design	Branding
Machine/Worker Ratio	Fancy and Fashionable design	Advanced R&D facility
Machine/Output Ratio/Line	R&D facility	Fashion and designing
Labor/Output Ratio/Line		Warehousing facility abroad
New department		Marketing facility abroad
Wastage, Stock lot		
Absenteeism		
Job switching		
Use of sophisticated machineries		

Source: Prepared by authors

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 11)

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 11a)

Product upgrading sub-index = Simple and basic design + Changes in basic design + Fancy and Fashionable design+ Fancy and Fashionable design + New Products Developed 11b)

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..... 11c)

After estimating the benchmark level, each firm's ability to upgrade has been measured separately. As mentioned earlier, each firm has a distinct level of capacity for upgrading (or not upgrading), which is reflected in achieving either any of the three levels: capacity for process upgrading only, capacity for process and product upgrading and capacity for process, product and functional upgrading (see equations 6, 7 and 8). Estimating the capacity for upgrading is another unique contribution of this study.

- e) Capacity for process upgrading => If the index value of process upgrading is higher than the average value 12)
- f) Capacity for product upgrading =>If the index value of product upgrading is higher than the average value..... 13)
- g) Capacity for functional upgrading => If the index value of product upgrading is significantly higher than the average value 14)

Since a firms' upgrade decision depends on contractual arrangements with buyers, different kinds of relationships between suppliers and buyers need to be taken into account. Likewise, as suppliers operate in different tiers, buyers operate in different tiers. Table 3.2 provides different kinds of contractual relationships between buyers and suppliers. Identifying specific kinds of contractual relations between suppliers and buyers and their implications on the level of upgrading are also unique contributions of this study.

Table 3.2: Type and Nature of Contractual Relationship

Suppliers	Buyers	Nature of relationships
Tier 1 (Ts 1)	Tier 1 (Tb 1)	Ts1-Tb1; Ts1-Tb2
Tier 2 (Ts 2)	Tier 2 (Tb 2)	Ts2-Tb1; Ts2-Tb2
Tier 3 (Ts 3)	Tier 3 (Tb 3)	Ts3-Tb2; Ts3-Tb3; Ts3-Ts1

Source: Prepared by authors

Firms' benchmark conditions for upgrading and thereby their capacity for upgrading is determined by a number of endogenous and exogenous factors. An econometric exercise has been carried out in order to understand the nature and extent of influence of those factors on a firm's benchmark level.

Firm's capacity to upgrade = F(skill composition, turnover, use of technology, rate of return, level of yearly profit, productivity, mid-level management, debt/equity ratio, contractual relation, risks, information access) 15)

A major determinant factor for upgrading is productivity of firms. A separate exercise has been carried out in order to estimate the productivity of firms using an extended Cobb-Douglas production function.

$$y_{it}^c = \alpha_l^c l_{it}^c + \alpha_k^c k_{it}^c + \alpha_n^c n_{it}^c + \beta^c M_i^c + \gamma^c Z_{it}^c + u_{it}^c \dots\dots\dots 16)$$

where, Y = deflated sales, L = labour, K = capital, and N = intermediate inputs (materials) of firm i at time t in country c (we allow country-specific parameters on the inputs and in some experiments, the management scores) and lower case letters denote natural logarithms (y = ln(Y), etc.). The Z's are a number of other controls that will affect productivity. Management practice, denoted as M, is also taken as a key variable.

3.7.3 Testing Third Hypothesis

Our third hypothesis tests how gender-embedded social upgrading influences economic upgrading of the value chain on the basis of the methods suggested for testing hypotheses 1 and 2.

Analysis of Gender-embedded Social Upgrading

First, gender-embedded social benchmark of surveyed enterprises is estimated.

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)17)

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)

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

Second, rise in investment for addressing gender-embedded social compliance affects a firm's profit level:

$$\Pi'' = TR-TC'' = (P-AC'').Q \dots\dots\dots 18)$$

The firm's profit level is reduced with the changes in fixed and variable costs (i.e. new investment for gender-related compliances) and changed equilibrium condition, $P > AC''$, where $AC'' = AC + \Delta AC''_F + \Delta AC''_V$. However, if $\Delta AC''_F + \Delta AC''_V > P - AC$ firm makes losses; continues production till $P > AVC$.

Third, it is hypothesised (hypothesis 3.1) that gender-embedded social compliance positively influences firm-level productivity. As a result, firms' costs for gender-embedded social compliance, particularly marginal and variable costs are internalised through rising productivity. Using the production function, the productivity of firms is disaggregated in order to identify the contribution of gender-embedded social compliance in it.

$$y_{it}^{c'} = \alpha_l^{c'} l_{it}^{c'} + \alpha_k^{c'} k_{it}^{c'} + \alpha_n^{c'} n_{it}^{c'} + \beta^{c'} M_i^{c'} + \gamma^c Z_{it}^{c'} + u_{it}^{c'} \dots\dots\dots 19)$$

Fourth, factors which influence a firm's gender-embedded social upgrading are analysed as follows:

Gender-embedded social upgrading = F'(turnover, rate of return, level of yearly profit, mid-level management, debt/equity ratio, contractual relation, information access, economic upgrading, monitoring by the government, monitoring by the buyers)20)

Analysis of Gender-embedded Economic Upgrading

Firm’s benchmark level of gender-embedded economic upgrading = Weighted index of gender embedded process upgrading sub-index + Weighted index of gender-embedded product Upgrading sub-index+ Weighted index of functional upgrading sub-index 21)

Gender embedded process upgrading sub-index = Line/Worker(m,f) Ratio + Line/Machine Ratio+ Machine/Worker (m,f) Ratio+ Machine/Output Ratio/Line+ Labor (m,f)/Output Ratio/Line+ New department+ Wastage, Stock lot+ Absenteeism (m,f) + Job switching (m,f) + 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 21a)

Gender embedded product upgrading sub-index = Simple and basic design (use of male/female worker) + Changes in basic design + Fancy and Fashionable design (use of male/female worker) + New Products Developed (use of male/female worker)..... 21b)

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..... 21c)

After estimating the benchmark level, each firm’s capacity for upgrading is measured separately. As mentioned earlier, each firm has a distinct level of capacity for upgrading (or not upgrading) is reflected in achieving either any of the three levels: capacity for process upgrading only, capacity for process and product upgrading and capacity for process, product and functional upgrading (see equations 6, 7 and 8). Estimating the capacity for upgrading is another unique contribution of this study.

- a) Capacity for gender-embedded process upgrading => If the index value of gender embedded process upgrading is higher than average value 22)
- b) Capacity for gender-embedded product upgrading =>If the index value of product upgrading is higher than average value..... 23)
- c) Capacity for functional upgrading => If the index value of product upgrading is significantly higher than average value 24)

Firms’ benchmark conditions for gender-embedded upgrading and thereby, their capacity for such upgrading is determined by a number of endogenous and exogenous factors. An econometric exercise will be carried out in order to understand the nature and extent of influence of those factors on firm’s benchmark level.

Firm’s capacity to gender embedded upgrading = F (skill composition (m,f), turnover, use of technology, rate of return, level of yearly profit, productivity (m,f), mid-level management (m,f), debt/equity ratio, contractual relation, gender embedded risks , gender embedded information access) 25)

The productivity of firms in terms of their gender embeddedness is estimated by using an extended Cobb-Douglas production function.

$$y_{it}^{c'} = \alpha_l^{c'} l_{it}^{c'} + \alpha_k^{c'} k_{it}^{c'} + \alpha_n^{c'} n_{it}^{c'} + \beta^{c'} M_i^{c'} + \gamma^{c'} Z_{it}^{c'} + u_{it}^{c'} \dots\dots\dots 26)$$

Where, Y = deflated sales, L = labor, K = capital, and N = intermediate inputs (materials) of firm i at time t in country c (we allow country-specific parameters on the inputs and in some experiments the management scores) and lower case letters denote natural logarithms (y = ln(Y), etc.). The Z’s are a

number of other controls that affect productivity. Management practice, denoted as M, is also taken as a key variable.

3.8 Management of the Study

An 18-member Advisory Committee comprises of representatives of different stakeholders related to the RMG sector, provided necessary guidance in different phases of the study. The Committee was chaired by the Honb'le Secretary, Ministry of Labour and Employment (MoLE) which included representatives of BGMEA, BKMEA, ILO, BILS, trade union leaders, brands/retailers and CPD representatives. A total of eight meetings of the Advisory Committee were held over the period. Annex 1 presents the list of members of the advisory committee.

The CPD-RMG Study mobilised a pool of researchers from both within and outside CPD to conduct the study. As per plan, two advisors specialised on industry and trade, the team leader and programme manager have been appointed from the CPD while a number of project staff had been recruited on contractual terms, including three consultants (economic, social and gender), an industrial engineer, junior researchers, a field supervisor, a communication officer and an administration associate. A 16-member survey team had been recruited to conduct the field survey. Two support staff were working in the CPD-RMG Office. Besides, the project received able support from different divisions including the Dialogue & Communication and Administration & Finance, particularly from the heads of the two divisions. For the smooth functioning of project-related work, CPD also rented a separate space for the CPD-RMG office. The office is located near the main office of CPD in Lalmatia.

Annexure

Annex 1: List of Members of the Advisory Committee

Designation	Position
Secretary, Ministry of Labour and Employment (MoLE)	Chairman
Additional Secretary (Export Oriented Industry & IO), Ministry of Labour and Employment (MoLE)	Member
President, BGMEA/Vice President, BGMEA	Member
Vice President, BKMEA	Member
General Secretary, Bangladesh Trade Union Kendra	Member
Assistant Executive Director, Bangladesh Institute of Labour Studies (BILS)	Member
Chairperson, National Coordination Committee for Workers Education (NCCWE)	Member
President, National Garments Sromik Federation	Member
Operations Manager-RMG, ILO Country Office	Member
Monitoring and Evaluation Officer, ILO Country Office	Member
Global Manager, Governance Production, H&M Bangladesh	Member
Communication and Public Affair Manager, H&M Bangladesh	Member
Sourcing Manager Walmart Global Sourcing	Member
Representative: Senior Manager, Building and Fire Safety Assessment, Walmart Global Sourcing	Member
Programme Officer, Development Co-operation, the Embassy of Sweden	Member
Cluster Coordinator, Textile-Cluster, GIZ Bangladesh	Member
Programme Coordinator, GIZ Bangladesh	Member
Senior Policy Advisor, GIZ, Bangladesh/Technical Advisor, GIZ, Bangladesh	Member
First Secretary-Economic Affairs & RMG Sector, Embassy of the Kingdom of the Netherlands/ Policy Advisor, Economic Affairs & CSR, Embassy of the Kingdom of the Netherlands Senior Advisor, Economic Affairs and CSR, Embassy of the Kingdom of the Netherlands	Member
Country Representative, FES, Bangladesh Office	Member
Representative: Programme Coordinator, FES, Bangladesh Office	Member
Distinguished Fellow, CPD	Member
Distinguished Fellow, CPD	Member
Executive Director, CPD	Member
Research Director, CPD	Member-Secretary

4. Population of RMG Enterprises and Workers: Main Features

4.1. Introduction

The lack of updated and reliable data of RMG enterprises fails to commensurate with the robust growth of the sector over the decades. The readymade garment (RMG) sector is no exception. The poor availability of data at the level of individual enterprises cannot commensurate with its robust industrial growth. Public and private databases have data on several indicators related to the RMG sector. Most of the databases are not comprehensive, not regularly updated, and do not provide information that meets the requirements of the sector. The RMG sector needs a comprehensive database because of its overwhelming importance to the national economy in terms of industrial production, employment and export as well as the increasing demand to ensure accountability and transparency in the production process. While initiatives have been taken to address the need for updated data, these are purpose-made and may not form a comprehensive database for the most important manufacturing sector of the country.

Based on the available data, the study has tried to create a master database of the RMG enterprises currently in operation. In the process of data mining, the study has explored weaknesses in the available datasets that need to be bridged to address the reliability of RMG-related data.

The study has compiled data from various available sources, including the internal databases of public and private organisations. To create a harmonised database, the variables used in different datasets usually need to be standardised. This study harmonises data on different variables as defined in different datasets. Besides, the reporting period of different datasets are also disparate. Most datasets provide information about enterprises, which are members of different manufacturers' and exporters' associations. Therefore, the data of some enterprises which are not members of these associations are reported only partially in this data universe.

4.2 Available Information on Bangladesh's Garments Sector: A Brief Review

A number of public and private organisations have maintained data and information on the RMG sector of Bangladesh. Among these, the public organisations that possess relevant data are the Bangladesh Bureau of Statistics (BBS), Department of Inspection for Factories and Establishments (DIFE) and Department of Labour (DoL). Private organisations that possess data on the RMG enterprises include Bangladesh Garments Manufacturers and Exporters Association (BGMEA), Bangladesh Knitwear Manufacturers & Exporters Association (BKMEA), the Bangladesh Accord on Fire and Building Safety (hereafter Accord), the Alliance for Bangladesh Worker Safety (hereafter Alliance), and National Tripartite Action Plan for Building and Fire Safety (hereafter NI). Each of those databases are purpose-made but they have not been regularly updated, so can be used in only a limited way. As a result, there remains a need for a comprehensive dataset that stakeholders may use to meet their requirements.

4.2.1 National Database: Survey of Manufacturing Industries and Others

Among the public organisations that are the most important sources of information for manufacturing enterprises such as those in the RMG sector is the Bangladesh Bureau of Statistics (BBS). The *Census of Manufacturing Enterprises* (CMI) and later the *Survey of Manufacturing Enterprises* (SMI) published by the Bangladesh Bureau of Statistics (BBS) are the two of their flagship publications. Both reports are published with specific time intervals. The CMI was published in 1986, 1991, 1995 and 2000. The SMI was published in 2005, 2010 and 2012.⁴⁰

⁴⁰ Major indicators covered under these reports include number of establishments, ownership of establishments, legal status of enterprises, fixed assets, total people engaged, number of employees, employment cost, value of gross output, industrial cost, gross value added, tax payments by enterprise, value

Information related to enterprises is also found in the *Economic Census*. The *Bangladesh Labour Force Survey* contains information on industrial workers. Production-related information is reported monthly in the *Industrial Production Statistics*. Industry-wise aggregate information is available in a number of national documents such as *Statistical Yearbook of Bangladesh*, *Bangladesh Economic Review*, *Import Payments*, *Export Receipts*, and *Major Economic Indicators* published by Bangladesh Bank. Some global databases such as World Development indicators (WDI), World Integrated Trade Solutions (WITS) and UNCOMTRADE also report macroeconomic indicators including those of enterprises and workers. These, however, mostly report aggregate-level information of macroeconomic and sectoral indicators.

The published data portrays aggregated-level information/data of the manufacturing sector including RMG but enterprise-level information is not available in the public domain. Since the aforementioned national survey reports are published in wide time intervals, stakeholders could use them only to a limited extent. Thus, a dearth remains in comprehensive and real-time data of manufacturing enterprises of the RMG sector in the public domain.

4.2.2 Data on the Garments Sector in Other Public and Private Organisations

At present, data related to RMGs at the level of individual enterprises is available to other public organisations such as the DIFE, the DoL, and private organisations such as the BGMEA, BKMEA, the Accord, the Alliance, and the NI (Table 4.1). However, most of this data is available only for internal use. Only two organisations, namely the Accord and the Alliance, have made public their detailed data of individual enterprises on their respective websites. BGMEA and BKMEA have presented only limited information of their members and enterprises on their websites.

4.2.3 Survey-based Data on the RMG Sector

Various research reports and academic papers have been written using primary surveys conducted on the RMG sector in Bangladesh. Since the early 1990s, various organisations have conducted these surveys with different objectives. Data gleaned from these primary surveys could be a good source of information. Unfortunately, most of those databases are not publicly available. In 1990 and 1991, the Bangladesh Institute of Development Studies (BIDS) conducted a survey at the level of individual workers at RMG enterprises on the economic and social condition of RMG workers. In 2006, the Centre for Policy Dialogue (CPD) surveyed over 200 RMG enterprises on the changes and challenges for the RMG sector of Bangladesh in the post-MFA period. In 2014, Bangladesh Mahila Parishad conducted a survey involving 1013 female garment workers. In 2015, the Asian Centre for Development surveyed 1,204 RMG workers to examine how the garments industry affected its workers socially. The Dhaka University surveyed 1,024 female garment workers in sweater, knitwear and weaving factories to study the vulnerabilities of employment in Bangladesh's garments sector.

Table 4.1: Available Information in Each Dataset

Indicators	Different Datasets								
	BGMEA	BKMEA	Accord I	Accord II	Alliance I	Alliance II	NI	DIFE	DoL
Info. available on no. of factories	4,329	2,085	1,608	1,466	862	649	1,549	4,808	
Information Available on following indicators									
Size (employee)	√	√	√		√			√	
EPZ								√	
Products	√	√						√	
Production capacity	√	√							
Operational	√	ILO							
Inspection			√	√	√	√	√	√	
TU/WPC									√

added at factor cost, and fixed assets and output by ownership. These reports also rank establishments by employment size and value of fixed assets.

BGMEA/ BKMEA ref	√	√					√	√	
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* Collection time of datasets was between October/November, 2016

Source: CPD-RMG Study, 2018

4.3 Observations regarding Collected Dataset

The observations in this section point out the weaknesses in existing data on RMG enterprises that need to be improved if the data is to be used better.

Incomprehensive Data: There is no one dataset that contains data on all the required variables. For example, the datasets of BGMEA and BKMEA only contain data on their members, while Accord and Alliance contain data on only those factories that they monitor and inspect. There is no comprehensive dataset on the garments sector available that can provide basic insights on total employment, total number of operational factories, volume and capacity of exports, etc.

Incompleteness: Many of the datasets are incomplete, i.e. a lot of data is missing data. For example, in the DIFE master dataset, out of 4,808 factories, the name of authority is missing for 259 factories, designation is missing for 118 factories, membership information is missing for 29 factories. Most importantly, there is no information on the workers for 1338 factories, which constitutes around one-fourth of the total factories listed in the dataset. Also, the DIFE dataset related to compliance contains information on firms of only four districts. In the BGMEA dataset, data on total workers is missing for 78 factories, while in the case of the BKMEA dataset this information is missing for 1,739 factories. The DoL database on trade unions has data on factories in only Dhaka and Chittagong, so is also incomplete. Many data anomalies are present in the data. For example, some operational factories are listed as non-operational and vice-versa. Many databases contain conflicting information about the same enterprise as well as duplicate information about the same enterprise while there exists practically no information at all about certain factories. Table 4.2 compares the information missing under each indicator for the datasets of each organisation.

Table 4.2: Missing Information in Each Dataset

Database	BGMEA	BKMEA	Accord I	Accord II	Alliance I	Alliance II	NI	DIFE	DoL
No. of factories	4,329	2,085	1,608	1,466	862	649	1,549	4,808	N/A
Size (employee)	0%	83.6%	21.21%	N/A	24.94%	N/A	N/A	27.83%	N/A
EPZ	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.10%	N/A
Products	0.79%	89.36%	N/A	N/A	N/A	N/A	N/A	0.49%	N/A
Production capacity	4.41%	90.70%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Operational	42.07%	59.62%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Inspection	N/A	N/A	0%	0%	0%	0%	0%	44.95%	N/A
TU/WPC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0%
BGMEA/ BKMEA ref	0%	0%	N/A	N/A	N/A	N/A	0%	32.5%	N/A

Source: CPD-RMG Study, 2018

Inconsistencies: There are inconsistencies in most of the data reported. For example, in the DIFE master dataset, there are 131 entries in the 'designation' field with no indication whatsoever as to which factories these designations belong. The Accord 2 dataset is not a proper subset of the Accord 1 dataset—there are factories listed in Accord 2 which are not listed in Accord 1. Also, there are a number of factories among the datasets of Accord and Alliance that are not members of either BGMEA or BKMEA. Data collected from the different databases cannot be taken at face value and needs to be rechecked before it can be utilised further. Fictitious and erroneous data should be eliminated from the different datasets to avoid confusion. These large datasets need to be regularly updated by deleting and archiving redundant data. It is necessary to recognise and fix the data anomalies. Poor data quality may lead to poor decision making in the organisations using the databases for research.

Other Limitations: The datasets of BGMEA, BKMEA and DIFE are not updated regularly. In fact, it is hard to discern from the datasets when they were last updated. BGMEA and BKMEA datasets do not provide information on whether the factories listed are still in operation or not. For factories that are members of both BGMEA and BKMEA, one organisation's database does not list the enterprise's reference ID number in the other database. Data on the progress in the remediation process of the factories listed in the Alliance database is not available. Although the national initiative dataset provides data on the reference IDs of BGMEA and BKMEA, it does not provide data on the number of workers. Data is only provided on the addresses of the trade union offices but the addresses of the factories in which the trade unions are active are not given. A real-time database containing full information on all the factories is essential. The database should also be regularly reorganised to remove out-of-date and deleted data. Archiving the deleted files would help the database to respond faster.

4.4 Creation of a Harmonised or Consolidated Dataset

Since data on the RMG enterprises is disjointed, purpose-made and dated, it is difficult to draw conclusions about the overall sectoral profile of the RMG industry. Therefore, it is important to prepare a 'data universe' based on the data and information available to initiate the process of developing a comprehensive database of the RMG industry.⁴¹ The CPD-RMG Study has followed a systematic process of preparing this comprehensive dataset.

Process of Compilation of Data from Different Sources: A total of nine datasets have been collected by CPD from different organisations and each of them has been defined separately. The initial objective is to assign a unique identification number to each RMG enterprise of all these datasets to avoid duplication. This process will help to develop a harmonised dataset of RMG enterprises. It starts with assigning a name to each dataset, according to their originating institutions: 'BGMEA', 'BKMEA', Accord 1, Accord 2, Alliance 1, Alliance 2, NI, DIFE and DoL. A major challenge was to clean up each of the datasets by correcting the spellings of enterprises names, inconsistencies of information at the enterprise level⁴², duplication of information, and filling in missing information in each database etc. The following process was followed in compiling the dataset (Figure 4.1):

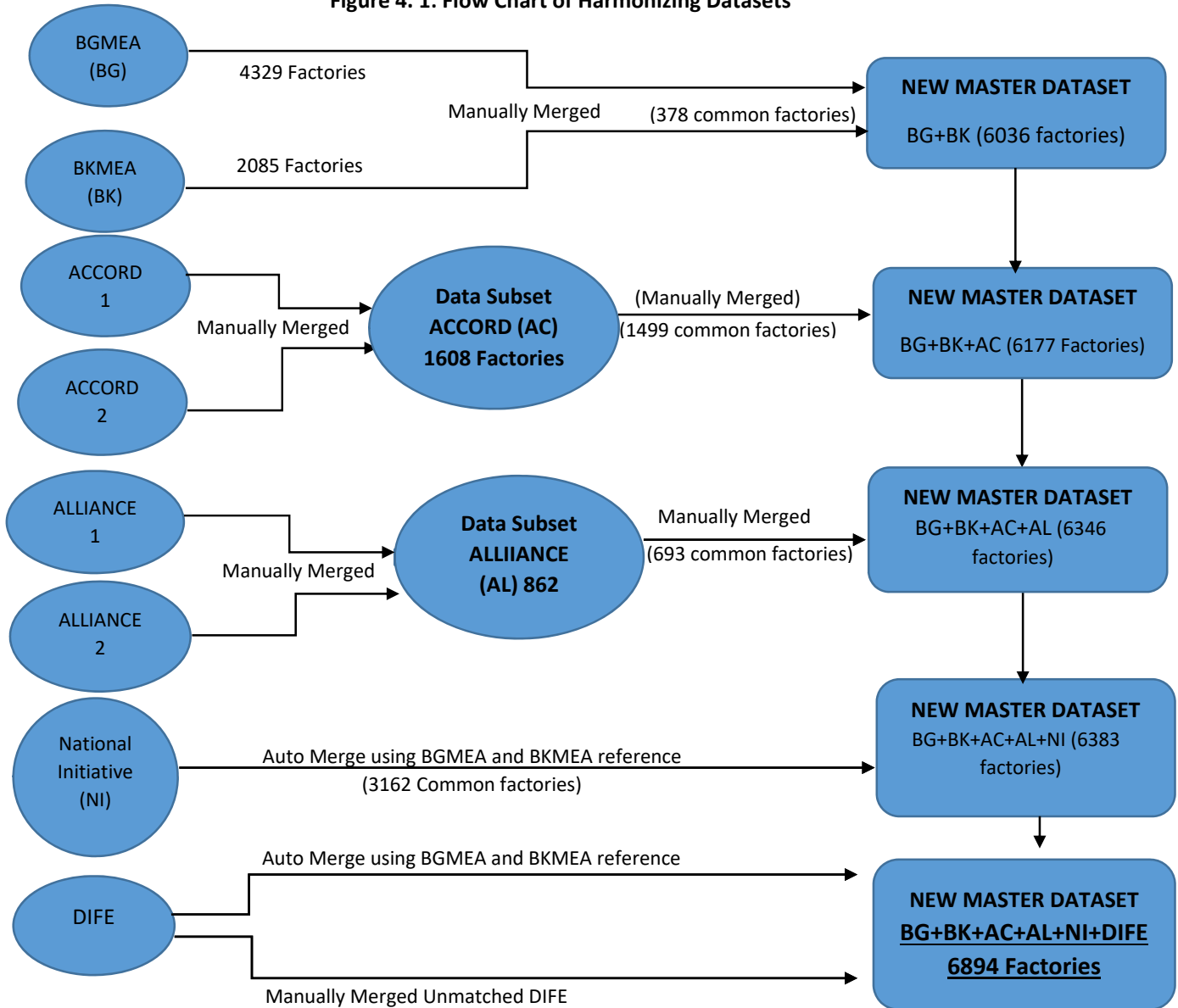
At first, the two major datasets of BGMEA and BKMEA were merged. In the BGMEA dataset, each of the 4,329 enterprises have its own reference ID. This is also the case for each of BKMEA's 2,085 enterprises. The CPD team first merged these two datasets and named it 'BG+BK'. Since BGMEA and BKMEA has 378 enterprises in common the resulting dataset consists of 6,036 factories.

Secondly, another dataset was manually created by merging Accord 1 (consisting of general information of enterprises) and Accord 2 (consisting of data related to compliance). This merged dataset is named ACCORD and consists of 1,640 enterprises.

⁴¹ A data universe is primarily a data set that encompasses the entirety of collectable data. A data universe is a semantic model which helps to connect users to different databases to design modules for further analysis. The sets of data in a universe are usually broken down into easily discernible groups that are logical for the users.

⁴² The databases contained inconsistent information on several variables. For example: the number of workers in the same enterprise was wrongly noted in each database compared. The enterprise named "ABC Apparels (pseudo name)" was included in BGMEA, ACCORD and DIFE databases. However, the BGMEA dataset listed that it employed 400 workers, the ACCORD database listed that there were 2000 workers and the DIFE database listed that there were 425 workers. This is the nature of incongruity that prevails for many of the variables in a majority of the datasets.

Figure 4. 1: Flow Chart of Harmonizing Datasets



Source: Prepared by authors

Thirdly, two merged datasets—‘BG+BK’ dataset and the ACCORD dataset were remerged to create a new dataset named ‘BG+BK+AC’ sub-dataset consisting of 6,177 factories. In this merged dataset, there were 1,499 enterprises that BGMEA, BKMEA and ACCORD had in common.

Fourthly, another sub-dataset was created separately by manually merging Alliance 1 (consisting of general information on factories) and Alliance 2 (consisting of data related to compliance). This is named ALLIANCE, and consists of 862 enterprises.

Fifthly, this ALLIANCE sub-dataset was then merged with the sub-dataset BG+BK+AC, and the new master dataset was called BG+BK+AC+AL. This lists 6,346 enterprises (693 enterprises were common among the datasets).

Sixthly, the dataset of the NI was then merged with the BG+BK+AC+AL sub-dataset, creating the BG+BK+AC+AL+NI database consisting of 6,383 factories (3162 enterprises were common among the datasets).

Finally, the DIFE dataset was merged with the BG+BK+AC+AL+NI database to create the unique ID database of 6,894 factories.⁴³

Basic Information of the Harmonised Data: The harmonised dataset prepared by the CPD-RMG Study provides information of 6,821 factories (73 factories have been removed from the master dataset because these were duplicate records) which have been assigned a unique identification number. Since most of the databases used for preparing the harmonised dataset are not updated on a regular basis and do not use proper data entry methods, the dataset prepared may easily contain records of enterprises that have gone out of operation. However, the harmonised dataset can provide an overview of the enterprises in the Bangladesh garments sector. Building on this dataset, a master dataset has been developed that includes information only on enterprises that are in operation. This dataset has been called a ‘data universe’.

The harmonised dataset includes information on a number of key indicators related to the apparel sector, such as the location of RMG enterprises disaggregated by EPZs or Domestic Tariff Areas (DTAs), membership in associations and size of these enterprises.⁴⁴ Harmonised datasets indicated that RMG enterprises are located in as many as 31 different districts of which, 4 are most significant (Table 4.3). These include Chittagong, Dhaka, Gazipur and Narayanganj. The highest number of factories is in Dhaka. Of the 6,821 factories, about 1,113 factories (16.3 per cent) have no information on size and 394 factories have no information on location, while 33 factories have information on neither size nor location. Thus, a total of 1,146 factories were omitted.

Table 4.3: Location of RMG Enterprises (based on harmonized dataset)

Location	No of factories	No of workers	Missing Information on size
Dhaka	2530	1500227	287
Chittagong	878	648593	52
Narayanganj	1351	424236	624
Gazipur	1510	1343697	132
Others	158	184873	18
Location Missing	394	182513	33
Total	6821	4284138	1146

Source: CPD-RMG Study, 2018

⁴³ A total of 174 factories were listed in the DIFE database that did not match the factories listed in the other databases.

⁴⁴ In a number of cases, information at the level of individual enterprises for indicators is not available.

Enterprises are found to be members of either of the two major bodies—the BGMEA or the BKMEA (Table 4.4). A majority of the enterprises are members of BGMEA, which accounted for over 60 per cent of the factories, followed by those of BKMEA, which comprises over 20 per cent of all enterprises. Besides, another 6 per cent of the enterprises are members of both BGMEA and BKMEA. The rest (6 per cent) does not have information about their membership. Being the organisation of majority of enterprises, BGMEA covers a majority of small, medium and large enterprises.⁴⁵ In case of individual BKMEA and BGMEA factories, small factories tend to dominate in the RMG sector.

Table 4.4: Membership of RMG Enterprises (based on harmonised dataset)

Association	No of factories	No of workers	Missing Information on no. of workers
BGMEA	3951	3093373	36
BKMEA	1707	248969	963
Both	378	456234	0
Non defined	785	485562	147
Total	6821	4284138	1146

Source: CPD-RMG Study, 2018

4.5 Description of the Newly Created Population Data Set

4.5.1 From Harmonised Dataset to Population Dataset of the RMG Enterprises

The harmonised dataset includes enterprises which are reported by the entrepreneurs to be either ‘operational’ or ‘non-operational’. According to Table 4.5, out of 6,821 enterprises, 3,648 enterprises are reported as ‘operational’. This is only 53 per cent of the total harmonised data. Anecdotal evidence has demonstrated that because the data is outdated, some of the factories noted as ‘operational’ may no longer be so. This is because there is a lack of a proper mechanism to monitor the operational matters of RMG enterprises. Moreover, a good number of BGMEA and BKMEA members renew membership registration every year, even though their enterprises are no longer in operation, only to keep their voting rights for their organisational elections.⁴⁶

The CPD RMG Study team called on telephone all the enterprises in the harmonised dataset. Of the 6,821 enterprises, the CPD team found telephone numbers for 6036 enterprises. This exercise underscored the need to recheck which enterprises in the database are still operational. According to Table 4.5, among the enterprises reported operational, about 121 enterprises are currently ‘not in operation’. Similarly, among the enterprises reported non-operational, about 329 enterprises are found to be in ‘operation’. Eventually, the CPD RMG study identified 3,856 enterprises to be functionally in operation and these enterprises constitute the data universe of the RMG sector of Bangladesh. The rest of the enterprises are functionally non-operational. Figure 4.2 shows the flow chart of how operational enterprises have been identified from the harmonised dataset.

The ‘Data Universe’ includes those enterprises which are currently in operation and have formal registration with public and private organisations. Please note that over 1000 enterprises which are not registered with public and private organisations, have been involved in export-oriented apparel manufacturing, either partially or fully in most cases under sub-contracting arrangement. Unfortunately, information about these enterprises is not publicly available.⁴⁷

⁴⁵ Data on size is missing for over 15 per cent of all factories.

⁴⁶ Based on anecdotal information from conversation with BGMEA officials.

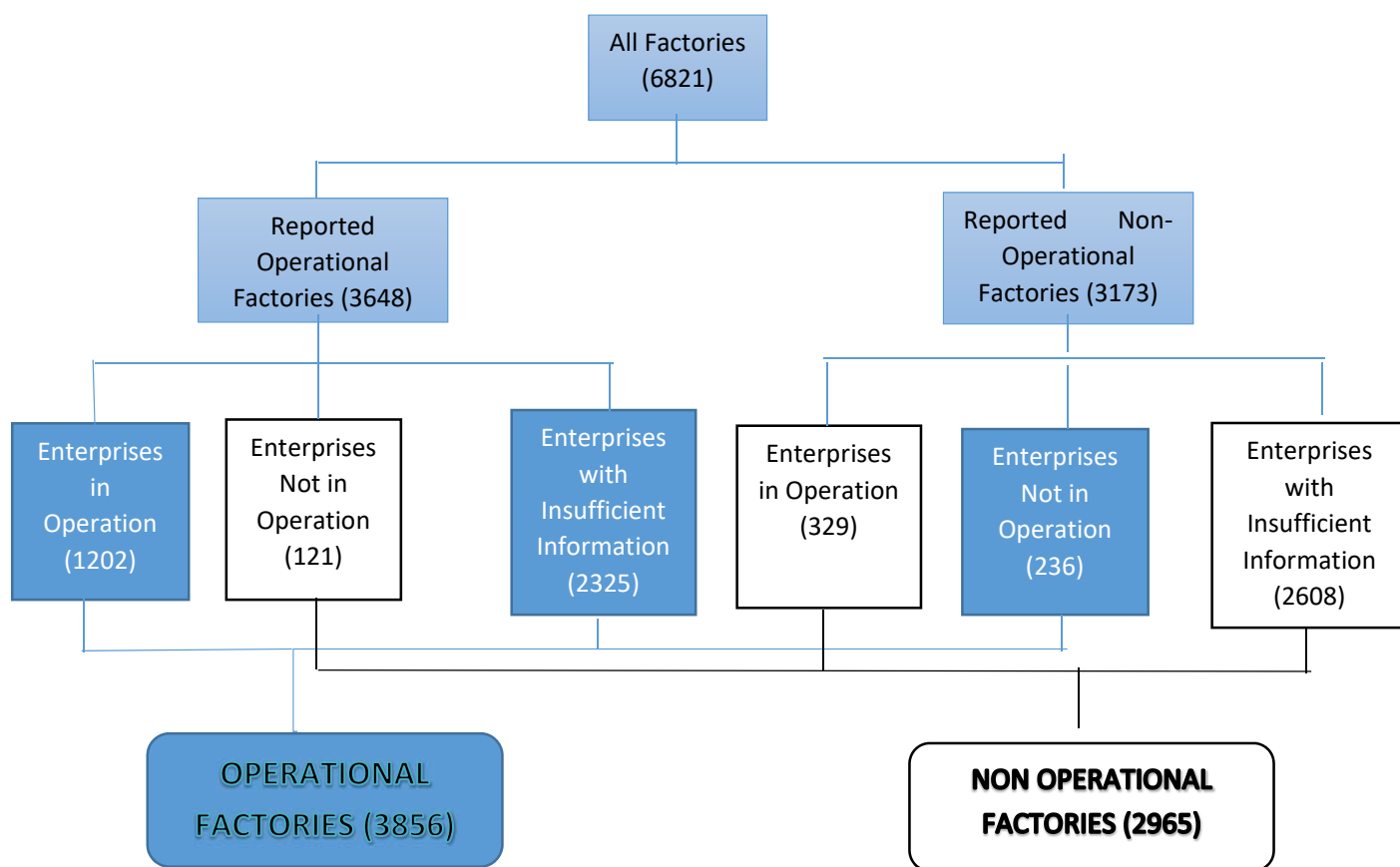
⁴⁷ DIFE lists a total of 4,808 enterprises, of which 1,565 enterprises do not match the harmonised dataset and do not have any membership information of BGMEA and BKMEA. A proportion of these enterprises are likely to be involved in export-oriented manufacturing operation.

Table 4.5: Data Universe of the RMG Sector of Bangladesh

	No. of Enterprises	Share (%)
A. Harmonised Enterprises	6821	100%
A 1. Reported as 'Operational' Enterprises	3648	53 %
A 2. Reported as 'Non-Operational' Enterprises	3173	47%
A 1. Reported as 'Operational' Enterprises (3648)	3648	100%
A 1 1. Enterprises found in 'Operation'	1202	33%
A 1 2. Enterprises found 'Not in Operation'	121	3%
A 1 3. Enterprises found with 'Insufficient Information'	2325	64%
A 2. Reported as 'Non-operational' Enterprises (3173)	3173	100%
A 2 1. Enterprises found in 'Not in Operation'	236	7%
A 2 2. Enterprises found in 'Operation'	329	10%
A 2 3. Enterprises found with 'Insufficient Information'	2608	83%
B. Enterprises in Operation or in 'Data Universe' (A11+A13+A22)	3856	100%

Source: CPD-RMG Study, 2018

Figure 4.2: Flowchart of Creating Operational Database



Source: Prepared by authors

4.5.2 Observations regarding the RMG Population

Incomplete Data: The data universe need not necessarily contain all types of information related to the enterprises listed (3856). Within the data universe, information on production capacity tends to be missing most often (19.1 per cent), while 10.5 per cent of the information on items produced is

also missing. Only inspection data of all the factories in the data universe is available. About 1.3 per cent data on production, 8.5 per cent data on EPZ affiliation and 6.4 per cent of data on BKMEA and BGMEA reference numbers are missing.

No Information about Enterprises Outside the Data Universe: As many as 1,000 enterprises may be in operation producing export-oriented apparels using their partial or full production capacity. These enterprises are mostly small in size and operate as tier 3 enterprises or ‘sub-contracting’ suppliers. These enterprises should ideally be included in the population but the required information was not available.

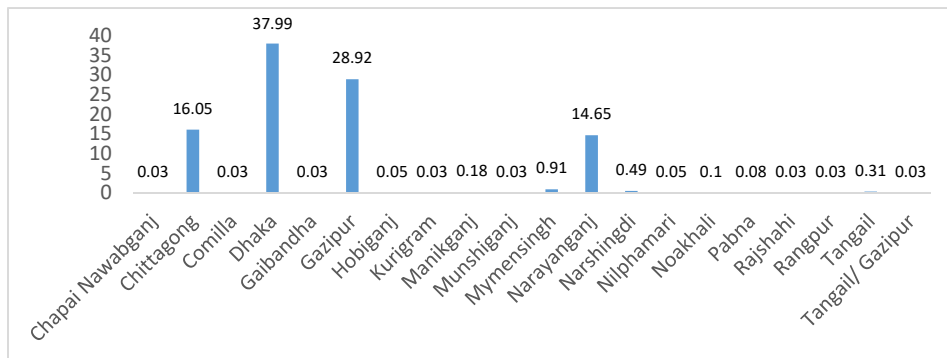
4.5.3 Characteristic Features of RMG Enterprises

The data universe provides key information of RMG enterprises. However, the information is insufficient to properly assess the enterprises, their production, products, market exposure, linkages with market agents and more. Key information available in the data universe includes the enterprise’s location, including whether it is located inside the EPZ or outside, who owns the enterprises, types of products, number of people employed by gender, and manufacturers’ and exporters’ association membership of enterprises.

Total Population (Enterprises and Workers): A total of 3,856 factories have been identified as operational—about 3.6 million workers are reported to be employed there. According to the data available on workers, 53 per cent of them are female and 47 per cent are male. If the factories that employ the most male workers or the most female workers are categorised according to location, the distribution differs slightly from one another. A total of 501 factories of the 3,856 factories were discovered to employ mostly males. Most of them were in Dhaka, and then in Gazipur. Paradoxically, the top 5 per cent of enterprises that employed mostly females, were predominantly in Chittagong. This complements the fact that none of the top 5 per cent of factories that employed mostly males were in Chittagong. Dhaka led among the top 10 per cent and the top 20 per cent of factories that employed mostly females, followed by Chittagong (top 10 per cent) and Gazipur (top 20 per cent).

Location of enterprises: Over 98 per cent of the total number of RMG enterprises are in four districts (Figure 4.3): Dhaka (38.0 per cent), Gazipur (28.9 per cent), Chittagong (16.1 per cent) and Narayanganj (14.7 per cent) (Figure 3). Most of the factories are in different industrial clusters in these four districts particularly because there are better infrastructural facilities, access to major trade routes for import and export, and logistic and banking facilities. Workers are easier to find here. A few other factories are located in other districts such as Mymensingh, Narshingdi, Tangail, Manikganj and Munshiganj with head offices in in Dhaka City and nearby areas so that commercial and business work can be based there.

Figure 4.3: Data Universe: Location of RMG Enterprises



Source: CPD-RMG Study, 2018

Table 4.8 shows how employment varies with location. Of the 3.6 million workers, the highest number of workers (1.27 million or 35 per cent) are employed in factories located in Gazipur districts, followed by Dhaka (1.26 million or 34.8 per cent), Chittagong (0.57 million or 15.9 per cent) and Narayanganj districts (0.37 million or 10.3 per cent). The remaining 0.14 million workers work in 91 factories dispersed in various districts. Gazipur is not only the region with the highest employment but also the highest employment per enterprise (1143 workers per enterprise) of any single location. The average employment per enterprise is relatively low in case of factories located in Narayanganj district. Table 4.9 shows that when the enterprises are categorised based on size and location, the top 5 per cent and top 10 per cent enterprises are in Dhaka. However, the top 20 per cent of the enterprises are in Gazipur.

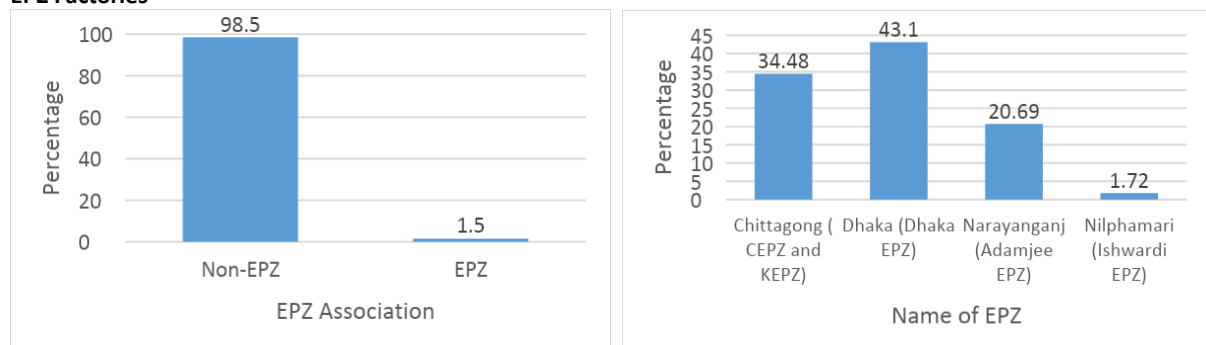
Table 4.8: Data Universe: Location of Operational Enterprises

Location	No of total factories	No of factories with size information	No of Workers	Average no. of workers per factory
Dhaka	1465	1456	1257516	864
Chittagong	620	615	572233	930
Narayanganj	565	534	373764	700
Gazipur	1115	1110	1268724	1143
Others	91	91	138845	1526
Total	3856	3806	3611082	949

Source: CPD-RMG Study, 2018

The enterprises can be categorised into two groups based on whether they are in the EPZs or DTAs (Figure 4.4a). Over 98.5 per cent of RMG enterprises are in DTAs. The remaining 1.5 per cent are in EPZs (Figure 4.4b); 98.3 per cent of total EPZ enterprises are in the four EPZ areas. Due to various limitations, RMG factories are very rare in the Ishwardi, Uttara, Mongla and Pabna EPZs. However, the data universe could not identify the country of origin of foreign investment in the RMG enterprises.⁴⁸ Until 2010, foreign direct investment (FDI) in the RMG sector was allowed only in the EPZ area, so a proportion of the enterprises located in EPZs were established under FDI. In recent times, however, the Government has allowed FDI outside EPZ. As a result, the ratio of FDI led factories, both within the EPZ and in the DTA is likely to change in the coming years.

Figure 4.4: Data Universe: a) RMG Factories Located in EPZs and Non-EPZs; and b) Locational Distribution of EPZ Factories



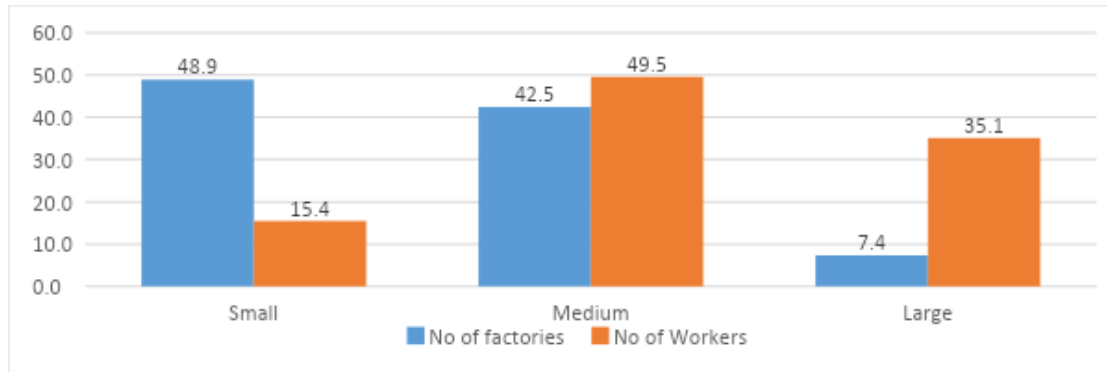
Source: Source: CPD-RMG Study, 2018

Size of the Enterprises: Factories employing less than 500 workers are classified as ‘small’ while ‘medium’ factories employ 500–2500 workers. ‘Large’ factories were classified as having more than

⁴⁸ Information of enterprises located in EPZs including those which are foreign owned are accessible to the Bangladesh Export Processing Zones Authority (BEPZA).

2500 workers.⁴⁹ The majority of the enterprises—48.9 per cent— are small. 42.5 per cent of the enterprises are medium (Figure 4.5). Only 285 enterprises are large, accounting for 7.4 per cent of the total. Medium-sized enterprises employ the highest number of workers. The average workforce size in RMG enterprises is different compared to what is observed in other major industries. The average employment in small, medium and large enterprises are 296, 1091 and 4443 workers respectively.⁵⁰

Figure 4.5: Data Universe: Distribution of Factories and Workers under Different Categories



Source: CPD-RMG Study, 2018

This scenario almost repeats itself when the sizes of the enterprises are considered, as demonstrated in Table 4.10. As the size distribution of factories increases, the percentage of total workers increases at a decreasing rate.

Table 4.10: Data Universe: Size Distribution of Operational Enterprises

Size Distribution	No of Factories	No of Workers	Percentage of Total Workers
Top 1% factories	39	370676	10.3
Top 5% factories	193	1003599	27.8
Top 10% factories	386	1498690	41.5

Source: CPD-RMG Study, 2018

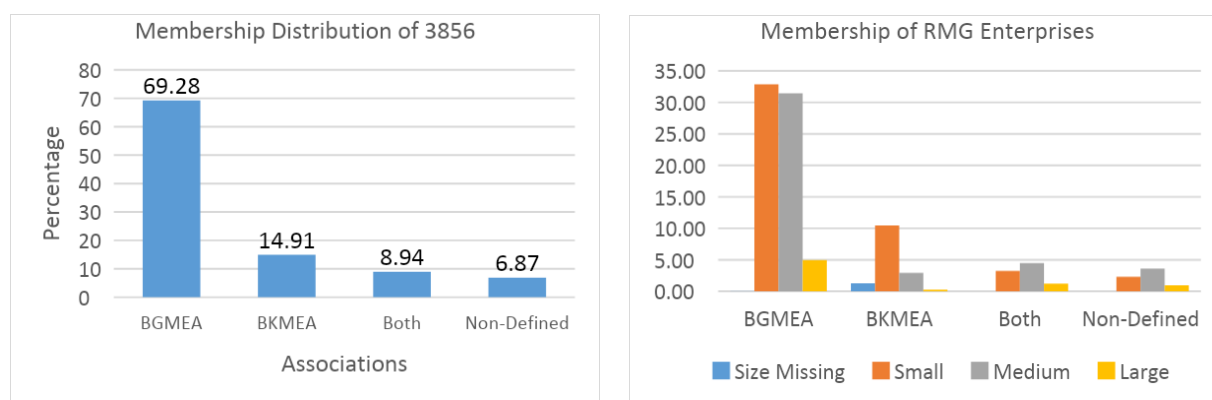
4.5.3.4 Membership of Enterprises

BGMEA factories comprise the major share of RMG enterprises (69.2 per cent) while BKMEA factories comprise a comparatively smaller share (14.9 per cent). There is another 8.9 per cent enterprises which are members of both BGMEA and BKMEA (Figure 4.6). BGMEA encompasses most of small, medium and large enterprises. Among the members of BKMEA, there are more small enterprises, some medium enterprises and no large enterprises. The worker–enterprise ratio is the highest in Gazipur—these are mostly weaving factories and are members of BGMEA. The worker–enterprise ratio is the lowest in Narayanganj, which houses mainly knit factories so are mainly members of BKMEA.

⁴⁹The *Industrial Policy 2015* categorises enterprises by employment differently. The criteria have been revised upwards for RMG enterprises because these are highly labour-intensive.

⁵⁰ According to the *Survey of Manufacturing Industries 2012*, average employment in all three categories of other export-oriented industries are much lower compared to that in RMG. For example, average employment in the food processing industry is as follows: 10–19 workers in 53.5 per cent enterprises, 20–49 workers in 35.1 per cent of enterprises and 50–99 workers in 7.9 per cent of enterprises.

Figure 4.6: Data Universe: a) Membership Distribution of Entrepreneurs; and b) Membership Distribution of Entrepreneurs (in terms of sizes)



Source: CPD-RMG Study, 2018

Trade Union in RMG Enterprises: The DoL database lists a total of 501 enterprises with trade unions, but not all of them are operational nor are they listed under the main associations and inspection agencies. It was possible to collect additional information of only 181 of these enterprises.⁵¹ This is reflected in the fact that 4.8 per cent of medium factories have trade unions, more than small (3.1 per cent) and large factories (2.8 per cent). The mean number of workers is larger in trade union factories, meaning that larger factories tend to have trade unions.

BGMEA factories are more likely to have trade unions—3.5 per cent compared to 1.2 per cent of BKMEA. Dhaka contains the most enterprises associated with trade unions—3.9 per cent of all enterprises in Dhaka have trade unions while only 1.04 per cent of factories in Narayanganj have trade unions. These figures match membership patterns, since most BKMEA factories are in Narayanganj.

Of the 181 factories, only 145 factories with trade unions are included in the harmonised dataset. This reflects that 36 of the factories with trade unions are presently non-operational, although they are included in the trade union database.

From table 4.11, it can be seen that medium factories have a higher percentage of trade unions (4.8 per cent). The standard deviation of worker size is also much lower in case of the trade union factories, signifying lower diversity in terms of worker size.

Table 4.11: Comparison of Data Universe and Trade Union Enterprises (Size Category)

Size	Data Universe Enterprises		Data Universe Enterprises with Trade Unions		Percentage of Enterprises with Trade Unions
	Frequency	Percent	Frequency	Percent	
Small	1883	48.83	59	40.69	3.1
Medium	1638	42.48	78	53.79	4.8
Large	285	7.39	8	5.52	2.8
Size Missing	50	1.3	0	0	0
Total	3856	100	145	100	3.8
Mean	948.8		941.1		

Source: CPD-RMG Study, 2018

⁵¹ It was not possible to match 320 factories that have trade unions to the harmonised dataset, since these factories do not belong to BGMEA or BKMEA, nor were they inspected by Accord, Alliance, NI or DIFE. Therefore, these factories have not been included in our harmonised dataset.

BKMEA factories show a much lower percentage of trade unions, when compared to their actual share in the data universe. Likewise, BGMEA factories demonstrate a much higher percentage, as shown in Table 12. Only 2.4 per cent of BKMEA factories are associated with trade unions compared to 4.2 per cent of BGMEA factories.

Table 4.12 shows that, like the trade union enterprises of the harmonised dataset, enterprises in Narayanganj comprise a much lower percentage (7.6 per cent) and those in Dhaka comprise a much higher percentage (51.7 per cent) of enterprises with trade unions. Considering the total enterprises of the population, only 1.9 per cent of factories in Narayanganj are associated with trade unions compared to the 5.1 per cent of enterprises based in Dhaka. Here, too is a correlation between fewer enterprises having trade unions and these enterprises being mostly members of BKMEA.

Table 4.12: Data Universe and Trade Union Enterprises (Location Wise)

District	Total enterprises		Total enterprises with trade unions		Percentage of total enterprises with trade unions
	Frequency	Percent	Frequency	Percent	
Dhaka	1,465	37.99	75	51.72	5.1
Chittagong	619	16.05	25	17.24	4.0
Gazipur	1,115	28.92	34	23.45	3.0
Narayanganj	565	14.65	11	7.59	1.9
Others	92	2.39	0	0	0
Total	3856	100	145	100	3.8

Source: CPD-RMG Study, 2018

4.6 Non Operational Enterprises in the Harmonised Dataset

A total of 2,965 enterprises have been identified to be functionally non-operational. The number of non-operational factories are a cumulative figure. These factories are still included in the databases as the databases have not been updated. Moazzem and Rayan (2014) have explored why 159 RMG enterprises closed. Of these, they were able to find information on 95 enterprises that shut down due to loss in businesses, mismanagement and buyers no longer placing orders.

In the harmonised dataset, 51 per cent of the enterprises that closed down were small-scale enterprises, 14 per cent were medium and 0.6 per cent were large-scale enterprises. However, information of the number of workers for 34 per cent of enterprises are not available. The highest number of closed enterprises are in Dhaka district (35 per cent) followed by Narayanganj (26 per cent), Gazipur (13 per cent) and Chittagong (8.7 per cent). About 98 per cent of these enterprises that have closed are in DTAs; while only 1.6 per cent factories are in EPZ areas. Since most enterprises were members of BGMEA, about 70 per cent of the closed enterprises were found to be members of BGMEA. 15 per cent were the members of BKMEA and 9 per cent being the member of both the associations.

4.7 Concluding Remarks

The CPD RMG study has attempted to develop a data universe based on the available datasets. Given the absence of any such datasets, this data universe could partially fulfil the stakeholders' needs. However, the datasets have lots of limitations, not the least of which is the availability of information on only a limited number of variables.

At present, several initiatives are underway to prepare a database on different aspects of RMG enterprises. This includes BGMEA and BKMEA's initiative to prepare biometric databases for workers and a buyer-led GIS database of RMG enterprises. However, these attempts are also likely be 'purpose

made' to serve the target group such as employers, associations and brands/buyers. It is important to update the existing database regularly with information collected from the survey.

A comprehensive dataset of enterprises should target the needs of major stakeholders including government, workers, right-based groups and trade unions along with those of the employers and buyers. The comprehensive datasets need to include information on distribution of production workers under different grades, distribution of professionals, employment of foreign professionals and workers, enterprises' extent of participation in backward and forward linkages of the value chain, types of products, types of machineries used, level of social compliance including workplace safety and security, level of physical compliance including fire, electrical and building safety, workers' associations including trade union and level of participation of workers in the trade union, training of mid-level management and workers, and compliance to environmental issues including the use of ETP and industrial waste management.

It is expected that government, manufacturers' and exporters' associations, and workers' organisations will join forces to prepare such a comprehensive database on the RMG sector of Bangladesh.

5. Sample Frame and Sampling Process

5.1 Sample Size

The CPD-RMG study has collected data on multiple sub-indicators from the sampled factories, but the calculation of minimum sample size becomes complicated as we need to account for different indicators which have different characteristics. However, most of the indicators are measured in proportions, as a percentage of the firm's completed remediation, or the percent of workers receiving training. So the sample size is determined using the formula for calculating minimum sample size for estimating proportions in a population (WHO, 2015).

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

Where,

N= population size = 3596

P = population proportion = 0.33 or 33%

e₀ = desired level of precision = 0.05

1- α = confidence interval = 90%

z_{α/2} = z-value corresponding to a level of significance in two-tailed test = 1.96

We consider three categories of factories in the absence of a comprehensive database at the national level detailing sizes of factories. Therefore, we assume the population proportion to be 1/3 or 33.33 per cent.

Given limitations with the data, time and budget constraints we use a 90 per cent confidence interval. However, a 90 per cent confidence interval is also popularly used across the world including at the World Bank Enterprise Surveys conducted by the World Bank all around the world which uses a 90 per cent confidence interval and a 7.5 per cent level of precision. Moreover, this study utilises 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.

5.2 Sampling Frame

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

As mentioned earlier, in the first stage, the primary sampling units are RMG factories. We divide population into three sub-populations: small, medium and large factories. Data limitations do not allow for more detailed sub-divisions of the population. Using proportional stratification, the population and the sample distribution across strata has been shown in Table 5.1. It is to be noted that population for drawing sample enterprises did not consider enterprises located in the EPZ areas, owing to difficulty in conducting survey in the BEPZA area. As per data universe of RMG enterprises, a total of 52 enterprises are reported to EPZ enterprises, located either in Dhaka or Chittagong. Besides, a number of enterprises have been excluded due to a lack of required minimum information for sample distribution. Ultimately, the sample enterprises have been drawn from a population of 3596 enterprises.

Table 5.1: 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 2018

As can be seen from the table, the population proportions have been maintained in the sample, as guided by the Probability Proportional to Size (PPS). We can see that according to proportion, there are not a lot of large factories. Thus, for separate focused studies (conducted as part of the study but not the main theme of upgrading) we need large factories. Considering the time and budgetary constraints, the number of large factories has been extended to 30, increasing 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. Moreover, to avoid bias, we kept the proportions of the sample would intact.

In the second stage, the sampling units are workers, and workers from each factory are randomly selected (Figure 5.1). Using 95 per cent confidence interval with 2 per cent margin of error and a population proportion of 33 per cent (as before), the minimum number of workers required in the sample is 2123 (given a total population of 2,629,298 workers of the whole data universe). Given the worker distribution of the population (Table 5.2), we find that medium-sized factories employ roughly three times more workers than small factories and twice the number of workers than large factories. To maintain this ratio, and due to rounding up of the fractions, we obtain a sample of 2123 workers. This is the minimum number of workers to be covered under the survey. Following the sample selection criteria, as mentioned below, the total number of sample workers is 2347 from sample enterprises.

Table 5.2: Distribution of Sample Workers

Size	Population (No. of Workers)		Sample (No. of Workers)		No. of Factories	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
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	100	226	100

Source: CPD-RMG Study 2018

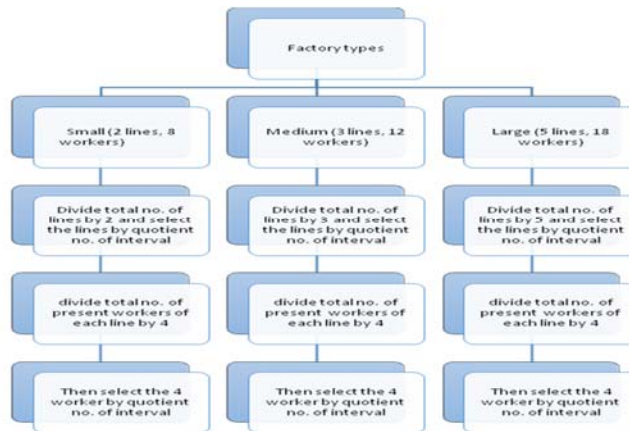
Given the sample, we selected 408 workers from 109 small factories, 1131 workers from 100 medium-sized factories and 584 workers from 17 large factories. However, we increased the number of large factories in the sample to 36, as we increased sample size to 30. So, the primary target was to select 4 workers from each small factory, 11 workers from each medium-sized factory and 17 workers from each large factory. Due to budget constraints, time limitations and factory level cooperation, we must take into account the possibility of errors in our reported data, we chose 8 workers from small factories, 12 workers from medium-sized ones and 18 workers from large factories.

We divided the workers in each garment factory into lines or blocks. Generally, workers in same positions of different lines have the same grade and the same training, so taking one worker from each line would not represent variation. Hence, the target was to select 4 workers from each line in order to ensure variability and some level of divisibility. The lines selected gave us the number of workers in the factory and in each line. For example, if we assume that 12 workers from a certain medium-sized factory are 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 ($12/4=3$). Assuming the number of lines in the factory is 18, with 40 workers each, the total number of lines was first divided by 3 and then selected the lines based on the quotient interval. i.e. the 6th, 12th and 18th line. Secondly, for each line, we divided the total number of present workers of each line by 4 and selected the workers based on the quotient interval. i.e. $40/4=10$ (if we have 40 workers 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 randomly chosen 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 per cent of 8 i.e. 3 male workers and 60 per cent of 8 i.e. 5 female workers have been selected.

Figure 5.1: Line and worker selection criterion for the baseline survey



Source: CPD-RMG Study 2018

5.3 High Frequency Data Survey (HFDS)

High frequency data survey or HFDS collects data on a regular basis for the issues with continuous variation. High frequency data is based on frequency that is monthly, weekly, daily, hourly, minutely and per second. The high frequency survey is often the average response and may not be meaningful. Rather, there are some issues for which we need to collect concrete observations regularly in order to project the changes that have occurred 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 does not provide accurate answers what we seem to have only through regularly monitoring the aspects that we mainly concerned with. It is widely used in measuring poverty in developing countries. Despite having some weaknesses, HFDS is widely used as a survey tool.⁵²

CPD’s study on the RMG sector conducted high frequency data survey on several issues incorporating the questionnaire module. There is no previous literature that utilises high frequency data in the RMG sector. Such high frequency survey will be used in CPD’s RMG study, where numerous questions will be asked to the respondents, some of which will be on a daily basis while others will be on a weekly

⁵² High frequency data survey has several drawbacks. First of all, as the high frequency data appears very quickly, therefore the movement of such time series variables with high frequency of observations behave very differently than the normal time series fluctuations. Sometimes important observation required for high frequency data analysis possess unique challenges for econometric analysis. Besides it, data are often recorded as errors and need to be cleaned and corrected prior to analysis. For various reasons, high frequency data may contain erroneous observations, data gaps and even disordered sequences (Zivot, 2005).

basis in order to get regular information on workers' productivity, firm performance, gender-specific issues as well as nutrition information, worker absenteeism, worker grievance, facilities exist in the factory and some management specific issues within the factory. Therefore, there is a widespread need of high frequency survey in order to collect such information from the RMG sector on a regular basis.

The broad objective of this study is to identify the difference in productivity at the factory level. While considering its specification, this study was mainly aimed at focusing on the differences in productivity while at the same grade, producing similar products, at the same wage, at different nutrition levels and also considering the gender-specific difference. This study was also aimed at finding management-level efficiency as well as the worker absenteeism that currently exists at the factory level and its subsequent impact on productivity.

Scope and Coverage: The main proposition of using HFDS in CPD's RMG study is to find the existing difference in productivity at the factory level. Since it is not possible to get intensive review from the baseline survey, the HFDS is useful as it gives information on a regular basis. This study attempted to find the productivity difference at the same grade, at similar age and producing the same product at the same factory. At the same time, differences in grade-wise productivity was also be analysed. The study team also looked at some gender-specific issues, which were collected using high frequency survey to search for incidence of discrimination at the factory level as well as management decision in improving the factory performance. In short, this study prioritised productivity-related issues within the factory level and managerial efficiencies to have a pinpoint analysis of the current situation of the RMG factories. Some key research questions to support the objective of the study are given below:

- 1) Whether there is any statistically significant difference between gender-specific productivity?
- 2) Does productivity vary between similar and dissimilar grade within the factory?
- 3) What are the factors that lead to absenteeism of the factory workers?

Efficiency has been measured by using the following the formula:

$$\text{Efficiency} = (\text{Output} * \text{SMV} * 100) / (\text{No. of worker} * \text{working hour} * 60)$$

$$\text{SMV} = \text{Basic Time (BT)} + \text{Allowance}$$

$$\text{BT} = \text{Observed Time (OT)} * \text{Observed Rating (OR)} / 100$$

Data Collection Process: Data was collected from a selected set of enterprises of different categories. Senior management officials of the selected enterprises had been asked to identify at least two production lines in the sewing/knitting sections where the works of the same production orders continued for the next consecutive days (at least three to five days). A baseline dataset was created on different issues related to control variables for the workers working in the specific production lines. Afterwards, line-wise data of each worker on their production had been collected. On the other hand, workers' absence-related data was collected from those who took absence just immediate past working day for a day or more.

5.4 Case Studies

A number of case studies have been carried out as part of this study. The case studies include: a) institutionalisation of workers' organisations; b) factory-level inspection system; c) Sub-contracting activities of RMG enterprises and d) Performance of EPZ-factories. Necessary information and data were collected through key informant interviews (KIIs), sample surveys and through secondary sources.

Reference

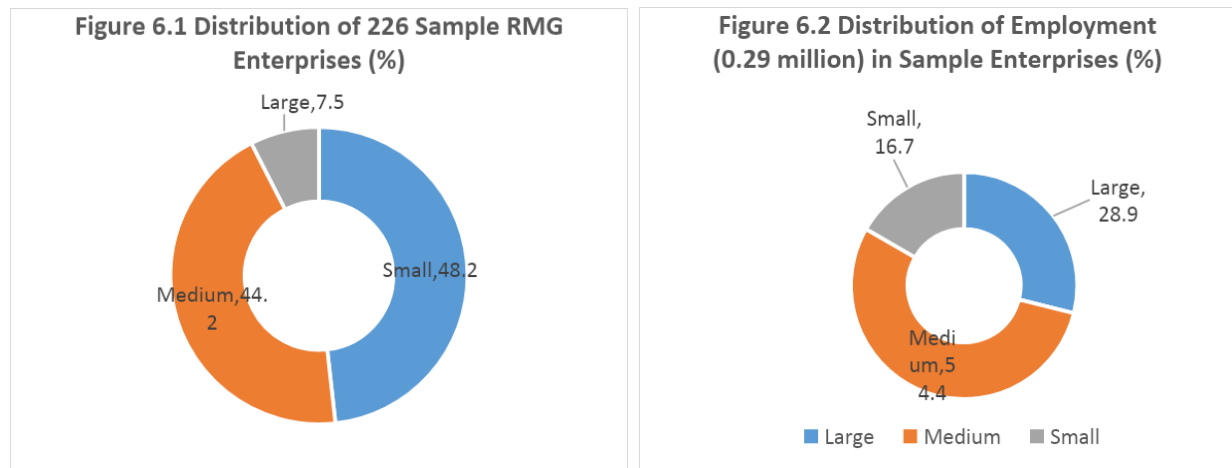
1. World Health Organisation (WHO). 2015. *Service Availability and Readiness Assessment (SARA)*.

6. Baseline Survey: Key Features of Sample Enterprises and Sample Workers

6.1 Introduction

CPD carried out a baseline survey among sample enterprises and sampled the employees of these enterprises as per the sample frame. A total of 226 enterprises and 2346 workers were surveyed in the sample. Factories and workers in the sample were distributed according to the distribution of the national population—out of 226 sample enterprises, 48.2 per cent comprised of small enterprises (109 enterprises), 44.2 per cent were medium (100 enterprises) and 7.5 per cent were large enterprises (17 enterprises) (Figure 6.1). The survey studied 298,000 workers, which accounts for 8.3 percent of total employment in the RMG sector. The distribution of workers in enterprises of different sizes varies compared to the distribution of enterprises but is consistent with the national population, where a majority of workers are employed by medium-sized (54.4 per cent) and large enterprises (28.9 per cent), followed by small enterprises (16.7 per cent) (Figure 6.2). The distribution of enterprises reflects the contribution of different types of enterprises differently in production, export, employment, technologies as well as in entrepreneurship development.

Indicators such as type, location or contractual arrangements of enterprises which could influence different aspects of sample enterprises and workers are not taken into account in the sample distribution. Given the limited availability of data of those indicators in the national population, the sample enterprises have only been distributed by size. In fact, size is usually considered a good proxy for labour-intensive low-end manufacturing industries like RMG to appreciate the dynamics and changes of different levels of competitiveness and upgrading issues.



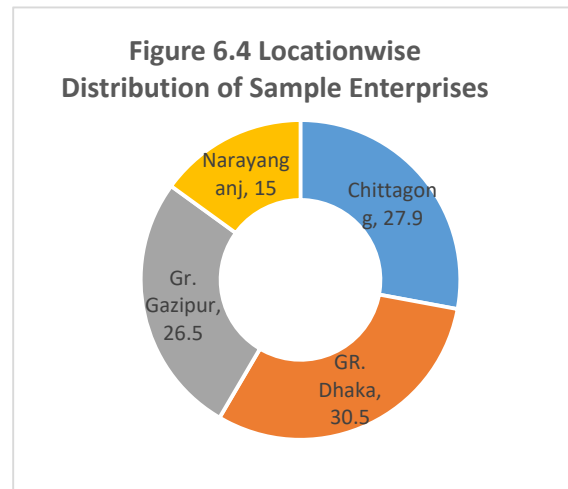
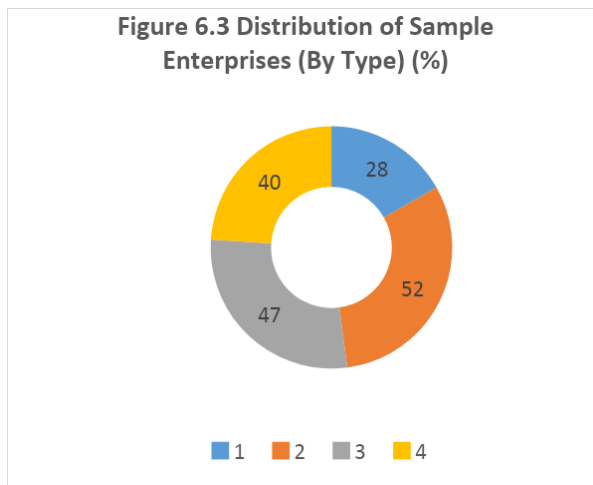
Source: CPD-RMG Survey 2018

6.2 Distribution of Enterprises under Different Categories

6.2.1 Type and Location

CPD examined the distribution of sample enterprises in terms of different type of enterprises, location and contractual arrangements with brands and buyers, among others. About 40 per cent of the sample enterprises comprise of woven enterprises, while the rest is comprised of knit enterprises (Figure 6.3); however, this distribution is not consistent with the types of enterprises under the national

population, where woven enterprises comprise a majority of the share.⁵³ Other than some specific issues, such variation in distribution of types of enterprises between sample and population does not affect the overall conclusion of the study. The spatial distribution of sample enterprises follows the national population distribution—sample enterprises are located near major clusters of RMG enterprises such as Dhaka (30.5 per cent), Gazipur (26.5 per cent), Narayanganj (15 per cent) and Chittagong (27.9 per cent). The sample enterprises do not account for factories located in other districts and those located in Export Processing Zones (EPZs), as those comprise less than 2 per cent of the total enterprises of the national population. Considering the importance of EPZ enterprises in the RMG sector in terms of production, export, employment and attracting foreign direct investment (FDI), a case study is being prepared based on the data collected from a limited number of EPZ enterprises.



Source: CPD-RMG Survey 2018

6.2.2 Year of Establishment

A majority of the enterprises in the RMG sector have been established in the past decade or so, with 63 per cent of them having been established on or after 2005 (Table 6.1). In other words, a majority of enterprises are the outcome of the development of the RMG sector during post multi-fibre arrangement (MFA) period started in 2005. These include about 71 per cent of knit enterprises and 52 per cent of woven enterprises. More importantly, a sizable number of RMG enterprises were established after the Rana Plaza tragedy (about 19 percent of total enterprises)—these are mostly small (24 per cent of total small enterprises) and medium-sized (15 per cent) enterprises. Factories which are older (i.e. established before 2000) have adverse effects on workers’ workplace safety and security. For example, factories established earlier (for example before 1990), unless properly maintained, are likely to have concerns with fire, electrical and structural integrity of their buildings due to normal wear and tear of use. This is because entrepreneurs often emphasis less on improvement of the workplace safety issues in old buildings considering the greater cost which could cause concerns in the longer run.

⁵³ A study by Bakht and Hosaain over RMG sector in 2007, finds that the woven garments industry in Bangladesh is dominated by medium and large sized enterprises, while small sized enterprises dominate the knitwear industry. In the case of woven RMG industry, nearly 49 percent of the factories are located in Dhaka district, followed by 24 percent in Gazipur. In the case of knitwear RMG, nearly 55 percent of the factories are located in Narayanganj district, followed by 24 percent in Dhaka district.

Table 6.1: Year of Establishment of Sample Enterprises

Year of establishment	Total	% of total
Up to 1985	14	6.2
1986-1995	24	10.6
1996-2004	46	20.4
2005-2012	100	44.2
2013-2016	42	18.6
Total	226	100.0

Source: CPD-RMG Survey 2018

6.2.3 Brands and Buyers

A majority of the enterprises have contractual arrangements exclusively with brands/retailers (59.8 per cent) (Table 6.2). Besides, a sizable number of enterprises work both with brands/retailers as well as with buying houses (20.8 per cent). Only a small fraction of enterprises work exclusively with buying houses. As it stands, there is a compositional change discerned in the contractual arrangement over time, where an increasing number of enterprises have been working with brands and retailers by shifting from buying houses. According to Rahman *et al.* (2008) about 49 per cent of RMG enterprises in 2006 received 50 percent or greater number of their orders from brands and buyers, while about 48 per cent of the enterprises received less than 50 percent of their orders from buying houses. Thus, we see a growing number of factories working with brands/retailers. This could lead to better expansion opportunities for local enterprises to export by complying with the codes of conduct of the brands/retailers.

Table 6.2: Distribution of Sample Enterprises as Per Contractual Arrangement

Brand/Buyer	Number of Factories	% of Factories
Brand/Retailer	135	59.73
Buying House	7	3.1
Mixed	47	20.8
Other	37	16.37
Total	226	100

Source: CPD-RMG Survey 2018

6.3 Sample Enterprises' Scale of Operation

The sample enterprises have been getting bigger as reflected in terms of changes in size of operation of individual enterprises. The average number of production lines in small, medium and large enterprises is 6, 13 and 47 respectively, which means that in terms of operating size, medium and large-scale enterprises are about twice as large as and nearly eight times larger than that of small scale enterprises respectively (Table 6.3). Moreover, the number of workers employed in a production line partly indicates that the complexity of the action being carried out in a production line is larger in large and medium enterprises (over 60 workers), followed by small enterprises (47 workers). The length of production line partly also indicates the intensity of the work being carried out by these enterprises. But overall, the average number of operators work per line has declined relative to previous years as a result of improvement in machinery, better skill on the part of the workers to name a few.

Table 6.3: Average Number of Lines, Machines and Operators per Line in Sample Enterprises

Product Type	Factory Type		Factory Size		
	Knit	Woven	Large	Medium	Small
Avg. Number of Lines	14.1	10.2	47.4	13.3	6.1
Avg. Number of Operators Per Line	39.6	80.4	62.1	67.3	47.2

Source: CPD-RMG Survey 2018

6.4 Sample Enterprises' Production and Export

The average gross revenue from the export of apparels from the sample enterprises was US\$8.5 million in 2016, which has increased by 9.59 per cent per year since 2012. In other words, the sample shows enterprises have ensured sizable share of growth of their export since the Rana Plaza tragedy despite various challenges. The growth of gross revenue is higher for small enterprises (18.7 per cent) followed by large (14.6 per cent) and medium-sized enterprises (5.83 per cent). In terms of the size of revenue, large enterprises were about 62 per cent higher than medium enterprises and 91 per cent higher than small enterprises in 2016. In fact, the gap in export has widened between large, medium and small enterprises.

A majority of the sample enterprises produce different types of basic and medium-end products (Table 6.4). Out of the 226 samples in the survey, 123 enterprises (54.4 per cent) produced T-shirts, 125 enterprises (55.3 per cent) produced children's wear, 115 enterprises (50.9 per cent) produced ladies tops, 110 enterprises (48.6 per cent) produced bottoms and 103 enterprises (45.6 per cent) produced jackets. In other words, all categories of enterprises produce similar types of products although there are differences between different categories in terms of the level of production of those products. The difference in the level of production of medium-end products exists between large and medium and small enterprises such as children's wear, jackets and bottoms. On the other hand, the basic T-shirt is the product which is produced largely by small-scale enterprises. Interestingly, a number of other items such as sports-wear, undergarments that would normally be produced by medium enterprises are actually manufactured by smaller firms as well. The data also indicates that a number of enterprises produce various other items though, such as dress pants, polo shirts, tank tops, trousers, cargo trousers, skirts, swimwear, hoodies, leggings, medical tops, bottoms and socks on a smaller scale. A large part of these items are medium-end products, which are produced at a smaller scale. The product-composition shows that a section of RMG enterprises have been diversifying their manufacturing base by producing medium-end products along with basic products. Interestingly, these enterprises are not necessarily large but rather, sections of small enterprises.

Table 6.4: Products Produced by Sample Enterprises

Product Type	Number of enterprises	Factory Size		
		Large (% of total 17 enterprises)	Medium (% of total 100 enterprises)	Small (% of total 107 enterprises)
Dress Shirt	45	29	24	15
Jeans	41	24	22	14
T-Shirt	123	47	43	66
Other Shirts	43	12	24	16
Ladies Tops	115	53	51	50
Sweaters	26	12	11	12
Bottoms	110	76	52	41
Jackets	103	65	42	46
Children Wear	125	71	51	57
Undergarments	30	6	12	16
Sports Wear	32	6	18	12
Others	33	24	13	15

Source: CPD-RMG Survey 2018

6.5 Workers of Sample Enterprises

RMG enterprises employ more workers than any other manufacturing enterprise in Bangladesh. On average about 1079 workers are employed by an enterprise, where average employment in large enterprises is 4329 followed by medium enterprises (1312 workers) and small enterprises (358 workers) (Table 6.5). In other words, a large enterprise is more than 3 times bigger than medium-sized enterprises and about twelve times bigger than small enterprises. The majority of RMG employees work in the sewing section—about 51 per cent of total workers are working in the sewing section, followed by finishing section (12.6 per cent) and cutting/knitting section (6.9 per cent). Because of larger size in operation, the number of senior professionals is higher in large enterprises, followed by medium and small enterprises, which include cutting masters in the cutting section, supervisors in sewing section and quality controllers in the finishing section.

Table 6.5: Average Number of Production Workers in Each Enterprise

Items	Large (17)	Medium (100)	Small (107)	Total
All Production Workers	4329	1312	358	1079
Cutting/Knitting section (total)	273	93	28	75
Cutting Master/Cutter	38	13	3	10
Sewing section (total)	2035	688	202	555
Supervisor	107	33	10	27
Finishing section (total)	522	174	42	136
Quality controller	301	76	15	64
Ironer	134	37	10	31
Folder	67	28	9	22
Others (total)	1499	357	86	312

Source: CPD-RMG Survey 2018

The data shows that each enterprise on average has about 113 non-production workers (Table 6.6) and these employees work particularly in the sewing section (29 staff,) followed by quality control (16 staff) and production planning sections (13 staff). While medium and large enterprises have staff in all sections, small enterprises have no staff in some sections such as research and development (R&D), industrial engineering and washing sections. This reflects the limited capacity of small-scale enterprises in forward and backward linkage activities. Hence, small enterprises are lagging behind those of medium and large enterprises in terms of different frontier level operations, which might affect at least a part of small enterprises' ability to upgrade their production processes. With gradual demand for specialised jobs in the production process, number of staffs as well as number of new departments has been on the rise.

Table 6.6: Distribution of Non-production Staffs in Sample Enterprises

	Large	Medium	Small	Total
Total Officers/Staff	465	131	43	113
Merchandising Department	27	7	4	7
Production, Planning and Cooperation	70	10	7	13
Sewing Department	100	37	10	29
Knitting Department	20	9	2	6
Washing Department	12	1	0	1
Quality Assurance/Control Department	66	19	5	16
Finishing and Packaging Department	26	10	4	8
Maintenance Department	38	13	3	10
Admin, HR and Compliance	36	12	3	10
Industrial Engineering (IE) Department	13	4	0	3
Research and Development	3	2	0	1
Others	53	7	3	9

Source: CPD-RMG Survey 2018

As we can see there is a gradual decline in use of non-production staffs perhaps because of improved working conditions, production as well as non-production workers' efficiency. Sample enterprises on average employ one non-production workers against 9.5 production workers (Table 6.7). The ratio of production and non-production workers is higher for medium enterprises (10.0) and lower for small enterprises (8.3). This ratio was considerably higher in previous years (according to the SMI 2012, this ratio was 12.6 which has declined by 24.6 per cent).

Table 6.7: Ratio of Production and Non-production Staffs

	Large	Medium	Small	Total
All Production Workers	4329	1312	358	1079
Total Officers/Staff	465	131	43	113
Ratio of production workers and Staffs	9.3	10.0	8.3	9.5

Source: CPD-RMG Survey 2018

6.6 Overall Observations

The data sample on enterprises indicates that the RMG sector is likely undergo the process of changes in the structure of production, composition of products, and employment of production and non-production workers and scale of operation. This can be attributed to the dynamics and changes in competitiveness of the RMG enterprises. It is thus important to examine the nature of changes and to differentiate the influence of different factors in the process of changes. However, a part of the change can also be credited to the changing compliance standard in view of post-Rana Plaza developments.

B. Economic Upgrading in Apparels Enterprises and Its Implications on Operation, Management and Technology Use

7. Changes in Ownership Structure and Management Practices in the RMG Enterprises and Their Relationship with Enterprise-level Performance

7.1 Introduction

The management practices are often less discussed in the context of Bangladesh's apparel enterprises compared to other issues such as production, export, employment and labour-related issues.⁵⁴ Unlike other manufacturing sectors, the apparels sector applies a moderate form of management activities, particularly with regard to basic and mass-scale production activities.⁵⁵ Traditionally, the operation of apparel enterprises in Bangladesh would focus on the production of basic products, which is largely driven by a process of volume-led, physical labour induced operational practices. Such operation styles may require standard management related practices. With the expansion of factory operations for producing both traditional and non-traditional products by using specialised technologies alongwith maintaining the compliance standards, the demand for better management practices has further intensified. Such changes are mainly evident in post-Rana Plaza period.

Better management and operation in the RMG sector are associated with changes in production planning, cost management, human resource management, compliance assurance and industrial relations, among others. These issues have been further aggravated after the Rana Plaza tragedy, when RMG enterprises struggled to upgrade social compliances by making significant investment—the need to address the increased cost burden of the rising cost of production as well as lowering the offered price. Hence, the management-related issues are becoming more and more important with a view to improving business operations of RMG enterprises of Bangladesh. This study has examined the management performance of RMG enterprises in Bangladesh, while taking into account the standard performance assessment method applied at the global level. The study has also identified the factors responsible for current management practices in RMG enterprises. Moreover, it has highlighted the role of current management, *inter alia*, firm-level performance of cost management, human resource management and production planning etc.

7.2 Literature Review on Management Practices in the Manufacturing Enterprises

Previous researches primarily focused on the individual management practices to appreciate the performance of the firm. But recent studies are focusing more on 'bundle', 'system' and configuration of management practices and their impact on performance outcome of firms (Drummond and Stone, 2007). Such a system-oriented management practice usually refers to high involvement (Gollan, 2005), high commitment (Whitener, 2001), high performance work system (Tsai, 2006), and high performance work practices (Huselid, 1995). There is no one management practice that provides the key to improving the firm's performance—rather it is a combination of multiple management practices that assures enterprise-level success (Bloom and Reenen, 2006).

7.2.1 Factors Responsible for Better Management Practices

Management practices are increasingly undertaken in a pressured environment because of various reasons. Bloom *et al.* (2016) identified five key factors for better management practices. These include competitive product market, professionally managed firms, trade openness, multinational presence, flexible labour market and more educated employees. In this context, improvements in management

⁵⁴ For details, please see: <http://www.uplbooks.com/book/entrepreneurs-and-economic-development-remarkable-story-garment-exports-bangladesh>

⁵⁵ The study was conducted on pharmaceuticals, commercial banks and media. For details, please see: <http://gsdl.easternuni.edu.bd/greenstone/collect/2eujournal/index/assoc/HASH01d7.dir/doc.pdf>

practices are likely to be higher (i) when firms face increased product market competition and (ii) when firms upgrade their technological skill.

The major constraint in the improvement of management at the enterprise level is an inadequate supply of managerial human capital. The second most significant barrier is the lack of worker's skill and the third one is informational barrier—not knowing what changes to make.⁵⁶ The scarcity of managerial skill and informational barriers is mostly witnessed in the developing countries— 56 per cent of Indian firms and 33 per cent of Chinese firms reported to have such constraints (CEP, 2011). Lemos and Scur (2014) suggest that a qualified and educated workforce is linked with better management practices as well as adequate capital investment, particularly for the middle-income countries.

The availability of skilled manpower both in management and the workforce often leads to differences between better managed firms and the rest. In Australia, 64 per cent of the managers in the high scoring firms have a university degree or higher (whereas it is 35 per cent in Canada and 53 per cent in the USA); on the other hand, among the lowest scoring firms, only 3 per cent of the managers have university or higher degrees (Green *et al.*, 2009). In particular, the findings of the study support the hypothesis that firms in a high-skill environment tend to have a better human-capital management practices compared to that in a low-skill environment. Besides, multinational companies (MNCs) are often referred to as better managed companies. This is mainly attributed to their capability to develop their management practices as well as their tendency to diffuse and transfer knowledge. This could be a result of their greater investment in management, which sets them apart from other firms and brings them greater productivity outcomes and competitiveness.

The ownership structure of a firm seems to have a significant influence on its management performance. A growing number of literature suggests that, family-owned and family managed firms experience lower management scores, whereas family-owned but externally managed firms score much higher (Bloom *et al.*, 2016). Publicly-owned companies outperform other types of companies in Australia, including privately-owned and family-owned firms. This is consistent with other previous findings of Green *et al.* (2009 & 2011) in other countries. Moreover, family-owned and domestic firms with less overall education and skill seem to pull down the management score in contrast to the more efficiently managed approach deployed in publicly listed firms and multinationals.

According to Green *et al.* (2009), a flexible labour market often encourages companies to adopt better management practices in order to attract and retain the best employees. Other important findings show that, organisational structure often has a positive correlation between the management score and flexible labour markets. The degree of manager autonomy is significantly linked to greater management scores and can account for 4 per cent of the variability in the management score.⁵⁷ Moreover, higher scoring firms have a higher level of innovation that can explain 8 per cent variability

⁵⁶ The constraint faced by the UK firm is similar to those of other three OECD countries (i.e. France, Germany and the US). British managers give more importance to the workers' skill and informational barriers than their US counterparts.

⁵⁷ LSE survey in 2011 finds that, managers consistently over-rate their firms' management performance, thus the manager's self-assessed score does not align well with the firm's management score. This suggests that managers are unaware of actual management performance in their firm and do not focus on benchmarking their performance against the best score. As a matter of fact, they are likely to be in the dark and can't recognise the potential areas for improvement. This result is consistent with the findings of Bloom *et al.* (2007 & 2016) where "many organisations are probably missing out an opportunity for significant improvement because they simply do not recognise that their own management practices are so poor" (similar findings observed in LSE study in Australian manufacturing firms in 2009). Thus improving the managers' self-awareness can better allow firms to drive improvements in management performance, thus shifting the performance curve towards the higher edge and raising the management score well beyond the average score.

of the management score (Green *et al.*, 2009). Overall, ensuring better management practices do not require a high level of physical capital investment—rather, investment on the part of managers to drive an effective change within their firms to change the managerial processes in place (CEP, 2011).

Performance Management System (PMS) is a tool used by organisations to guide performance behaviour in alignment with organisation strategy. Organisations through their performance appraisal formats, attempt to capture individual performance data as a part of a performance management system. Performance evaluation output must be linked with other human resource management (HRM) activities and other strategic decision-making for the organisational administrative and developmental purposes. Islam (2006) found that 20 per cent of the Bangladeshi companies hold PMS on a regular basis and only 10 per cent companies link performance evaluation results with HR decision making. It is evident that most MNCs are using performance evaluating output whenever they are the basis for a decision about an employee's working conditions including promotions, terminations, remunerations and rewards. A US study shows that global organisations use performance measures that focus on all other drivers of their businesses such as financial performance, shareholder value, employees and customers (Stark and Alper, 2000). Research by Nankervis and Leece (1997) indicate that organisations are trying to relate individual performance more directly to their strategic business objectives. According to McDonald and Smith (1995), companies that manage PMS successfully tend to outperform companies that do not, leading to higher profits, better cash, productivity gain, higher sales growth and overall better financial performance.

7.2.2 Human Resource Management (HRM) Practices at the Enterprise Level

HRM is considered as the critical organisational resource that helps an organisation remain sustainable and competitive (Lloyd and Leslies, 2000). Key issues handled by such a management position includes HR planning, job analysis, recruitment, selection, orientation, compensation, performance appraisal, training, development and labour relations (Dessler, 2007 and Khan, 2010). Absar *et al.* (2010) found that, recruitment and selection, training and development, performance appraisal and compensation management are independent and positively correlated. Moreover, worker's commitment towards organisation and job satisfaction increase when an employee judges the organisation to be fair and supportive with regard to promotional opportunities, adequacy of pay, effective supervision, employer's consideration towards workers well-being (Nasurdin *et al.*, 2001). However, financial benefits, social welfare, security and leave provisions have a positive impact on the quality of work. Furthermore, non-financial benefits like dining facilities, attendance incentives, transport facilities and financial incentives also have the positive role towards achieving worker's quality of work life (Zohir, 2007). As a result, employees become happy towards their work, which in return improves job performance and organisational performance. Thus, it is important that managers should try to develop a strong connection between the quality of work life and employee job satisfaction through effective HRM practices (Sarker and Afroze, 2014).

7.2.3 Implication of Management Practices on Firm Level Performance

Previous researches conducted on impact and implications of management practices on firm level performance show that better managed manufacturing firms witness higher productivity (as measured by sales per employee) and higher profitability (Lemos and Scur, 2014). CEP (2011) examined a correlation between management practices and the firm's performance in terms of productivity, profitability, growth rates, survival rates and market value. Across all these measures, management is highly correlated with these indicators of better firm performance.⁵⁸ Moreover regression results exhibit that each standard deviation of management score is associated with about a 40 per cent increase in firm's size, as indicated by sales as well as 14 per cent increase in total factor productivity (TFP). Bloom *et al.*, (2016) finds that even one per cent rise in management score raises

⁵⁸ CEP (2011) report shows that UK productivity is similar compared to other countries in Northern Europe like Austria and Sweden but are lagging behind France and Germany. One possible explanation of this productivity gap across firms and countries is the variation of management practices.

the TFP by 10 per cent, consistent with other findings. It is also matched with the research conducted by London School of Economics (Green *et al.*, 2011). In their research, it is witnessed that effective management practices are associated with higher productivity and output in New Zealand manufacturing firms. This result demonstrates a strong positive correlation between New Zealand management practice and various firm productivity performance indicators, employee per capita profit, firm sales and number of employees (similar association is tested in another study of Green *et al.* in Australia in 2009. The relationship between HRM practices with corporate turnover, profitability and market value are further examined by Huselid (1995) where they are found to be positively correlated. In contrast, poor management practices (ranked at the bottom of the management index) are directly related with lower productivity (Lemos and Scur, 2014).

The LSE study (Green *et al.*, 2009) attempts to see whether management practices are linked with increases in productivity and output in a developed economy with high wages and rapid technological improvements.⁵⁹ Regression result shows that a one point increase in management score is associated with an increase in profit per employee, increase in sales (17.1 percent) and number of employees (29.9 percent). Furthermore, the research uncovers key drivers of New Zealand management practice and significant findings as follows which is supported by another study of LSE conducted in Australia in 2009. The study finds that (a) firm size is an important determinant of management practices with larger firms often outperforming smaller ones; (b) ownership is also a factor as multinational companies often perform better compared to domestic companies on several dimensions including productivity, wages and R&D; (c) family-run firms tend to underperform other firm types; (d) higher level of education and training of both managers and non-managers significantly improves management practices; (e) the degree of manager autonomy is a crucial factor leading to improved management practices; and (f) optimally balancing organisational structure improves management practices.

In another study of LSE (Green *et al.*, 2009), we find that superior management behaviour and techniques and their adoptions are correlated with higher productivity gains. Awano *et al.* (2017) in their study of management practices in the manufacturing firms of UK found that, multinationals, large firms and non-family owned business outperforms domestic, smaller and family owned business in terms of productivity. Regression result of this study highlights the association between management score, number of key performance indicators (KPIs), frequency of KPI monitoring, target timeline, promotion score, family-owned and family-managed business, family owned and non-family managed business, multinationals with productivity where it is found that, management score, continuous improvement and promotion score have positive significant association whereas family-owned and family-managed businesses have a negative significant association with productivity.

However, some of the other variables that impede productivity include inadequate supervision and employee involvement in decision making and insufficient upward mobility opportunities etc. Another study finds that inefficient planning of work and organisational structure followed by poor leadership greatly hampers productivity (Nwachukwu, 1987). Researchers have indicated that improved working conditions and better wage rate could improve the productivity and profitability of the organisation (Ahmed and Peerlings, 2009).

7.2.4 Implications for RMG Sector of Bangladesh

Despite appreciating the importance of the efficiency and efficacy of HRM practices for organisational development, overall management practices in industrial enterprises remain low (Absar, 2014). The current state of HRM practices as a whole is still far below par. Most organisations in Bangladesh are

⁵⁹ The LSE study conducted in 2009 on Australian manufacturing firms designed an innovative and robust research methodology on 16 countries including developed and emerging economies collecting data from 439 medium and large size manufacturing firms following the detailed methodology of Bloom and Reenen (2006) to measure the management practice using the conversation-based interview scoring grid.

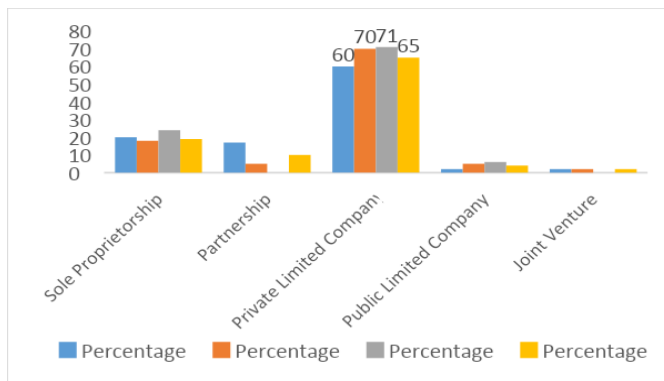
family-owned and controlled by family owners, therefore human resource management activities tend to mirror the owner’s views. However, enterprises are increasingly facing pressures particularly RMG enterprises in recent years, mainly from EU and North America, with a view to improving working conditions. Therefore, these RMG enterprises need to develop a systematic and efficient operational and HRM practices to remain competitive globally (Mahmood and Absar, 2015). In this respect, operational management and HR policies and practices need to maintain positive relationship that would guarantee good working environments, employer’s responsibility, relationship between management and workers, proper maintenance of rules and regulations as well as the health and environment of safety in the RMG sector as part of a GVC.

7.3 Ownership and Management Structure of Sample Enterprises

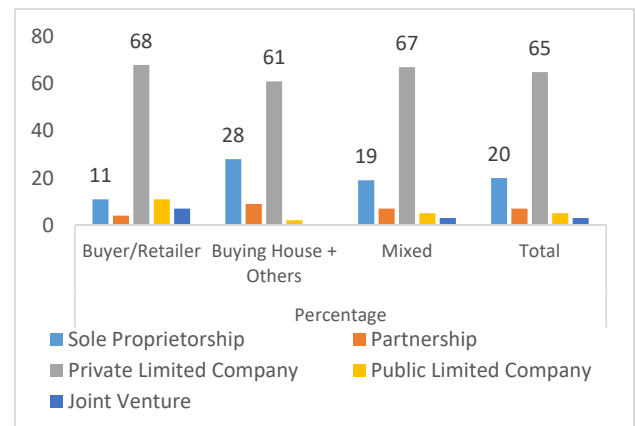
7.3.1 Family-based Private Limited Companies have been Firmed Up

The predominance of the private limited companies in the structure of ownership of the RMG enterprises has been at same state—65 per cent of total enterprises are owned by private limited companies followed by sole proprietorship companies (19 per cent) (Figure 7.1). Only a small share of companies is public limited companies (4 per cent) or joint venture companies (2 per cent). The structure of ownership is almost the same as decade ago—according to Rahman *et al.* (2008) the respective shares of companies were 71.6 per cent, 10 per cent, 1.6 and 9.5 per cent respectively.⁶⁰ There has been no major difference in woven and knit enterprises in terms of ownership structure over the years. Such unchanged structure of ownership shows that the RMG industry is maturing as a family-based entity with limited focus on growth of public limited companies. A part of enterprises are being directed by second generation family members. In other words, it is expected that intergenerational transfer of directorship within the family will not hamper smooth operation of enterprises. The brands/buyers are likely to be comfortable with the family-based entity of supplying enterprises (Figure 7.2)—about 68 per cent of enterprises working with brands/retailers are private companies. Public limited companies are rather high among enterprises working with brands/retailers (11 per cent vs. 5 per cent for enterprises with ‘mixed’ contracts.

Figure 7.1: Ownership Structure of RMG Enterprises Figure 7.2: Legal Status of Company



Source: CPD RMG Survey, 2018



These family-based private limited companies are however, limited to a single family. The study found about 88 percent of companies comprises boards with having on average three directors, two of whom are from the same family (Table 7.1). In most cases, there are no independent directors in the company boards. Hence, the management and operational decisions of the companies are still

⁶⁰ The share joint venture companies in 2008 includes 100 per cent foreign-owned companies.

decided by the family.⁶¹ A large section of new board members within the family are better educated compared to their earlier generation with knowledge about frontier issues of management, operations and technologies which likely to contribute in efficient operation of companies in the medium to long term.

Table 7.1: Board of Directors of Sample Enterprises

Items	Overall			Woven			Knit		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Average No. of Members per Enterprises	3	1	3.4	3.4	1	4	3	1	3.2
Average No. of Members Within Family	2	1	2.9	2.5	1	3	2	1	2.8
% Within Family	67	100	85	74	100	75	67	100	88

Source: CPD RMG Survey, 2018

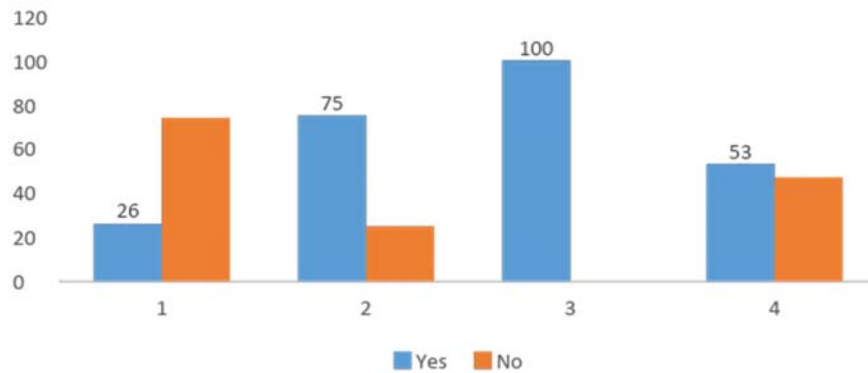
Given the rise of the number of family-based board members in these companies as well as the rise in their engagement in other businesses, there is a good possibility for further delegation of authorities to the factory management, in at least in a section of the enterprises. However, how far the boards of these companies have been delegating these authorities and thereby creating differences between board and management, which is an indication of corporate practices, remain unclear.

7.3.2 Growing Influence of Group of Companies

A majority of RMG enterprises are subsidiaries of different groups of companies which indicate their dominance in the RMG sector (Figure 7.3). In fact, more than half of sample RMG enterprises are sister concerns of different groups. Unlike the past where group-based enterprises were observed at limited scale particularly in large scale enterprises, such enterprises have been observed in medium and small scale enterprises—about three-fourth of medium-scale enterprises and more than one-fourth of small enterprises are members of different groups. The number of subsidiaries under these groups vary—from as low as two to over 45 enterprises. About 53 per cent of these enterprises belong to companies that own about 2 to 4 RMG enterprises and 88 per cent of the enterprises have 1-5 non-RMG enterprises (Table 7.2). Such an ownership structure indicates that more and more RMG enterprises are able to take advantage of its subsidiary position from their groups particularly in terms of cross-subsidisation of various costs in order to retain their competitive edge in the market. Such linkages of a share of small and medium enterprises along with large enterprises with group of companies extend new ways to define the competitiveness of RMG enterprises of Bangladesh.

⁶¹ According to Absar (2014) most organizations in Bangladesh are family owned and controlled by family owners; therefore, human resource management activities tend to be viewed as just a company owner's wish.

Figure 7.3: Enterprises Operating Under Group



Source: CPD RMG Survey, 2018

Table 7.2: RMG and Non-RMG Enterprises Operating Under Different Groups

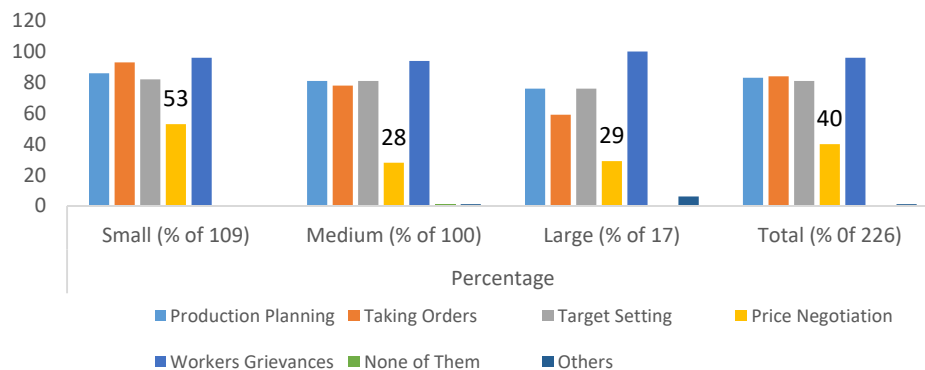
No. of RMG Factories Operating Under Group	Percent of Total RMG related Enterprises	No. of Non-RMG Factories Under Group	Percent of Total non-RMG related Enterprises
2-4	53	1-5	88
5-9	29	6-10	3
10-14	11	11-15	3
15-29	3	16-30	5
30-above	4	31-above	1
Total	100	Total	100

Source: CPD RMG Survey, 2018

7.3.3 Indication of Rise of Corporate Practices

Factory managements of RMG enterprises are increasingly getting more authority to operate businesses at the factory level (Figure 7.4). Directors of sample enterprises are increasingly allowing factory management to take part in the decision-making process, mainly in production planning, target setting and workers' grievances (over 80 per cent of the GM mentioned that they took decisions about those issues). However, directors still play a major role in price negotiations with buyers; but participation of managers in price negotiation is increasing (about 40 per cent of GMs mentioned that). Overall, the GM's growing role in practicing authority in the majority of factory-level issues provides an indication that corporate practices in RMG enterprises have been on the rise.

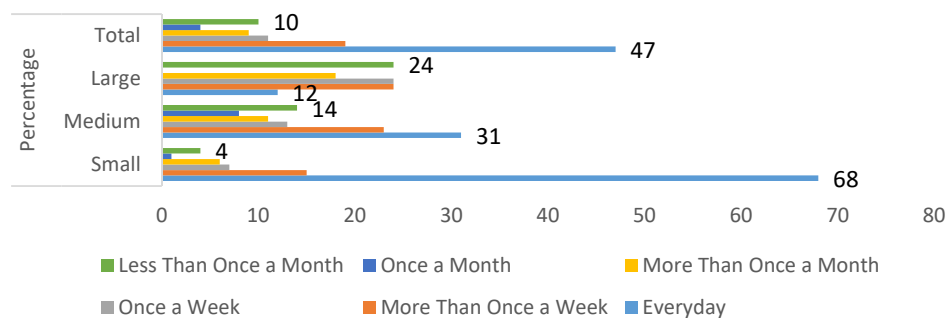
Figure 7.4: Issues on which CEO/GM Take Decision



Source: CPD RMG Survey, 2018

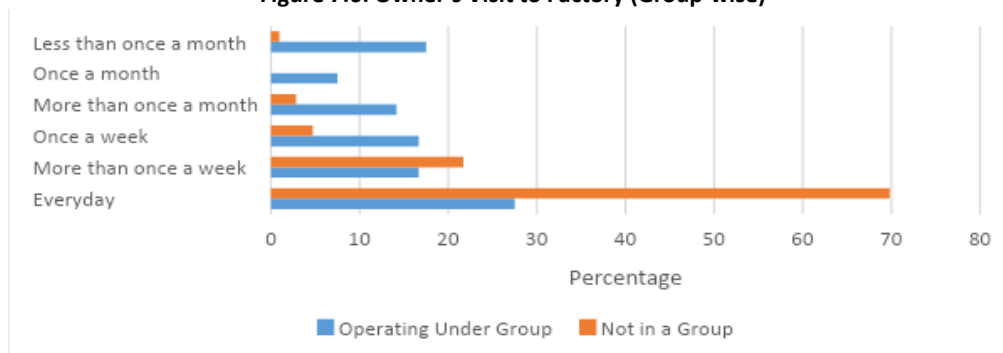
We assume that the delegation of authority to the managers at the factory level is mainly driven by ‘push factors’.⁶² Most of the owners are directors of more than one enterprise including non-RMG enterprises, where they need to divide their time on a regular basis. The frequency of visit to factories is a good indicator to appreciate how much time directors spare for each of their enterprises. Only 47 per cent of the directors visit factories on a daily basis (Figure 7.5). The rest visit more than once a week to less than once a month, particularly in case of directors who have medium-sized and large enterprises.⁶³ As many as 10 per cent of the RMG entrepreneurs visit their factories less than once in month. In case of factories under groups of companies, only 28 percent of directors visit factories everyday while over 18 per cent of the directors visit factories less than once a month (Figure 7.6). The lack of adequate time, particularly in highly labour-intensive manufacturing enterprises, has pushed directors to delegate more authority to the factory management. Hence, despite being a family-based entity, the RMG enterprises are practicing some of the corporate activities where the factory management takes exclusive decisions at the factory level (Table 7.4).

Figure 7.5: Frequency of Visit to Factories by Owner



Source: CPD RMG Survey, 2018

Figure 7.6: Owner’s Visit to Factory (Group-wise)



Source: CPD RMG Survey, 2018

⁶² Autonomy of the manager is highly dictated by an organisation culture; bureaucratic and traditional organisations are often supposed to have little autonomy while newer and more organic structures rely on autonomy. Manager autonomy sometimes reduces the relational behaviour between superiors and subordinates. Autonomy may also improve workplace function and foster relationships with a greater degree of trust between the management and employees. Moreover, in the worst case, increased autonomy may raise unscrupulous power, therefore a certain amount of oversight is essential in the organisation to avoid such malpractice when there exists high levels of autonomy in the factory. See details at: <http://www.referenceforbusiness.com/management/A-Bud/Autonomy.html>

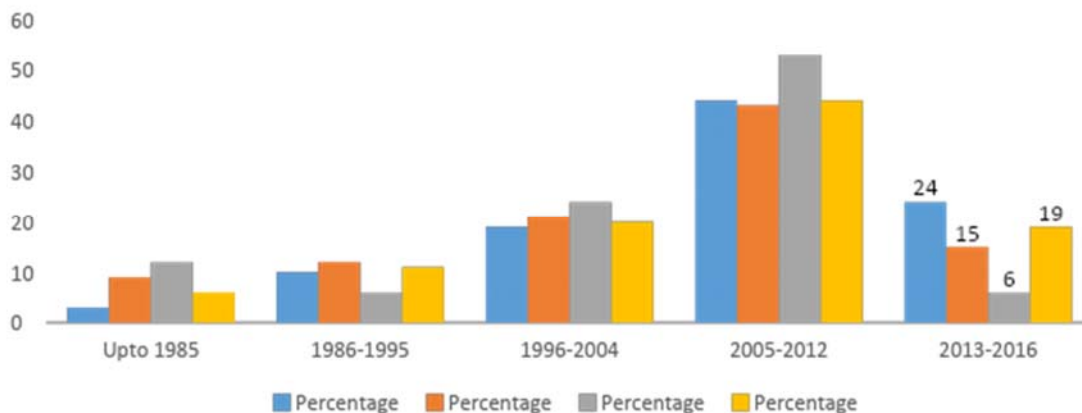
⁶³ According to the LSE study conducted in Australian Manufacturing firm in 2011 (Greene *et al.*, 2009), the degree of manager autonomy is a crucial factor leading to improve management practices.

7.3.4 Sizable Number of Factories Established after the Tragedy; Some Still Operate in Shared Buildings

A majority of enterprises were established within the last decade or so—about 63 per cent was established after 2005 when Bangladesh entered the quota-free regime with the end of the multi-fibre arrangement (MFA) (Figure 7.7). These include about 71 per cent of knit enterprises and 52 per cent of woven enterprises (Table 7.3).⁶⁴ More importantly, a sizable number of RMG enterprises were established after the Rana Plaza tragedy (about 19 percent of the total enterprises). These are mostly small (24 per cent of total small enterprises) and medium (15 per cent) enterprises. Despite being pressured to maintain compliance by making additional investments during the post-Rana Plaza period, entrepreneurs have set up new enterprises indicative of their positive attitudes towards new investment in a sector in crisis and at the same time, such investments in new factories portray continued confidence of buyers/brands on Bangladesh’s RMG sector. Given the pressure of high cost of compliance in the post-Rana Plaza period, how these new enterprises along with older ones maintain their competitiveness is important to explore.⁶⁵

There is some variation in year of establishment in different categories of enterprises. Knit enterprises are relatively more established after 2005 compared to that in woven enterprises although the difference is low when considering factories’ year of establishment after 2012 (Table 7.4). It is interesting to note that factories established earlier stem from more subsidiaries of different groups while factories established in recent years tend to be individual entities. In other words, the RMG sector is experiencing a new set of entrepreneurs in the post-Rana Plaza period.

Figure 7.7: Establishment Year (Size-wise)



Source: CPD RMG Survey, 2018

⁶⁴ A study by Bakht and Hosaain over RMG sector in 2007, finds that the woven garments industry in Bangladesh is dominated by medium and large enterprises, while small enterprises dominate the knitwear industry. In the case of woven RMG industry, nearly 49 per cent of the factories are located in Dhaka district, followed by 24 per cent in Gazipur. In the case of knitwear RMG, nearly 55 per cent of the factories are located in Narayanganj district, followed by 24 percent in Dhaka district.

⁶⁵ Lomborg (2016) referred the study of Shadat where it is investigated that ensuring safety regulation is important not only for worker safety but also for increasing exports. Greater compliance reduces the probability of accident, increase productivity, lowers employee turnover and make this sector attractive to both existing and new buyers. The author estimates that, it would require cost between BDT 164 billion to BDT 234 billion for industry-wise compliance. See details at: <https://www.thedailystar.net/op-ed/economics/rmg-smartest-strategies-1231252>

Table 7.3: Year in Which Factory Operation Started (Type-wise)

Year	Percentage		
	Woven	Knit	Total
Upto 1985	16	0	6
1986-1995	13	9	11
1996-2004	20	21	20
2005-2012	36	50	44
2013-2016	16	21	19
Total	100	100	100

Source: CPD RMG Survey, 2018

Table 7.4: Factory Establishment (Group-wise)

Unit Operating Under Group	Percentage					
	Upto 1985	1986-1995	1996-2004	2005-2012	2013-2016	Total
Yes	79	58	57	50	45	53
No	21	42	43	50	55	47
Total	100	100	100	100	100	100

Source: CPD RMG Survey, 2018

After the Rana Plaza tragedy, a major criticism arises that a part of factories is being operated in shared buildings which are non-compliant. This is mainly because of the location of factories in shared buildings. The operation of enterprises in shared building is considered to be hazardous in terms of workers' safety and security, particularly when similar levels of safety standards could not be maintained as some of the occupants of the buildings are in non-RMG businesses.⁶⁶ Despite various drives during the post-Rana Plaza period to discourage factories not to operate in shared buildings, about 32 per cent of the sample enterprises still continue to operate in shared building. This is observed more in case of woven enterprises (42 per cent) compared to that in knit enterprises (25 per cent) (Table 7.5). A majority of the occupants in shared buildings are RMG owners either of the same group or of different groups. However, about 7 per cent of those occupants are owners of non-RMG enterprises (Figure 7.8).

Structural integrity of the building is an important pre-condition for maintaining compliance standards set in the post-Rana Plaza period. A considerable number of factories located in shared buildings required to relocate those in state of art compliant premises either to ensure safety and security or to continue their businesses with major brands and buyers. Due to various reasons, about 17 per cent of the enterprises have planned to either relocate or close their businesses in their existing establishment (Table 7.6). The inability of enterprises to comply with modern safety standards as set in the post-Rana Plaza period is considered to be a major reason for the closure of factories (Table 7.7). In fact, factories often shut down due to various reasons⁶⁷; however, the reasons behind shutting down of factories in the post-Rana plaza period is related to a lack of willingness to make necessary investment for improvement of the safety related standards due to limited business prospects in the future.

⁶⁶ Factories located on old shared buildings are prone to safety threats, as it is difficult to maintain compliance in shared buildings. Besides, smaller factories, particularly those with less than 500 workers, and factories located in Dhaka district have been found to be, in general, less compliant (Bakht and Hossain, 2017).

⁶⁷ According to Moazzem and Rayan (2015), closure of factories before the Rana Plaza tragedy is because of less orders from buyers than before and loss in businesses and mismanagement, failure to deliver orders on time, irregularity in making payment of workers' wages and labour unrest.

Figure 7.8: Other Business in the Same Building

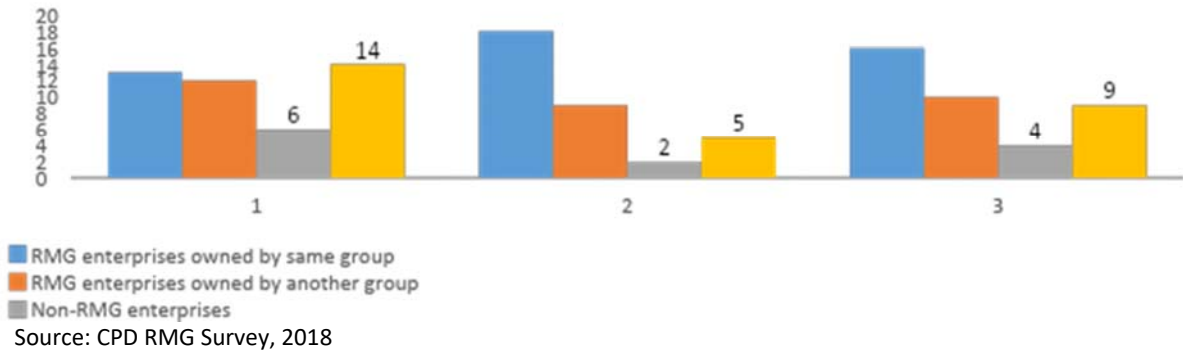


Table 7.5: Factories are in Operation in Shared Building (Type-wise)

Particulars	Percentage		
	Woven	Knit	Total
Yes	42	25	32
No	58	75	68
Total	100	100	100

Source: CPD RMG Survey, 2018

Table 7.6: Plan to Close or Migrate in another Location (Type-wise)

Plan	Plan to Close or Migrate in Another Location (Type-wise)					
	Frequency			Percentage		
	Woven	Knit	Total	Woven	Knit	Total
Yes	16	23	39	18	17	17
No	69	108	177	77	79	78
Don't Know	5	5	10	6	4	4
Total	90	136	226	100	100	100

Source: CPD RMG Survey, 2018

Table 7.7: Reasons for Moving or Closing

Reason	Frequency			Percentage		
	Small	Medium	Total	Small (% of 109)	Medium (% of 100)	Total (% of 226)
Profit Margin Lower than Expected	15	3	18	14	3	8
Flexible Terms of Regulation	10	1	11	9	1	5
Better Physical Compliance	12	3	15	11	3	7
More Advanced Rules	28	4	32	26	4	14
More Advance Structure (Compliance)	34	4	38	31	4	17
Others	2	0	2	2	0	1

Source: CPD RMG Survey, 2018

7.4 Management Structure of Sample Enterprises

7.4.1 More Responsibility to Senior Management

The management of RMG enterprises is getting bigger with their rising operation. On average, senior and mid-management staff per factory together bring up the total head count to 174 staff members, which is about 41.5 percent higher than that in 2012 (Table 7.8). This rise is mostly attributed to the rise of mid-level management staff, which increased by 51 per cent while senior management staff has increased only by 4.1 per cent. In terms of scale, large enterprises have experienced major rises in the number of staff (about 41.8 percent) while medium-sized enterprises experienced the highest rise in terms of percentage change (43.8 percent). Because of recruiting mid-level professionals more, the ratio of mid-level professionals per senior management professionals has changed over the years (from 4.1 in 2012 to 5.96 in 2016). Given the rise of management-related activities including workplace safety, security-related compliances, industrial relation related issues, and pressure to be cost-competitive—enterprises have recruited more staff at the mid-level.

The rise of management staff lags behind the rise of production workers (Table 7.9). Management staff in sample enterprises managed more workers in 2016 than they did in 2012 (before the Rana Plaza tragedy). On average, each management staff member were found to handle about 60 workers in 2016, up from 56.1 in 2012. Large and medium-sized enterprises have been managed by relatively less management staff compared to that of small enterprises. Considering the worker–management staff ratio as a performed indicator of the management, the performance level has increased more in small enterprises (29.6 per cent) followed by medium (1.1per cent) and large enterprises (5.9 per cent). However, small enterprises are still using their management professionals at less than their potential levels.

Table 7.8: Information on Management Professional

Management (no. of management professionals per factory))	2012				2016			
	Small	Medium	Large	Total	Small	Medium	Large	Total
Senior Level Management	3	3	18	24	3	4	18	25
Mid-Level Management	6	13	80	99	9	19	121	149
Total	9	16	98	123	12	23	139	174
Ratio of mid-level management and senior level management staff	2	4.3	4.4	4.1	3	4.75	6.72	5.96
Ratio of workers with management staff	24.3	80.0	93.1	56.1	31.5	80.9	98.6	60.2

Source: CPD RMG Survey, 2018

Table 7.9: Average Number of Management Professional

Management (Average No.)	2012			2016		
	Male	Female	Total	Male	Female	Total
Total Senior Level Management	8	2	10	9	2	11
Total Mid-Level Management	26	8	34	40	6	46
Total	34	10	44	49	8	57

Source: CPD RMG Survey, 2018

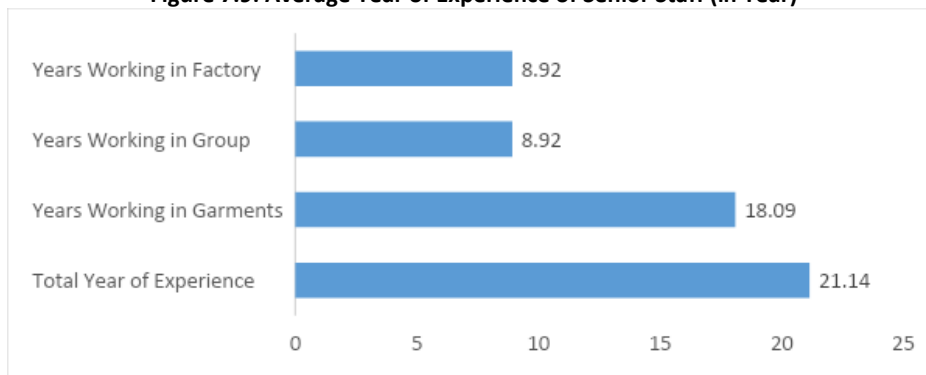
7.4.2 Senior Staff Members have Long Careers with Little Diversity

With an average working experience of 21.1 years, senior staff members spent on average 18.1 years in the garments sector (Figure 7.9). The average working life in the same group and in the same company is about half of their total working life in the garments sector (about 9 years). Such a long working life in the same group and company seems to be high compared to that in other sectors in Bangladesh. One of the reasons is that a section of the senior management officials enter the garment sector as non-management staff (mostly as production staff) and gradually builds their careers as

management professionals. On the other hand, such low mobility of management staff indicates a dearth of adequate supply of competent management professionals for the specialised jobs of the RMG sector of the country. There are diverse views about whether such slow mobility affects managers' incremental contribution to the job.

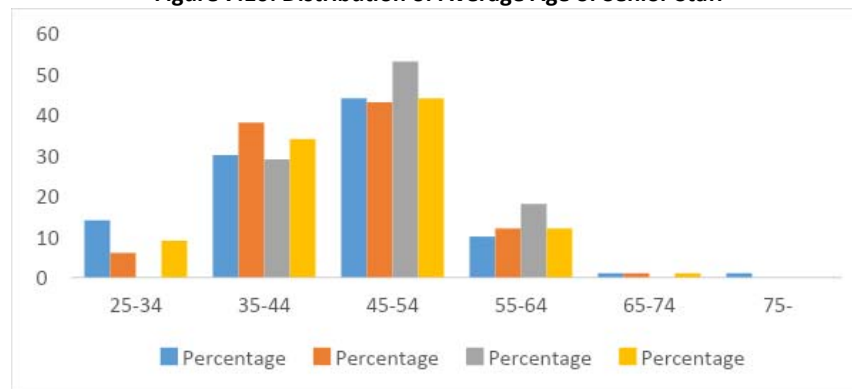
It is usually expected that managers' age could be a proxy to appreciate their level of skill and experience. The managers of sample enterprises are mostly middle-aged (average age was 45.6 years), although their age ranged as low as 25 years to as high as 75 years (Figure 7.10). Relatively younger-aged managers are found in small enterprises while large enterprises only hired more experienced managers. Among the top management professionals, about 3 per cent were found to be foreign professionals. Managers' average ages are almost the same between woven and knit factories. Since senior management positions in an enterprise require much experience and knowledge about complex management issues, managers' longer working life would have implications on their overall performance.

Figure 7.9: Average Year of Experience of Senior Staff (in Year)



Source: CPD RMG Survey, 2018

Figure 7.10: Distribution of Average Age of Senior Staff



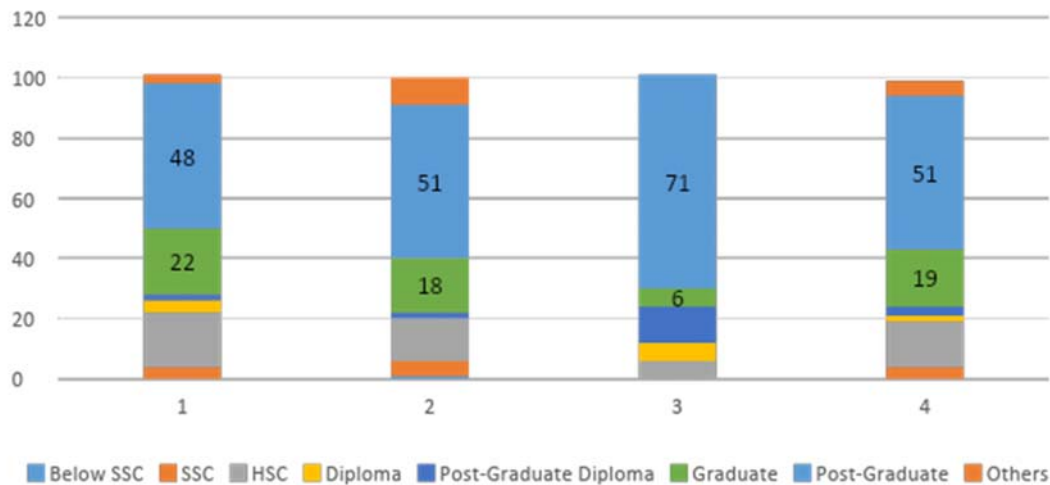
Source: CPD RMG Survey, 2018

7.4.3 Majority of Managers Have Modest Academic Background who Tried to Make it up through Training

Strong academic background of managers is usually considered to be a good indicator to appreciate the benchmark condition of management staff. Academic qualifications of managers widely vary (Figure 7.11) –from as low as below Secondary School Certificate (SSC) to as high as post-graduate level. About 51 per cent of the managers were found to have a post-graduate degree, which is impressive compared to managers of other countries. On the other hand, there were about one-fifth of managers who did not complete their undergraduate level studies. Poor academic records of the

managers are found mostly among managers working in small and medium-sized enterprises; on the other hand, higher academic attainment is observed in large and partly in medium-sized enterprises. More importantly, managers did not have specialised degrees necessary to pursue the management-related jobs in a labour-intensive industry like RMG (Table 7.10). A large share of managers (44 per cent) obtained non-business degrees such as arts and humanities, social science and mathematics and no specific subject specialisation. Business-related academic specialisation has been found among a limited number of GMs who obtained degrees in business (26 per cent), textiles (3 per cent), technology and engineering (3 per cent). There is locational variation among the academic qualifications of managers—managers working in factories located in Chittagong were found with less business-related background while those working in Gazipur were found to possess better background in business. Relative advantages of Dhaka and Gazipur may attract GMs with good academic records and other trainings to work in factories located in these regions.

Figure 7.11: Highest Degree Obtained by the CEO/GM/Head



Source: CPD RMG Survey, 2018

Table 7.10: Major Educational Area (GM)

Education Area	Frequency	Percentage
No Subject Specialization	27	12
Arts and Humanities	40	18
Social Science	16	7
Business	59	26
Pure Science and Mathematics	16	7
Technology and Engineering	6	3
Textiles	7	3
Others	55	24
Total	226	100

Source: CPD RMG Survey, 2018

Training on RMG-specific issues is important both to increase excellence in the professional work as well as to meet the deficit in academic records.⁶⁸ About 45 per cent of managers receive training on

⁶⁸ According to a research of Tehnopac (2013), the weak capability of managers results in poor understanding of optimal workflow. Managers very often unaware of the fact that proper implementation of control, planning

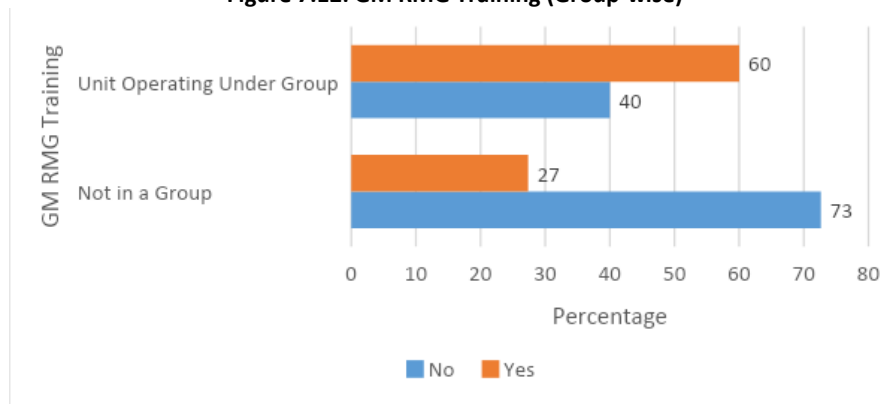
related issues. The number is greater in case of managers of large enterprises (71 per cent), followed by medium (57 per cent) and small enterprises (29 per cent) (Table 7.11). Similarly, the share is high for the factories operating under group (60 per cent) than from the non-group (27 per cent) (Figure 7.12). Therefore, it can be inferred that enterprises under group of companies and those large factories retain managers who have sound academic record as well as received training.⁶⁹

Table 7.11: Manager's RMG Specific Training

Manager's RMG Specific Training								
Training Received	Frequency				Percentage			
	Small	Medium	Large	Total	Small	Medium	Large	Total
Yes	32	57	12	101	29	57	71	45
No	77	43	5	125	71	43	29	55
Total	109	100	17	226	100	100	100	100

Source: CPD RMG Survey, 2018

Figure 7.12: GM RMG Training (Group-wise)



Source: CPD RMG Survey, 2018

Overall managers working in different categories of enterprises portray differences in their personal attributes in terms of age, academic qualification, subject specialisation and training on relevant issues. Such difference in their academic performance is likely to be reflected to their performances.

7.4.4 Human Resource (HR) Managers are Behind Both in Academic and Training Records

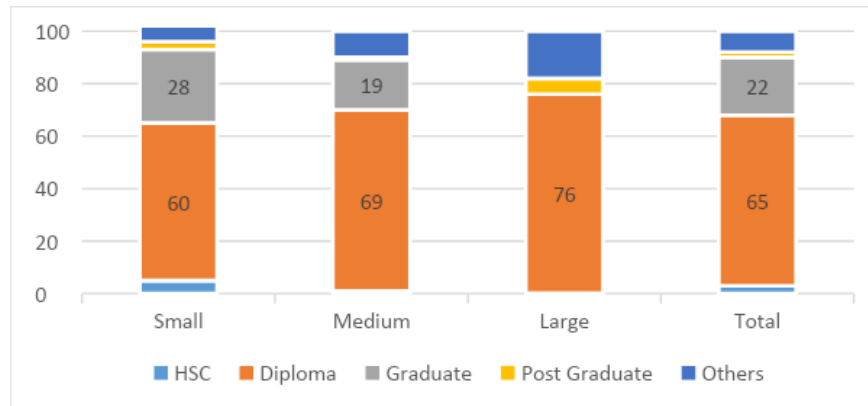
Compared to the GMs, HR managers of the sample enterprises are found to have less years of education. Most of the HR managers are within the age group of 30–40 and 40–50 years with an average age of 37.4 years. Most HR managers were found to be poorly educated with only 21.7 per cent with bachelors' degree while only 2 per cent were found to have Masters' degree (Figure 7.13). A majority of the HR managers (87 per cent) did not have graduation degrees. HR managers have tried to mitigate the gap through training initiatives. According to the survey, about 72 per cent have received professional training on HR management, 64 per cent on RMG related issues and 42 per cent on industrial relations (Table 7.12). Both academic qualification and training on management issues are higher among the HR managers working in large enterprises.

and engineering can have a strong significant positive impact on productivity. Therefore, management requires significant on-the-job and on-line training to understand management technique.

⁶⁹ Sonobe *et al.* (2011) in Vietnam and Pakistan and UNDP (2009) in Pakistan find that the larger the employment size, the more likely managers participate in the training programmes.

The overall management staff working in the garments sector entered with weak academic records, which is likely to have adverse effects on their basic knowledge and skills of management-related professional activities in the long run. In other words, RMG enterprises should focus on recruiting HR management professionals with adequate academic qualification and skills.

Figure 7.13: HR Manager Educational Distribution (Size-wise)



Source: CPD RMG Survey, 2018

Table 7.12: Professional Training Received (HR) (Size-wise)

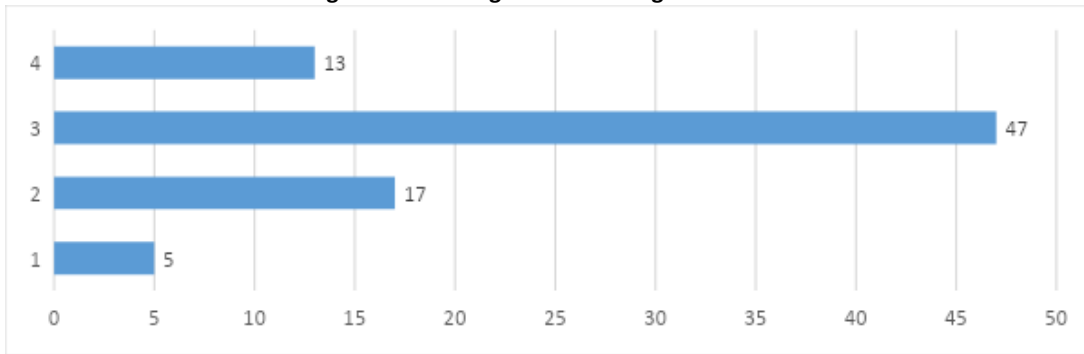
Training	Percentage			
	Small (% of 109)	Medium (% of 100)	Large (% of 17)	Total (% of 226)
RMG Industry Related	63	62	76	64
HR Management Related	62	79	94	72
Industrial Relations Related	32	48	71	42
Others	27	36	35	31

Source: CPD RMG Survey, 2018

7.4.5 Foreign Staff were found to be Important in Factory Management

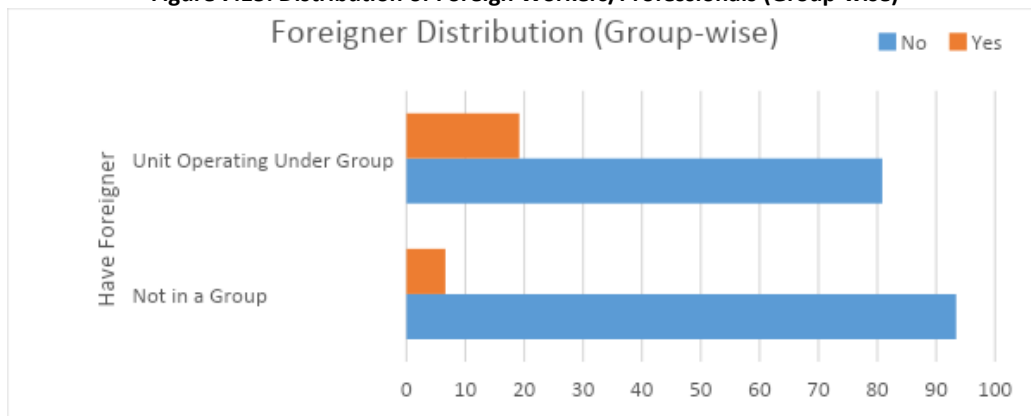
The presence of foreign staff in different management and operational jobs in RMG enterprises is primarily because of their specialised skills in specific professional activities, which are partially or entirely missing among the professionals trained locally. About 13 per cent of the enterprises have reported to have recruited foreign staff (Figure 7.14), a large part of these staff are working in large enterprises (47 per cent of large enterprises). Foreign staff are higher in number in woven enterprises compared to that in knit enterprises—about 19 per cent of the woven enterprises and 10 per cent of knit enterprises have foreign professionals in their factories. It is observed that 19 per cent of the foreign professionals are currently involved in the factories operating under group, with 7 per cent operating under non-group (Figure 7.15). According to the management staff working in different factories, the technical skills of local and foreign staff is consistent; but the foreign staff have comparative advantages in terms of comprehending the operational process, ability to present and discuss various company-related information as per requirement of the buyers/brands, better proficiency in English and better cross-country experience in dealing with management-related complexities. As a result, there is a demand for recruiting more foreign professionals to expedite factory operations with more technical efficiency. It is assumed that the involvement of foreign professionals has been increasing. Such a large presence of professionals in the RMG sector indicates a lack of available competent mid-level staff at the domestic level.

Figure 7.14: Foreign Staff Working in Factories



Source: CPD RMG Survey, 2018

Figure 7.15: Distribution of Foreign Workers/Professionals (Group-wise)



Source: CPD RMG Survey, 2018

Foreign professionals work in different sections of RMG enterprises— these sections mostly require specialised knowledge and professional skills (Table 7.13). The largest number of foreign professionals work in production and planning (about 46 per cent of foreigners are working) followed by merchandising (9.8 per cent), quality assurance (8.9 per cent) and industrial engineering (5.4 per cent). Foreign staff are also found in sections such as sewing, administration, washing, research and development sections. The section-wise distribution of foreign professionals indicates that they are more engaged in woven enterprises compared to that in knit enterprises. Foreign staff mainly works in three sections of knit enterprises—about 74 per cent is working in merchandising, production planning and quality assurance sections. The average number of foreign staff working in a factory is only 0.49 per cent of total staff; considering the factory-recruited foreign professionals, the average number of foreign workers per factory is 3.7 persons. In other words, factories working with foreign professionals tend to hire more than one foreign staff considering the relative advantage of hiring them. Despite that, the presence of foreigners in RMG factories is still low, considering the total number of staff working in different sections, the share of foreigners per officer ranged between 0.1 per officer in case of the finishing section to as high as 1.9 per officer in the production planning section. Overall, foreign staff has been fulfilling the gap left unfulfilled by domestic staff in various sections. In other words, there is significant scope to develop domestic talent with professional degrees and specialised skills who could meet the needs of the sector.⁷⁰

⁷⁰ It is imperative that industries train and develop their own local staff to help them to perform the task of the expatriates; moreover this would not save only foreign exchange but also increase the efficiency and boost the confidence of the management. Available at: <https://thefinancialexpress.com.bd/trade/groom-local-talent-for-mid-management-positions-in-rmg-industry-1512365934>.

Table 7.11: Department-wise Foreigner Distribution

Department	Foreign staffs per enterprises	Share of foreign staffs working in different sections	Foreign staffs working per officer
Merchandising	1.2	9.8	0.5
Production, Planning	3.5	46.4	1.9
Sewing Department	1.0	4.5	0.2
Knitting Department	1.0	1.8	0.1
Washing Department	1.5	2.7	0.2
Quality Assurance	1.0	8.9	0.4
Finishing and Packaging	1.0	0.9	0.1
Maintenance Department	1.0	2.7	0.5
Administration	2.0	3.6	0.3
Industrial Engineering	1.5	5.4	0.3
Research and Development	1.0	1.8	0.3
Others		11.6	
Total Officer		100	

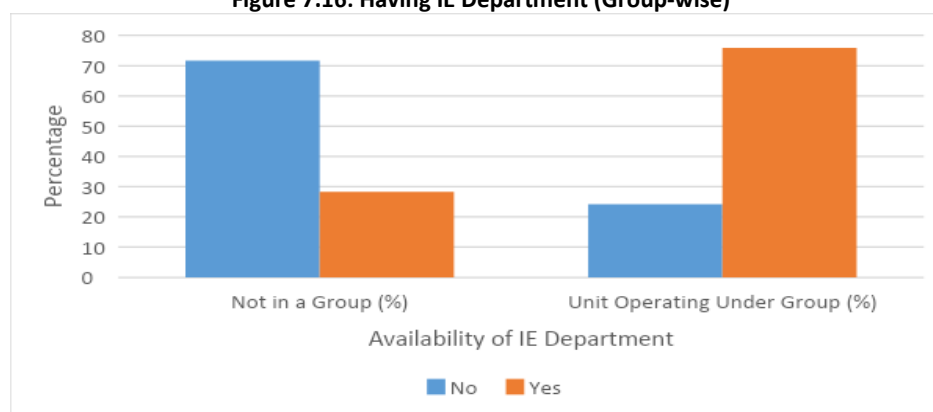
Source: CPD RMG Survey, 2018

7.5 Operation of Sample Enterprises

7.5.1 Introducing New Departments to Address New Requirements

The operation of RMG enterprises is becoming increasingly complex, with more specialised departments are required with better efficiency in terms of using time and resources. In the process of upgrading the technological base, the introduction of new departments is very important. For example, factories have been introducing industrial engineering departments with a view to improving cost management, better production planning and production management, and so on. About 70 per cent of woven enterprises and 43 per cent of knit enterprises have industrial engineering (IE) departments, whereas 76 per cent of group and 24 per cent of non-group enterprises have IE departments (Figure 7.16). However, most of the enterprises have introduced this department within the last 1 to 4 years; enterprises with long-term experience of working with industrial engineering departments are likely to reap the benefits in this sector (Table 7.14). Since the concept of industrial engineering is relatively new in Bangladesh, there is a lack of specialised professionals in the country. This gap is met by hiring foreign professionals as well as local professionals who have some training and knowledge on those activities. The top management communicates with the IE staff on a regular basis—about 69 per cent of the enterprises maintain daily communication, while another 24 per cent of the managers mentioned about more frequent (e.g. hourly) communication with the IE department.

Figure 7.16: Having IE Department (Group-wise)



Source: CPD RMG Survey, 2018

Table 7.14: Availability of the IE Department (Type-wise)

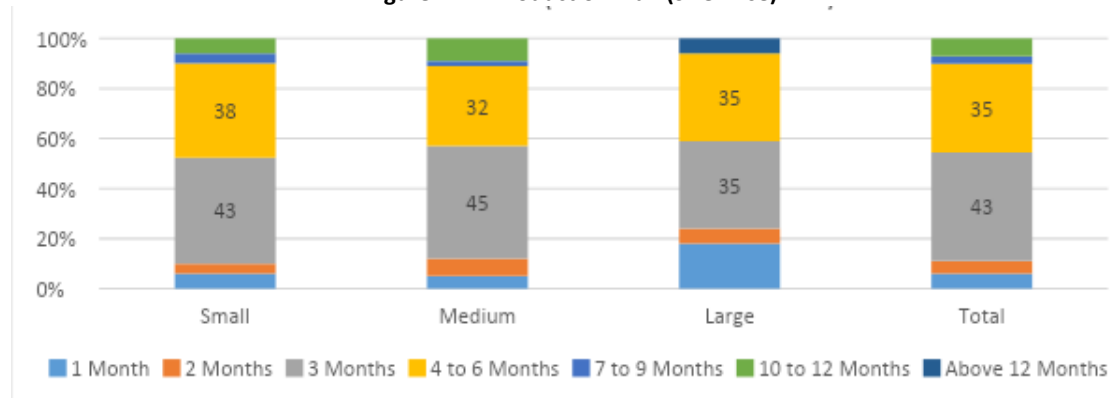
Setting up within (years)	Frequency			Percentage		
	Woven	Knit	Total	Woven	Knit	Total
1-4	38	38	76	60	66	63
5-9	15	12	27	24	21	22
10-14	9	7	16	14	12	13
15-above	1	1	2	2	2	2
Total	63	58	121	100	100	100

Source: CPD RMG Survey, 2018

7.5.2 Shorter Period of Contractual Arrangements Provides Less Predictability about Operation

There is little variation in production planning between large, medium and small enterprises (Figure 7.17). A majority of the firms have a 3 to 6 month business plan, about 43 per cent of enterprises have production plans of 3 months while another 35 per cent has plans of 4 to 6 months. Few enterprises have longer term production plans (over 6 months to more than a year). Factories working with brands/retailers, mainly large-scale enterprises, have a longer-term work plan for about a year and above (Figure 7.18). Nearly half of the factories (47 per cent) operating under this group have a production plan for 3 months and 6 per cent have a long-term work plan for about a year and above (Figure 7.19). While long-term production plan better predicts about firms’ operation and financial flow, more specifically firms’ capacity for such planning depends on the nature of contractual arrangement with brands/buyers, types of products produced and seasonality of demand for products, among others. Overall, factories in Bangladesh have been working in shorter contractual arrangements with limited predictability about production orders and financial flow, which pressurizes the firms to make long-term plans for enterprise development.⁷¹

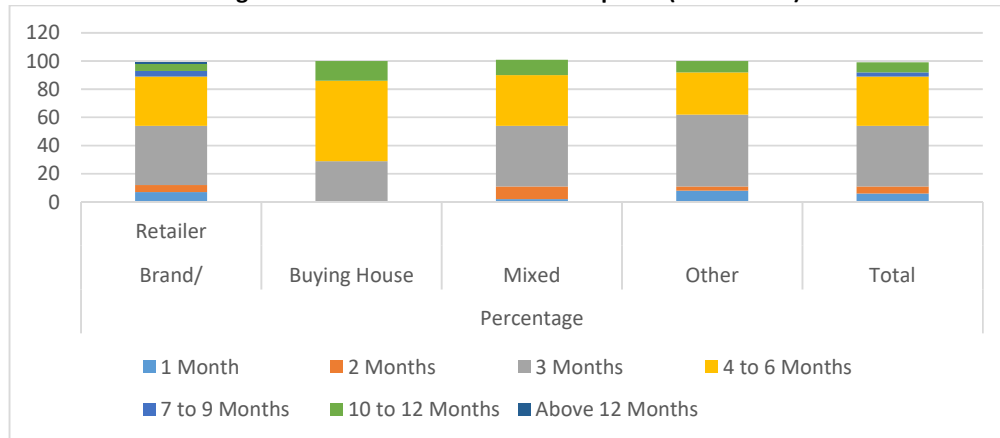
Figure 7.17: Production Plan (Size-wise)



Source: CPD RMG Survey, 2018

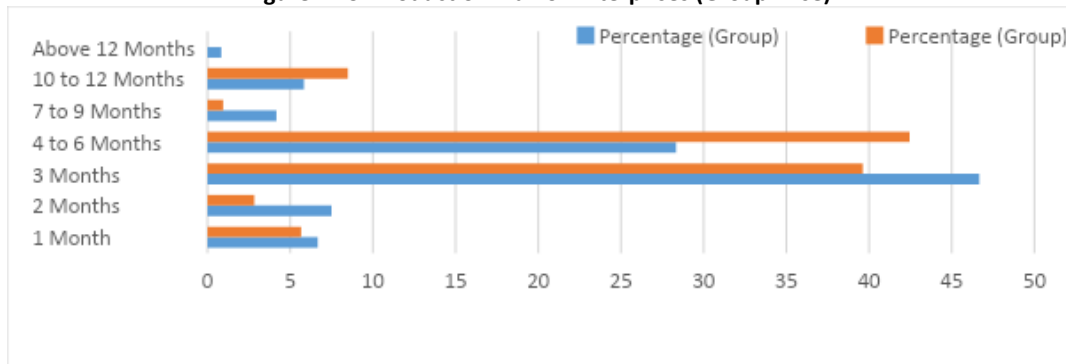
⁷¹ RMG factories in Bangladesh may come to handle a number of small orders due to a rise of safety concerns among the international buyers regarding factory working conditions and worker safety. Buyers are now searching for alternative suppliers, notably Cambodia, Indonesia and Vietnam. It will, however, take some time for those countries to boost production capacity to handle the large orders leaving from Bangladeshi factories but Bangladesh can’t afford to ignore such threats. See details at: <http://hkmb.hktdc.com/en/1X09UVLU/hktdc-research/Bangladesh%E2%80%99s-garment-industry-recent-development-and-outlook>.

Figure 7.18: Production Plan of Enterprises (Brand-wise)



Source: CPD RMG Survey, 2018

Figure 7.19: Production Plan of Enterprises (Group-wise)

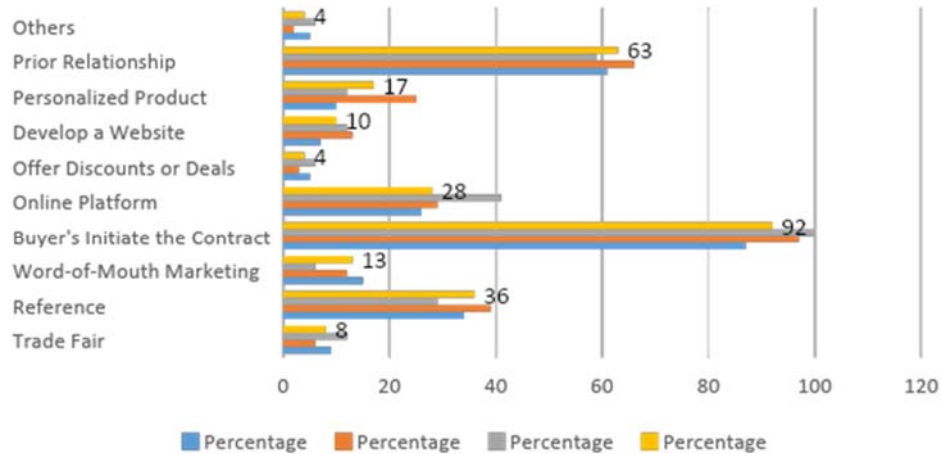


Source: CPD RMG Survey, 2018

7.5.3 Growing Role of New Form of Production Orders

The mode of taking orders has been changing over the years (Figure 7.20). Traditionally, enterprises took orders through contacts with brands/buyers (92 per cent) as well as based on prior relationship with the buyers/brands (63 per cent). A growing number of enterprises have been taking orders through the online platform (28 per cent), mainly by large-scale enterprises as well as through their own websites (10 per cent). Besides, a section of enterprises are contracted for their personalised products (17 per cent), attending trade fairs (5 per cent) as well as through references (36 per cent). Given the rise of online based transactions through various online platform such as Amazon and Alibaba, the suppliers of apparels need to invest in order to be compatible with the global demand. Bangladeshi entrepreneurs are not fully ready to take advantage of these online-based markets. Companies need to invest on infrastructure development (installation of software) and ready for on time delivery etc.

Figure 7.20: Receive Orders from Buyers (% of Total Enterprises)



Source: CPD RMG Survey, 2018

7.5.4 Continued Tendency to Take Excess Orders

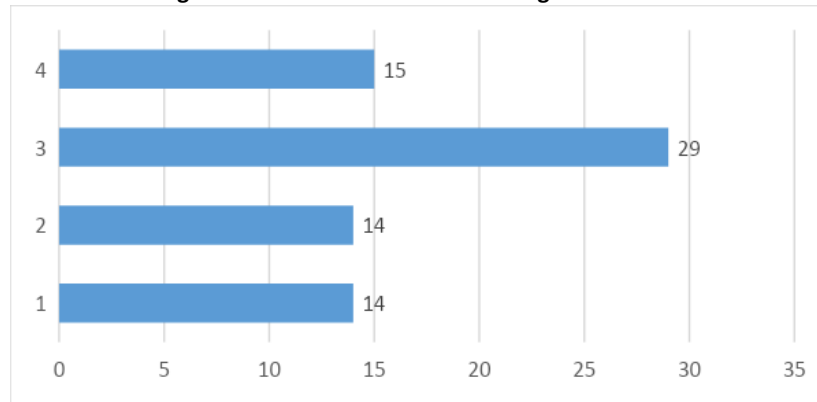
There is still a tendency to take extra production orders beyond the capacity of the firm. In other words, sub-contracting was found among a section of factories—about 15 per cent entrepreneurs mentioned taking orders despite their orders for full capacity for a specific time period.⁷² Large enterprises have usually taken more orders (about 29 per cent of large enterprises) compared to that of small and medium-sized enterprises (Figure 7.21).

Among those dealing with excess orders, about 40 per cent complete the work by outsourcing within the group and about 31 per cent coordinate with other production orders within their factories, while 17 per cent manage the additional orders by increasing the work intensity or by doing over time. Hence, a majority of the additional work orders have been managed within the factory or within this group (89 per cent), while the remaining 11 per cent of orders have been outsourced to other enterprises. In case of small-scale enterprises, there is a tendency to diversify the production orders between different sources, while medium and large enterprises managed those within the group.

Taking extra orders is one of the main reasons for sub-contracting activities (Figure 7.22). Such sub-contracting activities have been done mainly by large enterprises (57 per cent of those large enterprises who took excess orders) followed by medium-sized enterprises (53 per cent). In the post-Rana Plaza period, sub-contracting activities have been closely monitored to ensure the compliance standard in those enterprises. However, a large part of excess production orders has been carried out in factories that are not associated with the brands/retailers; hence there is risk of non-compliance in sub-contracting factories.

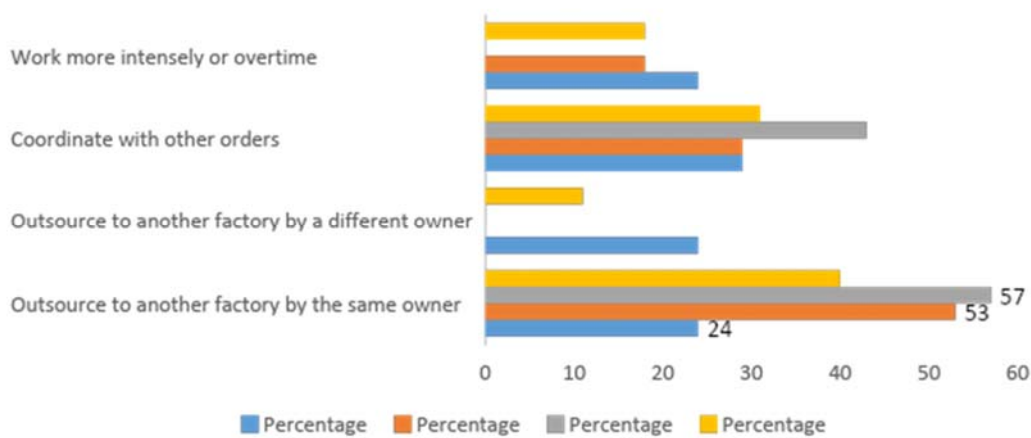
⁷² Sometimes buyers overload factories and pressurise them for short lead times that do not leave any option for the factory but to accept it; the problem persists. Generally, buyers can't know what orders other buyers put in place but due to the fear of losing orders, factory owners have no option other than accepting excess orders from the buyers. See details at: <https://www.thedailystar.net/business/time-put-excessive-apparel-work-hours-bed-1313890>

Figure 7.21: New orders Taken during Work at Full



Source: CPD RMG Survey, 2018

Figure 7.22: How to Manage Excess Orders (% of Total Enterprises)



Source: CPD RMG Survey, 2018

7.6 Operational Modalities of Sample Enterprises

7.6.1 Effective Functioning of Standard Production Planning and Risk Assessment Remain an Issue

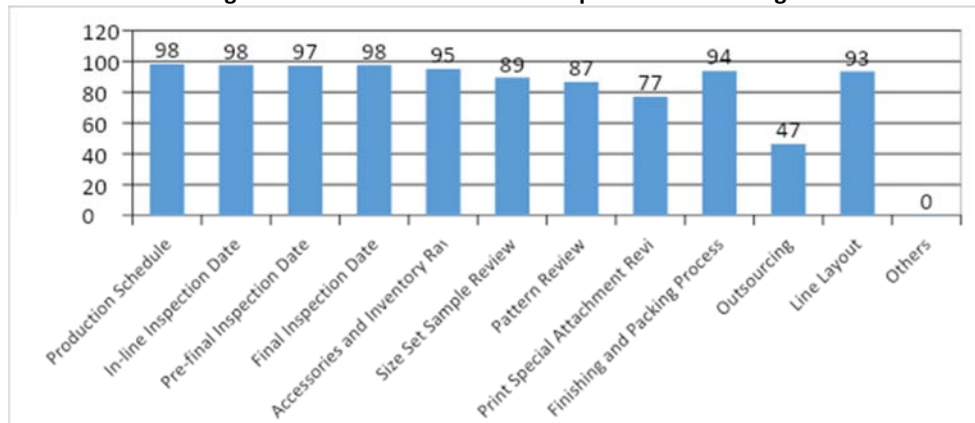
Factories follow a standard operational modality for production. As part of the process, managers meet with production staff at the pre-production level and discuss relevant issues.⁷³ These include production schedule, in-line, pre-final and final inspection dates, accessories and inventory raw materials, sample review, pattern review, the finishing and packing process, outsourcing and lay out, among others (Figure 7.23). While a majority of the enterprises follow these processes, some of the

⁷³ Pre-production (PP) meeting is generally arranged to ensure defect-free production. Generally PP meetings are held every two weeks on an average. If any anomaly arises during the scheduled time, the buying agents in connection with supplier(s) negotiate and fix a possible date. During the pre-production meeting, buyers' quality control team check all the related documents, if both parties agree, they sign an agreement paper for production. After getting the confirmation for starting production, PP meeting records are distributed among the parties concerned and the factory manager shares important information among the key employees involved in quality and production in order to get defect-free products and to complete successful shipment. See details at: <http://fashion2apparel.blogspot.com/2017/02/pre-production-meeting-apparel-industry.html>

processes which are not so common are less followed by enterprises such as outsourcing (46.5 per cent) and print special attachment review (77 per cent) etc.

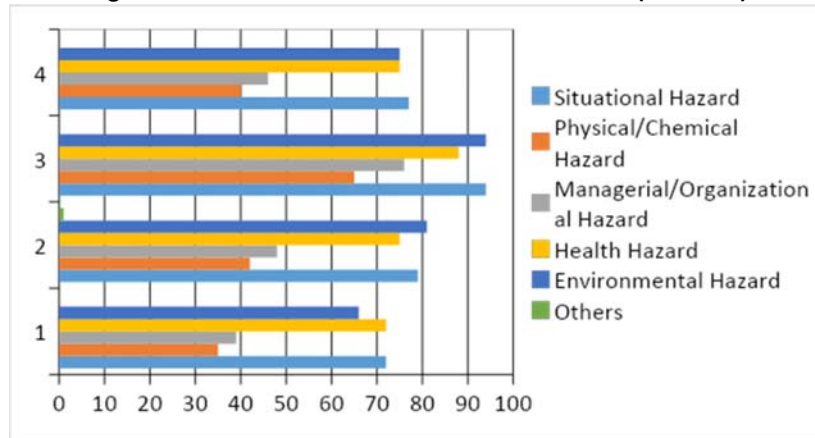
There are technical teams in the factory who assess risks in the production process. These risk assessments include situational hazards, physical/chemical hazards, managerial/organisational hazards, health hazards and environmental hazards (Figure 7.24). A majority of enterprises assess situational, health and environmental hazards. Less prominence is given to physical and chemical hazards, managerial and organisational hazards. Large enterprises are more concerned about most of the risks compared to that of small and medium-sized enterprises. Similarly, it is seen that factories dealing with brands/retailers are more concerned about environmental, health and situational hazards (Figure 7.25).⁷⁴ Despite having the similarity in practice, the effective functioning of those instruments remain an issue, which may deliver different outcomes for different types of enterprises.

Figure 7.23: Issues Discussed in Pre-production Meeting



Source: CPD RMG Survey, 2018

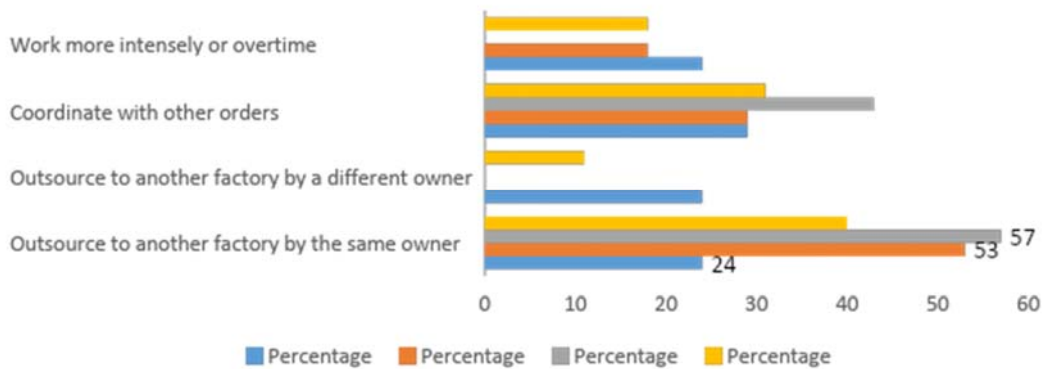
Figure 7.24: Risk Assessment for Production Process (Size-wise)



Source: CPD RMG Survey, 2018

⁷⁴ Brands/Retailers themselves aren't directly responsible for safety where production is taking place. Therefore, it is clear that the decision of brands and retailers to seek low-cost and unregulated environment in which to carry out production, has placed the worker's life at risk. See details at: <https://cleanclothes.org/resources/publications/2012-11-hazardousworkplaces.pdf>

Figure 7.25: Risk Assessment Process (Brand-wise)

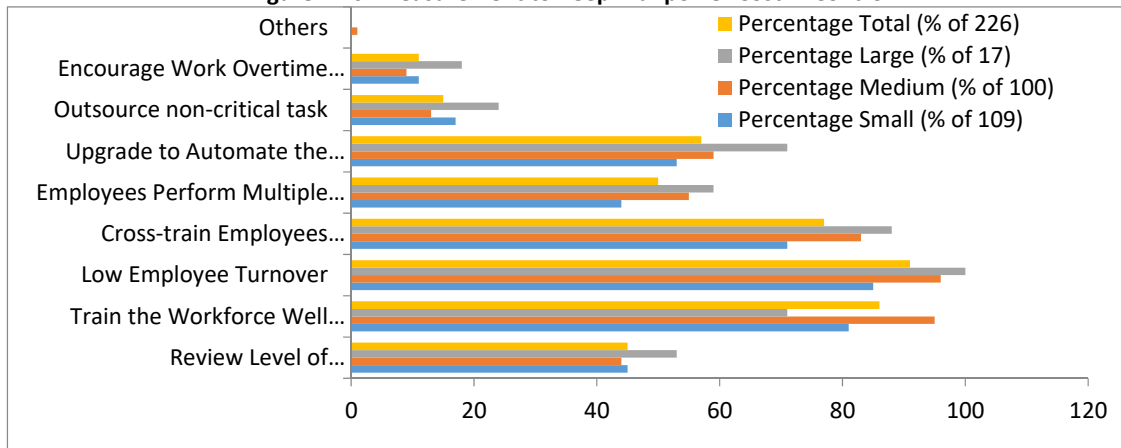


Source: CPD RMG Survey, 2018

7.6.2 Diverse Approaches for Cost Control: Workers' Replacement is Getting Costlier

Employee/worker management is an important cost management tool for RMG enterprises. Enterprises undertake various short, medium and long-term programmes targeted towards the improvement of workers' skill. This is done by promoting multi-tasking activities, ensuring low turnover of workers and upgrading further automation. In case of improving cost management, factories put emphasis on lower employee turnover (91 per cent), training initial workforce (86 per cent) and cross-training employees (77 per cent) (Figure 7.25). Such programmes have been followed more by large enterprises. In other words, enterprises are increasingly accentuating on retaining workers through various means, which partly indicate that workers' jobs are getting specialised and are not easily transferable; the replacement of a trained worker is getting costlier for the enterprises.

Figure 7.26: Measurement to Keep Manpower Cost in Control



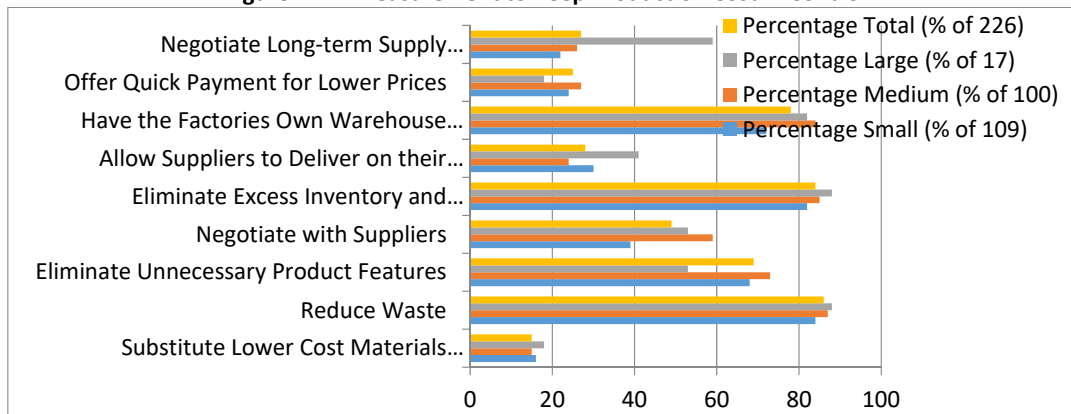
Source: CPD RMG Survey, 2018

7.6.3 Tightening Production Cost through Different Means

Factories are constantly working to control production costs (Figure 7.26). Major activities undertaken by enterprises for controlling costs include waste reduction (86 per cent), elimination of excess inventory (84 per cent), using warehouse and distribution systems (78 per cent) and elimination of unnecessary production features (69 per cent). There is not much variation between large, medium and small enterprises in case of major activities for controlling costs. A few other activities have been undertaken, more by specific categories of enterprises such as negotiating long-term supply contract by large enterprises and allowing suppliers to deliver on their own cycle times at discounted rates. Factories which are not working with brands/retailers sometimes use different types of measures to

reduce cost such as substituting lower-cost materials and offering quick payment for lower price (Table 7.15).

Figure 7.27: Measurement to Keep Production Cost in Control



Source: CPD RMG Survey, 2018

Table 7.15: Measurements to Keep Production Cost under Control (brand/non-brand)

Measurement	Brand/Retailer	Buying House	Mixed	Other	Total (% of 226)
Substitute lower cost materials where possible	11.9	42.9	25.5	10.8	15.5
Reduce waste	86.7	71.4	87.2	83.8	85.8
Eliminate unnecessary product features	67.4	71.4	66.0	78.4	69.0
Negotiate with suppliers	51.1	57.1	38.3	54.1	49.1
Eliminate excess inventory and carrying costs	84.4	42.9	85.1	86.5	83.6
Allow suppliers to deliver on their own cycle times for discount	20.7	14.3	42.6	40.5	28.3
Have the factories own warehouse and distribution services	82.2	42.9	80.9	67.6	78.3
Offer quick payment for lower prices	17.8	28.6	44.7	24.3	24.8
Negotiate long-term supply agreements	23.7	28.6	29.8	32.4	26.5

Source: CPD RMG Survey, 2018

7.7 Worker Management Issues of Sample Enterprises

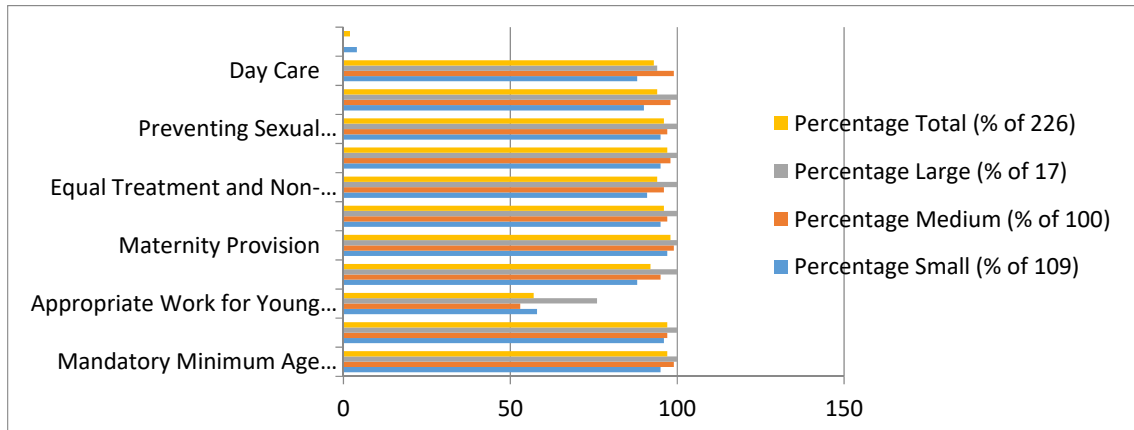
7.7.1 Proper Practice of HR related Policies is still in Question

Most enterprises in the RMG sector follow different types of HR policies. To have a concrete idea, HR managers are asked regarding the type of policies taken and their level of practices at the enterprise level. The policies include mandatory minimum age requirements, legal requirements for termination, appropriate work for young workers, maternity provisions, working hours, equal treatment for non-discrimination, preventing sexual harassment, safety committees and day care facilities etc (Figure 7.28).⁷⁵ Enterprises lag behind in a few areas such as appropriate work for young workers. About 96

⁷⁵ A study conducted by Ferdous (2015) tries to examine the factors which are responsible for promoting work satisfaction among RMG workers in Bangladesh. The results of the study suggest that satisfactory salary, timely payment, admissible benefits, supervisors' behaviour, acceptable working environment, hygienic canteen and medical facilities are responsible for the satisfaction of the labour.

per cent of the enterprises provide appoint letters to workers.⁷⁶ However, the most important part is to ensure proper implementation of the concerned policies. Such impression has been revealed through the perception of workers who are employed by these factories.

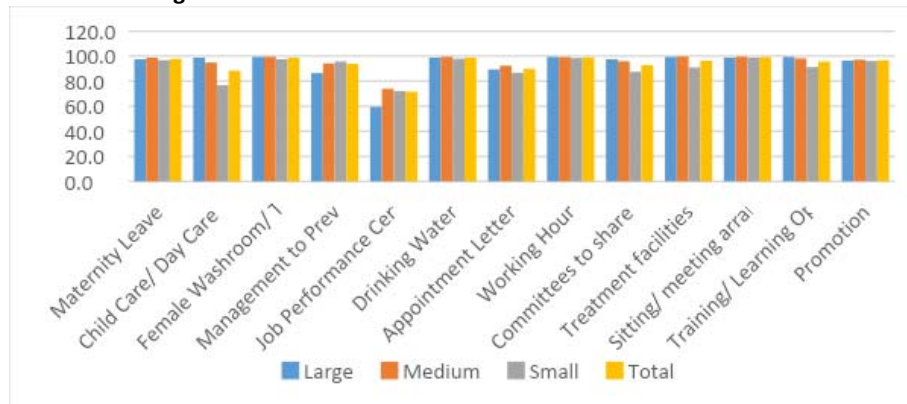
Figure 7.28: HR Policies and Practices



Source: CPD RMG Survey, 2018

While asking the sample workers of the enterprises about the basic facilities at the workplace, a majority of the workers expressed their satisfaction, which portrays better implementation of company policies (Figure 11.13). Almost all factories have toilets and drinking water facilities for workers. There are some medical facilities in most of the factories. However, there are fewer facilities in small and medium-sized factories compared to large factories. In most cases, workers in small factories are less satisfied about different facilities compared to others. There remains room for improvement of worker-related facilities in the workplace.

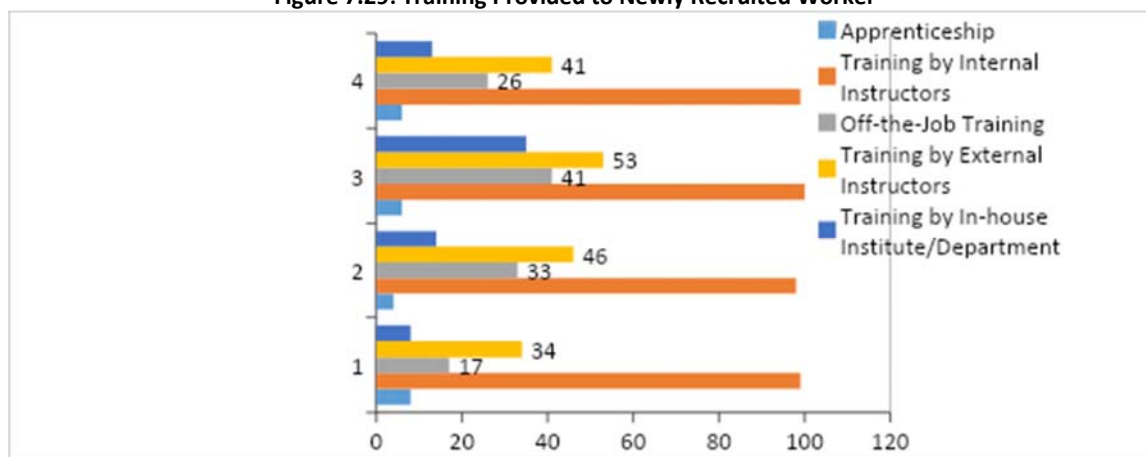
Figure 11. 13 Level of Satisfaction of Workers with Facilities



Source: CPD-RMG Survey, 2018

⁷⁶ According to a survey conducted in 2006 on RMG factories, it is found that, 69 per cent of EPZ enterprises provided appointment letters to their workers, while the proportion of DTA factories providing appointment letters to their worker was only 22 per cent. See details at: <http://cottonbangladesh.com/April2008/RMG.htm>.

Figure 7.29: Training Provided to Newly Recruited Worker



Source: CPD RMG Survey, 2018

Workers' training is a major initiative in RMG enterprises, particularly for cost reduction. A majority of the enterprises provide training to new garment workers (97 per cent) (Table 7.16); however, over 80 per cent of the factories provide training to existing workers and workers without a background in RMG. Moreover, a majority of enterprises do not have any preference for providing training based on workers' gender. These training sessions are largely conducted by internal instructors; in a number of cases, these training sessions are provided by external instructors and sometimes, the training is undertaken off-the job (Figure 7.29). While the effective implementation of the training-related policy is a good sign,⁷⁷ partial or non-implementation of other policies such as maternity leave policy, workers' participation and trade union related policy indicate the management's discriminatory practices following the policies in full. This happened partly because of avoiding the financial and other responsibilities related to implementing those policies.

Table 7.16: Kind of Workers Usually Provide Training by Enterprises (Size-wise)

Worker Type	Percent (of column total)			Total (% of 226)
	Small (% of 109)	Medium (% of 100)	Large (% of 17)	
New Garments Workers	97	98	94	97
Workers (with non-RMG) Background	77	88	82	82
Existing Workers	80	91	88	85
Apprentices	11	8	18	10
Others	1	1	0	1

Source: CPD RMG Survey, 2018

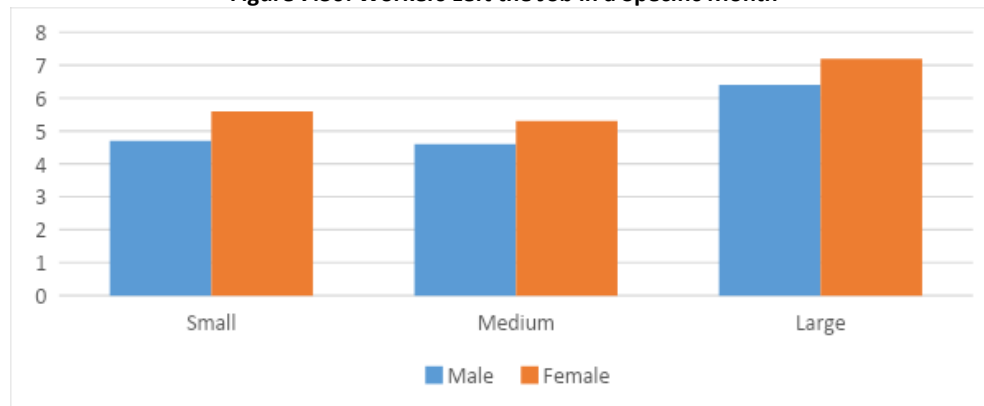
⁷⁷ Bartel (1994) in his study found that, investment in training of employees after selection produce beneficial organizational outcomes.

7.7.2 Workers' Frequent Turnover is a Major Management Concern

Despite various efforts in reducing employee turnover, on average about 5.3 per cent of workers resigned every month (Figure 7.30). Female workers left more than male workers in a month; while the male average turnover rate is 5.2 per cent, the female worker's turnover rate is 6 per cent. This indicates a new trend of mobility and replacement where more females leave their current workplaces compared to male workers.⁷⁸ A part of this mobility is related to better opportunities through better access to information about jobs.

The perception of managers and workers is different. Managers are particularly asked regarding the reasons behind workers' being laid off and leaving their jobs. It is found that the management laid off workers for various reasons such as lack of discipline (86 per cent), immoral activities (87 per cent) and violence against women (74 per cent) (Table 7.26). According to the sample workers, they left the job for various social and economic reasons such as family-related issues (91 per cent) or better opportunities elsewhere (84 per cent). In a few cases, harassment was cited as a reason for leaving (Table 7.17). In order to address workers' grievances, enterprises follow different means such as complaint or grievance box, open door policy and hotlines. Workers employed by large enterprises have enjoyed most of the above-mentioned options; while choices are less in small enterprises (Table 7.18). The effective functioning of those mechanisms is a concern to address workers' grievances.

Figure 7.30: Workers Left the Job in a Specific Month



Source: CPD RMG Survey, 2018

⁷⁸ According to a research conducted by Kaikobad and Bhuiyan (2012), female workers do not change their jobs frequently. About 41 per cent male change their jobs within 1–3 years of their job experiences while 49.7 per cent female workers do not change their job during the same time. Male workers (58.1 per cent) shift their jobs basically for higher wages whereas the female workers (44.4 per cent) for the good environment (e.g. free from abuse, good transportation and compliance, etc.). It was also found that female workers' harassment was common in the factory. More than 50 per cent of the female workers were harassed physically, mentally or sexually at the workplace.

Table 7.17: Reasons behind Workers Layoff and Leaving Job

Top Reasons Behind Worker Layoff (as per factory management)		Top Reasons Behind Worker Leaving Job (as per sample workers)	
Reasons	%	Reasons	%
Being Unproductive	11	Family Issues	91
Undisciplined	86	Better Opportunities	84
Immoral Activities	87	Retirement	22
Violence Against Women	74	Harassment	6
Labor Agitation	23	Others	2
Others	2		

Source: CPD RMG Survey, 2018

Table 7.18: Anonymous Grievance Mechanism Available in Organization (Size-wise)

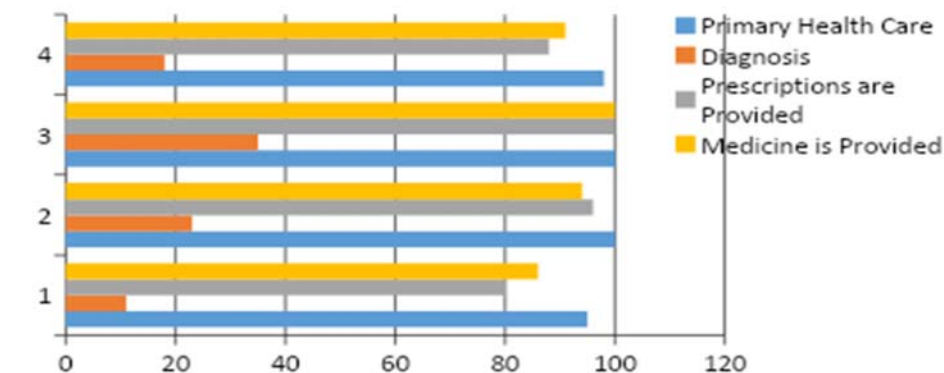
Mechanisms	Percentage			
	Small (% of 109)	Medium (% of 100)	Large (% of 17)	Total (% of 226)
Complaint or Grievance Box	85	99	100	92
Open Door Policy at Highest Level	88	88	76	87
Worker Hotline	34	60	82	49
Others	1	1	0	1

Source: CPD RMG Survey, 2018

7.7.3 Support Facilities for Workers Remain Weak

The support services are not well-organised; hence those are not efficiently operated in RMG enterprises (Figure 7.31). The medical services offered comprise of some basic facilities such as primary health care, prescription and over-the-counter medication. There is a dearth of other facilities—only 18 per cent of the enterprises have provided diagnostic facilities for diseases; those facilities are mostly available in large and medium-scale enterprises. Day care facilities are not well-organised in these enterprises. About 78 per cent of enterprises have a care leader in the day care centre, 72 per cent enterprises provided food to the children and, 73 per cent provided medical treatment to the children (Table 7.19). Less than half of the enterprises provided clothing, educational books and other facilities to the children. However, facilities are available more in large and medium-scale enterprises. A detailed analysis of workers’ perception about quality of support facilities is provided in Chapter 9. Overall, support facilities are not yet being standardised in all categories of enterprises.

Figure 7.31: Kind of Medical Service Provide



Source: CPD RMG Survey, 2018

Table 7.19: Facilities Provide in Day Care Centre (Size-wise)

Facilities	Percentage			
	Small (% of 109)	Medium (% of 100)	Large (% of 17)	Total (% of 226)
Care Leader	67	87	94	78
Food	54	87	100	72
Cloth	28	47	71	40
Education	34	61	76	49
Book	30	54	76	44
Medical Treatment	56	89	94	73
Others	2	3	0	2

Source: CPD RMG Survey, 2018

7.8 Level of Management Performance of Sample Enterprises

The present section measures the management performance of sample enterprises. This is estimated by using the standard methodology of the world management survey.⁷⁹ As part of the management survey, a perception survey has been carried out where managers rank their level of performance in different management practices at the factory level. These management practices are grouped into four areas: operations, monitoring, targets and incentives. Operation areas focus on lean manufacturing technique, documentation of progressive improvements and progress of improvements. Monitoring areas focus on tracking performance of individuals, review performance and consequence management. Target areas examine the types of target, realism and transparency of targets and the range and the interconnection of the target. Finally, the incentive area includes promotion criteria, pay and bonuses, fixing or firing bad performers, where best practice is deemed the approach that gives strong rewards to those with strong abilities and efforts. A total of eighteen different indicators are considered for calculation. The data collected for each question provide a level of perception of the managers, which is scored from 1 (very poor) to 5 (best). The average values of eighteen key indicators are used to get the management score for each enterprise.⁸⁰

7.8.1 Huge Gap in Management Score between Different Types of Enterprises

The management performance score of sample RMG enterprises is moderately higher compared to other comparable countries (Figure 7.32). The average management score is found to be 3.4 where the scores of small, medium and large enterprises are 3.24, 3.46 and 3.95 respectively.⁸¹ In other words, large enterprises are better managed compared to medium and small enterprises—these enterprises are 14 percentage point more efficient compared to medium-sized enterprises and 21.9 percentage points more efficient than small enterprises (Figure 7.33). However, the performance of enterprises under different categories is diverse.⁸² There is a gap in the level of management

⁷⁹ The World Management Survey (WMS) is a perception based survey method. The WMS methodology is followed to investigate and explain the probable differences witnessed in management practice across firms and countries in different sectors. This method evaluates and scores the management practices codifying into 1 (worst practice) to 5 (best practice). However, these practices are grouped into five major areas. It includes: operation management, performance monitoring, target setting, leadership management and talent management.

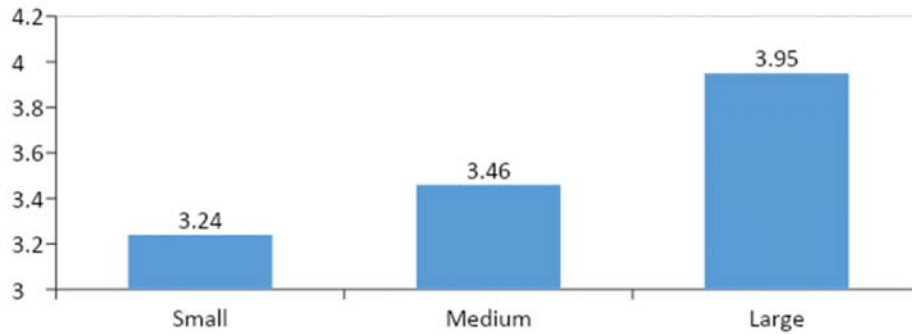
⁸⁰ For detail see the working paper titled 'Measuring and Explaining Management Practices across Firms and Countries'. Available at: <http://www.nber.org/papers/w12216>

⁸¹ CEP (2011) in their survey estimated management scores for cross-country comparisons following the World Management Survey methodology. Management scores for different countries includes: 3.17 for UK, 2.64 for China, 2.67 for India, 3.32 for USA, 3.19 for Japan, 3.15 for Canada, 3.02 for Australia, 3.01 for France and 2.68 for Brazil.

⁸² Factories with moderate management scores (between 31-59) are distributed in small, medium and large enterprises by 34 per cent, 13 per cent and 12 per cent respectively. On the other hand, factories with good

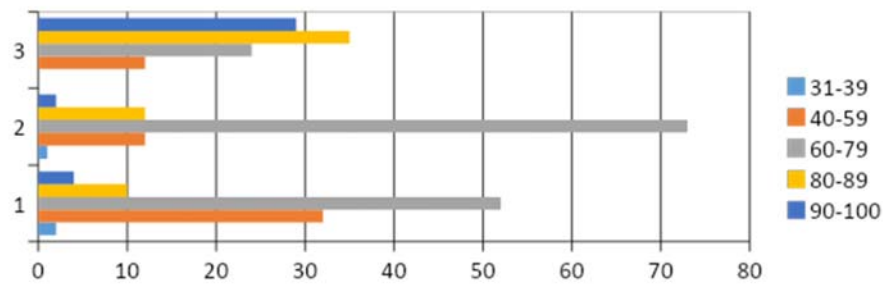
performance between factories under different groups and non-group factories: 3.55 and 3.21 respectively. In other words, managers in the factories under the group managed factories better compared to that of non-group factories, particularly with regard to decision making, technical efficiency and overall policymaking within the organisation (Figure 7.34). Overall, there is significant variation in the management practices between enterprises; enterprises having the standard operating procedures to manage enterprise-level operation, as is evident in specific categories of enterprises, perform better.

Figure 7.32: Average Management Score (Out of 5)



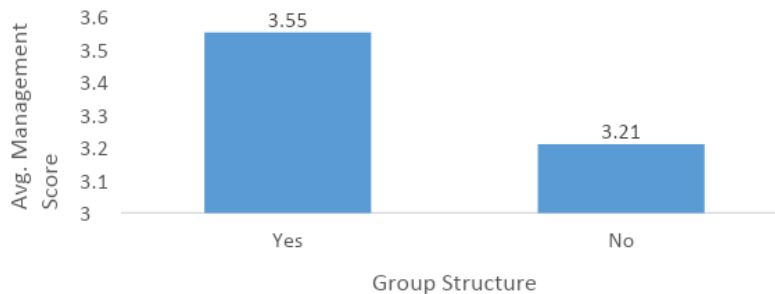
Source: CPD RMG Survey, 2018

Figure 7.33: Management Score Distribution (Size-wise)



Source: CPD RMG Survey, 2018

Figure 7.34: Average Management Score (Group-wise)



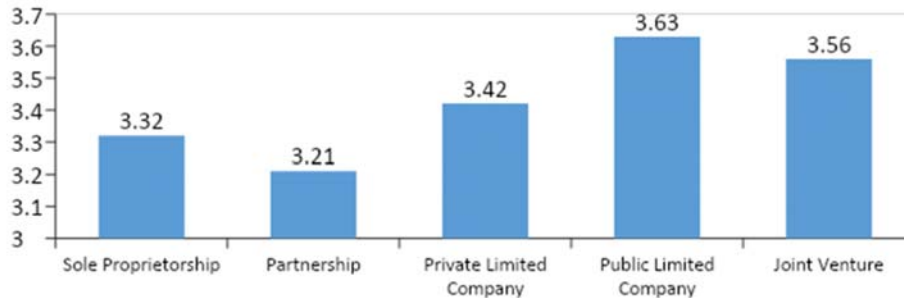
Source: CPD RMG Survey, 2018

management scores (between 60-79) are distributed in small, medium and large enterprises by 52 per cent, 73 per cent and 24 per cent respectively. Factories performed better with a score higher than 80 are distributed by 14 per cent, 14 per cent and 64 percent respectively.

7.8.2 Sole Proprietorship Companies are Behind in Management Performance

The nature of corporate entity has influenced the level of management practices of enterprises (Figure 7.35 and Table 7.20). Enterprises which operate under sole proprietorships or operate under partnerships are poorly managed entities with an average score of 3.21-3.24. Compared to sole proprietorship enterprises, other categories of enterprises are better managed. For example, private limited companies by 3 percentage points, public limited companies by 9 percentage points and joint venture companies by 7.2 percentage points advance compared to that of sole proprietorship companies.

Figure 7.35: Average Management Score for Different Companies



Source: CPD RMG Survey, 2018

Table 7.20: Management Score Distribution (Brand-wise)

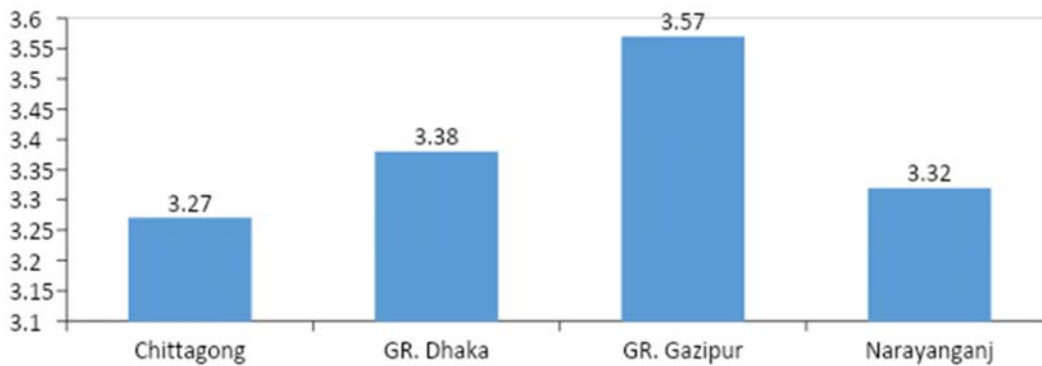
Management Score	Percentage				
	Brand/Retailer	Buying House	Mixed	Other	Total
31-39	1	0	2	3	1
40-59	19	29	19	32	22
60-79	61	57	60	51	59
80-89	14	0	15	8	13
90-100	4	14	4	5	5
Total	100	100	100	100	100

Source: CPD RMG Survey, 2018

7.8.3 Chittagong based Enterprises Lag in Management Practices

Factories located in Chittagong lag behind in management practices with an average score of 3.27 (Figure 7.36). Factories located in Narayangonj are also lagging behind (3.32). Less availability of skilled management professionals as well as a lack of investment in improvement of management practices in Chittagong and Narayangonj could be some of the reasons. Factories located in Gazipur are better managed with an average score of 3.57; better availability of skilled professionals could be a reason for this. Compared to Chittagong, the management performance of Dhaka, Gazipur and Narayangonj are better at 3.4 percentage, 9.2 percentage and 1.5 percentage points respectively. Factories located in Chittagong and Narayangonj perhaps face the trouble of a lack of availability of skilled managers and limited interest of entrepreneurs to invest for management professionals.

Figure 7.36: Average Management Score for Companies Located in Different Regions

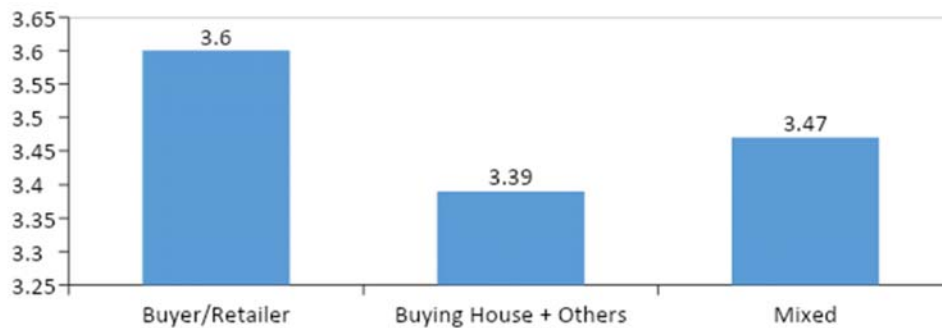


Source: CPD RMG Survey, 2018

7.8.4 Enterprises Working with Brands/Retailers Perform Better in Management Practices

Factories under contractual arrangements with brands and retailers have performed better than those with contractual arrangements with buying houses and mixed nature of contracts (Figure 7.37). The former is about 6.2 and 3.7 percentage points better than those having contractual arrangements with buying houses and mixed of brands and buying houses. Retailers and brands could influence suppliers towards improvement in management practices, which might contribute to higher management performance. Overall, contractual arrangements with brands and buyers benefit the enterprises in improving their management practices.

Figure 7.37: Average Management Score of Companies in terms of Their Contractual Arrangement



Source: CPD RMG Survey, 2018

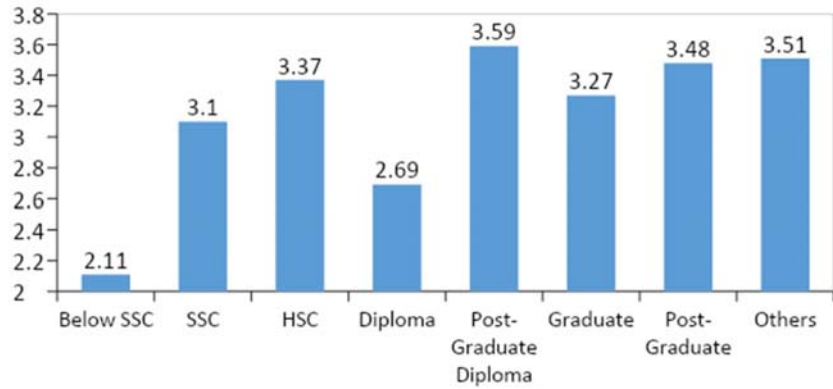
7.8.5 Managers with Poor Academic Records and Less Experience Cause Low Management Scores for Firms

Since managers are the heads of the factory management, their individual performance directly affects the overall management performance of enterprises. Factories with managers that have poor academic records have low management scores compared to those who obtained higher degrees (Figure 7.38). Factories with managers who have masters and bachelors degrees are about 64.9 and 54.9 percentage points advanced compared to those with managers with academic performance below SSC.⁸³ This portrays differences in management performance between managers of different

⁸³ According to the LSE study (2009), it is found that in the Australian context, 64 percent of the managers in the high scoring firms have a university degree or higher whereas it is 35 per cent in Canada and 53 per cent in US, on the contrary among the lowest scoring firm, 3 per cent managers have university or higher degree.

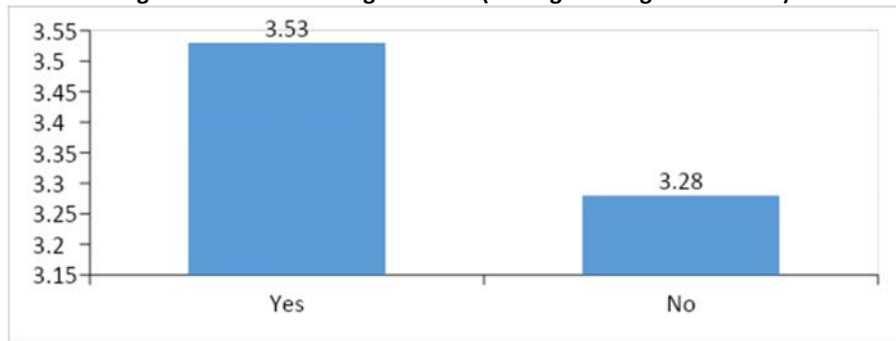
categories of enterprises.⁸⁴ Managers who received training improved their respective enterprise's score; the management score of their enterprises are 7.6 percentage points better compared to those where managers did not have better training (Figure 7.39). Similarly, a managers' years of experience positively influence the management performance of factories. Managers' experiences also influence the performance of management practices—experienced managers managed their factories 40.6 percentage points better than those with modest levels of experience (Figure 7.40). Similarly, educational qualifications of HR managers positively correlated with the firm's management score (Table 7.21).

Figure 7.38: Average Management Score in terms of Manager's Academic Qualification



Source: CPD RMG Survey, 2018

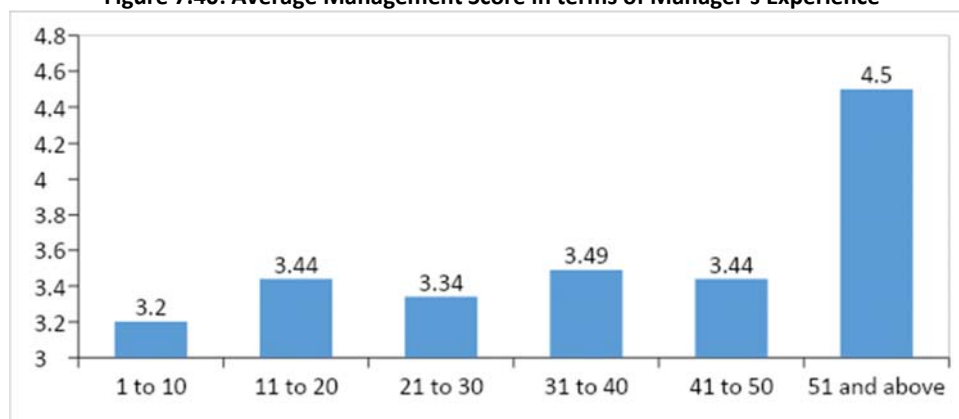
Figure 7.39: GM Training Received (Average Management Score)



Source: CPD RMG Survey, 2018

⁸⁴ LSE research further finds that, higher level of education and training of both managers and non-managers significantly improves management practices.

Figure 7.40: Average Management Score in terms of Manager's Experience



Source: CPD RMG Survey, 2018

Table 7.21: HR Education (Average Management Score)

HR Education	Average Management Score	HR Training	Average Management Score
HSC	3.19	RMG Industry Related	3.39
Diploma	3.37	HR Management Related	3.45
Graduate	3.37	Industrial Relations Related	3.38
Post Graduate	3.04	Others	3.45
Others	3.69		

Source: CPD RMG Survey, 2018

7.8.6 Presence of Foreign Staff Contributes Positively to Management Performance

The presence of foreign professionals also made a significant difference in the management performance. Factories with foreign professionals irrespective of the size of the enterprises tend to be better managed. The differences in management scores for small, medium and large enterprises with or without foreign staff are 10.6, 7.6 and 8.9 percentage points (Figure 7.41). This difference is also evident in case of enterprises having foreign workers, with different legal entities such as private and public limited companies and proprietorship companies (Table 7.22).

Figure 7.41: Average Management Score in Enterprises with or without Foreign Staffs



Source: CPD RMG Survey, 2018

Table 7.22: Foreigner Distribution (Average Management Score)

Foreigner Distribution (Average Management Score)		
Legal Status	With Foreigner	Without Foreigner
Sole Proprietorship	4.20	3.30
Partnership	4.00	3.17
Private Limited Company	3.79	3.35
Public Limited Company	3.30	3.67
Joint Venture	3.70	3.45

Source: CPD RMG Survey, 2018

7.9 Factors Affecting Quality Management: Regression Analysis

The above-mentioned analysis is indicative that management performance of RMG enterprises is influenced by various factors. Since management practices at the factory level are difficult to quantify, the management score of individual enterprise is taken as a dependent variable. On the other hand, corresponding explanatory variables include factory type (X_1), group (X_2), GM education (X_3), GM RMG training (X_4), owner visit (X_5), manager autonomy (X_6), factory size (X_7), factory zone (X_8), HR RMG training (X_9), have foreigner (X_{10}), brand/retailer (X_{11}), buying house (X_{12}), mixed (X_{13}) and worker education score (β_{14}). Regression equation is discussed below:

$$y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_{14} X_{14} + \mu_i \dots \dots \dots (1)$$

Where,

Y_i = Dependent Variable (Management Score);

β_0 = Constant;

X_1, X_2, \dots, X_{14} = Explanatory Variables; and

μ_i = Error Term

The Table 7.23 demonstrates that, factories operating under groups, general managers with training, large factories and factories with foreign staff have significant impacts on the quality of the management. For example, management practices tend to be better by 4.9 percentage points if the enterprises are subsidiaries of groups of companies; similarly, management practices of large enterprises tend to be better by 6.1 percentage points.⁸⁵ Interestingly, GM's skills particularly those with RMG-related training, tend to increase the management score by 2.9 per cent. The presence of foreign workers also tends to increase the management score by 4.6 percentage points.⁸⁶ Such changes are observed at 5–10 per cent level of significance. However, R^2 with having a value of 0.194 is not so high.

⁸⁵ Similar findings were observed in the study titled 'Management Matters in Australia: Just How Productive are We?'

⁸⁶ LSE study conducted on Australian Manufacturing firms in 2009 finds that higher levels of education and training of managers significantly improve management practices.

Table 7.23: Factors Affecting Management Quality

Management Score	Unit of Measurement	Coefficient	P>t
Factory Type (woven)	Dummy	-1.650 (1.784)	0.356
Group	Dummy	4.927 (1.984)	0.014**
Ownership (sole proprietorship)	Dummy	-0.462 (2.718)	0.865
Ownership (private)	Dummy	0.364 (2.245)	0.871
GM Education (Post-Grad)	Dummy	2.179 (1.592)	0.173
GM RMG Training	Dummy	2.951 (1.717)	0.087*
Owner Visit	Dummy	-0.170 (1.813)	0.925
Manager Autonomy	In Number	0.627 (0.687)	0.362
Factory Size (small)	Dummy	-0.961 (1.979)	0.628
Factory Size (large)	Dummy	6.139 (3.131)	0.051*
Factory Zone (gazipur)	Dummy	1.684 (1.941)	0.386
HR RMG Training	Dummy	-0.979 (1.624)	0.547
Have Foreigner	Dummy	4.597 (2.449)	0.062*
Brand/Retailer	Dummy	1.277 (2.203)	0.563
Buying House	Dummy	0.882 (4.840)	0.856
Mixed	Dummy	4.078 (2.676)	0.129
Worker Education Score	Score	0.259 (0.801)	0.746
Constant		57.513 (6.836)	0.000
Number of Observation: 226 R ² = 0.194			

Source: Authors' Estimation, 2018

Note: Standard error in parenthesis

(**) 5 Percent Level of Significance

(*) 10 Percent Level of Significance

7.10 Impact of Management Practices on Enterprise Level Performance: Regression Analysis

A regression analysis has been carried out in order to understand the impact of management practices on firm-level performance (Table 7.24). In this case, employers' margin per worker has been considered as a dependent variable.⁸⁷ Here, the explanatory variables are as follows: factory type (X_1),

⁸⁷ Employer's margin is calculated by subtracting total sales revenue – fabric cost.

group (X_2), GM RMG training (X_3), GM RMG experience (X_4), management score (X_5), HR RMG training (X_6), HR RMG experience (X_7), HR RMG experience (X_8), brand/retailer (X_9), buying house (X_{10}), mixed (X_{11}) and have foreigner (X_{12}). Following is the regression equation:

$$y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_{12} X_{12} + \mu_i \dots \dots \dots (2)$$

Where,

Y_i = Dependent Variable (Production Cost per Worker);

β_0 = Constant;

X_1, X_2, \dots, X_{12} = Explanatory Variables; and

μ_i = Error Term

Table 7.24: Factors Affecting Employer's Margin

Employer's Margin	Unit of Measurement	Coefficient	P>t
Factory Type (woven)	Woven =1, Knit =0	860 (1240)	0.488
Group	Yes =1, No =0	3770 (1570)	0.018**
GM RMG Training	Yes=1, No =0	-648 (1380)	0.640
GM RMG Experience	In Years	40.57511 (58.60868)	0.490
Management Score	In Percentage	7.35182 (54.12845)	0.892
HR RMG Training	Yes =1, No =0	1380 (747)	0.067*
HR RMG Experience	In Years	30.08683 (87.13101)	0.730
Brand/Retailer	Yes=1, No =0	1290 (1100)	0.240
Buying House	Yes=1, No =0	1310 (1960)	0.506
Mixed	Yes=1, No =0	506 (1140)	0.659
Have Foreigner	Yes=1, No =0	2790 (1370)	0.044**
Constant		-1650 (3400)	0.628
Number of Observation: 126 $R^2 = 0.217$			

Source: Authors' Estimation, 2018

Note: Standard error in parenthesis

(**) 5 Percent Level of Significance

(*) 10 Percent Level of Significance

Table 7.26 shows that group, HR RMG training and factories with foreign professionals have significant impacts on employer margin. It is observed that, factories operating under groups have a positive significant impact on employer margin due to the availability of quality management staff and operating procedures. Generally, group operating factories witnessed higher employer margin than the non-group factories because they are better managed and can enjoy the economies of scale in their production process. HR RMG trainings show significant impact with employer margin, which are expected. RMG-related training helps HR managers take prompt and strategic decisions to control production costs as well as increase profitability; this statement is statistically significant at the 10 per cent level. In addition, factories with foreign professionals also have positive significant impacts on

employers' margin. Factories now hire foreigners due to their expertise and technical skills. Foreigners have that expertise through which they can minimise the cost and increase the gross margin of the factories. Therefore, it is quite logical that factories with foreigners can enjoy higher employer margins compared to the factories without foreign expertise at the factory level. It has also been witnessed that other independent variables, though not significant, show the expected relationship with the dependent variable. Here the value of R^2 is 0.217 that means 22 per cent variability of the dependent variable is explained by the explanatory variables and remaining values fall under error term.

7.11 Conclusion

The structure of ownership and management of RMG enterprises have experienced a modest level of changes over the years. The RMG enterprises have been further firmed up as family-based private limited companies, with increasing roles likely to be played by second and third generation family members. There is almost no change in the share of public limited companies. As the sector is progressing towards maturity, the role of groups of companies in the RMG sector is getting prominent—these groups comprise subsidiaries of both RMG and non-RM enterprises of different categories. Interestingly, a large share of small enterprises are subsidiaries of different groups which facilitate their management and operation and make a visible difference in performance with those enterprises which are not subsidiaries of any group. In other words, a size-based analysis of RMG enterprises needs due caution in case of their interpretation.

The RMG enterprises are increasingly moving towards corporate practices, thanks to an increasing level of delegation of authority shifted to the management. The directors are increasingly delegating the enterprise-level authority of production planning, target setting and workers' grievances to the general managers or the head of the factory. However, the manager's role is limited in price negotiation. Such changes in the delegation of authority are reflections of growing engagement of directors in other activities. With the rise in businesses as well as increasing presence of second generation family members in the businesses, the management structure is likely to be more corporatised in the coming years.

With the rise in enterprise-level operation, the senior management needs to take more responsibilities. However, the management professionals are not adequately equipped to handle such responsibilities. GMs and HR managers have received training as an attempt to mitigate their poor academic records. However, recruiting more foreign staff in various management and professional positions indicate that local management staff is increasingly less capable of handling complex production and operation-related issues. Unless competent, well-trained and skilled management professionals are supplied by local management schools, dependence on foreign professionals is likely to rise in the coming years.

The RMG enterprises are not fully prepared with new forms of operational practices. With a view to adjusting with complex forms of production, time and cost, new and specialised departments need to be introduced. For example, industrial engineering is being introduced by a section of enterprises but skilled and trained professionals for this section are not locally available. Moreover, a large section of enterprises are not in a position to introduce such specialised activities. Similarly, enterprises need to respond to online-based marketing in which most of the enterprises are not ready because of requirements of substantive investment. Unless Bangladesh's enterprises develop their online trade infrastructure, they will lose the opportunity to be part of the fastest growing market segment of the value chain. Enterprises are still taking excess orders and trying to accommodate the extra load work in-house; this was also found in case of factories working with brands and buyers. A part of the orders have been sub-contracted out—it is important to ensure the standards of sub-contracting enterprises.

Enterprises undertook different measures to control cost of production- of which, the most important one is to retain trained workers. In other words, retaining trained workers for complex skill driven

activities is becoming an important management tool. Towards that end, enterprises have been focusing more on training and skill development of workers in order to meet their internal needs. However, both male and female workers have switched from one factory to another because of better opportunities as well as family needs. Unless retention is not linked with adequate financial incentives as well as addressing family concerns through the community approach, factories would lose their workers which may affect their overall output and cost.

Analysis of management scores of RMG enterprises reveals that management practices of RMG enterprises are in two streams. In one stream there are enterprises with 'advanced management practices' which include group-based, private companies, contract with brands, foreign staff oriented, experienced and trained GM-based factories. In another stream, there are enterprises with 'moderate or less advanced management practices' which include small, less educated GMs with no-training and remotely located. A regression analysis for identifying factors responsible for management practices revealed that enterprises which are subsidiaries of groups of companies, have trained human resource managers as well as foreign staff working in factories, which has made significant contribution to the management practices of RMG enterprises. In another regression, it is revealed that better quality management such as trained mid-level management professionals and foreign staff in the enterprise made significant contributions to employers' margin.

A number of medium to long-term initiatives are required in order to improve the management practices in the RMG enterprise. First, given the positive contribution made by educated and trained management professions, the sector should promote such categories of staff through targeted measures such as compulsory minimum academic degrees and training for senior and mid-level management professionals such as masters' degrees in business administration, business studies, industrial engineering and human resource management for the position of General Managers, bachelors' degrees in business administration, business studies and industrial engineering, human resource management etc. for the position of human resource managers, compliance managers and other relevant positions. It is expected that public and private universities such as BUFT, BUET, DU, JU, RU and other will develop their curriculum in line with the requirement of the RMG sector. The associations such as BGMEA and BKMEA will undertake necessary initiative for effective Industry-University collaboration for development of management and other professionals. Local universities and other academic organisations can explore joint venture initiatives with globally reputed management schools and universities to set up similar facilities under franchise arrangement.

Second, better educated and trained management professionals need to be made available to the regions which are behind in terms of management performance such as Chittagong and Narayanganj. Enterprises of these regions need to attract qualified management staff with attractive financial packages and other benefits. This is also true in case of small and medium-sized enterprises— instead of recruiting untrained, little educated, less experienced managers and other senior managers at low salaries and poor packages, these enterprises need to spend more for educated and skilled professionals at higher salaries and better financial packages. Besides, enterprises may consider senior management professionals who have experience working in top-graded factories as advisors on a part-time basis. Given their wide professional exposure, these senior professionals could extend necessary support to factories to identify their poor management practices as well as to suggest necessary measures for their improvement.

Third, given the significant contribution made by management staff, a separate service rule should be introduced for different categories of management and other professionals in the RMG sector. Such a common service rule will include qualification, job responsibilities, promotion, entitlements and benefits and other necessary issues. Besides, a separate salary structure with entitled benefits needs to be included there. In this context, factories following structured service rules particularly under those working with brands/retailers could be used as references.

Fourth, given the dearth of management and other professional staff in production planning, merchandising, quality control and industrial engineering, entrepreneurs are pressured to recruit foreign staff in those positions. Necessary academic and professional courses need to be introduced with high standards, where local professionals get the training. It is important to introduce certificate courses offered by globally recognised management and business schools under those areas at the local level under franchise arrangement. Professionals may be encouraged to enroll in online based certificate courses. In the long run, associations should make it mandatory to have professional degrees for availing such positions.

Fifth, special efforts need to be undertaken, targeting the Board of Directors of private limited companies, in order to make them effective and functional. With a view to promoting corporate practices, each board should include an independent director with specialised knowledge on the business in the garment sector. Instead of a non-functional family-based board of directors, each member of the board should have specific responsibilities and must be accountable for their activities. The associations such as BGMEA and BKMEA should take special drives to convert the proprietorship-based enterprises into private limited companies under a time-bound initiative. The registrar of joint stock companies should promote such initiatives.

References

1. Absar, N. (2014). Recruitment and selection practices in manufacturing firms in Bangladesh. Interview with Mussharrof Hossain, President, Bangladesh Society for Human Resources Management. *South Asian Journal of Human Resources Management*, 1 (1), 113–117.
2. Ahmed, M., Rahman, Z. M. & Sogra, J. K. (2017). Factors contributing to job stress of garment sector manager in Bangladesh. *Developing Country Studies*, 7 (2).
3. Alam, A. A. S. (2016). Organizational culture: An empirical study on selected garment factories in Bangladesh. *Asian Business Review*, 6 (2), 73-78.
4. Alam, K. M. R. & Akter, S. (2016). HR practices in selected RMG factories in Dhaka. *Journal of Business*, 1 (4), 39-42.
5. Awano, G., Heffeman, A. & Robinson, H. (2017). Management Practices and Productivity among Manufacturing Businesses in Great Britain. Retrieved from <http://worldmanagementsurvey.org/policy-business-reports/policy-reports/policy-reports-industry/>.
6. Bakht, Z. & Hossain, M. (2017). *Workplace Safety and Industrial Relations in the Readymade Garments (RMG) Industry in Bangladesh*. Dhaka: Bangladesh Institute of Development Studies (BIDS). Retrieved from https://www.researchgate.net/publication/319942563_WORKPLACE_SAFETY_AND INDUSTRIAL_RELATIONS_IN_THE_READYMADE_GARMENTS_RMG_INDUSTRY_IN_BANGLADESH.
7. Bartel, A.P. (1994). Productivity gains from the implementation of employee training programs. *Industrial Relations*, 33, 411-425.
8. Baset, A. M. & Rahman, M. M. (2016). Application of industrial engineering in garments industry for increasing productivity of sewing line. *International Journal of Current Engineering and Technology*, 6 (3).
9. Bloom, N. & Reenen, V. J. (2007). *Measuring and Explaining Management Practices Across Firms and Countries*. Working Paper 12216. Retrieved from <http://www.nber.org/papers/w12216>.
10. Bloom, N., Lemos, R., Sadun, R., Scur, D. & Reenen, J. V. (2016). *Management and Productivity in the Private Sector*. PEDL Policy Insight Series 1. Retrieved from <http://worldmanagementsurvey.org/policy-business-reports/policy-reports/policy-reports-industry/>.

11. CEP (2011). *Constraints on Developing US Management Practices*. BIS Research Paper 58. Retrieved from <http://worldmanagementsurvey.org/policy-business-reports/policy-reports/policy-reports-industry/>.
12. Clean Clothes Campaign (2012). *Hazardous workplaces: Making the Bangladesh garments industry safe*. Retrieved from cleanclothes.org/.../2012-11-hazardousworkplaces.pdf, November.
13. Delery, J. E., & Doty, D. H. (1996). Modes of theorizing in strategic human resource management: Test of universalistic contingency, and configurational performance predictions. *The Academy of Management Journal*, 39 (4), 802–835. Retrieved from <http://dx.doi.org/10.2307/256713>.
14. Dessler, G. (2007). *Human Resource Management*. New Delhi: Prentice Hall of India Private Limited. Drummond, I. & Stone, I. (2007). Exploring the potential of high performances work systems in SMEs. *Employee Relations*, 29 (2), 192-207.
15. Fashion Apparel (n.d.). Pre-production meeting (PPM) in apparel industry. Retrieved from <http://fashion2apparel.blogspot.com/2017/02/pre-production-meeting-apparel-industry.html>.
16. Ferdous, S. R. (2015). Factors promoting work satisfaction of readymade garment (RMG) worker in Bangladesh: An Empirical Analysis. *Journal of Scientific Research and Developments*, 2 (8), 39-47.
17. Gollan, P. J. (2005). High involvement management and human resource sustainability: The challenges and opportunities. *Asia Pacific Journal of Human Resources*, 43 (1), 18-33.
18. Green, R., Agarwal, R., Brown, P., Tan, H. & Randhawa, K. (2011). Management matters in New Zealand – How does manufacturing measure up? *Occasional Paper*, 11 (3).
19. Green, R., Agarwal, R., Van, R. J., Bloom, N., Boedker, C., Sampson, D., Gollan, P., Toner, P., Tan, H. & Brown, P. J. (2009). *Management Matters in Australia: Just how Productive Are We?* Australia: University of Technology Sydney. Retrieved from <http://worldmanagementsurvey.org/policy-business-reports/policy-reports/policy-reports-industry/>.
20. Greenwald, B. (2004). The good life: How managers made the modern world. Retrieved from http://www2.gsb.columbia.edu/hermes/winter2004/article_greenwald.cfm.
21. Ho, D. (n.d.). Bangladesh's garment industry: Recent development and outlook. Retrieved from <http://hkmb.hktdc.com/en/1X09UVLU/hktdc-research/Bangladesh%E2%80%99s-garment-industry-recent-development-and-outlook>.
22. Huselid (1995). The impact of human resource management practices on turnover, productivity and corporate financial performance. *Academy of Management Journal*, 38 (3), 635–672. Retrieved from <http://dx.doi.org/10.2307/256741>.
23. Institute for Competitiveness and Prosperity (2012). *Management Matters*. Working Paper 12. Canada. Retrieved from <http://worldmanagementsurvey.org/policy-business-reports/policy-reports/policy-reports-industry/>.
24. Islam, K. A. (2006). *In the Wonderland of Bangladeshi Managers*. Bangladesh: Boi Bazar.
25. Kaikobad, K. N. & Bhuiyan, A. Z. M. (2012). Job switching of garment workers decreasing productivity: An analytical research. *Journal of Business and Management*, 4 (4), 1-7. Retrieved from www.researchgate.net/publication/315728248_Job.
26. Khan, M. A. (2010). Effects of human resource management practices on organization performance: An empirical study of oil and gas industry in Pakistan. *European Journal of Economics, Finance and Administrative Sciences*, 24, 158–175.
27. Lemos, R. & Scur, D. (2014). *Management Practices in Manufacturing in Mozambique*. Working Paper 2. Mozambique: Dhaka: International Growth Council (IGC). Retrieved from <http://worldmanagementsurvey.org/policy-business-reports/policy-reports/policy-reports-industry/>.

28. Lloyed, L. B. & Leslie, R. (2000). *Human Resource Management* (6th ed.). North America: Irwin User Page, McGraw-Hill.
29. Lomborg, B. (2016, May 30). RMG: Smartest strategies. *Daily Star*. Retrieved from <https://www.thedailystar.net/op-ed/economics/rmg-smartest-strategies-1231252>.
30. Mahmood, M. & Absar, M. M. (2015). Human resource management practices in Bangladesh: Current scenario and future challenges. *South Asian Journal of Human Resource Management*, 2 (2), 171-188. Retrieved from <https://www.researchgate.net/publication/287198053>.
31. Mamun, A. A. (2016). Constraint for Bangladeshi RMG Factories to be Compliant. *International Journal of Innovative Science and Modern Engineering (IJISME)*, 4 (2). Retrieved from https://www.researchgate.net/publication/313652245_Constraints_for_Bangladeshi_RMG_Factories_to_be_Compliant.
32. McDonald, D. & Smith, A. (1995). A proven connection: Performance management and business results. *Compensation and Benefits Review*, 27 (1), 59-75.
33. Moazzem, K. G. & Rayan, K. (2015). 'Shut-Down Rule' vs 'Closure': Which one is Relevant on Close Garment Factories for Bangladesh? Retrieved from bea-bd.org/site/images/pdf/073.pdf
34. Moazzem, K. G. (n.d.). State of compliance of the RMG sector of Bangladesh. Retrieved from <http://cottonbangladesh.com/April2008/RMG.htm>.
35. Nankervis, A. A. & Leece, P. (1997). Performance appraisal: Two steps forward, one step back? *Asia Pacific Journal of Human Resource*, 35 (2), 90-108.
36. Nasuridin, A. M., Ramayah, T. & Osman, M. (2001). *Job Satisfaction and Organizational Commitment among the Malaysian Workforce*. Malaysian Publications.
37. Rajiq, A. (2011). "High Performance Management Practices in Manufacturing and Service-based SMEs: A Comparative Study." Paper presented at the 24th Annual Conference on *Small Enterprise Association of Australia and New Zealand*, organized by SEAAANZ, 13-15 July, Sydney, NSW, Australia.
38. Rashid, S & Quddus, M. (2000). *Entrepreneurs and Economic Development: The Remarkable Story of Garment Exports from Bangladesh*. Motijheel C/A: The University Press Limited.
39. Refayet, U. M. (2015, January 1). Garments exporters look to a buoyant year. *Daily Star*, Retrieved from <https://www.thedailystar.net/garment-exporters-look-to-a-buoyant-year-57929>.
40. Sarker, P. (n.d.). How to minimize production cost in garment manufacturing? Retrieved from <https://www.onlineclothingstudy.com/2016/01/how-to-minimize-production-cost-in.html>.
41. Sarker, R. A. M. & Afroze, R. (2014). Can HRM practices improve job satisfaction of readymade garment (RMG) workers in Bangladesh? An alternative solution to recent unrest. *International Journal of Business and Management*, 9 (10).
42. Shafiullah, M., Alam, M. M. D. & Quader, F. (2011). Practices of performance management system in Bangladesh: An empirical study among three different industries. *Eastern University Journal*, 3 (1), 1-19.
43. Sonobe, T., Suzuki, A., Otsuke, K. & Vu, H. N. (2011). *KAIZEN for Managerial Skill Improvement in Small and Medium Enterprises: An Impact Evaluation Study in a Knitwear Cluster in Vietnam*. Depocen Working Paper Series 2012/29. Vietnam: Development and Policies Research Center.
44. Stark, M. & Alper, W. (2000). Measuring people power. *Fortune*, 142 (7), 62-70.
45. Survey of Manufacturing Industries (2005). *Report on Bangladesh Survey of Manufacturing Industries (SMI) FY2005-06*. Dhaka: Bangladesh Bureau of Statistics. Retrieved from <http://www.bbs.gov.bd/site/page/175a795a-df34-4118-9ed6-1ec769fa03de/Industrial-Statistics>.
46. Survey of Manufacturing Industries (2012). *Survey of Manufacturing Industries (SMI) - 2012*. Dhaka: Bangladesh Bureau of Statistics. Retrieved from <http://www.bbs.gov.bd/site/page/175a795a-df34-4118-9ed6-1ec769fa03de/Industrial-Statistics>.

47. Technopak (2013). *Opening the Door: Opportunities and Challenges for the Garment Industry in Myanmar*. Retrieved from www.technopak.com/files/Garment_Industry_in_Myanmar_Feb2013.pdf.
48. The Financial Express (2017, December 04). Groom 'local talent for mid-management positions in RMG industry'. Retrieved from <https://thefinancialexpress.com.bd/trade/groom-local-talent-for-mid-management-positions-in-rmg-industry-1512365934>.
49. Tsai, C. J. (2006). High performance work systems and organizational performance: An empirical study of Taiwan's semiconductor design firms. *American Journal of Applied Science*, 17 (9), 1512-1530.
50. UNDP Pakistan (2009). *Mid-term Review Report: Gender Promotion in the Garment/Clothing Industry through Skill Development*. Pakistan: United Nations Development Programme.
51. Whitener, E. M. (2001). Do high commitment human resource practices affect employee commitment? A cross level analysis using hierarchical linear modeling. *Journal of Management*, 27 (5), 515-535.
52. World Management Survey (2015). *Methodology*. Retrieved from <http://worldmanagementsurvey.org/survey-data/methodology/>
53. Zohir, S. C. (2007). *Role of Dhaka Export Processing Zone: Employment and Empowerment*. Research Report. Dhaka: Bangladesh Institute of Development Studies.
54. <https://thefinancialexpress.com.bd/trade/groom-local-talent-for-mid-management-positions-in-rmg-industry-1512365934>
55. <http://hkmb.hktdc.com/en/1X09UVLU/hktdc-research/Bangladesh%E2%80%99s-garment-industry-recent-development-and-outlook>.
56. <https://www.thedailystar.net/business/time-put-excessive-apparel-work-hours-bed-1313890>
57. <http://fashion2apparel.blogspot.com/2017/02/pre-production-meeting-apparel-industry.html>
58. <https://cleanclothes.org/resources/publications/2012-11-hazardousworkplaces.pdf>
59. <http://www.nber.org/papers/w12216>

8. Technological Changes in RMG Enterprises and Analysis of Efficiency and Productivity

8.1 Introduction

Globally over the last few decades, the garments industry has undergone diverse and uneven development in terms of major technological shifts and economic upgrading. Distinguishingly, these changes resulted from a mix of dynamic policies and technological innovations. The nature of both technology use, upgrading, and policy execution are perceived to be deployed hand-to-hand in order to retain the potential competence in the global market. In Bangladesh, the RMG sector has been compelled to comply with technological upgrading under a new business environment in order to maintain competitiveness in the post Rana Plaza period. This chapter analysed technological upgrading in the RMG industry particularly in view of recent changes in the cost and compliance at the enterprise level. This chapter also examined the implications of those technological changes on employment, productivity and overall efficiency of the enterprises.

8.2 Literature Review

8.2.1 Different Forms of Economic Upgrading and Their Interrelationship

Economic upgrading of industrial enterprises is reflected through different forms such as products, process and functional upgrading. Different forms of upgrading depend on a firm's level of development in the production system including assembly, original equipment manufacturing (OEM) and original brand manufacturing (OBM). Gereffi and Memedovic (2003), and Humphrey and Schmitz (2000 and 2002) showed how the interaction between global buyers and suppliers influences the upgrading of firms under very uneven and unequal relationships.

In a quasi-hierarchical value chain, firms can upgrade processes and products relatively faster; but these chains do not permit firms to upgrade functionally. Given the overwhelming presence of this form of value chain, most apparel sector value chains tend to be upgraded only in terms of products and processes.⁸⁸ A number of specialised services are required in the production process; hence a firm's upgrading depends on its capability of garment preproduction in preparing samples, pattern, and marker making, as well as improved capability in fabric (dyeing and printing) and garment finishing (e.g., washing, distressing, embroidery) (Minor, 2008). Most of these activities are complicated and require capital investment in machinery and equipment, as well as upgrading the skillset of workers.

According to the internationalisation theory, upgrading the value chain in a multistage production depends on the level of improvement of specialisation at different stages in the production process. We find that complex tasks are often carried out by specialists who are more productive than a group of generalists (Casson, 2013). Since the division of labour applies not only to physical processes but also to intellectual processes, upgrading the value chain demands development on both accounts. A part of the division of labour is associated with vertical intellectual division of labour through which innovations are planned and implemented, such as the chain linking basic research, product development and production. But this is not associated with the upgrading of the value chain at the suppliers' end. In fact, according to the "strategic management", the upgrading of the value chain at the suppliers' end depends on three types of variables including the complexity of transactions, ability to codify transactions and capabilities in the supply base. These variables are sometimes determined by the technological characteristics of products and processes and they often depend on the

⁸⁸In contrast, market-based value chain tends to facilitate functional upgrading more but may not facilitate adequately process and product upgrading.

effectiveness of industry actors and social processes characterising the development, dissemination and adoption of standards and other codification schemes.

8.2.2 Nature of Technological Upgrading and Their Interrelationship

Technological upgrading, as suggested by Khan (2008), is likely to involve one or more of the following: 1) the purchase and financing of new machinery, ii) the training of workers and employees to effectively use new machinery, new processes or serve new markets with new products and iii) investments in ancillary factors and in particular land to enable the efficient expansion of production. Technological shift is not only subject to a varying modern machinery installation, but is more about managerial and reorganisational strategy (Piva, Santerelli, and Vivarelli, 2003) which derives an expected output. A country's historical exposure to technology tends to influence pattern of use of technologies as is evident in case of India and China.⁸⁹

8.2.3 Interrelation between Technology, Employment, and Skill Upgrading

Technological change has diverse impacts on the dynamics of employment and efficiency of enterprises. Scholars (e.g. Machin and Reenen, 1998; Berman and Bound, 1994; Berman, Bound and Machine, 1998) have found that technological changes have impact on wages and employment, favouring the technically skilled workers more over the unskilled workers. Skill upgrading has become evident in the developed countries as a result of constant technological change (Berman and Bound, 1994). An insignificant level of labour displacement has been found due to the introduction of new technology. Mark (1987) maintained that labour displacement is considered to remain at a minimum and initiation of new technology to be consistent with higher employment generation provided the economy is strong. The figures for the same have confirmed that the displacement and employment generation varies from occupation to occupation. A significant level of decline in employment and its share of total employment have been traced to operatives and private household workers in contrary to that of professional, technical and clerical workers. Even if dislocation is evident in the short run, the new technological change is considered compatible with the increase in employment, and is often associated with the changing demand from domestic to the international producers (ibid.). Firms introducing product innovations essentially provoke prices to increase and therefore, to grow faster than those of the firms defined as 'not product innovative'. However, due to an initiation of process innovation, firms are likely to experience an accelerating pattern in output and employment (Smolny, 1998). Piva, Santerelli, and Vivarelli (2003) show that skill upgradation is not only the result of new technological change, but also affects the overall reorganisation of the firm, which is further interrelated to the technological change.

8.2.4 Technology as an Influencing Factor on Firm's Overall Performance

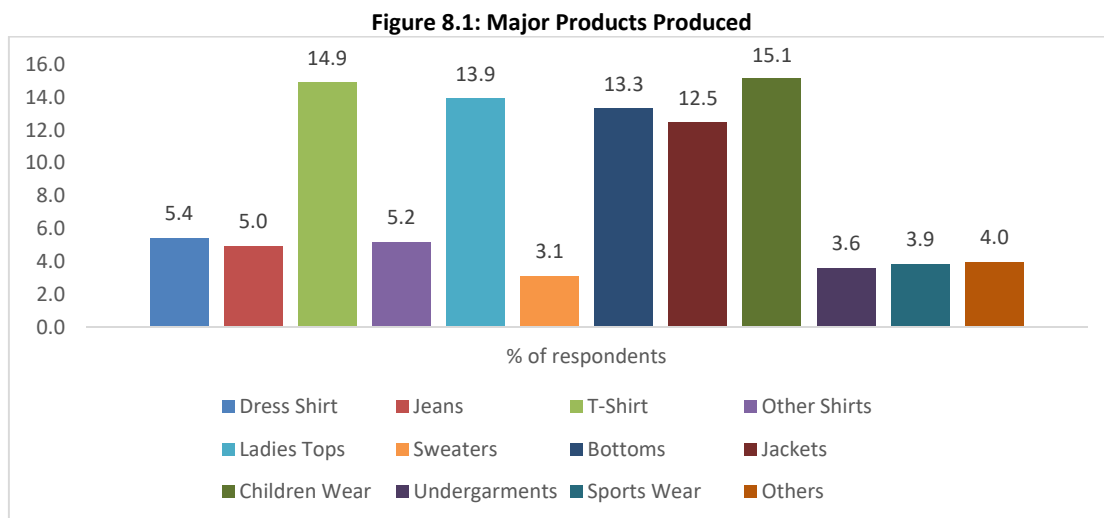
The study shows that productivity, especially with regard to technological change, accelerates productivity ensuring excess return relative to other capital (Lehr and Lichtenberg, 1997) regardless of experience and efficiency (Hagger, 2011). Higher educational qualification of production workers—a reflection of enrichment of technological levels at the enterprises, is a significant indicator for the overall performance of a firm (Black and Lynch, 1997). It is found that R&D expenditure and ICT investment are influential in productivity growth in the manufacturing industries by promoting more efficient gains. On the other hand, a firm's maturity, size, capital intensity, proportion of non-production to total workers, and type of legal status are also considered to be influential deterrents for the technical efficiency to alter significantly (Wadud, 2004). Apart from organisational change, infrastructure quality and management practices are considered to significantly impact manufacturing performance (Naor *et al.*, 2008).

⁸⁹Please see, "Comparing Technological Innovation of Textile Industries in India and China", written by Tang, Xiaoyang of International Food Policy Research Institute. <https://indiachinainstitute.org/wp-content/uploads/2010/03/Xiaoyang-Tang-Comparison-Textile.pdf>

8.3 Upgrading related Features of Sample Enterprises

8.3.1 Product Upgrading: Slow Progress in Product Upgrading; One Fifth of Enterprises Depend on Single Product

RMG enterprises have been diversifying their products but progress has been slow with the inclusion of higher value-added products. Major products produced by sample enterprises can be categorised into two groups: a) products produced by enterprises with a share of over 10 percent of their total production and b) products produced by enterprises with a share of around 5 percent of their total production (Figure 8.1). The lead products produced by enterprises include T shirts, bottoms, children’s wear, jackets and ladies’ tops. A number of new products have also been included such as children’s wear and jackets that tend to be value-added and technologically sophisticated. On the other hand, products produced with a moderate share by sample enterprises include dress shirts, jeans, outer shirts, sweater, sportswear and undergarments. Among other products, producers manufactured different items, albeit in limited quantities, such as dress pants, polo shirts, skirts, cargo trousers, female undergarments, leggings, sweat pants, medical tops and bottoms, men’s boxers, tank tops, rompers, hoodies, swimming shorts and jogging tops. This portrays that the suppliers have been gradually building up their manufacturing capacity through technology, skilled workers and maintaining compliance standard. Despite this, the majority of enterprises are still concentrated on a limited number of low to low-medium products, which is a major weakness for the industry to accelerate growth and diversification.

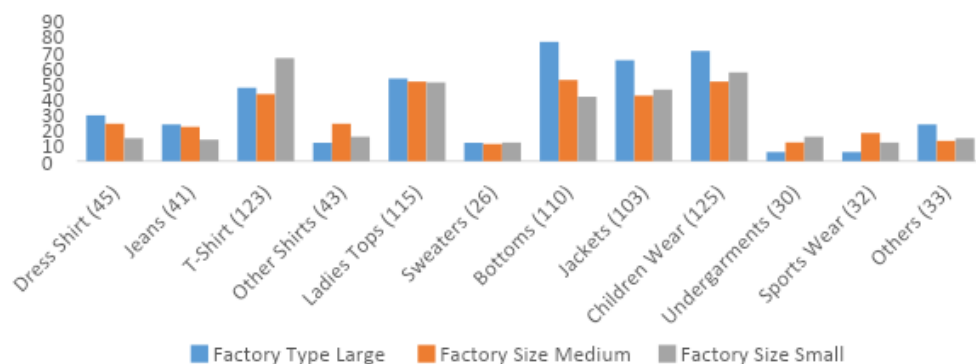


Source: CPD-RMG Survey, 2018

The composition of products is different for different categories of enterprises in terms of size (Figure 8.2). In case of type of enterprises, woven enterprises produce mainly dress shirts, jeans, bottoms and jackets, while knit enterprises produce ladies tops, bottoms and children’s wear. Among the main products, production between large, medium and small enterprises is consistent. However, large enterprises produced more of some products such as dress shirts (29 per cent) and polo shirts; medium enterprises produced relatively more shirts (24 per cent) and small enterprises focused on undergarments (15 per cent). Historically, different clusters of apparel enterprises have been developed based on the specialisation of different regions. However, distribution of products in terms of their locations reflects that such specialisation has been gradually eroding. Major clusters are producing almost similar types of products with little variation in terms of types of products between different enterprises. Thus, both knit and woven products have been equally produced in traditionally ‘knit’ and ‘woven’ clusters. For example, in Narayangonj, a knit-based cluster, entrepreneurs produce

different kinds of woven products such as ladies' tops, children's wear along with its main product and T-shirts.

Figure 8.2: Distribution of Products in Terms of Size of Enterprises



Source: CPD-RMG Survey, 2018

As we can see, most of the enterprises produced more than one product, with nearly eighty per cent of enterprises producing more than one product. A majority of the enterprises produced two to four major products along with various minor products (Table 8.1). We also find a positive linkage between the size of an enterprise and number of products it produces—small and medium enterprises produced mainly two to three major products (32–35 per cent) while large enterprises focused on three to four major products (41 per cent).

About 23.5 per cent of large enterprises have reported to produce five to six major products. Despite the growing diversity in manufacturing products, one-fifth of the enterprises could not diversify their product base and these enterprises are dependent on a single major product. Overall, enterprises are mostly equipped with manufacturing diverse sets of products using their existing capacity of machineries, workers and management.

Table 8.1: Number of Products Produced by Enterprises

Number of Major Product	Number of Factories Produced Major and Minor Products				Whether factories produced other products (Y/N)?
	Total Number of Factories produced Major Products	Factory Size			
		Large	Medium	Small	
1	19.9	23.5	20.0	19.3	12.1
2–3	31.0	0.0	35.0	32.1	36.4
3–4	27.9	41.2	22.0	31.2	24.2
5–6	11.1	23.5	10.0	10.1	12.1
7–max	8.0	5.9	11.0	5.5	0.0
No information	2.2	5.9	2.0	1.8	15.2
Total	100.0	100.0	100.0	100.0	100.0

Source: CPD-RMG Survey, 2018

8.3.2 Product Upgrading: Ensuring Quality of Products Depend on Extent of Monitoring Capacity of the Enterprises

Enterprises ensure quality through different approaches (Table 8.2). But, there is little variation between different types of enterprises with respect to these approaches. Small enterprises depend more on developing product specific criteria (94 per cent of small enterprises) while medium enterprises focus on auditing and testing processes (95 per cent). At the same time, large enterprises concentrate more on inspection throughout the production process and continue this in post-production phases as well (Table 8.3). As part of quality assurance, enterprises are involved in quality

checking before shipment of products (i.e. all categories of enterprises ensure quality checking during production and after production), while a majority of large enterprises check the quality prior to shipping as well. Hence, the extent of enterprises and buyers' requirement to monitor the quality ensures the degree to which the product quality to be maintained.

Table 8.2 Steps to Ensure Production of Quality Goods (Size Wise)

Steps	Percentage			
	Small (% of 109)	Medium (% of 100)	Large (% of 17)	Total (% of 226)
Develop a Product Specification/Criteria	94	90	82	91
Audit Potential and Existing Suppliers	81	95	82	87
Test Product	82	95	76	87
Inspection Throughout Production Process	88	95	100	92
Quality Check and Approval from Buyer	83	85	65	83

Source: CPD-RMG Survey, 2018

Table 8.3: Steps to Ensure Quality Products Shipped to Buyers (Size Wise)

Steps	Percentage			
	Small (% of 109)	Medium (% of 100)	Large (% of 17)	Total (% of 226)
Inspection Prior to Production	99	94	88	96
Inspection During Production	100	100	100	100
Inspection After Production	99	98	94	98
Inspection Prior to Shipping	39	44	76	44

Source: CPD-RMG Survey, 2018

8.3.3 Process Upgrading: Reduction in Number of Production Lines and Usages of Workers per Line

With the rise in productivity and efficiency through multi-tasking and specialised machineries, the use of number of machines and workers in production lines is likely to decline. Unlike the past, factories have used fewer workers per line (Table 8.4)—47 workers in case of small enterprises, 67 in case of medium enterprises and 62 in case of large-scale enterprises. The length of production lines are partly linked with types of products produced as well as demand for buyers. Usually, products with complex specifications and compliance requirements of buyers could demand longer production lines. Similarly, the use of machines per line is likely to decline over time. The changes in number of operators and machines per line are due to rises in line-level efficiency and workers' productivity of the enterprises. The Following section provides a detailed analysis on productivity and efficiency of sample enterprises. The highest number of operators working in a line is found in Chittagong (67.6 operators) while the lowest numbers are in Narayangonj (48.3) and Gazipur (44.4). Enterprises are increasingly putting emphasis on the reduction of cost and time through better production management.

Table 8.4: Number of Machines and Workers Used Per Production Line

	Factory Size			Factory Type		Overall
	Large	Medium	Small	Knit	Woven	
Worker/Line	62.105	66.54	47.16	39.56	79.39	56.93
Machine /Line	45.46	48.42	41.59	32.28	61.29	44.93
Line	47.42	13.28	6.11	14.07	10.21	12.39

Source: CPD-RMG Survey, 2018

8.3.4 Process Upgrading: Domestic Value Addition is still at Modest Level but is rising

Domestic value addition in the RMG sector is still at the modest level with only 37 per cent of the raw materials being domestically produced (Table 8.5). The volume has been increasing over time and is up 4 per cent between 2012 and 2016. The knit sector continues to contribute more in domestic value addition because of the backward linkage composite textile unit (about 59 percent of raw materials were procured domestically in 2016 which is a 6 per cent increase from 2012) (Table 8.6). In contrast, the woven sector has usually contributed less in domestic value-addition (only 18.4 per cent) and its local value addition has been decreasing over time (declined by 1 percentage point). This decline is mainly attributed to lesser use of domestic fabric vis-à-vis their total requirement and lesser use of accessories unlike that of knit sector. This contrasting scenario of domestic raw material use needs to be examined from the perspective of development of strong backward linkages in the country.

Table 8.5: Domestic Value Addition

Share	From Domestic Sources (%)		From Int'l Sources (%)	
	2012	2016	2012	2016
Fabrics	23.1	24.3	76.9	75.7
Thread	68.5	75.2	31.5	24.8
Accessories	47.7	50.9	52.3	49.1
Dyes/Chemicals	30.9	42.6	69.1	57.4
Total	33.7	37.4	66.3	62.6

Source: CPD-RMG Survey, 2018

Table 8.6: Domestic Value Addition (Size-wise)

		From Domestic Sources		From Int'l Sources	
		2012	2016	2012	2016
Fabrics	Knit	54.3	54.2	45.7	45.8
	Woven	11.6	10.4	88.4	89.6
Thread	Knit	62.8	69.9	37.2	30.1
	Woven	61.6	93.6	38.4	6.4
Accessories	Knit	59.6	64.0	40.4	36.0
	Woven	45.7	41.3	54.3	58.7
Dyes/Chemicals	Knit	16.3	31.5	83.7	68.5
	Woven	96.6	93.3	3.4	6.7
Total	Knit	53.6	59.2	46.4	40.8
	Woven	19.5	18.4	80.5	81.6

Source: CPD-RMG Survey, 2018

8.3.5 Process Upgrading: Growing Effort to Use State of Art Machineries by All Categories of Enterprises

Sample enterprises use machineries of different qualities in different sections. This variation of prices in machineries is reflected both in mass-scale machines as well as specialised machines. Factories use different types of machines in different sections (Table 8.7). Major machineries used in the factory include single and double stitch machines, over lock machines, manual machines, cover stitch machines, flat beds, semi-automatic machines, chain stitch, post-bed sewing machine, button holing machine, zigzag stitching machine and bar tacking machine. The average price of these machines range from as low as US\$564 to as high as US\$5600. However, the gap between prices of machineries as well as standard deviation of prices under different categories indicate a growing section of enterprises that use new branded machineries, not only in case of mass-scale used machines (e.g. 1 needle lockstitch, overlock) but also in small used machines (e.g. Kansai machine, shape tacking machine).

However, the price of machineries widely varies between factories—both for low-priced and high-priced machineries. Part of this variation is due to entrepreneurs’ capacity to invest in state of the art machineries as well as buyers’ compliance requirements. The survey shows that expensive machineries are not only used by large enterprises but rather by small and medium enterprises as well (Table 8.8). Since the number of machines used in large enterprises in all categories is significantly higher than that of medium and small enterprises, total investment for machineries by large enterprises is much higher compared to medium and small enterprises. Enterprises across the board have made the required level of investment for machineries in order to get production at the mandatory level. This is a shift from the past, when large enterprises would use state of art machineries at a significant level while small and medium enterprises would lag behind in machinery use (Rahman *et al.*, 2008).

Table 8.7: Different Machineries Used by Sample Enterprises

Name of machines	Overall		Average Machine Price	
	Av. no. of machine per factory	Av. machine price (US\$)	Minimum (US\$)	Maximum (US\$)
1-needle, lockstitch	258	564	223	2244
Overclock	107	947	178	4563
Manual Machine	95	799	159	5770
2-needle, lockstitch	38	1212	256	3600
Cover stitch Machine	37	2255	576	4200
Flat Bed Machine	32	1576	255	14000
Semi-automatic Machine	28	1779	145	6500
Chain Stitch Machine	19	1334	172	6410
Post-bed Sewing Machine	18	4167	446	10500
Buttonholing Machine	17	3326	133	30000
Zigzag Stitching Machine	17	1556	150	5000
Bar tacking Machine	16	3135	500	32000
Computer-controlled Cycle Machine	14	5568	701	11620
Button Sewing Machine	11	3176	250	15000
Kansai Machine	11	2132	280	32000
Shape tacking Machine	1	5601	183	32000

Source: CPD-RMG Survey, 2018

Table 8.8: Machineries Used by Different Categories of Enterprises

Name of machines	Large	Medium	Small
	Av. price per machine (\$)	Av. price per machine (\$)	Av. price per machine (\$)
Over lock machine	947	1073	839
Manual machine	305	613	1015
2-needle, lockstitch machine	1248	1432	952
Cover stitch machine	1937	2492	2125
Flat Bed machine	1065	1667	1525
Semi-automatic machine	--	2331	1070
Chain Stitch machine	1169	1444	1215
Post-bed Sewing machine	1025	6983	2136
Buttonholing machine	3060	3505	3185
Zigzag Stitching machine	1641	1743	1396
Bar tacking machine	2934	3172	3119
Computer-controlled cycle machine	6800	4759	11620
Button Sewing machine	3395	3776	2585
Kansai machine	1356	2106	2236
Shape tacking machine	5230	4074	7190

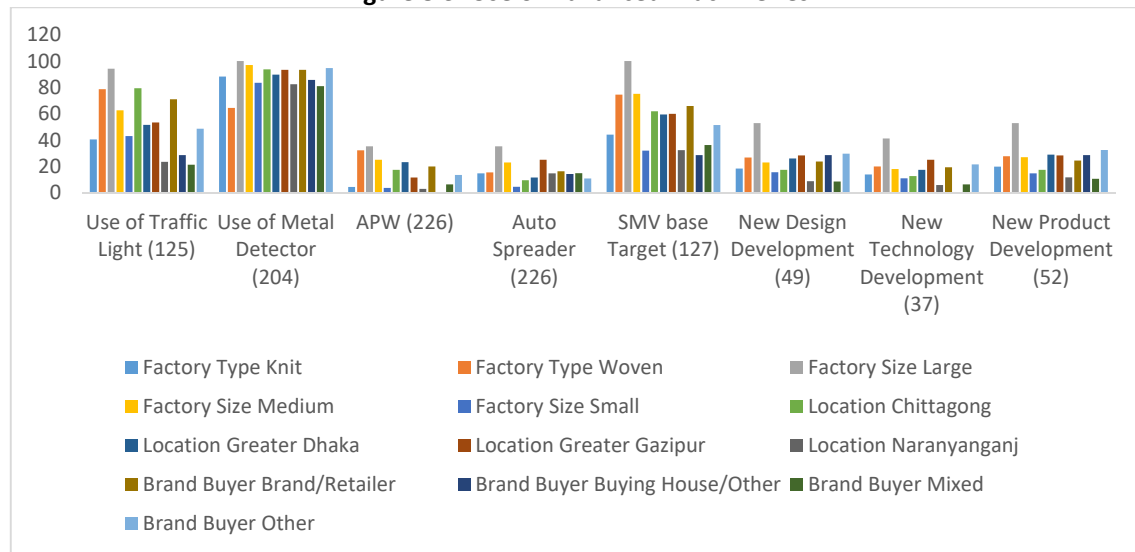
Source: CPD-RMG Survey, 2018

8.3.6 Process Upgrading: Rise in Use of Advanced Technologies and Machineries but Level of Use Varies in terms of Different Indicators

The growing demand for advanced machineries and technologies is evident in the RMG sector (Figure 8.3). The present study analyses the use of different advanced machineries and technologies such as traffic light system, metal detector and SMV base targets. Of the thirteen different types of specialised machineries used in RMG enterprises, about 60 per cent of the enterprises use 6 to 13 machineries. Woven enterprises are ahead in using advanced machineries compared to that of knit factories. Large-scale enterprises are well-ahead of medium and small-scale enterprises in terms of using these machineries. For example, about 94 per cent of the large enterprises use traffic light system, while this number is 63 per cent of medium and only 43 per cent for small enterprises. Only one-third of small enterprises have been using SMV-based target. In terms of location, Narayangonj-based enterprises are lagging behind in terms of advanced machinery and technology use. Chittagong is also lagging behind Dhaka and Gazipur-based enterprises in terms of product development. There is a sheer distinction in technology use between enterprises working with brands vis-à-vis those with buying houses and mixed contractual arrangements. Hence, technological advancement of enterprises is influenced by entrepreneurs' capacity, buyers' compliance requirement as well as entrepreneurs' expectation about business potentiality in different locations.

Overall, there is a difference in technology use between different categories of enterprises. Factories across the board have been using basic machineries based on their requirements. In contrast, wide variation exists between enterprises in case of using advanced machineries and technologies. The differences in price of basic machineries portray that a limited number of enterprises use high quality machineries. In other words, the prevailing gap in using basic and advanced machines and technologies between different categories slowed down the potential growth of a large section of small and medium enterprises.

Figure 8.3: Use of Advanced Machineries



Source: CPD-RMG Survey, 2018

8.3.7 Average Lead Time is Decreasing

The lead time for processing the production orders has been decreasing and is now down to an average of 52 days. In the 1990's this number was estimated to be 120-150 days (Azad, 2004) which was reduced to 90-100 days in early 2000s (Khan, 2007)⁹⁰. Although Bangladesh is now competitive in lead time compared to other South Asian countries such as Pakistan (e.g. 45-70 days); however, it still

⁹⁰As cited in Nuruzzaman, M., & Haque, A. K. M. (2009).

lags behind those of other South East Asian countries such as Vietnam and China (30 days) (Nuruzzaman, 2008). While the average lead time is higher for woven enterprises compared to that of knit enterprises due to significant dependence on imported raw materials for manufacturing products, better port facilities both for import and export would help in further reducing the lead time and make the knit and woven sub-sectors more competitive.

8.3.8 Most of the Enterprises Lag in Functional Upgrading

Most of the enterprises lack the facilities for functional upgrading. Functional upgrading is measured through the availability of necessary infrastructural facility for new design and product development in the sample enterprises (Table 8.9). In case of facilities for new design development, only 21.7 per cent of the enterprises have mentioned possessing such facilities. About 53 per cent of the large enterprises have mentioned about that facility, while it is available in 23 per cent of the medium and 16 per cent of the small enterprises. Factories which were established earlier have less of these facilities compared to those factories which were established later. Similarly, factories working with brands and retailers have such facilities at a higher number compared to those which are working with buyers and under mixed contractual arrangements, both with brands and buyers (Table 8.10). Since design development requires additional investment for human resources, creating necessary R&D facility and strong networking with brands/retailers, only a limited set of entrepreneurs took interest to invest on those facilities. However, most of the enterprises remain disinterested in developing their own brands because of large investments required for fashion designing, warehousing, retail market logistics and good business network with retailers at the consumers' market. Suppliers from developing countries continue to be disinterested as a result.

Table 8.9: Enterprises Having New Design Development (Size Wise)

New Design Development	Factory Size				
		Large	Medium	Small	Total
Yes	Number	9	23	17	49
	Percentage	52.94	23	15.6	21.68
No	Number	8	77	92	177
	Percentage	47.06	77	84.4	78.32
Total	Number	17	100	109	226
	Percentage	100	100	100	100

Source: CPD-RMG Survey, 2018

Table 8.10: Enterprises Having New Design Development (Contractual Nature Wise)

New Design Development	Merchandise				
		Brand and/or Retailer	Buying House and Other	Mixed	Total
Yes	Number	9	6	13	28
	Percentage	32.14	11.11	17.33	17.83
No	Number	19	48	62	129
	Percentage	67.86	88.89	82.67	82.17
Total	Number	28	54	75	157
	Percentage	100.00	100.00	100.00	100.00

Source: CPD-RMG Survey, 2018

Similarly, factories lag in developing new technologies with only 16.4 percent of enterprises in our sample developing new technologies (Table 8.11). Previously large enterprises were well ahead of medium and small enterprises in terms of technology development. However, there is no major difference between knit and woven enterprises in terms of technology development. Given the low-

end product market, most entrepreneurs show little interest in investing in technology development as incremental return through such investment is very low.

Table 8.11: Enterprises Having New Technology Development

New Technology Development	Factory Size				Total
		Large	Medium	Small	
Yes	Number	7	18	12	37
	Percentage	41.18	18	11.01	16.37
No	Number	10	82	97	189
	Percentage	58.82	82	88.99	83.63
Total	Number	17	100	109	226
	Percentage	100	100	100	100

Source: CPD-RMG Survey, 2018

Overall, Bangladesh’s entrepreneurs do not focus on functional development. In fact, entrepreneurs, within their limited capacity and investment, attempt to expand by developing new designs and products. Only a small segment of entrepreneurs has taken an interest in this segment. However, there is potential for greater investment in these segments of functional upgrading particularly in collaboration with brands.

8.4 Level of Technological Development in Sample Enterprises

This study attempts to assess the level of technological usage by enterprises in our sample by using a technology upgrading index. The index has been prepared considering two aspects: a) quality of technology use (mainly for basic machineries) and b) use of advanced machineries of technologies. Quality of machineries is estimated using average price of different types of machines, while use of advanced machineries and technologies has been estimated by examining availability of those in the factories.

These index value has been used to categorise factories into four: ‘advanced’ technology use enterprises, ‘moderately high’ technology use enterprises, ‘moderate’ technology use enterprises and ‘low’ technology used enterprises. For example, if the index value of a factory is greater than the 75th percentile, then it is deemed as ‘advanced’ in its technological usage; similarly, factories are termed as ‘moderately high’ if the index value falls between 50th and 75th percentile, ‘moderate’ if the value falls between 25th and 50th percentile, and ‘low’ if it falls below 25th percentile.⁹¹ On the other hand, the use of advanced machineries is another important criterion which is used to appreciate the level of technological upgrading. Hence, the percentage share of advanced machines in the total number of advanced machines used by the factories is considered for this estimation. If factories have a share over two-thirds (67 per cent or more) in advanced machines, this factory is to be qualified to the upper next category from the prevailing category in terms of technology use. 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 specialised machines in the process.

⁹¹ Enterprises have been categorised in terms of technology use by the following criteria: Low (below 25th percentile) : if average price of machineries is below than \$1273
 Moderate (between 25th and 50th percentile) : (\$1273≤moderate<\$1955)
 Moderately High (between 50th and 75th percentile) : (\$1955≤moderately high<\$3251)
 Advanced (above 75th percentile): if average price is equal or greater than \$3251

8.4.1 Level of Technology Use is Widely Diverged between Different Categories of Enterprises

Sample enterprises are widely diverged in technology use: about 21 per cent of the sample enterprises are well ‘advanced’ in technology use but another 16 per cent of the enterprises are well behind (‘low’) in technology use. A large number of enterprises are using technologies which are in between these two categories. Hence, a majority of enterprises are in transition in technology use in the RMG sector of Bangladesh. Such a diverse state in technology use indicates that the majority of enterprises are in transition in process and product upgrading and way behind in functional upgrading.

Small-scale enterprises lag behind medium and large-scale enterprises in terms of advanced technological usage. In fact, only 4 per cent of the small enterprises categorised as ‘advanced’ compared to 38 per cent of medium and large-scale enterprises. Over 70 per cent of small-scale enterprises are under the category of ‘moderate’ and ‘low’ level of technology use. Lack of technological development of a considerable share of enterprises is likely to adversely affect firm-level productivity and efficiency. Given the ever-changing fashion styles, design, production process, and market competitiveness, enterprises need to focus on technological development on a continuous basis (Yunus and Yamagata, 2012).

8.4.2 Variation in Technology Use between Woven and Knit Enterprises as well as Enterprises of Different Locations

In our sample, woven enterprises outpaced knit enterprises in terms of technology usage (Table 8.12). In fact, woven enterprises were twice as likely to be ‘advanced’ in technology use compared to knit enterprises (29.8 per cent vs. 15 per cent). Likewise, knit enterprises are more likely to be within the categories of ‘moderate’ and ‘low’ level technology. Thus, it is important to examine whether a technologically laggard position would have adverse impacts on the growth of knit enterprises in the long run. Likewise, Narayangonj-based enterprises (mostly knit enterprises) lag behind those of Gazipur and Dhaka-based enterprises (Table 8.13). It is important to examine the reasons behind the geographical use of technology in Narayangonj and Chittagong.

Table 8.12: Level of Technological Development (Type wise)

Factory Type	Technology Level					Total
		Advanced	Moderately High	Moderate	Low	
Knit	Number	14	25	36	18	93
	Percentage	15.05	26.88	38.71	19.35	100
Woven	Number	20	18	21	8	67
	Percentage	29.85	26.87	31.34	11.94	100
Total	Number	34	43	57	26	160
	Percentage	21.25	26.88	35.63	16.25	100

Source: CPD-RMG Survey, 2018

Table 8.13: Level of Technological Development (Location wise)

Location	Technology Level (Row %)					
		Advanced	Moderately High	Moderate	Low	Total
Chittagong	Number	13	16	22	7	58
	Percentage	22.41	27.59	37.93	12.07	100
Greater Dhaka	Number	8	14	11	5	38
	Percentage	21.05	36.84	28.95	13.16	100
Greater Gazipur	Number	12	9	11	5	37
	Percentage	32.43	24.32	29.73	13.51	100
Narayanganj	Number	1	4	13	9	27
	Percentage	3.7	14.81	48.15	33.33	100
Total	Number	34	43	57	26	160
	Percentage	21.25	26.88	35.63	16.25	100

Source: CPD-RMG Survey, 2018

In essence, the size of a firm is considered to be influential factor in determining the level innovation and performance of that particular firm (Yunus and Yagamata, 2012): the larger the firm, the greater likelihood of modern and innovative technology usage with high level of performance (Table 8.14).

Table 8.14: Level of Technological Development (Size wise)

Factory Size	Technology Level					
		Advanced	Moderately High	Moderate	Low	Total
Large	Number	3	5	0	0	8
	Percentage	37.5	62.5	0	0	100
Medium	Number	27	20	22	2	71
	Percentage	38.03	28.17	30.99	2.82	100
Small	Number	4	18	35	24	81
	Percentage	4.94	22.22	43.21	29.63	100
Total	Number	34	43	57	26	160
	Percentage	21.25	26.88	35.63	16.25	100

Source: CPD-RMG Survey, 2018

8.5 Technological Advancement and Its Implications on Workers

Technological advancements have different kinds of implications on the performance of enterprises. One of the major areas of implications is how technological impacts on labour use in the RMG enterprises progress. As discussed, sample RMG enterprises are of different categories in terms of level of technological advancement: about 21 per cent of the enterprises are technologically 'advanced', 27 per cent is technologically 'moderately high', 36 per cent is 'moderate' in technology use and another 16 per cent is 'low' in technology use. Hence, variation in technology use is likely to have diverse impacts on labour use in the sample enterprises. The CPD-RMG study has examined changes in capital-labour ratio over time in the sample enterprises with a view to appreciating the changes in labour use. The data available from the survey includes the intrinsic value of capital, which includes machinery, transport and other capital equipment, and a number of production workers of the sample enterprises. The comparable period is 2012 and 2016.

Table 8.15 shows that there is a decline in the capital-output ratio between 2012 and 2016 in all types of factories. This indicates a shift towards making the production processes more capital-intensive. The decline in the share of capital in terms of use of different levels of technologies indicates that the highest level of decline took place in case of 'advanced' technology using factories (-12.9 per cent) followed by 'moderately high' technology used factories (-5.7 per cent) and the difference between the two are quite significant. In other words, there is a sharp impact on the use of labour per unit of technologies. On the other hand, the reduction of capital-labour ratio is higher in woven enterprises

(-14.4 per cent) compared to that in knit enterprises (-3.1 per cent) which portrays a higher technological upgrading in woven enterprises vis-à-vis knit enterprises. In case of differently sized enterprises, medium and small enterprises have experienced a reduction of capital-labour ratio except for large enterprises. Overall, technological upgrading contributes to a reduction in the use of labour.

Table 8.15: Capital -Labor Ratio in Sample Enterprises

Year	Factory Type		Factory Size			Technology Level			
	Knit	Woven	Large	Medium	Small	Advanced	Moderately High	Moderate	Low
2012	137264.3	192854.3	113298.8	201178.3	130028.7	510601.9	86484.2	70025.89	27900.51
2016	120179.8	81425	204896.4	113104.2	89504.31	248116.3	66897.29	62382.75	23425.56
% change per year	-3.1	-14.4	20.2	-10.9	-7.8	-12.9	-5.7	-2.7	-4.0

Source: CPD-RMG Survey, 2018

Since factories with advanced technologies are likely to be more productive and more efficient compared to other factories, hereby making them more competitive, this decline may not affect the overall demand for labour if the factories continue expanding operations. Table 8.16 shows that all categories of enterprises have experienced higher levels of growth of workers per year, indicating that technological advancement is yet to be considered as labour displacing. However, the growth of workers in factories which experienced a higher level of technological advancement were relatively high compared to that of those of modest level of technological progress. In fact, growth of labour was slow in factories with low levels of technologies.

Table 8.16: Technological Progress and Labour Use in RMG Enterprises: 2012 and 2016

Technology Level	Avg. Labor per factory in 2012	Avg. Labor per factory in 2016	Changes per year
Advanced	1398.78	2048.85	11.6
Moderately High	683.33	968.26	10.4
Moderate	412.68	555.82	8.7
Low	289.3	389.8	8.7

Source: CPD-RMG Survey, 2018

8.6 Efficiency of Sample Enterprises

The CPD-RMG study analysed firm level productivity and efficiency based on the data collected through baseline and high frequency data survey (HFDS). As previously mentioned, a baseline survey was conducted in 226 enterprises of which necessary data for analysis of productivity was found in 136 enterprises. On the other hand, HFDS was conducted in 21 enterprises for a period of 3–5 days on specific lines, collecting time use pattern of all line workers. Based on the data, the study has analysed both the line efficiency of selected enterprises as well as efficiency of individual workers. The main objectives of the study are to: a) analyse the daily trends in worker-level and line-level productivity (as measured by SMV); b) analyse the differences in efficiency due to workers' grade of work, educational attainment, gender and other factors etc.

8.6.1 Data Envelopment Analysis (DEA): Model Specification

The efficiency of RMG enterprises is estimated using Data envelopment analysis (DEA). DEA, a non-parametric frontier analysis, measures the relative efficiency of the data monitoring unit (DMUs) derived from optimising a linear programming using a set of inputs and outputs. Among the different

methods of DEA analysis, we are deploying both CCR⁹² and BCC⁹³ model to estimate the Overall Technical Efficiency (OTE) and Pure Technical Efficiency (PTE) of the 50 different RMG enterprises/DMUs.

CCR-I Model and OTE

The Input-oriented CCR model explains the minimum input required to reach the desired level of output under constant returns to scale (CRS) assumption. This is the best practice frontier for any DMU to perform at the most efficient level. Any DMU that fails to perform at the best practice frontier must have discrepancies in organising and utilising the necessary inputs in the production process. Therefore, the thumb rule for the CCR-I model is to optimise the input requirements at the minimum possible level to achieve the best practice frontier.

$$TE_{CRS}^k = \delta_k^{CCR} - \eta \left(\sum_{r=1}^s S_r^+ + \sum_{i=1}^m S_i^- \right)$$

Subject to,

$$\sum_{j=1}^n \lambda_j x_{ij} + S_i^- = \delta_k^{CCR} x_{ik}$$

$$\sum_{j=1}^n \lambda_j y_{rj} - S_r^+ = y_{rk}$$

$$S_i^-, S_r^+ \geq 0 (i = 1 \dots m; r = 1 \dots s)$$

$$\lambda_j \geq 0, \quad j = 1 \dots n$$

Where, x_{ik} = number of input i used by k^{th} DMU
 y_{rk} = number of output r used by k^{th} DMU

s = number of input

m = number of output

The CCR-I model above represents the technical efficiency score of the k^{th} DMUs under CRS assumption. It provides the result of δ_k^{CCR} , which can be interpreted as the largest contraction of DMU k 's input that can be carried out (Kumar, Gulati, 2008). The first two restrictions are the convex reference sets for inputs and outputs, and the third restriction is the slack that shows the shortfall of either input (S_i^-) or output (S_r^+), which should be adjusted to achieve the desired level of output target. The final restriction ($\lambda_j \geq 0$) assumes that the model depends on the assumption of constant

⁹² CCR model is named after its developers Charnes, Cooper, and Rhodes (1978). The model essentially depends on the assumption of constant returns to scale. In both input-oriented and output-oriented approach, the resultant efficiency score, simply to say—Overall Technical Efficiency (OTE)—tells how well the inputs in the production process are being utilised by the DMUs to produce desired level of outputs.

⁹³ BCC model, on the other hand, is named after its developers Banker, Charnes, and Cooper (1984). It depends on the assumption of variable returns to scale. Unlike the CCR model, the resultant score in BCC model, derived both from input-oriented and output-oriented approach, is known as Pure Technical Efficiency (PTE)—shows the effectiveness of the control of managerial performance over the inputs to be used in the production process.

returns to scale. Any DMU can be said Pareto efficient if it meets the condition that $\delta_k^{CCR} = 1$ and $S_i^- = S_r^+ = 0$.

The efficiency score derived under CRS assumption is known as a measure of overall technical efficiency (OTE), and it helps to determine the inefficiency level, along with efficiency level, due to input/output configuration and size of the operation (Kumar and Gulati, 2008). The range of OTE lies between 0 to 1 ($0 \leq OTE \leq 1$). The DMUs which score 1 are said to be perfectly efficient, meaning that the DMUs are utilising their inputs more properly to produce a targeted output. On the other hand, the DMUs that score less than 1 are considered to be inefficient.

BCC-I Model and PTE

BCC-I model is not an exception to the CCR-I model, except its assumption on returns to scale. The BCC model, irrespective of different orientations, assumes variable returns to scale. The Technical Efficiency score may vary from DMU to DMU depending on the assumption we make about the scale and orientation in which we apply. The resultant efficiency score derived from BCC-I model is termed as Pure Technical Efficiency (PTE).

The input-oriented BCC model is as follows:

$$TE_{VRS}^k = \delta_k^{BCC} - \eta \left(\sum_{r=1}^s S_r^+ + \sum_{i=1}^m S_i^- \right)$$

Subject to,

$$\begin{aligned} \sum_{j=1}^n \lambda_j x_{ij} + S_i^- &= \delta_k^{BCC} x_{ik} \\ \sum_{j=1}^n \lambda_j y_{rj} - S_r^+ &= y_{rk} \\ S_i^-, S_r^+ &\geq 0 (i = 1 \dots m; r = 1 \dots s) \\ \sum_j \lambda_j &= 1 \quad j = 1 \dots n \end{aligned}$$

Similar interpretations will persist for δ_k^{BCC} as it does for δ_k^{CCR} , but with different assumptions. Since the technical efficiency score is always bounded between zero and one, the most efficient DMU must hold efficiency score $\delta_k^{BCC} = 1$. Any DMU that scores less than 1 is considered to be inefficient. The resultant technical efficiency score derived from BCC-I model under VRS assumption is termed as Pure Technical Efficiency (PTE). The measurement indicates the managerial process needs to control the inputs being used in the production process. It provides a priori information on how to improve the efficiency level through managerial capabilities. The Pure Technical Efficient DMU, which has a score of 1, is considered to be more managerially competent to perform better in the production frontier. The lower PTE ($PTE < 1$) score, which is a Pure Technical Inefficiency (PTIE), suggests that the DMU is suffering from incompetent management and should concentrate on reorganisation of managerial activity to handle the right production mix.

Scale Efficiency (SE)

Scale efficiency is a mix of OTE and PTE approaches. It indicates the ability of the management team in deciding the efficient utilisation and allocation of inputs required in the production process to

accrue the desired level of outcome. Scale Efficiency is derived by dividing OTE score resultant from CCR model by PTE score produced by BCC model.

$$Scale\ Efficiency\ (SE) = \frac{OTE}{PTE} = \frac{\delta_k^{CCR}}{\delta_k^{BCC}}$$

Where, δ_k^{CCR} is the technical efficiency score derived from CCR-I model under CRS assumption,
And, δ_k^{BCC} is the technical efficiency score derived from BCC-I model under VRS assumption

Like PTE and OTE score, SE score ranges between zero and one ($0 \leq SE \leq 1$). Here, higher DMUs represent greater efficiency.

Andersen-Petersen Super Efficiency

The Andersen-Petersen Super Efficiency model⁹⁴ is used to rank DMUs according to their respective efficiency scores. The model excludes DMUs under consideration from the reference set (Gulati, 2011; Chen, 2005). Super Efficiency DEA is restricted to constant returns to scale (CRS) because of the infeasibility problem (Chen, 2004).

Unlike the other efficiency measures, super-efficiency scores vary from 0 to infinity ($0 \leq Super\ Efficiency \leq \alpha$), and scores do not coincide. Therefore, it is convenient to rank the DMUs according to their super efficiency score.

For any k^{th} DMU, the CRS Super efficiency score can be obtained by

$$TE_{CRS}^{k,super} = \delta_k^{super} - \varepsilon \left(\sum_{r=1}^s S_r^+ + \sum_{i=1}^m S_i^- \right)$$

Subject to,

$$\begin{aligned} \sum_{j=1, j \neq k}^n \lambda_j x_{ij} + S_i^- &= \delta_k^{super} x_{ik} & i = 1 \dots m \\ \sum_{j=1, j \neq k}^n \lambda_j y_{rj} - S_r^+ &= y_{rk} & r = 1 \dots s \\ S_i^-, S_r^+ &\geq 0 \\ \lambda_j &\geq 0 & j = 1 \dots n; j \neq k \end{aligned}$$

Where, δ_k^{super} indicates the value of super efficiency with higher scores corresponding to greater efficiency.

8.6.2 Specification of Variables

Given the availability of data and restrictions of the model, we have tried to go through the most logical and simplistic way to measure the level of efficiency. However, to meet the objective of the study, we have chosen a set of variables consisting of two inputs; labour employed in production processes and the capital stock it has; and one output- net profit. Apart from using any consistent time period data, we used data for two different years: 2012 & 2016⁹⁵. Running the model with two different periods will allow us to better understand the differential impacts of efficiency levels and

⁹⁴ Super Efficiency DEA model is introduced by Andersen and Petersen in 1993 as an extension of traditional Farrell-based super-efficiency measure.

⁹⁵ The reasoning of taking two different years separately is to realise the changing pattern in terms of upgrading, and profit making in pre (2012) and post (2016) Rana Plaza collapse.

their ranking based on their performance in the interim time period. Therefore, it makes sense to understand the comparable benefit of the time difference accrued from the measures taken for overall compliance assurance and upgrading.

8.6.3 Only Few Enterprises are Technically Efficient in terms of OTE, PTE, and SE

The empirical results presented in Table 8.17 show the level of overall efficiency of sample enterprises. Results revealed that, in 2012, only two factories were overall technically efficient with OTE equal to one, while the rest were technically inefficient. These 48 overall technically inefficient (OTIE) factories are supposed to stay outside of the efficient frontier, depicting that resource allocation and utilisation are not efficient. The efficient factories are often considered as the global leaders or globally efficient factories and set the idyllic benchmarks in the RMG industries (Gulati, 2011).

Table 8.17: Descriptive Statistics of DEA

Statistics	OTE		PTE		SE= (OTE/PTE)	
	2012	2016	2012	2016	2012	2016
	No. of Efficient DMUs	2	3	5	8	2
Mean	0.2589	0.2229	0.4433	0.4782	0.5893	0.4585
Median	0.17285	0.1327	0.3365	0.4253	0.5908	0.3912
Maximum	1	1	1	1	1	1
Minimum	0.0046	0.0223	0.0916	0.0988	0.0148	0.0413
Standard Division	0.2512	0.2559	0.2717	0.2907	0.2871	0.293

Source: CPD-RMG Survey, 2018

In 2016, only three factories were performing at the best practice frontier with an overall technical efficient (OTE) score of one (appendix-1). The first two factories were not technically efficient in 2012, but improvements over time led to greater technical efficiency particularly in terms of inputs' utilisation and allocation. However, resource utilisation in the production process is not satisfactory since both the number of efficient factories (3) and the mean technical efficiency score are quite low (0.22). This indicates a significant amount of wastage in the resource utilisation and allocation, forcing many factories to abstain from the CRS best practice frontier.

Pure Technical Efficiency (PTE) score has distinguishingly varied after applying BCC-I model under VRS assumption. PTE helps realise the managerial capability of DMUs to organise the necessary inputs for its production process. In 2012, 5 factories were found to be efficient, and the rest found inefficient (Table 8.18). The average PTE score is 0.44 and the mean pure technical inefficiency score (PTIE) is 0.56 (1-0.44). PTIE results indicate that most of the factories are suffering from low levels of managerial capability to make out a right approach to the production procedure. In 2016, the number of pure technically efficient factories has increased to 8, with 5 new entrants who were disposed to PTIE in 2012 (appendix-1). Among the 5 efficient factories in 2012, two of them have failed to qualify at the best practice frontier in 2016. Such derailment from efficiency is primarily due to a lack of continuation of effective managerial skills with the production–input utilisation. However, the average PTE score in 2016 is slightly higher (0.47) than in 2012 (0.44), meaning that the overall managerial competence in RMG enterprises has somewhat increased. Interestingly, by observing the efficient factories under VRS assumption, we have found that most possess management scores greater than 50 per cent and as high as 80 per cent. This depicts a strong correlation with factories' enhanced levels of efficiency. Among 5 efficient factories, 4 were found to be small-sized factories. Despite this, factories managed to reach an efficient production frontier due to exposure to better

performance in terms of production timeline and targets, operations management, timely inspection and, revenue targeting etc. On the other hand, the factories outside the efficient frontier are supposed to dispose managerial incompetence in handling the proper production mix and, therefore, must concentrate less on the factors determining the managerial efficiency.

In terms of Scale Efficiency (SE) measurement, most factories are experiencing a deterioration in production scale. This has led to a significant number of inefficient factories within the RMG industry. The score of SE, derived by taking the ratio of OTE and PTE, equals 1 indicates that the factories are operating at Most Productive Scale Size (MPSS) which corresponds to Constant>Returns-to-Scale (Gulati, 2011). Scale Efficiency (SE) helps factories decide the right size and scale of production in order to attain the desired level of output. In 2012, only 2 factories (namely E and AQ) were found to be efficient with an overall average efficiency score of 0.58, with a standard deviation of 0.28. On the other hand, only 3 factories were efficient in 2016, with an average efficiency score of 0.58 and 0.29 standard deviation. The average scale inefficiency level (SIE) score increased by 13 percentage points between 2012 and 2016, from 0.41 to 0.54. This can be traced back to the source of OTIE of the factories. Factories with SE score less than 1 are either disposing to Decreasing Returns-to-Scale (DRS) or Increasing Returns-to-Scale (IRS) respectively.

8.6.4 Interpretation of Super Efficiency Score of RMG Sector

The Andersen-Petersen Super Efficiency model is used to rank DMUs according to their respective efficiency scores. However, a significant level of displacement in ranking is found for the RMG factories. As we can see from Table 8.18, 6 of 10 top-ranked factories in 2012 have been placed, interchangeably, in the first 10 top-ranked factories in 2016. More interestingly, there are two factories ranked 21st and 50th respectively in 2012 that have risen to 5th and 10th positions respectively in 2016. The top 10 factories in 2016 are found quite impressive in organising and managing the inputs to have a desired level of output. Distinguishingly, the factories possessing poor ranks in 2012 are capable of utilising the necessary input to achieve a decent level of efficiency. It is also worth noting that there were only two efficient factories in 2012, with super-efficiency scores between 0.0025 and 1.72; while, in 2016, this number rose to three with super-efficiency scores ranging from 0.021 to 1.82. Therefore we can infer that, the performance or efficiency level of the factories has been improving over time.

Table 8.18: Input-Oriented (CRS) Super Efficiency Score and Ranking

Factory Code	2012		2016	
	Ranking	Score	Ranking	Score
AM	7	0.33681445	1	1.829555938
AD	3	0.89162803	2	1.648410904
AR	2	1.714285714	3	1.484615385
F	1	1.724834535	4	0.706732365
E	21	0.166377471	5	0.55862069
U	4	0.693171029	6	0.515794256
AJ	6	0.383320638	7	0.470683291
M	14	0.232092634	8	0.386071133
R	19	0.1905839	9	0.30148926
B	50	0.002576217	10	0.268794326

Note: This table provides information for only the first 10 top ranked factories in 2016. The whole table is attached in the annexure.

Source: CPD-RMG Survey, 2018

8.7 Total Factor Productivity of Sample Enterprises

8.7.1 Methodological Issues of Total Factor Productivity (TFP) Analysis

The total factor productivity (TFP) refers to the portion of output not explained by inputs such as capital, labor and intermediate inputs used in the production system (Comin and Mulani, 2006; Caves *et al.*, 1982). Alternatively, TFP is a measure of the efficiency of all inputs in a production process (Coelli *et al.*, 2005; Hulten, 2001). It is determined by how efficiently and intensely the inputs are utilised in a production system of a sector or economy. To estimate the total factor of production (TFP) in a production function, it is required to show how inputs, physical capital and labour combine to produce output (Marschak and Andrews, 1994; Comin and Mulani, 2006, WB, 2011). Within the production theory, the exercise of the Constant Elasticity of Substitution (CES) production function, the Cobb-Douglas (CD) and the translog function are largely referred as methodological tools for estimating TFP.⁹⁶

The present study uses the Cobb-Douglas (CD) Production Function to establish TFP. Here, the coefficients obtained from the CD production function can be interpreted as input factor elasticity which represents the responsiveness of output revenue to changes in the levels of each input factor considered in the production function.

The basic or standard Cobb-Douglas production function is defined as follows.

$$Y_{it} = A_{it}K_{it}^{\alpha}L_{it}^{\beta}$$

Where,

Y = total production (the real value of all goods produced in a year), L = labour input (the total number of person-hours worked in a year, K = capital input (the real value of all machinery, equipment, and buildings), A = total factor productivity and α and β are the output elasticities of capital and labour, respectively.

The present study is based on the enterprise level survey data collected from the RMG enterprises of Bangladesh. We have specified the CD production function in the following form.

$$Y_{it} = A_{it}K_{it}^{\alpha}L_{it}^{\beta}M_{it}^{\phi}E_{it}^{\omega}F_{it}^{\mu}$$

Here, we have added three additional variables such as fabrics & accessories (M), energy (E) and electricity (F) along with the capital (K) and total number of labour (L) of the basic CD production function. The Y is considered here as a sales revenue of the firms in a year.

Then, the TFP is estimated as the residual term from this production function once log values of the variables in both sides of the equation are obtained.

$$\log A_{it} = \log Y_{it} - \alpha \log K_{it} - \beta \log L_{it} - \phi \log M_{it} - \omega \log E_{it} - \mu \log F_{it}$$

It is to be noted the total observation of the study is 226 but due to the unavailability of required data from the factory level, a total of 136 observations is considered for the TFP analysis where the distribution of large, medium and small factories are found 5.15, 39.71 and 55.15 percent respectively. In contrast, the distribution of large, medium and small factories is found to be 7.46 per cent, 43.86 per cent and 48.68 per cent respectively for the 226 factories. Hence, to maintain the original proportion of the factory size distribution, the weight of the size distribution of 226 observations are adjusted in 136 observation before the TFP estimation, which increased the goodness of fit of the overall analysis and maintain methodological vigor.

⁹⁶ The Cobb-Douglas Production Function is linked with the CES production function under the assumption of constant substitution of production inputs (Blundell and Bond, 2000; Mundlak and Hoch 1965).

8.7.2 Analysis of TFP and Results

Table 8.19 shows the estimation of different parameters used in the CD production function for the RMG sector of Bangladesh. As all the coefficients are non-negative, a positive causal relationship exists between the explanatory variables and sales revenue. The model estimates capital, fabrics and accessories, and energy are statistically significant at the 1 per cent level, labour is insignificant and electricity is significant at 5 per cent level. Thus, it can be said that, 1 per cent increase in capital, labor, fabrics and accessories, energy and electricity inputs lead to changes in the sales revenue of the RMG enterprises by 0.35 per cent, 0.05 per cent, 0.09 per cent, 0.14 per cent, and 0.16 per cent respectively. Furthermore, the returns to scale (RTS) of the RMG enterprises is estimated at 0.79 which can be termed as a decreasing RTS, meaning inputs lead to a less than proportional increase in output level or sales revenue. One possible reason for this could be lower sales revenue generated from the existing combination and amount of inputs. It can also be said that if the price level does not increase, then an increase in input amount will not offer constant or increasing returns to scale for the RMG enterprises of Bangladesh.

The high R^2 value along with the statistically significant explanatory variables means the model does a good job of predicting our dependent variable.

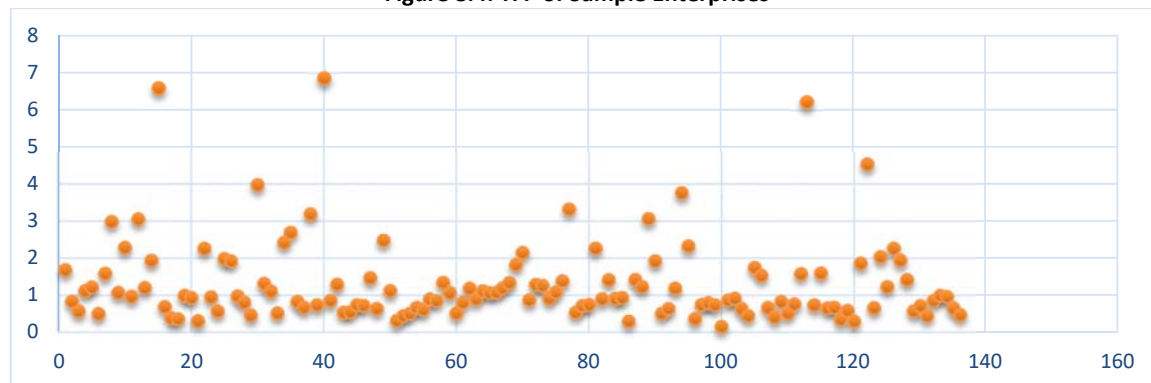
Table 8.19: Estimates of the Cobb-Douglas production (OLS) of the RMG enterprises

Variables	Coefficient	t-ratio	Linearized std. error
Constant	5.79***	4.8	1.207
Capital	0.35***	6.85	0.052
Labor	0.05	0.85	0.063
Fabrics & accessories	0.09***	5.44	0.016
Energy	0.14***	3.01	0.048
Electricity	0.16**	2.54	0.061
R^2	0.80		
Observation	136		

Note: *** significant at 1 % level ($p < 0.01$), ** significant at 5 % level ($p < 0.05$)

The mean TFP value of the RMG enterprises is 1.3 while the maximum and minimum TFP is 6.8 and 0.14 respectively (Figure 8.4). This result can be compared with other apparels producing countries—the mean TFP of the RMG sector in Mexico, Zambia and South Africa is respectively 1.1, 1.1 and 1.05 respectively during 2006-07, (WB, 2011). Furthermore, the mean TFP value in Mexico, Vietnam, Turkey, and Indonesia was 1.2, 1.3, 1.5, and 1.1 respectively during 2006-07 (Seker and Saliola, 2018).

Figure 8.4: TFP of Sample Enterprises

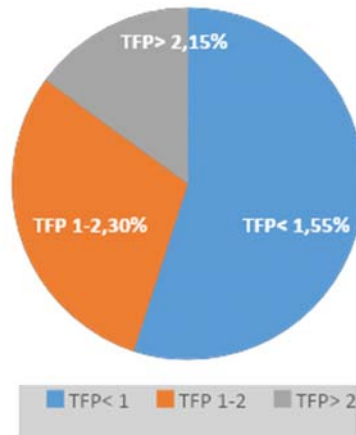


Source: CPD-RMG Survey, 2018

It deserves special mention that, a large number of enterprises are captured with a TFP of less than 1 and only a limited number of enterprises are captured with a TFP greater than 2. In Figure 8.5, the distribution shows that 55 per cent of the enterprises are found to have a TFP of less than 1, 30 per

cent of the enterprises TFP lies between 1-2 and 15 per cent of the enterprises with a TFP above 2. This indicates that a large number of factories in the observation are comparatively inefficient in utilising their inputs in the production process.

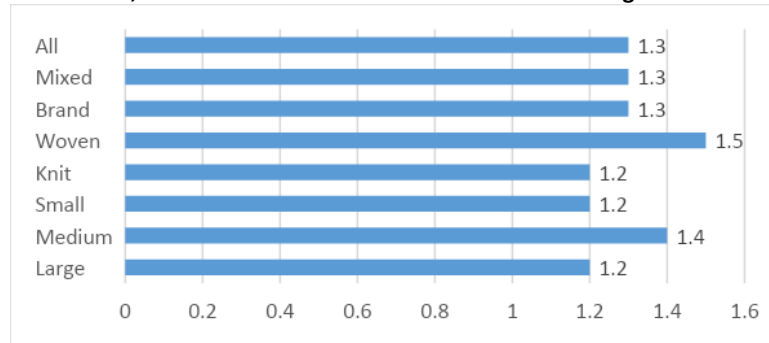
Figure 8.5: TFP Level Wise Enterprise Distribution



Source: CPD-RMG Survey, 2018

In Bangladesh, large and small RMG enterprises have a mean TFP value of 1.15 and 1.2 respectively, while medium-sized enterprises are ahead at 1.4 (Figure 8.6). Fernandes (2008) concludes that large Bangladeshi firms have low TFP due to inefficiencies in coordination, management, and a lack of qualified middle managers. Interestingly, the mean TFP of woven enterprises is 32 per cent higher than that of knit enterprises, whereas, there is no difference in the mean TFP of factories working with brands and those working under contracts of mixed nature. This is perhaps because production processes in factories are not widely varied in different categories of enterprises working under different contractual arrangements.

Figure 8.6: Mean, Maximum and Minimum TFP in Different Categories of Enterprises



Source: CPD-RMG Survey, 2018

8.8 Line and Worker Level Efficiency of Sample Enterprises: HFDS Analysis

As employees in garments factories generally conduct a specific task or operate at a certain stage of the production process, the primary unit for measuring their efficiency is Standard Minute Value or SMV. This helps to determine the operator’s efficiency and the target the operator can achieve in a given hour, day or month. So, a time study sheet has been included with the questionnaire in order to calculate the SMV for each stage of production, as well as the overall SMV for the product under study.

8.8.1 Methodological Issues

Workers' efficiency has been measured by using the following the formula:

$$\text{Efficiency} = (\text{Output} * \text{SMV} * 100) / (\text{No. of worker} * \text{working hour} * 60)$$

Where,

SMV= Basic Time (BT) + Allowance

BT= Observed Time (OT)*Observed Rating (OR)/100

Allowance =15% of BT

OR= (Skill + Effort + Quality + Cons)/4

Cons= 100- ((max-min)/average)*100

The skill, effort, quality and consistency data is used to measure OR in light of Westing–house method of rating [10].

The SMV analysis has been carried out by doing time study of hourly output of sample workers. A total of 2023 workers of 30 enterprises have been considered for this time study. The time study data was collected from sample workers for a period of 2–5 consecutive days for production of same products in two different production lines in sample enterprises. The data of seven-cycle of each operation is taken by a stop watch in a time study sheet by which workers' skill, effort, and quality of output have been measured. In this case, the digital stop watch and time study sheets were used. Besides, a multiple regression analysis has been carried out in order to identify the co-relation between workers' efficiency with different personalised issues, with a view to understanding the influence of those issues on workers' level of efficiency. Workers' personalised issues include nutritional status (as measured by body mass index, a ratio of height and weight of workers), ratio of knee height to height of seat (which determines workers' performance), age, gender, wage level, overtime payments, facilities provided by the factories (such as meals and transportation) and illness etc. Daily data was collected for issues that have daily variation. The rest was collected only on the first day of the survey.

8.8.2 SMV Analysis and Results

Analysis of efficiency data reveals that sample enterprises' line level efficiency is 58.4 percent (or 0.584 with a standard deviation of 0.21) (Table 8.20). This portrays an improvement of line efficiency of RMG enterprises over time, although the efficiency is lower compared to that in Vietnam and China. BGMEA enterprises are more efficient compared to that of BKMEA ones (3.1 per cent more efficient) which indicates their comparative advantage in terms of using technology, better management and other issues. The females are ahead of males in terms of level of efficiency (by about 0.29 per cent) (Table 8.21). In other words, female workers should receive sufficiently higher wages considering their better efficiency level.

Table 8.20: Worker Efficiency Analysis (Type wise)

Organization	N	Mean	Std. Deviation
BGMEA	1437	0.5895	0.2139
BKMEA	586	0.5717	0.21184
Overall	2023	0.5843	0.21341

Source: CPD-RMG HFDS, 2018

Table 8.21: Worker Efficiency Analysis (Sex wise)

Male	511	.5829	.2098
Female	1511	.5846	.2145

Source: CPD-RMG HFDS, 2018

Taking into account different factors contributing to workers' level of efficiency, the present analysis differentiates employees' level of efficiency in terms of their grade, education, work hazard and mode of transport used etc. It is found that upper-grade workers, particularly senior operators, are more efficient than mid and low-skilled workers (operators and assistant operators). However, there is variation in the level of efficiency in case of mid and junior-grade workers (operators and assistant operators) (Table 8.22).

Table 8.22: Efficiency for workers working under different Grades

Type of workers	Sample size	Mean	SD
Senior operators	643	.6092	.197
Operators	366	.5674	.2049
Asst. Operators	433	.5865	.2066
Junior Operators	288	.5520	.2439
Trainees	263	.5821	.2304

Source: CPD-RMG HFDS, 2018

However, workers' level of education and level of efficiency have a positive relationship (Table 8.23). The higher the level of academic attainment, the more workers are efficient. The gap of level of efficiency between workers passed HSC and above with those of workers passed SSC, JEC, PEC and illiterate are 11.4 per cent, 13.9 per cent, 22.7 per cent and 26.2 per cent respectively. In other words, higher educated workforce can contribute more efficiently compared to that of low-educated workforce.

Table 8.23: Workers' Level of Efficiency against Their Educational Qualification

Education	N	Mean	Std. Deviation
Illiterate	125	0.551	0.21164
Class 4	265	0.5606	0.23133
Primary	791	0.5667	0.21398
JSC	705	0.6106	0.20391
SSC	109	0.6215	0.19129
HSC	23	0.6952	0.23883
Graduate	3	0.4233	0.29771
Total	2021	0.5845	0.21346

Source: CPD-RMG HFDS, 2018

The level of efficiency increases if the workplace is free from health hazards such as dust or waste (Table 8.24). The lack of cleanliness is found to be more efficiency reducing among the workplace hazards. Those working in non-hazardous working conditions are 24.6 per cent more efficient, compared to workers in less clean environments, followed by 14.9 per cent and 10.8 per cent respectively more efficient compared to those working in noisy and dusty places. In other words, a hazardous working environment has a direct adverse impact on workers' level of efficiency. Similarly, mode of transport for commuting to the factory is equally important for efficient worker operation (Table 8.25). Employees who could avail factory transport and use rickshaws are found to be more efficient compared to those who commute through other means. The least efficient are those workers who commute by foot or who use boats.

Table 8.24: Workers Level of Efficiency under Different Hazardous Situation

Type of Hazards	N	Mean	Std. Deviation
Dust	145	0.5422	0.22701
Lack of cleanness	59	0.4824	0.18985
Noise	97	0.5229	0.19897
No-hazard	1431	0.6011	0.20735
Total	1732	0.5844	0.21345

Source: CPD-RMG HFDS, 2018

Table 8.25: Workers Level of Efficiency against Their Mode of Transport for Commuting to Workplace

Transport used to commute to factory	N	Mean	Std. Deviation
Bicycle	10	0.419	0.16441
Rickshaw	22	0.7301	0.08428
Public bus	160	0.5983	0.20877
On-foot	1707	0.5806	0.21438
Factory transport	31	0.631	0.164
Using boat	50	0.5794	0.2192
Total	1980	0.5843	0.21369

Source: CPD-RMG HFDS, 2018

The regression analysis indicated that workers' education, use of protective glasses and, non-existence of hazards have significant positive impact on their level of efficiency.

Table 8.26: Factors Affecting Workers' level of Efficiency: Regression Analysis

Dependent variable: efficiency	Standardized Coefficients(Beta)	T statistics	Sig.
(Constant)		9.574	.000
Sex	-.043	-1.560	.119
Breakfast	-.030	-1.056	.291
F. sick	-.020	-.689	.491
Last night sleep	-.028	-1.048	.295
Menstrual cycle	.006	.230	.818
Locating mother	-.038	-1.382	.167
Education	.113	4.119	.000
Grade	-.005	-.169	.866
P. Glass	-.069	-2.417	.016
Hazard	.054	1.943	.052
Chronic	.011	.384	.701
coworker	-.002	-.069	.945
Transport	-.019	-.610	.542

Source: CPD-RMG HFDS, 2018

Annex

Annex 8.1: Efficiency Analysis

DMUs/ Factories	OTE		PTE		SE= (OTE/PTE)	
	2012	2016	2012	2016	2012	2016
A	0.3744	0.0946	0.3762	0.1336	0.995215	0.708084
B	0.0046	0.2862	0.3107	0.5447	0.014805	0.525427
C	0.1466	0.1747	0.2793	0.5234	0.524884	0.333779
D	0.1061	0.1336	0.2069	0.4167	0.512808	0.320614
E	0.1726	0.6674	0.6905	1	0.249964	0.6674
F	1	0.7205	1	1	1	0.7205
G	0.1012	0.0522	0.1499	0.197	0.675117	0.264975
H	0.1337	0.0541	0.1676	0.1915	0.797733	0.282507
I	0.0526	0.0413	1	1	0.0526	0.0413
J	0.1728	0.2516	0.2266	0.3215	0.762577	0.782582
K	0.1207	0.0817	0.6075	0.6874	0.198683	0.118854
L	0.0677	0.1441	0.2144	0.4423	0.315765	0.325797
M	0.2595	0.3911	0.547	0.6928	0.474406	0.564521
N	0.1161	0.0996	0.1958	0.1589	0.592952	0.626809
O	0.0475	0.0706	0.0916	0.1697	0.518559	0.416028
P	0.3357	0.2069	0.6086	0.5343	0.551594	0.387236
Q	0.096	0.0711	0.5125	1	0.187317	0.0711
R	0.2196	0.3093	0.2723	0.3404	0.806463	0.908637
S	0.1743	0.1163	0.3931	0.3434	0.443399	0.338672
T	0.1269	0.1449	0.2054	0.2971	0.617819	0.487715
U	0.9735	0.5522	1	0.6602	0.9735	0.836413
V	0.2391	0.2127	0.7815	0.5879	0.30595	0.361796
W	0.1461	0.0394	0.4486	0.7417	0.32568	0.053121
X	0.1259	0.2477	0.3172	0.4389	0.39691	0.564365
Y	0.1672	0.0485	0.2484	0.1477	0.673108	0.328368
Z	0.1387	0.0756	0.298	0.502	0.465436	0.150598
AA	0.2568	0.0294	0.3308	0.2578	0.7763	0.114042
AB	0.2853	0.1468	0.3422	0.2182	0.833723	0.672777
AC	0.07	0.1466	0.531	0.1635	0.131827	0.896636
AD	0.9478	1	0.999	1	0.948749	1
AE	0.2664	0.1661	0.2929	0.2839	0.909525	0.585065
AF	0.1729	0.0223	0.1999	0.1186	0.864932	0.188027
AG	0.074	0.1239	0.1753	0.3136	0.422133	0.395089
AH	0.1226	0.1994	0.1989	0.2832	0.61639	0.704096
AI	0.1802	0.0545	0.2188	0.2591	0.823583	0.210343
AJ	0.5405	0.6033	0.5449	0.7359	0.991925	0.819812
AK	0.316	0.1619	0.4878	0.4023	0.647806	0.402436
AL	0.0841	0.0729	0.5259	0.5751	0.159916	0.126761
AM	0.6588	1	0.6646	1	0.991273	1

AN	0.3215	0.103	0.7823	1	0.410968	0.103
AO	0.0567	0.0527	0.2579	0.3468	0.219853	0.151961
AP	0.0935	0.0964	0.1028	0.0988	0.909533	0.975709
AQ	0.2704	0.0992	0.4593	0.4339	0.588722	0.228624
AR	1	1	1	1	1	1
AS	0.2335	0.0258	0.3034	0.2306	0.769611	0.111882
AT	0.5121	0.2065	0.5273	0.2299	0.971174	0.898217
AU	0.2497	0.3174	1	0.6344	0.2497	0.500315
AV	0.3591	0.1318	0.6424	0.4874	0.558998	0.270414
AW	0.1839	0.029	0.1987	0.1038	0.925516	0.279383
AX	0.0721	0.0676	0.2315	0.6603	0.311447	0.102378

Note: The scores with value 1 are the efficient factories

Source: CPD-RMG Survey, 2018

Appendix 8.2: Efficiency Analysis

DMUs/ Factories	Input-Oriented CRS Super Efficiency in 2012		Input-Oriented CRS Super Efficiency in 2016	
	Score	Rank	Score	Rank
A	0.303454703	8	0.088033808	31
B	0.002576217	50	0.268794326	10
C	0.121779053	29	0.166679446	17
D	0.097723705	36	0.127354839	23
E	0.166377471	21	0.55862069	5
F	1.724834535	1	0.706732365	4
G	0.080437109	41	0.048230137	42
H	0.087203656	39	0.045139059	44
I	0.048871243	47	0.039854701	45
J	0.146233054	25	0.233817335	13
K	0.104850216	34	0.069991223	35
L	0.054769554	45	0.138451025	20
M	0.232092634	14	0.386071133	8
N	0.114615766	31	0.095202806	30
O	0.037673005	48	0.059356223	39
P	0.17237337	20	0.11724307	25
Q	0.083167989	40	0.069893843	36
R	0.1905839	19	0.30148926	9
S	0.140359954	28	0.10992419	28
T	0.09995146	35	0.136605562	21
U	0.693171029	4	0.515794256	6
V	0.233656003	13	0.177261905	16
W	0.120149998	30	0.033532468	46
X	0.095150063	37	0.240870184	12
Y	0.141566003	27	0.047216412	43
Z	0.110473912	32	0.070608948	34
AA	0.220357908	15	0.028376139	48
AB	0.269168923	10	0.146092732	19
AC	0.065496172	43	0.136595753	22
AD	0.89162803	3	1.648410904	2
AE	0.145909525	26	0.115580189	26

DMUs/ Factories	Input-Oriented CRS Super Efficiency in 2012		Input-Oriented CRS Super Efficiency in 2016	
	Score	Rank	Score	Rank
AF	0.161854768	22	0.020784191	50
AG	0.065120095	44	0.1116375	27
AH	0.106548626	33	0.185152122	15
AI	0.161158485	23	0.050573838	40
AJ	0.383320638	6	0.470683291	7
AK	0.256493449	12	0.158785027	18
AL	0.068697795	42	0.062480418	38
AM	0.33681445	7	1.829555938	1
AN	0.265712528	11	0.102668025	29
AO	0.033732249	49	0.049113582	41
AP	0.092714948	38	0.084822237	33
AQ	0.218572408	16	0.086512524	32
AR	1.714285714	2	1.484615385	3
AS	0.199028014	18	0.024771703	49
AT	0.442006357	5	0.198851427	14
AU	0.200191327	17	0.264261654	11
AV	0.285619019	9	0.118190553	24
AW	0.150226211	24	0.028799856	47
AX	0.049355937	46	0.063856282	37

Source: CPD-RMG Survey, 2018

Reference

DEA References

1. Ahmed, S., Ahmad, F. B., & Joarder, M. H. R. (2016). HRM practices-engagement-performance relationships: A conceptual framework for RMG sector in developing economy. *Mediterranean Journal of Social Sciences*, 7(4), 87.
2. Akinyele, S. T. (2007). A critical assessment of environmental impact on workers' productivity in Nigeria. *Research Journal on Business Management*, 1(1), 50-61.
3. Al Mamun, A. Impacts of Compliance Issue on the Cost of Making and FOB Price of Bangladeshi Knit Products
4. Andersen, P., & Petersen, N. C. (1993). A procedure for ranking efficient units in data envelopment analysis. *Management science*, 39(10), 1261-1264.
5. Appelbaum, E. and Schettkat, R. (1995), 'Employment and Productivity in Industrialized Economies'. *International Labor Review*, Vol.: 134, No. 4-5
6. Asmild, M. et al. (2007) "Measuring overall efficiency and effectiveness using DEA", *European Journal of Operational Research*, 178(1): 305-321
7. Autor, D. H, Kerr, W. R, and Kugler, A. D. (2007), 'Does Employment Protection Reduce

8. Banerjee, A. & Munshi, K (2004), "How Efficiently is Capital Allocated? Evidence from the Knitted Garment Industry in Tirupur." *The Review of Economic Studies*, 71 (1), pp. 19–42.
9. Banker R.D. (1984). "Some Models for Estimating Technical and Scale Inefficiencies in Data Envelopment Analysis". *Management Science*. 30: 1078–1092.
10. Banker, R.D, Charnes, A. and Cooper, W.W. (1984), 'Some Models for Estimating Technical and Scale Inefficiencies in Data Envelopment Analysis'. *Management Science*, Vol. 30, No. 9. Pp. 1078-1092
11. Bhattacharya, D., Rahman, M., & Raihan, A. (2002). Contribution of the RMG Sector to the Bangladesh Economy. CPD Occasional Paper Series, 50(6).
12. Blundell, R. and S. Bond. 2000. "GMM estimation with persistent panel data: an application to production functions" *Econometric Reviews* 19: pp.321-340.
13. Bogetoft, P., & Hougaard, J. L. (2004). Super efficiency evaluations based on potential slack. *European Journal of Operational Research*, 152(1), 14-21.
14. Boutellier, Roman, et al. "Management of dispersed product development teams: The role of information technologies." *R&D Management* 28.1 (1998): 13-25.
15. Brandt, L. Biesebroeck, J. V. and Zhang, Y. (2012), 'Creative accounting or creative destruction? Firm-level productivity growth in Chinese manufacturing', In *Journal of Development Economics*, Volume 97, Issue 2, Pages 339-351, ISSN 0304-3878,
16. Broderick, Renae, and John W. Boudreau. "Human resource management, information technology, and the competitive edge." *The Executive* 6.2 (1992): 7-17.
17. Carneiro, Alberto. "How does knowledge management influence innovation and competitiveness?" *Journal of knowledge management* 4.2 (2000): 87-98.
18. Caves, D. W., Christensen, L. R., Diewert, W. E. 1982. Multilateral Comparisons of Output, Input, and Productivity Using Superlative Index Numbers". *Economic Journal*. 92 (365): 73–86, doi: 10.2307/2232257.
19. Caves, R. E. and D. R Barton (1990). *Efficiency in U.S. Manufacturing Industries*. Cambridge: MIT Press
20. Charnes A. (1978). "Measuring the efficiency of decision-making units" (PDF). *European Journal of Operational Research*. 2: 429–444.
21. Charnes, A., Cooper, W.W. and Rhodes, E. (1978), "Measuring the efficiency of decision making units", *European Journal of Operational Research*, 2(6): 429-444
22. Chen, Y. (2004). Ranking efficient units in DEA. *Omega*, 32(3), 213-219.
23. Chen, Y. (2005). Measuring super-efficiency in DEA in the presence of infeasibility. *European Journal of Operational Research*, 161(2), 545-551.
24. Cheng, Joseph LC, and Douglas S. Bolon (1993). "The management of multinational R&D: a neglected topic in international business research." *Journal of International Business Studies*: 1-18.
25. Coelli, T.J., Rao, D.S.P., O'Donnell, C.J., Battese, G.E. (2005). *An Introduction to Efficiency and Productivity Analysis*, Second Edition, Springer.
26. Comin, D. and S. Mulani. (2006). A Theory of Growth and Volatility at the Aggregate and Firm Level, NBER Working Paper # 11503.
27. Cook, W.D. et al. (2010) "Measuring performance of two-stage network structures by DEA: a review and future perspective." *Omega*, 38(6):423–430
28. Cook, W.D., Tone, K., and Zhu, J., (2014), *Data envelopment analysis: Prior to choosing a model*, OMEGA, Vol. 44, 1-4.
29. Davinder Singh, J.S. Khamba, Tarun Nanda, (2017) "Influence of technological innovation on performance of small manufacturing companies", *International Journal of Productivity and Performance Management*, Vol. 66 Issue: 7, pp.838-856
30. Essien, E. A. and Bello, Y. A. (2007), 'Technical Efficiency of Small and Medium Scale Industries (Smi) In Nigeria: Evidence from Nation-Wide Sample Survey'. *Studia Universitatis Babes-Bolyai*, Issue-2, pp. 39-69

31. Fan, S (1991), "Effects of Technological Change and Institutional Reform on Production Growth in Chinese Agriculture". *American Journal of Agricultural Economics*, 73 (2), pp. 266–275
32. Farrell, M. J. (1957), 'The measurement of Productive Efficiency'. *J. Roy. Statist. Soc. Ser. A*, 120, pp. 253-290
33. Fernandes, A. M. 2008. Firm level productivity in Bangladesh manufacturing industries, background paper prepared for Bangladesh: strategy for growth and employment, WB.
34. Greene, W. H. (1993). "The Econometric Approach to Efficiency Analysis." In H. O. Fried, C. A. K. Lovell, and S. S. Schmidt (eds.), *The Measurement of Productive Efficiency: Techniques and Applications*. Oxford: Oxford University Press, pp. 68–119
35. Gulati, R. (2011, February). Evaluation of technical, pure technical and scale efficiencies of Indian banks: An analysis from cross-sectional perspective. In *The 13th Annual Conference on Money and Finance in the Indian Economy*. Mumbai: Indira Gandhi Institute of Development Research. (pp. 1-31).
36. Hasan, KM Faridul, et al. "Role of Textile and Clothing Industries in the Growth and Development of Trade & Business Strategies of Bangladesh in the Global Economy." *International Journal of Textile Science* 5.3 (2016): 39-48.
37. Heshmati, A. (2003), Productivity Growth, Efficiency and Outsourcing in Manufacturing and Service Industries. *Journal of Economic Surveys*, 17: 79–112.
38. Hill, H. & Kalirajan, K. P. (2006,) "Small enterprise and firm-level technical efficiency in the Indonesian garment industry", *Applied Economics*, 25 (9), pp.1137-1144,
39. Hulten, C. R. Total Factor Productivity: A Short Biography. 2001. NBER Working Paper No. 7471.
40. Huselid, M. A. (1995), 'The Impact of Human Resource Management Practices on Turnover, Productivity, And Corporate Financial Performance', *Academy of Management journal* Vol 3B. No. 3. B35-672.
41. Ikram, A., & Su, Q. (2015). Determinants of Productivity in the Ready-made Garments SMEs of Lahore, Pakistan. In *Proceedings of the 5th International Asia Conference on Industrial Engineering and Management Innovation (IEMI2014)* (pp. 81-86). Atlantis Press, Paris.
42. Islam, M. A., Bagum, M. N., & Rashed, C. A. A. (2012). Operational Disturbances and Their Impact on the Manufacturing Business-An Empirical Study in the RMG Sector of Bangladesh. *International Journal of Research in Management & Technology*, 2(2), 184-191.
43. Islam, M. M., & Adnan, A. T. M. (2016). Improving Ready-Made Garment Productivity by Changing Worker Attitude. *European Scientific Journal*, ESJ, 12(4).
44. Joshi, R. N. & Singh, S.P. (2010) "Estimation of total factor productivity in the Indian garment industry", *Journal of Fashion Marketing and Management: An International Journal*, 14 (1), pp.145-160
44. Kelegama, S. (2005). Impact of the MFA Expiry on Sri Lanka. *South Asia after the Quota System: Impact of the MFA Phase-out*, 89-98.
45. Khan, M. (2008). Technological Upgrading in Bangladeshi Manufacturing: Governance Constraints and Policy Responses in the Ready-Made Garments Industry.
46. Khayyat N. T and Lee, J. D. (2015), A measure of technological capabilities for developing countries, In *Technological Forecasting and Social Change*, 92, pp. 210-223,
47. Kumar, S., & Gulati, R. (2008). Evaluation of technical efficiency and ranking of public sector banks in India: An analysis from cross-sectional perspective. *International journal of productivity and performance management*, 57(7), 540-568.
48. Kumbhakar, S. C. and L. Hjalmarsson. (1993). "Technical Efficiency and Technical Progress in Swedish Dairy Farms." In H. O. Fried, C. A. K. Lovell, and S. S. Schmidt (eds.), *The Measurement of Productive Efficiency: Techniques and Applications*. Oxford: Oxford University Press, pp. 256–270

49. Leblebici, D. (2012). Impact of workplace quality on employee's productivity: case study of a bank in Turkey. *Journal of Business Economics and Finance*, 1(1), 38-49.
50. Löfsten, Hans, and Peter Lindelöf. "Science Parks and the growth of new technology-based firms—academic-industry links, innovation and markets." *Research policy* 31.6 (2002): 859-876.
51. Lopez, X.L.F (2015), 'From the Boom to the Collapse: a Technical Efficiency Analysis of the Spanish Construction Industry during the Financial Crisis', *Construction Economics and Building*, 15(1), 104-117
52. Lopez-Acevedo, Gladys; Robertson, Raymond. 2016. *Stitches to Riches? : Apparel Employment, Trade, and Economic Development in South Asia. Directions in Development--Poverty;*. Washington, DC: World Bank. © World Bank. <https://openknowledge.worldbank.org/handle/10986/23961> License: CC BY 3.0 IGO."
53. Mahamat Hamit-Haggar, (2011) "TFP growth, technological progress and efficiencies change: Empirical evidence from Canadian manufacturing industries", *International Journal of Productivity and Performance Management*, Vol. 60 Issue: 4, pp.360-371
54. Margono, H., & Sharma, S. C. (2006). "Efficiency and productivity analyses of Indonesian manufacturing industries". *Journal of Asian Economics*, 17(6), 979-995.
55. Marschak, J. and Andrews, W. 1944. Random Simultaneous Equations and the Theory of Production, *Econometrica*, Vol. 12, pp. 143-205.
56. Martand .Telsang, *Industrial Engineering and Production Management*, S. Chand & Company Ltd, 1st edition 1998LTD ISBN; 81-219-1773-5, PP: 79.
57. Maskell, Peter, and Anders Malmberg. "The Competitiveness of Firms and Regions: 'Ubiquitification'and the Importance of Localized Learning." *European Urban and Regional Studies*6.1 (1999): 9-25.
58. Minian, I., Martínez, Á. & Ibáñez, J. *Technological Change and the Relocation of the Apparel Industry*.
59. Mitra, A, Varoudakis, A and Varoudakis, M.A. V (2002), "Productivity and Technical Efficiency in Indian States' Manufacturing: The Role of Infrastructure", *Economic Development and Cultural Change* 50:2, 395-426
60. Moazzem, K. G. (2014). 4. Transformation of the export-oriented, ready-made garment sector of Bangladesh: changes, challenges and the future outlook. In 'enhancing productivity in Bangladesh's garment sector,' edited by Dirk Willem te Velde.
61. Mundlak, Y. and Hoch, I. 1965. Consequences of alternative specifications of Cobb-Douglas production functions, *Econometrica*, 33, 814-828.
62. Naor, M. et al. (2008). "The Role of Culture as Driver of Quality Management and Performance: Infrastructure versus Core Quality Practices" *Decision Sciences*, 39: 671–702.
63. Nishimizu, M. and J. M. Page, Jr. (1982). "Total Factor Productivity Growth, Technological Progress and Technical Efficiency Change." *Economic Journal* 92, 920–36
64. Nishimizu, M., & Page, J. (1982). Total Factor Productivity Growth, Technological Progress and Technical Efficiency Change: Dimensions of Productivity Change in Yugoslavia, 1965-78.
65. Olley, G. S. and Pakes, A. (1996), 'The Dynamics of Productivity in the telecommunications Equipment Industry'. *Econometrica*, Vol. 64, No. 6, pp. 11263-1297
66. Opperman, C. S. (2002). *Tropical business issues*. Partner Price Water House Coopers.
67. Piva, M., Santarelli, E., & Vivarelli, M. (2005). "The skill bias effect of technological and organizational change: Evidence and policy implications". *Research Policy*, 34(2), 141-157.
68. Productivity? Evidence From Us States', *The Economic Journal*, 117 (June), F189–F217
69. Saha, P., & Mazumder, S. (2015). Impact of Working Environment on Less Productivity in RMG Industries: A Study on Bangladesh RMG Sector. *Global Journal of Management and Business Research*.

70. Saiful Islam, M & Abdur Rakib, Md & Adnan, Atm. (2016). Ready-Made Garments Sector of Bangladesh: Its Contribution and Challenges towards Development *. *Journal of Asian Development Studies (JADS)*.
71. Seker, M. and Saliola, F. 2018. A cross-country analysis of total factor productivity using micro-level data, *Central Bank Review*, Vol. 18 (1).
72. Shafiqul, I. (2014). Informal Labor Incentives and Firm Performance: A Case Study of RMG Industry in Bangladesh. *International Business and Management*, 8(2), 19-27.
73. Sight, Ş. and E. Taymaz. (1995). Privatization and Technical Efficiency: The Case of Turkish Cement Industry (in Turkish), paper presented at the 4th Conference of Turkish Social Science Association, Nov. 1–3, Ankara.
74. Sun, C.-H. (2005), Productivity growth in East Asian manufacturing: a fading miracle or measurement problem?. *J. Int. Dev.*, 17: 1–19.
75. Taiwo, A. S. (2010). The influence of work environment on workers' productivity: A case of selected oil and gas industry in Lagos, Nigeria. *African Journal of Business Management*, 4(3), 299.
76. TANG, X. Comparing Technological Innovation of Textile Industries in India and China.
77. Taymaz, E., & Saatci, G. (1997). Technical change and efficiency in Turkish manufacturing industries. *Journal of Productivity Analysis*, 8(4), 461-475.
78. Torii, A. (1992). "Technical Efficiency in Japanese Industries." In R. E. Caves (ed.), *Industrial Efficiency in Six Nations*. Cambridge: MIT Press, pp. 31–119
79. Volume 21, Issue 2, October 1995, Pages 207-229
80. Wadje, P. R., and Doshi, M. J. (2008). Technical Progress & Structural Changes in Textile Industry. *Indian Textile Journal*. <http://www.indiantextilejournal.com/articles/FAdetails.asp?id=1136last> Accessed: 28-01-2018
81. Wadud, I.K.M. M. (2007), Sources Of Productivity Growth In Australian Textile And Clothing Firms*. *Australian Economic Papers*, 46: 254–281
82. Wilson, P. (1995) "Detecting influential observations in data envelopment analysis". *Journal of Productivity Analysis*, 6:27–45
83. World Bank (WB). 2011. Enterprise Note Series: Total Factor Productivity Across the Developing World, Enterprise Note No. 23.
84. WU, Y (1995), "Productivity Growth, Technological Progress, and Technical Efficiency Change in China: A Three-Sector Analysis". *Journal of Comparative Economics*
85. Yunus, M., & Yamagata, T. (2012). The garment industry in Bangladesh. *Dynamics of the Garment Industry in Low-Income Countries: Experience of Asia and Africa (Interim Report)*. Chousakenkyu Houkokusho, IDE-JETRO.

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86. R. Shumon M.R.H, "Productivity Improvement through line balancing in apparel industry," in *International Conference on Industrial Engineering and Operations management*, Dhaka, 2010.
87. D. A. Berg, "Bangladesh ready-made garment landscape: The challenge of Growth," *McKinsey & Company*, Frankfurt, 2014.
88. Ovi, "Dhaka Tribune," *Dhaka Tribune*, 2017 August 2017. [Online]. Available: www.dhakatribune.com/business/2017/08/bangladesh-sustained-604-share-global-clothing. [Accessed 5 July 2018].
89. M. Telsang, "Productivity," in *Industrial Engineering and Production Management*, New Delhi, S.Chand & Company, 2011, pp. 13-25.
90. M. Telsang, "Work measurement," in *Industrial Engineering and Production Management*, Delhi, S.Chand & Company Ltd, 2011, pp. 69-70.

91. P. Sarker, "How to calculate Operator Efficiency at work?," Online Clothing Study, [Online]. Available: <https://www.onlineclothingstudy.com/2011/09/how-to-calculate-operator-efficiency.html>. [Accessed 27 2018].
92. R.cell, "Bgmea B2B Web portal," Bangladesh Garment manufacturer and Exporter association, 18 February 2018. [Online]. Available: www.bgmea.com.bd/home/pages/tradeinformation. [Accessed 5 July 2018].
93. S. Mozumdar, Productivity Improvement in readymade garment industry-A case study, Dhaka: MSc Engineering thesis, IPE, BUET, 2014.
94. W. J.stevenson, "Operations management," in Work Design and Measurement, New York, McGraw-Hill, 2015, pp. 306-310.

C. Social Upgrading in Apparel Enterprises and Its Implications

9. Decent Work in Sample Enterprises in Post-Rana Plaza Period: Implications on Social and Economic Upgrading

9.1 Introduction

Decent work in industrial enterprises implies adequate employment opportunities, safety at the workplace, decent wages and living and workers' rights. Bangladesh's RMG enterprises have been discretely working on different components of decent work over the last decade. However, there is a demand for implementing a comprehensive decent work agenda for the RMG sector of Bangladesh. During the post-Rana Plaza period, a significant number of activities have been carried out targeting workplace safety, workers' wages and workers' rights. These include among others, amendment of laws, introduction of labour rules, updating national standards for compliance, monitoring and inspection by buyer-led private agencies under the MoLE, revising minimum wages, introducing election-based workers' participation committees (WPC) at the enterprise level, and setting standard operating procedures for registration of trade union etc. Such changes have been carried out to ensure social upgrading in RMG enterprises. This chapter examined the dynamics and changes in decent work environment in the RMG sector in recent years and tried to associate those changes with institutional, regulatory and operational measures undertaken during the post-Rana Plaza period.

9.2 Literature Review on Decent Work in the Manufacturing Enterprises

9.2.1 Key Elements of Decent Work

The International Labour Organisation (ILO) identifies ten substantive elements which are linked with the four pillars of decent work (ILO, 2011). These ten elements include employment opportunities, adequate earnings and productive work, decent working time, combining work, family and personal life, stability and security of work, equal opportunity and treatment in employment, safe work programmes, social security and social dialogue, and employers' and workers' representation. Each of these elements combines multidimensional issues. In other words, ensuring decent work standards requires these criteria are fulfilled.

9.2.2 Working Conditions: Working Hours and Its Implications on Workers' Productivity

There have been many studies on the effects of long working hours on productivity. Most studies find that long hours of work negatively affect the productivity of workers. The effects can be both short-term and long-term. However, Caruso (2006) highlights the complexity of the factors involved in influencing the outcomes of working long hours, such as the characteristics of the worker and the job. This includes timing of work/schedule, and non-work responsibilities.

ILO (2013) suggests that the extent to which workers have the power to influence their working hours is significant in determining its effect on work performance. Beckers *et al.* (2008) differentiate between voluntary and involuntary overtime, and found that involuntary overtime has more negative effects. The argument that flexible working conditions create potential benefits for employers has been developed theoretically. Bradley, Royer and Eckardt (2008) analyse the literature on work-life balance (WLB) and strategic HRM and suggest a link between WLB, supportive organisational cultures and firms' competitive advantage. Others simply assume that this case is established.

9.2.3 Minimum Wage

To improve social upgrading levels, countries sometimes opt for minimum wages, and ILO (2016), in its minimum wage policy guide, suggests that minimum wages can contribute to higher labour productivity. In fact, a large number of studies examining 'efficiency wage' theories suggest that the effect of minimum wages on workers' motivation has been found to be positive. For example, Georgiadis (as cited in ILO, 2016) found that the national minimum wage operated as a kind of 'efficiency wage' in selected sectors; Owens and Kagel (as cited in ILO, 2016) found a positive

association between minimum wages and workers' efforts. Minimum wages can also lead to increased efficiency levels at the enterprise and the sectoral levels (ILO, 2016).

However, the impact of minimum wage is not yet a settled issue. There is also sizable evidence of labour-substitution—a rise in the minimum wage prompts employers to hire a more skilled workforce. This impacts the least-skilled workers more adversely than might be indicated by a standard employment study. According to USAID (2005), increases in labour productivity allow wages to rise because firms become more cost-efficient. In this respect, increasing labour productivity not only helps in improving a firm's competitiveness, it is widely acknowledged as the key to improving the well-being of workers and their families. Thus, increasing productivity and wages eventually leads to rising living standards.

According to UNICEF (2015), the wages in Bangladesh's RMG sector are widely considered to be inadequate to allow workers and their families to enjoy a good standard of living. The study further states that regardless of an increase in wages in 2013, the gap between legal minimum wage and a sufficient living wage is the highest in the world within Bangladesh's RMG sector.

9.2.4 Working Conditions

The relationship between working conditions and participation in GVCs is a highly debated issue. While GVCs (GVCs) are seen to generate employment in some cases, the conditions of work generally remain poor, especially in the apparel sector (Pickles, 2012). Williams *et al.* (2015) suggest that complex subcontracting structures along GVCs limit the power of multinational corporations to enforce corporate codes related to better working conditions on manufacturers working at lower levels of the value chain. Modern human resource (HR) practices are generally not followed by firms because of 'information failures', 'switching costs' or a 'prisoner's dilemma-like coordination failure'. (Brown *et al.*, 2011). In fact, the analysis of Brown *et al.* (2013) suggests that poor working conditions come as a consequence of firms' optimising behaviour. Some researchers even suggest that sweatshop conditions constitute a necessary stage of economic development. They also suggest that firms' decision to become non-compliant depends primarily on adjustment costs, combined with the uncertainty of outcomes.

Workers in garments factories are generally from quite impoverished backgrounds. According to a C&A Foundation study (2018), only 33 per cent has completed primary education, 19 per cent has completed junior-secondary education, and 15 per cent are either illiterate or can only write their names. Consequently, they are not empowered and are not eligible for many other jobs. Thus, they fear that initiating discussions to improve their working environment or raising their wage levels could potentially lead to job loss and further poverty. Workers fear retaliation if they ask the management for better health coverage or safety.

9.2.5 Job Security

Mariani *et al.* (2013) have posited that some of the major reasons workers do not have job security are: 1) the absence of a signed and legally binding contract between the employers and employees, and 2) lack of having workers' ID, which carries proof of workers' expertise and allows them to attain employment more easily in other firms.

Middle and top-management harass workers to control them in order to maintain the firm's efficiency. This ranges from verbal to physical abuse. The relationship between the management and subordinates is similar to that of a patron and client, and thus there does not exist a clear line of communication for the workers to express their opinions or open dialogue regarding the negative practices (Mariani *et al.*, 2013). Workers have reported experiencing or witnessing harassment in their factory several times. Verbal abuse is the most common type of harassment. Most of the workers are not in trade unions either because their factory does not have one or they fear retaliation for joining the union (C&A Foundation, 2018).

9.2.6 Workplace Safety and Health

Violating occupational safety and health codes have led to many accidents (Majumdar, 2002). Many lives have been lost because factory owners disregard maintaining proper safety codes and standards. The C&A Foundation study (2018) has found that only 44 per cent of workers reported feeling safe in their factories at all times, and 6 per cent reported that they never felt safe. While most factories do provide clearly-marked emergency exits, many workers are not confident that they will be able to use the exits properly during an emergency. Around 40 per cent of workers have reported to have seen a fire break out in their factories at some point in their employment. Even though most factories have installed a fire-detection system, they might not be effective depending on whether they operate automatically or manually.

On matters of health, Koopmanschap *et al.* (as cited in Hafner *et al.*) suggest that generally ‘ill health’ is measured using ‘absenteeism’—a measure of the days absent at work, and ‘presenteeism’—a measure of ‘reduced productivity while at work’. Both are strongly influenced by workplace policies on sick pay, job stability, job role and workplace environment. Also, both absenteeism and presenteeism have effects on workers’ health. This, in turn, affects the productivity of the firm. Thus, investment in occupational health and safety (OSH) should increase productivity.

ILO (2013) provides some theoretical views on establishing this ‘business case’ for higher levels of OSH. It suggests that according to ‘the most extreme and reductionist version of neoclassical economics’, conflict of interest between employers and employees forces the employer to minimise costs. This restricts them from investing in good working conditions, which the ILO (2013) labels as the ‘common-sense’ model. Another view is the resource-based view (RBV). This considers an enterprise as a bundle of tangible and intangible assets. Better financial performance can be achieved if resources are valuable, rare, difficult to imitate and non-substitutable. Based on this, Croucher *et al.* (2013) suggest that the management should treat its employees like valuable assets and invest in training and development to gain better financial performance. There is also the ‘implicit gift-exchange’ view (Akerlof, 1982), where exchange is based on reciprocity and trust, and relations are endogenously determined. ILO (2013) suggests that the ‘major gifts’ of an employer include extra remuneration to some employees and lenient work rules. In return, the employees’ gifts to the employer are efforts in excess of formal work standards.

9.2.7 Training, Promotion and Productivity

The willingness of firms to provide general training to workers depends on the productivity gains from training and the likelihood that workers are retained (Adhvaryu *et al.*, 2016a). However, the RMG sector is stuck at a low equilibrium trap, which occurs as a result of high worker dissatisfaction driving high worker turnover. Due to high turnover rates, factory owners are reluctant to invest in upgrading workforce skill through training programmes, and thereby raise productivity levels (Hearle, 2016). Firms want to improve labour productivity but are afraid of losing their return on investment because of high staff turnover (World Bank 2012, ILO 2016). On the other hand, if factory owners provide training, it raises the job satisfaction of employees and improves retention rates, thereby enhancing productivity and bringing the factory out of its low equilibrium trap. Upon introducing on-the-job training programmes on soft skills development for female RMG workers in Begaluru, India—the retention rates improved while the programme was ongoing. However, it decreased again after the programme was completed (Adhvaryu *et al.* 2016a). A high spillover effect was also observed on the labour supply and productivity of non-trainees, who frequently worked closely with trainees.

Macchiavello *et al.* (2014) noted that retention rates in Bangladesh are slightly lower for females who are assigned to training compared to males. Promotion rates are higher for male trainees than for female trainees. There are no significant differences between male and female trainees with regard to line-level efficiency, absenteeism or quality defects. The factory recuperates its cost of training in 24 months on average, or 12 months in the case of those promoted, suggesting a “reasonable rate of return to the training”.

According to Woodruff and Macchiavello (2014), after being trained in RMG factories, female trainees are as much or even more effective than male supervisors and there are no differences between male and female trainees with regard to line-level efficiency, absenteeism or quality. However, there is a predominant bias against women taking on the role of supervisors. Promotion rates for the female trainees in their study proved to be significantly lower than for male trainees. Due to the gender bias within factories, women do not invest in the skills required to become supervisors, as they do not expect to have opportunities to progress in their careers. With weaker career prospects, women are also likely to leave when offered better opportunities elsewhere. Consequently, garment factories face high turnover rates. From factory data in Bangladesh, 4 out of every 5 production line workers are female, whilst just over 1 in 20 supervisors is a woman. If workers are promoted on the basis of merit, this would mean that currently 95 per cent of the managerial talent in factories emerges from 20 per cent of the workforce (Sebastio, 2014).

9.2.8 Worker Rights and Standards

Regular workers with strong employer attachment can get access to legal employment protection and benefit from measurable improvements in labour standards. Since they obtain greater employment security, it increases their ability to participate in workplace-based union organisations and reduces their fear of reprisals. They are, thus, able to initiate dialogues on exercising their labour rights. Irregular workers with low employer attachment are deprived of the same benefits. These irregular workers are mostly women, and marginalised ethnic and migrant groups. Hence, they are more likely to face double discrimination, through both their social and employment status. Irregular workers often suffer a 'decent work deficit', whereby their access to enabling rights is denied. This in turn undermines their relative ability to reap the benefits of economic and social upgrading (Barrientos et al., 2010).

Freedom of association, which is generally measured by the density of trade unions (ILO, 2016), is one of the basic elements of social upgrading. In 2013, workers' right to freedom of association (FOA) was often disallowed in Bangladesh, as demonstrated by the fact that only 50 out of 5000 factories could exercise the right to form a factory union. A lesson can be learned from the Cambodian garment industry where trade unions play a key role as the mediator between workers and factory owners when settling disputes and wage-related issues (Islam *et al.*, 2014).

There are many studies which highlight the positive impact of the economic performance for trade unions. Doucouliagos & Laroche (2003) found a positive relationship between unions and productivity in the United States manufacturing sectors. However, a large number of studies also found a negative relationship between union and economic performance. Hirsch (1997) concludes that usually unions significantly increase compensation for their members but do not increase productivity sufficiently to offset the cost increases that this brings. Shirk's study (2009) highlights that unions harm the overall economy. Trade unions face different categories of challenges in terms of economic reform, managerial strategies, and demands for labour reform (Subdar, 2006). The managerial strategies were implied to cut employers' costs and to hire flexible labour. This results in increased competition, which in turn, reduces labour, prolonged lockout and expansion of peripheral categories of workers (Shrouti and Nandkumar, 1995).

9.2.9 Housing Conditions and Asset Ownership

In a bid to stay competitive in the global apparels market, Bangladesh's RMG sector provides one of the lowest wage rates in the world to its workers. As a result, workers and their families often tend to live in overcrowded settlements in deprived urban communities, where they lack access to essential services such as healthcare, education, water, sanitation, and hygiene (UNICEF, 2015). According to a study carried out by the C&A Foundation (2013), garments workers in Bangladesh usually tend to be of the median age of 27 years. Most respondents live with their family members given that around

four-fifth of the sample workers are married. The remaining respondents are either single, widowed or separated.

According to the C&A Foundation study (2018), most respondents have fans and mobile phones. On average, all respondents own at least one of the two. Many own televisions, but fewer own televisions than do mobile phones. UNICEF (2015) reported that garment workers often live in overcrowded and non-durable housing structures made out of corrugated iron or scrap wood. Their living space is extremely limited in one-room houses, and the families of these workers share the kitchens and sanitary facilities with numerous other neighbours within the same block. Furthermore, due to insecure tenure in urban slum communities, many workers and their families are under the constant threat of evictions.

9.2.10 Decent Work and Its Implications on Social Upgrading

Firms operating at the lower levels of buyer-driven GVC have to tackle the competing pressures of maintaining high quality while lowering costs. Hence, they can choose between a 'low road', characterised by economic upgrading and social downgrading, and a 'high road', involving both economic and social upgrading. However, those taking a high-road approach have the fear of risk of losing price competitiveness (Barrientos, Gereffi and Rossi, 2010). This creates pressure which compels firms to take the 'low road' of industrialisation and leads to various problems for workers. For example, Barrientos (2007) reports that problems that workers in garments factories of Bangladesh face include lack of awareness by workers of their rights, significant occupational segregation and discrimination, wages and gender pay gap, employment insecurity, long working hours, compulsory overtime, lack of childcare or maternity leave, poor health and safety, and overcrowding and poor working conditions. Hence, how factors such as collective bargaining and labour rights and other contextual issues impact social upgrading require further investigation.

Unskilled workers are often excluded from social upgrading in order for the factories to remain cost competitive and flexible in terms of last minute changes in orders. Hence, even while factories are shifting their production towards higher value-added items, irregular workers face considerable challenges with regard to social upgrading. The increase in higher value-added production may lead to social upgrading for regular workers, who are simultaneously also developing more skills and availing access to advanced training programmes. Nevertheless, the factory needs irregular workers because buyer require low costs, short lead times and high flexibility. Yet, their status as irregular workers impede their social upgrading (Gereffi, 2013). The simultaneous social upgrading and downgrading has been observed in case studies on garment factories in Morocco. Factories responsible for both the finished product and overseeing packaging, storage and logistics for buyers offer stable contracts and higher social protection for their high-skilled workers to ensure a continuous relationship and, more importantly, full compliance to buyers' codes of conduct. On the other hand, they also employ irregular workers with casual contracts when they have to respond to buyers' frequently changing orders quickly or to operate on short lead times (Rossi, 2013). Factory owners need to balance between maximising quality (to meet buyers' standards) and minimising costs (to remain competitive to buyers). This has important implications for social upgrading across all labour groups (Gereffi, 2013).

9.3 Basic Features of Sample Workers

9.3.1 Changing Composition of RMG Workers in terms of Gender, Size and Location

The composition of employment in RMG enterprises has been changing over time. Bangladesh's RMG enterprises are getting bigger. The size of sample enterprises in terms of number of workers is bigger across the board compared to earlier years. In 2016, the average enterprise employed 1,363 workers—this was 8.5 per cent higher than that in 2012 (1,016 workers). The average number of

workers in small, medium and large enterprises are significantly higher than that earmarked in the Industrial Policy 2016. For example, the number of workers in large sample enterprises is five times bigger than the standard 'large' RMG enterprise defined in the Industrial policy 2016.⁹⁷ In other words, garments enterprises have grown in size in the post-Rana plaza period despite having to invest in meeting compliance standards. Employment increased the most in large enterprises (18.1 per cent per year) followed by small and medium enterprises (12 per cent and 6.5 per cent respectively) (Table 9.1). Consequently, the difference between the workforce size of large enterprises, and that of small and medium-sized enterprises has been getting bigger over time (Figure 9.1).⁹⁸

Worker composition in the garment sector has experienced changes over time—the percentage of female workers has reduced from 58.4 per cent in 2012 to 53.2 per cent in 2016 (Table 11.3). Female employment still comprises a higher share in woven enterprises compared to knit enterprises. Over time, the employment structure has been changing. Male employment is increasing in large and small enterprises. As a result, the proportion of female workers has reduced drastically from 63.6 per cent to 54.4 per cent. Male workers comprise 31 per cent of total employment in large enterprises. This was only 28 per cent in 2012. The differences between male and female workers in small enterprises have been narrowed down. Such a drastic reduction in the proportion of female employment needs to be examined from the perspective of female employment in the formal manufacturing sector as well as their overall empowerment point of view.

Table 9.1: Workers per Factory

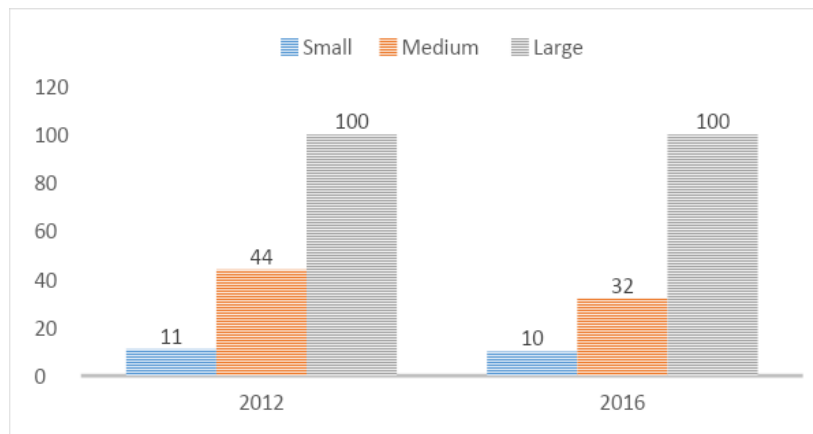
	Small	Medium	Large	Total
Workers per factory				
2012	327	1303	2947	1016
2016	484	1639	5077	1363
% Changes				
Overall	12.0	6.5	18.1	8.5
Female	6.6	4.1	15.0	5.5
Male	21.4	10.0	21.4	12.8
% of female workers in total employment				
2012	63.6	59.6	52.5	58.4
2016	54.4	55.1	48.8	53.2
Share of total employment in different types of factories				
2012	14.0	61.4	24.6	100.0
2016	16.7	54.4	28.9	100.0

Source: CPD-RMG Survey, 2016

⁹⁷ According to the Industrial Policy 2016, a large enterprise of the RMG sector comprises at least 1000 workers.

⁹⁸ The highest number of workers are working in medium-sized factories, which employ 501–2500 workers. These factories employ 54.4 per cent of workers, down 61.4 per cent in 2012.

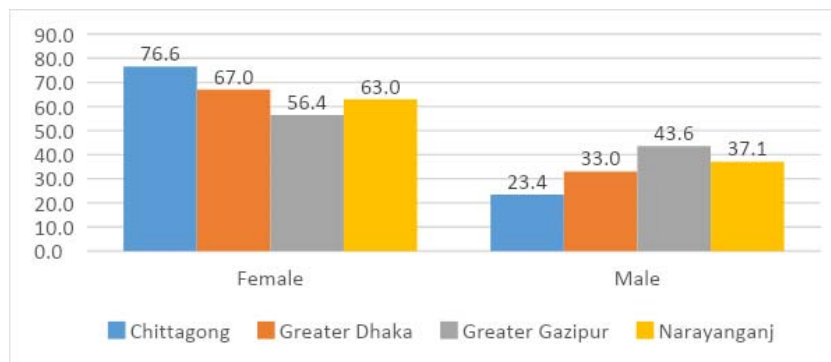
Figure 9.1: Comparison of Average Size of Workers per Factory (Large=100)



Source: CPD-RMG Survey, 2018

The structure and composition of employment varies by location (Figure 9.2). In all major locations, females are the majority. This is especially true in Chittagong, where they comprise 76.6 per cent of total employment. This is partly because most enterprises based in Chittagong are woven enterprises. However, it may be interesting to examine why there are so many more females employed in Chittagong compared to other areas such as Gazipur and Narayanganj.

Figure 9.2: Distribution of Workers in Sample Enterprises



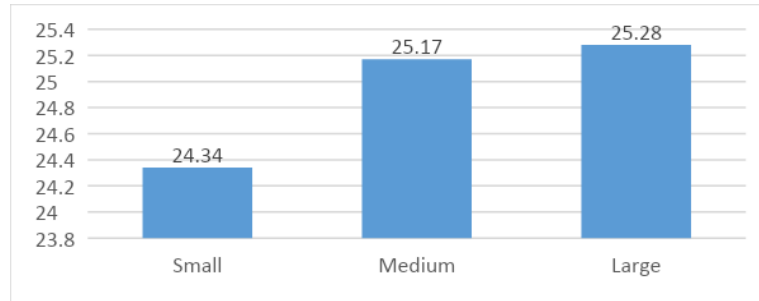
Source: CPD-RMG Survey, 2018

9.3.2 Workers' Biometric Information indicate Longer Working Life

No major change has been observed in workers' biometric information such as workers' age, marital status, family size and earning members. The average age of workers is 24.9 years, almost the same as a decade ago (Rahman *et al.*, 2008). The age gap between male and female workers is 1.4 years. This has slightly increased over the years (gap was 1 year in 2008). Large enterprises recruit relatively older workers for their experience and productivity (Figure 9.3). The marital status of workers did not change much—about 67 per cent is married. Female workers (70 per cent) are more likely to be married than male workers (63 per cent). There is no major difference in marital status between workers in knit and woven enterprises. However, workers (both male and female workers) are more likely to be unmarried in Chittagong and Narayanganj districts (Figures 9.4 & 9.5). Such a consistent age distribution of the workers over the years suggests that workers flow in and out of garments naturally. Since employment in the manufacturing sector outside of the garments is limited, there was no shortage in supply of the required number of workers.

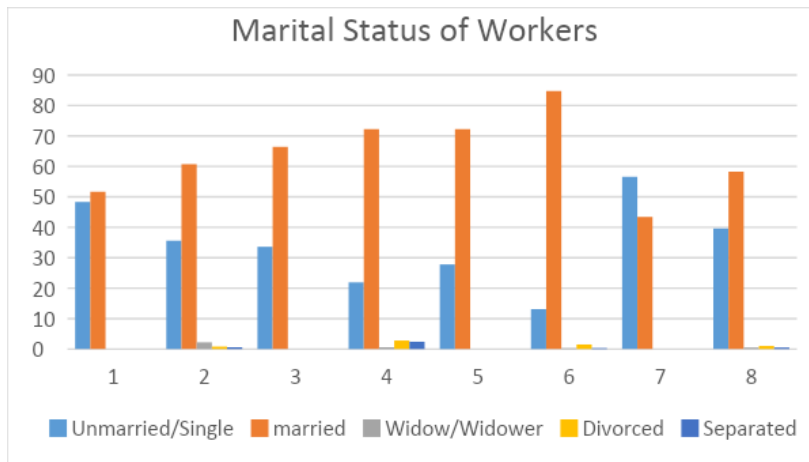
Retaining such a high share of married workers in an increasingly complex production process indicates that the factory management values workers' experience and skill despite their marital status. Recruitment of juvenile and adolescent workers (less than 18 years old) has been declining (about 0.6 per cent). Overall, workers are being hired based on their ability to work within a changing production structure.

Figure 9.3: Mean Age of Workers according to Size



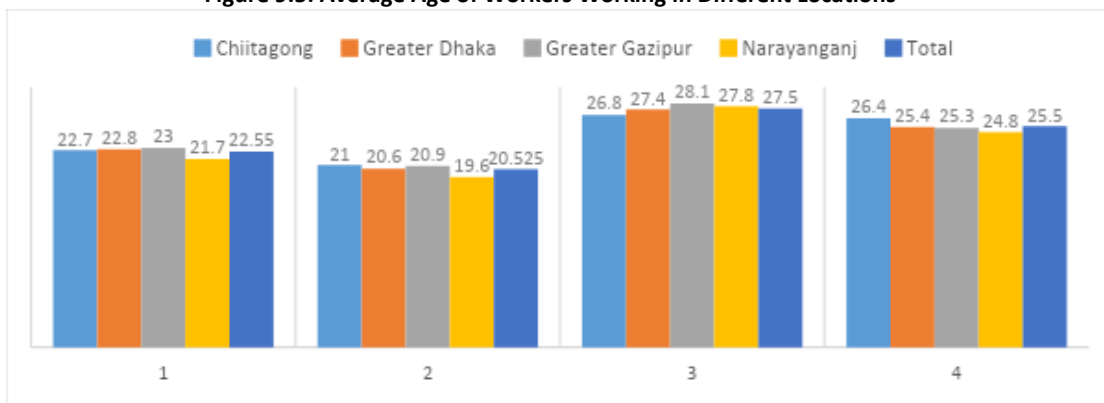
Source: CPD-RMG Survey, 2018

Figure 9.4: Marital Status of Workers Working in Different Locations



Source: CPD-RMG Survey, 2018

Figure 9.5: Average Age of Workers Working in Different Locations



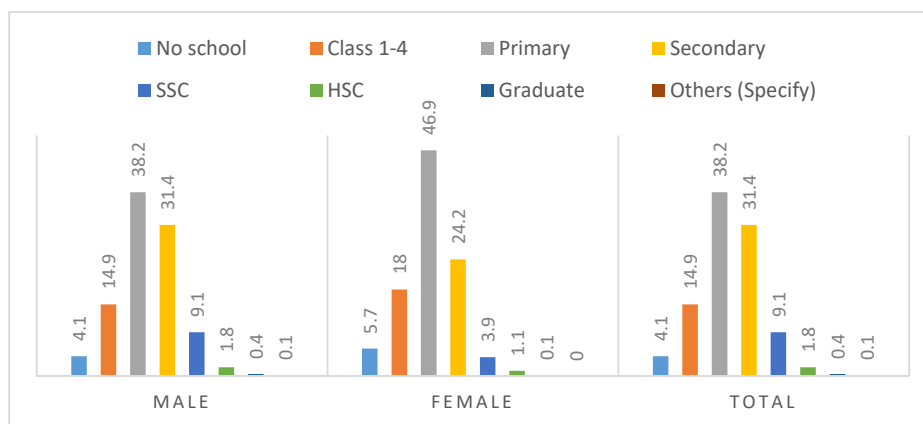
Source: CPD-RMG Survey, 2018

9.3.3 Gender Differences in Academic Attainment affect Their Aspirations Differently

Workers' educational attainment has improved over time but remains low on average. About 96 per cent of sample workers have completed some level of education compared to 90 per cent in 2006; about 38 per cent of workers have completed primary education and 31 per cent has completed secondary education. Only 1.8 per cent of workers completed higher secondary education. Since workers tend to get educated in the hope of getting employed in the formal sector, their educational attainment could be incentivised accordingly.

Female workers are still not as educated as male workers (Figure 9.6). Being better educated gives male workers an advantage when getting jobs in terms of learning complicated techniques and getting promoted to higher grades. If female workers had better job prospects in the higher grades, parents would be more encouraged to invest in females for higher levels of education and training (Woodruff and Macchiavello,2014).

Figure 9.6: Workers' Academic Attainment (% of total workers under each category)



Source: CPD-RMG Survey, 2018

Over 68 per cent of workers think that they can be promoted to supervisor if they continue to work hard (Table 9.2). However, this perception differs between male and female workers (81 per cent for male and 61 per cent for female workers). Many workers, especially females, are not interested to take on supervisory roles. Only 45 per cent of workers want to become a supervisor. Of them, 63 per cent are male and 36 per cent are female. Therefore, being promoted and becoming a mid-level management professional does not only depend on skill but also on individual choice. It is possible that many workers do not think that being a supervisor would be rewarding because they do not want to shoulder that extent of responsibility or long working hours for still inadequate salaries (including loss of over time benefit for not being eligible).

Table 9.2: Prospects of Becoming a Supervisor

	Can you think be promoted as a supervisor in future?			Would you like to be one?		
	Male	Female	Total	Male	Female	Total
Yes	81.2	60.9	67.8	62.7	35.6	44.8
No	18.8	39.1	32.2	37.3	64.4	55.2
Total	100.0	100.0	100.0	100.0	100.0	100.0

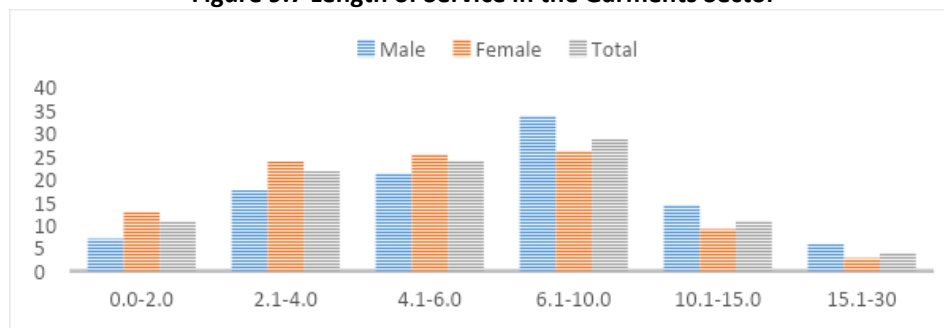
Source: CPD-RMG Survey 2018

9.3.4 Female Workers' Job duration is Constrained by Various Factors

Garment workers are expected to work on average for 7.4 years. In fact, sample workers have been working for an average of 3.3 years and expressed their intention to work for another 4.1 years. About 28.7 per cent of workers have been working for 6–10 years and 24 per cent of workers have been working for 4–6 years (Figure 9.7). Only 11 per cent work for 10–15 years. In other words, less than one-tenth of total workers have experienced working for longer periods in the garments industry. Female workers have been mostly working for shorter periods on the job. About 12.8 per cent of the female workers have been working in the garment sector, with job experience of less than two years and another 23.8 per cent have job experience of less than 4 years. This is in comparison to 7 per cent and 17.6 per cent of male workers, respectively. On the flipside of the coin, 14.4 per cent of the male workers possess job experience of 10–15 years and another 6 per cent have job experience of over 15 years. This is in comparison to 9.1 per cent and 2.8 per cent respectively in case of female workers. These patterns are true for all enterprise sizes. It signifies that female workers tend to leave their jobs quicker than their male co-workers because of various social and cultural norms and practices as well as less prospect for getting promoted to supervisory positions.

Since workers rarely remain at the same factory for long, they move frequently from one factory to another. While only 10.8 per cent of workers have worked in the garments sector for two years, over 19.2 per cent of workers have been employed in the existing factory for less than a year and another 19 per cent has work experience of 1-2 years. The lack of decent work in the factory in terms of working environment, wage and other benefits, fewer prospects of getting promoted, family issues, distance from home, and bad living conditions pushed workers to shift from one factory to another.

Figure 9.7 Length of Service in the Garments Sector



Source: CPD-RMG Survey, 2018

Unlike other manufacturing sectors, length of service in the garment sector is shorter and there are rare cases where workers work for the whole life in the garments sector. The production-related jobs in Bangladesh's garment sector are low-skilled, volume-driven and requires longer period of work. Taking those issues into account, entrepreneurs demand workers who are physically strong, have the ability to work longer hours at stress and have less social/family responsibilities. With a large supply of young female and male workers in the labour market, employers prefer to replace a part of their relatively aged workforce with young fresh entrants with less skill. As a result the length of stay of male workers is relatively longer than female workers. Moreover, workers face various types of health-related problems due to the lack of proper attention and protection against occupational diseases. Overall, workers' period of stay in the garments sector get short because a large share of workers find it difficult to work for longer periods under the complex production process, ultimately quitting the job. Such examples are found in industries that operate in other developing countries such as the electronics industry in Vietnam.

It is rare for production workers of the RMG sector to work till the age of retirement (around 60 years). Often, exiting the jobs from the garment sector is the end of workers' engagement in formal employment. A large section of female workers became engaged in household activities, while a part

of them worked in the informal sector in urban areas. On the other hand, male workers partly engaged in jobs which are informal in nature; a section of them returned to the village and engaged in farming or non-farm activities. An in-depth investigation and analysis is required about the workers who quit the jobs in the garments sector and their job-engagements afterwards. In any case, it is still rare for RMG workers to work for their whole lives and retired.

9.4 Employment Opportunities

9.4.1 More Production Workers now in Upper Grades

Although the distribution of workers has not changed in different sections of factories, it has changed in skill composition. In the factories sampled, production workers are mostly confined to a few sections—sewing (47 per cent) and finishing sections (12 per cent). No significant variation of section-wise distribution between male and female workers has been observed. In contrast, the skill category of workers assigned to different grades has changed over the years. Jobs are increasingly concentrated from lower grades to lower-middle grades (Table 9.3). At present, grade VII (24.5 per cent) and grade IV (26.7 per cent) have the highest share of employment. Together, these comprise over 51.2 per cent of total employment. The proportion of workers in grades VII, VI and V has declined by 3.2, 1.1 and 0.1 percentage points. On the other hand, the proportion of workers in Grade IV and III have increased by 1.9 and 1.8 percentage points. Since total employment in RMG enterprises has increased, these changes in the grade structure are not only a redistribution of existing employment but also reflect changes in the composition and structure of newly recruited workforce.

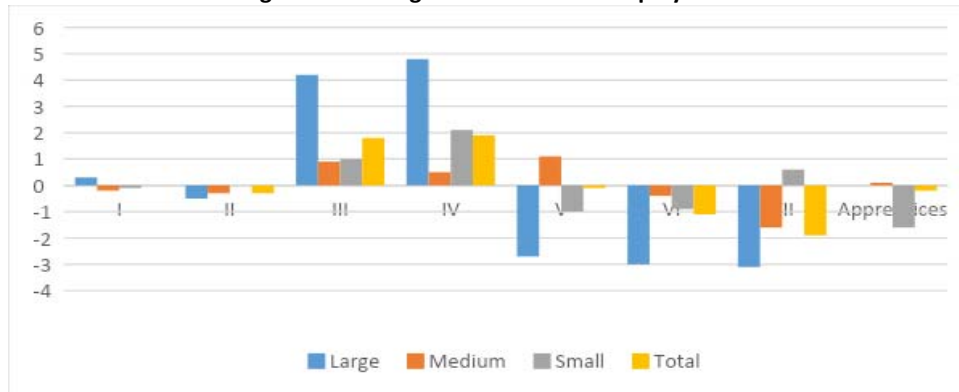
The change in the composition of workers is different for various categories of enterprises (Figure 9.8). The number of workers in lower grades, mainly in grade VI and VII, in large and medium enterprises, decreased the most. Likewise, the number of workers in medium grades increased the most. This reflects average improvement of skill of RMG workers. This rise in the skill composition of the workforce in the RMG sector is important for economic and social upgrading, which certainly reflects higher productivity in the RMG sector.

Table 9.3: Grade wise Distribution of Employment

	Small		Medium		Large	
	2012	2016	2012	2016	2012	2016
I	0.5	0.5	0.5	0.4	0.1	0.4
II	0.6	0.5	1.1	0.8	1	0.5
III	16.3	17.3	14	14.8	12.4	16.6
IV	21.5	23.6	26.2	26.7	23.5	28.3
V	16.7	15.7	16.2	17.2	20.7	17.9
VI	14.7	13.8	15.3	14.9	17.6	14.6
VII	27.7	28.2	26.7	25.1	24.7	21.6
Apprentices	2	0.4	0	0.1	0	0
Total	100	100	100	100	100	100

Source: CPD-RMG Survey, 2018

Figure 9.8: Changes in Structure of Employment



Source: CPD-RMG Survey, 2017–18

9.4.2 Lack of Orientation to New Machineries Keep Female Workers behind those of Male Workers in Using Machines

The capacity to operate different types of machineries by male and female workers is different. Majority of male and female workers have the capacity to operate limited number of basic machines such as single needle, double needle and over lock machines. The capacity to operate diversified machines used in other production related activities are not same by male and female workers. Table 9.4 shows that a significant per cent of women were better at operating single needle, double needle, over lock and flat lock machines. Only 1-16 per cent women workers can operate other machines as well (Table 14). In contrast, male workers are better at single needle, double needle, over lock, and flat lock, feed of the arm, button attach and bar tack machines. About 3-18 per cent male workers can operate other machines as well. It reflects that more men than women have the capacity to operate multiple machines. The reasons behind such differences in the capacity to operate machines have no gender-based explanation; rather, lack of attention provided to female education and limited access to acquire technical training on different machineries fall the female behind those of male workers.

Table 9.4: Percentage of Men and Women Have Capacity to Use Machines

Name of the machines	% of men and women have capacity to use machines	
	Female	Male
Machines		
Single Needle	91	69
Double Needle	54	50
Single Needle Edge Cutter	7	14
Over Lock	56	68
Flat Lock	38	57
Feed of the Arm	14	36
Button Attach	13	28
Button Hole	13	30
Bar Tack	16	32
Snap Button	7	18
Blind Stitch	4	13
Velcro Attach/Profile	1	5
Auto Welt Pocket	3	4
Manual Knitting Machine	2	16
Semi-automatic Machine	1	3
Others	8	14

Source: CPD-RMG Survey, 2018.

Such differences in technological capacities between male and female workers is likely to have direct implications in workers' employment opportunities in the sector which has been gradually upgraded the technological bases (though at slow pace) by including more efficient and upgraded machineries. Female workers because of their limited knowledge in diversified machineries is likely to be less preferred in factories which are in the process of upgrading the machineries. A part of recent decline in the share of female production workers (vis-à-vis those of rise of male workers) in the apparels sector of Bangladesh is perhaps associated with limited capacities of female workers in operating diversified machineries. Considering the major role played by the apparels sector in womens' employment, a gender-based employment strategy for the apparels sector needs to be explored.

9.4.3 Length of Work in a Particular Grade is Likely to get Shorter

In accordance with the policy guideline of enterprises, workers are expected to spend a specific period of time working in a certain grade. Hence, workers may expect to get promoted to the next grade following a predetermined timeline as long as they have the skills necessary. Workers are promoted more often if they work in the lower grades (Table 9.5)—about 96.7 per cent of workers under grade 7 got promoted to the upper grades. This is in contrast to workers in grade VI, V, IV and III, of whom 32.6 per cent, 33.2 per cent, 20.7 per cent and 1.2 per cent got promoted respectively. On average, it takes 2.7 years for a worker to get a promotion—much more quickly than in the past. According to Zohir & Majumder (1996), 73 per cent of the workers surveyed did not get a promotion in the factory they are currently working at. Of the male workers, 30 per cent got a promotion; on the other hand, of the female workers, 25 per cent got a promotion. As has been discussed throughout this paper, this, along with other benefits, motivated workers to move to a different factory.

Table 9.5: Changes in Workers' Grade in the Current Factory

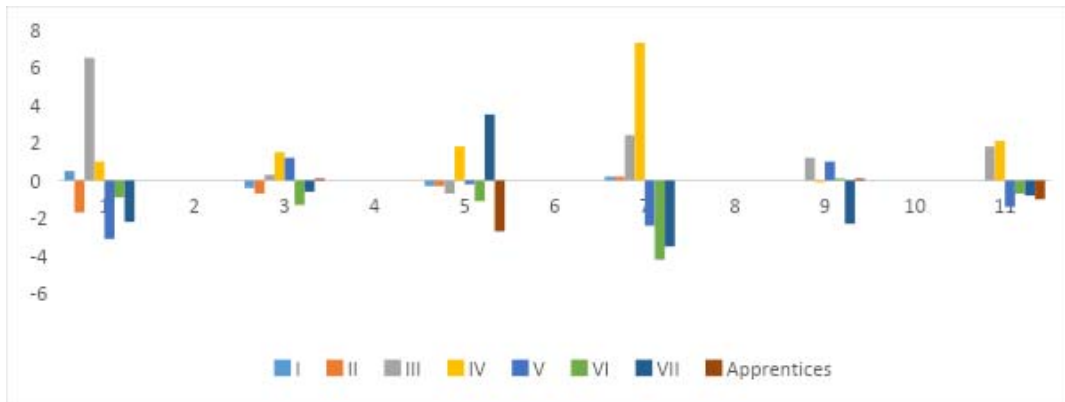
	Current Grade				
	3	4	5	6	7
Grade Start at this factory	3	4	5	6	7
	98.8	0.2	0.7	0.2	0
	20.7	73.2	5.5	0.5	0
	20.7	12.5	63.3	2.6	0.2
	11.9	7.5	13.2	67.1	0.3
	22.5	26.4	30.9	16.8	3.3

Source: CPD-RMG Survey, 2018

9.4.4 More Female Workers in the Medium-upper Grades

The share of female workers has decreased in lower and lower-middle grades—Grades VII, VI and V, mainly in large and small-scale enterprises. The share of female workers in grades III and IV has increased for these two categories. Male workers have increased in small enterprises but declined in medium and large enterprises. In other words, small enterprises have been recruiting more male workers at the entry level. The proportion of female workers has increased in the upper grades (grade I and II) during 2016 than in 2012 (Figure 9.9). The number of female workers in the lower grades has decreased but this does not necessarily mean that the number of female workers has increased in the upper grades. Instead, it may be due to more male workers being hired in the lower grades as well.

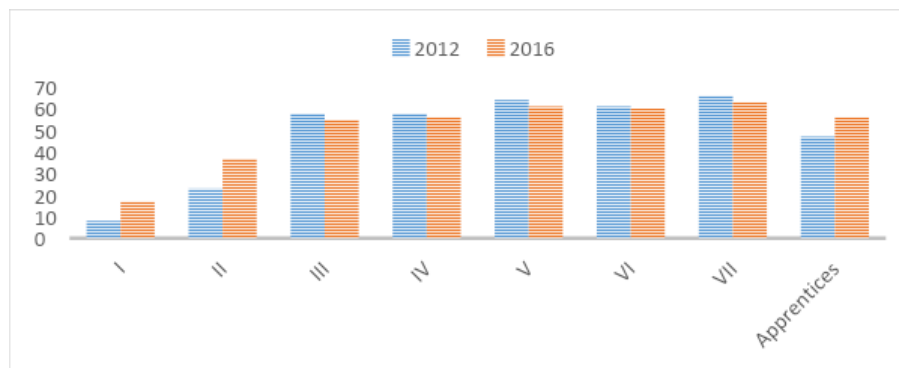
Figure 9.9: Changes in the Grade-wise Distribution of Workers between 2012 and 2016 (in %)



Source: CPD-RMG Survey, 2018

Overall, the composition of workers has gradually shifted from being an overwhelmingly female-led to a moderately female-led employment structure (Figure 9.10). Despite the changes, female workers are mostly employed in the lower grades (Grades VII, VI and V) and are significantly fewer in the upper grades (Grade I and II). Females participate in the upper grades but are fewer in large and medium-scale enterprises.

Figure 9.10: Share of Female Workers in Different Grades



Source: CPD-RMG Survey, 2018

9.4.5 Less Overtime Work

Workers work for an average of 9.26 hours per day, including overtime (Table 9.6). With 8 hours of work stipulated daily, overtime work is for 1.26 hours. Workers in large enterprises work relatively more hours (9.62 hours per day) compared to those in medium (9.11 hours) and small-scale enterprises (9.34 hours). Overtime hours have reduced from earlier, and this is within the stipulated limit (2 hours per day). In recent years, slow growth in export reduced the demand for excess work.

Table 9.6: Working Hours and Overtime Works

Hours Worked (including overtime)	Days worked in a typical week	Hours worked in a typical day	Hours worked as overtime in a typical day
Small	6	9.34	1.38
Medium	5.99	9.11	1.13
Large	5.93	9.62	1.64
Total	5.99	9.26	1.29

Source: CPD-RMG Survey, 2018

Interestingly, workers are willing to work overtime during working days and holidays because wages are not enough to meet family expenses. A small section of workers (3.3 per cent) mentioned that they work at least one day over the weekend in the previous month of the interview was taken. Workers from small enterprises tended to work more often (about 6.7 per cent) during the weekends. Most workers (85 per cent) get paid for their work during the weekend.

9.4.6 On-the-Job Training is Not Sufficient

Most workers in the garments industry received on-the-job training, especially on how to run certain machinery. About 92 per cent of both male and female workers received training. Among them, 87 per cent received training at the current factory. This means that factories provide training not only at the entry level but also at the mid-level. About 85 per cent of total factories provided training to workers. Of these, 92 per cent are woven factories and 81 per cent are knit factories. Most factories (about 93 per cent) provide training regardless of gender, age and how long the worker has been with the current factory. Many factories train workers using internal as well as external instructors (Tables 9.7 and 9.8). About 26 per cent of enterprises provided off-the-job training. On-the-job training focuses on the skills factories demand, so it limits the scope for workers to diversify their skills in other technologies and machineries. Most importantly, workers can operate only a few kinds of machines. Diversified training could be an opportunity for them to operate new and state of the art multi-tasking machines.

Table 9.7: Kinds of Workers Usually Provide Training to (Type Wise)

Worker Type	Woven (% of 90)	Knit (% of 136)	Total (% of 226)
New Garments Workers	100	96	97
Workers with Non-RMG Background	84	81	82
Existing Workers	92	81	85
Apprentices	13	8	10
Others	1	1	1

Source: CPD-RMG Survey, 2018

Table 9.8: Training Provided to Newly Recruited Workers (Type Wise)

Particulars	Woven (% of 90)	Knit (% of 136)	Total (% of 226)
Apprenticeship	6	7	6
Training by Internal Instructors	98	99	99
Off-the-Job Training	33	21	26
Training by External Instructors	38	43	41
Training by In-house Institute/Department	18	10	13

Source: CPD-RMG Survey, 2018

It is common practice for workers to report problems they have identified to their supervisors (Table 9.9). About 24 per cent of workers mentioned that they do this. Usually, workers themselves suggest solutions to the problems and these are well-received by the supervisors. However, these may not be properly documented. Proper documentation could help other workers and supervisors apply the lessons learnt in the future.

Table 9.9: Workers' Level of Participation in Problem Solving Process

Perception	Spotted a problem related to production?			Informed your supervisor?			Suggested a solution to your supervisor/ upper management?			Was your suggestion taken seriously?		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Yes	25.9	19.3	21.6	98.6	99.3	99.0	90.8	84.9	87.4	97.9	99.2	98.6
No	74.1	80.7	78.4	1.4	0.7	1.0	9.2	15.1	12.6	2.1	0.8	1.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: CPD-RMG Survey, 2018

9.4.7 Factories have been Shifted Away from Traditional Incentive Structures

Incentives have been reduced in the production process. Over 90 per cent of workers mentioned that they work under stipulated targets (Table 9.10); about 97 per cent of the workers find the targets achievable. However, they are not rewarded for meeting these targets. Only 28 per cent of workers say they receive a bonus or are especially recognised for achieving the target. However, if they fail to meet the target, about 12 per cent of workers say that they are punished in some way.

Table 9.10: Reward and Punishment related to Production Target

	Any Target?		Target Achievable?			Rewarded for achieving Target?			Punished for not Meeting Target?		
	Male	Female	Male	Female	Total	Male	Female	Total	Male	Female	Total
Yes	90.4	91.9	96.8	97.1	97.0	29.2	28.3	28.6	10.5	12.4	11.8
No	9.6	8.1	3.2	2.9	3.0	70.8	71.7	71.4	89.5	87.6	88.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: CPD-RMG Survey, 2018

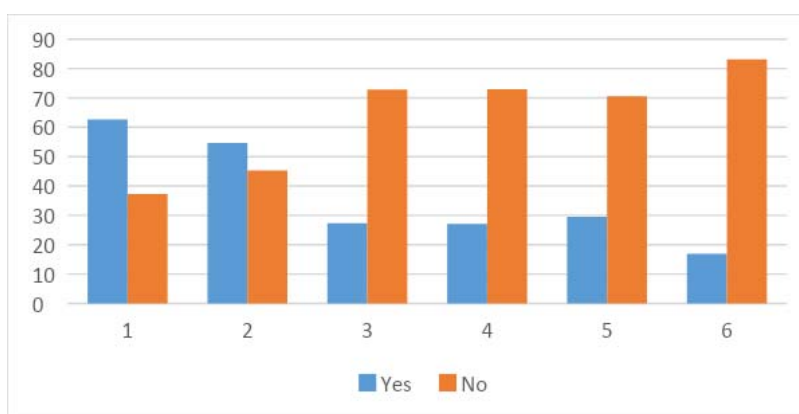
Factories no longer provide incentives to work (Table 9.11). While most workers receive attendance bonus (98 per cent), less than one-third of workers receive production bonus. In other words, factories have been incentivising workers' attendance but not their productivity. This may be because most workers are skilled and their work hardly varies. While over 50 per cent of workers working in large enterprises have received a production bonus, only 27 per cent of workers in medium enterprises and even fewer workers in small enterprises received it (Figure 9.11). In all cases, fewer female workers received a production bonus compared to their male counterparts. Factories located in Gazipur areas give out production bonuses more than those located in Narayangonj areas. Similarly, workers in factories that have contractual arrangements with brands and retailers receive more production bonus compared to workers of factories that do not.

Table 9.11: Incentive Structure of the Sample Enterprises

Perception	Does your factory give attendance bonus?		Have you ever received it?			Does your factory give production bonus?			Have you ever received it?		
	Male	Female	Male	Female	Total	Male	Female	Total	Male	Female	Total
Yes	94.4	95.6	97.6	98.8	98.4	33.3	26.2	28.6	88.0	81.0	83.8
No	5.6	4.4	2.4	1.2	1.6	66.7	73.8	71.4	12.0	19.0	16.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: CPD-RMG Survey, 2018

Figure 9.11: Incentives provided by the Sample Enterprises (yes or no)



Source: CPD-RMG Survey, 2018

About 87 per cent of workers say that factories have assessed their skills (Table 9.12). However, only a third of workers say that their factories recognise their best workers. A significant proportion of workers did not even know whether their factories have this practice at all. Most promisingly, over 90 per cent workers are confident that they will get promoted in the factories they currently work at if they work hard. Only 2 per cent of the workers feel the need to switch their factories if they want to get promoted. It is interesting to examine which aspects of the job—such as promotion, higher wages, better benefits and fixed working hours—workers consider most important.

Table 9.12: Skill Assessment Mechanism of Sample Enterprises

	Has the factory ever assessed your skills?			Is the best worker recognized at your factory?			Will you get a grade promotion if you work hard in this factory?			Do you have to switch factories to get a promotion?		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Yes	90.0	86.0	87.4	35.2	30.6	35.2	92.5	93.0	92.8	3.5	1.6	2.2
No	10.0	14.0	12.6	46.9	49.5	53.2	5.8	2.8	3.8	-	-	-
Total	100.0	100.0	100.0	82.1	80.1	88.4	98.2	95.8	96.6	-	-	-

Source: CPD-RMG Survey, 2018

9.5 Workers' Living Wages and Livelihood Issues

Workers' wages in the RMG sector of Bangladesh are more or less directly determined by statutory minimum wage development. It is important to note here that there are two extreme minimum wage regimes. In one, extreme regime minimum wages are largely independent of wage bargaining—increases of minimum wages in this scenario can potentially compress the wage structure from below. This is the regime for example in Germany, the US or Brazil. In the other extreme regime, minimum wages substitute wage bargaining. In this case, the lowest skilled workers earn the lowest minimum wages, higher skilled workers can earn 1.2 times, 1.5 times, 1.8 times, of the lowest minimum wage. Bangladesh seems to belong to one of the countries in which wage bargaining at least in the apparel sector does not play any significant role and minimum wages take over the determination of wage development.

9.5.1 Workers' Wages Did Not Rise as per the Required Level Stipulated in the Law

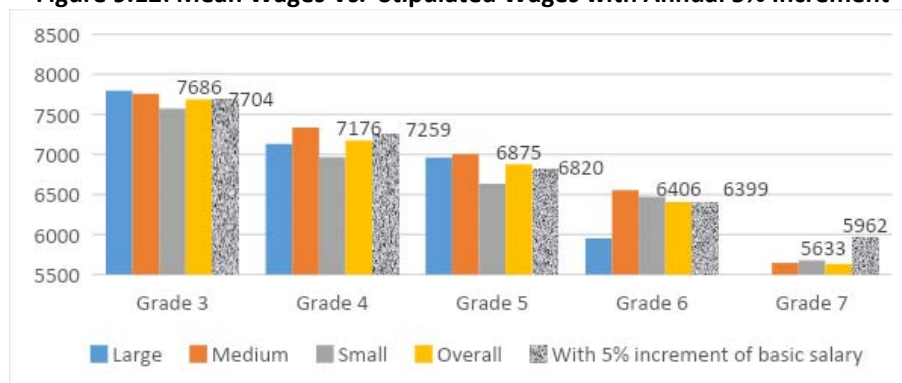
Workers' wages have increased over time, mainly because the minimum wage has been revised during 2013 just after the Rana Plaza tragedy. During the time of the survey (2017), sample workers' average wage (without other financial benefits) was Tk.6637 per month (US\$84.2) (Table 9.13). Workers in medium-sized enterprises received slightly higher wages (Tk.6715) compared to workers in small (Tk.6513) and large enterprises (Tk.6578). It is important to note that workers do not receive wages as stipulated in the circular of the Minimum Wage Board of 2013 (Figure 9.12). The average wage for grade VII workers was Tk.5633, which has increased by 6.3 per cent between 2013 and 2016. According to the circular, workers are supposed to receive a wage of Tk.5962 during 2016.⁹⁹ This means that grade VII workers have been receiving Tk.329 less than their stipulated amount per month. For grade VI, workers' average wage (Tk.6406) was slightly higher than the stipulated amount (Tk.6399). Workers' wages were lower in grades III and IV compared to the stipulated increase. Since workers only receive the 5 per cent annual increment if they work for one year in a particular factory, a section of workers may not benefit from it. This is because at least 19.2 per cent of workers worked at a particular factory for less than a year.

Table 9.13: Workers' Average Wage (without overtime and other benefits)

Size	Large	Medium	Small	Total
Average	6578	6715	6513	6638

Source: CPD-RMG Survey, 2018

Figure 9.12: Mean Wages Vs. Stipulated Wages with Annual 5% Increment



Source: CPD-RMG Survey, 2018

Worker's overtime income is an important part of their take-home pay. It is about 15.2 per cent of total payment (Table 9.14). The average monthly overtime payment was Tk.1192. This was the highest in large enterprises (1995), followed by small (Tk.1190) and medium-sized enterprises (Tk.964). Together with overtime payment, workers' average take-home payment was Tk.7829. This was Tk.8572 for workers working in large enterprises, followed by Tk.7703 for workers in small enterprises and Tk.7679 for workers in medium-sized enterprises. Workers in grades VII, VI, V, IV and III on average take home about Tk.7016, Tk.7342, Tk.8058, Tk.9096 and Tk.8901 respectively. It is important to examine whether workers' take-home pay is enough for them to get by with a family.

⁹⁹ According to the directives of the Minimum Wage Board 2013, workers will receive an annual increment of 5 per cent of their basic wage wages every year provided s/he works in the specific factory at least for one year.

Table 9.14: Wages with Overtime Payment

	Large	Medium	Small	Overall
Grade 3	9089	8906	8883	8901
Grade 4	9152	9301	8616	9096
Grade 5	8208	8208	7678	8058
Grade 6	6822	7529	7367	7342
Grade 7	6445	7063	7286	7016
Overall	8573	7679	7703	7830

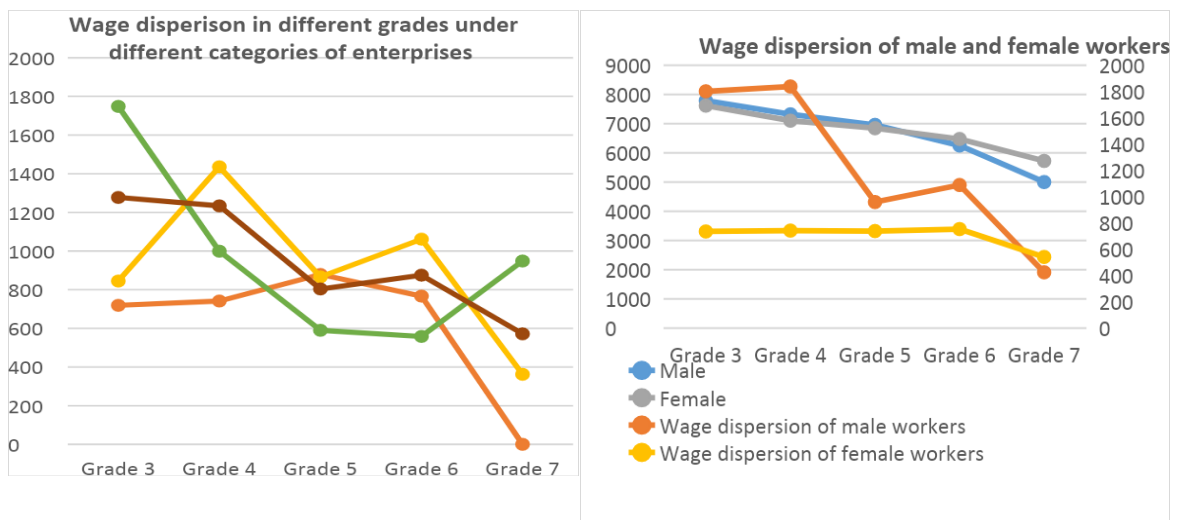
Source: CPD-RMG Survey, 2018

Unlike the other developed and developing countries (e.g. Brazil, Germany or USA) where minimum wage is set by collective bargaining, Bangladesh follows the other extreme case where minimum wages substitutes wage bargaining. Bangladesh seems to belong to one of the countries in which wage bargaining at least in the apparels sector does not play any significant role and minimum wages take over the determination of wage development.

9.5.2 Wage Dispersion Remain at a Low Level

Wage dispersion widely varies in different grades between different categories of factories and for different gender categories. Figure 9.13 shows the standard deviation of workers' average wages in different grades. The wage dispersion is getting higher in the upper grades compared to that in the lower grades. In fact, wage dispersion fluctuates heavily in small and medium-sized enterprises compared to that in large enterprises. Because of low level of compliance on wage related policies in small and medium enterprises, the variation is rather high there. On the other hand, wage dispersion is high among male workers across most of the grades compared to that of female workers. Male workers, unlike female workers, negotiate more for their wages which may cause higher variation of their wages. In general, workers have a lack of knowledge and are less aware of their grades and salary structure in the concerned grades. During the time of shifting from one factory to another, such a lack of unawareness and knowledge has adverse impacts on settling wages and other financial benefits.

Figure 9.13: Wage Dispersion in Different Grades under Different Types and Gender



Source: CPD-RMG Survey, 2018

9.5.3 A large section of workers did not receive their payment as per the stipulated timeline

Workers' salary is yet to be paid as per the stipulated timeline (Table 9.15). Only 53 per cent of enterprises have paid wages in the first week of the month. About 25.3 per cent of workers were paid after the first week and 22 per cent of workers received wages even after the second week of the month. In only a few cases, workers receive salary even the last week of the previous month. Weaving

factories tend to pay workers later than knit factories. Despite various initiatives and legal bindings as well as pressure to comply with the buyers' code of conduct, a section of enterprises does not comply with those requirements.

Table 9.15: Payment Time

	Within the last week of the previous month	Within the first week of the current month	After the first week of this month	Not received yet	Other
Type wise					
Knit	0.07	54.66	24.24	20.88	0.15
Woven	0.4	49.55	26.67	23.18	0.2
Size wise					
Small	0	66.67	22.22	11.11	0
Medium	0.34	57.72	21.56	20.2	0.17
Large	0.11	40.8	31.25	24.61	0.23
Location wise					
Chittagong	0	44.03	33.18	22.64	1
Greater Dhaka	0	56.92	20.75	22.19	0.14
Greater Gazipur	0.71	63.25	20.37	15.53	0.14
Narayanganj	0	35.41	30.16	34.1	0.33
Contracting Party wise					
Brand	0.21	53.12	23.58	22.96	0.14
Buying House and Other	0	35.29	29.41	35.29	0
Mixed	0.45	45.6	29.12	24.38	0.45
Others	0	61.17	26.6	12.23	0

Source: CPD-RMG Survey, 2018

9.5.4 Garment Workers Maintained a Small Family

On average, a workers' family has 4.7 members with one child (Table 9.16). About 47 per cent of married workers have one child while another 27.8 per cent workers do not have any children. Only 20 per cent of workers have two children. In other words, garment workers have a relatively smaller family compared to the past. Anecdotal information indicates that most female workers are afraid of losing their jobs if they take maternity leave. About 37 per cent of male members who got married have no children, whereas 26.2 per cent of married female workers have the same. Most workers maintained an extended family, where parents live in rural areas and are partially or fully dependent on the earnings of their children. In a recent trend, a section of married workers live with their families in urban areas, where parents are partially or fully employed in different types of jobs.

A growing number of garment workers—90 per cent of the female workers and 72 per cent of the male workers—live with their families. Irrespective of the size or location of their factory, female workers tend to live with their families more often compared to male workers. Many workers live instead with other RMG workers or friends. Living with a family on low wages compels workers to live in cramped quarters with limited facilities at a high rent. Workers tried to accommodate the higher costs of living with the additional income of other members of the family. On average, the families of garment workers have 2.17 earning members. The number of earning members has increased over time.

Table 9.16: Workers' Family Size

Mean No. of Children per Worker	Size of Family	No. of Children
Small	4.66	1.00
Medium	4.7	1.04
Large	4.75	1.08
Overall	4.69	1.04

Source: CPD-RMG Survey, 2018

9.6.5 Workers' Income Hardly Meets the Family Expenses

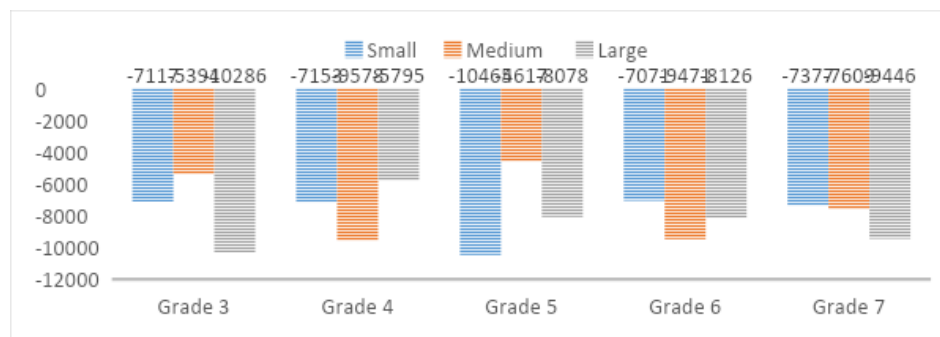
Workers do not earn enough to meet their family expenses. On average, a worker spends Tk.15,694 per month. This is way below their income from working in the factory (Table 9.17). Even with overtime payment, workers' wages did not cover a significant part of their expenses. Workers' average income covers only 49.9 per cent of their total family expenditure and there is a shortfall of about Tk.7864. This needs to be met by the income of other members of the family (Figure 9.14). In most countries in the world, the wages of a worker does not cover the income of whole family even without parents, for example in Germany or the US. Although workers working in large enterprises earn more, their family income is less than that of workers in small and medium-sized factories, perhaps because of relatively low income from other family members.

Table 9.17: Gap between Workers' Monthly Income and Expenditure

Size	Gross monthly expenditure (Tk.)	Workers' Monthly income from factory	Surplus/deficit
Small	16127	7703	-8424
Medium	15505	7679	-7826
Large	15144	8573	-6571
Total	15694	7830	-7864

Source: CPD-RMG Survey, 2018

Figure 9.14: Deficit in Household Expenses



Source: CPD-RMG Survey, 2018

Since most workers have to support their family with a deficit or only a modest surplus in household expenditures, only 28.7 per cent of workers, irrespective of gender, type of factory, factory location and contractual arrangement have bank accounts (Table 9.18). Bangladesh Bank, however, reports that only 10 per cent of garment workers have a bank account.¹⁰⁰

Table 9.18: Workers' Access to Formal Banking Services

	Do you have bank account?			Does any member of your family have a bank account?		
	Male	Female	Total	Male	Female	Total
Yes	29.3	28.3	28.7	26.7	27.0	26.9
No	70.7	71.7	71.3	73.3	69.2	70.6
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: CPD-RMG Survey, 2018

¹⁰⁰ Bangladesh Bank promotes opening of formal banking transactions by underprivileged people as part of its inclusive banking programme.

9.6 Workplace Safety Issues

9.6.1 Workers satisfied with workplace safety

Unlike in the past, most of the workers feel safe in their workplace (Table 9.19). Almost 100 per cent of workers feel safe with regard to fire, electrical and structural hazards. This corroborates with their familiarity with emergency exits, members of emergency response team and regular fire drills. About 90 per cent of the workers knew about safety measures available in the factories. Most of the workers note that there is a safety committee at their factories (88 per cent) and these committees have been working (Table 9.20). About 87 per cent of workers mentioned that they receive safety-related training at their current factories. However, more workers in large enterprises receive training compared to in medium and small enterprises. Interestingly, female workers in Narayanganj and male workers in Chittagong were better trained compared to their counterparts in the respective regions.

Table 9.19: Major Security Concern in the Factory

Perception	Feel safe about fire, structural and electrical hazards?			Know where emergency exits are in your factory?			Know who the members of the emergency response team are?			Has there been a fire drill since you joined this factory?		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Yes	99.6	99.4	99.5	99.7	99.5	99.6	88.7	83.7	85.4	92.2	92.6	92.5
No	0.4	0.6	0.5	0.3	0.5	0.4	11.3	16.3	14.6	7.8	7.4	7.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: CPD-RMG Survey, 2018

Table 9.20: Operation of Safety Committees

Perception	Is there a safety committee exist in your factory?			Is the safety committee active?			Received any fire or electrical safety training at the current factory?		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Yes	90.0	87.0	88.0	90.1	89.4	89.6	87.2	86.9	87.0
No	10.0	13.0	12.0	9.9	10.6	10.4	12.8	13.1	13.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: CPD-RMG Survey, 2018

A majority of the workers mentioned that they use necessary protective equipment while working at the factory (Table 9.21). These include proper shields against high speed sewing machines and maintaining basic safety precaution in case of sharp and cutting instruments. About half the workers indicated that their factories have helplines, but the use of helplines is still rare (12.5 per cent). Female workers use the helpline less often compared to male workers.

Table 9.21: Safety Measures and Their Uses

Perception	Did you receive any personal protective clothing and equipment?			Is there a helpline in your factory?			Have you ever used the helpline?			Do you know somebody who has used helpline in the last month?		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Yes	92.0	92.7	92.5	51.9	47.8	49.2	15.9	10.5	12.5	13.7	7.8	10.0
No	8.0	7.3	7.5	39.3	42.9	41.7	84.1	89.5	87.5	86.3	92.2	90.0
Total	100.0	100.0	100.0	8.8	9.2	9.1	100	100	100	100.0	100.0	100.0

Source: CPD-RMG Survey, 2018

9.6.2 Factories are Still Reluctant to Improve Facilities beyond Basic Requirements

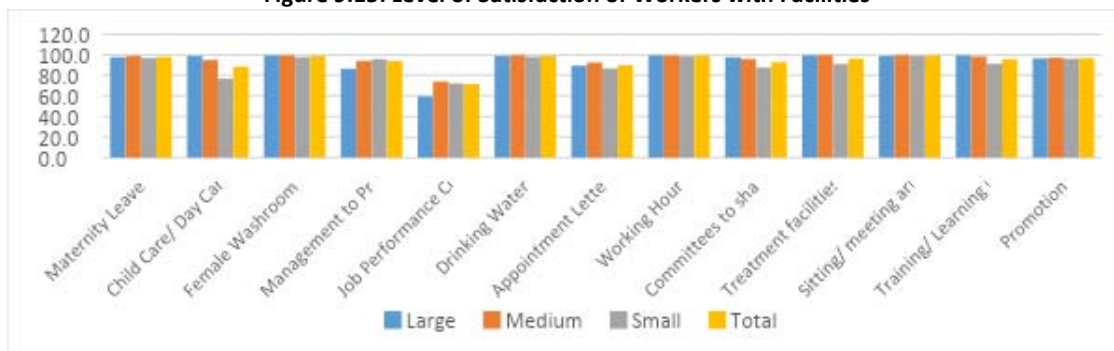
Facilities for workers in the factories have been more available compared to the past (Table 9.22). These facilities include maternity leave, day care, female washrooms, treatment facilities, sitting and meeting facilities and training and learning facilities. Most workers agree that factories provide basic facilities at their work place (Figure 9.15). About 87 per cent of workers have access to day-care facilities, while almost all of the factories have toilets and drinking water. There are some medical facilities in most of factories. However, there are fewer facilities in small and medium-sized factories compared to large factories. In most cases, workers in small factories are less satisfied compared to others. There remains room for improvement of worker-related facilities in the workplace.

Table 9.22: Different Kinds of Facilities for Workers

Perception	Is there any Day-care centre available on your factory?			Do you have safe drinking water?			Do you have good toilets?			Does the factory have medical facilities?		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Yes	86.6	83.9	86.6	99.6	99.2	99.3	98.5	99.4	99.1	97.5	97.2	97.3
No	13.4	16.1	13.4	0.4	0.8	0.7	1.5	0.6	0.9	2.5	2.8	2.7
Total	100	100	100	100	100	100	100	100	100	100	100	100

Source: CPD-RMG Survey, 2018

Figure 9.15: Level of Satisfaction of Workers with Facilities



Source: CPD-RMG Survey, 2018

9.6.3 Sexual Harassment Persists in Different Forms, Particularly in the form of Verbal Abuse

The problem of sexual harassment in sample apparels enterprises although exists in different forms but it is found to be difficult to quantify in full due to lack of proper reporting of the incidences, lack of clarity among the survey respondents particularly workers regarding the sexual harassment as per the directives of the Supreme Court in 2009 and other related laws (e.g. Nari O Shishu Nirjatan Domon Ain, 2000).¹⁰¹ According to the ILO's Declaration on Sexual harassment at Work, three types of behaviour qualifies as sexual harassment which include a) physical: physical violence, touching and

¹⁰¹ The verdict from 2009 by the Supreme Court of Bangladesh (the landmark decision BNWLA vs Bangladesh, 14 BLC 694 case) redefined the term sexual harassment and it now includes behaviors that this study excludes, namely, from indecent gesture, teasing through abusive language, stalking, jokes having sexual implication to attempts or efforts to establish or demand or request for physical relations. It also includes sexually based unwelcome behavior or verbal representation, making love proposals and posing threat in case of refusal, showing pornography, taking video photographs for the purpose of blackmailing. In short, one can define sexual harassment with sexual implication which is unwelcome to the women, as defined in BNWLA case. In the laws of Bangladesh, close to violence against women we find sections that include this. For example, Section 509 of the Penal Code: "Whoever, intending to insult the modesty of any women, utters any word, makes any sound or gesture, or exhibits any object, intending that such word or sound shall be heard, or that such gesture or object shall be seen, by such woman, or intrudes upon the privacy of such woman, shall be punished with simple imprisonment for a term which may extend to one year, or with fine, or with both."

unnecessary close proximity; b) verbal: comments and questions about appearance, life-style, sexual orientation, offensive phone calls and c) non-verbal: whistling, sexually-suggestive gestures, display of sexual materials. In the workplaces, workers face such problems in the mix of work-related activities of ten as part of 'disguised production management'. The survey asked the workers about physical violence, verbal abuses and denouncement before other workers. Most workers say that outright physical abuse in the workplace is low (Table 9.22). About 93 per cent of workers did not hear about outright physical abuse at their current factory. About 5 per cent of workers say that it rarely happened; less than 1 per cent of workers say that they themselves have faced outright physical abuse. However, about 3.6 per cent mentioned knowing about instances of outright physical abuse involving other workers at the factory. There is a specific department to report outright physical sexual harassment.

Table 9.22: Workers' perception on sexual harassment

Frequency	How frequently does harassment takes place at your factory?		
	Male	Female	Total
Frequently	0.0	0.1	0.0
Rarely	4.6	5.5	5.2
Never happened	93.6	92.9	93.2
Do not know	1.8	1.4	1.5
Reluctant to Answer	0.0	0.1	0.0
Total	100.0	100.0	100.0

Source: CPD-RMG Survey, 2018

A part of harassment is observed in sample enterprises as 'disguised production management' in the form of verbal reprimand, denouncing before other workers along with financial punishments (e.g. loosing performance bonus and deducting a share of monthly wages etc.). According to Table 9.23, about 11 per cent of workers faced punishment for failure to meet the work targets and for other non-compliances. The extent of punishment is higher for female workers compared to that for male workers (11.4 per cent vs. 9.63 per cent respectively). Among different forms of punishment, verbal abuse comprises the highest share followed by denouncement before other workers (Table 9.24). Female workers confronted verbal reprimand as high as 10.9 per cent of total female workers against 9.25 per cent in case of male workers. Besides, 1.6 per cent of female workers rebooked in front of other workers. In the absence of standard operating procedure for dealing with production related irregularities, a large part of the above-mentioned punishments targeted to female workers are likely to be use of abusing languages which can be categorized as one form of sexual abuse (verbal in nature). A number of studies undertaken on the sexual harassment in the garments factories found similar results.¹⁰² In general, workers face different types of work-related verbal harassment at their workplace including teasing, rough behaviour, and being confronted with slang (sex-related). They are proposed sexual relationships, face personal abuse and coercion, are allowed minimum personal space etc. It is important to examine how workers confront those kinds of abuse in the workplace.

Table 9.23: Punishment for not meeting targets on time

Nature of response	Male	Female	Total
Yes	77 (9.63)	177 (11.4)	254 (10.8)
No	723 (90.4)	1370 (88.6)	2093 (89.2)
Total	800 (100.0)	1547 (100.0)	2347 (100.0)

Source: CPD-RMG Survey, 2018

¹⁰² For detail, please see <https://unb.com.bd/category/Bangladesh/22-pc-rmg-workers-face-sexual-harassment-at-workplace-mjf/17878>

Table 9.24: Nature of Punishment/Abuse to Workers (Multiple responses)

Types of punishment	Male (800)	Female (1547)	Total (2347)
Verbal reprimand	74 (9.25)	169 (10.9)	243 (10.4)
Lost performance bonus	11 (1.4)	25 (1.6)	36 (1.5)
Deduct a percentage from the monthly salary	1 (0.1)	0 (0)	1 (0.04)
Feeling bad before other workers/colleagues	17 (2.1)	26 (1.7)	43 (1.8)
Others	3 (0.4)	10 (0.6)	13 (0.6)
Total	106 (13.3)	230 (14.6)	336 (14.3)

Source: CPD-RMG Survey, 2018

9.6.4 Absence from the Job: Sickness and Family Issues

Workers take leave from the job due to various reasons—over 30 per cent workers had taken leave (at least for a day) in the previous month when the survey was conducted (Table 9.25). It is the same across categories the workers are employed in. Workers working in small enterprises (both male and female) took leave more often than those at medium-sized and large enterprises. Both male and female workers working at large enterprises took leave less often. Male workers (31 per cent) in weaving factories took leave (27 per cent) more often. On the other hand, female workers in knit enterprises took leave more often (33 per cent). Workers in Narayangonj take leave relatively more often compared to other regions—as many as 46 per cent of female workers and 35 per cent of male workers of that region take leave.

Table 9.25: Workers' Absence in the Workplace

Perception	Were you absent on a working day in the last month?			Were you paid for those days?		
	Male	Female	Total	Male	Female	Total
Yes	30.5	30.0	30.2	38.9	42.5	41.2
No	69.5	70.0	69.8	61.1	57.5	58.8
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: CPD-RMG Survey, 2018

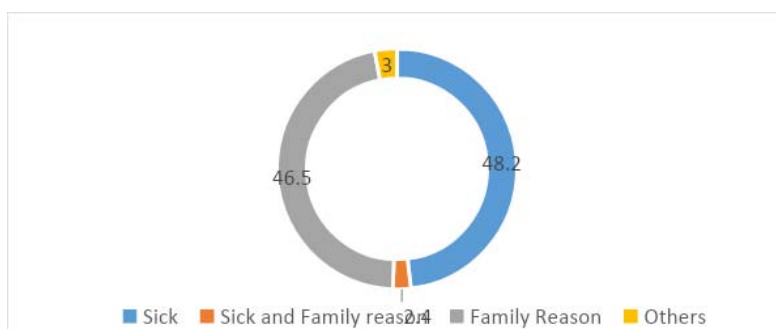
Workers were on leave from 1 day to 11 days (Table 9.26). Most workers took between 1 to 5 days of leave. About 10 per cent of workers took leave between 6 to 10 days. A large part of workers took leave either for illness (48 per cent) or for family reasons (46.5 per cent) (Figure 9.16). Female workers took sick leave more often compared to male workers in all the regions except Chittagong. Male workers took leave for family reasons more often in all regions except Chittagong. Only about 41 per cent of workers say that they received payment if on leave; on other words, about 60 per cent of the workers do not receive payment during leave, although they are supposed to receive full benefits during the period of their statutory leave.

Table 9.26: Number of Days Absent

Days	Male	Female	Total
1	32.0	31.9	31.9
2	27.0	26.9	27.0
3 to 5	27.9	30.2	29.4
6 to 10	11.1	9.1	9.7
11 to max	2.0	1.9	2.0
Total	100.0	100.0	100.0

Source: CPD-RMG Survey, 2018

Figure 9.16: Reasons for Taking Leave



Source: CPD-RMG Survey, 2018

9.7 Workers' Rights

9.7.1 Many Workers are Not Fully Aware about Their Rights and Entitlements

Most workers report that they are aware of their rights and entitlements. They state that their most important rights are: safety in the workplace (65.3 per cent) and getting wages on time (25.1 per cent) (Table 9.27). This is in addition to getting leave (6.3 per cent) and proper compensation for injury and other reasons (1.0 per cent). Most workers believe that they could easily express their grievances at their factories. But very few workers have responded when asked whether they fear losing their job if grievances are expressed.

About half of the factories have reported that they have helplines in their factories. However, helpline use is still at a very low level (12.5 per cent). Male workers use the helpline more often than female workers (Table 9.28). Helplines are available more often in large enterprises than in medium-sized and small enterprises. Helplines are fewer in Narayanganj region compared to other regions. Factories working with brands tend to have more helplines (over 50 per cent) compared to factories working with buying houses (between 25-30 per cent).

Table 9.27: Most Important Right Issues according to Workers

Issues	Male	Female	Total
Wage/Salary	28.3	23.5	25.1
Overtime	1.1	0.9	1.0
Leave	5.6	6.6	6.3
Compensation	1.3	0.9	1.0
Safety in the workplace	63.0	66.5	65.3
Didn't mention any	0.3	1.0	0.7
Others	0.5	0.6	0.6
Total	100.0	100.0	100.0

Source: CPD-RMG Survey, 2018

Table 9.28: Use of Helplines by Workers

	Is there a helpline in your factory?			Have you ever used it?			Has somebody used it in the last month?		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Yes	51.9	47.8	49.2	15.9	10.5	12.5	13.7	7.8	10.0
No	39.3	42.9	41.7	84.1	89.5	87.5	86.3	92.2	90.0
Total	8.8	9.2	9.1	100.0	100.0	100.0	100.0	100.0	100.0

Source: CPD-RMG Survey, 2018

9.7.2 Workers' Mixed Reaction about Access to Written Contracts, Service Book and Experience Certificate

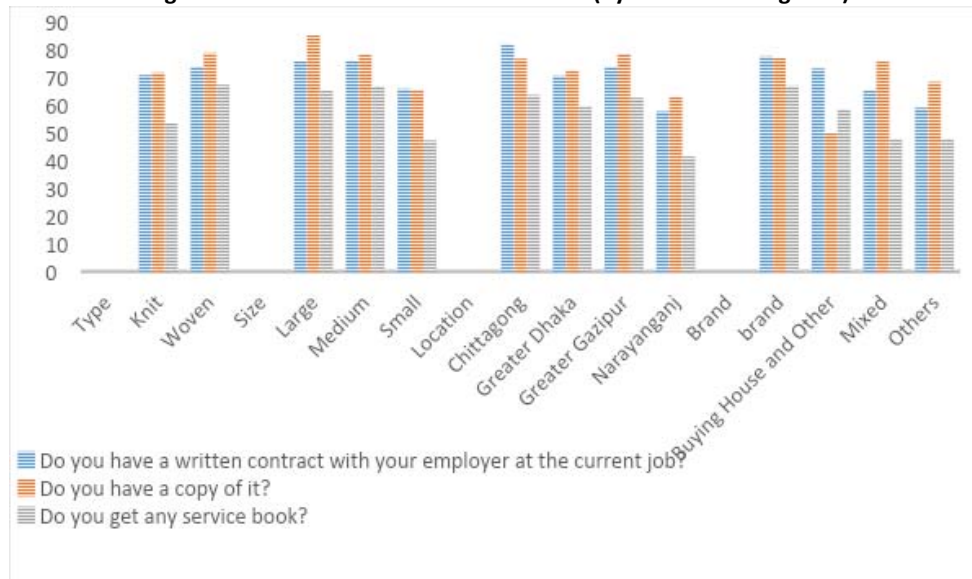
Factories are becoming compliant in providing written contracts to the workers. As many as 96 per cent of enterprises provide contracts. A few knit companies have yet to ensure providing written contracts to workers (Table 9.29). However, most workers claimed that factories do not provide experience certificates for their previous roles in the factory. Despite various efforts, many workers do not get service books and written contracts (Figure 9.17)—about 25 per cent of workers do not have the necessary documents in hand. Even among those who have the document, a large section do not keep a copy of the document.

Table 9.29: Workers Received Documents

	Do you have a written contract with your employer at the current factory?			Do you have a copy of it?			Do you get a service book?			Experience Certificate (% of total workers)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Yes	71.2	73.1	72.5	74.3	75.3	75.0	62.0	58.2	59.5	5.0	3.4	4.0
No	28.8	26.9	27.5	25.7	24.7	25.0	38.0	41.8	40.5	90.1	91.1	90.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	4.9	5.6	5.3

Source: CPD-RMG Survey, 2018

Figure 9.17: Workers Received Documents (by Different Categories)



Source: CPD-RMG Survey, 2018

9.7.3 (Workers') Participation Committees (PCs) are Increasing but Still not Popular among Workers

Most workers say that there is a participation committee at their factories (80 per cent). About 90 per cent claimed that the committee is active (Table 9.30). Over 85 per cent of workers in large enterprises said that their factories have WPCs, but workers at medium-sized and small enterprises said that 90 per cent and 62 per cent of their factories have WPCs respectively. There are more PCs in Gazipur region (over 85 per cent). On the other hand, factories working with brands are more likely to have PCs (85 per cent) compared to those working with buying houses (between 58–78 per cent). It is important to examine the extent to which PCs are functional, especially to address the concerns of the workers.

Table 9.30: Function of Workers' Participation Committee

	Is there any worker's participation committee?			Is it active?			Do you ever participate in any meeting of the worker's participation committee?			Have you ever availed their services?		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Yes	81.1	79.4	80.0	91.2	90.3	90.6	49.7	45.4	46.9	15.1	12.3	13.3
No	18.9	20.6	20.0	8.8	9.7	9.4	50.3	54.6	53.1	84.9	87.7	86.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: CPD-RMG Survey, 2018

After elected PCs were introduced into labour law (Bangladesh Labour Act (amended)), the number of PCs set up by election have increased (63.2 per cent). However, in many factories, committees have still been selected by the management (11 per cent) or selected jointly by workers and the management (17 per cent) (Table 9.31). About 9 per cent of workers do not know how the PCs in their factories have been formed. Small factories lag behind in setting up elected PCs in their factories—only about 56 per cent of the factories have a PC in contrast to over 65 per cent among medium-sized and large factories. In Chittagong, there are many elected PCs (72 per cent) but not in Dhaka region (52 per cent). Factories working with brands tend to have more elected PCs compared to others. Most workers are not members of the PC. Only 15 per cent of workers mentioned they have availed some services from PCs. Overall, PCs are yet to become popular as a platform to discuss workers' issues.

Table 9.31: Formation Process of WPC

Processes	Male	Female	Total
Elected by workers	65.4	62.0	63.2
Selected by the management	11.7	11.1	11.3
Selected jointly by workers and management	15.3	18.2	17.2
Do not know	7.6	8.7	8.3
Refused to answer	0.0	0.0	0.0
Total	100.0	100.0	100.0

Source: CPD-RMG Survey, 2018

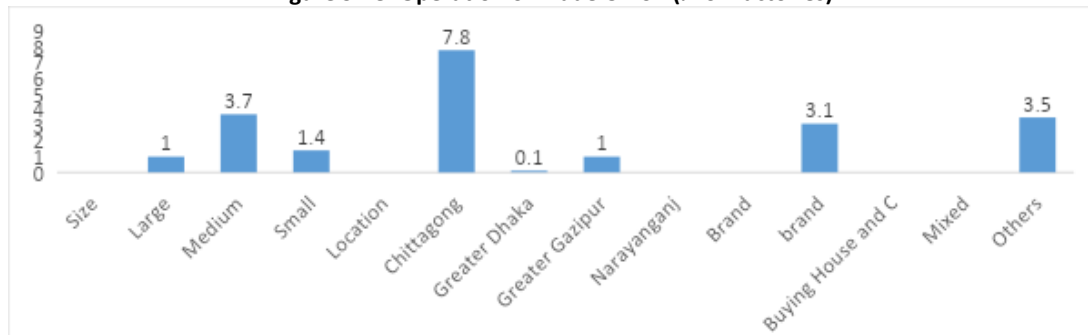
9.7.4 Trade Unions are almost Non-existent and Non-Functional

Despite various commitments and efforts made by the government under the agreement of the Sustainability Compact, trade unions remain non-existent at the factories. Most workers say that there is no trade union at their factories (97.5 per cent) (Table 9.32). There are trade unions in 1.4 per cent of the small factories, 3.7 per cent of medium-sized factories and 1 per cent of large factories (Figure 9.18). Factories in Chittagong (7.8 per cent) have more trade unions compared to other regions. Factories working with brands have trade unions at 3.1 per cent of factories. Factories working with buying houses and mixed contractual arrangements have no trade unions. The election process of trade unions is not fully above the management's influence. Seventy per cent of respondents say that representatives are elected while the remainder says that workers and management jointly decided on the representatives (Table 9.33). Therefore, the process of selecting representatives need to be further improved. Since workers of very few factories have experience with trade unions, a large share of them (47.3 per cent) did not avail the trade union's services.

Table 9.32: Trade Union and Its Activities

Perception	Trade Union in a factory	Are you part/member of it	Do you think trade union can be useful to represent you?	Availed trade union services
Yes	2.47	32.76	100	21.05
No	97.53	67.24	0	78.95
Total	100	100	100	100

Source: CPD-RMG Survey, 2017-18

Figure 9.18: Operation of Trade Union (% of Factories)

Source: CPD-RMG Survey, 2017-18

Table 9.33: Formation of Trade Union

Type of Member	% of respondents said 'yes)	By whom elected	% of respondents said 'yes)
General member	89.47	Elected by workers	70
Not Applicable	5.26	Joint selection by worker-management	30
Others	5.26		
Total	100		100

Source: CPD-RMG Survey, 2017-18

The PCs have very specific scope of work which is different from that of trade unions. These include maintaining good relations between parties, improving working environment, discussion both workers and employers' issues of discontent and dissatisfaction etc. It is important to note that PCs do not discuss workers' wage bargaining and other issues, which is dealt at the collective bargaining system of trade unions. These issues have been thoroughly discussed in a separate case study on 'Challenges of Institutionalisation of Workers Organisations' is presented in the next section.

As discussed in the case study, workers' organisations are either ineffective or non-existent in garment factories. Under such circumstances, it is even difficult to achieve a sectoral collective bargaining for determining wages, let alone individual enterprise-level collective bargaining. Sectoral level bargaining provides a fair playing field for firms and reduces transaction costs for all. It seems that Bangladesh remains a country with almost no wage bargaining in the medium term, at least in the RMG sector. Statutory minimum wages take over the main responsibility for wage development. Trade unions seem to be very weak; and Participation Committees are only partly a substitute for trade unions.

9.8 Factors Influencing Expected Length of Work: A Regression Analysis

Workers in the garments industry usually work for shorter durations than those working in other manufacturing industries. A number of factors may be considered that influence workers' length of service in this sector. These include total family income, overtime work and its timely payment, workers' marital status, managers' skill, factories' contractual arrangement with brands/retailers, the

location of factories, availability of participation committees etc. A regression analysis has been carried out considering workers' expected length of employment in the garments factories in future as a 'dependent' variable and the above-mentioned factors as independent variables (Table 9.34).

Table 9.34: Factors Affecting Expected Length of Work

Expected Length of Employment	Unit of Measurement	Coefficient	P>t
Revenue per Worker	BDT per worker	-6.040 (2.210)	0.784
Overtime Work	In hour	-0.214 (0.155)	0.168
Gender	Female =1, Male =0	-3.437 (0.283)	0.000***
Family Income	Monthly	5.570 (0.000)	0.700
Marital Status	Married =1, Otherwise =0	0.451 (0.319)	0.158
No. of Children	In number	2.233 (0.218)	0.000***
Dealing with Brand	Yes=1, No =0	0.438 (0.283)	0.122
Factory Location	Greater Dhaka =1, Otherwise =0	0.498 (0.301)	0.099*
Factory Size	Large =1, Otherwise =0	-0.057 (0.478)	0.904
Inactive WPC	Yes =1, No =0	0.035 (0.508)	0.945
Constant		11.152 (0.504)	0.000
No. of Observation: 1423 R ² = 0.20			

Note: Standard Error in parenthesis. *** & * indicate 1 per cent and 10 per cent level of significance respectively
Source: Authors' estimates

It is interesting to note here that workers' period of stay in the garment sector job is not necessarily determined exclusively by economic factors, but also by a number of social factors. Regression result exhibits that, explanatory variables such as gender, number of children and factory location have significant relations with the expected length of service in the garments sector. There is a variation between male and female workers in case of their expected length of work. Female workers have 3 years less expected length of service compared to that of male workers and it is statistically significant at 1 per cent level of significance. Less expected length of service of female workers is influenced by their social engagements such as household chores and raising children.

Result show that if the number of children increases, expected length of work increases by more than 2 years and it is statistically significant at 1 per cent level of significance. Workers having higher number of children need to work longer periods in order to meet the minimum required needs of a larger family. The period of jobs is influenced by location as well. Workers working at Dhaka region are expected to work longer periods compared to other regions. Modest livelihood facilities with urban amenities available in Dhaka influence workers to work for longer periods. Other variables used in the model were not significant but still showed the relationship expected between how long workers are employed in the garments industry.

However, the value of R² is 0.20 that means 20 per cent variation of the dependent variable is explained by the explanatory variables and remaining values fall under error term.

9.9 Conclusion

The decent work-related issues have experienced a diverse nature of changes over the years—a part of these changes are structural, while a part of these are institutional and another part is almost unchanged. Not all of these changes can be attributed to various reforms undertaken in the post-Rana Plaza period. While decent work in the workplace is linked with four pillars and ten different elements, the progress in most of the pillars and elements during the post-Rana Plaza period is less satisfactory; the progress is mostly confined in workplace safety. In other words, a large number of indicators related to social compliances because of having less focus under ongoing initiatives are either in weak state or remain unchanged.

The change in the structure and composition of the workforce in the RMG sector is a major issue in the context of employability. It is observed that while enterprises are employing more workers, the rise in employment in large enterprises is greater than that of medium and small enterprises, which further widens the gap of operation between larger and smaller enterprises. The female-led characteristics of the garment industry has been fading away in recent years with declining share of female workers mainly in knit and sweater factories. With the rise of male workers, the male to female ratio has narrowed down. Interestingly, the share of female workers are relatively higher in Narayangonj and Chittagong, which need to be examined. Such geographical variation in male and female workers is observed in terms of age, marital status, workers' use of technologies and types of products produced etc.

Workers' biometric information are indicative of non-discrimination in terms of age and marital status. It shows that a workers' average length of service in the garment industry has been increasing as a result of the growing demand for skill and experience in producing improved products. A growing share of workers employed in the lower-middle grades is reflective of the rise in skill composition of workers in the RMG enterprises. Female workers are still lagging behind the male workers in the upper grades, mainly because of their poor educational attainment, low levels of skill orientation as well as various social obligations. The level of aspirations of female workers to become supervisors is low due to the increased responsibility, long working hours or insufficient salaries (including loss of overtime benefit for not being eligible). Such limited career prospects for female workers lead to less investment for better academic attainment as well as better training by the parents.

Factories are increasingly shifting their traditional modes of production and incentivising the workers in the production process. There have been significant reductions in overtime within the stipulated limit (2 hours per day). Furthermore, in recent years, the slow growth in exports has led to a decrease in demand for excess work. However, a section of workers are still willing to work overtime as well as during holidays due to low wages. Unlike previously, factories are increasingly offering less incentive in relation to employee work. This may be because most workers are skilled and their work varies greatly. Factories now offer attendance bonuses, which ensure continuous employee presence in the factory without leave. A large share of workers (about 70 per cent) do not take leave in a selected month. Thus, there is an effort to ensure 'presence' instead of 'absence' in the factories.

Although workers are supposed to receive the 5 per cent annual increment if they work for one year in a particular factory, a section of workers did not enjoy the benefit. Moreover, overtime allowances are an important part of a worker's monthly income, constituting about 15 per cent of their total monthly income. However, a large section of workers did not receive their payment (including overtime payment) as per the stipulated timeline. Only 53 per cent of enterprises pay wages within the first week of the month. About 25.3 per cent of workers are paid after the first week. More importantly though, these wages are not adequate to ensure basic necessities, covering only 49 per cent of their total expenditure leading them to depend on other means of income. Most workers have to support their families with a deficit or only a modest surplus in household expenditures, with only 28.7 per cent of workers in this category.

In terms of safety and security, most workers have expressed their satisfaction about workplace safety and security. This corresponds to their familiarity with emergency exits, emergency response team contacts and regular fire drills. The institutional measures taken to improve the workplace safety over the last five years has increased confidence among workers with regard to workplace safety and security. However, factories are still reluctant to improve other facilities including day care, female washrooms, treatment facilities, sitting and meeting facilities and training and learning facilities etc. The quality of these services remain poor in most of the cases. While sexual harassment has decreased as a result of increasing awareness of workers and management, harassment is likely to remain a major concern. Workers expressed mixed reactions about access to written contracts, service books and experience certificates.

Workers' organisations continue to remain in either weak or non-functional states. After the amendment of labour laws, workers' representatives in the participation committees have been determined by election. Despite having their larger presence in the factories, the effectiveness of these committees remain weak. Factories working with brands are more likely to have desktop computers (85 per cent) compared to those working with buying houses (between 58–78 per cent). In contrast, trade unions in garment factories are almost non-existent – 97.5 per cent of the factories do not even have trade unions.

A separate case study on problems of institutionalisation reveals that the standard operating procedures as introduced in case of registration of trade unions partly facilitate the process. However, formation of trade unions has faced a number of obstacles beyond the usual process which needs to be addressed. Even the offices responsible for registration are not out of question.

A number of medium to long-term measures need to take into account. First, taking into consideration of changing composition of employment because of changing demand for skills as well as changes in technologies in major manufacturing industry, a National Employment Policy needs to be formulated. Such a policy will focus on economic and social policies related to employment and labour market policies and institutions. The economic and social policies will highlight on pro-employment macro-economic policies, trade, tax, infrastructure and sectoral policies, enterprises policies, SME development and entrepreneurship, policies to encourage transition to formality and education, training, migration and demography. On the other hand, labour market related policies and institutions should highlight both active and passive labour market policies (Parisotto, n.d.).¹⁰³ These policies should promote more female employment in the formal sectors. Besides, the policy should put emphasis on key employment generating industries such as RMG. Business bodies such as BGMEA and BKMEA should develop their long-term employment strategies by encouraging members to develop the skills of workers, offer them advanced training, pursue female employment promotion and make it mandatory to recruit a share of female staff in mid and senior management positions.

Second, female workers' skill development programme needs to be undertaken in order to train the workers in operation of multiple machines. Such programme needs to be extended for fresh female workers who are interested to join the RMG sector. The training should include the operation of advanced machineries and production processes. These training programmes should be organised in the nearby locality, where workers can easily take part after working hours or in weekends. The government in collaboration with development partners, should arrange those programmes at subsidised rates.

Third, workers' length of service, particularly those of female workers, needs to be increased by undertaking special initiatives. Better working environments such as moderate to less overtime working hours, increased support facilities particularly for children, maternity leave with full financial benefits, better housing, schooling and medical facilities for workers and their family members in their

¹⁰³ For details, please see:

<https://labour.gov.in/sites/default/files/uploadfiles/01%20Final%20ILO%20session%20II.pdf>

localities. In this connection, community development initiatives need to be undertaken by the government under which, necessary housing, schooling, medical and recreational facilities to be developed in the locality of RMG clusters.

Fourth, a special community development programme needs to be undertaken for workers working in factories of Narayangonj and Chittagong. These community development programmes should include skill development for female workers along with other community related facilities.

Fifth, business associations such as BGMEA and BKMEA should further streamline its monitoring of proper enforcement of workers' entitled benefits and other facilities. These include the timely payment of wages and other financial benefits including overtime benefits, the payment of proper amount of overtime benefits, the proper grading of workers as per the stipulated structure, the payment of full benefits for leave and the enforcement of maternity leave with full benefits and payment of festival bonus. Since a majority of these benefits are related to financial issues, enterprises need to ensure proper cash flow management for timely paying workers' entitled benefits. Associations should modify their checklists by including necessary indicators to understand preparedness and enforcement of financial issues properly. The MoLE particularly DIFE should also modify their checklists by including necessary indicators while monitoring the factories.

Sixth, workers' wages and grade structure need to be significantly revised as current wages and other financial benefits are not sufficient for them to cover the required need. Most importantly, their wage could cover less than 50 per cent of their family expenses. In this context workers' wages need to be substantively revised with a view to covering the minimum required need of their families. Besides, their current grades are not matched with the skill composition because of a rise in workers' skill. Hence, the grade structure can be revised where grade VII workers could be upgraded to grade VI, grade VI to grade V, grade V to grade IV, grade IV to grade III and grade III to grade II. On the other hand, grade I and II could be merged together under grade I as IA and IB. Considering the skill upgrading in different grades, the promotion of workers could be incentivised in a progressive manner—the proportionate rise of wages for getting promotion from grades VI, V, IV, III and II would be 7 per cent, 10 per cent, 13 per cent and 15 per cent respectively. Moreover, considering the high expenses for children, a 'child care and education allowance' could be introduced, which will be provided for workers having children below 18 years of age. Since workers' expenses for communications is growing, the current item of transport allowance is proposed to be renamed as 'Transport and communication allowance' with a rise in the amount. Since workers need long-term savings for maintaining a decent living after quitting the job, a component of service benefit is proposed in the wage structure. The amount of the benefit would be 3 per cent of the basic. This service benefit could be deposited in a centrally managed 'Provident Fund'.

Seventh, it is noticed that workers working for one year or more in a particular factory are supposed to receive 5 per cent annual increment as per the decision of the minimum wage board held in 2013. A considerable number of workers are deprived of getting wages according to the stipulated amount; moreover, there are other allegations regarding fixing workers' grade under the revised wage structure. In this backdrop, proper enforcement of workers' wages as well as fixing their wages, need to be ensured. DIFE in association with BGMEA and BKMEA should undertake necessary measures for proper enforcement of revised minimum wages.

Eighth, workers facilities in the workplace need to be improved. These include day care, female washrooms, treatment facilities, sitting and meeting facilities and training and learning facilities. Factories should extend other facilities in the factory premise such as fair price shop facility, zero-interest credit facility for purchasing essential households durables, supply of hygienic products etc.

Ninth, since both PCs and trade unions are yet to pass the early stage of the institutionalisation process, it is difficult to get effective organisations in the near future without undertaking any major breakthrough in the process. Most importantly, traditional mechanism of institutionalisation does not make that breakthrough. Since PCs are found to be progressed to some extent, entrepreneurs should provide all kinds of logistical, technical and financial support to make the PCs functional. An effective PC at the enterprise level could facilitate scope of work by creating trust, confidence about the importance of workers' organisations. These PCs could be used to develop trade unions where trained and educated workforce, who are involved in PCs, could act as baseline workforce for working in the trade unions. In this perspective, it is important to create 'model' PCs and educate entrepreneurs and workers according to that line so that integration process of the PCs would be smoother.

References

1. Adhvaryu, A., Kala, N., Nyshadham, A. (2016). *Management and Shocks to Worker Productivity*. IGC Working Paper. UK: International Growth Centre.
2. Akerlof, George A. (1984). Gift exchange and efficiency-wage theory: Four views. *The American Economic Review*, 74(2), 79 - 83.
3. Barrientos, S., Gereffi, G., & Rossi, A. (2011). Economic and social upgrading in global production networks: A new paradigm for a changing world. *International Labour Review*, 150(3-4), 319-340. doi:10.1111/j.1564-913x.2011.00119.x.
4. Barrientos, S., Gereffi, G., & Rossi, A. (2010). *Economic and Social Upgrading in Global Production networks: Developing a Framework for Analysis*. Capturing the Gains Working Paper 3.
5. Barrientos, S., & Smith, S. (2007). Do workers really benefit from ethical trade? Assessing codes of labour practice in global production systems. *Third World Quarterly*, 28(4), 713-29.
6. Beckers, D.G.J., Linden, D. V.D., Smulders, P. G.W., Kompier, M. A. J., Taris, T. W. & Geurts, S. A.E. (2008). Voluntary or involuntary? Control over overtime and rewards for overtime in relation to fatigue and work satisfaction. *An International Journal of Work, Health & Organisations*. 22 (1).
7. Bradley, L., Royer, S. & Eckardt, F. (2008). "There is a link between work life balance culture and strategic competitive advantage". In 22nd ANZAM Conference 2008: *Managing in the Pacific Century*, Auckland, New Zealand.
8. Brown, S., McHardy, J., McNabb. R. & Taylor, K. (2011). *Workplace Performance, Worker Commitment and Loyalty*. IZA Discussion Paper No. 5447.
9. Caruso, C. C., Bushnell, T., Eggerth, D., Heitmann, A., Kojola, B., Newman, K., Rosa, R. R., Sauter, S. L. & Vila, B. (2006). Long working hours, safety, and health: Toward a national research agenda. *Am. J. Ind. Med.*, 49: 930-942. doi: [10.1002/ajim.20373](https://doi.org/10.1002/ajim.20373).
10. C & A Foundation (2018). *Garments Worker Diaries: A study of Garment Workers' Lives and Wages in Bangladesh, Cambodia, and India*. Retrieved from www.workerdiaries.org.
11. Doucouliagos, H. & Laroche, P. (2003). What do unions do to productivity? A meta-analysis. *Industrial Relations*, 42, 650-691. Retrieved from SSRN: <https://ssrn.com/abstract=447340>.
12. Gereffi, G., (2013). Economic and social upgrading and workforce development in the apparel global value chain. *International Labor Brief*. Retrieved from https://dukespace.lib.duke.edu/dspace/bitstream/handle/10161/10946/2013-04-23_Gereffi_Apparel%20Global%20Value%20Chain_KLI%20Brief.pdf%3Bsequence=1.
13. Hearle, C. (2016). Skills, employment and productivity in the garments and construction sectors in Bangladesh and elsewhere. Retrieved from https://assets.publishing.service.gov.uk/media/5977616f40f0b649a7000022/Skills_productivity_and_employment.pdf.

14. Hirsch, B. T (1997). "Unionization and economic performance: evidence on productivity, profits, investment, and growth". In Fazil Mihar, (Eds). *Unions and Right-to-Work Laws, Vancouver, B.C.* The Fraser Institute.
15. ILO (2013). Decent work indicators: guidelines for producers and users of statistical and legal framework indicators. ILO manual: second version / International Labour Office. - Geneva: ILO, 2013.
16. ILO (2016). Strengthening workplace safety and labour rights in the Bangladesh Ready-Made Garment. Retrieved from http://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/--ilo-dhaka/documents/publication/wcms_474048.pdfse.
17. ILO (2013). Can better working conditions improve the performance of SMEs? An International Literature Review. International Labor Office, Geneva. ILO, 2013
18. Islam, N. & Chowdhuri, A. S. B (2016). Socio-economic factors of readymade garments workers in Bangladesh. *D.U. Journal of Marketing*, 15. doi: 10.2139/ssrn.2851802.
19. Koopmanschap, M., Burdorf, A., Jacob, K., Willem, J. M., Brouwer, W. & Severens, H. (2005) Measuring productivity changes in economic evaluation. *Pharmacoeconomics* 23(1):47-54.
20. Macchiavello, R., Menzel, A. & Woodruff, C. (2014). Managerial capital and productivity: Evidence from a training programme in the Bangladeshi garment sector, University of Notre Dame. Retrieved from https://economics.nd.edu/assets/147311/paperfemale_impact_141007cw.pdf [accessed 20 January 2017].
21. Majumdar, S. K., & Marcus, A. A. (2001). Rules versus discretion: The productivity consequences of flexible regulation. *Academy of Management Journal*, 44(1), 170-179.
22. Mariani, R. D. (2013). Working conditions in the Bangladeshi garment sector: Social dialogue and compliance.
23. Pickles, John (2012). *Economic and Social Upgrading in Apparel Global Value Chains: Public Governance and Trade Policy*. Working Paper 13, Capturing the Gains.
24. Rizov, M. & Croucher, R. (2009). Human resource management in European firms. *Cambridge Journal of Economics*, 33, 253-272. doi: 10.1093/cje/ben037.
25. Rossi, A. (2013). Does economic upgrading lead to social upgrading in global production networks? Evidence from morocco. *World Development*, 46, 223-233. doi:10.1016/j.worlddev.2013.02.002.
26. Sebastio. F. (2014). Female empowerment in the Bangladeshi garment industry. Retrieved from <https://www.theigc.org/blog/female-empowerment-in-the-bangladeshi-garment-industry/>.
27. Shirk S.L. (2009). The legacy of Tiananmen for Chinese politics. Statement prepared for the congressional-executive commission on china. Retrieved from https://www.huffingtonpost.com/susan-shirk/the-legacy-of-tiananmen-f_b_210787.html.
28. Shrouti, A., & Nandkumar,. (1995). *New economic policy, changing management strategies: Impact on workers and trade union*. Bombay: Maniben Kara Institute.
29. Sundar. K.R.S (2007). Trade Unions and Civil Society: Issues and Strategies. *Indian Journal of Industrial Relations*, 42(4), 713-734.
30. UNICEF, (2015). The ready-made garment sector and children in Bangladesh. Retrieved from https://www.unicef.org/csr/files/CSR_BANGLADESH_RMG_REPORT.PDF.
31. USAID (2005). Understanding micro and small enterprises growth. *Development Alternatives, Inc.* Retrieved from https://pdf.usaid.gov/pdf_docs/PNADY362.pdf.

Case Study: Challenges of Institutionalisation of Workers' Organisations

CS 1. Objectives and Methodology

The main objectives of the case study are to examine the challenges of institutionalising workers' organisations in Bangladesh's RMG sector. In particular, the major impediments to workers' organisations functioning and the way to improve those organisations are studied. The key statutory framework for workers' organisations is the Bangladesh Labour Act (Amended) 2013 and Bangladesh Labour Rules 2015. This analysis considers issues related to two types of workers organisations such as PCs and trade unions in the RMG sector.¹⁰⁴

This is a perception-based analysis where KIIs have been carried out among representatives of government officials, entrepreneurs, members of PCs, trade unions of factories, and federations and representatives of brands. Key issues discussed in the KIIs include: (i) formation and functioning of PCs/trade unions; (ii) registration and activities of new trade unions and operation of existing trade unions (iii) identifying the key barriers to effective functioning of worker's organisations and (iv) putting forward a set of recommendations to improve the institutionalisation process of workers' organisations. The respondents of KIIs are selected from Dhaka and Chittagong, where the majority of RMG enterprises and workers organisations are in operation.

CS 2. Participation Committees

Legal and Organisational Structure: The Participation Committee (PC) is an elected body which is formed at the factory level with the representatives of employers and workers. Forming the PC is mandatory for the enterprises with at least fifty workers.¹⁰⁵ The PCs function is to inculcate and develop a sense of belongingness among workers and employers, as well as to make workers aware of their commitments and responsibilities.¹⁰⁶ According to the law, the number of workers' representatives should not be fewer than the number of the employer's representatives of the employer. The total number of the members from the two sides in the committee will not be less than 6 or not more than 30. Table 1 presents the distribution of the members of the participation committee.

Table 1: Distribution of members of the participation committee

Number of general workers	Number of workers' representatives in the committee
1-100	<= 6
101-400	10
401-800	12
801-1500	14
1501-3000	18
3001-5000	22
5001-7500	24
7501- more	30

Source: Directorate of Labour, Ministry of Labour & Employment, GoB

Worker's representatives of the PC are elected among workers in the factory. When informed, the Director of Labour (DoL) forms a committee with the help of three to five representatives from the employers and the workers. The committee announces an election schedule and publishes a list of the

¹⁰⁴ In Bangladesh, there are 338 trade unions and 85,883 members of those trade unions (Islam, Farmin & Asaduzzaman, Md. 2015). More or less all the factories have WPCs in accordance with the 2006 law.

¹⁰⁵ Section 205

¹⁰⁶ Section 206

voters. The committee allots electoral symbols among the candidates. These procedures and the election process are to be completed within 15 working days.

The representative of the employer will be the Chairman of the PC and will preside over the meetings of PC. On the other hand, one of the workers' representatives is selected as vice president of the committee. In case the president is absent, the vice president may preside over the meeting. One of the officers selected by the employer works as a member-secretary, who convenes the meeting and prepares the minutes of the meetings. The meetings of the PC are supposed to take place every two months.¹⁰⁷ All copies of the reports and minutes of the meeting need to be sent to the DoL. Overall, the rules and regulations on forming the PC and scope of work and responsibilities of the committee are well specified.

CS 3 Employers and Worker Representatives' Perspectives about PC

At the Formation Stage: According to the workers, their representatives are selected from each floor or section of the factory. On the other hand, representatives from the employers are selected through a mutual decision between General Manager, Executive Director and the Executive Body. Both the workers and employers say that the PC election has taken place at two year intervals. Since factories follow the procedures stipulated in the Labour Act, no major challenge is faced by the enterprises in the process of formation of PC. Usually, senior workers who know the workers' issues well and have a good rapport with the management, are nominated for the election. The workers said that the election process was fair and they casted their votes in the election.

According to the Director of Labour of Dhaka and Chittagong, the PC can bridge workers and entrepreneurs. The committee provides a platform to the workers to discuss their day-to-day concerns and avoid unnecessary disputes. According to representatives of a major brand, most of the factories they have contractual arrangements with, have PCs. PCs maintain a good working environment in the factory. The objective of the members of the PC should be to improve leadership among the workers. The brands prioritise ensuring fair elections as well as the effective functioning of the committee. However, a major challenge at the formation stage is to convince employers who are often apprehensive about the role and function of the Committee to form one in the first place. Overall, there is trust-deficit between workers and employers. However, PCs played a major role in easing labour unrest in Ashulia in November 2016.

Operation Stage: During the interview, both the employers and workers representatives mentioned that core activities of the PC include: a) protecting the rights of workers and employers; b) maintaining a good relationship between both parties; c) improving the working environment; d) increasing productivity and efficiency at the factory level; f) discussing both workers' and employers' issues of discontent and dissatisfaction; and g) conflict management in the factory. Both workers and employers say that they meet once every two months. Workers and employers mutually decide on the agenda. The member-secretary collects complaints from the workers on different floors and sections and reports them as agenda for the meeting. The agenda is finalized by the members of the committee.

Three out of eight worker representatives interviewed emphasised transparency between workers and employers on the discussion, decisions taken and their implementation and follow-up activities. Another three out of eight workers interviewed opined that the increased trainings and workshops regarding the committee will be helpful. Creating a fund at the factory is important because it could facilitate the PC. Both workers' and employers' representatives say that the PC made a difference at the factory by helping improve productivity and efficiency, and by increasing camaraderie between workers within the factory.

¹⁰⁷ Section 207

According to brand representatives, the PCs are performing well by following the necessary rules. The committee can work properly when both sides understand its importance. For the PC to be effective, it is important to ensure fair election, increase participation of workers' representatives in the discussion meetings, and improve how well workers' representatives understand committees. The factory management also needs to be willing to make the committee functional. According to the general workers, sometimes they are unaware about meeting discussions. Sometimes the workers' representatives update them during the lunch break.

CS 4 Trade Unions

Legal and Institutional Structure: A trade union is formed by workers as per chapter XIII of the Bangladesh Labour Act, 2006¹⁰⁸. Besides, workers' federations are allowed to form trade unions by registering under the Act.¹⁰⁹ A trade union is to be formed to maintain the relations between workers and employers.¹¹⁰ Registration is mandatory¹¹¹ for trade unions, and trade unions have to follow all the rules.¹¹² A trade union should not be entitled to register unless it has a minimum membership of thirty per cent of the total number of workers employed.¹¹³ The application for registration is to be signed by its president and secretary and made to the Director of Labour. The application needs to fulfill the stipulated requirements such providing the necessary information on the trade union, the personal information of the officers, the statement of members and necessary information of the Federation of trade union.¹¹⁴

The office of the Director of Labour acts as the Registrar of Trade Unions.¹¹⁵ Upon receiving the application, it publishes a public notice with the names of the president and general secretary along with their particulars.¹¹⁶ On being satisfied with the requirements of the application, the Director of Labour registers the trade union in a prescribed register and issues a registration certificate in the prescribed form within a period of sixty days from the date of receipt of the application.¹¹⁷ Table 2 presents the standard operating procedure (SOP) for the registration of trade unions.

Table 2: Standard Operating Procedure for the registration of trade union

Step	Activities	Responsibilities	Time Frame
Phrase 1: Receipt, consideration and decision on application (Total allocation of 12 days)			
A. Receipt and recording of the application	<ul style="list-style-type: none"> ○ Application receipt ○ Creation of File 	PA to the Registrar of Trade Unions	03 days
B. Processing of the application	<ul style="list-style-type: none"> ○ Application Processing 	Registrar of Trade Unions	02 days
C. Decision on the application by the registrar of trade unions	<ul style="list-style-type: none"> ○ Registration ○ Issue the Letter of Requirements 	Registrar of Trade Unions	07 days

¹⁰⁸ Section 2 (15), 'trade union' means trade union of workers or employers formed and registered under Chapter XIII and includes a federation of trade unions

¹⁰⁹ Section (16), 'trade union federation' means a federation of trade unions registered under Chapter XIII

¹¹⁰ Section 176 (a)

¹¹¹ Section 177 and 178

¹¹² Section 179 (1)

¹¹³ Section 179 (2)

¹¹⁴ Section 178 (2)

¹¹⁵ Section 177 (2)

¹¹⁶ Section 178 (3)

¹¹⁷ Section 182 (1)

Phase 2: Reply on the Letter of Requirements having been issued by the registrar of trade unions (Total allocation of 25 days)			
A. To receive the letter of requirements	The letter of requirements shall be received by the Trade Union	Postal Department	05 days
B. Rectification of application	Applicant to rectify the application as stipulated in the Letter of Requirements	Applicant	15 days
C. To reach the rectified application	Rectified application to be submitted to the Registrar of Trade Unions	Postal Department	05 days
Phase 3: Verification (Allocation of 15 days)			
A. Verification of the application	In the application is deemed to require verification, the Registrar shall form a Verification Committee.	At least 02 staff (Deputy Director/Assistant Director and a Labour Officer)	15 days
Phase 4: Decision concluded by the registrar of trade unions (allocation of 03 days)			
A. Final decision of the registrar of trade unions	Issuing of final decision by the Registrar of Trade Unions	Registrar of Trade Unions	03 days

Source: Directorate of Labour, Ministry of Labour & Employment, GoB

Taking part or instigating others to take part in the activities of an unregistered trade union or of a trade union whose registration is cancelled is punishable with imprisonment for a term which may extend to six months, or with a fine which may extend to Tk.2000 or both.¹¹⁸ **Table 3** presents the Standard Operating Procedure followed in case of the unfair labour practices and anti-trade union activities.

Table 3: Standard Operating Procedure of Unfair Labour Practices

Step	Time Frame
1. Written complaint	Complaint should be submitted by workers within 30 days from occurrence of the date
2. Verification	06 working day
3. Communication	17 working day
4. Investigation	22 working day
5. Resolution	05 working day
6. Record	Step by step it will be preserved in the file and should maintain a prescribed register
7. Referral to Labour Court	04 working day

Source: Directorate of Labour, Ministry of Labour & Employment, GoB

CS 5 Perspectives on Formation and Registration of Trade Unions

Worker's Perspective

Workers face difficulties and constraints in forming trade unions. Most of the worker's representative (four out of nine) state that they formed trade unions secretly by going to the worker's residences after factory hours or on weekend to convince them to be members of their trade unions. Trade union leaders complete all the procedures without letting the entrepreneurs know about it. Factory trade unions take the help of the Federations. Trade union members of other factories also help to form trade unions. Most members joined trade unions due to discontent and dissatisfaction about wages,

¹¹⁸ Section 299

untimely payment, and not receiving the entitled benefits such as sick/maternity/earned leave, and physical and verbal harassment.

Most of the trade unions obtain the registration certificates by following a legal process. Since workers are not educated, they seek help from the Federation to fill up the written application and complete other formalities. Despite completing the formalities as per legal process, often trade unions have to bribe officials to complete the process without delay. For example, the registration fee of the trade union is Tk. 500 but more than half the respondents mentioned that they needed to provide extra money to the officials to receive the registration certificate without much delay. The amount of extra money ranged from Tk. 7,000 to Tk. 85,000.

Besides, workers face various other challenges when forming trade unions. The main challenges were to convince other workers because they do not know enough about trade union related activities. Workers fear losing their jobs for joining the trade union. Entrepreneurs usually increase their workloads so they do not find time to talk to the other workers about trade union related activities. Moreover, entrepreneurs also send goons to threaten the workers and family members of workers.

Entrepreneur's Perspective

Most of the entrepreneurs mentioned that they were not aware of the formation of the trade unions; they only got to know about it when the Director of Labour informed them to verify the trade union. They claim to not be against trade unions but they do not support some of what the workers have done such as, they claim, misleading other workers, calling for strikes, destroying factory property, and so on. They do not appreciate the work that needs to be done in the factory once the trade union is formed. However, three out of six entrepreneurs responded that while the trade union has not yet had a direct effect, it has had an indirect one. Workers raise their queries and discuss those with the management through trade union instead of making an issue of unrest as they did earlier.

Other Stakeholders' Perspective

The Federation and the trade unions have similar perspectives. The first challenge when forming a trade union is to explain to the workers the importance and benefits of the trade union. The next challenge is to hide the news from the entrepreneurs, because they are against forming trade unions. The third challenge is to handle worker representatives after the trade union is formed. Most of the workers expect that their demands will be fulfilled quickly and they usually get impatient. To meet their urgent demands the Federation takes help from the Director of Labour, to pressurise factory authorities to get the work done as quickly as possible. Sometimes, the Federation had to meet the officers' unofficial demands (e.g. bribe).

According to the Directorate of Labour, many applications they receive are not filled up properly. For example, applications have duplicate factory ID cards of the workers, dual membership of unions and incorrect information about workers and false signature of workers. The Directorate usually gives them a chance to resubmit the application with proper information. The Directorate of Labour officials think workers should be trained on the matter of trade unions to prepare them for the formation, registration and other activities of the trade union.

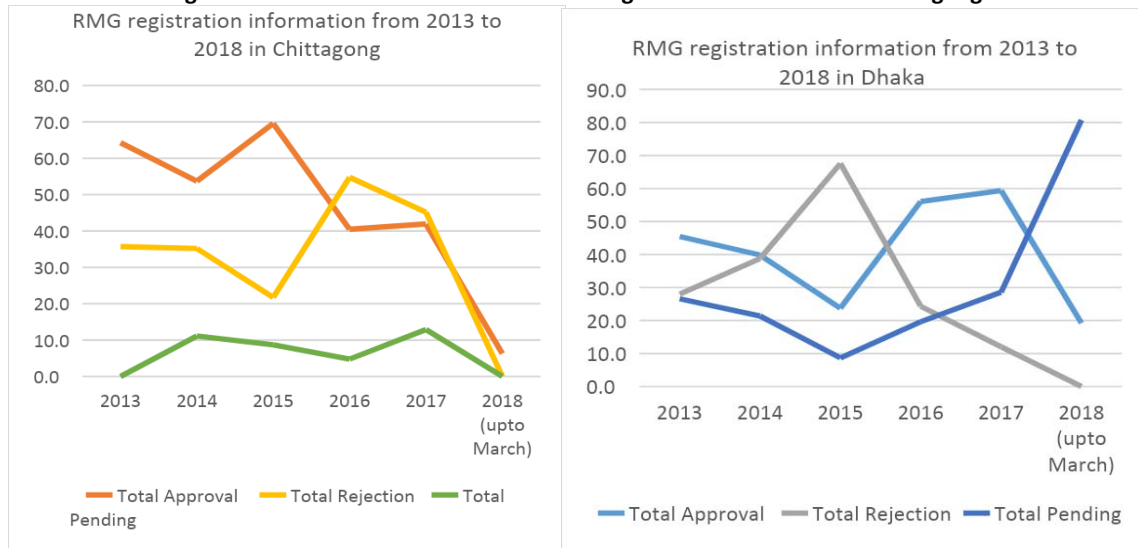
Table 4: RMG registration information from 2013 to 2018 in Dhaka and Chittagong

Year	Total Application		Total Approval		Total Rejection		Total Pending	
	Dhaka	Chittagong	Dhaka	Chittagong	Dhaka	Chittagong	Dhaka	Chittagong
2013	143	28	65	18	40	10	38	0
2014	379	54	151	29	147	19	81	6
2015	219	23	52	16	148	5	19	2
2016	107	42	60	17	26	23	21	2
2017	133	31	79	13	16	14	38	4
2018 (up to March)	26	16	5	1	0	-	21	-

Source: Directorate of Labour, Ministry of Labour & Employment, GoB

The figures below provide information about the trend in registration of trade unions in Dhaka and Chittagong. In Dhaka, the rate of approval of trade unions has gradually decreased from the 2013 to 2015 and then it increased from 2015 to 2018. Application rejection percentages were the highest in 2015. Pending applications fluctuate from year to year. On the other hand, in Chittagong, the approval of the registration drastically fell from 2013 to 2018 and the rejection of applications fluctuated over the last five years. The percentage of the pending applications increased from 2013 to 2018.

Figure 1: Information about Trade Union Registration in Dhaka and Chittagong



Source: Directorate of Labour, Ministry of Labour & Employment, GoB

CS 6 Perspectives on Operation of Trade Union

Worker's Representatives Perspective

The worker representatives say that they form trade unions to create a working environment where the workers are not getting deprived of their entitled benefits and facilities as well as their rights. They admit to needing training to know more about law, rules and regulations of the trade union and more importantly, to always be united. According to the workers' representatives (five worker representatives out of six), they hold meetings but there is no specific time for the meeting. The President and the General Secretary set the agenda of the meeting. The agenda often includes issues on workers' facilities and benefits such as drinking water, maternity leave, factory discipline and yearly increments. Trade union representatives set their strategies for negotiating with owners. In most cases, the final outcome does not meet expectations.

Trade unions collect regular fees from the member workers for their official work. Out of six trade unions, three take Tk. 20 per month from each member and two take Tk. 10 per month. This is not enough, but their members cannot afford more.¹¹⁹ The financial report is to be submitted to the Directorate of Labour. It is challenging for trade unions to organise regular meetings with workers at the factory premises because the entrepreneurs are not supportive in this regard. Besides, workers' representatives face harassment. They have gotten locked up in a room for hours, threatened to be fired, gotten arrested, attacked by local goons, gotten charged by the police and even got cases filed against them. Their families have been harassed.

¹¹⁹ The collected fund is deposited into a bank account which is jointly maintained by President, General Secretary and Director of Finance of the trade union. The yearly transaction of the account as well as the financial report of the trade union is to be approved in the annual general meeting.

In a few cases, entrepreneurs have given trade unions the necessary facilities. For example, the factory authority has paid for their training. Despite having lots of challenges and problems, all of the worker representatives interviewed said that they have been trying to operate the trade union as efficiently as possible. If workers are properly trained, they could contribute more. The representative of workers' federations shared the same views on the difficulties in operating a trade union. Trade unions have been established to solve various problems raised by workers. Workers' organisations try to be transparent and report to the authority about their problems on a regular basis.

Entrepreneur's Perspective

Entrepreneurs believe that the trade union's purpose is to unite the workers so they can ask the entrepreneurs for their rights and facilities. Besides, trade unions should negotiate with the employers work for the betterment of the workers. Entrepreneurs think that trade unions should not waste time by making unnecessary demands, going on strike without a proper reason, influencing other non-union workers to stop production and creating chaos. Three out of six entrepreneurs said that the activities in which trade unions are involved are not always justified and legal. Sometimes workers refrain from productive work in the name of activities related to trade union and sometimes they damage machinery and equipment. Overall, the entrepreneurs have a mixed perspective on trade unions. Some entrepreneurs support trade union activities.

There is a lack of accountability among workers' representatives of trade unions with regard to their work in the factory. Entrepreneurs say that they consult with the Director of Labour or Industrial Police and try to come to a mutual understanding when there is a problem. The entrepreneurs were unhappy with the workers involved in trade union activities since this impedes their target achievement.

During the formation of the trade union, the entrepreneurs did not face any challenges as most of them did not know that the trade union was being formed. However, after the formation, they say they had to fulfill the workers' demands at any cost. Problems were solved with the help of the Director of Labour. Moreover, federations play an important role by providing training to the workers. Entrepreneurs believe that the training is not enough; proper training to the workers will improve the quality of trade union activity.

Other Stakeholders' Perspective

According to the Directorate of Labour, the trade union is a platform. The trade union places a charter of demands to the factory authorities in a way that compels the authority to discuss the demands with the workers. The Directors of Labour mentioned that they follow up the activities of the trade union and check their annual income and expenditure reports. The Directors of Labour in Dhaka and Chittagong have different opinions on unrest. According Director of Labour and senior officials of Industrial Police in Chittagong, the number of incidences of unrest has decreased since 2013. On the other hand, the Director of Labour and the officials of Industrial police in Dhaka stated that more cases were filed in Dhaka between 2013 and 2017. Unrest is usually related to wages, leave or verbal harassment to workers.

Table 5 documents in detail how trade unions were discriminated from 2013 to 2017 in Dhaka. Total complaints gradually increased and total disposal also increased drastically in 2016 and 2017.

Table 5: Measures against anti-Trade Union Activities

Year	Previous Pending	New Complaints	Total Complaints	Disposal			Pending Under Process	Addressed rate (%)
				Case filed	Settled Otherwise	Total		
A	B	C	D=B+C	E	F	G=(E+F)	I	H=G/(D-I)
2013	08	07	15	05	00	05	05	50%
2014	10	09	19	03	00	03	09	30%
2015	16	23	39	01	00	01	00	03%
2016	38	46	84	26	45	71	13	100%
2017	13	53	66	16	43	59	07	100%

Source: Directorate of Labour, Ministry of Labour & Employment, GoB

Brands and buyers say that trade union leaders should improve their capabilities so that entrepreneurs cannot disagree with the trade union.

CS 7 Other Issues

Importance of Successful Trade Unions

According to the entrepreneurs, a trade union is important only if the workers' representatives do not take advantage of it and it does not hamper with the production. They believe that worker representatives should organize trade unions for workers' betterment. One of the entrepreneurs mentioned that he did not see a point in having a successful trade union because it is not conducive to productivity. According to the Director of Labour, a successful trade union can solve workers problems effectively, even when they pressurize the factory management.

Opinion of General Member of Trade Union

According to the general members of trade unions, trade union activities contribute to improving workplace facilities and getting due benefits. Labour leaders are transparent in using trade union funds. Trade union leaders have good relations with management officials.

Opinion of Non-Union Members

Many workers who are not members of trade unions believe that they might lose their jobs if they join a trade union. At the same time, they see that the trade union is helpful to its members and it helps workers become independent. This may encourage them to join the trade union. Some of the workers who are not members mentioned that the trade union is not making much of a difference for them.

CS 8 Process of Development of Institutionalisation

Unlike PCs, trade unions are still struggling at the intuiting¹²⁰ stage, where each of the trade unions have confronted challenges at the individual level. There is a huge gap between stakeholders particularly between entrepreneurs and workers about its formation and operation at their enterprises. Workers face various kinds of difficulties in convincing workers to be members of trade unions, submitting applications without harassment and limited cooperation from government offices including problems of corruption. Despite setting Statement of Purposes for formation and registration of trade unions, workers did not get registration as per support and timeline. Under such circumstances, the whole process of institutionalisation of trade unions have been struggling at the very initial stage.

¹²⁰ The 4-I Framework developed by Crossan, Lane and White (1999) indicates a comprehensive model of organisational learning which identifies four main processes including intuiting, interpreting, integrating and institutionalising.

CS 9 Conclusion

Since both PCs and trade unions are yet to pass the early stage of institutionalisation process, it is difficult to get effective organisations in the near future without undertaking any major breakthrough in the process. Most importantly, traditional mechanism of institutionalisation does not make that breakthrough. Since PCs are found to be progressed to some extent, entrepreneurs should provide all kinds of logistical, technical and financial support to make the PCs functional. An effective PC at the enterprise level could facilitate the scope of work by creating trust, confidence about the importance of workers' organisations. These PCs could be used to develop trade unions where a trained and educated workforce that is involved in PCs could act as the baseline workforce for working in the trade unions. In this perspective, it is important to create 'model' PCs and educate entrepreneurs and workers according to that line so that integration process of the PCs would be smoother.

References

1. Crossan, M.M., Lane, H.W. and White, R.E. (1999). "An Organizational Learning Framework: From Intuition to Institution," *The Academy of Management Review*, 24(3): 522-537.
2. Deakin, Simon, "The Contract of Employment: A Study in Legal Evolution," ESRC Centre for Business Research, University of Cambridge Working Paper No.203, 2001.
3. Doucouliagos, Christos & Patrice Laroche, (2003), "What Do Unions Do to Productivity? A Meta-Analysis", *Industrial Relations* 42 (4)
4. Hirsch T. Barry (1997), "Unionization and Economic Performance: Evidence on Productivity, Profits, Investments and Growth", in Fazil Mihlar (ed), *Unions and Right to Work Laws*, Vancouver B.C.: The Fraser Institute
5. Itcilo (2008). Employment, labour relations and working conditions in the EPZs Labour legislation and labour relations
6. Shirk, James (2009), What Unions Do: How They Affect Jobs and Economy, Centre for Analyses at Houtage Foundation, May 21, Background#2775
7. Shrouti, Arvind and Nandkumar (1995), *New Economic Policy, Changing Management Strategies—Impact on Workers and Trade Unions*, Friedrich Ebert Stiftung, New Delhi and Maniben Kara Institute, Mumbai.
8. ILO (2011). Decent Work Indicators: Guidelines for Producers and Users of Statistical and Legal Framework Indicators; ILO Manual, second Version, December, 2013, Geneva

D. Measuring Enterprise Level Upgrading Index and Hypothesis Testing

10. Estimating Enterprise-level Upgrading and Testing Hypotheses: Social, Economic and Gender-embedded Upgrading

10.1 Introduction

Despite having the conceptual and analytical frame for understanding the upgrading of the value chains, there is limited attempt to quantify the level of upgrading of industrial enterprises. This study has undertaken a unique attempt to measure the level of upgrading of the apparel enterprises of Bangladesh. Taking into account the conceptual issues related to social, economic and gender-embedded upgrading, necessary index has been prepared and required estimation has been done based on the data collected from the enterprise level survey. For example, social upgrading of RMG enterprises is measured based on the method developed by Standing (2003). On the other hand, the economic upgrading index is developed based on the three different components of upgrading—process, product and functional upgrading; similarly, gender-embedded upgrading has been measured on the basis of gender-related components of economic and social upgrading of RMG enterprises. Such an analysis helps to measure the benchmark level of upgrading of RMG enterprises. More importantly, the analysis distinctly identifies enterprises with their different levels of upgrading under different components and enterprises could easily be traced with regard to their strength and weaknesses and what kinds of measures would be required to address their challenges.

Besides, the chapter tests three hypotheses with regard to social, economic and gender-embedded upgrading of RMG enterprises based on the data collected through sample survey. These hypotheses attempted to identify the nature of relationship between social, economic and gender-embedded upgrading in view of the post-Rana Plaza developments in the RMG sector of Bangladesh.

10.2 Literature Review

The issue of social upgrading along the value chain while ensuring economic upgrading, is quite a recent phenomenon; however, the literature doesn't shed light on how social upgrading as a whole affects profitability and productivity, and how it helps in firm's growth (in terms of developing capacity for producing better products more efficiently and move up the value chain, commonly referred to as economic upgrading) that would offset the increased costs of social upgrading. There are different factors that influence the link between the two; nevertheless, some of which are: particularities of specific industries, position within the GVC, typology of labour, status of workers, firm size and product mix etc. (Salido and Bellhouse, 2016; Pickles, 2012). As the context of the industry is important for better working conditions, Barrientos, Gereffi and Rossi (2010) suggest different economic upgrading and social upgrading outcomes for the type of industry. In case of low-skilled, labour intensive work, (such as apparel), they suggest that this type of industry is good for 'ramping up' output and exports, attracts foreign investors, but highly buyer-dependent with minimal local linkages, low value-added and highly affected by buyers' purchasing decisions. With respect to social upgrading, these types of industries generate high quantities of jobs (especially for females), but pay lower wages, flexible and casual employment, no fixed working hours, lack of job security and no skill improvement. Especially in apparel GVCs, fragmented and geographically dispersed production processes with shorter contract lengths, high supplier turnover, higher demand for quality products often without any increase in contract price etc., lead to the distribution of the responsibility of decent work across many actors, among whom many are not qualified to handle the issues (Pickles, 2012).

Among the case studies, one particularly mentionable study is Bernhardt and Milberg (2011), who adopted a 'parsimonious' approach to measure the relationship between economic and social upgrading in the apparel, mobile phones, agro-foods and tourism value chains. Based on the results, Milberg and Winkler (2013) suggest that increased employment and declining real wages are commonly observed in the apparel sector data; but overall, excepting some cases, economic and social

upgrading seem to have a positive association with each other in the apparel and agro-foods sector. The mobile telecom sector shows a negative association, while the tourism sector shows social upgrading with ‘somewhat less economic upgrading’. Milberg and Winkler (2013), from their analysis of a sample of thirty developing countries reveal that the ‘connection between economic and social upgrading is weaker than the connection between export growth and economic upgrading’. Studies dealing exclusively with the relationship between economic and social upgrading are not readily available, and among the studies that are available, 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). Table 10.1 presents a summary of results of relationship between social and economic upgrading.

Table 10.1: 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); Locke et al (2007); Plank, Rossi and Staritz (2014);

Source: Author’s compilation

Another determinant is the type of economic upgrading pursued, and process upgrading in textile and garments industries have introduced labour replacing new technologies; hence, it has had an ‘ambiguous and segmented’ social effect (Rossi, 2013). There is also the example of the tourism industry, where gains were divided unevenly among formal and informal workers. Nazneen and Nathan (2014) conclude that economic upgrading (mainly through functional upgrading) of the suppliers in the apparel sector of Bangladesh resulted in higher earnings per worker and improvements in wages (mainly due to the increasing bargaining power of workers). However, they conclude that the improvements are quite limited, as the factories are yet to develop ‘decent’ working conditions. They also comment that increased wages and improved working conditions require a level of financing that can be maintained by increases in the profitability of firms. Hence, it can be concluded that though guaranteeing social upgrading due to economic upgrading is difficult, economic upgrading resulting in an increase in revenue per employee is a favourable condition for social upgrading.

Now, firms have to tackle competing pressures of maintaining high quality while lowering costs, and suppliers can choose between a ‘low road’, characterised by economic upgrading and social downgrading, and a ‘high road’, involving economic and social upgrading; however, those taking a high-road approach have the fear of losing price competitiveness (Barrientos, Gereffi and Rossi, 2010). This creates pressure on firms to take the ‘low road’ of industrialization, creating various problems for workers. For example, Barrientos (2007) reports that problems workers in garments factories of Bangladesh face include lack of awareness by workers of their rights, significant occupational segregation and discrimination, wages and gender pay gap, employment insecurity, long working hours, compulsory overtime, lack of childcare or maternity leave, poor health and safety, overcrowding and poor working conditions. However, current literature (as highlighted in Table 13.1) 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. This paper tries to fill in this gap in the literature. In other words, using data on 226 factories operating in the apparel sector of Bangladesh, this paper tries to untangle the complex relationship among economic and social upgrading, and also their relationship with gender-embedded upgrading, which is a special case of social upgrading where there is more focus on gender equality in social upgrading.

10.3 Methodology

As the basic target of this paper is to untangle the complex relationships among economic and social upgrading of firms, first of all, a methodology for measuring the level of upgrading in the form of quantifiable indices needs to be developed, and second, the relationships among the index values need to be examined.

10.3.1 Definitions

Measuring economic and social upgrading entails detailing a proper definition of the concepts, such that the indices and the following analyses could be based on them. The existing literature provides a more or less clear definition of the concepts.

Economic Upgrading: Economic upgrading can be defined as the process through which firms move from low-value added to high-value added activities (Gereffi, 1999), or, in other words, value-added increasing innovation (USAID, 2006). While there might be different approaches, there is a general consensus on the types of upgrading along the value chain (see for example, Barrientos, Gereffi and Rossi, 2010; Humphrey and Schmitz, 2002; Barrientos et al, 2011, among others), which are: process upgrading, which is the 'transforming of inputs into outputs more efficiently by production reorganization or technological improvement (Humphrey and Schmitz, 2000); product upgrading, which refers to the introduction of 'advanced types' of products (Barrientos, Gereffi and Rossi, 2010) and quality improvement of products for generating higher value-added and higher revenue (Salido and Bellhouse, 2016); and functional upgrading, which involves changes in the mix of activities of firms in order to perform higher value added tasks. The major levels of functional upgrading (in the case of apparel manufacturers) are Cut, Make and Trim (CMT), Original Equipment Manufacturing (OEM), Original Design Manufacturing (ODM) and Original Brand Manufacturing (OBM).¹²¹

Social Upgrading: Social upgrading generally refers to the improvement in the rights and entitlements of workers, and 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).

Gender-embedded Upgrading: This study treats gender-embedded upgrading as a special case of social upgrading, where the gender equality in employment, standards, rights and social protection are to be measured in terms of quantifiable terms.

10.3.2 The Model

To understand more about how social upgrading and economic upgrading could be related, let us consider the profit function of a competitive firm, which produces only one output; the basic objective

¹²¹Cut, Make and Trim (CMT) = Manufacturers only assemble inputs according to buyers' specifications; Original Equipment Manufacturing (OEM) = Firm undertakes a broad range of activities, commonly known as full package production; Original Design Manufacturing (ODM) = Supplier completes part of the pre-production process, such as designing or product development; and Original Brand Manufacturing (OBM) = Supplier fully develops products under its own brand name. For details, please see Gereffi and Lee (2013)

of the firm is to maximise profits. Hence, following Varian (1992), the firm's objective function would be –

$$\Pi(p) = \underset{x}{\text{Max}} pf(x) - wx \text{ s.t. } x \geq 0$$

where, $\Pi(p)$ = profit function, p = price of the product, $f(x)$ = production function, x = vector of all factors of production, w = vector of factor prices.

First of all, the vector of factors of production, x , includes capital (K), labor (L) and other factors of production. If we consider only labour and capital, then –

$$\pi = Pf(K, L) - rK - wL$$

where, r denotes rent for capital and w denotes wage for labor.

Following Milberg and Winkler (2013), if we consider wage as an indicator of social upgrading, with higher wages indicating better working conditions, and profitability being a primary condition for economic upgrading, we can see that social upgrading might affect economic upgrading negatively. Now, factories in the garments sector of Bangladesh also have to consider remediation costs, or the costs of improving workplace safety in the factories, as prescribed by Accord, Alliance and the National Initiative.¹²² Hence, remediation costs (RC) need to be added to the profit function as costs –

$$\pi = Pf(K, L) - rK - wL - RC \dots \dots (1)$$

The major argument from the stakeholders in the garments sector¹²³, especially ILO, is that although increased costs in improving workplace environment of the factory translated into a negative impact on the profits of the factory, it has a positive impact on worker productivity, thereby increasing production and ultimately increasing productivity. Hence, there is an inherent positive effect of social upgrading on economic upgrading; however, that remains to be tested given the data.

On the other hand, if we rewrite the equation, we get –

$$Pf(K, L) = \pi + rK + wL + RC \dots \dots (2)$$

Hence, there is also an effect of all those costs on sales revenue as well, given the level of profits.

10.3.3 Developing Index Values for Benchmarking

The following is the methodology used for calculating indices for upgrading. All indices have been calculated for data of 2016.

10.2.3.1 Economic Upgrading Index: As mentioned in section 13.2, economic upgrading has three components: product upgrading, process upgrading and functional upgrading. So, the economic upgrading index (EUI) calculated for the purposes of this paper also considers the three components, where each of them receive equal weight:

$$EUI = PrSI + PSI + FSI$$

The score is then converted to a 0 – 100 scale.

Product Upgrading Sub-Index (PrSI): The product upgrading index basically measures how much value each factory generates through the production of its products, as it generally entails quality

¹²² Accord and Alliance had been formed by the brands and retailers who are the major buyers of Bangladeshi garments products after the Rana Plaza tragedy, with a view to improving workplace conditions. On the other hand, the National Initiative had been formed by the Government of Bangladesh (with help from ILO) for the same purposes.

¹²³ See, for example, the policy briefs of Better Work, ILO

improvement of products for generating higher value-added and higher revenue (Salido and Bellhouse, 2016). The only data available in this case is the average price of products produced by factories in the apparels sector, which is an approximation of the level of products produced by the factory. Another component considered here is product development activities of the factory; hence, PrSI is measured as follows:

$$PrSI = \text{Average price of products } (P_{avg}) + \text{Involvement in product development } (V)$$

where,

P_{avg} = weighted average price of the five largest volumes of orders received by the firm in 2016. Here, the volume of orders has been used as weights. To convert P_{avg} to a 0 – 1 scale, the following formula has been used –

$$\frac{\text{Value of the Variable} - \text{Minimum Value}}{\text{Maximum Value} - \text{Minimum Value}}$$

So, in this case, the firm with the highest average price value would get a score of 1 while the firm with the lowest average price would get a score of 0.

$V = 1$ if the firm’s Research and Development wing is involved in new product development.

The scores have been converted to a 0-1 scale.

Process Upgrading Sub-Index (PSI): Process upgrading entails improvements in efficiency of the production process. Here, sales per worker and presence of industrial engineering department (IE) has been considered. Sales per worker is an approximation of measurement of efficiency, while the presence of IE is an indicator of upgraded production process. Hence, PSI has been measured by using the following formula:

$$PSI = \text{Sales per Worker} + \text{Use of IE Department } (N)$$

where, Sales per Worker = Sales revenue of the year 2016 divided by the number of workers in the factory

$N = 1$, if the firm has an IE department, 0 otherwise

The PSI score has been converted into a 0-1 scale, following the method outlined earlier.

Functional Upgrading Benchmark Sub-Index (FSI): The functional upgrading sub-index has been measured as follows:

$$FSI = G_w + G_m + F_b + X$$

where,

$G_w = 1$ if the firm has warehousing facilities abroad, 0 otherwise; this is an approximation of whether the factory is moving towards the ODM level of functional upgrading

$G_m = 1$ if the firm has whole selling facilities abroad, 0 otherwise; this is an approximation of whether the factory has reached at least a primary level of ODM or OBM level of the value chain

$F_b = 1$ if the firm has retailing facilities abroad, 0 otherwise; this is an approximation of whether the factory has been able to reach OBM level of the apparel value chain.

$X = 1$ if the factory has design facilities, 0 otherwise; this is an approximation of whether the factory is trying to move up a level in the value chain, towards the ODM level from the OBM level¹²⁴.

¹²⁴ See footnote 1 for details

The FSI score has also been converted to a 0-1 scale.

10.2.3.2 Social Upgrading Index: Social upgrading basically refers to the improvement in the rights and entitlements of workers in the workplace, and Standing (2003) developed a method for measuring social upgrading using the definition. A composite index has been suggested in that study, which was termed as 'Decent Workplace Enterprise index (DWE 4)' for different countries of different development strata.¹²⁵ Based on Standing (2003), the present study measures a firm's social benchmark level in the context of the apparels sector of Bangladesh through a composite index of three key sub-index:

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

The Index is then converted to a 0-100 scale.

Employment sub-index (ESI): The employment sub-index measures one of the pillars of decent work of ILO, and it is a combination of three sub-components

ESI = Employment Security Index (ESel) + Work Security Index (WSI) + Human Resource Development Enterprise Index (HRDEI)

Employment Security Index (ESel) has been calculated by using the following formula –

$$ESel = RB + N + Dis + R$$

where,

RB = 1 if workers receive retrenchment benefits, 0 otherwise

N = 1 if the firm reported that the workers are provided with a notice before they're laid off, 0 otherwise.

Dis = 1 if the firm reported that worker dismissal procedures are covered in collective agreement between workers and management, 0 otherwise

R = 1 if the firm reported that workers are provided with a regular contract, 0 otherwise.

So, all the variables used in ESel are dummy variables, and like before, they have been converted to a scale of 0 – 1.

Work Security Index (WSI) has been calculated using the following formula –

$$WSI = SC + ACC + ILL$$

where,

SC = 1 if the firm has a safety committee and received training in all key safety issues, 0.5 if there is a safety committee but no training experience, 0 otherwise

ACC = 1 if the firm's ratio of no. of accidents to total number of workers is less than half of the sample mean, 0 otherwise

¹²⁵ DWE has been defined as: DWE = normalized value of (Human Resource Development Enterprise index + Work Security Index + Employment Security index + Non-discrimination index + Economic Equity index + Economic Democracy index). Normalization is made by the following rule: $X_i = [X_{actual} - X_{min}] / [X_{max} - X_{min}]$ Where, X_i is the normalized value of the Index, X_{actual} is the actual value obtained by the firm, X_{min} is the minimum value attained by any firm, and X_{max} is the maximum value of the Index attained by any firm. As a result, values of each index range from a minimum of 0 to a maximum of 1. Details of his calculation is given in the annex.

ILL = 1 if the no. of workdays lost due to illness is less than half of the sample mean, 0 otherwise

This has also been converted to a 0-1 scale.

Human Resource Development Enterprise Index (HRDEI) has been calculated using the following formula–

$$HRDEI = TR + TR_F + RETR + RETR_F + TR_{inst}$$

where,

TR= 1 if training was usually provided to newly recruited workers, 0 otherwise;

TR_F= 1 if TR was apprenticeship or off-the-job training in classroom or institute given to workers, 0 otherwise;

RETR=1 if there was training provided for established workers, 0 otherwise;

RETR_F = 1 if that retraining given to workers was formal, in class or institute, 0 otherwise;

TR_{inst}= 1 if the firm paid workers for trainees at institutes, directly or indirectly, 0 otherwise.

To convert the value of HRDEI to a 0 – 1 scale, data has been divided by using the number of elements used in the index (5).

Standard sub-index (SSI): Standards Sub Index (SSI) is an index for measuring the workplace safety in terms of the remediation activities completed. After the Rana Plaza tragedy, Accord, Alliance and National Initiative was formed to improve the workplace safety of garments factories in Bangladesh. They initially gave a Corrective Action Plan (CAP) to each factory so that remedial measures could be initiated to improve workplace safety. Costs associated with implementing those CAPs were estimated (henceforth referred to as estimated cost), and if the realised costs upto 2016 are lower than the estimated cost, that indicates that they have not yet completed their remediation activities. Hence, this index is an approximation of how much of the workplace improvement activities (generally referred to as remediation activities) have been actually completed by the factory. It has been calculated by using the following formula:

$$StSI = \text{Electrical Safety Index (EISI)} + \text{Fire Safety Index (FSI)} + \text{Structural Safety Index (SSI)}$$

where,

$EISI = \frac{\text{Total Expenditure on Electrical Safety till 2016 (after CAP)}}{\text{Total Initially Estimated Expenditure on Electrical Safety}}$; so the value of EISI = 1 if total expenditure on electrical safety till 2016 is equal to that of the estimated expenditure, indicating that the firm has completed most or all of its remediation activities. In cases where the actual expenditure has exceeded the estimated ones, the value of EISI = 1.

$FSI = \frac{\text{Total Expenditure on Fire Safety till 2016 (after CAP)}}{\text{Total Initially Estimated Expenditure on Fire Safety}}$; so the value of EISI = 1 if total expenditure on electrical safety till 2016 is equal to that of the estimated expenditure, indicating that the firm has completed most or all of its remediation activities. In cases where the actual expenditure has exceeded the estimated ones, the value of FSI = 1.

$SSI = \frac{\text{Total Expenditure on Structural Safety till 2016 (after CAP)}}{\text{Total Initially Estimated Expenditure on Structural Safety}}$; so the value of SSI = 1 if total expenditure on structural safety till 2016 is equal to that of the estimated expenditure, indicating that the firm has completed most or all of its remediation activities. In cases where the actual expenditure has exceeded the estimated ones, the value of SSI = 1.

The value of SSI has also been converted to a 0-1 scale.

Rights sub-index (RSI): RSI basically measures how much rights the workers enjoy in the workplace, and it has been calculated by using following formula:

$$RSI = \text{Economic Democracy Index (EDI)} + \text{Economic Equity Index (EEI)}$$

Economic Democracy Index (EDI) has been calculated by using the following formula –

$$EDI = WO + COLL + P$$

where,

WO= 1 if there is a recognised trade union/ trade union and participatory committee in the firm, 0.5 if there is a participatory committee, 0 otherwise;

COLL= 1 if there is a collective agreement between workers and management operating in the firm, covering wages and other labour matters for workers, 0 otherwise;

P= 1 if there is a bargained profit sharing payment scheme for workers, 0 otherwise

So, all the variables used in EDI are dummy variables. The sub-index has been converted to a 0-1 scale.

Economic Equity Index (EEI): Given the data availability, only one variable was considered, which is number of fringe benefits received by workers. Here, this data was collected from the survey of workers in the respective factories. So, if a worker reported that the firm provides fringe benefits (health insurance, rationing, tiffin, housing subsidies, etc.), for that worker, the value of the variable Fb is considered to be 1. Then if three workers were interviewed, the respective values from their answers were averaged. For example, if two out of three workers reported that they receive selective fringe benefits, the value of EEI would be 2/3. Therefore,

$$\text{Economic Equity Index (EEI)} = \frac{\text{No. of workers who reported they receive fringe benefits}}{\text{No. of Workers Surveyed}}$$

After converting the values of EEI and EDI to a 0-1 scale, the Rights Sub-Index (RSI) has been calculated. To convert the value of RSI to a 0 – 1 scale, data has been divided by using the number of elements used in the index (2).

Non-Discrimination Index (NDI): NDI has been calculated using the following formula –

$$NDI = R_s + T_s + FWC + D$$

Where,

Here, $R_s = 1$ if the management has no preference for either men or women in recruiting production workers, 0 otherwise;

$T_s = 1$ if the firm reported that it doesn't have any preference for gender in training; 0, otherwise.

FWC = 1, if the ratio of women working in the factory, measured as total female workers divided by total number of workers (No. of female workers / Total no. of workers), is greater than 40 percent.

D = 1, if the firm employed workers with disabilities; 0, otherwise. In this case, if the number of disabled workers working in the firm was found to be greater than zero, the value of D=1.

So, all the variables used in NDI are dummy variables. The sub-index has been converted to a 0-1 scale.

10.2.3.3 Gender-embedded Social Upgrading: As mentioned earlier, gender-embedded social upgrading is a special case of social upgrading, where the gender equality has been measured for each social upgrading sub-index, and is based on the worker survey conducted under the CPD-RMG Study 2016. It has been calculated as follows:

Gender-embedded Social Upgrading Index (SBI_{GE}) = ESI_{GE} + RSI_{GE} + NDI

Gender-embedded Employment Sub-Index (ESI_{GE}) = HRDEI_{GE} + WSI_{GE} + EmSI_{GE}

Here,

Gender-embedded Human Resource Development Enterprise Index, HRDEI_{GE} = TR_f + TRF_f + TR_{inst,f}

where, TR_f = ratio of female respondents of the factory who received training to total number of female respondents from that factory

TRF_f = ratio of female respondents of the factory who received formal training (in an institute or likewise) to total number of female respondents from that factory

TR_{inst,f} = ratio of female respondents of the factory who said that factory bears the expenses of formal training to total number of female respondents from that factory

Gender-embedded Work Security Index (WSI_{GE}) = SC_f + ILL_f

where,

SC_f = 1 if the firm has a department or formal worker-employer committee having female workers responsible for safety and health at work, 0 otherwise

ILL_f = ratio of female respondents who reported that they took sick leave(s) in last month to total female respondents

Gender-embedded Employment Security Index (EmSI_{GE}) = R_f + N_f + RB_f

where,

R_f = ratio of female respondents who reported that they have regular employment contracts to total number of female respondents

N_f = ratio of female respondents who reported that firm provides them with a notice before they're retrenched to total number of female respondents

RB_f = average duration of notice period (summation of durations of notice periods reported by female respondents divided by number of female respondents). To normalize the score of RB_f to a 0-1 scale, the following formula was used –

$(RB_f - \text{minimum } RB_f) / (\text{Maximum } RB_f - \text{Minimum } RB_f)$

Non-Discrimination Index (NDI) = R_s + T_s + T_f + FWC + D_f + NDHRPolicy

R_s = 1 if the management has no preference for either men or women in recruiting production workers, 0 otherwise;

T_s = 1 if management stated that they had no preference for either men or women in providing training for production workers, and 0 otherwise;

T_f = 1 if women's share of workers trained is equal to or greater than their share of total employment, 0 otherwise;

FWC FWC = 1 if the female share of employees (managerial, specialist or general service workers) was greater than 40 per cent, 0 otherwise;

D_f = 1 if the firm employed female workers with disabilities, 0 otherwise.

NDHRPolicy = 1 if the firm has an HR policy with specific regulations against discrimination among workers, 0 otherwise.

Gender-embedded Rights Sub-Index (RSI_{GE}) = EEI_{GE} + EDI_{GE}

Gender-embedded Economic Democracy Index (EDI_{GE}) = 1 if there is a recognised trade union in the firm with female members; 0.5, if there is a Work Forum for female workers (or the equivalent) in operation; 0 otherwise;

Gender-embedded Economic Equity Index (EEI_{GE}) = MatProv + DayCare + HarassProt + FBfav_g

MatProv = 1 if the firm has a provision for maternity leave, 0 otherwise

DayCare = 0.75*DayCareFac + 0.25*DayCarePolicy

DayCarePolicy = 1 if the HR policy of the firm included day care facilities provisions

DayCareFac = 1 if the factory has daycare facilities, 0 otherwise

HarassProt = score of the firm with regards to protection of women from sexual harassment. It is evaluated using three criteria: if the factory has a dept. or some responsible authority to deal with sexual harassment issues, if the authority has female members and if there is a written policy for tackling these issues. For each criteria, the firm is given a score of 1 if the factory fulfills the criteria, 0 otherwise. The total score is then converted to a 0 – 1 scale by dividing by 3.

FBfav_g = number of fringe benefits received by female workers averaged over the number of female respondents and number of criteria.

10.3.4 Hypothesis Development and Testing

The arguments presented in the literature review and subsequent sections lead to the important question of how social upgrading would impact economic upgrading in the garments sector of Bangladesh; however, testing the relationship entails forming quantifiable hypotheses to be tested. This paper would test the following hypotheses:

Hypothesis 1: Higher social upgrading levels lead to higher productivity and profitability.

The basis of this argument is that if workplace safety improvement activities (remediation activities) actually do improve labour productivity, then firms would actually be able to produce more and get more sales revenue and more profit. Otherwise, all firms will not be able to internalise the costs of social upgrading and therefore would exit the market. The first hypothesis wants to test, given the indices (method of calculation of index given in the following section) and the average values of the indices, whether factories with higher than median social upgrading have higher average values of economic upgrading than factories with lower than median values of social upgrading. More precisely, if we divide all the factories in the sample into two groups, where group 1 consists of factories with social upgrading scores that are higher than the median social upgrading score, and group 2 consists of factories with social upgrading scores that are lower than the median social upgrading score, then the main objective is to find whether the average economic upgrading score in group 1 is significantly higher than that of group 2. Hence, if the mean economic upgrading score of Group 1 is EU₁ and mean economic upgrading score of Group 2 is EU₂, then H₀: EU₁ = EU₂, while H_a: EU₁ > EU₂. After that, as a part of understanding the relationship, some secondary hypotheses, such as whether better social upgrading leads to better productivity, how economic upgrading benchmark condition helps in economic upgrading capacity, etc. have been tested.

Hypothesis 2: Higher economic upgrading levels lead to higher social upgrading levels.

This hypothesis stems from the fact that the literature available on this issue suggests that there have been positive effects of economic upgrading on social upgrading in different countries, as well as

negative effects. It is also highlighted in the literature that although it sounds probable that better profitability and productivity that leads to economic upgrading would result in more investment in workplace condition improvement, the reality might be different. Here also, all the factories in the sample would be divided into two groups, where group 1 consists of factories with economic upgrading scores that are higher than the median economic upgrading score, and group 2 consists of factories with economic upgrading scores that are lower than the median economic upgrading score; the main objective is to find whether the average economic upgrading score in group 1 is significantly higher than that of group 2. Hence, if the mean economic upgrading score of Group 1 is SUI_1 and mean economic upgrading score of Group 2 is SUI_2 , then $H_0 : SUI_1 = SUI_2$, while $H_a : SUI_1 > SUI_2$.

Hypothesis 3: Higher economic upgrading leads to higher gender-embedded social upgrading.

As mentioned earlier, this is a special case of social upgrading, where gender equality is measured in social upgrading; hence, like social upgrading, it needs to be tested whether firms do actually invest more in gender-embedded upgrading given increases in productivity and profitability, and vice versa.

10.3.5 Econometric Specification

As a final step in the analysis of the relationship between economic and social upgrading, some econometric models have been developed for testing the effects of different variables on net revenue and total revenue, to better understand the interactions. The econometric models being tested in this paper are as follows:

$$\pi_{it} = \beta_0 + \beta_1 K_{it} + \beta_2 L_{it} + \beta_3 R_{it} + \beta_4 S_{it} + \beta_5 X_{it} + u_{it} \dots \dots (i)$$

$$\pi_{it} = \beta_0 + \beta_1 K_{it} + \beta_2 L_{it} + \beta_3 R_{it} + \beta_4 S_{it} + \beta_5 K_{it}^2 + \beta_6 L_{it}^2 + \beta_7 R_{it}^2 + \beta_8 S_{it}^2 + \beta_9 X_{it} + u_{it} \dots \dots (ii)$$

$$\pi_{it} = \beta_0 + \beta_1 \ln K_{it} + \beta_2 \ln L_{it} + \beta_3 \ln R_{it} + \beta_4 \ln S_{it} + \beta_5 X_{it} + u_{it} \dots \dots (iii)$$

$$S_{it} = \beta_0 + \beta_1 K_{it} + \beta_2 L_{it} + \beta_3 R_{it} + \beta_4 \pi_{it} + \beta_5 X_{it} + u_{it} \dots \dots (iv)$$

$$S_{it} = \beta_0 + \beta_1 K_{it} + \beta_2 L_{it} + \beta_3 R_{it} + \beta_4 \pi_{it} + \beta_5 K_{it}^2 + \beta_6 L_{it}^2 + \beta_7 R_{it}^2 + \beta_8 \pi_{it}^2 + \beta_9 X_{it} + u_{it} \dots \dots (v)$$

$$S_{it} = \beta_0 + \beta_1 \ln K_{it} + \beta_2 \ln L_{it} + \beta_3 \ln R_{it} + \beta_4 \ln \pi_{it} + \beta_5 X_{it} + u_{it} \dots \dots (vi)$$

Here, π = net revenue or profit, K = cost of capital, L = total wage cost, R = total remediation cost, S = total sales revenue and X = a vector of control variables including other costs, age of firm etc. Equations (i) and (iv) follow directly from equations (1) and (2) of Section 4.2 respectively, while the rest of the equations have been developed to test for possible non-linearity.

10.4 Level of Upgrading: Estimated Values

10.4.1 Average Level of Upgrading in Apparel Enterprises

The benchmark level of economic upgrading of different firms, which encompasses technological issues of upgrading along the GVC—is the area where the factories are still lagging behind. From Table 10.2, we can see that the average score of economic upgrading index is 21, with a standard deviation of 1.6; also, given the sampling method followed, it can be predicted that the economic upgrading score of the overall garments sector (the population of the study) has a 95 per cent probability, being between 18.02 and 24.23. Firms are relatively better in process upgrading (average score is 31.66) followed by product upgrading (23.79) and lastly functional upgrading (7.21). The comparatively lower score of functional upgrading is due to the fact that most factories operate at the OEM level, and the initiatives to move towards the ODM level are limited. There is not much variation among the firms under study, indicating that the low economic upgrading level is an issue for all factories across the board.

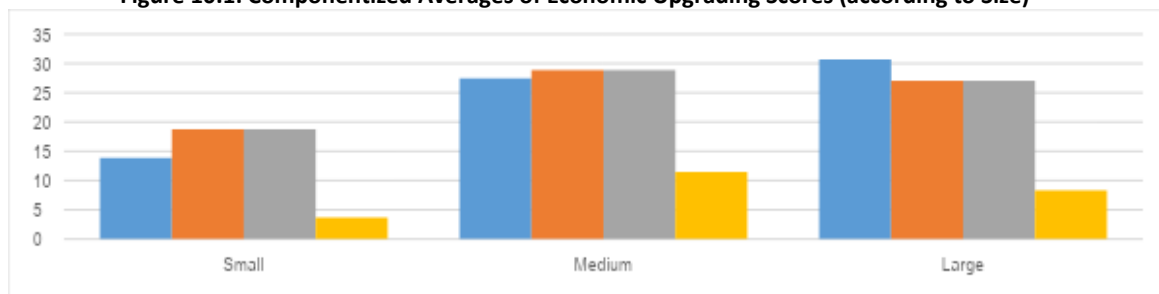
Table 10.2: Economic Upgrading Score

	Mean	Std. Err.	95% Confidence Interval	
Economic Upgrading Score	21.12564	1.566112	18.01889	24.23238
Product Upgrading Sub Index	23.78775	2.31743	19.19113	28.38436
Process Upgrading Sub Index	31.66	1.89863	27.90584	35.41417
Functional Upgrading Sub Index	7.20593	1.11104	5.00934	9.40252

Source: CPD-RMG Survey, 2018

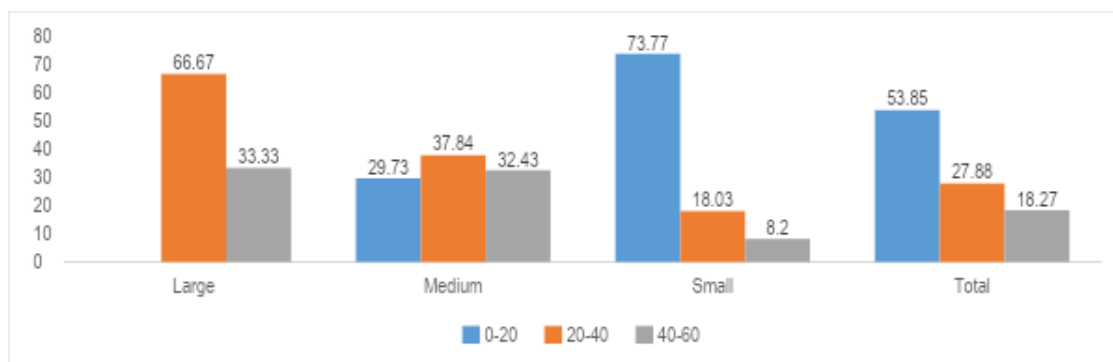
As we can see, there is low economic upgrading in different types of factories. The average score of economic upgrading is being considered low since the highest score in the sample is around 58, with the 90th percentile value being around 45. This means that on average, most factories operate at very low levels of economic upgrading compared to the best factories in the sample in terms of economic upgrading; and this is primarily a result of the low averages of the components of economic upgrading. The average score of product, process and functional upgrading is the highest in large enterprises, followed by medium and small enterprises (Figure 10.1). This is understandable given the availability of resources for large enterprises and the limited availability of resources for small and medium-sized enterprises. However, small enterprises are quite far behind medium and large enterprises in terms of process upgrading. The overall product upgrading score averages, and especially functional upgrading indices continue to remain low (Figure 10.2). Even if we look at the percentage distribution of factories according to economic upgrading, the overall low scoring picture is still predominant here.

Figure 10.1: Componentized Averages of Economic Upgrading Scores (according to Size)



Source: CPD-RMG Study, 2018

Figure 10.2: Percentages of Economic Upgrading Scores according to Size of Factory



Source: CPD-RMG Study, 2018

The post-Rana Plaza period has seen a period of rapid social upgrading under institutional initiatives of Accord, Alliance and National Initiative in order to ensure workplace safety. Predictably, this has led to higher social upgrading scores than economic scores. This has led to an imbalance in upgrading in

the garments sector. On average, the factories have a social upgrading score of around 59, with heteroskedastic robust standard errors of around 0.6. This indicates little variation in the score across the board. Moreover, the confidence interval suggests that the factories of the garments sector should fall between 57-60 range with a 95 per cent probability (Table 10.3). The higher score in social upgrading can be attributed to high scores in the Standards Sub Index, which measures progress in remediation activities for improvement of workplace safety. The average score of Non-Discrimination Index (57.58), which measures the level of equality among different workers in terms of working conditions and other issues, is also statistically significant. But we find that progress in the Rights Sub Index is below par with a mean of 18.76.

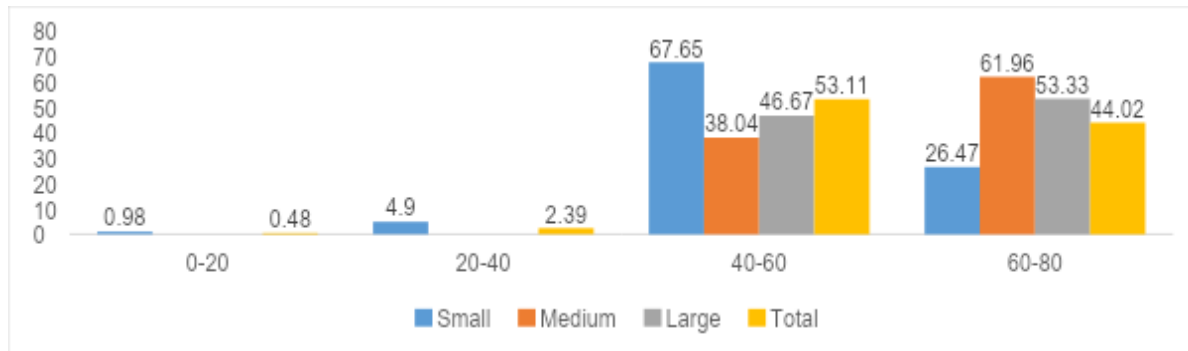
Table 10.3: Average Score of Social Upgrading Index

	Mean	Std. Err.	95% Confidence Interval	
Social Upgrading Index	58.42709	0.545345	57.35192	59.50227
Employment Sub Index	68.75739	0.99023	66.80517	70.70962
Standards Sub Index	88.26677	1.20705	85.887	90.64653
Rights Sub Index	18.76925	0.82134	17.14999	20.38851
Non Discrimination Index	57.58149	0.90759	55.79218	59.3708

Source: CPD-RMG Study, 2018

While the social upgrading scores consisted across the board, we find that more than half of the medium enterprises (55.17 per cent) have scored in the 60–80 range, while 53 per cent and 27 per cent for large and small-sized enterprises have the same score (Figure 10.3). Therefore, the performance of medium-sized enterprises is the most impressive in this regard, followed by large and then small enterprises. The data also indicates that an insignificant number of small and large enterprises, with no medium enterprises, have scores in the low 0-20 and 20-40 ranges. Hence, the overall result of social upgrading is quite remarkable, with around 44 per cent of all enterprises having scores in the 60–80 range and around 53 per cent of all enterprises having scores within the 40–60 range.

Figure 10.3: Average Score of Social Upgrading Index (Size wise)

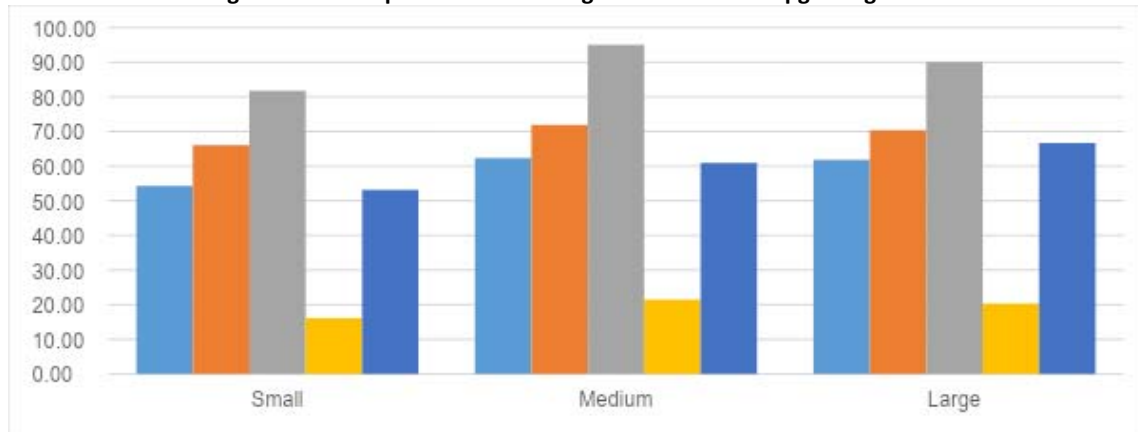


Source: CPD-RMG Study, 2018

The high values in social upgrading scores across the board can be attributed in part to good scores in the standards sub-index. The average score is around 80 for small enterprises and over 90 for medium and large enterprises (Figure 10.4). This can be credited to the implementation of Corrective Action Plans (CAPs) prepared under the Accord and Alliance initiatives as well as the remediation process of the National Initiative, which is still ongoing. Small enterprises, however, continue to have lower scores in Standards Sub Index, indicating that they are lagging behind in remediation activities. This is as a result of their capital structure and limited availability of resources that is significantly weaker in comparison to large and medium-sized enterprises. The lowest average scores across the board are found under the rights sub-index scores. This is a result of the limited freedom of association rights of

workers across different sizes of enterprises. Large enterprises have performed slightly better in this regard, as shown by their slightly higher mean values, while medium and small enterprises have lower averages. What is noticeable is the employment sub-index score which measures the work security and human resource training abilities of factories and is found to be higher in medium-sized enterprises. This also indicated great progress in social upgrading as well.

Figure 10.4: Component-wise Average Score of Social Upgrading Index



Source: CPD-RMG Study, 2018

The gender-embedded upgrading levels are lower for all averages than overall social upgrading scores. This means that while social upgrading on the whole has improved due to improvements in workplace safety issues, there has not been equal improvement in gender-related issues. The average score of the gender-embedded social upgrading index is about 51 (Table 10.4), which is less than the average score of social upgrading in general (59). Given the standard error and the sampling method followed, there is a 95 percent probability that gender-embedded upgrading score of factories would range between 50.2 and 52.5. While this is a moderately good score, it also indicates that half of the criteria of gender-embedded upgrading remains unfulfilled. If the components of gender-embedded social upgrading are considered, then surprisingly enough, the rights sub-indices have very high average values, while the non-discrimination index has low average values. As this index is primarily based on worker surveys, female workers feel factories have fulfilled more than half of the criteria for providing them with the necessary rights. Even still female workers feel discrimination against them.

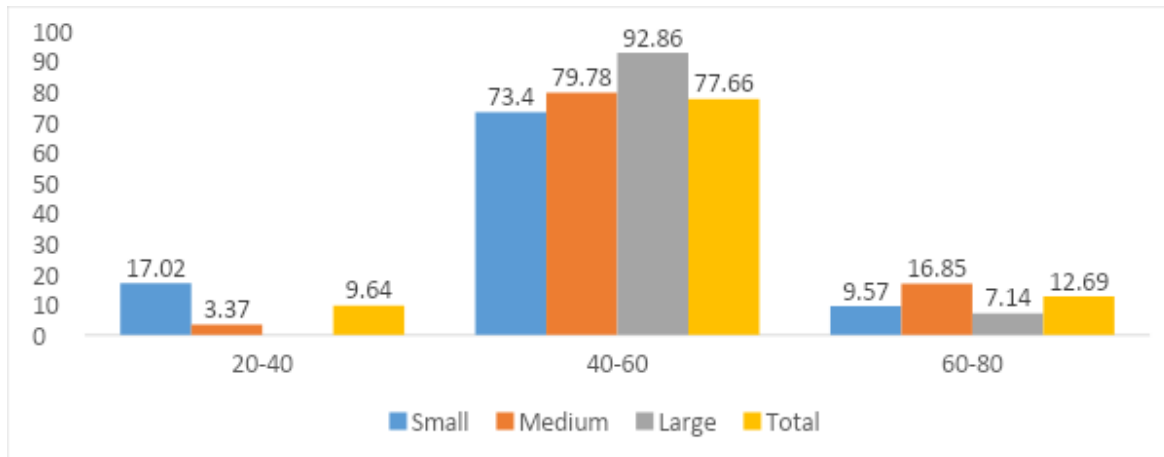
Table 10.4: Average Score of Gender-embedded Upgrading Index

	Mean	Std. Err.	95% Confidence Interval	
Gender-embedded Social Upgrading Score	51.34206	0.584695	50.18889	52.49524
Gender-embedded Employment Sub Index	54.37833	0.67697	53.04318	55.71349
Gender-embedded Rights Sub Index	56.89417	0.97057	54.98102	58.80731
Gender-embedded Non Discrimination Index	41.96012	1.07278	39.8455	44.07474

Source: CPD-RMG Study, 2018

The gender-embedded index scores are evenly distributed across the board, with most small, medium and large enterprises falling between the 40–60 range (Figure 10.5). Here, large enterprises seem to be leading the way, with 93 percent of them having score within the 40–60 range. However, if the high scoring range of 60–80 is considered, then medium enterprises are leading at 16.85 percent. Overall, around 77.7 percent enterprises have scores in the 40–60 range, while around 12.69 percent have scores in the 60–80 range.

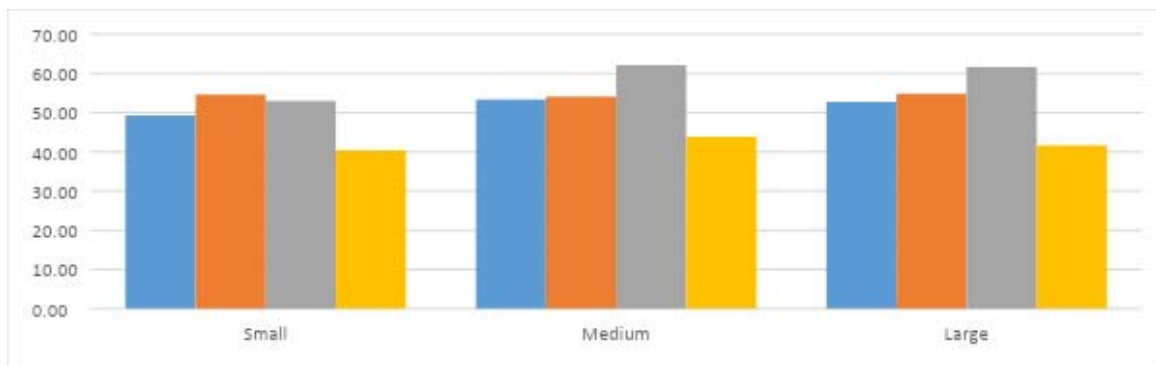
Figure 10.5: Average Score of embedded Upgrading Index (Size wise in different ranges)



Source: CPD-RMG Study, 2018

If the average scores are considered, then medium-sized factories have higher average scores (51.28) than small and even large enterprises (Figure 10.6); however, the difference between large and medium-sized enterprises is significant. In other sub-components as well, the difference among small, medium and large enterprises in terms of average scores is not significant, indicating a balanced level of gender-embedded social upgrading across enterprises.

Figure 10.6: Average Score of Gender-embedded Upgrading Index (Size wise in different sub-indices)

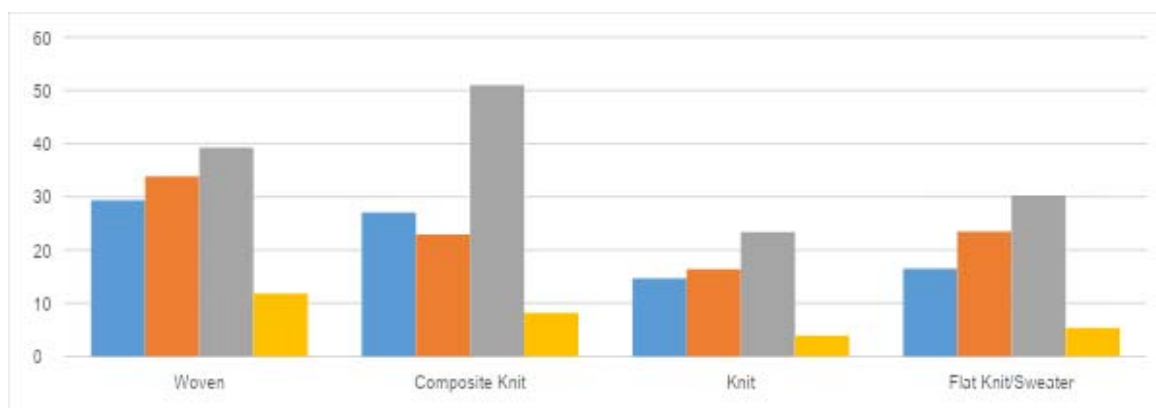


Source: CPD-RMG Study, 2018

10.4.2 Production Patterns and Upgrading along GVCs

There is no previous literature or research done on this sector related to production patterns, factory production or differences in result in firm upgrading along GVCs. To understand this phenomenon further, the surveyed enterprises have been categorised primarily into woven and knit factories (composite knit, knit, flat knit/sweater), following the popular categorisation followed by stakeholders of this sector (Figure 10.7). This categorisation is primarily based on the types of products enterprises manufacture.

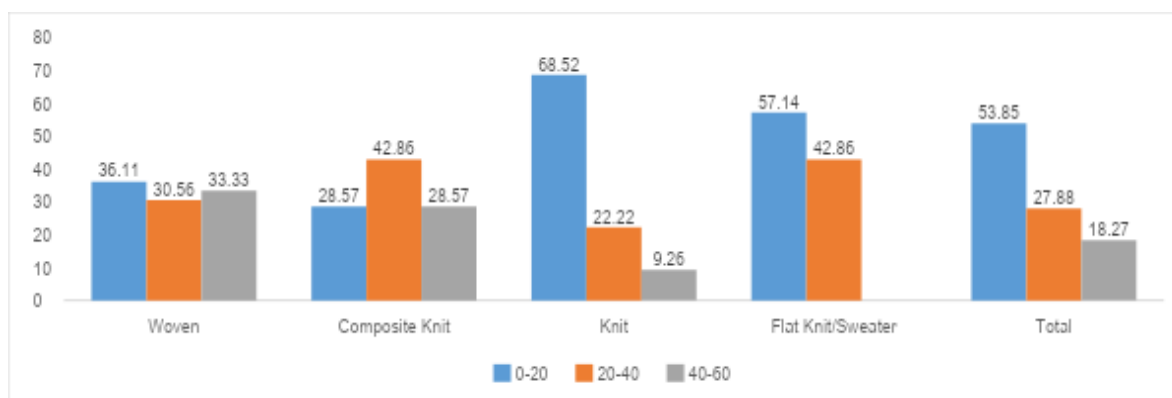
Figure 10.7: Economic Upgrading Averages according to Type of Factory (Type-wise)



Source: CPD-RMG Study, 2018

On average, woven enterprises have higher scores in economic upgrading than any other category of factories. This can be attributed to the scores of the process upgrading sub-index scores; however, composite knit enterprises have the highest scores in this index; this is unsurprising given that composite knit enterprises need more sophisticated machinery than woven factories; however, the functional upgrading score averages are poor for all types of factories.

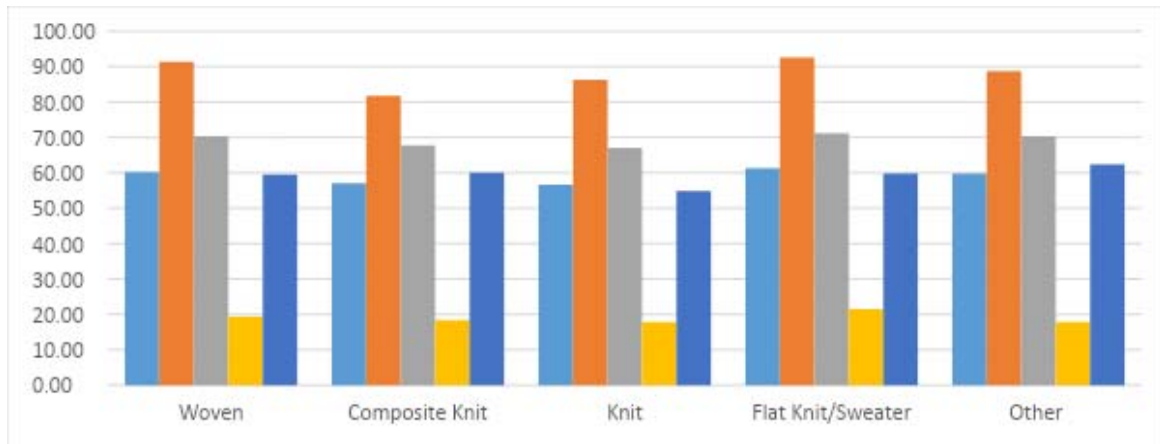
Figure 10.8: Percentages of Economic Upgrading Scores according to Type of Factory (Type wise in different ranges)



Source: CPD-RMG Study, 2018

The low average scores for different types of factories are a result of most of the factories having scores within the low 0–20 range and 20–40 range (Figure 10.9). None of the factories have scores in the high 60–80 range. This shows the poor condition of economic upgrading in the factories, and as previously stated, this is primarily a result of poor scores in functional upgrading, which has offset the positive effects of the good scores in process upgrading.

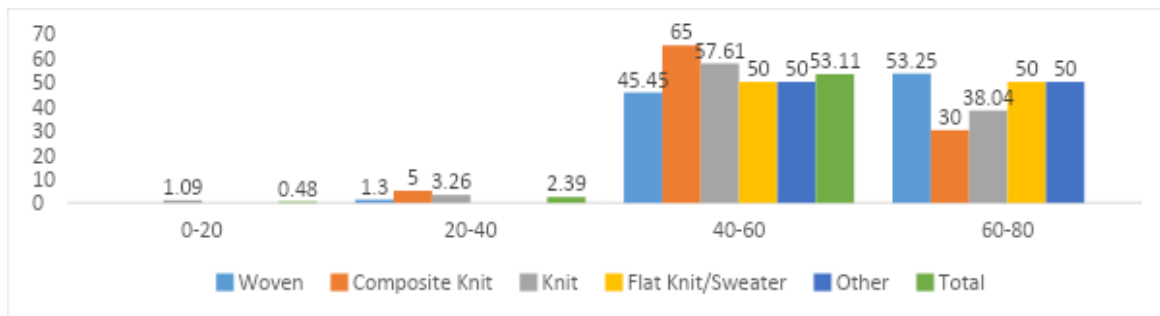
Figure 10.9: Social Upgrading Score Averages according to Type of Factory



Source: CPD-RMG Study, 2018

If social upgrading is considered, then, as can be assumed a priori, there is not much variation among the types of factories with respect to their average scores. All of the types of factories have average scores of around 60, with knit factories leading the scores. In this case also, the respectable score has been possible due to the high tallies in the Standards Sub Index, which is a result of the remediation activities implemented in the post Rana Plaza period. For all types of factories, the area of concern is the Rights Sub Index, which has the lowest average scores. This can be attributed to the limited freedom of association rights enjoyed by the workers.

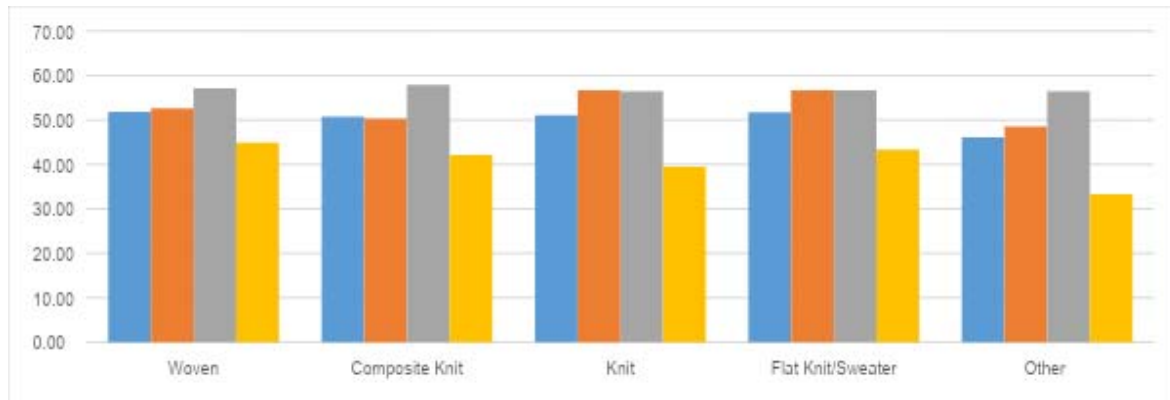
Figure 10.10: Percentage Distribution of Social Upgrading Scores according to Type of Factory



Source: CPD-RMG Study, 2018

The percentage distribution of the factories suggests that a majority of enterprises have scores in the 40–80 range (Figure 5.10); with 53.25 percent of woven factories, 30 percent of composite knit factories, 38.04 percent of knit enterprises, and 50.5 percent of flat knit/sweater enterprises have scores in the high 60–80 range. Again, this is indicative that most factories have high social upgrading scores regardless of the type of factory. Consequently, production pattern does not vary in social upgrading scores.

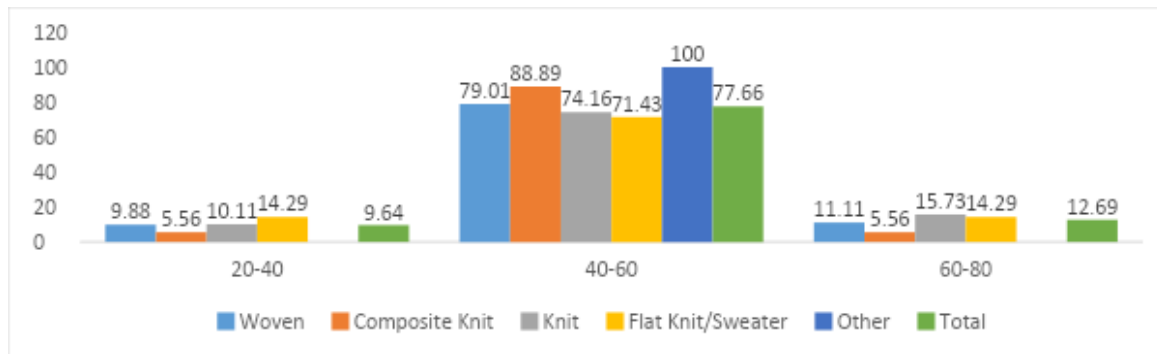
Figure 10.11: Gender-embedded Upgrading Score Averages according to Type of Factory



Source: CPD-RMG Study, 2018

The situation is similar for gender-embedded upgrading. This includes woven factory, composite knit factory or a sweater factory, where the average scores are almost the same. However, the scores are lower than the social upgrading scores (Figure 10.12). The average scores are the lowest for the gender-embedded non-discrimination index, meaning that female workers are still discriminated at many levels. This could be because of a lack of awareness of the workers surveyed, or due to real issues regarding social upgrading that is leaving female workers out of the process. Even the percentage distribution of enterprises according to gender-embedded social upgrading scores show little or no variation across types of factories. Therefore, upgrading along GVCs seems to be production pattern neutral, particularly in this case.

Figure 10.12: Gender-embedded Upgrading Score Distribution According to Type of Factory



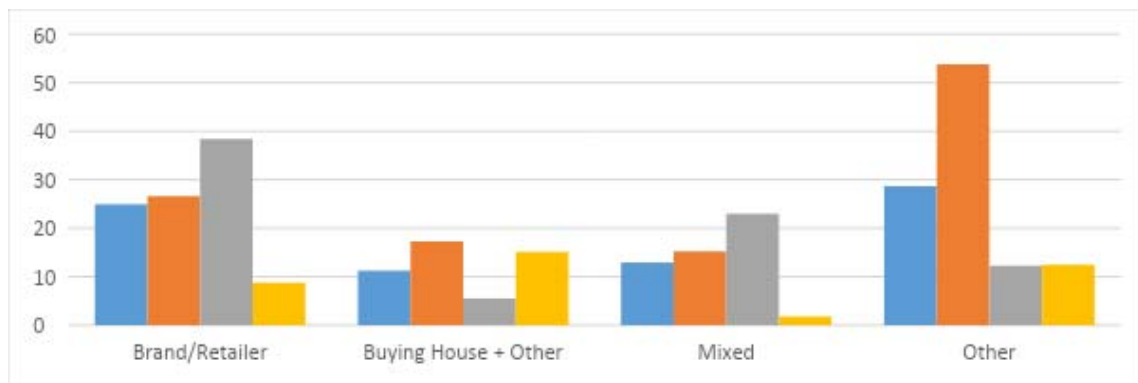
Source: CPD-RMG Study, 2018

10.4.3 Brand/Buyer Influence on Upgrading along GVCs

In buyer-driven GVCs product price, design and branding are primarily determined by the buyers and suppliers at the bottom of the value chain as they tend to have very little flexibility on these issues. Hence, the main influence on economic upgrading along GVCs stems from the focus of buyers and brands on preserving their price mark-ups as well as ensuring code of conduct at the enterprises levels. If we consider the garments sector of Bangladesh, however, many firms have contractual arrangements with brands or buyers, while others have arrangements with buyers/buying houses. There are also mixed sources of orders. Hence, for the purposes of this analysis, enterprises have been categorised into three: enterprises having contractual arrangements only with Brand/Retailer, enterprises with contractual arrangements only with Buying House, those having mixed contractual arrangements and those who have not shared information about their contractual arrangements

(mentioned as 'Others'). The objective is to find out if the method of interaction with brands and buyers influence upgrading along GVCs.

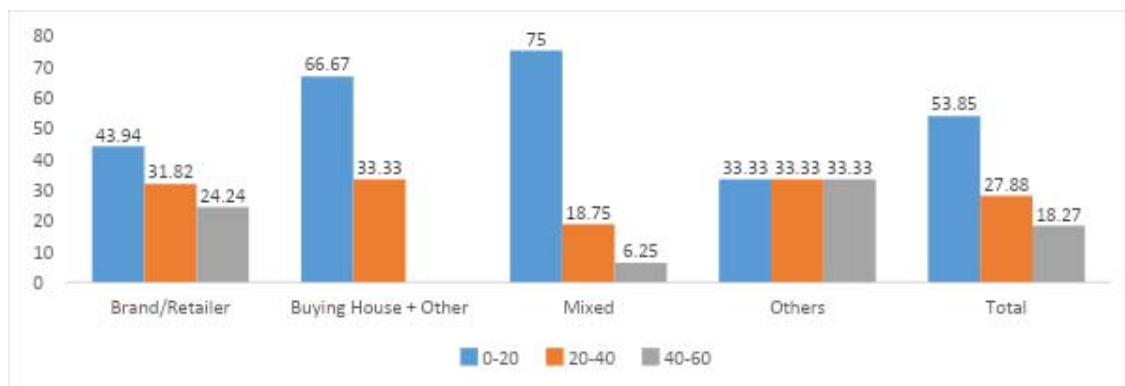
Figure 10.13: Bar Chart for Averages according to Brand/Buyer



Source: CPD-RMG Study, 2018

Figure 10.13 suggests that firms interacting with buyers via buying houses have lower average economic upgrading scores than firms who communicate with brands directly. Also, firms that directly communicate with brands and buyers have a very high average score in product upgrading compared to firms that directly interact with brands or retailers. Unsurprisingly, given the technological support they receive from buyers and brands for ensuring the quality of their products, firms under the 'brand/retailer' category have far better process upgrading average scores than any other factory. But the functional upgrading sub index remains poor, which is similar across all categories.

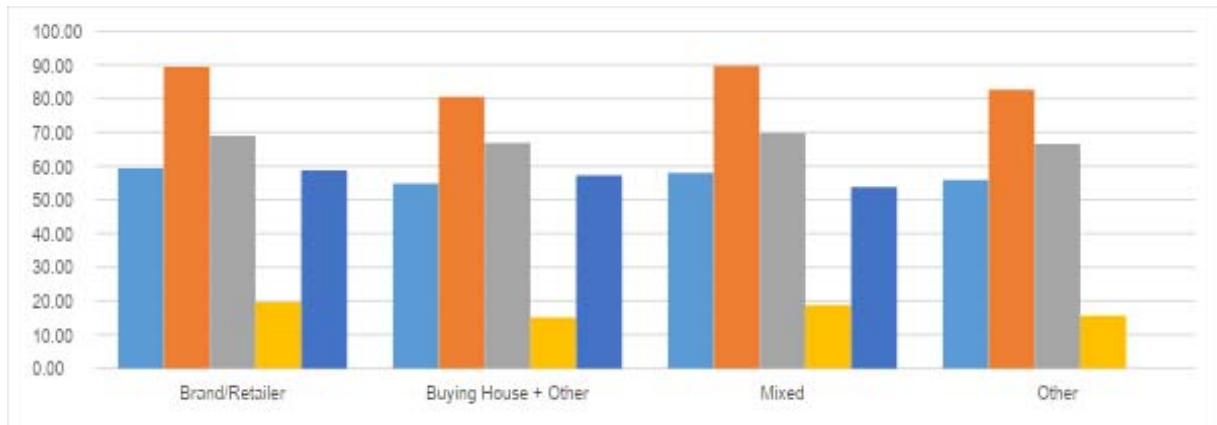
Figure 10.14: Percentages of Economic Upgrading according to Brands/Buyers



Source: CPD-RMG Study, 2018

Looking at the distribution of scores among different categories of factories, we see around 24 percent of factories under the brand/retailer category have scores within 40–60 range, while none of the factories under the buying house category have scores in this range. On the other hand, 33.33 per cent of the firms which rely on buying houses have a score in the 20–40 range. Overall, the results are mixed; but there is a slight indication here that brand influence may be having a great impact on the economic upgrading levels of the supplier enterprises in the garments sector of Bangladesh.

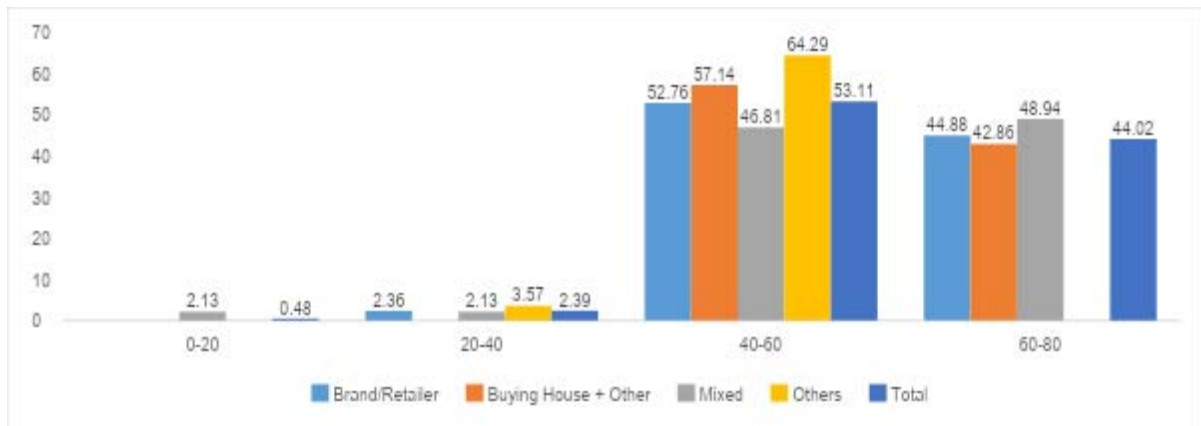
Figure 10.15: Components of Social Upgrading Averages according to Buyer type



Source: CPD-RMG Study, 2018

As we can see, factories with direct access to brands or buyers have a much higher average score than enterprises that rely on buying houses. This can be credited to the strict compliance codes adhered by the brands and buyers as part of their corporate governance initiatives. In almost all the components of social upgrading, brand and buyer influence is evident, as the average scores are higher for almost all the sub-indices than any other factory (Figure 10.15). The scores are highest for the standards sub-index, which is also a result of the remediation activities that are strongly influenced by the brands working with the garments sector of Bangladesh.

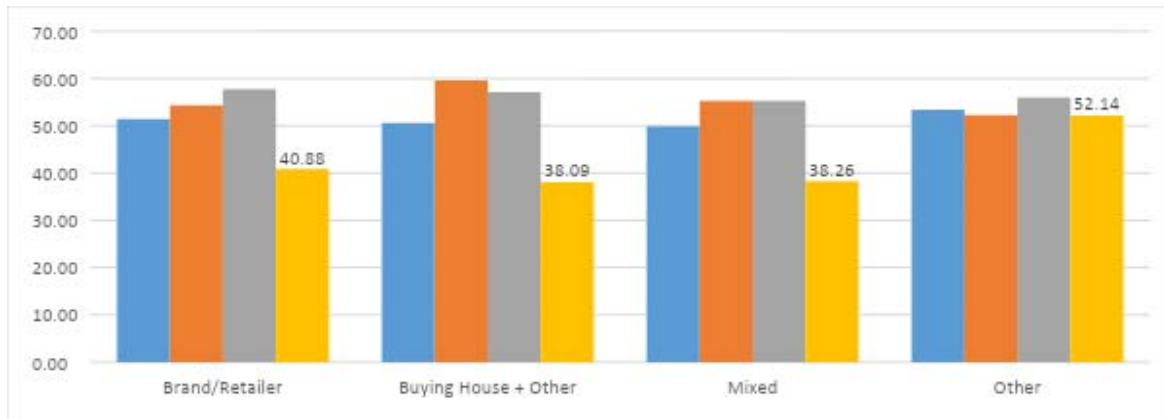
Figure 10.16: Percentage of Social Upgrading According to Type of Buyers



Source: CPD-RMG Study, 2018

Similarly, if we consider the percentage distribution of scores, the findings are mixed as well. Firms under the 'Buying House + Other' category having a better leverage. Around 45 percent of enterprises under the 'Brand/Buyer' category have scores in the high 60–80 range, while only 43 percent of factories under the 'Buying House' category have scores in that range (Figure 10.16). Moreover, around 53 percent of enterprises contact with brands/retailers directly and around 57 percent enterprises contact with buying houses have scores in the moderate 40–60 range.

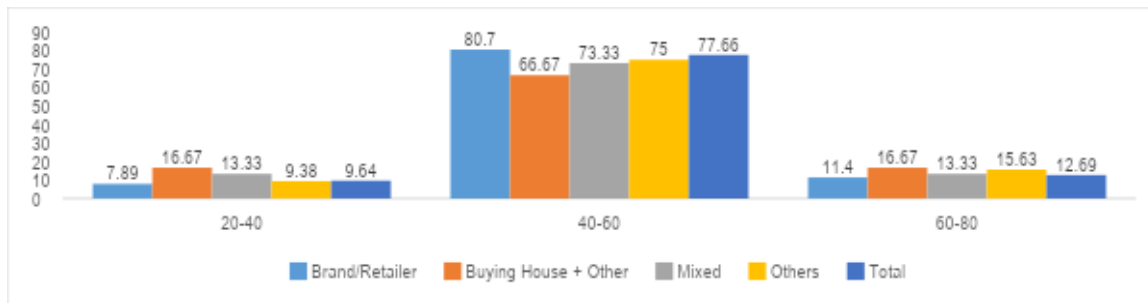
Figure 10.17: Gender-embedded Upgrading Averages According to Type of Buyers



Source: CPD-RMG Study, 2018

The results of gender-embedded upgrading scores are also mixed (Figure 10.17). When looking at the percentage of factories with scores in the high 60–80 range, we also find that around 16.67 percent of factories receive orders via buying houses as well as 11.4 percent of the factories interact with brands or retailers directly, have scores in the same range (Figure 10.18). As previously mentioned, the gender-embedded upgrading scores are primarily based on survey on female workers, with some data collected from the human resource departments of the factories. Hence, the data might be reflective of the perceptions of workers more than actual situation itself.

Figure 10.18: Percentage Distribution of Gender-embedded Upgrading Scores According to Buyer Type



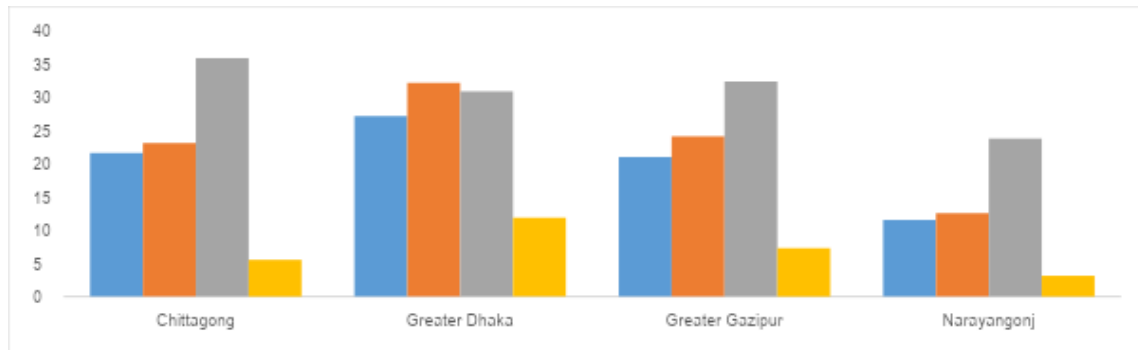
Source: CPD-RMG Study, 2018

10.3.4 The Effect of Location on Upgrading

Geographical effects have been researched a lot, and while there is reason to believe that proximity towards knowledge base or required resources can lead to better firm performance, there are also studies that indicate that the location of a firm has only a minimal impact on the firm’s performance. Recently, such analyses have been conducted at the micro-level including studies conducted in Netherlands, Sweden and Germany.¹²⁶ Most studies, however, support the fact that there is a significant impact of location of firms on firm performance (Stephan, 2009). So, there could be differences in economic, social and gender-embedded upgrading patterns according to the location of factories of the sample.

¹²⁶ See Sternberg (1999) and Audretsch and Dohse (2007) for details

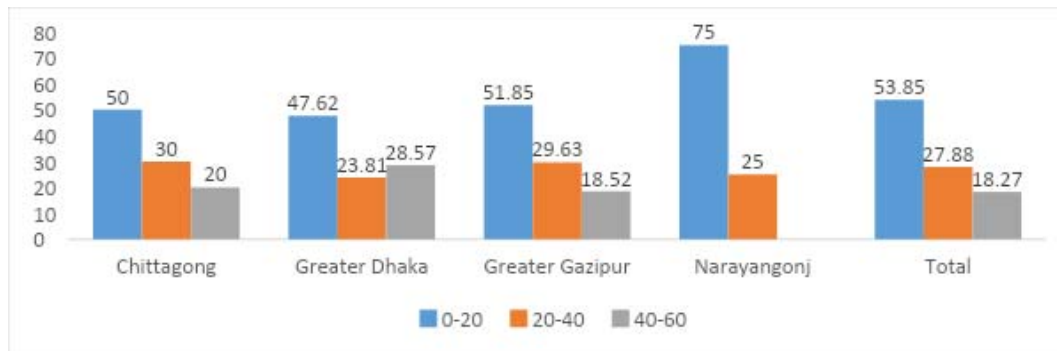
Figure 10.19: Average Scores for Factories in Different Locations



Source: CPD-RMG Study, 2018

The enterprises in the sample can be divided into four broad zones: greater Dhaka, Chittagong, greater Gazipur and Narayanganj. We find that there are differences in the average scores of economic upgrading with Greater Dhaka having the highest economic upgrading score on average, followed by Chittagong, greater Gazipur and Narayanganj (Figure 10.19). The study shows Dhaka leading in product and functional upgrading sub-indices, while Chittagong is slightly ahead in process upgrading. However, the functional upgrading scores are overwhelmingly low for enterprises in all areas.

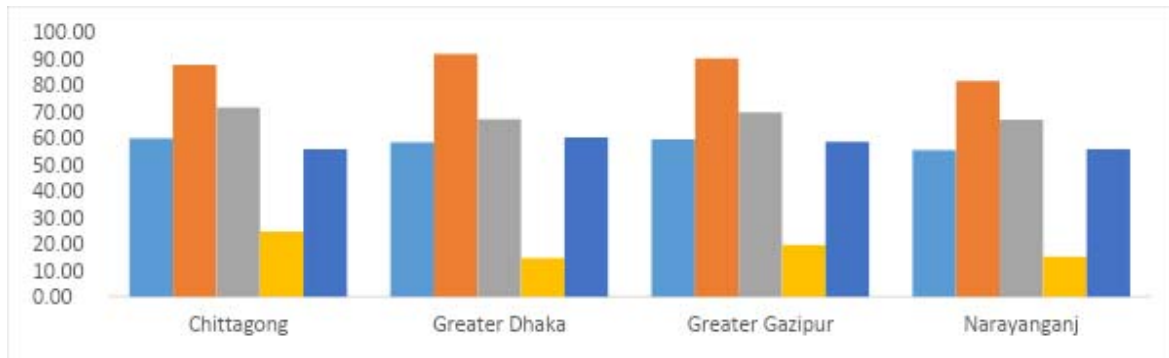
Figure 10.20: Percentages of Economic Upgrading Scores According to Area



Source: CPD-RMG Study, 2018

The percentage distribution of enterprises according to location is similar to the average scores of economic upgrading: enterprises situated in Dhaka lead the scores, with around 28.57 percent of enterprises in Dhaka having economic upgrading scores in the 40–60 range (Figure 10.20). The rest of the percentages are quite similar for enterprises across different zones or areas. The social upgrading scores, on average, are slightly better in Dhaka compared to other regions (Figure 10.21); however, the differences are not statistically significant. For all areas, the average scores for social upgrading are much higher than economic upgrading, and this has been possible due to high scores of Standards Sub Index. Enterprises in Dhaka have the highest scores in the standards sub index, followed by greater Gazipur, Chittagong and Narayanganj. The area of concern across all locations is a recurring issue in social upgrading of garments factories of Bangladesh, as is the low score of Rights Sub Index. This is a reflection of the limited rights of workers, especially with respect to freedom of association rights.

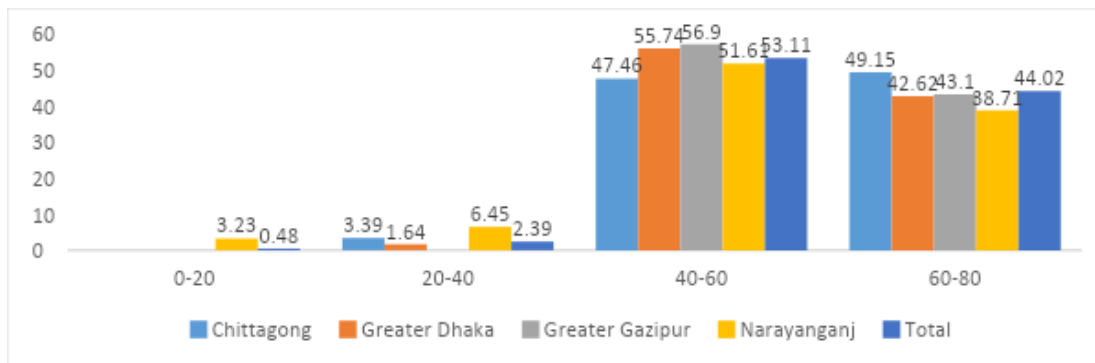
Figure 10.21: Average Scores for Factories in Different Locations



Source: CPD-RMG Study, 2018

Taking into account the percentage of distribution, we find that 42.6 per cent of the enterprises of greater Dhaka, 49.2 percent of Chittagong, 43.1 percent of greater Gazipur and 38.7 percent of Narayanganj have social upgrading scores in the high 60–80 range (Figure 10.22). Therefore, there is little variation in the number of factories achieving high scores, which is not statistically significant, indicating a balanced level of social upgrading across locations.

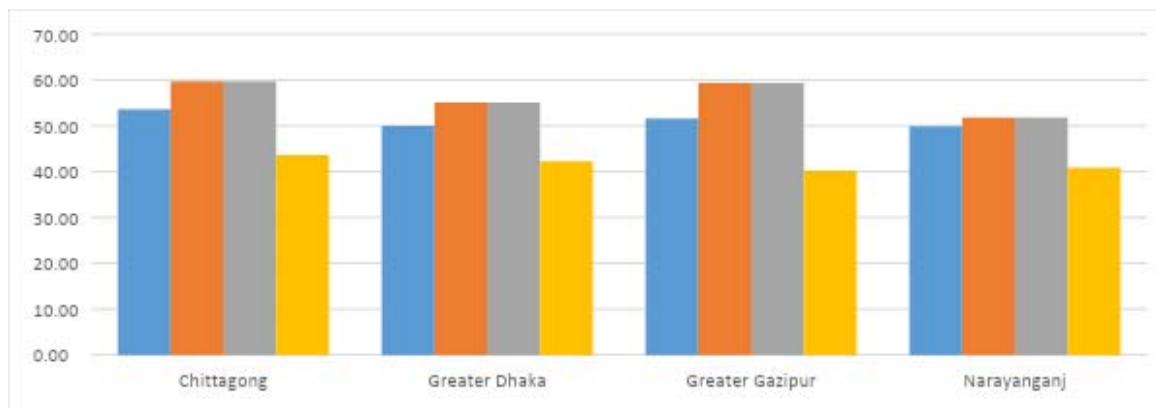
Figure 10.22: Percentages of Social Upgrading Scores in Different Zones



Source: CPD-RMG Study, 2018

It is a similar case for gender-embedded upgrading scores, although the average score is slightly higher in Narayanganj than other locations, followed by Chittagong, greater Dhaka and greater Gazipur respectively (Figure 10.23). Among the components of gender-embedded social upgrading, the non-discrimination index scores are the lowest across all locations. At the same time, the gender-embedded rights sub-index scores are the greater on average for all locations, indicating that the female workers surveyed have positive views about the rights they enjoy, given their knowledge and awareness of situations.

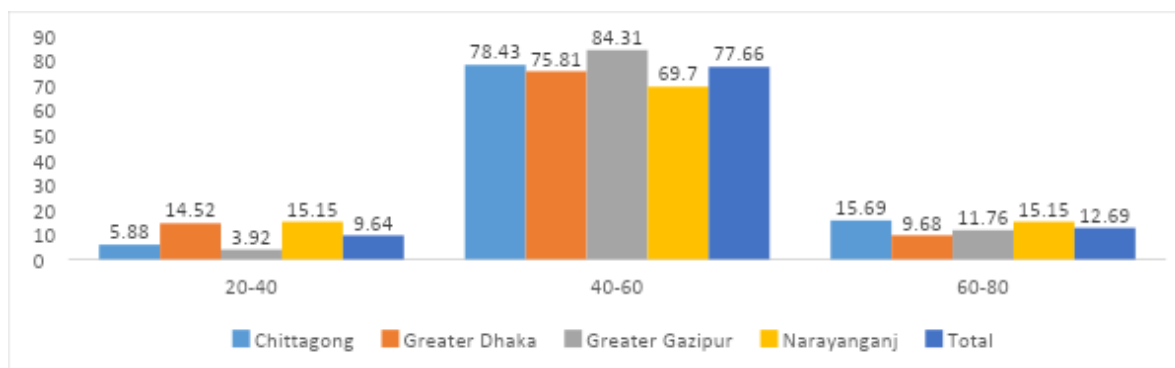
Figure 10.23: Gender-embedded Social Upgrading Averages across Locations



Source: CPD-RMG Study, 2018

Given the number of enterprises, almost 10 percent of the enterprises in Dhaka, 16 percent in Chittagong, 12 percent in Gazipur and 15.15 percent in Narayanganj have gender-embedded social upgrading scores in the high 60–80 range (Figure 10.24). Generally, around 78 percent has scores within the moderate 40–60 range, and another 13 percent has scores within the high 60–80 range. Therefore, there is a small variation in economic upgrading of factories across locations, with the variation in social and gender-embedded upgrading being negligible.

Figure 10.24: Gender-embedded Social Upgrading Score Distribution



Source: CPD-RMG Study, 2018

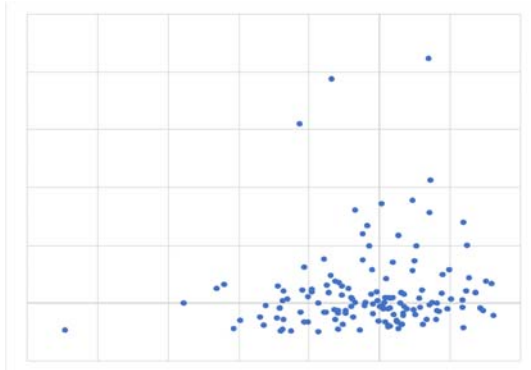
10.5 Economic and Social Upgrading: The Relationships

The relationship between economic and social upgrading, along with its components, has been widely researched recently, and there is no consensus regarding the issues. Some have seen economic upgrading with social upgrading, whilst others have experienced economic upgrading with social downgrading. Hence, in the garments sector of Bangladesh, where there has been a large-scale implementation of social upgrading packages regardless of firm size or financial condition, it is very difficult to find evidence regarding the interrelationships between social and economic upgrading. In our sample, there is not ample evidence in this regard. As can be seen in Figure 10.25, the scatter diagram shows no clear direction in terms of the relationship between productivity and social

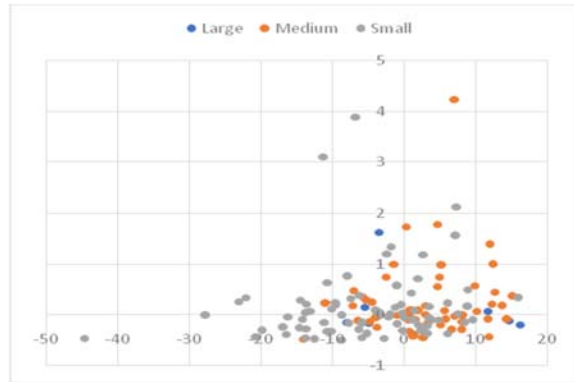
upgrading, where productivity has been measured by sales/worker and social upgrading has been measured by social upgrading index.

Figure 10.25: Relationship between Social Upgrading and Sales/Worker

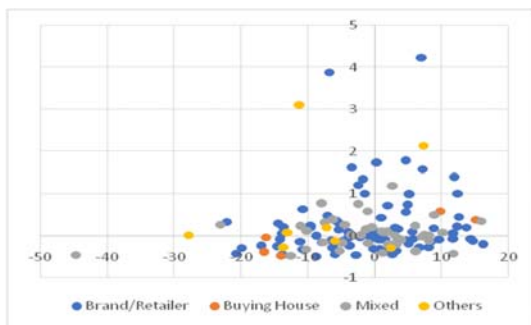
(a) All Factories



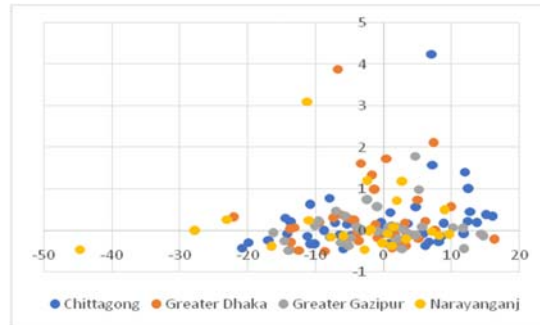
(b) Size-wise Distribution



(c) Brand-Buyer Distribution



(d) Location wise Distribution



Source: Based on CPD-RMG Survey 2018

Figure 10.25 shows the relationship between differences of social upgrading scores from the median value and the differences of productivity from its median value. The natural assumption would be that if there is a positive relationship among social upgrading and productivity, higher than median scores of social upgrading would be accompanied by higher than median productivity values. But the figure clearly shows no pattern in the relationship, indicating that while some firms have experienced productivity rises with social upgrading, other firms have experienced productivity falls with social upgrading as well. Results disaggregated according to size (Figure 10.25b), buyers (Figure 10.25c) and location (Figure 10.25d) also show specific direction in the relationship.

10.5.1 T-tests for Comparing Two Means

As the scatter diagrams do not show any particular pattern regarding the relationships, the second step in the analysis involves comparing the mean values between two groups to see whether the difference is statistically significant (as mentioned earlier). In that perspective, the data has been divided into two groups: one, enterprises which have lower social upgrading scores than the median social upgrading scores, and two, enterprises which have higher social upgrading scores than the median social upgrading scores. If the difference among the mean values of group one is lower than that of group two, and is statistically significant, then there is an indication that higher social upgrading can lead to higher productivity, leading to the other conclusions mentioned earlier.

Testing Hypothesis 1: Table 10.5 reports the results of testing hypothesis 1 (mentioned in the methodology section), and clearly there is no evidence supporting hypothesis 1. Now, if we compare

the mean productivities of the two groups, then the results seem to show some positive trend, as the mean value of all factories in group 1 are lower than that of group 2, and the difference is statistically significant at the 5 per cent level of significance (Table 10.6). This implies that factories with a higher level of social upgrading have a higher average productivity, and the statistical significance is also quite robust. In other words, enterprises with higher than median social upgrading have higher productivity values on average, which, in turn, could lead to the conclusion that higher social upgrading can actually lead to higher sales generated through increased confidence of buyers.

Table 10.5: Testing Hypothesis 1

Group	Mean	Std. Err.	95% Confidence Interval	
Group 1	18.9385	2.188618	14.54253	23.33447
Group 2	20.61911	2.286708	16.02835	25.20987

Pr(T < t) = 0.2983

Source: Based on CPD-RMG Survey 2018

Table 10.6: Comparing Average Productivity

Group	Mean	Std. Err.	95% Confidence Interval	
1	80.32258	5.140067	70.04438	90.60078
2	92.32308	3.949386	84.43327	100.2129

Pr(T < t) = 0.0333

Source: Based on CPD-RMG Survey 2018

As the confidence of buyers on manufacturers is a vague term, it needs to be converted into something easily measurable. Here, data on sales revenue itself might be a suitable proxy for buyers' confidence, enterprises having higher sales revenue indicates that those factories get more orders or produce higher-value products or both; whichever the case, this is an indication of relatively higher buyer's confidence on those factories. In fact, if enterprises are divided into the two groups as before, with enterprises having a higher than median social upgrading score in group 1 and a lower than median social upgrading score in group 2, then factories belonging to group 1 has a lower average score than factories belonging to group 2, and like the previous results, this difference is statistically significant at the 5 per cent level of significance (Table 10.7).

Table 10.7: Comparing Sales Revenue

Group	Mean	Std. Err.	95% Confidence Interval	
1	0.486	0.101	0.286	0.687
2	0.753	0.124	0.506	0.999

Pr(T < t) = 0.0485

Source: Based on CPD-RMG Survey 2018

However, the relationship among economic upgrading as a whole (including product, process and functional upgrading) and social upgrading is still not clear, as a similar sort of analysis on economic and social upgrading reveals no statistically significant difference in economic upgrading scores of factories of groups 1 and 2. So, while the differences in productivity among factories due to changes in social upgrading are quite evident, the differences in economic upgrading are still not clear. Also, a similar sort of analysis on economic upgrading reveals no statistically significant difference in the social upgrading scores of factories with higher than median economic upgrading and factories with lower than median economic upgrading scores.

The anomaly in the relationship may be caused by different factors that affect economic upgrading. Now, economic upgrading is affected by different factors, one of them being benchmark condition of economic upgrading of factories, evident from the results shown in Table 10.8. The table reports test results, where capacity of economic upgrading has been measured by the difference of economic upgrading scores of each factory from the median value of economic upgrading; also, factories have

been divided into two groups: group one consisting of enterprises with higher than median economic upgrading scores and group two consisting of factories with lower than median economic upgrading scores. As can be seen from the table, the difference is highly statistically significant, with factories in group 2 having a higher average score than enterprises in group 1. As the economic upgrading benchmarking index has been calculated using product, process and functional upgrading indices, it is evident that the capacity of economic upgrading also depends on those sub-indices.

Table 10.8: Comparing Capacity of Economic Upgrading (Benchmark)

	Mean	Standard Errors	95% Confidence Interval	
Group 1	-11.0302	0.835134	-12.7013	-9.3591
Group 2	14.37763	1.592405	11.18505	17.57021

Pr(T < t) = 0.0000

Source: Based on CPD-RMG Survey 2018

There is also the issue of fierce price negotiations faced by the suppliers in the industry. This can be measured by using the differences in price quoted by sellers and the price which the buyer and seller have finally agreed upon, hereinafter referred to as settled price. Now, if factories are divided into two groups, where group 1 includes factories that face lower than median level of price negotiations, and group 2 includes factories that face higher than median level of price negotiations, then the difference in mean economic upgrading scores among the two groups is not significant. Hence, it cannot be concluded from the data that firms which face fierce price negotiation with buyers have low benchmark condition and will have less capacity to upgrade.

Table 10.9: Comparing Mean Economic Upgrading (Price Negotiations)

	Mean	Standard Errors	95% Confidence Interval	
Group 1	24.03582	1.386658	21.28333	26.78832
Group 2	33.42683	5.925778	18.92697	47.92668

Pr(T < t) = 0.0837

Source: Based on CPD-RMG Survey 2018

Test of Hypothesis 2: Testing reverse causality, i.e. whether higher economic upgrading translates into higher social upgrading, leads to the same conclusion as before. It shows no specific direction in the relationship. Factories with higher than median economic upgrading scores have higher mean social upgrading scores, but the difference is not significant.

Table 10.10: Test of Hypothesis 2

Group	Mean	Standard Error	95% Confidence Interval	
0	56.58312	1.470025	53.63192	59.53431
1	57.97249	.9554834	56.07366	59.87131

Pr(T < t) = 0.2150

Source: Based on CPD-RMG Survey 2018

Test of Hypothesis 3: Finding any sort of relationship among gender-embedded upgrading and productivity is quite difficult, as there is no clear direction of the relationship. To see whether there is a significant difference among firms with better gender-embedded upgrading and firms with lower gender-embedded upgrading, all factories were divided into two groups: group one consisting of factories with lower than median score in gender-embedded upgrading, and group two consisting of factories with higher than median score in gender-embedded upgrading.

Table 10.11: Comparing Mean Gender-embedded Upgrading

Sale / Worker	Mean	Std. Err.	95% Confidence Interval	
Group 1	632454.1	88355.56	456143.3	808764.9

Group 2	712079.8	85682.39	541057	883102.5
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Pr(T < t) = 0.2594

Source: Based on CPD-RMG Survey 2018

As can be seen from the Table 13.1 it is evident that there is a difference in the mean productivity levels of enterprises among the two groups, but this difference is not statistically significant.

Hence, from cross-sectional survey data, it is not clear as to how the additional costs of gender-embedded social upgrading would be internalised through higher productivity, as the impact of gender-embedded upgrading on productivity is unclear. Conversely, it also cannot be concluded from the evidence that enterprises not sensitive to gender-embedded aspects in the production process will have low levels of efficiency and productivity, which adversely affect their benchmark condition and reduce their capacity for upgrading. There is also no clear indication as to whether enterprises which have better benchmark conditions in economic upgrading will have better capacity for gender-embedded social upgrading. As a result, the relationship between economic upgrading and gender-embedded upgrading remains unclear on the whole.

10.5.2 Multivariate Regression Analysis

Comparing two means does not provide specific and focused analysis on the costs associated with social upgrading, along with the effects of other factors involved. For that, multivariate regression analysis is required. Now, from elementary economics, we know that a production function implies that production depends on capital and labour ($Y = f(K, L)$), along with technology (which is generally considered to be the error term in Cobb-Douglas function type specifications) and other variables. In case of costs associated with social upgrading, the only cost that can be modeled explicitly is the remediation cost, which constitutes the cost for improving the workplace safety of the factory. Data on costs for trade union along with other costs associated with social upgrading is not readily available, so this analysis will focus solely on remediation costs.

Table 10.12: Regression Results

	Net Revenue	Net Revenue	Log of Net Revenue	Sales Revenue	Sales Revenue	Log of Sales Revenue
<i>Capital</i>	-0.986*	0.571**		6.363**	-0.452	
	(0.422)	(0.208)		(1.981)	(0.983)	
<i>Square of Capital</i>	0.00000001***			-0.00000001***		
	(0.00000002)			(0.00000002)		
<i>Debt</i>	0.007	-0.022*		0.084	0.251***	
	(0.016)	(0.009)		(0.076)	(0.040)	
<i>Square of Debt</i>	-0.00000001			-0.00000002		
	(0.00000002)			(0.00000008)		
<i>Total Wage Cost</i>	0.028	-0.303***		2.153***	1.595***	
	(0.044)	(0.032)		(0.195)	(0.132)	
<i>Square of Total Wage Cost</i>	-0.00000005***			-0.00000005*		
	(0.00000004)			(0.00000004)		
<i>Remediation Cost</i>	0.251*	0.109		0.811	-2.624***	
	(0.118)	(0.096)		(0.681)	(0.471)	

	Net Revenue	Net Revenue	Log of Net Revenue	Sales Revenue	Sales Revenue	Log of Sales Revenue
<i>Square of Remediation Cost</i>	-0.00000002*** (0.00000001)			-0.00000001*** (0.00000005)		
<i>Age of Firm</i>	540368.1 (103421.2)	-433018 (541287.3)		374125.2 (461654.2)	325451.1 (191235.2)	
<i>Square of Age</i>	-32812.1 (35136.663)			82842.3 (15523.2)		
<i>Other Costs</i>	-0.960*** (0.221)	-1.082*** (0.257)		8.532*** (1.297)	14.856*** (1.018)	
<i>Square of Other Costs</i>	-0.0000000001*** (0.0000000002)			0.0000000001*** (0.0000000002)		
<i>Sales Revenue</i>	0.040** (0.013)	0.158*** (0.010)				
<i>Square of Sales Revenue</i>	0.0000000001*** (0.0000000009)					
<i>Log of Capital</i>			0.005 (0.068)			0.053** (0.018)
<i>Log of Wage Cost</i>			-0.282* (0.137)			0.190*** (0.032)
<i>Log of Remediation Cost</i>			-0.003 (0.010)			0.002 (0.002)
<i>Log of Age</i>			-0.032 (0.122)			0.025 (0.037)
<i>Log of Other Costs</i>			-0.149 (0.182)			0.551*** (0.033)
<i>Log of Sales Revenue</i>			1.276*** (0.232)			
<i>Net Revenue</i>				2.236*** (0.346)	2.845*** (0.212)	
<i>Square of Net Revenue</i>				-0.000 (0.000)		
<i>Log of Net Revenue</i>						0.114*** (0.018)
<i>Constant</i>	8853452 (6533241)	-1782531 (726123)	-0.606 (1.485)	43612513 (27451232)	24812354 (25748123)	2.856*** (0.390)
<i>R-squared</i>	0.87	0.71	0.46	0.98	0.87	0.93
<i>N</i>	194	194	197	194	194	197

Source: Authors' estimation

The regression model has been run on panel data consisting of two years: 2012 and 2016. Random effects model has been used here, after applying the Hausman test. The results in Table 6.9 are the

results of applying the regression models developed following the model in section 4.2 and the specifications in section 4.4. The results indicate that in some specifications, remediation cost is positive and statistically significant, while in others it is negative and significant. However, there is an indication of a non-linear relationship of remediation costs with net revenue and sales revenue, indicated by the significance of the squared term. On the other hand, wage cost is also found to be statistically significant in some specifications, while insignificant in others. As wages and remediation costs indicate the efforts of the factory to improve working conditions (following the literature), it is clear that there is evidence of weak association between economic and social upgrading in the sample, but the exact direction is still not clear. There is also a significant role of the debt variable in some specifications, which primarily measures the total liabilities of the factory. This is partly due to the large amounts of loans taken by the factories to fulfill their obligations in terms of remediation activities, which have role in determining profitability and productivity. However, here also, the exact direction of relationship is still not discernible.

References

1. Ahmed, N. & Nathan, D. (2014). Improving wages and working conditions in the Bangladeshi garment sector: the role of horizontal and vertical relations. *Working Paper 40, Capturing the Gains*.
2. Barrientos, S. & Visser, M. (2012). South African horticulture: opportunities and challenges for economic and social upgrading in value chains. *Working Paper 12, Capturing the Gains*.
3. Barrientos, S., Gereffi, G. & Rossi, A. (2011). Economic and Social Upgrading in Global Production Networks: A New Paradigm for a Changing World. *International Labour Review*, 150(3–4), 319–40.
4. Barrientos, S., Gereffi, G. & Rossi, A. (2011). Economic and Social Upgrading in Global Production Networks: A New Paradigm for a Changing World. *International Labour Review*, 150(3–4), 319–40.
5. Bernhardt, T. & Milberg, W. (2012). International trade and the relation between economic and social upgrading. *Capturing the Gains, Summit Briefing, 3-5 December*.
6. Bhaskaran et al. (2013). Vulnerable workers and labour standards (non-)compliance in global production networks: home-based child labour in Delhi's garment sector. *Working Paper 16, Capturing the Gains*.
7. Carr, M. & Chen, M. (2004). Globalisation, Social Exclusion and Work: With Special Reference to Informal Employment and Gender. *Integration Working Paper No. 20* (Geneva: ILO).
8. Chen, M., Sebstad, J. & O'Connell, L. (1999). Counting the Invisible Workforce: The Case of Homebased Workers, *World Development* 27(3), 603–10.
9. Coe, N. M. & Hess, M. (2013). Economic and social upgrading in global logistics. *Working Paper 39, Capturing the Gains*.
10. Collins, J. L. (2003). *Threads: Gender, Labor and Power in the Global Apparel Industry* (Chicago and London: Chicago University Press).
11. Evers, B. et al. (2014). Social and economic upgrading in floriculture global value chains: flowers and cuttings GVCs in Uganda. *Capturing the Gains, Working Paper 42*.
12. Evers, B. et. al. (2014). Global and regional supermarkets: implications for producers and workers in Kenyan and Ugandan horticulture. *Working Paper 39, Capturing the Gains*.
13. Funcke, A. (2014). Social and economic up and downgrading in Brazil's hortifruiculture. *Working Paper 41, Capturing the Gains*.
14. Hale, A., & Wills, J. (Eds.). (2005). *Threads of Labor*. London: Blackwell Publishing.
15. Knorringa, P. & Pegler, L. (2006). Globalisation, Firm Upgrading and Impacts on Labour'. *Tijdschrift voor economische en sociale geografie*, 97(5), 470–79.

16. Joonkoo, L. et. al. (2013). Mobile Phones: Who benefits in shifting global value chains?. *Capturing the Gains, vol. Revised Summit Briefing, February*.
17. Locke, RM., Qin, F & Brause, A. (2007). Does monitoring improve labor standards? Lessons from Nike. *LSE Research Online Documents on Economics 59405, London School of Economics and Political Science, LSE Library*.
18. Maree, J. et. al. (2013). Developmental uses of mobile phones in Kenya and Uganda. *Working Paper 39, Capturing the Gains*.
19. Milberg, W. & Winkler, D. (2013). *Outsourcing Economics: Global Value Chains in Capitalist Development*. New York: Cambridge University Press.
20. Nathan, D. & Sandip, S. (2011). Blood on your mobile phone? Capturing the gains for artisanal miners, poor workers and women. *Capturing the Gains, Briefing Note 2, February*.
21. Oxfam International (2004). *Trading Away Our Rights: Women Working in Global Supply Chains*. Oxford: Oxfam International.
22. Pickles, J. (2012). Economic and Social Upgrading in Apparel Global Value Chains: Public Governance and Trade Policy. *Working Paper 13, Capturing the Gains*.
23. Plank, L. & Staritz, C. (2013). Precarious upgrading in electronics global production networks in Central and Eastern Europe: the cases of Hungary and Romania. *Working Paper 31, Capturing the Gains*.
24. Plank, L. et. al. (2014). What Does 'Fast Fashion' Mean for Workers? Apparel Production in Morocco and Romania" (Rossi, Luinstra & Pickles, Eds.) in *Towards Better Work: Understanding Labor in Apparel Global Value Chains*. UK: Palgrave.
25. Raworth, K. & Kidder, T. (2009). Mimicking 'lean' in global value chains: it's the workers who get leaned on'. (J. Bair Eds.), in *Frontiers of Commodity Chain Research*, USA: Yale University Press.
26. Rossi, A (2013). Does Economic Upgrading Lead to Social Upgrading in Global Production Networks? Evidence from Morocco. *World Development, 46* (1), 223 – 233.
27. Salido, JM. & Bellhouse, T. (2016). Economic and Social Upgrading: Definitions, connections and exploring means of measurement. *Sede Subregional de la CEPAL en México (Estudios e Investigaciones) 40096, Naciones Unidas Comisión Económica para América Latina y el Caribe (CEPAL)*.
28. Sarkar et. al. (2013). How social upgrading drives economic upgrading by Indian IT majors: the case of telecom IT services. *Working Paper 27, Capturing the Gains*.
29. Standing, G. (2003). *The Decent Work Enterprise: Worker Security and Dynamic Efficiency*. Geneva: International Labour Office.
30. Staritz, C. & Morris, M. (2013). Local embeddedness and economic and social upgrading in Madagascar's export apparel industry. *Working Paper 21, Capturing the Gains*.
31. Varian, H. R. (1992). *Microeconomic Analysis* (3rd ed.). W W Norton and Company.
32. Verhoogen, E. (2007). Trade, Quality Upgrading and Wage Inequality in the Mexican Manufacturing Sector. *Discussion Paper No. 6385, CEPR*.

11. Conclusion and Policy Recommendations

The study examined the capacity for economic, social and gender-related upgrading of apparel enterprises of Bangladesh, particularly in the post-Rana Plaza period. Based on the enterprise-level survey from a nationally representative sample, the study identified the benchmark condition of economic and social issues, which helped to appreciate the changes of apparel enterprises over time. The study has further revealed the enterprises' capacity to upgrade with a view to understanding the development of competitiveness of apparel enterprises in the changing context during the post-Rana Plaza period. This study attempted to estimate the level of benchmark condition needed for the upgrading of RMG enterprises of Bangladesh, and using the data, tried to untangle the interrelationships among economic and social upgrading. The results of the study have been mixed.

Most RMG enterprises lag behind in economic upgrading; and this is due to their lagging behind mainly in terms of the components of economic upgrading, especially functional upgrading. In other words, most factories belong to the OEM category, and they have no evident facilities that would enable them to reach the next level in the value chains (ODM level or OBM level); hence, many have the lowest possible scores in functional upgrading. However, factories have made progress mainly in social and gender-embedded upgrading; this is mainly due to the various remediation activities undertaken by the factories in the past five years. Large enterprises have outpaced medium and small enterprises in terms of economic upgrading, mainly because of their advantage in product and process and partly in functional upgrading; however, a section of small and medium enterprises have also shown progress in this regard.

The exactly opposite picture can be seen in terms of social upgrading, in which factories have made significant progress, primarily due to large investments in fire, electrical and structural safety over the last five years. There is little variation among different categories of enterprises in safety-related issues. However, data shows the absence of different elements of freedom of association in those factories, as many still do not feel comfortable with giving workers' rights to form trade unions that would help in the social dialogue process. Enterprises having contractual arrangements mainly with brands/retailers are ahead over those with contractual arrangements with buying houses and those with contractual arrangements with both brands and buying houses. Also, there is geographical variation in the benchmark condition of upgrading, and such spatial variations of improvement of upgrading necessitates more investment in order to ensure a balanced level of upgrading in all areas. So, one underlying message from the analysis of the indices suggests that there is an inherent imbalance in the upgrading levels, as social and gender-embedded upgrading is apparently more advanced than economic upgrading.

The tests of the three hypotheses described earlier have found some indications of a positive effect of social upgrading on economic upgrading; however, the effect of economic upgrading on social upgrading as well as the relationship between gender-embedded upgrading and economic upgrading is still not clear, as the tests show no significant trends. Even the regression analysis shows weak association of profits with wage costs and remediation costs (two indicators of improved working conditions). Hence, while a weak positive correlation between investment in compliance for social upgrading and level of productivity has been found, other relationships have not been found to be significant. Tests of other secondary hypotheses have not provided clear cut results as well: prices received for manufacturing products have little impact on enterprise's upgrading, while gender-embedded upgrading does not show any significant relationship with upgrading capacity and different variables. Overall, there is no strong association between social and economic upgrading in the RMG sector of Bangladesh, and this could be due to the fact that the efforts to improve the working conditions in the garments factories of Bangladesh are basically considered as investments by the factory owners, and would require a little bit of time before it takes full effect.

Based on the above, the sector needs medium to long-term strategies for upgrading and sustainable development. First, an institution-driven upgrading, targeting social issues which had been undertaken over the last five years, has yet to establish its natural link with economic upgrading and less so with gender-related upgrading. In that consideration, an unbalanced upgrading has been taking 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 with regard to firm's overall competitiveness, especially those which are behind. RMG enterprises need to make substantive investment for economic upgrading in terms of using advanced machineries, design and product development, introducing new departments, non-cotton textiles and IT-based marketing facility. A 'technology upgrading' fund could be developed to facilitate enterprises in undertaking those measures.

Second, both economic and social upgrading in RMG enterprises are not necessarily location-neutral. There is spatial variation in case of upgrading—enterprises located in clusters like Chittagong and Narayangonj are found to be lagging behind in economic upgrading and partially in social upgrading compared to other clusters such as Dhaka, Gazipur and Savar. Hence, enterprise development initiatives are required for those located in clusters such as Chittagong and Narayangonj. Such initiatives should focus on management, technology, employability, skill development and networking with brands and buyers, among others.

Third, new clusters need to be developed in other potential regions such as Bogra, Khulna and other districts of Southern regions by developing necessary infrastructural facilities. In this context, areas for developing special economic zones in Northern and Southern districts could be advantageous.

Fourth, the study reveals that RMG sector has experienced two streams of changes in case of structure and composition as well as their level of upgrading. 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. At the same time, there is an apprehension that without ensuring a balanced level of upgrading, a section of enterprises (small and enterprises outside the group) would find difficult to maintain their competitiveness.

Fifth, a targeted measure is required for small and sub-contracting enterprises in order to build their competitiveness and compliance standards. These entrepreneurs need special technical and financial support as well as need support to build their networks with buyers/brands. Associations such as BGMEA and BKMEA should make them members of their associations and should extend technical support for their capacity development. In case of non-compliance at their existing location, they should provide adequate financial support for relocation/building their enterprises, maintaining full compliance.

Sixth, instead of avoiding their problems, major stakeholders including brands, buyers, government and development partners should provide the necessary assistance for their upgrading in order to remain competitive in the changing market scenario.

Seventh, RMG sector needs a 'gender-embedded upgradation strategy'. Taking this into account, the sector needs investment on female education, training on new machineries and technology, specialized skills for working in upper grade skill-oriented jobs, awareness about rights and entitlements and awareness about harassment and their remedies. Besides, targeted initiatives are required for ensuring opportunities for women in mid- and senior level management and professional positions. Making the workplace free from any kinds of harassment and violence particularly those of the female workers should be a major initiative of the gender-embedded upgradation strategy.

The specific observations and recommendations are as follows:

11.1 Entrepreneurship Development

Observations: Bangladesh's RMG enterprises have been further firmed up as family-based private limited companies, with increasing presence of second and third generation family members in the businesses. Despite that, the key business decisions have been taken by one or two lead members of the family, while young family members in the board are likely to contribute in the further improvement of the operations and management practices in the factories based on their better exposure to state-of-the-art knowledge and technologies compared to their earlier generations. There is very limited presence of independent directors in these family-based enterprises and likewise, very limited roles played by them. Unlike the past, these enterprises are increasingly dependent on the factory management for day to day operations because of growing engagement of the family member directors in different business activities both in RMG and non-RMG sectors. Relatively less time spent at the factory by the directors, particularly those with the group of companies, portray their changing time demand in different activities. Still a small section of 'proprietorship' based enterprises are in operation, which are mostly in small and medium-sized enterprises.

Suggestions: An efficient and functional corporate governance model in family-based enterprises/groups need to be established. The roles and responsibilities of each of the board members should be properly specified. Efforts should be made gradually to separate the involvement of the board in day-to-day management and operational matters. The role of the independent directors in the family-based corporate enterprises need to be devised with a view to getting independent views outside of the family, with regard to ongoing and future strategic dimension of businesses. Taking the precedence of family-based enterprises in major countries, the associations such as BGMEA and BKMEA should develop 'model' cases of corporate governance on family-based enterprises and should promote these among their member factories. Moreover, BGMEA and BKMEA should take special drive to convert the proprietorship-based enterprises into private limited companies.

Observations: The study found that an increasing share of enterprises is subsidiaries of different groups of companies, which comprise not only medium-sized and large enterprises, but also small enterprises. These subsidiary enterprises can take advantage of the mother companies in terms of getting capital, sharing risks and distributing a part of common expenses (if required). In the absence of specific provisions with regard to ownership, operations and management of group of companies under the existing regulatory structure, it becomes difficult to appreciate the financial and operational performance of the subsidiary companies properly.

Suggestion: The scopes and responsibilities of the subsidiaries and the mother companies need to be distinguished. In this connection, necessary amendments could be undertaken under the Company Act 2013, by including separate clauses and provisions on group of companies and their subsidiaries related to roles and responsibilities of enterprises with regard to ownership structure, management and operational issues. The cross-country experiences would be helpful in formulating related provisions on process of documentation, reporting system and disclosure mechanism, among others.

11.2 Management-related Issues

Observations: RMG enterprises are increasingly getting corporatized, which is reflected in terms of delegation of authority to the management. However, managers have limited roles to play in price negotiation with buyers/brands. With changes in the family-based business structure due to a rise in the number of businesses as well as the increasing presence of second/third generation family

members in the businesses, the management structure is likely to be more corporatised in the coming years. Such changes in the management structure demands better ability of the factory management to deal with day to day larger-scale operations. The capacity and quality of the management professionals of the sector may not be ready to take such responsibilities in the future. Senior management staff such as GM, HR managers and compliance managers tried to address their limitations through taking different types of trainings on relevant areas. Given the limitations in basic academic qualifications, such training could partially meet the needs. To meet the deficit, there is a growing tendency to recruit foreign staff in different management and operational positions. Unless competent, well-trained and skilled management professionals are not available at local level, the recruitment of foreign professionals is likely to increase in the coming years. The performance of management practices observed to be varied where management scores of factories located in Narayangonj and Chittagong are found behind.

Suggestions: The corporate management practices in the RMG sector need to be well-structured with proper organogram, job responsibilities and delegation of authority. The service rules for non-production staff should delineate job responsibilities of top, middle and junior management staff. The qualification of the management needs to be earmarked in order to standardised the level of the staff, which may include minimum academic qualification, basic training and level of work experiences etc. A separate salary structure with entitled benefits need to be set for the management staff. The guideline for recruitment of foreign professionals can be included in the service rules. A blanket nature of recruitment of foreign staff in all sections need to be checked. The concerned associations should take the lead role in terms of ensuring corporate management practices at the factory level. Taking the precedence of other countries as well as discussing with reputed brands and retailers about the global good practices, the associations should formulate 'model' structures for corporate management for the enterprises. Extensive awareness-building activities need to be undertaken at the enterprise level, with a view to promoting standard corporate practices.

Promoting standardised management practices require minimum benchmark standards in academic qualifications and training of management professionals. The association should consider making compulsory the minimum academic degrees and trainings for senior and mid-level management professionals such as masters' degrees in business administration, business studies, industrial engineering and human resource management etc. for senior management positions and special degrees/training on industrial engineering, human resource management and compliance management, for the jobs under the department of HR management, compliance and industrial engineering. The associations such as BGMEA and BKMEA are expected to undertake necessary initiatives for effective industry-university collaboration for development of management and other professionals. Given the limited offer of those specialised degrees/trainings at the national level, the associations should discuss these with concerned authorities of public and private institutes and universities to offer such degrees/trainings, help to develop curriculum in line with the requirement of the industry. In this connection, the activities of the BGMEA University of Fashion and Technology (BUFT) of BGMEA and Institute of Apparel Research and Technology (iART) of BKMEA need to be expanded further. Local universities and other academic organisations can explore joint venture initiatives with globally-reputed management schools and universities to set up similar facilities in the country.

In order to improve the management-level efficiency in Chittagong and Narayangonj, better educated and trained management professionals need to be recruited by the factories located in those regions. Academic institutes located in these regions should be encouraged to introduce customised management degrees/trainings so that a local-supply base of management-related professionals could be ensured in these regions. Besides, enterprises of these regions need to attract qualified management staff with attractive financial packages

and other benefits. This would reduce the tendency to recruit less trained, less educated and less experienced professionals at low/unattractive financial packages. The recruitment of foreign professionals needs to be streamlined with a view to providing more scope for local professionals to the same positions. Bangladesh embassies/high commissions in different countries should be taken into cognisance while providing visa clearance to foreign professionals for working in Bangladesh.

11.3 Technology related Issues

Observations: Slow progress in product upgrading is one of the major concerns for industrial upgrading of RMG enterprises, which reflects their poor ability to invest in advanced machineries, limited networking capacity with brands/retailers, and weak management and skill capacity of production and non-production workers. There is a growing effort to use state of the art machineries by all categories of enterprises; however, the use of advanced technologies and machineries varies in terms of size, location and contractual arrangements of factories with brands/retailers. Entrepreneurs working mostly in low-end segments of the product market show little interest to invest in technological development. The study found that level of technology use widely varied between different categories of enterprises due to various reasons. Small-scale enterprises lag behind medium and large-scale enterprises in terms of using advanced machineries and technologies; similarly, variation in technology use is observed between woven and knit enterprises as well as enterprises of different locations.

There is a growing concern in case of using advanced and state of the art machineries and their implications on size of workforce in the factories. The study noticed that the growth of employment between 2012 and 2016 was relatively high in factories which are advanced in technology use. On the other hand, the growth of employment was rather slow in factories which are lagging behind in using advanced technologies. Hence, the use of technologies most likely improved firm-level competitiveness, which created demand for more export and thereby, created scope for investment and employment in the factory. In other words, technological advancement may reduce the scope of employment in particular operations but may raise the demand for employment as a whole, due to a rise in enterprise-level competitiveness. Hence, the net effect of technology is still not negative (rather still positive). On the other hand, most of the enterprises lag behind in functional upgrading, which is reflected in terms of limited development of own capacity for design and products, among others.

Suggestions: A set of targeted fiscal and budgetary measures are needed with a view to promoting technological upgrading of apparel enterprises. The existing fiscal incentives provided to the RMG sector need to be reviewed and should be redesigned, addressing the changing needs of the enterprises, entrepreneurs and workers. First, fiscal incentives should be given to factories for promoting technological development, productivity improvement and skill development of workers and professional staff. Second, a 'technology upgrading fund' needs to be developed with the objectives of promoting technologies, upgrading products, diversifying markets, supporting small and medium-sized enterprises and enterprises located in Chittagong and Narayangonj. Third, a part of the 'technology upgrading fund' should be of a low-interest revolving credit facility for the enterprises in order to modernise, upgrade and introduce new and advanced technologies and machineries in the garment factories. Fourth, the fund could be used for investment in backward linkage diversified textiles (e.g. non-cotton yarn and fabric), design development and brand development. Fifth, low interest credit facility from the 'technology upgrading fund' needs to be made for enterprises located in Chittagong and Narayangonj as well as small-scale enterprises who are interested to invest in state of the art technologies, machineries and development of design centres. Sixth, BGMEA and BKMEA should maintain a comprehensive

database, which could include enterprise level information on production capacity, products produced, use of machineries and technologies, skill composition of workers, major export markets and composition of management professionals. This database could be used to devise tools for providing fiscal support to the targeted enterprises. However, the promotion of technological advancement in RMG factories needs to be done in such a way that it would take into account the level of job displacement due to the use of advanced machineries and technology.

Given the huge demand for cotton in the textiles enterprises currently being met by import from different countries, domestic production of cotton should be promoted in the potential cotton-producing regions. However, the local cotton must meet the required type, quality and standard set by the users of the textiles manufacturers.

11.4 Productivity and Efficiency-related Issues

Observations: The study observed an improvement in line efficiency of RMG enterprises, although the level of efficiency is still lower compared to that of its competing countries such as, China and Vietnam. Upper grade workers, particularly senior operators, are more efficient than mid and low-skilled workers (operators and assistant operators). But there is variation in the level of efficiency in case of mid and junior-grade workers (Operators and assistant operators). Workers' education, use of protective glasses and, non-existence of hazards at the workplace have significant positive impact on their level of efficiency. Female workers are less aware about technology use, particularly multiple machine use, compared to male workers.

Suggestions: Promoting technological advancement in RMG factories needs to be done in such a way that it would take into account both improvement of productivity, efficiency as well as ensure modest job displacement. It is important to follow how much job would be replaced by the use of machines in specific sections and how much additional jobs could be created through the use of better technologies in the factories. Each enterprise will inform the associations about the changes in machinery use and labour use pattern in their factories.

Better academic attainment and training to advanced machineries, particularly to female workers, needs to be ensured. A minimum benchmark of academic attainment could be set up for the entry-level workers in garment factories. This benchmark level could be passing the junior secondary school certificate (level eight) for entry-level workers. Training for workers, particularly female workers in different kinds of machines, need to be made mandatory. There should be training facilities at the enterprises to train the workers about different machineries and technologies. BGMEA and BKMEA should set targets for factory management to attain the training levels for workers in each factory. The government should provide financial support to factories to provide technical training for workers.

11.5 Decent Work: Employability and Gender related Issues

Observations: The study has observed that the composition of RMG workers has changed significantly in terms of gender, size and location. Workers' biometric information indicates longer working life of workers in the garments sector compared to the past. However, differences in academic attainment of male and female workers are likely to affect their aspirations about working in the garments sector. Female workers' job duration is constrained by various economic and social factors. It is important to note that more production workers are now working in the upper grades, perhaps because of a rise in the demand for skilled workers in more skill-based work; this is particularly evident in case of female workers, who are found more in medium-upper grades. The demand for longer hours of overtime

work has reduced, mainly due to the slow rise in growth of production in factories. This mainly happened due to the slow rise in import demand for apparels in major apparel-sourcing countries. Although a majority of the workers received on-the-job training in garment factories, the amount of training is not sufficient.

Suggestions: Regular monitoring of the changes in the composition of workers in the garment factories is very important, particularly focusing on changes in composition in terms of gender, grades, movement from one factory to another factory, working hours including overtime working hours and leave. Since two national biometric databases of RMG workers have been prepared at the BGMEA and BKMEA, these databases need to be properly used and updated on a monthly basis. Based on the database, regular changes in the structure and composition of workers could be monitored properly. Instead of managing by the associations, these biometric databases need to be managed and monitored by a tri-partite committee in order to ensure transparency in the database management.

The associations should promote the standardisation of workers' basic qualification and skills with a view to ensuring long-term development of the sector. In this connection, DIFE in collaboration, with the associations, should fix minimum educational qualifications for workers (for example, passing junior secondary level to be eligible for entry-level jobs). In order to create more job opportunities for female workers, DIFE and associations should fix a minimum proportion of workers under each grade to be female workers, particularly in middle and upper grades (grades 3 to 5).

In order to enhance skill of existing workers, each factory must have their internal training facilities for workers where workers will get training for different machines, compliances and other necessary issues. The associations should set standards for factories to be compliant with regard to providing training to workers and this should be monitored by the associations on a regular basis. Similarly, the promotion criteria for workers should be fixed based on skill and performance. Working hours should be differentiated properly between mandatory working hours and overtime working hours. The overtime working hours should be made voluntary and are to be decided by the workers as per his/her will. On the other hand, factories may also think of better management of work, which could reduce cost for overtime hours for workers.

Female workers who are currently working in the factories and the prospective workers for the garment sector need special care about skill development. Female workers need to be trained about new and advanced machineries on a regular basis. Necessary awareness building activities need to be undertaken among the factory workers, particularly female workers, about the changes in the machineries and technologies and consequent changing demand for labour. The Department of Labour along with worker participation committees, trade unions and worker-related NGOs, should undertake necessary initiatives in this regard.

11.6 Decent Work: Wages and Livelihood Issues

Observations: According to the study, workers' wages did not rise as per the required level stipulated in the rules on revision of minimum wages. Moreover, a large section of workers did not receive their monthly wages and overtime work payment as per the stipulated timeline. Because of over attention on entry-level wages and less attention on wages of upper grades, the wage dispersion between average wages and minimum wages of entry-level workers remain at a low level. Because of insufficient wages and limited income from overtime work, workers' income hardly meets their family expenses and they need to depend on the income of other family members.

Suggestions: The proper enforcement of workers' minimum wage announced by the Minimum Wage Board should be ensured at the enterprise level; in this case, DIFE, DoL and associations should monitor the level of enforcement at the enterprise level. In case enterprises are not complying with the laws, necessary punitive measures should be undertaken against those enterprises. Workers' organisations such as participation committees and trade unions need to follow-up the enforcement of minimum wage related provisions properly at the enterprise level and they should discuss with the factory management in case irregularities are noticed in case of enforcement of minimum wage related provisions. If the factory management is reluctant to take necessary measures, workers organizations should report the irregularity to the DIFE and DoL. Besides, DIFE/DoL should introduce 'apps' for workers to communicate with the authorities about different irregularities including those related to workers' wages, leaves and other financial entitled benefits. Given the limited income, workers need non-wage support in order to accommodate the inadequacy in their wages. Factories may introduce zero-interest credit facility to support workers for their household need. The private commercial banks could introduce customised financial products targeting the garment workers under which workers could open salary accounts, deposit their savings and get credit from the banks. Considering the poor housing condition of workers, the housing projects in major worker-clusters need to be developed by the private sector/individual land owners. In this case, the commercial banks/ public or private house-building financial organisations could extend necessary credit facility to the land owners for building multi-storied apartments at low cost. Besides, government in collaboration with NGOs should arrange more facilities for better education for the children of workers and specialised health/medical services for workers and their families.

11.7 Decent Work: Workplace Safety and Security

Observations: The study observed that major safety-related problems identified at the factory level are—predominance of specific nature of problems under different categories, variation in progress of remediation in terms of factories' location, size and year of operation and variation in extensity and intensity of problems (the former being high in Gazipur and the latter being high in Narayanganj and Chittagong). Main weaknesses in monitoring and inspection (M & I) process include: a) an unclear inspection guideline; b) weak delegating authority of factory inspectors at the factory level; c) the lack of cooperation on the part of the factory management; d) limited awareness at management level; e) the biased process of selecting factories; f) the lack of transparency and poor ethical standards; g) the lack of skilled staff; h) the limited capacity to provide training at the international standards; and i) the lack of adequate logistic facilities. After remediation and restructuring of enterprise-level problems under the closely monitored initiatives, workers are found to be satisfied with workplace safety and security. However, factories are still reluctant to improve facilities beyond basic safety related requirements. While sexual harassment is found to be rare in the workplace, other kinds of harassments are likely to persist. Major reasons for workers' absence from the jobs include sickness and family issues.

Suggestions: Local public authorities need to upgrade their inspection process in the following areas—harmonising inspection guidelines with that of international ones; setting up standard operating procedure (SOP) for monitoring and inspection; creating inspection-related databases for better monitoring; ensuring transparency in the inspection process; and recruiting skilled professionals and providing them with the necessary training. Besides, a number of initiatives need to be undertaken in order to develop a sustainable inspection process, which includes: a) introduction of broad-based consultation for finalising National Action Plan; b) implementation of integrated SOP for better transparency and accountability; c) reviewing draft National Inspection Strategy; d) ensuring effective functioning of the

Coordinating Body; e) developing a new institutional structure for monitoring and inspection; and f) developing a 'Remediation and Relocation Fund'.

Given the prevalence of different types of harassment and sexual harassment particularly targeted to the female workers, special initiatives are required to reduce those problems. As part of the directives of the High Court, each workplace is supposed to form 'anti-harassment committee' with a view to take appropriate institutional measures. Concerned stakeholders particularly employers, workers organisations, MoLE/DoL and brands/buyers should undertake measures to institutionalize the process for addressing the workplace harassment issues. In this case, workers' participation committees (WPCs) can be used for setting up 'sub-committees' to address various complaints with regard to harassment in the workplace. The sub-committee will regularly report those to the concerned authorities, take follow-ups of the decisions and organise awareness raising sessions for workers. Similar level of effort is required at the association level as well as at the ministry level with a view to reduce the harassment.

11.8 Decent Work: Workers' Rights and Workers' Organisations

Observations: The study found that among the workers' organisations, participation committees have been taking shape at a modest level. Major stakeholders including workers, employers and government are at the same page regarding the important role played by these committees. The introduction of an election process for selecting workers' representatives is well appreciated both by workers and entrepreneurs. However, unclear operational modalities and the limited implementation of decisions taken at the committee level raise doubts about their efficacy and long-term sustainability. For the participation committees to be effective, it is important to ensure fair election, increased participation of workers' representatives in the discussion meetings, effective implementation and follow-up of the decisions taken, improved understanding of workers' representatives regarding their roles and responsibilities and most importantly, the willingness of the factory management to make these committees functional. There is a massive trust deficit between workers and entrepreneurs with regard to trade union's role, formation and operation. An environment of unwillingness from the entrepreneurs, fear among workers to lose their jobs, limited cooperation from government organisations and even the problem of corruption at the institutional level, have made it challenging to develop trade unions for better industrial relations. The study observed that many workers are not fully aware of their rights and entitlements. Workers' mixed reactions about getting written contracts, service books and experience certificates, is also an area of improvement. Overall, the (workers') participation committees (PCs) are increasing but still not popular among workers. On the other hand, trade unions are almost non-existent and non-functional.

Suggestions: It is important to create an environment for developing trade unions, which requires building trust between the factory management and workers. An initial step for this is to make the participatory committees functional with a view to creating a trained and educated workforce in the factory, who could ultimately take the lead in the trade unions. In this context, all kinds of logistical, technical and financial support from the factory management needs to be ensured to make the participation committees functional. The WPCs and trade unions and national level workers' federations should work jointly with factory management in order to prepare the workers and members working of participation committees for achieving an environment for developing trust-building trade unions at the factory level in the long run.