

HAPHAZARD INDUSTRIALIZATION AND THE RISK OF FIRE: A STUDY ON GARMENTS INDUSTRIES IN DHAKA

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ABSTRACT

Readymade garments are the most important export item from Bangladesh, yet the working conditions and fire safety records in the factories are often not up to the standard. In Bangladesh, fire accidents in export-oriented garment factories continue to kill workers; most of them are women and children. Despite a number of initiatives to curb fire accidents in the garment industry, there are still a significant number of fire occurrences in this industry. The main focus of this paper is to find out garments workers vulnerability to fire risk due to haphazard industrialization in the different areas of Dhaka. Beside this, some other issues also examined such as existence of fire warning system in the garments, workers knowledge about the fire equipments, their personal experience and opinion about fire hazard, any visit from fire service, people's knowledge about existing law on fire drill, condition of gas and electricity lines in the buildings, emergency exit condition etc. For the purpose of the study quantitative methodology was employed and interview is used as a technique of data collection. Six garments were selected randomly by which 180 (30 from each garment) garments workers were interviewed in a same manner. The study revealed that the safety scenario of the Bangladesh garment industry is one of the worst in the world. Since this is a highly labor intensive industry (hence Bangladesh's competitive advantage through its abundant supply of unskilled cheap labor) the sector is also the largest industrial employer in the country with around 3.6 million people directly working in these factories. Inclusion of backward and forward linkages would further increase the number of employees' dependant on this sector. Due to those reasons industries haphazardly grow here and there without following any kind of construction law that enhances the risk of fire hazard further. Fire is purported to be the largest cause of on-the-job injuries and fatalities in this sector. Each new incident of fire and related damage adversely affects the reputation of the industry abroad, especially since the working conditions in the manufacturing sectors in the developing countries is a general cause of concern in many developed countries. Despite the various measures, rules and regulations implemented in the past decades, there are still several instances of fire outbreak in the garment factories every year, resulting in significant losses of lives, livelihoods (through injuries), equipments and materials. These incidents raise questions about the effectiveness of existing fire prevention and fire fighting rules, regulations and practices. Based on this conceptions finally this study formulated a number of recommendations to bring a positive change in the garments industries and round up with conclusion.

KEYWORDS: Industrialization, Risk, Haphazard, Fire, Garments Industries

INTRODUCTION

The 1980s mark the beginning of the rapid integration of Bangladesh's a small and open home based garment industry into global garment chain as a result of liberalization of the economy. At present the readymade garment industry (RMG) is a highly globalize industry with more than 78% of the country's total foreign earnings generated from this

sector. From a humble beginning of 12 enterprises in 1978, the garment industry currently consists of 4,500 factories of various sizes (Muhammad 2011), although around 3,500 are currently operating (Prothom Alo 2013). Almost all of these factories are distributed primarily in the two of the largest cities – Dhaka, the capital and Chittagong, with Dhaka hosting over 70% (Muhammad 2011). The sector is also the largest industrial employer in the country with around 3.6 million people directly working in these factories. Inclusion of backward and forward linkages would further increase the number of employees' dependant on this sector. Fires have been a persistent problem in the country's readymade garment (RMG) industry for over a decade. Clothing is easily flammable and as such fire is one of the most frequent and damage inducing accidents in these factories in Bangladesh. Fire is also purported to be the largest cause of on-the-job injuries and fatalities in this sector. There is some disagreement about the number of worker deaths in the industry. According to the Bangladesh Institute of Labour Studies, 431 workers died in 14 major fire incidents between 1990 and 2012 (Islam & Adri 2008). However, according to Bangladesh Fire Department, 414 garment workers were killed in 213 factory fires between 2006 and 2009 alone (The Daily Star 2010). Given the importance of fire safety in the garment sector, there have been concerted efforts from the government, the industry lobby (Bangladesh Garments Manufacturers and Exporters Associations, BGMEA) and the international buyers of the apparel products, to improve the fire safety culture and this has indeed reduced the fire incidents and losses significantly. However, the battle has not been fully won yet. Despite the various measures, rules and regulations implemented in the past decades, there are still several instances of fire outbreak in the garment factories every year, resulting in significant losses of lives, livelihoods (through injuries), equipments and materials (Ahmed and Hossain 2009). These incidents raise questions about the effectiveness of existing fire prevention and fire fighting rules, regulations and practices and whether more could be done to limit fire occurrences and fire induced losses of lives and injuries. Especially, enforcement of the rules and regulations and day-to-day health and safety management practices on factory floor is a major issue.

OBJECTIVES OF THE STUDY

The present study tries to explore the fire hazard vulnerability of garments industries in Dhaka. The study also focuses on fire hazard management scenario of garments industries in Dhaka from the point of institutional capacity of Bangladesh Fire Service and Civil Defense (BFSCD). Beside this some other issues such as existence of fire warning system in the garments, worker's knowledge about the fire equipments, their personal experience and opinion about fire hazard, any visit from fire service, people's knowledge about existing law on fire drill, condition of gas and electricity lines in the industries are the other issues followed during the time of the research.

METHODOLOGY

For conducting the research a questionnaire was made for interview where the pattern of the questions was structured. Through the questionnaire the main intention was to find out all possible answers related with fire hazard. That means to know the level of fire risk in the study area. The method applied here was quantitative method. For study purpose six garments were selected randomly from six different areas by which 180 garment workers were interviewed in a same manner as sampling unit. The garments are Borhan Fashions Limited, Mohsin Apparels Limited, Agomony Garments, Monowar Sweeter International, Reliance Stitches Limited and Vai & Vai Garments. For collecting data only interview technique was applied. The entire respondent gave face to face interview. During the time of interview the questionnaire was used as a guideline and beside the selected questions some other questions were also asked to the

respondents on the basis of the nature of their answer. After the overall data collection all the data is analyzed manually. The major limitation of the study was the small sample size and absence of any specific theory related with the topic. Considering to the overall boundary of the study area very small number of garments are covered for study. Besides this absence of garments industries authorities' opinion on fire fighting facilities of the industry and failure to get any opinion of the nearest fire station officials is another limitation the study.

LITERATURE REVIEW

The fire service department of the government says that nearly 150 workers died due to fire accidents in garment factories from 1990 to 2000. Unofficial sources say this death toll exceeded 250. Over this period, at least 40 incidents of fire have been recorded in different garment factories. In the year 2000 alone, three major fire accidents in three different factories claimed at least 60 lives and injured over 200 people. In 1990, a fire in the Saraka Garments in Mirpur Dhaka left 32 workers dead in stampede. One major cause of this was that the main gate was locked and the panicked workers could not get out of the factory. The reasons and the patterns of deaths in garment fires have remained the same throughout the decade of the 1990s and even in the new millennium. In September 2000, 12 women workers died in a stampede following a fire in Globe Knitwear in Dhaka. The main collapsible gate of the factory was locked during the accident. In October of the same year 50 workers were seriously injured in stampede following a fire in another Dhaka factory. According to Bangladesh Fire Department, 414 garment workers were killed in 213 factory fires between 2006 and 2009 alone. According to the Bangladesh Institute of Labour Studies, 431 workers died in 14 major fire incidents between 1990 and 2012. On the night of 24 November 2012, a fire broke out in Tazreen Fashions, an eight-story garment factory in the Ashulia district on the outskirts of the capital Dhaka. Of the estimated 1,150 people working that night to fill orders for various international brands, 113 were killed and another 200 wounded. The fire reportedly originated from an electrical malfunction on the ground floor, where bales of yarn and fabric were improperly stored. While many workers managed to escape to an adjacent building, others were burned or suffocated to death. On the worst affected third floor sewing unit, sixty-nine bodies were recovered.

Table 1: Deaths in Fire Accident in Garments Factories in Dhaka

Year	Deaths
1990	32
1991	5
1993	12
1994	5
1995	9
1996	10
1997	13
2000	60
2004	23
2005	23
2006	62
2010	52
2011	98
2012	132

Source: Research Reference Cell, Dainik Janakantha, The Daily Star 27 February 2010, The Daily Star 15 December 2010, New Age 15 December 2010, and bdnews24.com 15 December 2010, 2012.

THEORETICAL FRAMEWORK

Giddens (2006) said the process of industrialization generated the concept of urbanization where a large number of populations move toward cities and towns. Later the development of modern cities has had an enormous impact not only on habits and modes of behavior but on pattern and thoughts of feeling. On that time cities were seen the fount of dynamism and cultural creativity. Cities maximize opportunities for economic and cultural development and provide the means of living a comfortable and satisfying existence. According to Gunther (1981) and Dodge (1996) fire is one of the earliest innovations of civilization and an essential part of our existence on the earth. Still it is the dreaded demon which burns everything into ashes when it gets out of control. Fire can cause widespread destruction within no time and is one of the most feared scourges of modern civilization. Although fire hazards cannot be fully eliminated, corresponding risk can be minimized by better preparedness and well planned mitigation strategies developed on the basis of comprehensive analysis based on his spatial, temporal and causal pattern. It is vital that hazard level be assessed in order to understand the spatiality of fire hazards and enable distribution of the optimum dynamic resources in a balanced manner. Rayner's (1992) view on this matter is that emergency services need current information to provide quick and adequate response. Such information includes spatial details on land-use, functions of structures, access network and availability of resources. To combat the menace of fire hazard it is required to integrate the spatial context and potential population exposure together with technical and engineering aspects. Blakie (1994) says that the concept of vulnerability is important during the time of fire hazard. It is encompassing the physical relationship between hazards and communities at risk, accident preparedness and the mitigation and the social geography of potentially affected populations. Ulrich Beck was one of the first theoretical giants to recognize the strange paradox in late modern society; that risk might in fact be increasing due to technology, science and industrialization rather than being abated by scientific and technological progress. Rather than a world less prone to risk, late modernity might actually be creating what Beck famously described as a "world risk society." Human species always had to face risks of one kind or another, but today's risks are qualitatively different from those that came in earlier times. Until quite recently, human societies were threatened by external risk-dangers such as drought, earthquakes, famines and storms that spring from the natural world and are unrelated to the actions of humans. Today, however, we are increasingly confronted with various types of manufactured risk (risks that are created by the impact of our own knowledge and technology on the natural world). As we shall see, many environmental and health risk facing contemporary societies are instances of manufactured risk; they are the outcomes of our own interventions into nature.

FINDINGS AND DISCUSSIONS

For conducting the research the major limitation was that the sample size was too small. But still some important findings are come out from the conducted research.

Fire Fighting Facilities in the Garments Industries

The main intention of the study was to see the risk of fire in the garments industries. That's why respondents were asked about the existing facilities in the buildings for control fire situation. Questions were asked on the fire fighting equipments and respondents knowledge about those equipments. Considering the overall study among the six garments industries of the study area only one garments industry has existence of proper fire fighting facilities (Reliance Stitches Limited) however majority of the respondents in other five industries said that they lack from proper fire fighting facilities.

So they are in a very vulnerable situation to the risk of fire.

Table 2: Existence of Proper Fire Fighting Facilities in the Garments Industries

	Name of Garments Industries					Vai & Vai Garments
	Borhan Fashions Limited	Mohsin Apparels Limited	Agomony Garments	Monowar Sweeter International	Reliance Stitches Limited	
Existence of proper fire fighting facilities	3	9	4	5	30	2
Absence of proper fire fighting facilities	27	21	26	25	0	28
Total	30	30	30	30	30	30

Source: Field work, 2012

Existence of the Hydrant Box

Hydrant box is a necessary item for every industry in modern time. The respondents were asked about the existence of hydrant box in their industry. 30 respondents (almost 17%) said that in their garments they have hydrant box and 150 (almost 83%) of the respondents said that they have no hydrant box. All the thirty respondents are from Reliance Stitches Limited. As in most of the industries there is no availability of the hydrant box that express the high risk situation of garments industries to fire hazard.

Table 3: Existence of the Hydrant Box

Answer of the Respondents	Number of the Respondents	Percentage
Yes	30	16.67
No	150	83.33
Total	180	100

Source: Field Work, 2012

Existence of Fire Extinguisher

Fire extinguisher is the most important thing for fire like situation in both commercial and residential buildings. The respondents were asked about the existence of fire extinguisher.

Table 4: Existence of Fire Extinguisher

Existence of Fire Extinguisher	Number of Respondents	Percentage
Yes	120	66.67
No	60	33.33
Total	180	100

Source: Field work, 2012

Among the respondents 120 respondents (almost 67%) said that they have fire extinguisher. The important thing is that some of the respondents said that in the building they have several extinguishers but most of them are not working and without any expiry date. However, another 60 respondents (almost 33%) said they have no extinguisher in the industry. These sixty respondents are from Borhan Fashions Limited and Vai & Vai Garments.

Existence of Alarm Bell and Smoke Detector

Existence of alarm bell and smock detector is two most influential equipments in fire like situation. The respondents were asked about the existence of alarm bell and smock detector. Among all the 180 respondents almost all of them said that they have existence of alarm bell. While only 30 respondents agreed about the existence of smock detector and all of them are from Reliance Stitches Limited. There is no availability of smoke detector in other five industries. In any industrial or commercial building absence of these equipments can enhance the possibility of fire like situation.

Table 5: Existence of Alarm Bell and Smoke Detector

Existence of Alarm Bell	Number of Respondents	Existence of Smoke Detector	Number of Respondents
Yes	180	Yes	30
No	0	No	150
Total	180	Total	180

Source: Field work, 2012

Fire Exit in the Buildings

According to BNBC (Bangladesh National Building Code), a fire escape is must in non-residential multi storied building with fire resistant door and also with easy access and unhindered route. On the basis of this questions were asked and 90 respondents said that they have fire exit in the industry and they also specify the position of the emergence exit door. On the other hand 90 of the respondents said they have no fire exit in the building. In Mohsin Apparels Limited, Monowar Sweeter International and Reliance Stitches Limited they have one fire exit and the exits are separated from the main office place by a corridor. But in Borhan Fashions Limited, Agomony Garments and Vai &Vai Garments the entrance and exit is same that is why there is no existence of fire emergency exit which make these industries highly vulnerable to fire.

Table 6: Number of Fire Exit in the Buildings

Name of the Industries	Number of Fire Exit
Borhan Fashions Limited	0
Mohsin Apparels Limited	1
Agomony Garments	0
Monowar Sweeter International	1
Reliance Stitches Limited	1
Vai &Vai Garments	0

Source: Field work, 2012

Existence of Under Water Reservoir

The respondents were also asked about the existence of under water reservoir in the building. 30 respondents (16.67%) said that in their garments they have existence of under water reservoir and 150 respondents (83.33%) said that they have no under water reservoir. All the 30 respondents are from Reliance Stitches Limited.

Table 7: Existence of Under Water Reservoir

Existence of Under Water Reservoir	Number of Respondents	Percentage
Yes	30	16.67
No	150	83.33
Total	180	100

Source: Field work, 2012

Number of Lift and Staircases

The respondents are asked about the total number of staircases and lift facilities in the garment industry. On the basis of this question nobody mentioned lift facilities in their respective industry. On contrary only Reliance Stitches Limited has multiple numbers of staircases whereas others have only 1 staircase.

Table 8: Number of Lift and Staircases

Name of the Industries	Number of Lift	Number of Staircases
Borhan Fashions Limited	0	1
Mohsin Apparels Limited	0	1
Agomony Garments	0	1
Monowar Sweeter International	0	1
Reliance Stitches Limited	0	2
Vai &Vai Garments	0	1

Source: Field work, 2012

Knowledge on Nearest Fire Station Number

During emergency situation fire station number is very important thing. Among the 180 respondents 27 (15%) said that they know nearest fire station number and also keep the number with them.

Table 9: Knowledge on Nearest Fire Station Number

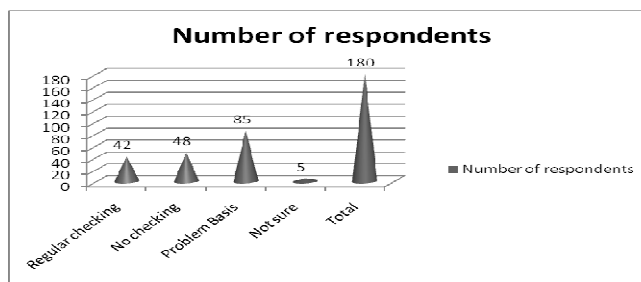
Personally Keep Fire Station Number	Number of Respondent	Percentage
Yes	153	85
No	27	15
Total	180	100

Source: Field work, 2012

Most of the respondents (85%) said they do not know the number. All the respondents who know the nearest fire station number worked in a higher position in the office. One of them said that though in his office they have no number of fire station but he personally keep the number for emergency.

Condition of Gas and Electricity Line

The respondents were asked questions whether the gas and electricity lines are checked regularly or not in their building. Among 180 respondents only 42 respondents said the electricity and gas line is checked regularly while 48 respondents mentioned no checking. Furthermore most of the respondents observed that the electricity line and gas line is checked on problem basis whereas 5 respondents was not sure about that matter. In garments industries electricity and gas line should be regularly checked otherwise due to short circuit fire incidents could be happen.



Source: Field work, 2012

Figure 1: Condition of Gas and Electricity Line

Visit from Fire Service

Respondents were asked whether any inspection team come from fire service. The figure shows that all of the respondents (100%) said that there is no regular visit from fire service in the building. They only come after the happening of fire accident.



Source: Field work, 2012

Figure 2: Visit from Fire Service

RECOMENDATIONS

Awareness at the Individual Level

- Media is one of the most powerful sources for awareness generation. The electronic media as well as the newspapers could be an effective source to make people aware of fire hazards. Recently 'Fire Hazard Week' has been observed in many cities of Bangladesh and undoubtedly such initiatives are the great sources of generating awareness among the people.
- At present BFSCDA arranges fire drills particularly in the garment factories and industries in a very limited scale, which requires to be strengthened. The provision of mandatory training should be arranged for the staff working in various residential and commercial buildings.
- Some billboards could be put in the prominent locations, street intersections with some messages that are helpful to make people aware regarding fire safety. Also the emergency contact numbers of BFSCDA could be displayed in those billboards. Children at school should be taught about the fire safety and some drills can be arranged.
- Electric short circuit and fire from burner are the two prominent causes of fire incidents in Dhaka City which could be reduced through motivation and generation and awareness of people at the individual level.

City Planning Perspective

- The city authority should take necessary steps to preserve the natural water bodies. Already many water bodies of Dhaka City have been subjected to the encroachment. An urgent initiate is necessary to recover them.
- In the unplanned areas, government may take necessary steps to widen the road. Community motivation for participation in this regard is highly encouraged.
- The government should fix up appropriate land use zoning. Industrial activity and warehouses should not get permission in the residential areas. Proper enforcement of setback rules and FAR should be ensured in building construction. A long term planning is necessary so that the garments industries can be shifted from residential areas to the industrial zones.

- The risky areas should be demarcated and necessary steps should be taken for remedy. Fire station can be established in the risky locations and in some cases street fire hydrants could be installed in limited scale.
- Some special smaller sized vehicles can be added to the BFSCDA to provide the service in the locations with narrow road system. Government can allocate sufficient resources for the strengthening of the authority.

Institutional Strengthening

- Ensure strict enforcement of the existing legal provisions. The manpower of the development control authority and BFSCDA could be increased gradually in order to proper monitoring of the law enforcement.
- At present, each of the fire stations in Dhaka City is working beyond their capacity. BFSCDA have a future plan to construct 193 more stations all over Bangladesh. However, the stations should be constructed on the priority basis.
- Modern training program should be provided for the staffs of BFSCDA. Experts should be appointed to demonstrate the efficient rescue service and the handling process of emergency situation. Also the quality of training on Medical First Responder (MFR) and Collapsed Structure Search and Rescue (CSR) should be improved.
- The government should allocate more resources for purchasing modern firefighting equipment such as pump, ambulance, fire vehicles etc. The number of equipments should be increased in each station.

CONCLUSIONS

In conclusion it can be said that fire fighting facilities have to increase in garments industries. Fire fighting equipments such as hydrant box, fire extinguishers are not available in every industry and most of the respondents do not know the use of fire extinguisher. Facilities like alarm bell, smoke detector, fire resistant door, sufficient number of fire exits, personal fire fighters are only available in some industries but the amount is minimum. Beside this for tackling fire situation under water reservoir or any extra source of water is not found in all the buildings and insufficient water supply still exists in the area. Considering to the height of the buildings enough number of lift and staircases are not available. The important thing is that electricity lines are not regularly checked in most of the buildings. Fire service is not taking any proper initiatives. In most of the study buildings no regular fire drill is occurred and there is hardly any visit from fire service for inspecting the condition of the fire facilities in the industries. Even the respondents do not know the nearest fire station number and they also have no idea about the existing law on fire drill. So steps should be taken to solve these problems. People have to give primary knowledge on fire fighting equipments and also have to show them how to tackle the emergency situation. Regular fire drill should be conducted under the guidance of fire service and for this everyone's participation has to ensure.

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