Risks and Their Management in Ready-Made Garment Industry: Evidence from the World's Second Largest Exporting Nation

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A smooth supply chain is critical for clothing exporters to profit and remain competitive in the global clothing industry. Several risks including the lower profit share, alongside cost reduction pressure from the buyers threaten the survival of the clothing (Readymade Garment) exporters. This paper explores the variety of risks faced by the Ready-Made Garment (RMG) exporters and their management practices in the World's second largest exporting nations, Bangladesh. Conducting detailed case studies and in-depth interviews on 10 RMG exporters, the paper identifies that the exporters face eight different types of risks, however, have a less-than-par awareness and understanding on formal risk management. Overall findings identify a significant multi-dimensional vulnerability of the RMG exporters in Bangladesh, which serves implications for the other competing nations in the global clothing market.

Keywords: Readymade garment, risk management, clothing, textile, RMG exports, international business.

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Introduction

The world Ready-Made Garment (RMG) exports market is led by developing economies, mainly, China, Bangladesh, Vietnam, and India. Many of these countries are considered as 'emerging economies' that are expected to lead the world in the coming decades. For many of them, RMG exports generate the lion share of exports revenue, which works as a key driver of their economic growth. As a result, vulnerability of the RMG industry in these economies would implicate at least two-fold challenges; first, the economies will lose their growth momentum coupled with unemployment and loss in trade competitiveness, and second, the parties to the supply chain of global RMG market would be adversely affected (Ahmed, 2009). As a result, the RMG exporting firms need to understand the risks they face (either explicit or implicit) and the need for their appropriate management in order to protect their market share and profitability. However, the story appears quite dissimilar as most of the exporting nations are developing economies, and several structural and economic problems create a diverse range of risks. These risks often adversely affect business volume and profitability of the exporting firms via different channels, e.g., international buyers cancelling orders. In addition, there is an on-going buyer pressure for cost reduction due to several factors, e.g., increasing levels of wholesale and retail market competition, aiming for maximizing profit margin, increased frequency of financial and economic crises or shocks, etc. Facing these multi-facet challenges, the RMG exporting firms in many of the developing economies, for example, Bangladesh and India, often struggle to maintain their competitiveness and profitability in the world market, putting the countries' economic performance at risk.

Given the significance of understanding the risks and their management strategies, this paper aims to explore the true nature of the risks, their impacts and management at the firm level in the world's leading RMG exporting countries, particularly in the context of developing economies. In order to fulfill this aim, this paper examines ten large RMG exporting firms in Bangladesh. By applying two-fold methods (case study and in-depth interview), the paper identifies three key aspects: (i) the key risks faced by the exporters, their nature and sources (ii) the perceived impacts of these risks on five key business dimensions of the exporters, i.e., productivity, profitability, exports volume, reputation or image, and stakeholder relationship, and finally, (iii) the current risk management strategies adopted and an evaluation on their adequateness. There are several reasons why Bangladesh is an ideal case for this research: (i) Bangladesh is the second largest RMG exporter in the world market, mainly driven by abundance of cheap, unskilled and semiskilled labor, and the sector earns about 80% of its foreign currency earnings, employing about 4 million people in the country (Faruque, 2009; Hossain & Hafiz, 2017; BGMEA, 2015), (ii) the lessons would be useful for other competing nations with similar socio-economic characteristics, e.g., India, Sri Lanka, Vietnam, due to the similarity of their socio-economic profile to Bangladesh, (iii) it is identified as one of emerging economies to lead the world in the coming decades (e.g., a member of the N-11 listed by Glodman Sachs (Sandra, David, & Anna, 2007)), and (iv) finally, several unique uncertainties and risks can be found in Bangladesh (for example, the collapse of Rana Plaza and the fire damage at Tazreen Fashion), which are peculiar to the global clothing market and could be a vital source of risk information. Therefore, the contribution of this paper are multifaceted: it explores risks and management practices critical to the global RMG manufacturers and exporters, especially in a developing economy context while providing a novel evidence on Bangladesh. The paper draws critical information for the managers and entrepreneurs in the global RMG supply chain and explores insights that could be useful for policy makers and regulators in protecting the industry.

The rest of the paper is organized in the following sections: section 2 provides a brief overview on the world RMG exports and Bangladesh's relative position, section 3 reviews the theories on risks in business and their management, followed by a brief literature review specific to RMG industry, section 4 outlines the methodology, section 5 presents the analysis and discussion, followed by conclusion and policy implications in section 6.

World RMG Exports and Bangladesh

Table 1 presents the global RMG exports data as reported by World Trade Organization (WTO). Global exports of RMG appears to grow at a healthy average rate of 2.41% annually over five year period from 2012 to 2016, largely dominated by China. China holds its top exporter position consistently over the years with an average market share of 36%. However, in the recent periods China has been losing its market share mainly due to higher cost of production and shortage of skilled workforce, diverting its benefits to the closest competitor Bangladesh (Mirdha, 2016). The table shows that China's exports declined by 6.4% from 2014 to 2015 and about 9.0% in 2015 to 2016. On the other hand, in the same two years, Bangladesh experienced a growth of 9.6% and 26.1%, respectively. Consistently for over the five years, Bangladesh holds the second largest exporter position in the global exports market although its market share (5.6%) is significantly lower than that of China. Compared to these two countries, the closest competitors in terms of five-year average market share are: Italy (4.7%), Vietnam (4.4%), Hong Kong (4.3%), Germany (4.0%), and India (3.6%). With respect to Bangladesh in particular, its exports are on the rise, as work orders at competitive prices appear increasing. Only five items (e.g., shirts, trousers, jackets and sweaters) covered 78.6% of the total garment export earnings in the 2014-15 fiscal year (Mirdha, 2016).

Table 1: World RMG exports from 2012-2016

	World Top Exporting Nations (billion USD)					Shares of in World Exports (%)				
Exporters	**2012**	**2013**	**2014**	**2015**	**2016**	**2012**	**2013**	**2014**	**2015**	**2016**
World	*405.11*	*440.25*	*474.68*	*442.35*	*442.12*	*100*	*100*	*100*	*100*	*100*
China	148.27	165.04	173.44	162.35	147.79	36.60	37.49	36.54	36.70	33.43
Bangladesh	19.27	19.57	24.21	26.53	33.45	4.76	4.44	5.10	6.00	7.57
Viet Nam	14.08	16.75	19.70	21.43	24.66	3.48	3.80	4.15	4.85	5.58
Turkey	13.85	14.96	16.26	14.85	14.78	3.42	3.40	3.42	3.36	3.34
Germany	17.65	18.30	19.46	16.66	17.12	4.36	4.16	4.10	3.77	3.87
India	12.90	15.70	16.54	17.13	16.96	3.18	3.57	3.48	3.87	3.84
Italy	20.35	21.64	22.94	19.40	19.97	5.02	4.92	4.83	4.39	4.52
Hong Kong	21.28	20.72	19.39	17.45	14.92	5.25	4.71	4.08	3.94	3.37
Cambodia	4.01	4.81	5.32	5.92	10.28	0.99	1.09	1.12	1.34	2.32
Indonesia	7.18	7.38	7.36	7.28	7.17	1.77	1.68	1.55	1.65	1.62
Sri Lanka	3.78	4.27	4.68	4.55	4.60	0.93	0.97	0.99	1.03	1.04
Pakistan	3.70	3.96	4.39	4.49	5.61	0.91	0.90	0.92	1.01	1.27

Source: International Trade Center, World Trade Organization (WTO) as of June 04, 2017

According to industry research (Mirdha, 2016), a large number of the world's leading brands prefer Bangladesh as the source of their RMG products. Key buyers and their average purchase volume include: Swedish retail giant H&M (nearly $3billion in a year, purchasing T-shirts, cotton trousers, woven shirts, jackets and sweaters), the US retail giant Walmart (about $2.5 billion yearly, purchasing T-shirts, kidswears, trousers and sweaters), Li & Fung (nearly $1.5 billion annually, buys mainly trousers, T-shirts, shirts and sweaters), the British retailer Primark ($1.0 billion, buying mainly jeans pants, shirts and other denim products), the Spanish retailer Inditex (about $1.5 billion annually, purchasing women's wear and trousers and under its different brands like Zara, Lefties and Bershka), and C&A (more than $800 million in a year). Other top buyers include German's posh brand Hugo Boss and Olymp, Tesco, M & S, Gap, Nike, VF Asia, Levi's and Adidas. However, the Bangladesh RMG industry faced major setbacks when two major accidents significantly damaged reputation of the industry and exposed the high-level compliance vulnerabilities. Tazreen Fashions factory fire in 2012 (November 24) took lives of more than 112 employees. In 2013 (April 24), the Rana Plaza, an eight storied building accommodating five garment factories, collapsed and more than 1100 lives were lost in the accident. The pair of consecutive events exposed the extremely high compliance gaps and called for immediate actions from the global RMG customers for responsible purchase with stricter compliance enforcement. Although a slowdown in work-orders was evident in the short run after the accidents, the industry has been able to significantly improve its compliance levels and restore its pace of growth over time.

Table 1 provides an important picture in relation to this research. On the list of 12 top exporters, it is worth noting that most of the countries are developing economies and contain similar socio-economic profiles. For example, of the 12, four are South Asian including India, Pakistan and Sri Lanka who are the close neighbors of Bangladesh. On the other hands, top exporting nations like Vietnam, Cambodia, and Indonesia are from Southeast Asia whose socio-economic characteristics are much similar to that of Bangladesh. Given that Bangladesh is the second largest RMG exporter and has a socio-economic environment that is similar to most of the world's leading RMG exporting nations, examining the RMG exporters' risks and their management practices could deliver valuable insights for all the major competitors. Therefore, the insights from this research is expected to produce important lessons for both Bangladesh and other competing nations, especially the developing economies from South and Southeast Asia.

Literature Review

In this section, we first present a theoretically brief on the general business risks and their management, and then review the literature specific to the Bangladesh RMG industry.

Risk generally refers to the uncertainty regarding deviation from expected outcome (Jordão & Sousa, 2010), in other words, it is the probability of an undesirable outcome (Holton, 2004). For businesses, Barumwete and Rao (2008) defined risk as the unpredicted changes that may have unfavorable impact on an organization's profitability, value and cash flow. While businesses are encompassed with various types of risks, their nature and extent escalates when firms engage in business across the border, i.e., international business. For example, exchange rate risk and country risk are specific to generally internationally-oriented business (Hou, 2013; Oxelheim, 1984). The prevalence of wide scale risks in international business could damage broader financial performance of corporations if not managed properly; yet firms tend to go international expecting higher returns (Barua, Khan, & Barua, 2018; Barua, 2017; Khan & Barua, 2017).

Table 2: Different types of risks and their sources

Risk	Definition	Key Sources
Political Risk	Effect on investment as a result of political changes or instability in a country (Berg, 2010)	Political unrest and violence, abrupt changes in regulations, changes of political ideology
Technological Risk	Incurring loss from the installation of a technical process with uncertain outcome (Hou, 2013)	Obsolete technology, new technology, technical failure, external attacks, e.g., malware
Financial Risk	Shortage of cash flow for meeting the financial obligations of the organization (Wengert & Schittenhelm, 2013)	Higher amount of debt, leading to higher principal and interest repayments
Operational Risk	Loss resulting from inadequate or failed processes, people and systems or from external events (Hou, 2013)	Production risk, quality risk, external and internal fraud
Supply Chain Risk	Loss from the unavailability of necessary raw material as well as ineffective delivery of the finished goods to the customers (Merna & Al-Thani, 2008)	Choosing wrong supplier(s), undesired behaviour of suppliers, quality mismatch of materials
Environmental Risk	The threat of adverse effects on living organisms and the environment by emissions, wastes, resource depletion, etc., arising out of an organization's activities (Govori, 2012)	Pollution, lack of proper waste management policies, diseases arising from chemicals or hazardous work
Logistics and Transportation Risk	The possibility that raw materials or finished goods are not delivered to the customers effectively and timely due to transportation and logistics failure (Wright & Datskovska, 2012)	Mechanical failure of transports, accident, port lockouts
Compliance Risk	The risk of legal sanctions, financial loss, or loss to reputation that the firm may suffer as a result of its failure to comply with laws, its own regulations, code of conduct, and standards of best/good practice (Jordão & Sousa, 2010)	Intentional or unintentional non-compliance with relevant laws and regulations, internal policies or prescribed best practices.

Source: Based on literature review

There are several types of risk that can have diverse impacts on business activities. Based on the literature, a summary of the different types of risks is shown in Table 2. Since firms have to deal with a diverse range of risks, they need to manage them in order sustain and grow. Risk management is a process through which risks are identified, recognized and assessed, strategies are developed to manage and mitigate those risks using managerial resources efficiently (Berg, 2010). However, it is true that not all risks are equally vital for an organization as some have higher 'likelihood' of occurring and some may cause greater 'damage' (impact), over the others (Berg, 2010). As a result, it is critical and useful to evaluate all risks using a 'likelihood-impact' approach. A generic risk management process follows the four sequential actions: (i) *Risk Identification:* identification and preparation of a checklist of the potential risk, (ii) *Risk Evaluation:* evaluating the likelihood and potential impact of each of the risks identified and developing a rank of priority or significance, (iii) *Risk Mitigation:* based on the rank, all risks need to be mitigated through adopting appropriate risk mitigation strategies (Berg, 2010); usually, in any or a combination of four ways: risk avoidance, risk sharing, risk reduction and risk transfer, and (iv) *Contingency Plan:* outlining action plans for a sudden or unexpected risk event that may arise in future (Berg, 2010).

In this study, our main purpose is to explore the sources, impacts and management process of different types of risks associated with the RMG exporters of Bangladesh. Literature specific to the RMG industry risks or challenges appear to be very limited, which we review in this section. The growth of the export-oriented RMG industry has been remarkable for Bangladesh; however, it appears crippled with a diverse range of challenges and uncertainties that generate significant levels of risks (Mottaleb & Sonobe, 2011). Although the list could be long, it would include: frequent violations of working conditions, international labor standards, and codes of conduct, using inconsistent factory or office building construction, use of poor construction materials, congested air circulation or poor workspace ventilation, no safety inspection of working conditions and building, frequent labor unrest, poor artificial and natural lighting system, illegal power connection and improper wiring, no or insufficient emergency staircases, careless smoking, overload on electricity, and poor fire safety measure (Barua & Ansary, 2016; Ahmed, Raihan, & Islam, 2013; Islam, 2014; Absar, 2001; Afrin, 2014; Rakib & Adnan, 2015; Carlson & Bitsch, 2018).

In addition to the firm-specific problems, the overall business environment of Bangladesh is also influenced by different political unrest of which the RMG industry cannot be alienated, for example, Hartal/Strike, blockade, political violence etc. Roy and Borsha (2013) found a sizable negative impact of 'Hartal/Strike' on the socio economic development of Bangladesh, so is expected for the RMG industry. Political instabilities are often complemented by frequent labor unrest in the RMG industry of Bangladesh that significantly disrupt production (Aziz, 2011). Moreover, the RMG producers frequently face the risk of very high employee turnover by the workers, which creates risk of production delay and business loss (Kaikobad & Bhuiyan, 2012). Other risks appear relevant could be obsolescence of technologies used by most of the RMG manufacturers, upgrade of which is essential for this labor-intensive industry in order to sustain the output growth (Khan, n.d.). Nuruzzaman (2013) found that, due to over dependence on foreign buyers' demands and imported raw materials; this industry faces a very high degree of supply chain related uncertainties. Moreover, the industry also faces climate change risk, mainly through increases in labor cost, reduction in supply of raw materials (Faruky, Uddin, & Hossain, 2011). Islam, Rakib, and Adnan (2016) found that the industry faces a number of challenges that may create a significant level of risky business environment, for example, unskilled workers, improper infrastructure, energy crisis, high cost of capital, high tax rate, intricate social compliance, political crisis, lack of market and product diversification, compliance pressure from buyers and lack of integration. Given the diverse range of risks faced by the industry, yet it remains unsure how the exporting firms manages the risks. No study so far has examined the issue.

In the world RMG market, Bangladesh is the second largest exporter, and insights from this country would be highly useful for any other RMG exporting nation, especially the close competitors with similar socio-economic profiles, e.g., Vietnam, India, and Sri Lanka. As such, identifying the existing and potential risks is also equally important for the industry. Faced with various types of risks, the RMG industry in Bangladesh has to manage them appropriately to sustain and grow in the international market. Effective risk management fundamentally requires top managements' role in identification, evaluation and mitigation of the risks (Islam & Tedford, 2012). However, in the overall manufacturing sector in Bangladesh, such management practice appears significantly weak or absent (Islam & Tedford, 2012). As the literature review suggests, there are a number of research on RMG industry in Bangladesh, most of which are on the overall performance of the industry in terms of competitiveness, working conditions, problem and prospects. To the best of authors' knowledge, no study has explored the multi-dimensional risk aspects associated with the industry. This paper attempts to fulfil this literature gap.

Methodology

In line with the objectives set, the paper uses two methods - case study and in-depth interview, involving a non-probability sampling technique. Case study method is useful when there is a requirement of in-depth investigation and acquiring large sample population is not easy (Zainal, 2007). According to Yin (1994), case study approach is mostly useful when the investigator is looking for how or why type questions and has little control over the variables. For this study, obtaining a large sample size appears difficult since the RMG manufacturers are very reluctant to disclose their business information. Moreover, case studies and in-depth interviews can explore deep insights, which will serve the purpose of this research.

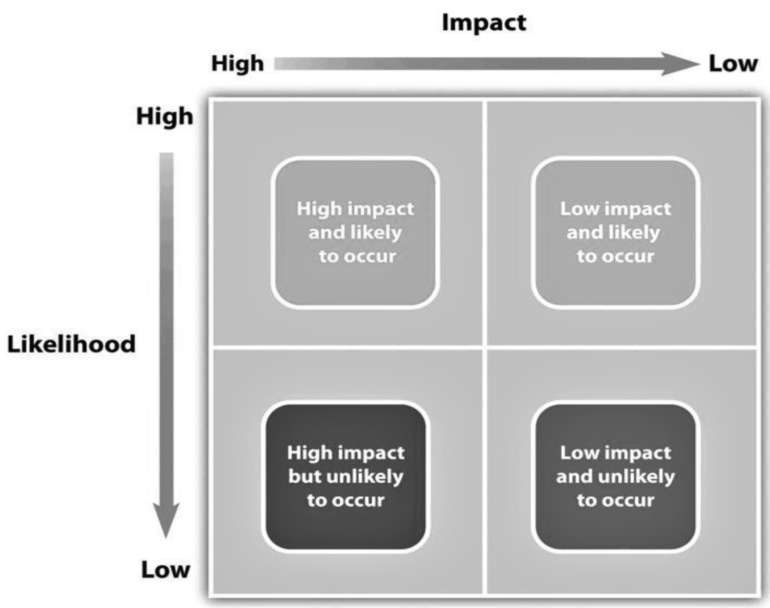
Most of the RMG manufacturers and exporters in Bangladesh are private limited companies or sole proprietorship. As a result, public data and information on them often appears unavailable or limited. As explained earlier, the RMG manufacturers treat data and information relevant to their businesses as a matter of secrecy and hence, they are very conservative while about data or information disclosure. A total of 10 RMG exporters are selected for this research. To acquire necessary data and information, detailed case study on each exporter is carried based on publicly available information and data collected through direct visits and observations for the last five years from 2011 to 2015. Further, in-depth structured interview of the top management of each manufacturer is conducted to complement with the case study analysis. Both the interviews and the case studies are carried in the second quarter of 2016. Combining these two methods, data and information collected are utilized to identify three critical aspects:

(i) the types of risks the manufacturers face, their frequencies and sources. Average frequencies for the risks are calculated on annual basis – minimum, maximum, and average number of times.

(ii) the perceived level of overall impacts of each risk on five key business indicators: productivity, profitability, exports volume, reputation or image, and stakeholder relationship. The severity and significance of each risk is then evaluated using the Likelihood-Impact (L-I) framework (described below).

(iii) key strategies that the RMG exporters adopt to mitigate or prevent these risks, followed by an evaluation of the strategies.

The likelihood-impact (L-I) model is widely known in the area of risk management, in particular in project management Amado et al. (2012). Following L-I model is used to complement the analysis (ii) above:



Source: Amado et al. (2012)

Figure 1. Risk Likelihood-Impact matrix

Once the risks are identified, scores are assigned for each risk based on the perceived level of impact magnitude and likelihood of each risk, using a five-point scale. These magnitude and impact scores are then used to develop a Risk Matrix to identify the overall risk-impact positioning of the exporters. Figure 1 shows the Risk Matrix utilizing the Likelihood-Impact framework. Each quadrant represents a different zones of likelihood-impact combinations of a risk. A company can be on any quadrant based on its own likelihood-impact scores for each risk individually. The likelihood and impact of a particular type of risk is scored using the scale presented in Table 3. The scores are assigned based on blind evaluations of the authors and the respondent so that untoward bias can be minimized.

Table 3: Risk scores

Scale	Score
Very High	5
High	4
Moderate	3
Low	2
Very Low	1

About the RMG Manufacturers Selected

Table 4 shows that all the selected RMG manufacturers are fully export-oriented, meaning that they only export and do not sell their products in the domestic market. The manufacturers employ a minimum of 500 to a large pool of 15,000 employees, which show the depth and breadth of production and business activities of the exporters. Table 5 presents the export volumes, key export destinations, key import sources, and major customers for all the exporters. It is important to note from both Table 4 and 5 that the samples selected varies greatly in terms of size, business volume, and export destinations, which captures potential variations across large and small exporters making the findings more generally applicable. Almost all exporters rely on China and India for their raw material. The exporters have fairly balanced exports portfolio of USA and Europe, which helps to immune from systemic risk of being too focused on one particular region.

Table 4: Basic information of surveyed RMGs

Name	Address	Year of Establishment	No. of Workers	Export Orientation	Company Type
Diganta Sweater Ltd.	Noajoor, Tangail Road, Chandana Chowrasta, Gazipur 1702	2007	15000	Fully	Private Ltd
Gold Star Garments Ltd.	13/1, Ring Road, Shamoli, Dhaka	1992	1000	Fully	Private Ltd
National Garments Ltd.	14, Ring Road, Shamoli, Dhaka	1995	1200	Fully	Private Ltd
Bando Apparels Ltd.	Baribad, Mohammadpur, Dhaka-1207	2005	1200	Fully	Private Ltd
Prince High Design Ltd	Hakim Tower (2nd& 3rd floor), E-6 Middle Badda, Pragati Sarani Road, Dhaka	1996	800	Fully	Private Ltd
Ambition Garments Ltd.	Al-Amin Plaza, 320, East Rampura, Dhaka-1217	2009	500	Fully	Private Ltd
Anam Garments Ltd	67, Mirpur Road, (1st Floor), Kalabagan	1998	1500	Fully	Private Ltd
Birds Garments Ltd	9/9 Iqbal Road, Mohammadpur	2000	1300	Fully	Private Ltd
Virtual Knitwear Ltd	S.A. 7,8, R.S. 11,12,13, Karamtola, Pubail, Gazipur	2007	700	Fully	Private Ltd
Niagara Textiles Ltd	27, Bijoy Nagar, Suite No. C-1 (1st Floor) Dhaka-1000, Bangladesh.	2000	1500	Fully	Private Ltd

Source: Author constructed based on company provided data

Table 5: International trade activities of the selected RMG manufacturers

Name	Exports (million USD)						Imports (million USD)						Major Exports Destinations	Major Imports Sources	Major Buyers
	2012	2013	2014	2015	2016	2010	2011	2012	2013	2014	2015	2016			
Diganta Sweater Ltd.	27.04	44.58	45.45	41.44	41.19	26.01	29.18	17.30	25.99	26.01	23.94	23.62	USA, UK, Germany, Italy, France	China, India	M & M and Tema
Gold Star Garments Ltd.	5.00	4.50	6.98	7.52	8.55	1.89	2.34	3.75	3.38	5.23	5.63	6.40	Germany, USA, Brazil Canada	China	NKD Services GMBH, MGL
National Garments Ltd.	4.38	5.00	7.50	7.39	8.16	2.75	3.71	3.75	3.13	5.00	4.84	5.23	USA, Italy Germany	China	Bright Way, KZM
Bando Apparels Ltd.	6.00	6.50	6.25	7.01	7.43	3.50	4.00	4.50	5.35	5.00	5.68	6.06	UK, Italy Germany	Hong Kong, India	Metro D.D., Elvina Fashion
Prince High Design Ltd	6.00	6.50	5.00	6.40	6.80	2.50	3.19	4.38	4.85	3.00	4.38	4.65	Spain, Italy USA	China, Hong Kong	Louise Parise, Reliance Fashion
Ambition Garments Ltd.	3.38	3.50	3.75	4.11	4.40	1.50	2.25	2.50	2.56	2.75	3.16	3.44	Belgium, France, UK	China	M&M, Bright Way
Anam Garments Ltd	5.00	5.50	5.63	6.08	6.43	3.13	3.63	3.94	4.31	4.38	4.83	5.15	Belgium, Poland, France	India, Taiwan	Elvina Fashion, Pattaya Unique Fashion Co.
Birds Garments Ltd	5.13	5.38	5.75	6.19	6.59	2.75	3.88	4.00	4.13	4.75	5.18	5.60	Thailand, France, USA	China	KAN SP 200, Life style International
Virtual Knitwear Ltd	7.13	7.25	7.50	7.86	8.15	3.75	4.13	4.28	4.35	4.50	4.72	4.89	USA, Canada	India	Innovation Qualities, Truerex Ltd.
Niagara Textiles Ltd	9.38	9.13	10.00	11.19	12.10	5.00	6.00	8.13	7.50	8.50	9.58	10.43	Australia, Canada, Middle East	China	Sova, GTA Fashion

Source: Author constructed based on company provided data

Analysis and Discussion

This section presents the analysis of the cases and in-depth interviews. The first sub-section presents the risk types and their nature, sources and frequencies. The second sub-section provides a detail on the risks' impacts and likelihood of occurrence, and finally, the risk manage strategies are discussed in third sub-section.

Types, Frequency and Sources of Risks Faced

Table 6: Types and frequency of risk face faced

Risk Type	Annual Frequency (no. of times occurred in a year, considering all companies)		
	Minimum	Maximum	Mean
Political Risk	2	15	9
Technological Risk	2	25	14
Financial Risk	2	5	4
Operational Risk	5	20	13
Supply Chain Risk	5	10	8
Environmental Risk	2	5	4
Logistics & Transportation Risk	10	15	13
Compliance Risk	3	8	6

Source: Author constructed based on company provided data

Table 6 suggests that the RMG manufacturers face eight different types of risks in their international business activities. Expectedly, the most frequent risk faced by the companies is the logistics and transportation risk. Companies faced this risk from a minimum of 10 to a maximum of 15 times in a year. Technological and operation risks are closely related and both of them appear to be highly frequent. Consistent with the Bangladesh's history of frequent political turbulences, the RMG manufacturers appear to face political risk up to as many as 15 times in a year, which more than once in a month. The least frequency is associated is with compliance risk and environmental risk. One reason for these two risks taking the least frequency may be that these two are closely related since environmental protection is often a matter of compliance, and the regulatory authorities or the customers of the RMG manufacturers do not enforce compliance requirements much. The statement reflects the fact that compliance (e.g., worker safety, building codes) is often an overlooked matter in the Bangladesh RMG industry while environmental protection is probably the least considered matter in consideration to the industry activities. In the following section, a detailed discussion on the findings of the case studies is presented, organized by the types of risk.

Political Risk

Bangladesh has a long history of unstable political environment since its independence. For example, during 2015, national election-centered political crises erupted in a multifaceted manner, creating a complex set of problems and posed huge risks for the export oriented RMG industry. Consequently, the RMG manufacturers and exporters were hit hard. Considering the factual history, the respondents identify this as a highly frequent risk. According to the survey, the RMG exporters face loss or damages from political risk a minimum 2 to a maximum 15 times in a year. The major sources of political risk are: unrest and violence, nation-wide strike and blockade, politically motivated adverse changes in government regulations, politically motivated industry unrest etc. It is not uncommon that political figures often intervene in company operations demanding financial benefits. According to the respondent, due to the risk, companies often face several outcomes, for example, delay in supply chain, direct financial losses due to casualties and damages of employees/workers, physical property damages from violence, losing work-order due to not being able to maintain commitment with the customers.

Technological Risk

Although, the RMG industry in Bangladesh is in general labor intensive, yet they run with plenty of machineries and mechanical equipment. The heavy reliance of technology poses a great deal of risk also, for example, technology becoming obsolete, injuries resulted from mechanical failure. The exporters identify that they often face such technology related risk generally in the range of 5 to 25 times in a year. Fast obsolescence of technical and mechanical equipment is one of the main source of this risk. The respondents reveal that they find their newly or recently introduced machineries and technology becoming obsolete too fast, mainly due to the invention of new and advanced technology far before the expected life of the existing technology. Sometimes, they install new technology replacing their current one to comply with the requirements of their buyers. In addition, system breakdown, mechanical failure, and safety issues are also key sources of this risk. According to the respondents, they generally take enough safety measures to safeguard the workers from injury or accidents, however, yet it proves to be inadequate. The exporters perceive that technological risk affects their productivity, reputation and stakeholder relationship significantly higher than the direct effects on export volume.

Financial Risk

Financial risk may arise due to the possibility of direct financial losses or in ability to meet its financial obligations. Most of the (seven out of the 10) RMG exporters identified this risk as relatively infrequent risk. Exporters reporting affirmatively revealed a much infrequent occurrence of such risk (2-5 times in a year). Three main sources of this risk is explored examining the firms' cases: defaulting on a financial obligation, adverse changes in foreign exchange rates, and not receiving timely export payments. The case studies revealed that the RMG exporters often take large loans from private and public commercial banks, which they may be unable to service at times. On the other hand, almost all of them transact with the banks in spot exchange rate and as a result incur loss in value of the receipts due to adverse exchange rates movement. Only two of the RMG exporters identify that doing business would have been almost impossible without adequate supply of credit and regular export payments, and if they can mitigate the foreign exchange risk properly, they may incur more profit.

Operational Risk

Operational risk is a frequent risk for any RMG manufacturer and exporter. As the case studies reveal, the frequency of occurring this risk is relatively higher, between 5 to 20 times in a year. Generally, operation risk occurs when a company fails to meet the target production or quality standards and cannot finish the production within a deadline. The case studies reveal that the absence of workers, process breakdown, mechanical failure etc. can significantly influence RMG production levels. If the workers and line chief fail to deliver production within their assigned deadlines, overtime works to catch the ultimate deadline may increase the production cost significantly and also may lead to a loss of reputation. In addition, below-standard quality of RMGs due to operational failure may result in reduced future order size or loss of customers.

Supply Chain Risk

Although Bangladesh is the second largest RMG exporter in the world, the industry is largely dependent on external suppliers of raw materials, mainly from overseas. Such heavy reliance on international suppliers creates the possibility of supply chain risks. The RMG exporters studied normally collect their supplies locally from Savar and Comilla EPZ and internationally from China, India and other countries. The RMG exporters identify that the frequency of supply chain risk generally varies within the range of 5-10 times in a year. Several sources create supply chain risk, e.g., inability of suppliers to supply the required (in terms of both quantity and quality) raw materials, lack or failure of transportation facilities. The poor performance of the raw materials suppliers is a key source of the risk which affects quality of finished products. The RMG exporters reveal that late delivery of raw material can also delay finished product delivery exceeding the deadline set by the buyers (production shutdown in extreme cases), which generally results in a cut of 5%-10% of total export payment. Moreover, higher the price during high demand season also increases supply chain risk. Overall, they adversely affect the level of profitability. The RMG exporters agreed that supply chain risks have a strong impact on productivity, profitability, reputation, and stakeholder relationship.

Environmental Risk

RMG factories often release hazardous materials as waste that can impact the environment significantly, e.g., different colors, chemicals etc. Huge amount of wastages are produced by this industry which can be an alarming threat for the environment, if proper waste management is not undertaken, e.g., installing Effluent Treatment Plant (ETP). Such environmental damages often create severe health complications and diseases for the workers. Of course, such complications may also arise due to the direct contact of the workers with different chemicals during the production process. However, the RMG exporters reveal a relatively lesser frequency of occurrence of environmental risk, varying in the range of 2-5 times in a year. It is important to note that majority of the exporters studied believe that, environmental risk has no or little impact on production, profitability, export volume and stakeholder relationship; and as a result, they often overlook the environmental damages.

Logistics & Transportation Risk

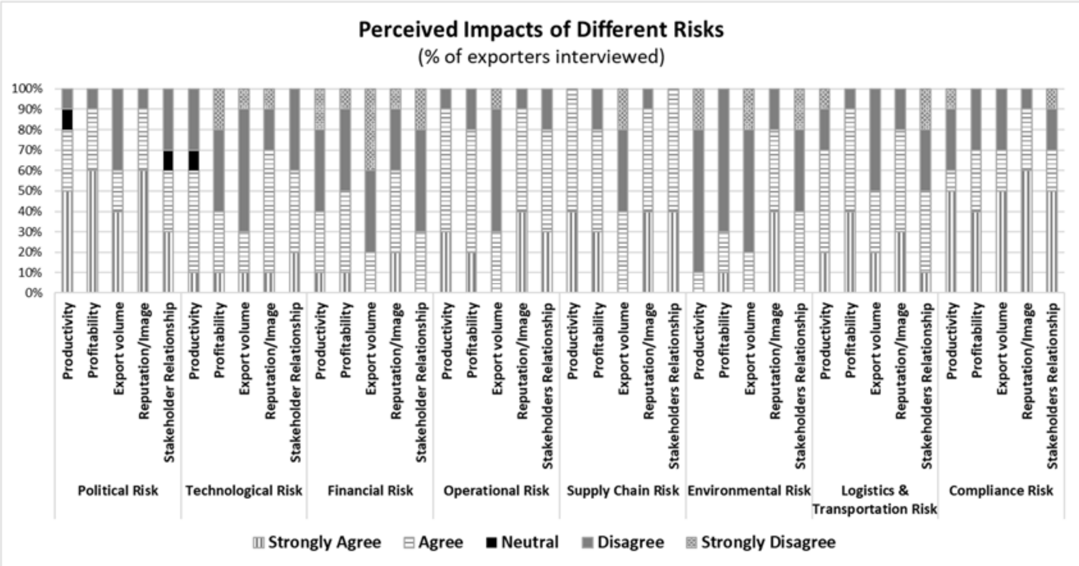
Logistics and transportation play a vital role in the RMG value chain globally, and there are several risks associated with these activities. Negligence and delay of the carriers may result in loss of money, resources, and customers. The RMG exporters revealed that incidences like robbery, theft, hijacking during transporting goods is not uncommon both at the local and international levels. Moreover, carrier cost frequently increases during special occasions, such as religious festival (e.g., Eid-ul-Fitre), and also due to unstable political conditions like strike, blockade etc. Increased carrier cost ultimately increases the overall cost and reduces profitability. The case studies reveal facing the logistics & transportation risk at an annual frequency of 10-15 times. And the exporters strongly believe that logistics and transportation risks have a large impact on productivity, profitability, reputation and relationship among stakeholders.

Compliance Risk

International buyers or importing country governments often impose compliance requirements that need to be ensured by the RMG exporters from Bangladesh. The compliance requirements became stricter after the unfortunate incidents of Rana Plaza collapse and Tazreen Fashion fire that killed many workers. Since then, different audits are being conducted focusing mainly on compliance requirements. The RMG exporters reveal that compliance risk has risen in the last couple of years and its general frequency of occurrence falls in the range of 3-8 times in a year. Bangladeshi RMG factories, especially those who are located in and around the capital city Dhaka are famous for very poor compliance history, e.g., not following proper building codes, not using any scientifically approved construction design, not having any worker safety measures, and lack of minimum wage. Such no-compliance practices have led to building collapse and loss of many lives. In addition, RMG exporters reported that they do not have enough arrangements to ensure hygienic food and clean drinking water for all the workers. All these again increase compliance risk. The RMG exporters studied strongly believe that compliance risk has strong impact on productivity, profitability, export volume, reputation and stakeholder relationships. If any accident occurs in a factory and the lack of compliance is proved, international buyers tend to cancel relationship with that particular exporter and switch to the more compliant factories. However, the RMG exporters reveal that increased level of measures have been undertaken to avoid compliance risk, especially in the face of the two major accidents and the subsequent compliance pressures from all stakeholders.

Perceived Impacts of the Risks

The impacts of different types of risks on RMG industry are given below on a percentage basis, perceived by the exporters interviewed in this research. The perceived impacts are expressed across five major dimensions of their businesses: Productivity, Profitability, Export volume, Reputation, and Stakeholder Relationship. Note that the previous section provided brief on the potential impacts of each risk.



(Relative frequency as % of total respondents)
Source: Author constructed based on interview data

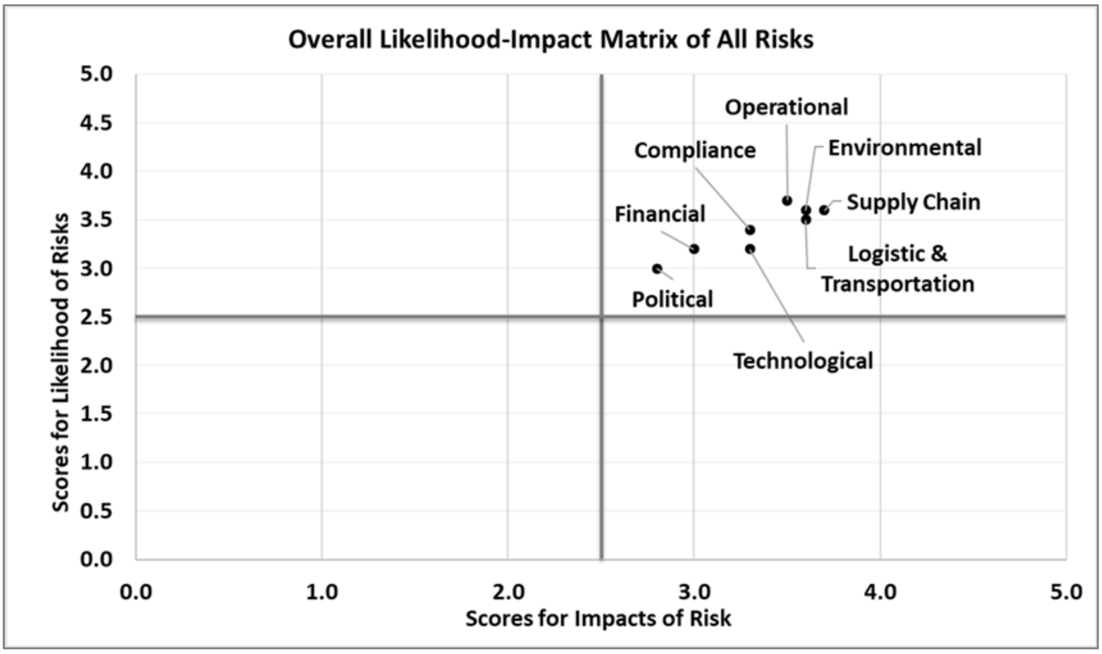
Figure 2. Perceived impacts of different risks

Figure 2 shows that most of the exporters perceived political risk (with mostly strongly agreed) has a significant level of negative impacts across all dimensions, especially on profitability (90%), productivity (80%) and reputation (90%). However, they believe it has a less direct effect on their exports volume. On the other hand, technology risk is perceived to have significant effects on productivity (60%), reputation (70%) and stakeholder relationships (60%). Most of exporters believe financial risk damages only profitability (50%) and reputation (60%). However, the most severe is probably the operational risk. Most of the exporters reveal that operation risk destroys their performance across all dimensions with a little lesser direct effect on exports volume (30%). Most of the exporters perceive its adverse effects on productivity (90%), profitability (80%), reputation (90%) and stakeholders Relationship (80%). Similarly, supply chain risk is also perceived by most exporters as another risk having great impacts on almost all the dimensions, i.e., productivity (100%), profitability (80%), export volume (40%), reputation (90%), and stakeholder relationship (100%). However, environmental risk is still considered as having lesser impacts on the five dimensions, for example, only 10% agree with its effects on productivity, 30% agree on profitability, 20% agree on exports and the another 30% agrees with its effects on stakeholder relationship. It means that most exporters believe environmental risk does not have a significant level of effects on these four business dimensions. Only reputation appears to be the key recipient of the risk impacts as agreed by about 80% of the exporters. Logistics and transportation risk on the other hand is a critical risk factor perceived by most of the exporters. Majority of the respondents believe that it has a significant level of impacts across all dimensions: productivity (70%), profitability (90%), export volume (50%), reputation (80%), and stakeholder relationship (50%). It is important and perhaps, a matter of hope that, majority of the exporters now identify compliance risk as a key risk significantly affecting all the business dimensions productivity (60%), profitability (70%), export volume (70%), reputation (90%), and stakeholder relationship (70%). This understanding may be helpful in bringing compliance discipline of the overall industry in the future.

Overall Risk Matrix

The following 'Risk Matrix'shows the average riskiness of the selected RMG exporters using the L-I framwork. Each risk was intitally assigned a score from 1 to 5 for both Likelihood and Impact, based on possiility of occurance and severity of impacts, respectively. The overall score for each risk is created by taking the average value of 'Likelihood' and 'Impact' across all the RMG exporters. Figure 3 presents the plotting of the average values, i.e., overall positioning of each risk in the risk matrix.

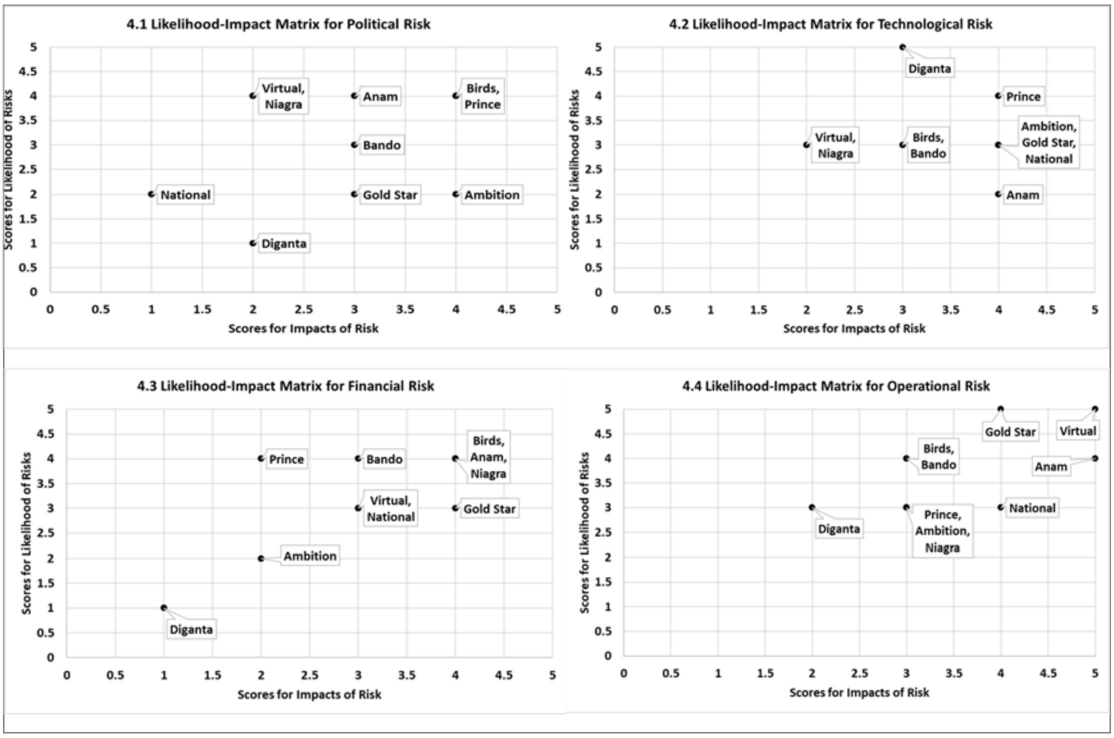
The overall likelihood-impact matrix clearly shows that the significance and severity of each risk is at the top-right corner, suggesting that all the risks identified in the previous sections have high-significance and high-severity. In other words, each of the risks has relatively high possibility of occurrence, combined with high impact.

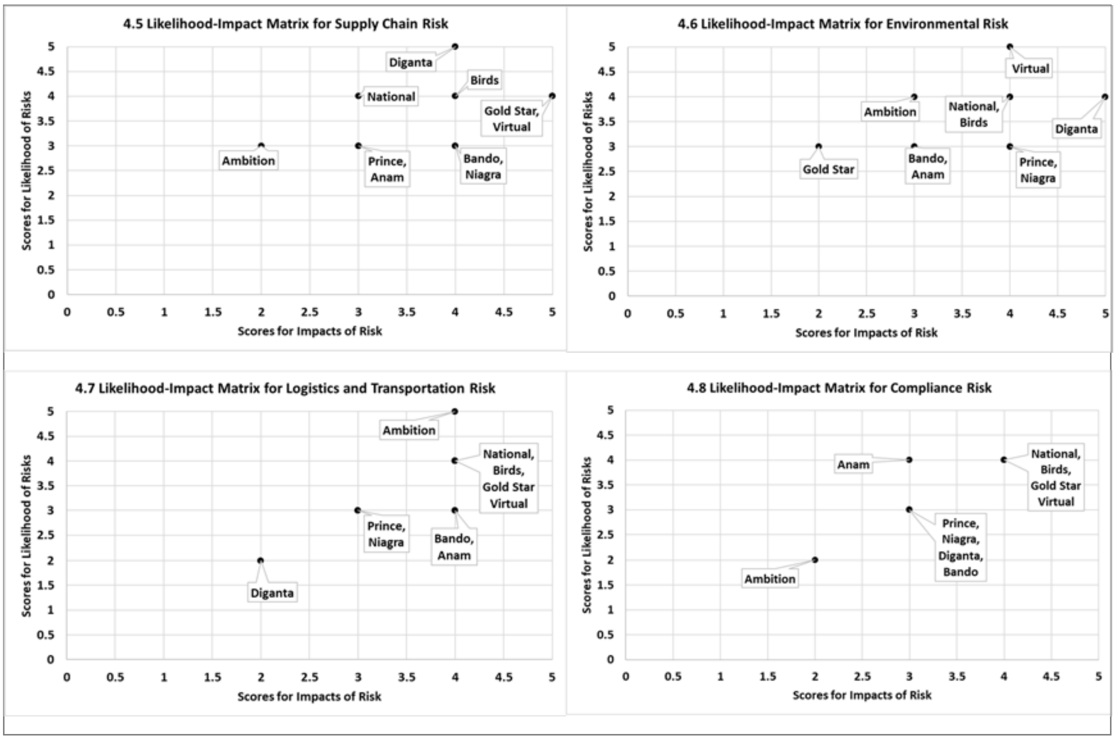


Source: Author constructed based exporter responses

Figure 3. Overall risk matrix (average basis)

In a comparative view, supply chain risk appears to carry the highest average likelihood of occurrence and the highest levels of average impacts on the business of the RMG exporters. It is then followed by operational, logistics and transportation, and environmental risk. This is expected since the RMG exporters are fully export-oriented and therefore, operational, logistics, transportation and supply chain risk are to be more critical for them than anything else. Technological, financial and compliance risks appear to have relatively less likelihood associated with fewer impacts. The least combined likelihood-impact is associated with political risk, although, Bangladesh has a known history of political instability. More detailed risk-wise matrices are shown through Figure 4.1 to 4.8 below. It is important to note that most of the companies fall in the top-right corner, in other words, the high likelihood-high impact zone of the matrices presented. Only for political and financial risk matrices, three of the exporters fall in the relatively lower likelihood and lower impact zones. As most of the RMG exporters are falling in the high likelihood-high impact zone of almost each risk, it clearly suggests that the exporters are carrying business with higher degree of risk. These matrices also explain the outcome presented in the overall matrix in Figure 3.





Source: Author constructed based exporter responses

Figure 4. Company position in the Likelihood-Impact matrix of each risk

Strategies for Managing the Risks

The RMG exporters reveal a number of strategies, both preventive and mitigating, to deal with the risks faced. Table 7 reports the summary of the key strategies adopted for each risk type. The table shows that most of the management strategies are damage or loss preventive, meaning that the exporters intend either to prevent a risk from occurring or to prevent damages from a risk if occurs. Very few mitigating strategies are adopted, indicating the RMG exporters have less instruments or preparations at hand to minimize the loss arising from a risk.

Table 7: Risk management strategies adopted by the RMG exporters

Risk Type	Key Management Strategies Adopted	Strategy Type
Political Risk	- Insurance for shipments during blockade/strike or violence	Preventive
	- Assistance from the security agencies (police)	Mitigation
Technological Risk	- Frequent check-up of machineries and equipment	Preventive
	- Training for workers to familiarize with technology	Preventive
	- Protective measures, e.g., health insurances, especially for those who interact directly with the heavy machineries.	Preventive
Financial Risk	- Unethical practices, e.g., bribing bank officials for loans	Mitigation
	- Pressurizing local agents of the foreign buyers to pay timely	Mitigation
Operational Risk	- Setting weekly production target for line chief/workers	Preventive
	- Matching the measurements and designs of buyers' sample	Preventive
	- Employing skilled and efficient workers etc.	Preventive
	- Quality control checking of each and every unit of production	Preventive
	- Buyer representative monitoring for product quality	Preventive
Supply Chain Risk	- Contracting with more than one buyer	Preventive
	- Critically checking raw material quality before accepting	Preventive
	- Motivating suppliers to provide good quality supplies	Preventive
Environmental Risk	- Developing and adopting wastage management strategies	Preventive
	- Setting up Effluent Treatment Plant (ETP)	Preventive
	- Procuring advisory services from waste management experts	Mitigation
	- keeping the garments premises neat and clean.	Preventive
Logistics & Transportation Risk	- Using own pool carriers/vehicles	Preventive
	- Installing safety devices in the carriers	Preventive
	- Tightening security of the factory premises to reduce theft	Preventive
	- Insurance policies for the goods in transport and shipment.	Preventive
Compliance Risk	- Following the compliance requirements set by the buyers, the importing country government and the local government	Preventive
	- Separate funds to ensure the required compliances	Preventive
	- Regular testing of fire safety, noise level and building strength	Preventive

Source: Author constructed based on case study and in-depth interview

The respondents reveal that insurance schemes for the outward or inward shipments during the blockade/strike or any other political violence help manage political risk, at least partially. The only other mitigating mechanism they often pursue is taking the help of security agencies (police). In order to address the technology risk, the exporters frequently check machineries and equipment used in the production process and arrange training for workers to make them familiar with the new or existing technology. In addition, protective measures, e.g., health insurances are also undertaken, especially for those who interact directly with the heavy machineries. To manage financial risk from occurring, the RMG exporters revealed of adopting unethical approaches such as bribing the bank officials for approving emergency loans through "Fraud L/C'. Also, they often pressurize local agents of the foreign buyers to pay timely. To manage operational risk, the exporters set weekly production targets for line chief/workers, carefully match the measurements and designs of buyers' sample, employ skilled and efficient workers, and ensure quality control for every unit of production. Often, buyer representatives monitor products' quality during production process. To address supply chain risk, the companies usually contract with more than one buyer, critically check the quality of raw materials delivered, and motivate suppliers to provide good quality supplies through financial and non-financial incentives. Although not enough, the RMG manufacturers revealed of adopting some strategies and actions to reduce environmental risk, e.g., setting up ETP, appointing waste management experts, keeping the garments premises neat and clean. To manage transportation and logistics risks, the exporters often use own carriers, install safety device in the carriers, tighten the security system of the garments to reduce theft, take appropriate insurances for the goods in transport and shipment.

Compliance risk is addressed carefully by following the compliance requirements set by the buyers, the importing country governments, and the local government. Sometimes, they keep extra funds separately to ensure the required compliances. Further, they frequently test fire safety, air and water quality, noise level and building's strength and capacity. However, the RMG exporters reveal that much of these compliance measures have increased significantly in the face of the two major accidents and the subsequent compliance pressures from all stakeholders, both locally and internationally. The risk management strategies outlined in Table 7 provides some critical implications about the industry's dealing with risks. It is clear that the RMG exporters have a minimal weapon available for risk mitigation purposes, which might prove very costly in the long-run. Effective risk mitigating strategies can minimize the loss or damage arising from a risk whenever it occurs. However, if such mitigation strategies are not available or whatever available proves to be ineffective, firms would embrace whole cost.

The risk management story presented here indicate that the RMG exporters do not have adequate risk mitigation strategies at hand and therefore, are exposed to collateral damage whenever a risk occurs. For example, on the technological risk, in case of a mechanical failure, immediate arrangements of alternative machineries to keep the production uninterrupted would help the exporters to minimize the production and time delay effects. On the environmental risk, in case where the hazardous materials are released, there should be effective strategies to remove them in order to minimize pollution, and impacts on worker and community health. While the RMG exporters appear to be over-reliant on preventive approaches, they might eventually prove ineffective and inadequate. For example, in order to reduce the possibility of supply chain risk, futures or forward contracts could be a better alternative strategy for the RMG exporters. Again, on the financial risk, derivatives, especially, forward exchange rate contracts with banks could be more useful in removing potential exchange rate risk.

Overall, the risk management strategies explored reveal that the RMG exporters actually have a very minimal formal expertise in risk identification, measurement and management in international business, particularly with respect to the global RMG and clothing market. The case studies also identified that none of the ten exporters had any official, department, or section formally assigned to deal with risk management. In addition, the in-depth interviews revealed that only two of the exporters' top management had awareness about the necessity of a formal risk management approach in the RMG exports business. It is found from the interviews that the RMG exporters had 'no' to 'very little' idea about many of the risks they inherently carry, meaning that there is a large gap in risk identification ability – the first step towards formal risk management practices. For example, all the exporters believed exchange rate variation does not pose much risk for them, whereas in practice, often they face loss in the value of exports receipts or increased import payments due to adverse changes in the USD-BDT exchange rates.

Conclusion

Bangladesh is the world's second largest Readymade Garments industry (RMG) exporter, led by China and followed by India and other developing countries. The RMG industry generates more than eighty per cent of foreign currency earnings industry for Bangladesh and employs millions of people. The industry appears to have exposure to a variety of risk, however, the industry and the policy-makers fall short of both awareness about the risks and expertise in managing them As a novel effort, this research provides insights on the different types of risks faced, their sources, potential impacts and management practices in the industry, by conducting case studies and in-depth interviews on 10 selected RMG exporters of Bangladesh. Findings suggest that the RMG exporters face eight different types of risks: political, technological, financial, operational, supply chain, logistics and transportation, environmental, and compliance-related. Sources of each risk varies greatly due to the difference of the attribute of each risk. However, these risks on an average occur throughout the year annually and the frequencies vary across risks (on average 4 to 14 times). Most of the exporters believe the risks affect their productivity, exports volume, profitability, reputation and stakeholder relationship significantly, and all the risks on average have a high likelihood-high impact severity. The exporters appear to adopt different strategies, mostly preventive, having a weak preparation to minimize the loss or damage when a risk occurs. While the strategies adopted appear inadequate to protect the exporters, the understanding of the top management of almost all the exporters on the risks and their management is found very minimal (e.g., they failed to identify a real risk 'as a risk' e.g., foreign exchange risk). Further, it appears that the exporters neither assess their level of riskiness on a regular basis nor they have dedicated manpower to do that. While the industry is considered as the main engine of Bangladesh's economic growth, the high-level of vulnerability in terms of know-how about the risks and their poor management practices may prove to be costly in the long-run. If not addressed appropriately, large risk events may shut the industry growth, leading to a major slowdown in the country's clothing-industry centric economy. While the findings posit important insights for Bangladesh, these may be useful lessons for other nations, especially the developing ones that closely compete with Bangladesh in the world market.

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