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Landslide in Chattogram City: Spatial Vulnerability and Risk Mitigations Options

Md. Rezwan Siddiqui*

Abstract

Landslides have been among the most alarming disasters in the hilly regions of Bangladesh for the past few years. This hazard has become an unprecedented cause of human and economic losses. This paper attempts a spatial vulnerability analysis of landslides in the hilly regions of Bangladesh using hotspots, cluster and time-series analysis. It also discusses the risk mitigation options practiced by the inhabitants of landslide vulnerable areas of Chattogram City. Deadly landslides are found to be concentrated in South-eastern hilly towns and cities of Bangladesh. Larger clusters of landslides are found in Chattogram City, Teknaf, Cox's Bazar cities, followed by Bandarban, Chattogram university area and Rangamati. Landslide hotspots are especially prominent in Chattogram city and Bandarban districts. Both landslide incidents and fatality have been increasing with highest number deaths of 162 in 2012. From the late 90s, the rate of landslide occurrences began to increase sharply at an average annual growth rate of 132.75 percent. Landslides are found prominently in urban settings. Growing rural-urban migration of low -income population leads to occupation of hills, unplanned urban growth and risks. Poor economic condition, lack of awareness and education, poorly built structures are some sources of vulnerability. There is severe lack of awareness, motivation and training about personal and community preparations and interventions to reduce landslide vulnerability. Most vulnerable populations know very little about techniques of avoiding landslide risk, prevention and mitigation options. They are only aware of emergency evacuation during heavy rainfall and are dependent extremely on external assistance and relief.

Keywords: Landslide in Bangladesh, Landslide vulnerability, Hotspot analysis, Landslide risk mitigation.

1. Introduction

Bangladesh is the largest delta in the world with eighty percent floodplains (Goldsworthy and de Vareis, 1994). This country is severely affected by floods, storms and riverbank erosion each year. Landslide was a less noticed hazard in this region until June 2007 when attention started being drawn to

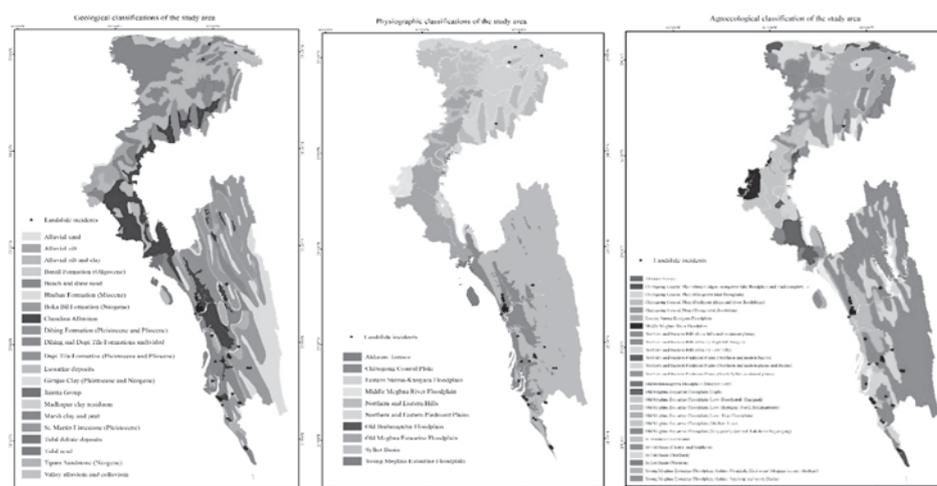
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the severity of landslide after a devastating incident in Chattogram city which took 129 lives. In recent years, devastating landslides have occurred in several parts of Chattogram City, Bandarban, Cox's Bazar, Teknaf, and Sylhet regions (Sarker and Rashid, 2013).

In Bangladesh landslides are prevalent in Northern-eastern and South-eastern areas, physiographically identified as terrace and hilly area that consist 12% of total landform of Bangladesh. These hilly regions are underlain by sandstone, siltstone and shales of Tertiary and Quaternary ages (Brammer, 1999). These hills have been folded, faulted and uplifted (Brammer, 1999) into a series of anticline and syncline during the collisions between the Indian and the Eurasian plates in the Miocene period (Khan, 1991). Soil composition is mainly of Brown Hill Soils with some Grey Piedmont and Grey Floodplain Soils (Rashid, 1991). Brown Hill Soil have been developed over consolidated and unconsolidated rocks or yellow to strong brown subsoil with friable, porous, sandy loam to sandy or silty clay loam texture. These subsoils are imperfectly to excessively drained (Brammer, 1999; Banglapedia, 2008). Soils become unstable in wet condition and are unable to support more than 25.9° angle of slope in wet condition (Islam et al., 2014). Rainfall ranges from 2,200 mm to 5,800 mm annually with an average of 2,919 mm in Chattogram division. The highest precipitation occurs in June and July consecutively, 607.06 mm and 726.44 mm (BBS, 2009).

In 2012, Comprehensive Disaster Management Programme (CDMP) developed a landslide inventory, mapping, vulnerability and early warning system for Cox's Bazar and Teknaf. An early history and locational database of landslide can also be found in Banglapedia (2008), which has data of until 2000. Khan and Chang (2007) did a landslide hazard mapping for Chattogram City by the weighing-rating system based on field observation. Mahmood and Khan (2010) have attempted to identify vulnerable places in Chattogram City for landslide hazards based on the events of 2007.

Khan et al. (2012) found that there is a correlation between major landslide events and extreme precipitation over a short period in Chattogram. Sarker and Rashid (2013) have indicated locations of some major landslides in Bangladesh since 1968, but they only focused on major landslides and their relative locations. Ahmed (2015) did landslide susceptibility mapping of Chattogram city based on multi-criteria decision analysis of physical factors of the landslide. Islam et al. (2014) tried to determine engineering and geological properties of landslide vulnerable locations of Chattogram city. This paper accumulates all reported landslide occurrences from multiple sources until 2012 for a spatio-temporal analysis.



Source: BARC (2014)

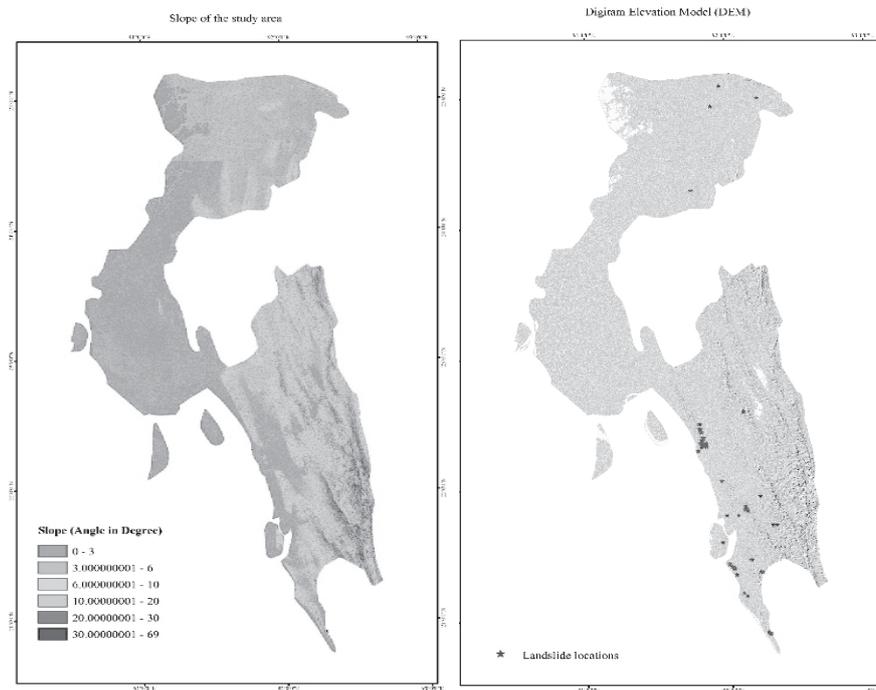
Figure 1: Geological, physiological and agro-ecological zones of the hilly region of Bangladesh

2. Objectives of the Study

The aim of this paper is twofold. First, it aims to carry out a spatial vulnerability analysis for landslide incidents of the hilly region of Bangladesh. Then, it aims to understand how people perceive landslide hazards, their awareness of the issue, and the mitigation and adaptation strategies practiced by them. This paper also sheds light on the socio-economic and living conditions of people living around landslide vulnerable locations to determine their sources of vulnerability and possible mitigation strategies to reduce them.

3. Methodology

This paper has taken note of all possible landslide events reported until 2012 from secondary databases, and provides insight into the spatiotemporal and statistical trends of landslide distributions in Bangladesh following the approach of Kirschbaum et al. (2010). The compilation has been done from different secondary sources and hazard databases similar to the study of Westen et al. (2008) and presents a combination of techniques of landslide inventory analysis following the methods of Westen et al. (2008) and Guzzetti et al. (2012). CDMP (2012) databases of Cox's Bazar and Teknaf have contributed a good deal at identifying notable recent landslides in these two towns. Government databases often ignore small-scale landslides while sometimes situation reports are not available. In such cases, local and national newspapers may work as good complementary sources of information. Hotspot, spatial cluster and time-series analysis of landslide incident has been done to ascertain spatial and temporal characteristics of landslides. Detail methodology and techniques of analysis are presented in the following sub-sections.



Source: BARC (2014)

Figure 2: Digital elevation model (DEM) and slope of the study area

3.1 Landslide Inventory

Landslide inventories are simplest form of landslide mapping (Malamud et al., 2004; Hansen, 1984; Wieczorek, 1984) which record location, date of occurrence, type of mass movement, along with resultant damages and casualties (Guzzetti et al., 2012; Malamud et al., 2004). There are essential to identify and document extent of landslides from local to nationwide range (Guzzetti et al., 2012; Brabb, 1991), as a preliminary stage of susceptibility, hazard and risk assessment of landslides (Cardinali et al., 2006; Westen et al., 2006 & 2008) and for any spatiotemporal statistical analysis (Malamud et al., 2004). There are several techniques for landslide inventory like archiving historical information of individual landslide events or analysis of aerial photographs (Malamud et al., 2004). Techniques for inventory depend on the purpose, extent and scale of the study area (Guzzetti et al., 2012) and availability of data.

Landslide inventory presented in this paper is an event inventory triggered mainly by rainfall (Guzzetti et al., 2012; Cardinali et al., 2006; Tsai et al., 2010) and at times by earthquakes in the hilly regions of Bangladesh. Based on the guideline for landslides inventory mapping of Guzzetti et al. (2012), this paper presents a small-scale, synoptic inventory of landslide.

The inventory collects data examining secondary literatures like chronicles, journals, technical, scientific reports, newspapers, government situation reports, local governments reports etc. This intensive archive study was carried out for spatiotemporal data and other information on deaths and damages caused by landslides. Subsequently, aerial photograph analysis (Malamud et al., 2004; Cardinali et al., 1990) was done to locate landslide incidents based on this archived information. To identify historical landslides, this paper has had to depend only on historical documents and archive study. Several field investigations following the method of Khan and Chang (2007) and Westen et al. (2008) were carried out in the Chattogram areas in 2008 and 2011. In these field surveys, handheld GPS and base maps were used to identify geographical locations of landslides. Household interviews using questionnaires (Westen et al., 2008) and group discussions with local government representatives and community leaders were carried out to gather this information.

Landslides have been identified according to their date and location. Sometimes there were several slides in a locality within a short span of time –a day or two; are counted as a single incident. Several small non-distinguishable slides within a small area or within same administrative boundaries have been identified as a single incident. Landslides in the same day or occurring within a short span of time, but in different identifiable locations, are counted as separate incidents.

Developing landslide inventory with temporal information is a difficult and a tedious process (Ibsen and Brunnsden, 1996; Westen et al., 2006). In Bangladesh, landslides are most often confused with flash-floods. It is obvious that, a high-quality remote sensing based (e.g., using satellite images, and aerial photographs, DEMs) inventory mapping is much more accurate than field-based mapping (Guzzetti et al., 2012), but this method is far too expensive for this kind of large area. Human settlements and development structures often work as barriers in identifying landslides from remote sensing data. And these processes are unable to document historical landslides. With available resources, information and manpower this is probably the best possible combination of techniques available for large area inventory.

3.2 Spatial Cluster Analysis

Landslides tend to occur in clusters. A cluster may contain several landslides of different sizes, and types (Malamud et al., 2004). Cluster analysis is a statistical classification technique for dividing a population into relatively homogeneous groups (ESRI, 2014). Clusters analysis of incidents is based on spatial autocorrelation of a set of spatial features and their associated

data values that tend to be clustered together (positive spatial autocorrelation) or dispersed (negative spatial autocorrelation). This paper follows unsupervised k -means clustering approach of Melchiorre et al. (2008).

In ArcGIS, clusters analysis of incidents can be done using a Cluster Analysis tool based on spatial autocorrelation, which is a measure of the degree to which a set of spatial features and their associated data values tend to be clustered together in space (positive spatial autocorrelation) or dispersed (negative spatial autocorrelation) (ESRI, 2014). In this research spatial autocorrelation was measured using Global Moran's I statistics based on both landslide's locations and the number of fatalities simultaneously. Equation for Global Moran's I statistics is:

$$I = \frac{N}{(\sum_i \sum_j W_{ij})} \frac{\sum_i \sum_j W_{ij} (X_i - \bar{X})(X_j - \bar{X})}{\sum_i (X_i - \bar{X})^2}$$

Where, N is the number of spatial units indexed by i and j ; X is the variable of interest; \bar{X} is the mean of X , and W_{ij} is an element of a matrix of spatial weights.

3.3 Hotspot Analysis (Getis-Ord G_i^*)

Nadim et al. (2006) has done global landslide hotspots mapping based on global datasets of climate, lithology, earthquake activity, topography and areas with the highest hazard intensity. Bianchini et al. (2012) and Lu et al. (2012) did landslide hotspot identification using the synthetic aperture radar (SAR) interferometry (InSAR) technique, and Van Den Eeckhaut et al. (2010), using a sampling strategy that enabled statistical modelling.

So far, there has been no inventory based hotspot analysis for landslides for Bangladesh. Identification of hotspots in local scale can be a useful tool for landslide preplanning and mitigations measures. In this paper inventory based hotspot analysis has been done using Getis-Ord G_i^* statistics. The Getis-Ord G_i^* statistics is a spatial statistics that represents the association of event(s) (e.g., landslides occurrences) up to a specified distance. Getis-Ord G_i^* statistics have been applied to evaluate spatial clustering of neighbouring landslide incidents weighed by the number of fatalities.

The Getis-Ord G_i^* (Getis and Ord, 1996) statistics is given as:

$$G_i^* = \frac{\sum_{j=1}^n w_{ij} X_j - \bar{X} \sum_{j=1}^n w_{ij}}{\sqrt{\frac{n \sum_{j=1}^n w_{ij}^2 - (\sum_{j=1}^n w_{ij})^2}{n-1}}}$$

The G^*i statistics is itself the z-score. Where x_i is the attribute value for feature j , w_{ij} is the spatial weight between feature i and j , n is equal to the total number of features and:

$$\bar{X} = \frac{\sum_{j=1}^n x_j}{n}$$

$$S = \sqrt{\frac{\sum_{j=1}^n x_j^2}{n} - (\bar{X})^2}$$

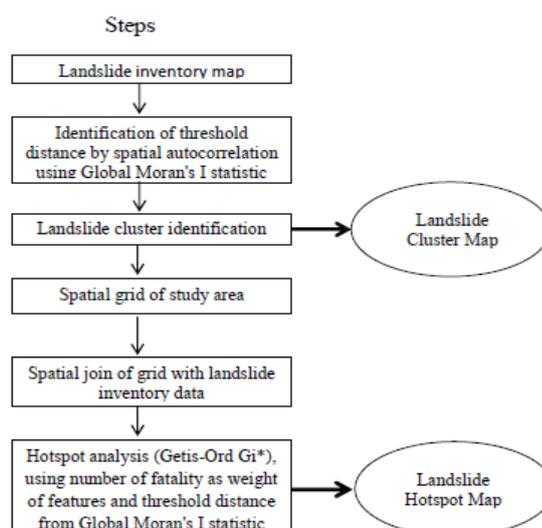


Figure 3: Steps for landslide hotspot and cluster analysis

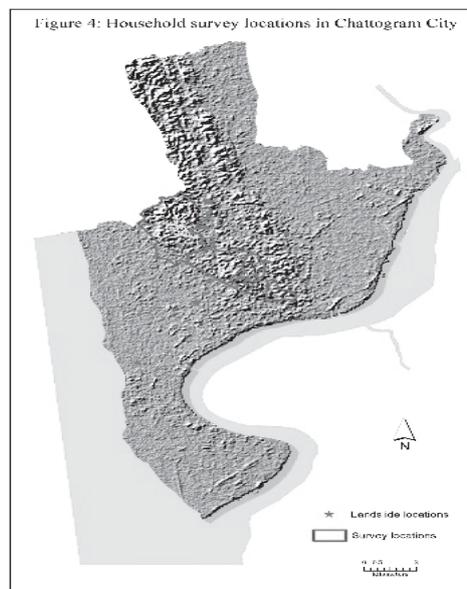
The Hotspot Analysis tool of ArcGIS 10.2 calculates the Getis-Ord G_i^* statistics for each feature in a weighed set of features (ArcGIS Resource, 2013). This tool works by looking at each feature within the context of neighbouring features. If a feature's value is high, and the values for all of its neighbouring features are also high, it is a part of a hot spot. The resultant Z score signifies whether features are spatially clustered, dispersed or random and P values indicate its statistical significance (ESRI, 2014). These two values together indicate the confidence level of the hotspots. For this research, the study area has been divided into grids and spatial information of landslide occurrence and fatality has been spatially joined with this grids. Steps for hotspot and cluster analysis have been briefed in Figure 3.

3.4 Household Survey

For the second objective, data from a household survey of landslide prone

locations of Chattogram city were collected. Study locations (Figure 4) were selected purposively based on the history of landslides of the city. All the surveyed areas were prone to landslides recently and are within Chattogram City, which is the second largest city in Bangladesh and is situated within $22^{\circ}14'$ and $22^{\circ} 24'30''$ N Latitude and between $91^{\circ}46'$ and $91^{\circ}53'$ E Longitude, on the bank of the Karnafuli river.

Data was collected as part of an academic research carried out by the Department of Geography and Environment, University of Dhaka in 2008. Eighty-four (84) students from the undergrad program were trained to conduct this survey in seven locations of Chattogram city. As already noted these locations were selected, as there were landslide incidents in previous years and in the surveyed year.



Source: BARC (2014), Field survey of 2008 and 2011

Figure 4: Households survey location in Chattogram City

A questionnaire was developed containing both closed and open-ended questions for household survey. It collected social-economic data along with peoples' perception of landslide hazards, vulnerability and mitigation strategies. Households were selected based on their experience of the landslide incidents. Priority were given to houses located close to the past landslide incidents spreading outwards. Snowballing techniques were used to identify landslide vulnerable households from one to another. Local people also assisted in the process of identifying most landslide-prone locations and households. Questionnaires were mainly distributed among

the household heads, if not, available preference was given to the oldest responsible household member. The survey was conducted during weekends to maximize the possibility of interviewing household heads. Three hundred and thirty two (332) households were surveyed in this process. The survey lacks any systematic selection or sampling strategy; rather, preference was given to maximise the number of landslide vulnerable respondents.

4. Analysis and Discussion of Results

4.1 Landslide Inventory

Identification of reliable landslide inventory map is essential for the spatial and temporal analysis of landslide hazard and risk assessment (Westen et al., 2008). Therefore, developing a detail and precise landslide inventory is the prerequisite of any landslide research (Westen et al., 2008; Pellicani et al., 2013; Ibsen and Brunsden, 1996). So far, 65 landslide hazard incidents were identified in Bangladesh from 1968 to 2012 (Table 1). Most incidents in this inventory took place in human occupied areas; this is because landslides in uninhabited remote hilly areas often go unnoticed and hence can not be found through archive studies.

In this inventory, place names or administrative names of landslide incidents areas are stated in as much detail as possible. An inventory map of 1:2,000,000 scale is shown in Figure 5, indicating geographical locations of these landslides. Landslides on map are shown using points (Guzzetti et al., 2012) with weighed circles of number of fatalities. This weighing gives an idea about damages done by landslides. The number of fatalities is an important variable indicating massiveness and impact of these landslides on human life and society. Chattogram City and adjacent Chattogram University record most landslides occurrences and fatalities (28 landslides, 238 fatalities), followed by Cox's Bazar (20 landslides, 103 fatalities) and Bandarban districts (9 landslides, 166 fatalities). Sylhet and Rangamati districts have the fewest incidences of landslides.

Table 1: Landslide inventory of Bangladesh (1968-2012)

Year	Date	Area	Place Name	Fatality
1968	---		Kaptai - Chandraghona Road	0
1970	---	Rangamati	Ghagra- Rangamati Road	0
1974	---	Chattogram	Chattogram University Area	2
1997	---	Bandarban	Sarai	0
	13-Aug	Chattogram	Gopaipara of Chattogram Kotwali Thana (Enayet Bazar, Railway Pahar)	10
	13-Aug	Cox's Bazar	Cox's Bazar Sadar	0
1999	11-Aug	Bandarban	Lama Thana, Aziz Nagar Union (Chittaputti, Monargiri, Chionipara, Muslimpara, Sonaisari, Bazapara, Kalargiri, Maishkhata, Aungratali, Meounda, Kariungpara)	7
	15-Aug		Lama Upazila (Chittaputti)	0
	---		Baghghona	2
2000	24-Jun		Chattogram University Area	13
	8-Jun	Chattogram	Ghonapara	1
2003	8-Jun		Lalkhanbazar	3
	10-Jul		Lalkhanbazar	3
2004	10-Jul		Bayojid Bostami Majar Area	2
	17-May		Bayojid Bostami Majar Area, Atturpara Dipo	1
2005	31-Oct		Bayojid Bostami Majar Area, Shantinagar slum	3
	11-Jun		Chattogram, Pahartoli	12
	11-Jun		Motijhorna	2
	11-Jun		Halishahar	1
	11-Jun		Baghghona	1
	11-Jun		Hathazari Thana, Sekandar Para, Sikandar Colony	1
	11-Jun	Chattogram	Panchlaish	1
	11-Jun		Debarpara	7
2007	11-Jun		Muradpur	1
	11-Jun		Khulshi (Kusumbag, Lalkhan bazar)	14
	11-Jun		Mohammad Ali Road	1
	11-Jun		Chattogram Cantonment Area, Lehubagan Area	72
	11-Jun		Chattogram University Area, Adjacent slum area	5
	17-Aug		Motijhorna	11
	8-Aug	Sylhet	Sylhet, Osmani Bimanbandar Area	0
2008	3-Aug	Cox's Bazar	Cox's Bazar	7
	6-Jul		West side of Upazila Parishad Office, Tuinna Pahar	4
	3-Aug	Teknaf	Teknaf	7
	19-May	Moulavibazar	Srimangol. Kalighat Union, Lakhai Tea state, Zerim Tea State	0
2009	19-May	Bandarban	Bandarban, Lama Upazila, Ajijnogor, Bandarban Sadar, Kalaghat	51
	19-May		Bandarban, Bandarban Sadar, Kalaghat	30
	15-Jun		West side of Upazila Parishad Office, Tuinna Pahar	33
	15-Jun	Teknaf	West side of Upazila Parishad Office, Fokirmura Pahar	0
	15-Jun	Upazila	Boiddoghona Pahar	0
	15-Jun		Nila Union, Uluchamri	0
	15-Jun		Howaikeng Union, Bazar Para	0

	15-Jun		Ukhiya, Palongkhali Union, Dokkhin Rahmoter Bill Gram and Dhamonkhali	6
	15-Jun	Cox's Bazar	Cox'sbazar, Teknaf, Ukhiya	0
2010	15-Jun		Himsori, Army Camp	6
	15-Jun		Cox's Bazar, Ghunghum Union, Bajbania, Mohajer Para	0
	15-Jun	Bandarban	Bandarban, Naikkhongsori, Bajabania, Uttor Para	4
	15-Jun	Cox's Bazar	Cox's Bazar Sadar	2
	15-Jun	Bandarban	Bandarban	0
	2011	1-Jul		Tiger Pass Area, Batali Hill
1-Jul			Lalkhan Bazar Slum	17
17-Jun		Chattogram	Khulshi	11
23-Jun			Akbar Shah Mazar area	35
23-Jun		Bandarban	Naikhanchari	47
23-Jun			Lama	27
23-Jun			Ukhia	10
23-Jun			Chakaria	10
2012	23-Jun	Cox's Bazar	Ramu	7
	23-Jun		Maheshkhali	5
	23-Jun		Cox's Bazar Sadar	3
	23-Jun		Pekua	3
	23-Jun	Chattogram	Bangshkhali	3
	23-Jun		Hathazari	1
	27-Jun	Sylhet	Gowainghat	0
	27-Jun		Kanaighat	0

Sources: NBCnews 2007; Banglapedia 2008; Mahmood and Khan 2010; Reuters 2012; Yahoo News 2012; Sarker and Rashid 2013; Wikipedia 2013; archive study by author, and numerous other newspapers and magazines

4.2 Spatiality of Landslides Incidents

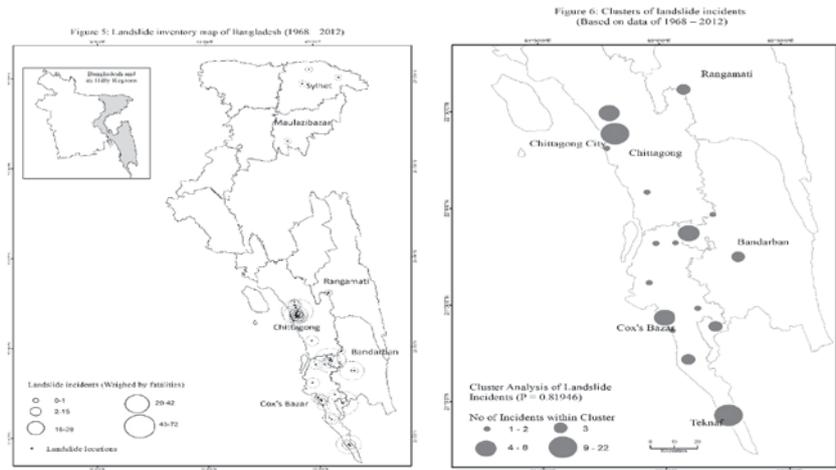
For spatial analysis, North-East region of Sylhet has been excluded since only a few landslide occurrences have occurred there with reported causalities. South-East region of Chattogram division has been considered as the study area for analysis below.

4.2.1 Clusters of Landslide Incidents

A cluster may contain several landslides of different sizes and types (Malamud et al. 2004). Landslide hazards were found spatially clustered within a radius of 2400 metres in the study area. Figure 6 shows these clusters for landslide incidents. The largest cluster of landslide incident is found in the Chattogram City area. The second most prominent cluster of landslide is located at Teknaf, Cox's Bazar. Cluster analysis gives us a good understanding of the spatial behaviour of landslide occurrences. In Bangladesh, most landslide occurrences are found spatially clustered within some hilly towns and cities of the South-east. Densely populated areas of these hilly regions are more prone to landslide hazards due to unplanned human interventions in hills.

4.2.2 Hotspot Analysis (Getis-Ord G_i^*)

The result of hotspot analysis is shown in Figure 7. There are several landslide hotspots within the study area and most of them are at 99.9 percent significant level. This type of unusual high significance level occurs because of the interaction of natural and social factors (Chainey, 2012).

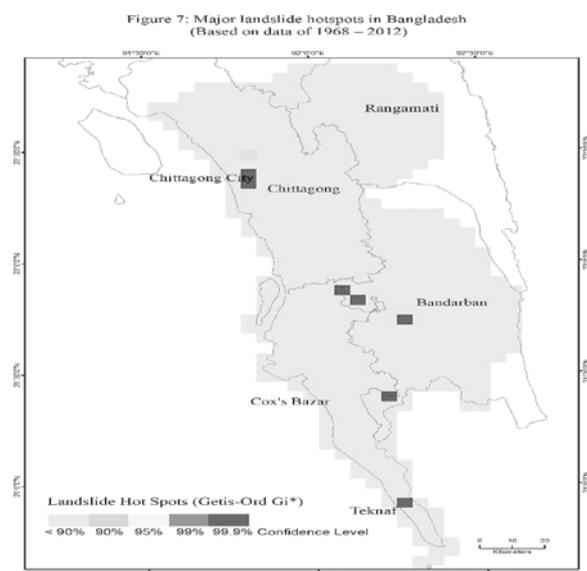


Source: Based on the field surveys of 2008, 2011 and the inventory presented in table 1
 Figure 5: Landslides inventory map of Bangladesh Figure 6: Clusters of landslide incidents

Hotspots are profound in hilly areas with poor infrastructure, drainage facilities and in areas prone to deforestation, soil erosion, and hill cutting. Highest numbers of landslide hotspots are located in Bandarban District, followed by Chattogram City and adjacent areas.

In the current analysis, the number of incidents for analysis is very low (65 incidents) and many of these incidents have zero as weighed value (number of fatalities). A better result can be expected if this method is replicated in places with more incident data and detail damage information. Another option would be identifying landslides using latest remote sensing techniques and use of hotspot analysis. As landslides are isolated events, therefore, most parts of the study area have been identified as non-significant area (green areas in map) for landslide hazards. The significance of this study is: physiographic characteristics and other social features of these hotspots landscapes can lead futures researchers to identify probable landslide hotspots in hilly regions of Bangladesh. Landslides also might occur in less populated areas, but remain unnoticed in most cases. It causes casualties and major damage, especially when occurring in populated urban areas. The importance of this analysis is that, it shows how vulnerable urban hilly locations can be. Cox's Bazar and Bandarban experienced fatal landslide

recently, corresponding with their urban growth. Similar situation is eminent for other urban areas, if extensive preventive measures are not taken.

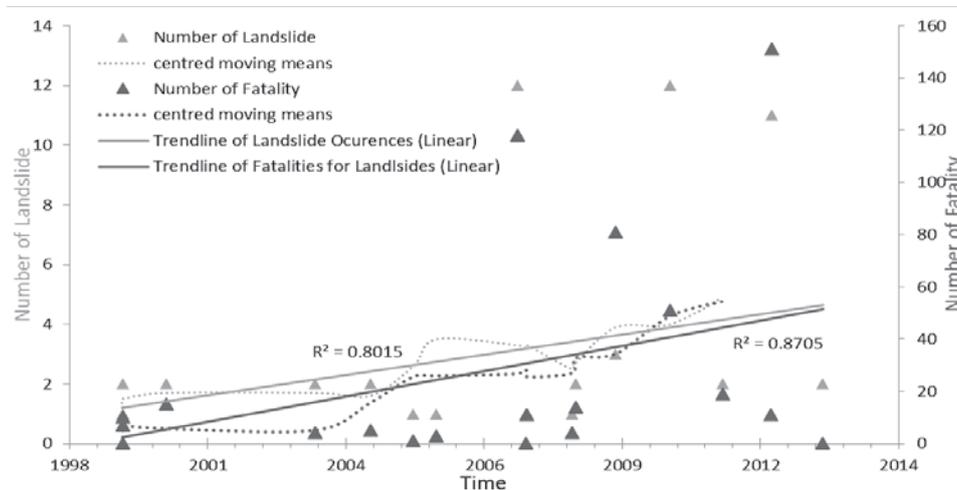


Source: Based on the field surveys of 2008, 2011 and the inventory presented in table 1

Figure 7: Major landslide hotspots in Bangladesh

4.3 Temporal Analysis of Landslide Incidents

During our study period, mortalities have noticeably increased due to the upsurge of landslides occurrences. There have been 510 deaths recorded from landslides in Bangladesh so far, 88 % of which are from 2007 onwards with a record of 162 deaths in 2012. Seventy percent of all landslides occur within the last 20 days of June, which is the peak season of the monsoon in Bangladesh, and 91.67 % from June to August. In Bangladesh, landslide incidents are alleged to be closely related to intensive rainfall occurrences (Khan and Chang, 2007; Mahmood and Khan, 2010). Time-Series analysis (Figure 8) of landslide occurrences and number of deaths reveal upward trend for both. From the late 90's, the rate of landslide occurrences began to increase sharply at an average annual growth rate of 132.75 percent. Both the trend of landslide occurrences and fatalities are showing an upward trend with strong R-square values. These portray the future vulnerability of this region to landslides and illustrate that both numbers of landslide and fatality counts will increase in coming days if the present scenario persists. It can be assumed that urbanization, and populations increase in urban areas can act as factor for this growing trend of landslides. Hilly urban areas are not prepared to accommodate rapid growth. If the current trend of urbanization persists, other small urban areas will also be in risk of facing this disaster in the future.



Source: Prepared by the author based on the field surveys of 2008, 2011 and the inventory presented in table 1.

Figure 8: Landslides incidents and associated fatalities in Bangladesh

4.4 Factors behind Landslides in Chattogram City

Excessive rainfall within a short period is considered as the main triggering factor for landslides in hilly areas (Sarker and Rashid, 2013; Mahmood and Khan, 2010, Islam et al. 2014). Unsustainable landuse, construction, deforestation and hill cutting are major anthropogenic causes (Mahmood and Khan, 2010) aggravating susceptibility of this hazard. These factors work to make vulnerable locations more vulnerable. CDMP (2012) have identified some general causes of landslides for Bangladesh. These are removal of lateral support, addition of weight to the slope, removal of underlying support and anthropogenic activities.

Survey respondents identified two types of factors for landslides: anthropogenic and natural. One-third of the populations cite intensive rainfall as the main triggering factor, followed by hill cutting. Water logging, cultivation, deforestation and infrastructure development are some other anthropogenic factors. Only a very few have identified steep slope, soil erosion, sandy soil texture, crack or faults, water leaching, earthquake as possible factors. Absence of protective walls and poor infrastructure development are also attributed by respondents as causes of landslides.

4.5 Households' Vulnerabilities to Landslide

Among the survey population, majority of the households are from very poor to lower-middle income status. One-third of the households have less than 4000 BDT (50 USD) per month as income, which is only enough for

sustaining a poor living condition, because of high rents and other living costs in the city. Another 26.44% have income of up-to 6000 BDT, and can manage to save some money after meeting all costs. Main source of income here are wages from day labor (34.07 %) of different types. Socio-economic status of the survey population is comparatively poorer than the national urban average.

Around 62 percent of the population living in the study area are temporary settlers. To understand their vulnerability, it is imperative to understand the reason of resettlement of these populations in their present vulnerable location. Half of the respondents reported coming here in search of job or sources of income. These people came mostly from outside the city, from surrounding rural areas. Though majority of the migrants came from nearby areas, some have also migrated from the remote areas of the country. People, living here often act as source of inspiration and help for migrants. As the second largest city of the country, Chattogram provides opportunities for day laborer, small jobs and businesses-which attract people from surrounding rural and peripheral urban areas. Less transport cost, known places, and people influenced them to take the decision to migrate. Poverty, unemployment, lack of basic social facilities and natural hazards work as push factors for migration. Poor income and job uncertainty create vulnerable situation for families. However, they tend to live in these places because of better job opportunities than in rural areas.

There are structural vulnerabilities too. Only 2.43% houses are entirely brick built, along with 27.36% half brick built (wall made of bricks with occasional concrete floor and tin-shed roof). Rest of the houses have non-concrete structures and are made of wood, bamboo, tin or straw. Most of these houses are very poorly built without architectural design to reduce vulnerability. These houses are exposed to heavy rain, storms, floods and landslides due to their poor structure, construction quality, weak and old construction materials and overdue restorations. Communications around houses are also poor. Although, main pathways are built of concrete, though these roads often do not continue all around. Major portions of these are mud ways and unable to provide safe communication for dwellers, especially during torrential rain and storm. Sixty percent of the houses are located at the bottom of hills. These families migrated from low-lying flood plain areas, so they tend to live as close to the plain land as possible. They are unfamiliar with techniques of living in hilly regions like the indigenous people in hilly areas. Indigenous households are usually built on elevated platforms, so they need far less hill cutting to construct plain platform.

Three-fourth of the population studied uses sanitary and unsanitary toilets.

About 85.7% of these households have electricity, though majority of these connections are illegal. These amenities are one of the benefits of living in a big city. Access to toilet and water sources are often difficult, as they are away from houses, have poor communication and no lighting. Especially for women, and the aged– these facilities are inaccessible during heavy rain or at night. Because of the illegal electricity connections, people also fear losing them. Thirteen percent of the households live illegally in government lands and around 63 % in rented houses owned by other people, companies, or the government. Illegality of tenancy creates vulnerability among tenants about fear of eviction. Tenants also complains about owners of houses, as they are often abusive and do not support them during disaster periods.

4.6 Mitigation and Adaptation Strategies

From 2007, after the massive landslides in several places of Chattogram city, people become more aware of landslide disaster, especially during the Monsoon season. Though only 16.10% people faced landslide experiences in their life, half the population consider themselves at risk of landslide. They can differentiate clearly between flash floods and landslides. To them a landslide is “break down of soils from hills due to excessive rainfall “or “vertical movement of soil caused by heavy rainfall”. People also use the term “old hills”, indicating hills where people are living for long, have little vegetation coverage and are susceptible to landslides. The inhabitants of hilly areas principally take preparation for landslides based on their experience and observation. For example, they identify intensive precipitation over short periods as the main reason for landslide, and become alert when heavy rainfall continues for long. They also look for small breakages and faults to predict landslides. These are some signs that help them predict landslide. Soil breakage from hills often creates roaring noise, which also alarm people in surrounding areas. Sometimes people are reluctant to express this risk for fear of eviction, as there is always pressure from the government to remove human settlements from landslide risky areas. They think it is rather wise to overlook risks to avoid possible eviction. This problem can only be solved with raising awareness among all level of people.

Two-thirds of the inhabitants have been alerted during heavy rainfall in recent years. Mainly, government agencies play the core role of sounding alarms and evacuation calls during heavy rain. Almost all survey respondents have mentioned these procedures as effective. They also sometimes move vulnerable families to safer places. NGOs, landowners, and owner of houses engage in this process. Most sub-urban areas are not alerted through warning broadcast.

From the survey, it is evident that every household has at least a television, radio, or both. These mediums could be useful for landslide warning and evacuation training broadcasts. Announcements from religious institutions over mikes can be a very useful tool of early warning. Motivational training for priests could be useful to keep the awareness process alive and effective. They can announce early warning by themselves when necessary, and can alert people during weekly prayers in the rainy season.

People take different steps to save their lives and properties from landslides. Evacuation to safer shelters is the most common step. People move out either to relatives' house or to temporary shelters created by the government or NGOs during the rainy season. This relocation is a temporary measure but is unable to reduce vulnerability permanently. Though relocation saves life, it cannot save property and household materials. Majority of people do not know what to do to save household materials, mainly because of lack of training. Some families move out suddenly, leaving everything behind. Their belongings are sometimes stolen and damaged. Sometimes men try to guard them, but these become impossible during extreme weather condition. Only a few can relocate their furniture and household utensils things mostly in relative or neighbors' houses. Some also try to reinforce their houses with concrete or sand bags. The government is now more proactive and attempts to evacuate people temporarily during heavy rainfall to prevent any human losses.

People expect different responsibilities with different priorities for individuals, communities, NGOs and governments. People think they have nothing to do at the individual level to prevent or mitigate this vulnerability. Majority of them think external intervention and help is mandatory in this process. Almost three-fourth opined that they do not know what they can or should do to avoid such hazards. They think themselves to be helpless in face of such hazards. Similar responses are also found for communal responsibility. Majority were unable to mention any techniques or approach they could take collectively to reduce vulnerability. Only a few (7.54 %) have acknowledged that peer help among households and individuals can be useful in reducing vulnerability.

Land and hill owners have some responsibilities in order to reduce risks too. Building fortified walls, raising awareness, tree plantations, making strong houses at safe distances is prescribed as some of their responsibilities. As they are economically solvent, they are thought as more capable and responsible for immediate and costly interventions when necessary. Landowners actually could contribute in reducing vulnerability by restricting themselves from constructing risky houses.

People think the government has not done enough for them except provide emergency rehabilitation and relief. Fifteen percent of the population think government organizations should arrange to relocate families to risks free areas permanently. Raising awareness, arranging for emergency logistics, providing early warning is mentioned by some others by some others (7.72%) as essential steps that government authorities should take. Building fortified walls and proper drainage, weather forecasting and tree plantations were also mentioned as structural measures to reduce landslide risk. People also think that government should be stronger in applying laws to stop hill cutting, deforestation, and unplanned development in risky areas. They suggest that these operations could discourage people from living in risky areas and thus minimize risks. They also urge stopping gas and electricity supplies to illegal households. Although these actions seem radical, necessity of enforcing government acts and rules to stop illegal occupation in risky areas is necessary. Government authorities have already taken steps in this regard, but they lack firmness and as well as popularity among people. In parallel to executing these rules, the government should take steps to popularize their policies so that people feel encouraged to obey them. NGOs could help by providing training and credit facilities and by ensuring livelihood security. Awareness raising is identified as a major role for NGO to take, by loan and relief activities.

Survey respondents proposed some mitigation and adaptation strategies. More than 92 percent respondents think that permanent relocate to safer plain lands is the best option to reduce their vulnerability. Relocation and building houses in safer places (especially government places) are the most popular option among people. Government residences for poor people and control over high rent of private houses were also suggested. Low house rent is the major pull factor for population living here as house rents in cities are often a burden for the low and middle-income population, and Chattogram city is no exception. Safer places tend to be more expensive, and poor people have no other option than living in these cheap places, despite risks of landslide. Housing facility by government or donor organizations for poor and low-income population could be viable options to encourage people to leave these risky areas. They also emphasize building strong houses and concrete walls. Government authority could help them by providing them with construction material and urging them to build resilient houses. Respondents also wanted job opportunities for them. Financial help as loans could also be very useful for them. Training to reinforce houses with landslide adaptive technology could be useful too. People do not know how to build houses in slopes and appropriate training in this regard is necessary for them. Making drainage system to let water pass, setting plantations around the house and building concrete walls are other suggested measures

mentioned by respondents.

Some respondents suggested awareness building along with firmness in applying laws to reduce havoc from landslides. In this society, landowners, local musclemen and politicians play vital roles. They build house to rent them out, and this is often a source of easy money for them. Respondents often say that it is for this group of people (landowners and local musclemen), the government cannot stop illegal land grabbing and settlement development in hills. Therefore, any initiative to stop deforestation and hill cutting need to include local musclemen and powerful people like politicians to ensure the successful execution. These local powerful people are often responsible for deforestation and hill cutting for their construction projects. Most respondents have suggested motivating these people against deforestation and illegal land grabbing.

There is severe lack of awareness, motivation and training about personal and collective preparations and interventions to reduce landslide vulnerability. They know very little about techniques of avoiding landslide risks as well as prevention and mitigation options.

Training for inhabitants of all ages is highly recommended. People should know about these preparation, evacuation and post disaster rehabilitation processes in detail. They should be made personally and collectively aware. Help with necessary tools for evacuation like, torchlights, raincoats, emergency dry foods, shovels (for drainage) could be useful for the community. Reserve of tents, plastic sheets, and sleeping bags in communal places (clubs, schools, and mosques) could be useful for emergency shelter development.

5. Conclusion

Spatial analysis reveals that hotspots of landslide incidents are prominent in the cities that are going through the development process in the hilly regions of Bangladesh. From the late 90s, numbers of deaths and damage to assets have been increasing at an alarming rate. Anthropogenic and physical features of these hotspots and clusters need to be recognised in order to identify other potential landslide-vulnerable places and vulnerable communities to pre-plan for landslide disasters and for reducing landslide vulnerability.

The government has taken some initiatives to mitigate this hazard in Chattogram City and Cox's Bazar. However, with limited resources, it is impossible for them to cover all vulnerable areas. Using mass communication media to disseminate landslide awareness, arrange training and form voluntary groups with suggested responsibilities during landslide risk times could be useful tools to reduce risks. Locally influential landowners and

politicians should be included in the process too.

Evacuation is merely an emergency tool to save life practiced now, but it is unable to save property and reduce continuous fear of living in risk. Managing land and housing for a large population is a challenging task, as plain lands tend to be scarce and expensive there. To prevent future occurrences, landslide resilient urban planning is essential in hilly urban areas. Anthropogenic and physical features of landslide vulnerable places and vulnerable communities need to be identified in detail to pre-plan for landslide disasters and for reducing vulnerability. Training for resilient structure construction, awareness about mitigation and adaptation practices, and engaging people at all levels is essential for effective landslide mitigation.

Data limitation is a major challenge for landslide research in Bangladesh. Historical data is scarce; moreover the necessary parameters of incidents are not recorded, which are critical in landslide analysis. Data used in this paper is also not sufficient as it is 8-10 years old, and landslides have occurred almost every year in the last decade. Landslides are also occurring in new locations across the Chattogram Hill Tracts. Therefore, this paper is unable to present analysis of recent incidents, and is spatially limited. Moreover, the analysis presented here is only a general representation of the landslide vulnerable population living in Chattogram City. Future studies need to focus on the comprehensive vulnerability of different landslide prone locations with comparative analysis. Last but not least, lack of access to landslide research studies of Bangladesh is an acute problem. Only a few Bangladeshi researches are available online; most of them (thesis, reports, university journal publications) are only hardcopy publications and difficult to get access.

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CSR Practices in Banking Industry of Bangladesh: A Bird's-eye View

Naharin Binte Rab* and Tanjila Hossain**

Abstract

The arena of Corporate Social Responsibility (CSR) has been in limelight since the anti-capitalist movement grew momentum in the 1970s and 80s. In 2008, Bangladesh Bank (BB) issued CSR guidelines for banks and financial institutions. Literature reports academic interest in CSR disclosure in banking industry since 2009. This paper looks into disclosure practices in the full population (n=30, Dhaka Stock Exchange (DSE) enlisted banks) of the industry. The year 2013-2014 is taken as study period because the first deadline for Phase III of Green Banking Guideline by BB was 31 December, 2013 which eventually ended on 30 June, 2015 with extension. The authors attempted to see the extent of implications of Green Banking Policy on Corporate Social Responsibility Disclosure (CSR) practices by the banking industry as a whole instead of by a sample. The authors report improvement in CSR, albeit little.

Keywords: Bangladesh, Banking industry, CSR, DSE.

1. Introduction

A debate has been looming large for centuries whether the business community has a responsibility broader than that of economic value or not (Carroll & Shabana, 2010). In the CSR literature, Howard Bowen's text "Social Responsibilities of the Business Man" (1953) appears as the first testimony to this debate. Bowen, a strong proponent of CSR by the business and for the citizens, argued that large businesses have actual impact on the lives of citizens (Carroll, 1999). Since then, down the timeframe CSR definitions evolved into alternative concepts such as: stakeholder theory, theory of business ethics, corporate citizenship, corporate governance, social reporting, triple bottom line and more recently CSR 2:0 (Carroll, 1999, Visser, 2008; Donaldson & Pretson, 1995).

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Economist Milton Friedman takes a strong stand against CSR, arguing that profit maximisation is the sole responsibility of the businessmen and social issues should be resolved by the free market system, ultimately falling into the hands of government (Carroll, 2010). The Corporate Watch (2007) hits direct criticism on the concept and practice of CSR by calling it as no more than a corporate branding and selling tool. Companies in the USA and UK became increasingly alert to CSR practices in the aftermath of anti-capitalist movements in the 1970s and 1980s. In the developed world, there is a hype of CSR conferences, books, web sites and PR material. Non-government organisations (NGOs), the media, and public attitudes are gearing towards more environmental and sustainable issues (Sophie, 2016). International authorities such as the World Bank, OECD, IMF and the United Nations are demanding for heightened levels of corporate social responsibility as well (Jenkins, 2005; Hafsi & Farashahi, 2005).

Martínez-Ferrero and Frías-Aceituno (2015) conducted an empirical study on a sample of 1,960 multinational non-financial listed companies from 25 countries for the period between 2002 and 2010. The study announces verdict to the centuries old debate and refutes Milton Friedman and establishes the existence of a positive bidirectional and synergistic relationship between corporate social responsibility and financial performance.

This paper will attempt to shed light on CSR practices in all DSE enlisted banks in Bangladesh.

2. Literature Review

2.1 Corporate Social Responsibility Disclosure (CSRD) beyond Bangladesh

Baughn et al. (2007) examines two aspects of CSR; i.e. social and environmental type in 15 Asian countries. The performance of these Asian countries on the two types is also assessed relative to country economic, political and social conditions, and compared with those of other regions; namely: Western Europe, East/Central Europe, Australia/New Zealand, US/Canada, Middle East and Africa. On social CSR, the US/Canada and Australia/New Zealand regions rank at the top, followed by Western Europe, Asia, the Middle East, Africa, Latin America and finally, Eastern/Central Europe. The study reveals strong correlation between economic development and CSR. Singapore, Japan, Taiwan and Hong Kong score quite high on social CSR. Their scores are similar to those of Australia, New Zealand and Western Europe, and well above the mean for Asia as a whole. Malaysia is an exception that showed a high score on social CSR despite a substantially lower level of individual wealth in this country. Pakistan is reported with low levels of social CSR that resonate with her economic continuum.

Japan's commitment to environmental CSR is substantial which is at the similar level to Taiwan and Singapore. Environmental CSR gets a lot less importance than social CSR in US/Canada and the Middle Eastern nations (Baughn et al., 2007). Japan, Taiwan and Singapore score on both dimensions at the level of well-to-do countries. While Pakistan's performance falls below the average found in Eastern and Central Europe, as well as Latin America and Africa. The level of CSR activity in Eastern and Central Europe is not only well below that of Western Europe, but also, that of Asia, despite the fact that the overall level of income is similar.

Guthrie and Parker (1990) revealed through content analysis the average number of pages that organizations allotted in their reports. Companies in the US used 1.26 pages while for UK companies it was 0.89 pages and for Australian companies 0.70 pages. In 1995, Gray et al. supported that CSR reporting curve looks upward in the UK and USA. Halabi et al. (2006) found that in Australia all banks made disclosures in relation to the environment, labor practices, and human rights. However, for Irish banks social disclosures were found to be much lagging behind relative to Europe (Douglas et al., 2004). A study by Nikolaou (2007) on the banking sector in Greece stated that this sort of disclosure was mostly ad hoc in nature.

Indian companies are reported to improve in CSR practices; some have established their own CSR departments even (Hopkins, 2006). Narwal (2007) conducted a study on 33 banks in India that included banks both from private and public sectors. He installed questionnaire survey as data collection method and for data analysis descriptive statistics and factor analysis were used. This study reveals that banks commonly hold an objective view-point about CSR, with special emphasis given on education, balanced growth (different strata of society), health and environmental marketing. Narwal (2007) concludes that the banking industry across India is found to be integrating CSR with customer satisfaction at the core.

Jain et al. (2015) conducted a cross-country study covering Japan, China, Australia and India over seven years from 2005 till 2011. The study took six large banks from each of the country where they installed content analysis technique using information from annual reports and web sites. Evaluation was done on the basis of comprehensive disclosure framework; such as: ethical standards, extent of CSR reporting, environment, products, community, employees, supply chain management and benchmarking. The findings look impressive in all four countries. Of the four countries, Australian banks were reported with the best scores and Indian banks registered maximum improvement. The study concludes that in the absence of legislative requirements, CSR reporting still continued to improve, both in the category of quality and quantity.

Jain and Winner (2016) conducted a study on 200 largest state-owned and private companies in India. The authors look into CSR/Sustainability issue from the lens of GRI using information accessed through websites. This study provides insights into how Indian corporations are transforming into good corporate citizens which are actively being demonstrated through web-based communication in order to engage and interact with stakeholders. The study outlines the current CSR/Sustainability reporting trends and best practices in India and comments on overall positive signs of reforms.

Hadfield-Hill (2014) conducted a study in 2008 to understand the orientation of “corporate elite” about CSR during the time of economic crisis. Schoenberger (1991) defines “corporate elite” as the corporate heads whose motivations and strategies play a key role in project financing decisions. The author conducted thirty in-depth interviews with “corporate elite” from private, public and multi-national companies. She reports that corporate social commitments were squeezed with the lack of available credit, widespread job losses, cutbacks and business failures. The author states unequivocally that countless boards of directors and CEOs jumped on the CSR bandwagon during the good times, not only in the west, but also in countries such as India.

2.2 Corporate Social Responsibility Disclosure (CSRD) within Bangladesh

In 2008, BB issued an elaborate directive titled ‘Mainstreaming Corporate Social Responsibility (CSR) in Banks and Financial Institutions in Bangladesh’¹. Khan et al. (2014) reported that first academic research available on CSR in Bangladesh was in 2009. Since then, there has been an increasing trend of CSR reporting in Bangladesh.

Following is a table that includes academic articles found in journals² as journal articles are authoritative (Belal and Momin, 2009). Here we have reviewed 15 articles.

¹ DOS Circular No. 01 ‘Mainstreaming Corporate Social Responsibility (CSR) in banks and financial institutions in Bangladesh’ dated 1 June 2008.

² Such as Journal of Business Ethics, World Review of Business Research, Contemporary Issues in Business Research, Corporate Ownership and Control, The Bangladesh Accountant, Bank Parikrama, International Review of Business Research Papers, Social Responsibility Journal, World Journal of Social Sciences, Journal of the Department of Management Studies, International Journal of Law and Management, Journal of Asia-Pacific Business, Social Responsibility Journal.

Author	Study Period	Sample	Research Methods	Findings
Belal et al. (2015)	1983-2010	Islamic Bank Bangladesh Limited	Interviews and Content analysis	Overall social disclosures increased gradually with acceleration in latest years. Image building worked as a primary motive for disclosures, albeit inadequate. This paper doubts consistency of IBBL's investment portfolio with the socio-economic framework of Islamic finance. The paper reports a decreasing utilization of PLS mode of investment in its portfolio. Interview evidence suggests that the key drivers of social disclosures include a range of factors such as gaining publicity, promoting social welfare motives, adherence to the guidelines on corporate social responsibility and the desire to be a winner in various award schemes.
Das et al. (2015)	2007-2011	29 listed banks in DSE and CSE	Content Analysis	About 18% increase in average CSR disclosure was reported with more than 10 times increase in direct monetary expenditure. CSR disclosure was found to be positively significant with firm size, board size, ownership structure, independent non-executive director. Surprisingly, a negative association was shown between CSR disclosure and firms' profitability which is highly arguable (Martínez- Ferrero & Frías-Aceituno, 2015). Correlation between CSR disclosure and board leadership structure was found to be insignificant. Disclosure practices were unstructured and needed to adopt a comprehensive format as suggested by GRI, 2006.
Hossain and Rab (2015)	2013	15 DSE listed private commercial banks(PCBs)	Content Analysis	Banks disclosed HR issues the most which matched with Ahmad et al. (2010). Disclosure on environment and community issues were found to be moderate which refuted Ahmad et al. (2010) who reported environmental issue as the least disclosed category.
Khan et al. (2014)	2014		Literature Review	A theoretical framework was proposed through the angle of New Institutional Sociology (NIS), strategic response and Legitimacy theory.
Saha et al. (2013)	2010-2011	6 listed banks	Content Analysis	In proportion to the profit the sample banks contributed insignificant amount to CSR activities.

Ullah (2013)	2007 - 2010	47 scheduled banks	Content Analysis	There was reported an evident increase in banks' involvement in CSR expenditure, community investment, financial inclusion, CSR governance, CSR reporting, and environmental safety. However, this study shows no significant correlation between CSR and total revenue, net income after tax, number of branches, or deposit growth.
Sobhai et al. (2012)	2009	29 listed banks	Content Analysis	Invariably, all listed banks reported sustainability issues (mostly social), but in unstructured manner through both annual reports and websites. In general, preference was given to annual report over website. Islamic banks disclosed more on sustainability issue compared to conventional banks. Surprisingly, among the three generation of banks the level of disclosure of the older banks could not surpass that of the younger ones.
Masud and Hossain (2012)	2010	10 listed banks	Content Analysis	All banks reported participation in CSR activities but for more than 40% of the sample, participation was not in line with the areas specified by Finance Act 2010 and 2011.
Azim et al. (2011)	2007 - 2008	All listed companies under Finance Sector	Content Analysis	Half of the sample companies had disclosure practices. They echoed with Belal (2001) and Imam (2000) that most corporate disclosures were found to be qualitative in nature.
Khan et al. (2011)	2008	12 listed commercial Banks	Content Analysis	Out of 16 GRI disclosures recommended for financial service sector, only 7 items were disclosed by all sample banks. Information on society was the most disclosed, followed by the disclosures on decent works and labour practices and environmental issues. Disclosure on product responsibility information and human rights was relatively absent from banks' reporting.
Sobhai et al. (2011)	2000-2009	2 Banks as cases	Content Analysis	Sustainability disclosures showed an upward trend except energy, human rights and natural environment issues. Both banks disclosed considerable degree of economic and social items.

Ahmad et al. (2010)	2008	20 listed banks	Content Analysis	The most reported CSR theme was human resource whereas the least was the environmental one. The level of CSR was found to have significant correlation with firm size, profitability and firm age.
Khan (2010)	2007 - 2008	30 listed private commercial banks	Content Analysis	CSR reporting practice was influenced by the existence of the nonexecutive directors and foreign directors.
Azim et al. (2009)	2006 - 2007	246 listed companies	Content Analysis	Around 16% companies disclosed CSR information voluntarily. Disclosure was more with banking industry than with non-banking one.
Khan et al. (2009)	2004 - 2005	20 DSE listed banking companies	Content analysis and Questionnaire	CSR reporting was mostly narrative in nature. Stakeholders were interested to see more disclosures.

These studies admit that the disclosure level and practices have increased significantly during the period 2009-2013 in the banking industry of Bangladesh but are still inadequate. (Khan et al., 2009; Khan et al., 2011; Azim et al., 2011; Masud & Hossain, 2012).

After the issuance of the elaborate directive titled ‘Mainstreaming Corporate Social Responsibility (CSR) in Banks and Financial Institutions in Bangladesh’ by BB in 2008 Banks showed some improvement though little in CSR practices (see for example, Kahn et al., 2009; Khan, 2010). This paper aims to see the impact of another circular in 2011 by BB called ‘Green Banking Policy Guideline³ (Available in Appendix-C) on the Banks’ CSR practices. We attempt to see the extent of implication of Green Banking Policy by the banking industry as a whole instead of by a sample.

3. Methodology

The study is done on a full population (n=30) DSE enlisted banks (the detailed list of the banks are available in Appendix A). The year 2013-2014 is taken as study period because the first deadline for Phase III of Green Banking Guideline by BB was 31 December, 2013 which eventually ended

³ BRPD Circular No. 02 Dated 27 February 2011.

on 30 June, 2015 with extension. We could not extend our study period to 2015 as the annual reports for 2015 are not available yet for most of the banks.

Annual reports of 30 DSE enlisted commercial banks for 2013-2014 were collected and rigorously analyzed. Annual reports, in general, command credibility as they are means of communication to stakeholders (Adams, 2004; Gray et al., 1995a, b; Guthrie & Parker, 1990; Raman, 2006; Singh & Ahuja, 1983). Separate CSR disclosure reports of these banks for 2013-2014 were also reviewed.

Content analysis is the key instrument used in this study. It is a research tool for making valid inferences from texts (or other meaningful matters) (Krippendorff, 2004). It is an approach which systematically filters the contents under specific categories. An important element of content analysis is the collection and development of categories into which content units can be classified (Ali et al., 2008). Due to the flexibility of this approach it is used extensively (Cho, 2009; Gray, Kouhy, & Lavers, 1995b; Haniffa & Hudaib, 2007; Maali et al., 2006; Tilling & Tilt, 2010).

We used earlier work by Ernst and Ernst (1972-78), Guthrie and Parker (1990), and Gray et al. (1995a) to organize information into two categories: Theme, Location. Theme was based on variables such as environment, human resources, and community involvement. Location refers to directors and/or chairman's reports, separate sections of annual reports and separate or stand alone reports.

The frame work of disclosure items used in this paper is provided by Ahmad et al (2010) and modified by Hossain and Rab (2015). This study uses three broad categories of disclosures, namely: environmental issue, human resource issue and community issue which are further subcategorized into a total of fifteen.

4. Findings and Analysis

4.1 Analysis and Discussion of Results

After the issuance of Green banking policy guide lines by BB, the practice of including a separate chapter on Green Banking has been common among all the banks. BB requires every bank to submit a green banking report on a quarterly basis. Being a watchdog BB is enforcing the banks to formalize their disclosures. In our study we aim to find the actual impact through empirical evidence that banks are actually acting according to rules or not and it was found that among 30 listed banks 21 had separate chapter for green banking. The exception was BRAC bank that published a whole

green banking report separately. This means every bank has taken the policy implication seriously and has started to double their effort in disclosure.

Table 1: Disclosure Practices on Environmental Issue

Environmental Issue	No. of Disclosing Companies in the total sample(n=30)		% of the total population		Location of Information				
	2013	2014	2013	2014	Separate report		Directors Report		Notes to the accounts
					2013	2014	2013	2014	
*Commitment to Environment	30	30	100	100	21	21	11	11	-
**Contribution: to Environment	29	29	96.66	96.66	19	19	11	11	-
**Employees' training on green event	24	25	80.00	83.33	17	17	8	9	-
**Policy on environment restoration	27	29	90.00	96.66	20	22	8	8	-
*Amount spent on environment restoration	22	22	73.33	73.33	17	17	6	6	-

* 2 banks have disclosed on Commitment to Environment and Amount spent on environment restoration in both director's report and separate report section.

** 1 bank has disclosed on Contributions to Environment, Employees' training on green event and Policy on environment restoration in both director's report and separate report section.

Does preparing a separate chapter or separate report mean banks are disclosing whole-heartedly? Further evidences need to be collected and scrutinized to answer this question. Table 1 of this report gives a comparative scenario of banks for 2013 and 2014 under five disclosure indices for environmental issues. In case of commitment to environment 100% banks were found to be committed since 2013. Commitment to environment is reflected by establishing a Green Banking Unit or Cell, reducing carbon foot print in its operation and lending to customers in compliance with Environmental and Social Risk Policies (BB, 2011). All the listed banks said that they have established a committee for green banking and named that as Green Banking Unit (GBU) or Green Banking Cell (GBC). So, along with dedicating few more pages in a separate section in Annual Report for green banking, banks have created separate division/unit.

All banks except Uttara Bank said they took steps toward formulating "Green Office Guide" or at least circulating general instruction of in-house green banking which includes saving paper, water, energy and assessing a borrower from the perspective of Environmental Risk Management (ERM). 19 banks disclosed their contributions to environment in a separate

chapter whereas 10 banks did in the director's report, but Southeast Bank reported in both director's report and separate section.

Another important determinant of how green banking is actually progressing is the information on employees' training on green event. If banks are to implement green banking policy they must train their employees. Training is needed not only for the employees who is working as GBU or GBC but also each and every employee who is working for the banks. Question might arise why so? Because green banking is not only about preparing a quarterly report and submitting to the BB and writing some pages in the annual report rather it is all about practical implication. The banks are saying that they have started in-house green banking by saving paper, water, energy, etc.

We can surely validate these information by finding evidence of training on green event, amount spent on environment restoration. Only 80% of the full population have arranged training on green event for their employees which means their commitment to environment is somewhat vague as 20% of the population are absent in this regard. Bank Asia is ahead on this issue followed by Exim Bank among all. Another validation point is that to save energy banks need to install solar panels, energy saving electronic system; to be paperless they need to have in-house online networking; some banks are really working on green banking for example IBBL has installed solar panels in its all branches. It is found that 22 banks disclosed information on amount spent on environment restoration. We found IBBL as the champion and DBBL as the runner up at environment restoration expenditure. 27% of the banks did not report any activity that can justify that they are actually implementing green banking.

To be in line with BB banks should finance environmental infrastructure projects such as: renewable energy project, clean water supply project, wastewater treatment plant, solid and hazardous waste disposal plant, bio-gas plant, bio-fertilizer plant etc. as policy on environment restoration (BB, 2011). This paper finds it to be 90% in 2013 and 96.66% in 2014 among full population. These figures are high because as per BB environmental risk management is a must before lending to any borrowers and every borrower is assessed under these policy guidelines. To enforce green banking BB has directed banks to finance more in above sectors and banks are acting accordingly. Some relevant examples of Green Banking are available in Appendix-D.

4.2 Disclosures on Human Resource Issue

In each of the components under HR issue 100 % of the sample banks have made disclosure except in break-down of the employees by executives and non-executives and in number of employees trained. In this paper Standard

Bank and Uttara Bank joined the three other banks that did not disclose break-down of employees. They are: AB Bank, FSIBL, and UCBL. This is noteworthy that Company Act 1994 makes this disclosure binding.

Table 2: Disclosure Practices on Human Resource Issue

Human Resource Issue	No. of Disclosing Companies in the total sample(n=30)		% of the total population		Location of Information					
					Separate report		Director's Report		Notes to the accounts/Income statement	
	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
Formal HR Policy	30	30	100	100	10	10	20	20	-	-
*Break down of the employees by executives and non-executives	25	25	83.33	83.33	4	4	5	4	21	21
**Amount spent on training employees	30	30	100	100	1	1	-	-	30	30
No. of employees trained during the year	27	26	90.00	86.66	12	12	14	14	1	-
**Information on employee benefits	30	30	100	100	3	3	-	-	28	28

* 5 banks have disclosed on Break down of the employees by executives and non-executives in both notes and director's report section.

** 1 bank has disclosed on Amount spent on training employees and Information on employee benefits in both notes and separate report section.

Amount spent on training employees and information on employee benefits are disclosed in the notes to the financial statements as these are expenses and should be recorded in financial statements. In 2013, 90% and in 2014, 86.66% banks reported about the number of employees who got trained during the year. The human resource disclosure scored high among all three disclosure issues. From earlier studies of Khan et al. (2009); Khan (2010); Ahmad et al. (2010); Sobhani et al., (2011-2012) it is evident that firms are inclined to report more human resource issue compared to other issues. We also found no exception.

4.3 Disclosures on Community Issues

Out of the five components of community issue education ranked first and other communities' involvement theme ranked second with 96.66% and

93.33% respectively. This very finding is in line with BB review of 2012 and can be attributed to Finance Act 2011⁴. BB review reports on the direct CSR expenditure by the banks reveal that education sector receives the major contribution which is close to 32% (BB, 2012).

Table 3: Disclosure Practices on Community Issuest

Community Issues	No. of Disclosing Companies in the total sample(n=30)		% of the total population		Location of Information				
					Separate report		Director's Report		Notes to the accounts
	2013	2014	2013	2014	2013	2014	2013	2014	
*Education	29	30	96.66	100	21	22	9	9	-
Health	23	25	76.66	83.33	16	16	7	9	-
**Donation to disaster	24	24	80.00	80.00	18	18	8	8	-
*Community activities	26	25	86.66	83.33	20	19	7	7	-
*Other communities involvement	28	28	93.33	93.33	20	20	9	9	-

* 1 bank has disclosed on Education, Community activities and on other communities involvement in both director's report and separate report section.

** 2 banks have disclosed on Donation to disaster in both director's report and separate report section.

5. Conclusion

In this paper the authors report improvement in CSR, albeit little which is congruent with Baughn et al. (2007). Though variation was found in the pattern and level of disclosure, most of the banks presented the green banking issues in the prescribed format of BB. Most Banks' disclosed human resource issues can be attributed to the notion that being service oriented organization banks are prone to capitalize on the efficiencies and capabilities of human resources and through disclosure in annual reports they are actually advertising their strength of human resources. In case of community issues almost every bank tried to highlight their contribution though in terms of percentage of total turnover these expenditure are somewhat very little and again most of the banks only disclosed the name of the CSR program and number of people got benefitted from the program but the amount spent was absent in all manner. So, it can be said Banks are smart enough to satisfy

⁴ According to Finance Act 2011 a company including banks will get tax rebate @ 10% not exceeding BDT core or 20% on total income, whichever is lower donation to 22 CSR areas specified by the Act (GOB, 2011).

their shareholders by making separate chapters and increasing number of pages writing good news about CSR or Green Banking but this paper could not find real or quantitative evidence to support their claim. This study is limited to only 2014 annual reports. Further follow up research will be meaningful using 2015 annual reports. Case study may further enrich the understanding of management philosophy behind green banking disclosure practices.

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Appendices

Appendix-A: Name of Banks

1. AB Bank	16. Mutual Trust Bank Ltd. (MTB)
2. Al-Arafah Islami Bank (AIBL)	17. National Bank Ltd. (NBL)
3. Bank Asia	18. NCC Bank Limited
4. BRAC Bank Ltd.	19. One Bank Limited
5. City Bank	20. Premier Bank Limited
6. Dhaka Bank Limited	21. Prime Bank
7. Dutch-Bangla Bank (DBBL)	22. Pubali Bank
8. Eastern Bank Limited (EBL)	23. Rupali Bank
9. Exim Bank Limited	24. Shahjalal Islami Bank limited
10. First Security Islami Bank Limited (FSIBL)	25. Social Islami Bank Limited (SIBL)
11. ICB Islamic Bank Limited (ICBIBank)	26. Southeast Bank
12. IFIC Bank	27. Standard Bank Limited
13. Islami Bank Bangladesh Limited (IBBL)	28. Trust Bank Limited (TBL)
14. Jamuna Bank Ltd.	29. United Commercial Bank Limited (UCBL)
15. Mercantile Bank Ltd.	30. Uttara Bank

Appendix-B: List of Social Disclosure Items

Environmental Issue		Community Involvement Issue
1. Commitment to environment	6. Formal HR policy	11. Education
2. Contributions to environment	7. Break-down of the employees by Executive and Non-Executive	12. Health
3. Employees' training on green event	8. Amount spent on training employees	13. Donation to disaster
4. Policy on environment restoration	9. Number of employees trained during the year	14. Community activities
5. Amount spent on environment restoration	10. Information on employee benefits	15. Other communities involvement

Appendix-C: Phases of Implementation of Green Banking Program Suggested by Bangladesh Bank (Prepared from GBCSRD Circular Letter No. 05)

Phase I (June 30, 2014)	Phase II (Dec 31, 2014)	Phase III (June 30, 2015)
1.1 Policy Formulation and Governance	2.1 Sector-specific Environmental Policies	3.1 Designing and Introducing Innovative Products
1.2 Incorporation of Environmental Risk in CRM	2.2 Green Strategic Planning	3.2 Reporting in Standard Format with External Verification
1.3 Initiating In-house Environment Management	2.3 Setting up Green Branches	
1.4 Introducing Green Finance	2.4 Improved In-house Environment Management	
1.5 Creation of Climate Risk Fund	2.5 Formulation of Bank specific Environmental Risk Management Plan and Guidelines	
1.6 Introducing Green Marketing	2.6 Rigorous Programs to Educate Clients	
1.7 Online Banking	2.7 Disclosure and Reporting of Green Banking Activities	
1.8 Supporting Employee Training, Consumer Awareness and Green Event		
1.9 Reporting Green Banking Practices		

Appendix D: Some Examples of Green Banking Practices of Commercial Banks in Bangladesh

Green Banking Activities	Name of Banks
Provided refinancing facility to 1,693 Bio-gas Plant amounting to total Tk. 489.99 million	Trust Bank Limited
Handed over 1,000 Flamboyant trees to Dhaka South City Corporation (DSCC).	Dhaka Bank Limited
Allocated budget for Tk.5.00 million as Climate Risk Fund for help/rehabilitation of the affected people due to natural disasters like flood, cyclone, drought etc. for climate change.	Dutch Bangle Bank Limited

Green Banking Activities	Name of Banks
Incurred Green marketing expenditure amounted to Tk. 18.00 million for the year 2014 and put emphasizes selling products and/or services based on their environmental benefits like ATM debit card, Visa Debit Card, M-Cash, i-banking, i-recharge, Remittance card, SWIFT, Call center, Online banking, SMS banking etc.	Islami Bank Bangladesh Limited (IBBL)
Inaugurated 10 Green Branches at Uttara, Tongi, Narshingdi, Majdee, Madambibirhat, Juri, Rayerbazar, Faridgonj, Mahipal and Parulia.	NCC Bank Ltd.
Organised an environment awareness program for school students and handed over saplings to the students as a part of the awareness campaign.	Brac Bank Limited
Developed “EBL Nobody”,a creative financial product to generate electricity from poultry waste to prevent environmental pollution.	Eastern bank Limited
Planted trees at vast areas adjacent to Water Bus Terminal at Gabtoli in Dhaka and distributed saplings amongst customers at different branches.	Mutual Trust Bank Limited
Introduction of Earth Hour in every Branch and at Head Office by switching off Air Coolers of the branches as well as the unnecessary lights for 1 (one) hour every Sunday from 3:00 p.m. to 4:00 p.m.	AB Bank
Opened a green branch at Ruhitpur Bazar, Keranigonj and installed Energy efficient bulb and other electric appliances.	Al Arafah Islami Bank
Allocated Tk15 million per quarter for green marketing, training and capacity building.	Prime Bank
Disbursed a total some of Taka 6,518.03million under ETP, Solar Plant/ Energy Renewable Plant, HKK and other Green Industry.	Social Islami Bank Limited (SIBL)

Social, Economic and Environmental Sustainability: The Implications to Develop Sustainable Tourism in Bangladesh

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Abstract

Bangladesh is a country with both natural and cultural resources that can be developed as tourist destinations. The country has enormous prospects in tourism industry, but this industry is not well managed. This study aimed to analyze the strengths, weaknesses, opportunities and threats (SWOT) of tourism industry in Bangladesh from a sustainability perspective to explore the potential implications of developing sustainable tourism. A qualitative case study design was undertaken for this paper. This study applied the core concept of sustainability for the data analysis. Data were collected by conducting semi-structured interviews with 20 tourism- related key professionals and tourists. Using a qualitative content analysis technique, we find that the country has immense opportunities to create jobs for youths, promote local culture, encourage local entrepreneurships, and above all increase economic benefits through developing sustainable tourism, which can also contribute to achieving the targets of Sustainable Development Goals by 2030.

Keywords: Sustainable tourism, SWOT analysis, Adaptation tourism, Bangladesh, Sustainable development goals.

1. Introduction

Tourism comprises a wide range of economic activities and is recognized as one of the largest industries of the world (Neto, 2003); it has the potential to contribute to socio-economic development (Petrevska, 2012), especially in a developing country, like Bangladesh. Recently, this industry has been prioritized by the government of Bangladesh. The contribution of this industry is reflected in several policy documents of the government, notably the National Tourism Policy (2010), the Seventh Five Year Plan (2016-2020), and the Prospective Plan of Bangladesh 2010-2021: Making Vision 2021 A Reality. The Seventh Five Year Plan (2016-2020) for Bangladesh emphasizes development a competitive tourism industry by 2020 (Planning Commission, 2015) and increasing its contribution to the Gross Domestic

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Products (GDP) to 5% by 2021 (Planning Commission, 2012). The direct contribution of travel and tourism to GDP in Bangladesh was only 2.4% (BDT. 407.6 billion; 1 USD = BDT. 78.4 in July 2016), to employment 2.0% (1.4 million jobs) and 1.2% of total investment (BDT. 61.6 billion) in 2015 (World Travel & Tourism Council [WTTC], 2016). The share of foreign exchange earnings by this industry increased from BDT. 2451 million in 1999 to BDT. 12273 million in 2014 (Bangladesh Bureau of Statistics [BBS], 2015). Therefore, this industry has a great potential to generate employment, increase foreign exchange earnings and overall contribution to the economic growth of the country. To reap these benefits, sustainable growth of this industry is a must. Sustainable tourism is an approach that aims to develop and manage tourism-related interventions and services in a manner that preserves the originality of the places to be visited, provide benefits to local communities, and conserve natural and cultural resources that can attract tourist to attractive destinations to visit (United Nations Environment Programme [UNEP], 2005). The concept of sustainable tourism has gradually become an important determinant for destinations that depend on nature for their major tourist attraction (Larson & Herr, 2008).

Tourism is a fast-growing sector (UNEP, 2005) in Bangladesh. Nevertheless, empirical studies on sustainable tourism in Bangladesh are very limited. The majority of the studies that exist focus on ecotourism. Haque, Reza, Alam, Ahmed & Islam (2016) studied potential benefits and challenges to develop sustainable ecotourism in the Sundarbans Reserve Forest, Bangladesh. The improvement of tourism products of the country may generate good perception in the tourists' mind-set (Ishtiaque, 2012). But substantial efforts should be made to develop the kind of tourism that can stimulate development, and lead to environmental and cultural protection, gender equality, and export diversification in services (Honeck & Akhtar, 2014). The nexus between tourist micro-enterprises and the alleviation of poverty in rural Bangladesh was studied by Islam & Carlsen (2012). A nature-oriented tourism model was proposed to monitor the adverse impact of tourism in the reserve forest of Sundarbans, using geographical information systems (GIS) technology by Salam, Lindsay and & Beveridge (2000). The perception of visitors were explored in different tourist destinations, including Kaptai National Park (Rahman, Roy, Anik, & Fardusi, 2013), and Cox's Bazar (Hossain, Quaddus, & Shanka, 2013). Alam, Furukawa & Akter (2010) identified different strengths and impediments in developing forest-based tourism using strengths, weakness, opportunities, and threats (SWOT) matrix. The concept of sustainable tourism has been used in several studies. Jahan & Amin (2014) have identified numerous social, cultural, environmental, economical and political

factors that affect the sustainability of the Sylhet region. Attempts have also been made to identify the strengths and weakness of this industry (Shamsuddoha & Chowdhury, 2009; Mondal, 2017a). No attempts were made to identify the strengths, weaknesses, opportunities and threats of tourism industry from a sustainable development perspective. Therefore, this study explores the following questions, using an empirical qualitative inquiry:

- What are the socio-cultural, economic and environmental strengths, weaknesses, opportunities and threats related to the tourism industry of Bangladesh?
- What are the possible ways to develop sustainable tourism industry using SWOT?
- How can 'sustainable tourism' help to achieve sustainable development?

This qualitative case study formulated an understanding of existing strengths and opportunities, as well as identified several weaknesses and threats related to the tourism industry that may hinder the successful growth of this industry. The following section discusses the conceptual frame of this study. The strengths, weaknesses, opportunities and threats are described from a sustainability perspective in the subsequent section (results and discussion section). The article concludes with the implications of this study, and underscores future priorities to develop the sustainable tourism industry in the country.

2. Conceptual Framework of the Study

Sustainable development has been defined by the Brundtland Report as 'the development that meets the need and demand of the present generations without compromising the ability of future generations to meet their own needs' (Brundtland, 1987). The idea of sustainability integrates economic, social and environmental aspects.

Sustainable tourism development involves balanced social, economic and cultural development without endangering the environment, which enables the development of the same or higher level (Angelevska-Najdeska & Rakicevik, 2012). United Nations World Tourism Organization [UNWTO] (2017) defines sustainable tourism as 'tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities'. Major influences on sustainable tourism have also included more broad reaching agreements, strategies and international meetings related to sustainability, including World Conservation Strategy 1980, Brandt Commission Report 1980, World Tourism Organization Manila Declaration 1980, UNEP/WTO Accord 1982, the Brundtland Report, 1987,

and the United Nations Conference on Environment and Development (UNCED-Earth Summit) in 1992 (Romeril, 1989; Richins, 2009). The 2030 Global Agenda for development has also acknowledged the contribution of the tourism industry to achieve Sustainable Development Goals (SDGs) by 2030 (United Nations, 2018). Three targets of three different goals of SDGs directly relate to tourism industry; these are as follows (United Nations, 2018) (Table 1):

Table 1: Indicators on sustainable tourism in SDGs (Source: United Nations 2018)

Goal	Target
Goal 8	8.9: By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products
Goal 12	12.b: Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products
Goal 14	14.7: By 2030, increase the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism

Therefore, SDGs calls for implementing policies on sustainable tourism; creates jobs, promote local cultures and products; and increase economic benefits through sustainable tourism (United Nations, 2018).

Sustainability in tourism has three interrelated issues, viz, environmental, socio-cultural, and economic and it aims at preventing or minimizing ecological, cultural and social impacts (UNEP, 2005). Sustainable tourism is not a type of tourism, instead, a condition of tourism which is based on the principles of sustainable development (UNEP & UNWTO, 2005). This approach may offer high quality tourist satisfaction, improve quality of life involving local communities (UNEP, 2005).

3. Objective of the Study

Bangladesh is gifted with evergreen hills, long sandy beaches, luxuriant tropical rain forests, and a rich cultural heritage (Islam & Nath, 2014). The unique biogeography of the country may be an important factor in augmenting global tourism demand. Many people might be surprised to learn it has three World Heritage sites (Honeck & Akhtar, 2014). However, this industry is not fully flourished; rather, it is in a developing stage (Alam,

Furukawa & Akter, 2010). This industry is growing in an unplanned and haphazard way. On the one hand, uncontrolled expansion of tourism is likely to cause environmental degradation, but on the other, environmental degradation associates with tourism activities pose serious problems to tourism-rich regions (Neto, 2003). It is necessary to develop sustainable tourism industry. Thus, the objective of study was to analyze the strengths, weaknesses, opportunities and threats of tourism industry in Bangladesh from a sustainability perspective to explore the potential implications of developing sustainable tourism.

4. Methodology

The author employed a qualitative case story approach for this study. Such an approach is very useful tool in studying complex phenomena (Baxter & Jack, 2008). This study also uses descriptive case study techniques to describe the phenomena.

Table 2: Background of the respondents

Background of the respondents	Number of respondents	Respondents code	Age (years)	Remarks
Academicians	n= 15	R1 to R 15	Age range: 30 to 55; Average age: 42.2 years	Both from public and private universities
Independent consultant	n= 1	R 16	46 years	More than 15 years of experience in the tourism industry
Tour operators	n= 2	R17, R 18	Age range: 34 to 47, Average age: 40.5 years	Have long experience in tour operations
Travelers(service holders)	n= 2	R 19, R 20	Age range: 28 to 30, Average age: 29 years	At least one tour in a quarter
Total	N= 20			

A survey was conducted by the author to collect data for this study. It was conducted in Dhaka, the capital city of Bangladesh. There was no sampling frame for this study. To identify respondents, the author used the purposive random sampling technique. The author also applied snowball sampling tool to identify 80% (n=12) of academics. Snowball sampling is very useful when researcher need to locate hard-to-find population, or when the sampling frame is unavailable, or to identify the hidden population (Sadler, Lee, Lim, & Fullerton, 2010). The author purposively included the majority of the respondents (75% of total respondents) from academic institutions. The reason behind this overrepresentation of academicians is that the concept of sustainable tourism is relatively new in the country. The author believes that academics have more knowledge about sustainable tourism than other respondent groups. Data were collected during the 3rd and 4th week of January 2017. The interview was conducted first in Bengali and has then translated in to English.

Data were collected using semi-structured interviews with 20 individuals (details of the respondents are given in Table 2) using checklists. Face-to-face interview techniques with the respondents' were adopted. The detail methodological follow chart has given given in Figure 1.

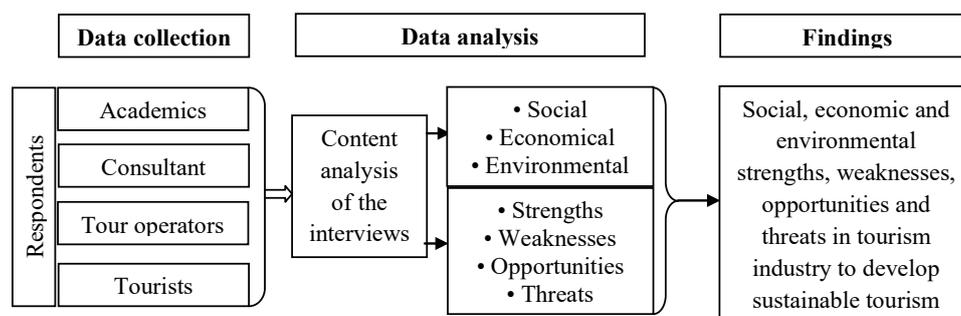


Figure 1: Methodological flow chart

The author took informed consent from all respondents before the interview and applied both traditional (note taking) and scientific (recording of interview) methods of interview data collection. A voice recorder was used to record the discussions with the permission of all interviewees. In the end, the data collected were analyzed and presented as thick description with juxtaposition. The texts were segregated into the SWOT matrix from social-cultural, economic and environmental perspectives. To maintain the confidentiality and privacy of respondents, the author de-identified the names from their quotes (Mondal, 2017b).

5. Analysis and Discussion of Results

The results from this study were presented using SWOT matrix (Table 3). The following section describes these factors from socio-cultural, economic and environmental point of views.

5.1 Strengths, Weakness, Opportunities and Threats of the Bangladesh Tourism Industry

5.1.1 Strengths in Tourism Industry

A. Environmental: Bangladesh has a subtropical monsoon climate and experiences heavy rainfall in the rainy season, high temperature in the summer and moderate cool in the winter. This seasonal rhythm clearly indentifies distinct rainy, summer and winter seasons. The northern region of the country is located near the foothills of Himalaya and the southern zone is exposed to the Bay of Bengal. The topography of the country is steeply downhill from the northern region to the southern region. The country has greenery and unique natural beauty with distinguishing faunal and floristic composition, including a large river network (Ganges, Brahmaputra and Meghna river system). The country is also blessed with the longest sea beach of the world in Cox's Bazar (155 km long sea beach); the largest contiguous mangrove forest (Sundarbans mangrove forest has been recognized as an United Nations Educational, Scientific and Cultural Organization [UNESCO] World Heritage Site); and tertiary hills in the Chittagong Hill Tracts and Sylhet. As a result of the flat topography, most tourist spots can be reached within 6 to 12 hours by road or on water ways from Dhaka. Its natural resources should make this country one of the most appealing destination spots of the world. The country also has abundant sunny days. These physical characteristics indicate huge potentiality for developing natural tourism. According to one respondent:

'We have unique seasonal rhythms, comfortable climate, longest sandy sea beach, largest mangrove forest, and tertiary hills'. (Respondent: R 11)

B. Socio-Cultural: Bangladesh is full of with UNESCO declared world cultural heritage sites, such as, including 'Ruins of the Buddhist Monastery, Paharpur, and 'Historic Mosque City, Bagerhat'. The country also has several ancient archaeological remains, such as Lalbagh Fort, Mahansthagarh, Kantanagar Temple, Halud Vihara, Lalmai-Mainamati monuments, Jaggadala Vihara, Wari Bateshwar and many more. These ancient remnants represent Islam, Buddhist and Hindu religion. The country has a distinctive Bengali culture with strong religious harmony among the people. As per the respondent:

'The country has a long historical background. The traditional and cultural features of the country are unparalleled in the world.' (Respondent: R 6)

Bangladeshi people are very simple and hospitable to guests. They have their unique traditions to satisfy their guests. Bengali cuisine is also unique for its culinary style. Moreover, solemnization of colorful holidays and religious festivals bring all segments of people under a common platform. According to one respondent:

'Bangladeshi people and cuisine are really unique in the world' (Respondent: R 4)

Bangladeshi handicrafts have become very popular in both at home and abroad. Different geographical regions of the country are famous for their diverse handicrafts that represent rural livelihoods of the country. The most common craft products are *Nokshikatha* (embroidered quilt), *Sital Pati* (one type of mat which is made from cane and possesses natural cooling effect), bags, wall hangings, baskets, potteries, cushions, dresses, toys, carpets, terracotta, traditional jewelries, silk products, woven clothes, and many more. All these products are made from environment-friendly raw materials such as jute, bamboo, coconut shells, cane, wood, straw, natural fibers, and so on. Bangladesh has received geographical identification (GI) of *Jamdani Sari* (one of the finest cloth with decorative motifs) which has international demand. As one academic has informed:

'Bangladeshi handicrafts and handlooms have worldwide reputation. A sustainable business strategy might help both local communities as well as other stakeholders. The most important thing to rate is that we have already received GI of Jamdani Sari.' (Respondent: R 14)

C. Economic: The government is eager to promote the tourism sector of the country. To do so, the government has formulated the 'National Tourism Policy 2010' and has taken several tourist friendly measures, including 'visa on arrival policy' and conditional 'no visa required' policy. As a result, investment in this industry has been increasing. According to one respondent:

'Developing sustainable tourism requires strong willingness from the government. One of the important aspects is that the government has already acknowledged the contribution of the tourism industry for the development of the country.' (Respondent: R 16).

The economic growth of a country depends on the supply of youth labour forces. Bangladesh has now abundant labor forces. The percentage of working group people (15-59 years) to the total population has crossed 64%

Table 3: Environmental, Socio-cultural and Economic Strengths, Weaknesses, Opportunities and Threats of Tourism Industry

	Environmental	Socio-cultural	Economic
Strengths	<ul style="list-style-type: none"> • Different appealing tourist spots • Unique biodiversity with fascinating natural beauty and greenery • Mostly flat topography (80% of total land) with tertiary hills (12% of total land) • Abundant sunny days for natural tourism • Distinct rainy, winter and summer season 	<ul style="list-style-type: none"> • UNESCO declared cultural heritages • Ancient archeological remnants • Religious harmony • Unique Bengali culture • Local people are very hospitable and tourist friendly • Colorful festivals for all religions • Unique traditional handicrafts and handlooms 	<ul style="list-style-type: none"> • Positive attitude of government to promote tourism • Investment in tourism is increasing • Abundant young labor force supply
Weakness	<ul style="list-style-type: none"> • Inadequate initiatives to protect natural environment • Improper management of natural resources • Lack of knowledge to develop sustainable tourism 	<ul style="list-style-type: none"> • Inadequate safety and security for tourists • Political biasness to regional development • Absence of separate ministry on tourism • Limited community participation in tourism project development • Lack of organizational coordination 	<ul style="list-style-type: none"> • Insufficient fund to conservation tourist spots • Poor infrastructure and weak investment base • Fails to attract brilliant business professionals • Lack of representation of other disciplines professionals • High profit motive attitudes • Inadequate management of tourist products • Underdeveloped tourism marketing and supply chains

	Environmental	Socio-cultural	Economic
Opportunities	<ul style="list-style-type: none"> • Develop nature tourism • Monitoring and conservation of natural ecosystems 	<ul style="list-style-type: none"> • Increasing numbers in domestic tourism • Develop pilgrimage and cultural tourism • Favorable government policies to attracts young and NRB business professionals 	<ul style="list-style-type: none"> • Develop explicit marketing strategies • Opportunity to promote community level entrepreneurship • Mobilization of locally available resources and diversification economic activities • Employment generation at local level • More attractive and competitive local tourist products
Threats	<ul style="list-style-type: none"> • Unsustainable extraction of natural resources • Destroy vulnerable natural ecosystems • Smuggling of ecosystem resources • Natural disasters may hinder tourism industry • Changes in landcover and landuse by executing mega tourism projects 	<ul style="list-style-type: none"> • Alien culture entry to manage mass tourism • Political turmoil and militant attacks • Trade or labor union menaces • Lack of political commitment by the political parties • Favorable tourism policies of neighborhood countries 	<ul style="list-style-type: none"> • Big investments may fail optimum returns • Inadequate fund may hamper tourism expansion and branding

in 2015 compared to 50% in 1970 (United Nations Department of Economic and Social Affairs Population Division [UNDESA], 2017). This transition in age structure offers a new window of opportunity for economic growth of the country. This economic dividend can be reaped through engaging working age people in the productive works. Government jobs are limited in Bangladesh and government is incapable of absorbing these huge youth labor forces into the formal jobs sectors. These large number of youth pool is one of the major strengths of the country who can be engaged in tourism sector. According to one respondent:

'Bangladesh is now running through demographic dividend. We have a large number of youth people. We could engage them in tourism industry development. This will help us to solve the unemployment problem of the country. (Respondent: 01)

5.1.2 Weaknesses in Tourism Industry

A. Environmental: Conservation of natural resources and heritages are important determinants of sustainable tourism. Natural resources and habitats are being destroyed because of inadequate awareness on the protection of the environment. According to one academic:

The major drawback in developing sustainable tourism industry is knowledge on natural resources conservation. People have limited understanding of sustainable tourism. Often people conceptualize this approach (sustainable tourism) from the economic aspect only.' (Respondent: 15)

B. Socio-Cultural: Safety and security determine the number of domestic as well as inbound tourists. Inadequate safety and security discourages tourists to visit a country or even a region. Hijacking and snatching of tourists valuables are common in Bangladesh. Some recent terrorists' attacks have led reduction in the number of inbound tourists in Bangladesh. According to one respondent:

'I was roaming around the Chittagong city at around 9 pm. I was suddenly attacked by some hijackers. They snatched away my wallet and mobile phone.' (Respondent: 19)

Lack of political commitment often leads to regional bias. As a result, prospective tourists' spots are being overlooked. For example, the northern region of the country is renowned for its archaeological monuments, and the potentiality to develop rural tourism, agricultural tourism, nature tourism, winter tourism, as well as cultural and historical tourism. Unfortunately, this region is not well recognized as a tourist destination due to lack of promotional activities by policymakers. There is no separate ministry for

the promotion of the tourism industry. At present, this industry is under the 'Ministry of Civil Aviation and Tourism'. According to one respondent:

'I love the natural beauty of north Bengal. There are many unexplored cultural relics here. Unfortunately, these areas are not tourist friendly.' (Respondent: 20)

Local communities' participation has always been overlooked in the country. Decisions are, therefore, made behind closed doors. Such a top-down approach fails to address the interest of local communities. Most of the nature conservation projects of the country have failed because of limited community engagement. According to one consultant:

C. Economic: Bangladesh has faced serious funding crisis in trying to conserve its natural resources. Most conservation interventions in the past depended largely on foreign donations. The tourist infrastructure of the country is not well developed. Tourist spots are not often well- managed, due to funding constraints. According to one respondent:

'Poor road network, weak transport connectivity, uncomfortable transport, unsatisfactory hotels and lodging services are some of the weaknesses of this industry.' (Respondent: 03)

Although tourism industry of the country has ample potentiality, investment in this industry is still considered to be high-risk. The weak financing base often discourages business professionals from marketing tourist products. This industry also fails to draw the attention of brilliant business professionals. It industry fails to engage environmental professionals. As a result, issue related to the environment is mostly overlooked in project development. Furthermore, empirical research on tourism is still quite inadequate. As stated by one academic:

'To develop the sustainable tourism industry, the policymakers should consult with all relevant stakeholders, including academics, such as economists, environmentalists and socialists.' (Respondent: 07)

High- profiting attitude is another drawback of this industry. Tourism products (such as hotels rooms, travels, foods) are very expensive in Bangladesh compared to those neighboring countries. As a result, domestic tourists tend to spend their holidays abroad. According to a respondent:

'I am a frequent traveler at both home and abroad. But tourism is more expensive in Bangladesh than in to neighboring countries (India, Nepal and Bhutan) and East Asian countries (Thailand & Malaysia). I often spend my holidays abroad. Food, accommodation and transport costs in some

Sustainable tourism aims to promote local economy and encourage tourists to purchase locally made products. Unfortunately, most tourist products in most destinations are not locally made. As one respondent observed:

'You will hardly find local product in tourist spots. I visited Cox's Bazar and Rangamati the last winter. I was trying to purchase some gifts for my family. I found that most of the goods available were made in Myanmar (locally known as 'Burmese product.' (Respondent: R 19)

Tourist spots and hotels of the country are not properly designed and managed. Services offered are not always tourist friendly. There might be several reasons behind these dissatisfactions, including inadequate tour operators, and lack of training and knowledge on tourists demand management. Now-a-days, tourists want to get requisite information on destinations from their origins. But website based information on tourist products of the country are inadequate and backdated. Most of the information on tourist products are in Bengali. According to one consultant:

'Tourism marketing and supply chains are not properly developed. Tour operators cannot offer lucrative destination packages for domestic and foreign tourists. They have inadequate knowledge about selling tourism products, and mostly rely on unconventional marketing strategies. These factors rated lower level of tourist satisfactions.' (Respondents: R 16)

5.1.3 Opportunities in Tourism Industry

A. Environmental: Bangladesh has diversified biotic and abiotic natural resources, distinct seasonal rhythms, and unique geographical variations. These diversities are well enough to develop nature based tourism, including winter tourism in the northern region, beach tourism in the coastal zone (e.g. Cox's Bazar, Kuakata), forest tourism (mangrove forests, deciduous forests and evergreen forests), agro tourism, and river tourism. As one respondent notes:

'We have ample prospect to develop nature- based tourism, we can even have the benefit of our large and wide river network and can establish river cuisine.' (Respondent: 02)

Bangladesh is one of the most climate vulnerable countries of world and has already experienced some adverse effects of climate change on the lives and livelihoods of its people. But the people of the country have been developing their own strategies to adapt to adverse climatic conditions. The country is a role model of climate adaptation. These adaptation models could be sold as tourist products. Therefore, the country also has the opportunity to materialize

'adaptation tourism' as a tourist product. Sustainable tourism is considered the most desirable form of tourism development in particular reception areas, especially one that preserve the most natural and cultural authenticity values (Butowski, 2012). Planning of sustainable tourism development actually concerns planning to preserve the environment (Angelevska-Najdeska & Rakicevik, 2012). Chronological changes in landcover of tourist spots can be monitored by using remote sensing and Geographic Information Systems (GIS). Real time monitoring might help policymakers to adapt well-managed environment conservation decisions. Moreover, communities will be vigilant about protecting nature spot if they can understand that they will benefit from doing so. According to an interviewee:

'Sustainable tourism not only creates economic opportunity but also promotes conservation of natural ecosystems. If communities get benefits from sustainable tourism practices, they will also take the responsibility to conserve their environment.' (Respondent: 05)

B. Socio-Cultural: There is a growing interest in domestic tourism among locals. This is a great opportunity for tourism stakeholders to keep up the influx of tourists by improving the quality of tourist spots as well as services. As a respondent observes:

'The good news is that the number of domestic travelers has increased in the last few years. Tourism stakeholders should utilize this opportunity for the sustainable growth of this industry.' (Respondent: 10)

Festival tourism is growing fast (Stankova & Vassenska, 2015). Festivals have the potential to provide opportunities for sustainable local economic development (O'Sullivan & Jackson, 2002). For Bangladesh such opportunities remain unexploited. Hundreds of religious and cultural festivals are observed by natives every year. The country has glorious archaeological remains of Buddhist dynasties. 'Mosque based tourism' and 'festival tourism' can also be promoted. The country could also host international events, including international sports events, workshops, seminars, and conferences to promote inbound tourism. According to a respondent:

'Bangladesh is a land of cultural diversity and has religious harmony. This country is also recognized as the foothills of Lord Buddha. There is an opportunity to develop and promote its Buddhist heritage for Buddhist pilgrims and non-Buddhists.' (Respondent: 16)

The Government of Bangladesh is eager to promote tourism industry. invest in tourism industry. Moreover, non-residence Bangladeshis (NRB) could be interested in investing in this industry with favorable government

policies. In addition, government should allocate sufficient funds for research and development in this sector. As per the respondent:

'Government could attract youths and NRBs to invest in the tourism industry. It might play an important role in the successful growth of this industry.' (Respondent: 17)

C. Economic: Explicit marketing largely depends on the use of branding and packaging. Bangladesh is now in the early stage of its tourism industry. Many tourist spots are still unexplored. There is ample opportunity to sell these tourist products through explicit marketing strategies, such as updating website information on tourist destinations, tour operators, facilities and services, and developing posters, brochures, pamphlet and leaflets on tourist spots for branding. The content of online and offline marketing strategy should be in English and Bengali to attract a wider audiences. According to one respondent:

'We could do more to brand our tourist products. This will increase the number of domestic and inbound tourists.' (Respondent: 18)

Sustainable tourism can promote community engagement and create opportunities to develop community level entrepreneurships. Community entrepreneurship might help to mobilize locally available resources through diversification of economic activities. Therefore, a community's interests can be well preserved through this approach. If we can ensure sustainability of the tourism industry, the benefit of tourism may not only bring enjoyment for tourists but, more importantly, maximize economic benefits and thus increase the living standards of host communities and countries (Neto, 2003). As one academic asserts:

'Sustainable tourism is a win-win approach. Community level entrepreneurships will create more employment at the community level. As a result, communities will be benefitted directly through such entrepreneurship.' (Respondent: 12)

5.1.4 Threats to Tourism Industry

A. Environmental: Unplanned and uncontrolled influx of tourists in ecologically vulnerable tourist spots (e.g. forests and archaeological sites) might destroy the environment. Excessive demands on tourist products can increase unsustainable natural resources extraction. In addition, smuggling of wildlife (deer, Bengal tiger, snake venom, and so forth), timbers, herbs and archaeological resources is a problem. As one respondent refers:

'I am concerned about the unplanned expansion of tourism industry. Unplanned tourism can affect local environment badly. We need special care to

develop tourist spots in fragile ecosystems especially UNESCO declared natural and cultural heritages. ' (Respondent: 08)

Development of tourism requires huge investments and infrastructures, including execution of mega tourism projects such as hotels, resorts, tourist spots, and so on. These interventions are associated with conversion of natural landscapes and agricultural lands. As a result, agricultural production may be hampered. According to an academic:

'The reality is that government may permit to executing mega tourist projects without proper socio-economic and environmental impact assessment. These will hamper the motto of sustainability. ' (Respondent: 09)

Bangladesh is a disaster prone country and every year disaster visits it. Notable disasters are floods, cyclones, droughts, and so on. The socio-economic and environment losses and damages from such disasters are huge. Natural disasters pose major threats to the tourism industry. Private insurance markets for the damage of property and livelihoods by disasters do not exist in Bangladesh (Akter et al., 2011). An academic observes:

'We do not have improved insurance policy for disaster losses. Community level investment might be washed away by disasters. It will be difficult to build back again. ' (Respondent: 09)

B. Socio-Cultural: Around 66% people of the country lived in rural areas in 2015 (World Bank, 2017). Most tourist spots of the country are located in the country sides and in hilly areas. Hill Tracts are homelands of majority of ethnic communities. Mass tourism may destroy ethnic and grassroots culture because of the invasion of alien culture. According to one respondent:

'Sustainable tourism promotes local cultures. But how can we preserve local cultures? In general, we adopt foreign cultures too quickly. ' (Respondent: 04)

Political turmoil and terrorists attacks can be treated as the threats to the tourism industry. Political parties support trade and labor unions (including transport unions) threaten this industry. The government is often unable to control these unions. In addition, corruption of government officials and transition of government may affect the tourism industry. International geo-politics can hamper tourists' arrival. For example, recent terrorist incidents (e.g. Dhaka attack in July 2016) in some places defer tourists. One respondent asserts:

'The number of foreign tourists has been decreasing in the last pentad. I would like to mention major two reasons, one is political and another Islamic militant attacks. ' (Respondent: 07)

In addition, the aviation industry of the country is not equipped adequately to manage mass tourism. Local transport systems are controlled by labor unions. Failing to control burgeoning trade and labor unrest may lead to mismanagement in the transport system. According to one respondent:

'We need to recast the whole aviation industry and control different unions for the successful growth of tourism industry.' (Respondent: 03)

Tourism policies of Nepal and India could also affect the tourism industry of Bangladesh. If these neighborhood countries adopt more tourist friendly policies, Bangladesh will be affected badly. According to one academic:

'Bangladesh has to compete with India and Nepal. Tourism strategies of India and Nepal will influence us either positively or negatively.' (Respondent: 13)

C. Economic: Tourism development requires huge investment and promotional activities. Inadequate funding may hamper physical expansion of tourist projects and marketing of tourist products. A respondent notes:

'Big investments in tourism industry may fail to reap sustainable return to investors because of socio-cultural, political and environmental threats.' (Respondent: 15)

6. Conclusion

This study classified SWOT factors into environmental, socio-cultural, and economic dimensions. It is true Bangladesh has unique environmental and socio-cultural strengths, including unique geography, climate, biodiversity, culture relics and traditions that can be easily transformed into touristic elements. The country also has the opportunity to develop sustainable tourism using its scenic beauty and archaeological heritage. This industry can also generate employment as well as develop community level entrepreneurship. However, socio-cultural and economic weaknesses, such as political instability, inadequate branding, poor infrastructures and investments, and improper marketing strategies may limit growth of this industry. Uncontrolled and unplanned tourism are major threats for the tourism industry as well. Such threats could damage the natural environment through unsustainable resource extractions and socio-cultural environment because of the invasion of alien cultures. However, these weaknesses and threats could be tackled by ensuring security for travelers, better planning, strict environmental legislation, educating people, and infrastructure development. Above all, achieving sustainability in tourism industry requires systematic continuous monitoring.

The concept of sustainable tourism is at its infancy stage in Bangladesh. This study applied the sustainability concepts to identify the strengths, weaknesses,

opportunities and threats of tourism industry using qualitative inquiry. The tourism industry of the country is growing in an unmanageable way. On the other hand, the country can develop itself as an important tourist destination. Finally, the country has immense opportunities to create jobs for youths, promote local culture, encourage local entrepreneurships, and above all increase economic benefits through developing sustainable tourism which will contribute to achieving the targets of SDGs by 2030.

This empirical study provided an in-depth overview of SWOT to develop sustainable tourism industry in Bangladesh from a sustainability perspective. This study collected data from academics, tourism consultants, tour operators and tourists. It did not conduct any interview with government officials, who are among the key stakeholders of this industry. Moreover, another drawback of this study related to exclusion of local community's voice. Further study should engage all relevant stakeholders and may yield more interesting and robust findings thereby. Moreover, the sample size was also small. Therefore, caution is required before generalization of results. Nevertheless, this study will be particularly helpful for policymakers and other interested groups for better sustainable tourism planning. Indicators that were identified could also be used for future study.

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Factors Affecting the Satisfaction and Dissatisfaction of Bankers: A Study of a Private Commercial Bank in Bangladesh

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Abstract

Human resource is the only competitive tool that can be protected from imitation by competitors. Highly satisfied employees contribute in acquiring competitive advantage. Contribution Factor and Return Factor explain the satisfaction level of a banker. Not only compensation package (Return Factor) but also good-to-work surroundings (Contribution Factor) can increase the satisfaction level of an employee. Employers must consider the two factors to create a pleasant working environment which will result in a bunch of satisfied and motivated employees who can become the source of competitive advantage for the organization.

Keywords: Job satisfaction, Private bank and Factor analysis.

1. Introduction

Surpassing the competitors in merely a competitive world requires the possession of unique competency by an organization. Possessing unique technologies, processes, procedures, methods, and unique financial resource will not guarantee a sustainable competitive hold in a competitive market. Imitation threatens the exclusiveness of these non human resources. Thus an organization must focus on recruiting, selecting retaining and developing efficient employees to sustain as well as supersede its competitors. However, only having large number of highly qualified employees will not bring a better performance of organization. Ali and Ahmed (2009) conclude that due to the changes in reward or recognition programs, there will be corresponding changes in work motivation and satisfaction.

In other words, changes in remuneration and recognition will enhance motivation and thus lead to higher level of job performance. Satisfied employees will perform better than unsatisfied ones. Thus job satisfaction is an important concern for all business organizations. Hoppock (1935) defines, job satisfaction as any combination of psychological, physiological and

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environmental circumstances that cause a person truthfully to say “I am satisfied with my job.” Job satisfaction represents a combination of positive or negative feelings that workers have towards their work. By bringing efficient employees closer and then increasing their satisfaction should be the central strategic focus of any organization. Thus organizations should design their tasks, organization climate and compensation package in a manner that will increase the satisfaction of their employees. In a service industry, the most important resource is human resource (Batt, 2002). The main objective of this paper is to find out the factors that influence the job satisfaction of employees in banking industry and also provide guidelines to enhance the job satisfaction of personnel in organization.

2. Literature Review

Job satisfaction is the positive attitude of a person toward his/her job. It is combination of positive or negative feelings that workers have towards their work. Job satisfaction is an evaluation of what a person is contributing to the organization and what one is getting in return from it. It is closely linked to that individual's behavior in the organization (Davis et al., 1985). Vroom describes job satisfaction as affective orientation on the part of individuals toward the work with which they are presently engaging (Vroom, 1964). There are several factors that can influence the overall satisfaction of an employee. Job satisfaction is the key outcome that emerges from recognition, income, promotion, and the achievement of goals (Kaliski, 2007). Organizations want employees who can contribute for the betterment using the maximum capabilities and employees will utilize maximum potential when they will find fulfilling the organizational objectives will translate into the fulfillment of their personal goals. Here, job satisfaction comes into play. Job satisfaction will increase if work-role outputs mean ‘pleasures’ increase relative to work-role inputs called ‘pains’ (Sousa-Poza and Sousa-Poza, 2000). If any disequilibrium situation comes into play, employees may get depressed. The term job satisfaction refers to attitudes and feelings people have about their work.

Firstly, Positive and favorable attitudes towards the job indicate job satisfaction on the other hand negative and unfavorable attitudes towards the job indicate job dissatisfaction (Armstrong, 2006). Job satisfaction varies because of demographic diversity. For example, age, gender, education and tenure can have profound impact on job satisfaction. The gender and job satisfaction paradox (Kaiser, 2002) or the paradox of the contented female worker (Bender et al., 2005) reveal that women account higher job satisfaction than men even after having a clearly disadvantaged position in the labor market in terms of salary, recruitment/dismissal,

promotions and career opportunity. In my study this view has been reflected in the same manner.

However base salary is considered as the main factor for job satisfaction, other factors such as the promotion and recognition of work have a lot of impact on it (Saba et al., 2013). As job satisfaction is the juxtaposition of multi-facet elements thus concentrating on any element will not provide a real picture. At present only wages, promotion and recognition will not increase job satisfaction. Positive and significant association have been found between job satisfaction and management practices such as team work, independence and leadership positions (Hunjra et al., 2010). Thus organizations should try to create an encouraging “Human Resource Policy” and build a congenial work environment that can ensure job satisfaction. Hanif and Kamal (2009) argue that if companies producing favorable strategies and rules for the employees related to pay scales, policy development, staff input, and the work environment, may lead to employee engagement, satisfaction and increased employee loyalty with the organization. Since satisfied employees are more likely to be welcoming and attentive.

Abdulla et al. (2011) examine the relationship between job satisfaction and environmental and demographic factors and found environmental factors (such as salary, promotion and supervision) better predictors of job satisfaction compared to demographic factors (such as sex, age and education level as well as other factors related to their work experience, such as job level, shift work, and years of experience). Autonomy to make decision and recognition of any accomplishment can increase job satisfaction. Abu Elanain (2009) notes that employees of UAE prefer clear goals and objectives and well defined lines of authority and autonomy. The dissatisfaction of employees is one of the prime reasons for poor services in banking industry of Bangladesh (Hossain, 2000). All employees are not equally satisfied with each factor and Dissatisfaction arises among most of the employees are because of compensation package and sequentially reward and motivation, career growth, training and development, management style, and job design and responsibilities (Majumder, 2012). As the present banking system is being changed and the generation working now in banking industry is changing, the purpose of this paper is to identify and evaluate the factors and forces which either enhance or demean the satisfaction and dissatisfaction of employees in banking industry of twenty-first century.

3. Methodology

Primary data have been collected through responses to a structured questionnaire

distributed employees of Private Bank¹ working in Head office as well as in different branches. Three studies that used the Job Description Index (JDI) as the instrument to measure job satisfaction were reviewed (Christian, 1986; Donohue, 1986; Fain, 1987). By reviewing literature and consulting with the Human Resource Executive, job satisfaction data were collected on fourteen variables which are the components of Job Description Index (JDI). Kennerly (1989) measured job satisfaction with the Index of Job Satisfaction, on 18-item scale using a 5-point Likert-type scale, with a high score indicating a high level of satisfaction. Questions were developed using five point Likert scale (e.g. 1= Highly Dissatisfied, 2= Dissatisfied 3= Neutral - neither Dissatisfied nor Satisfied), 4= Satisfied, 5= Highly Satisfied). Out of 160 questionnaires were sent but 134 complete and usable questionnaires were returned back. Thus the response rate is 83.75%. In this writing, the research has used factor analysis techniques to identify the underlying dimensionality of the variables that are related to job satisfaction. MS Excel and STATA 11 software package have been used for analysis. Factors influencing the job satisfaction change as people's perceptions and attitude change. Thus, this paper aims to identify the factors influencing the job satisfaction of employees working in banks. For analysis, consulting with scholars from human resource discipline the variable using skills learnt in academic institution has been extended. This paper will help the organizations and academics to understand the condition of job satisfaction of employees of banks at this time.

4. Analysis and Discussion of Results

After collecting the data from respondents, the reliability test and the central tendency of data was measured. Then through the factor analysis the underlying factors have been identified. The internal reliability of the items was tested using Cronbach's alpha. Ideally the Cronbach alpha coefficient of a scale above should be 0.7. In this current study the Cronbach alpha coefficient was 0.8.

From the data it can be observed that employees are very satisfied with the relationship with the coworkers (*Mean=4.05*). On the other hand employees were dissatisfied with take-home-salary (*Mean=2.71*), benefit and allowance (*Mean=2.71*) and promotion (*Mean=2.71*). Regarding all other factors, employees had a moderate level of satisfaction (Table: 5), of whose means are in between 3.16 and 3.67. An independent t-test (Table: 5) was conducted to measure the difference in satisfaction of male and female employees regarding different elements of job satisfaction.

¹The name of the bank was requested not to use.

The T-test shows that there is a significant difference between male and female employees regarding routine job and training provided by the organization.

Table 1² : Correlation Matrix

(obs=134)

	alltasks	indepn-e	rtnjob	vluaadd-g	useskill	relsruer	relcowrk	corcul-r	comtop	tkhmsa-y	benall-c	traning	promot-n	recogn-n
alltasks	1.0000													
independence	0.6717	1.0000												
rtnjob	0.5080	0.3466	1.0000											
vluaadding	0.2335	0.2907	0.2828	1.0000										
useskill	0.1436	0.2728	0.2535	0.3070	1.0000									
relsruer	0.5399	0.3839	0.4190	0.3709	0.3587	1.0000								
relcowrk	0.5807	0.4833	0.2869	0.2183	0.3613	0.6150	1.0000							
corculr	0.4474	0.3654	0.4055	0.3624	0.4097	0.6177	0.6411	1.0000						
comtop	0.2461	0.2728	0.1057	0.3422	0.2381	0.2397	0.3966	0.3508	1.0000					
tkhmsalry	0.0661	0.2565	-0.1004	0.1149	0.1289	0.0523	0.2184	0.1422	0.3783	1.0000				
benallmc	-0.0272	0.1710	-0.0252	0.2610	0.1605	0.1260	0.1790	0.1498	0.5404	0.6193	1.0000			
traning	0.1109	0.3153	0.1038	0.3806	0.2158	0.1023	0.1917	0.1433	0.4048	0.3237	0.5540	1.0000		
promotion	0.0877	0.1325	-0.0940	0.0483	0.1390	0.1038	0.2209	0.1923	0.3940	0.3352	0.5293	0.3230	1.0000	
recognition	0.3314	0.4503	0.1036	0.0769	0.2714	0.5675	0.4731	0.3864	0.2953	0.1168	0.1971	0.1406	0.1259	1.0000

Prior to performing Factor Analysis the suitability of data was assessed. Inspection of the correlation matrix (Table 1) revealed the presence of many coefficients of .3 and above. The Kaiser-Meyer-Oklin value was 0.76 (Table 2) exceeding the recommended value of 0.6 (Kaiser, 1970, 1974) and supporting the factorability of the correlation matrix. Factor Analysis (Table 3) revealed the presence of two factors with eigenvalues exceeding 1, explaining 60.84 % and 26.53 % percent of the variance respectively. These two factors explain 87.93% of the total variance. An inspection of the scree-plot (Graph 1) revealed a clear break after the second factor. Thus it was decided by whom to retain two factors for further analysis. Retaining two factors was further supported by the results of Parallel Analysis, which indicates that two factors should be retained. The dashed line for parallel analysis in the graph cross the solid line before reaching the third component. To aid the interpretation of these two components, Varimax Rotation was performed. The rotated solution (Table 4) revealed the presence of simple structure, with both factors a number of strong loadings except the variable-comtop, though it has moderately high loading in Factor 2 thus this variable is included in Factor 2. The most important resource for any service industry is human resource. Thus a bank’s success largely depends on recruiting, selecting and retaining satisfied employees. So for sustaining in competitive market every bank needs to have large pool of efficient and satisfied employees. Based on the nature of variables associated in these two factors, the researcher can call the Factor 1 as “Contribution” items and

²The explanation of the terms (variables) are given in the appendix-A.

Factor 2 as “Return” items. Considering the nature of variables these are called

Factor 1	Factor 2
1. All Tasks	1. Ease of Communicating with Top Level Executives
2. Independence in Work	2. Take-home Salary
3. Doing Routine Tasks	3. Benefit and Allowance
4. Value adding in own Department	4. Training Provided by the Bank
5. Using skills learnt in Academic Institution	5. Promotion Procedures
6. Relationship with immediate Superior	
7. Relationship with Coworker	
8. Bank Corporate Culture	
9. Recognition from Superior for any accomplishment	

Contribution Factor	Return Factor
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as contribution factors and return factors. Thus it can be said that job satisfaction of an employee depends on two factors. One is “CONTRIBUTION FACTOR” and another one is “RETURN FACTOR”. All variables are categorized under both factors based on higher loadings (Table 4) and shown in the following table.

Thus job satisfaction of an employee in an organization depends on two types of factors. Satisfaction of an employee will increase, if the overall work environment is made in such a manner that he/she thinks the organization is his/her own. Nine elements are related with what an employee does to an organization and five elements are related with what an employee gets from the organization. The presence and absence of both contribution factors and return factors affect the level satisfactions and dissatisfactions of employees of banking sector.

Table 2: Kaiser-Meyer-Olkin Value

Kaiser-Meyer-Olkin measure of sampling adequacy

variable	kmo
alltasks	0.7148
independence	0.7304
rtjob	0.7291
vladding	0.6826
useskill	0.8273
relsuper	0.7643
relcowrk	0.8615
corcultur	0.8689
comtop	0.8400
tkhmsalry	0.7008
benallwnc	0.6812
traning	0.8135
promotion	0.7342
recognition	0.6768
overall	0.7610

Table 3: Factor Analysis

(obs=134)

Factor analysis/correlation
 Method: principal factors
 Rotation: (unrotated)

Number of obs = 134
 Retained factors = 8
 Number of params = 84

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	4.35885	2.45804	0.6084	0.6084
Factor2	1.90081	1.26580	0.2653	0.8737
Factor3	0.63501	0.07980	0.0886	0.9624
Factor4	0.55521	0.28332	0.0775	1.0399
Factor5	0.27189	0.14018	0.0380	1.0778
Factor6	0.13171	0.03278	0.0184	1.0962
Factor7	0.09892	0.03842	0.0138	1.1100
Factor8	0.06050	0.07101	0.0084	1.1185
Factor9	-0.01051	0.04519	-0.0015	1.1170
Factor10	-0.05570	0.04584	-0.0078	1.1092
Factor11	-0.10154	0.08493	-0.0142	1.0950
Factor12	-0.18647	0.03160	-0.0260	1.0690
Factor13	-0.21807	0.05833	-0.0304	1.0386
Factor14	-0.27640	.	-0.0386	1.0000

Table 4: Rotated Factor Loadings

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Uniqueness
alltasks	0.7686		0.4083
independence	0.6502		0.5321
rtnjob	0.5647		0.6668
vluadding	0.3902		0.7712
useskill	0.4186		0.7819
reIsuper	0.7878		0.3760
reIcowrk	0.7360		0.4105
corcultur	0.7111		0.4664
comtop	0.3158	0.6064	0.5325
tkhmsalry		0.6449	0.5816
benallwnc		0.8602	0.2587
traning		0.5984	0.6155
promotion		0.5720	0.6680
recognition	0.5450		0.6708

(blanks represent abs>Loading)<.3)

Table 5: Variables, their Descriptive Statistics, t-test:

Serial No.	Variable(Short form for using in STATA)	Mean	S.D.	t-test (95%)	Variable (Full form)
1	alltasks	3.49	0.873557	-0.1566	All Tasks
2	independence	3.16	1.091278	-0.7432	Independence in Work
3	rtnjob	3.07	1.000953	-2.1013	Doing Routine Tasks

4	vluadding	3.64	0.9451338	-1.2987	Value adding in own Department
5	useskill	3.30	1.097022	0.1143	Using skills learnt in Academic Institution
6	reلسuper	3.67	1.20635	0.0756	Relationship with immediate Superior
7	relcowrk	4.06	0.979191	0.3377	Relationship with Coworker
8	corcultur	3.25	1.101513	0.409	Bank Corporate Culture
9	comtop	3.16	1.020055	-1.5562	Ease of Communicating with Top Level Executives
10	tkhmsalry	2.72	1.134635	0.4675	Take Home Salary
11	benallwnc	2.75	1.030998	-0.437	Benefits and Allowance
12	traning	3.09	1.093127	-2.3913	Training Provided by the Bank
Seria I No.	Variable(Short form for using in STATA)	Mean	S.D.	t-test (95%)	Variable (Full form)
13	promotion	2.72	1.052115	1.2368	Promotion Procedure
14	recognition	3.58	1.028164	-1.142	Recognition from Superior for any accomplishment

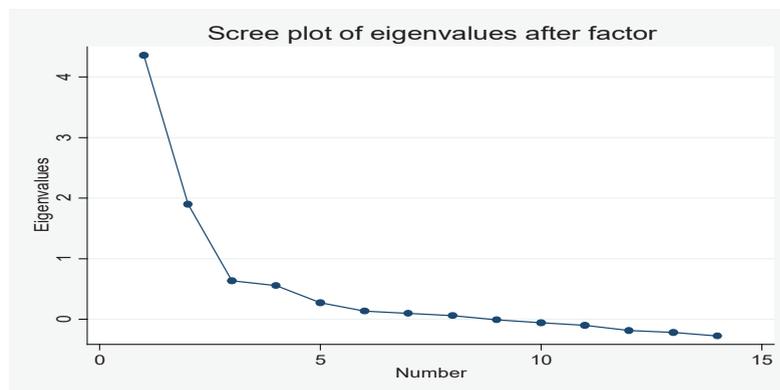


Figure (graph) 1: Scree-Plot

6. Conclusion

The competency on which an organization thrives is an important concern for any kind of business. Creating a group of energetic, efficient and effective employees is one of the best ways to gain the competencies in this competitive market. It is also challenging to retain the efficient human resources all the time. Thus any organization want to ensure higher employee satisfaction should not only consider what it is providing to the employees but also find out whether employees are getting a very conducive internal environment to work. However more variables can be included in the analysis such as demographic structure, ownership structure of banks and corporate governance. These factors may also have some impact in the satisfaction and dissatisfaction of employees. As human resource is the one of the most valuable resources it will give a competitive advantage to the organizations especially in service industry. Considering the present turmoil situation in banking industry in Bangladesh if managements in banking sector can ensure a positive work environment then growth oriented employees will contribute in a constructive manner to this sector (Spector, 1997). Highly satisfied employees are the source of core competency and will ensure long term growth.

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Appendix

Appendix: Explanation of Variables

Code * for Variables	Variables and Its Explanation
all tasks	All Tasks: The attitude (affective) of an employee toward the responsibilities he/she is performing from a position.
independence	Independence in Work: How independently an employee can make decisions from his position.
rtnjob	Doing Routine Tasks: How much structured or unstructured the employee's works are.
vluaadding	Value adding in Own Department: An employee's perception of his contribute to the department he/she is working
useskill	Using Skill leant in Academic Institution: The opportunities of applying the knowledge and skills acquired by an employee form the educational institutions
rlsuper	Relationship with Immediate Superior: How is the relationship between an employee and his/her direct supervisor
rlcowerk	Relationship with Coworker: How is the relationship of an employee with his/her coworkers/peers.
corculture	Bank Corporate Culture: The evaluation of an employee about the bank's corporate values, beliefs, attitudes and practices.

* Shortened form of variables used to run the data in statistical software, STATA.

comtop	<i>Ease of Communicating with Top Level Executives:</i> How much easy for an employee to communicate with top level management
tkhmsalary	<i>Take-home Salary:</i> The satisfaction about the salary he/she gets in every month
bnallwnc	<i>Benefit and Allowance:</i> The satisfaction of an employee about the different types of benefits and allowances given to him/her (e.g. Transportation Allowance, Provident Fund etc.)
training	<i>Training Provided by the Bank:</i> The perception of an employee about the training organized by the bank for skill development
promotion	<i>Promotion Procedures:</i> The perception of an employee about the clarity and objectivity of the promotion decisions taken by the bank.
recognition	<i>Recognition from Superior for Any Accomplishment:</i> The perception of an employee about his/her supervisor unbiased judgement on employees' performances.

The Impact of TQM Practices in Improving Product Quality: Bangladesh Garment Organizations as a Case⁺

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Abstract

The increase in competition, changes in import and export policies, and increased customer consciousness have resulted in organizations focusing on the use of TQM practices to remain competitive. This study identifies the practices of TQM. In addition, this study also examines the association between TQM practices and product quality. It uses data obtained from 133 garment organizations. Results reveal that TQM practices, including leadership (employee empowerment, resource allocation), employee participation (cross-functional teams, employee authority), supplier relationship (supplier audit), and customer focus (customer survey) have positive association with product quality. These findings lead to the conclusion that if sample organizations can achieve quality improvement thorough TQM practices, then other garment organizations of Bangladesh may also do so. It is important to create right awareness for all organizations to realize these improvements.

Keywords: TQM practices, Developing country, Product quality.

1. Introduction

The increase in competition, changes in import, export policies and increased customer consciousness have resulted in organizations focusing on the use of various strategic tools to survive in this increasingly competitive market (Wanderi et al., 2015; Lakhe and Mohanty, 1994). In response, researchers and practitioners have directed their focus on the use of management techniques such as Total Quality Management (TQM) (Cheng, 2009; Wayhan and Balderson, 2007).

The concept of TQM was introduced in the 1920's when a statistical approach was first used for the quality control in the factories in USA (Islam

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and Mustafa, 2008). It is a management approach that focuses on incorporating quality in all organizational processes (Savolainen, 2000). TQM involves systematic activities to efficiently manage all processes of organizations and contribute to the achievement of organizations' goals in order to provide quality goods and services (Khan et al., 2011). It is also an organization-wide philosophy that ensures continuous improvement of products and service quality while simultaneously reducing costs (Grill and Whittle, 1992). It works through quality circles to encourage and meet quality at all levels in order to improve production and reduce wastage (Talib et al., 2011). It is a set of techniques and procedure used to reduce or eliminate variation from production processes. As mentioned by Pheng and Jesmine (2004), the practice of TQM brings several benefits for organizations including higher customer satisfaction, better quality products and higher market share. The use of TQM can change organizational culture and management approaches as compared to the traditional way of managing an organization and quality (Njie et al., 2008). TQM practices can enhance quality in order to increase customer satisfaction (Garrison and Noreen, 2003).

While in developed countries like UK, USA and Japan, TQM has been the common issue for many years in all business sectors, particularly, in manufacturing industry (Chowdhury, 2010), in a developing country like Bangladesh, TQM is also a vital tool for improving quality. While a large number of studies have focused on the practices of TQM (Jaca and Psomas, 2015; Zhang et al., 2012; Haar and Spell, 2008; Sila, 2007; Witcher, 1994; Taylor and Wright, 2003; Gilson et al., 2002; Ismail and Hashmi, 1999; Edwards et al., 1998; Mohrman et al., 1995), there are some studies that focus on the use of TQM from a developing country (Al-Omiri, 2012; Saleheldin, 2009; Turner et al., 2000) perspective. It is important to conduct research on developing countries as they are different from developed countries in many aspects including their political, economic, social and cultural environments. Accordingly, in order to provide further insight into TQM, this study focuses on examining its practices from a developing country perspective.

While various studies have focused on the association between TQM and performance (Basu and Bholap, 2016; Zehir et al., 2012; Corredor and Goni, 2011; Fotopolous and Psomas, 2010; Gadenne and Sharma, 2009; Kumar et al., 2009; Pinho, 2008; Vijande and Gonzale, 2007; Prajogo and Sohal, 2006; Feng et al., 2006; Demirbag et al., 2006; Prajogo, 2005; Seth and Tripathi, 2005; Prajogo and Brown, 2004; Fuentes et al., 2004; Prajogo and Sohal, 2003; Watson et al., 2003; Montes et al., 2003; Rahman, 2001) they have been mainly focused on quality performance (Talib et al. (2013); Zehir et al. (2012), financial performance (Demirbag et al. (2006); Agus and

and Abdullah (2000); Vijande and Gonzale (2007), and non-financial performance (Abusa (2011); Fotopolous and Psomas (2010); Vijande and Gonzale (2007)). There are only a few studies that measure performance in terms of product quality (Zhang et al., 2012). Considering the export orientation of Bangladesh garment industry where ensuring product quality is key to satisfying its buyers, this study considers product quality as an important indicator of measuring performance.

Therefore, the study focused on the following research objectives:

1. To examine the practices of TQM in the garment organizations of Bangladesh.
2. To examine the association between TQM practices and product quality in the garment organizations of Bangladesh.

2. Literature and Hypothesis Development

The developments in the management of quality during the 1980s led increasingly to the use of the practices of TQM (Manni et al., 2003). While several studies (Jaca and Psomas, 2015; Zhang et al., 2012; Haar and Spell, 2008; Sila, 2007; Witcher, 1994; Taylor and Wright, 2003; Gilson et al., 2002; Ismail and Hashmi, 1999; Edwards et al., 1998; Mohrman et al., 1995) have measured TQM practices in terms of leadership, top management commitment, customer focus, employee involvement, employee empowerment, supplier quality management, reward and recognition and culture, this study have chosen four TQM practices, namely leadership, employee involvement, customer focus and supplier quality. These factors were chosen as they have been strongly supported in several studies (Zhang et al., 2012; Fotopoulos and Psomas, 2010; Saleheldin, 2009; Sharma and Gadenne, 2002; Basu and Bholap 2016; Zehir et al., 2012; Kapuge and Smith, 2007; Karim, 2009). Further, this study examines the association of TQM practices with product quality, which is measured in terms of product conformity rate. This performance indicator has been identified from the study by Zhang et al. (2012). The following section discusses the association between TQM practices and product quality.

2.1 Leadership

There is no alternative to effective leadership to successfully attain TQM. According to Ugboro and Obeng (2000), top management commitment plays an vital role in achieving customer satisfaction. The European Quality Award (1994) and the Malcolm Baldrige Quality Award (1999) emphasized the importance of leadership in pursuit of quality improvement. In this study, the concept of leadership is measured in terms of top management

commitment, top management participation, top management encouragement and top management empowerment.

2.1.1 Top Management Commitment

It is evident that the top management support and commitment play a critical role in TQM effectiveness (Mersha, 1997). It is important to provide unwavering support to ensure quality and excellence through promoting initiatives among managers and workers. Garvin (1983) suggests that higher levels of quality performance are always attained by an organization's commitment and high product quality which is facilitated by the strong commitment of top management. Top management commitment to enhancing quality enables an organization to engage in continuous improvement and facilitate the organizations quality improvement efforts (Gibson, 1990). There must be certain quality policies developed by the top managers that contribute to organizations in improving product quality (Motwani et al., 1994).

2.1.2 Top Management Participation

It is very difficult to improve product quality if top managers do not lead and participate (Zhang et al., 2012). It is essential to ensure top managers' direct participation in improving product quality. Top management participation is crucial to an organization's quality improvement efforts (Dale, 1999) in particular, product quality (Zhang et al., 2012).

2.1.3 Employee Empowerment through Top Management

Empowered employees are expected to perform more effectively. Empowered employees are more confident that results in quality improvement. Employee empowerment through top management is considered as one of the critical practices of TQM. Zhang et al. (2012) showed a direct association between employee empowerment and product quality. Based on above discussion, the following hypothesis is developed:

H1: The higher the leadership the greater the product quality.

2.2 Employee Participation

Employee participation indicates the extent to which employees in an organization engage in various quality related activities. Employee participation attributes include teamwork, employee suggestions, and employee commitment. Teamwork (e.g., cross-functional teams and within-functional teams), considered an important characteristic of employee participation and focuses on the improvement at the input and output of any stage. Cross-functional quality teams and task forces are common in quality-oriented organizations (Hackman and Wageman, 1995). Organizations emphasize quality control (QC)

circle (a group of workforce-level people, usually from within one department, who volunteer to meet weekly to address quality problems that occur within the department (Juran and Gryna, 1993). Cooke (1992) reveals that there is a significant effect of employee participation on product quality. Many studies also show that there is a relationship between employee suggestion and product quality. Therefore, the following hypothesis is proposed:

H2: The higher the employee participation the higher the product quality.

2.3 Supplier Quality Management

In the current competitive market, the dependence of buyers on suppliers has increased to a great extent. There is a relationship between buyers and suppliers that have emerged in the form of supplier partnership (Juran and Gryna, 1993). It has been referred that working with suppliers as a partner and maintaining a long-term relationship with them help improve product quality (Deming, 1986). It is important therefore to ensure incoming material from a competent and reliable supplier to ensure the quality of the finished product (Juran, 1981). In manufacturing organizations where quality is the key developing a long term cooperative relationship with suppliers participating regularly in supplier quality activities and giving them feedback on the performance of their product are necessary to the continuous improvement of product quality (Zhang, et al., 2012). Zhang (2000) also suggests that improving supplier quality management will contribute to the improvement of the organization's product quality. Therefore, the following hypothesis is developed:

H3: The higher the supplier quality management the higher the product quality.

2.4 Customer Focus

Customer focus can be defined as the degree to which an organization continuously satisfies customer needs and expectations (Zhang et al., 2012). The key to quality management is to maintain a close relationship with the customer in order to understand the customer's requirements as well as to receive feedback on the extent to which those needs are being met. Organizations can focus on customer complaint, thereby improving product quality. It is important to identify the serious complaints that require thorough consideration to identify causes and to provide solutions (Juran and Gryna, 1993). It is also important to examine the quality of finished products as it works as a useful predictor of customer satisfaction. Such information includes data on field failures or service-call rates, and analysis and reporting of customer attitude trends regarding product quality. Therefore, the following hypothesis is developed:

H4: The higher the customers focus, the higher the product quality.

2.5 Product Quality

Product quality is key to the success of any organization. It has been seen that the quality image enables an organization to compete for success (Pfau, 1989). DuBrin (1995) notes that organizations must place a high priority on product quality in order to remain their competitive positions. Ahire et al. (1996) suggest that improving product quality must be the core concern of an organization's quality management efforts. Organizations are increasingly recognizing the strategic importance of product quality (Anderson et al., 1994). In the past while different studies measured product quality in terms of factors such as reliability, durability and conformity (Zhang et al., 2012), this study measures product quality in terms of product conformity.

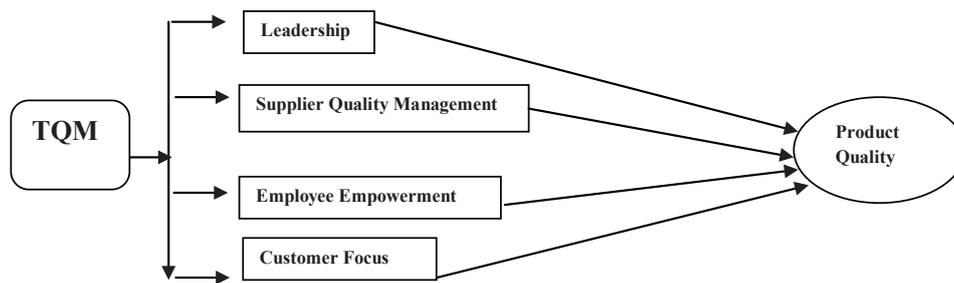


Figure 1: The association of TQM practices with product quality

3. Methodology

A quantitative approach was used to conduct the study. A sampling frame was developed using the lists of garment units obtained from the Bangladesh Garment Manufacturers and Exporters Associations (BGMEA), Bangladesh Knit Manufacturers and Exporters Association (BKMEA), and Bangladesh Export Processing Zone Authority (BEPZA). This sampling frame has been

Table 1: Distribution of sampling units

Places/location	Total number of units in a location	Proportion (%)	Selected units in each location
Dhaka	3058	87.67	128
Gazipur	163	4.67	7
Narayanganj	131	3.76	5
Savar	75	2.15	3

Chittagong EPZ	35	1.00	2
Dhaka EPZ	26	0.75	2
Total	3488	100.00	133

used to determine sample size and respondents. Using a purposive sampling technique, a survey questionnaire was sent to 133 garment organizations. A total of 59 organizations participated in the survey. Due to response biases and inconsistencies in the responses, 11 garment firms were excluded. Finally, 48 organizations were used.

The respondents were the head of organizations, functional managers such as the production manager, and the quality control manager.

Table 2: Measurement of Variables

Independent Variables	Indicators	Measurement Scale
Leadership	Top management participation (LS_parti)	Interval
	Quality related concepts & skills (LS_skills)	Interval
	Encourage employee involvement (LS_encr)	Interval
	Vision for employee empowerment (LS_empw)	Interval
	Resource allocation for TQM application (LS_resrs)	Interval
	Meeting about TQM updates (LS_meet)	Interval
	Prime focus on product quality (LS_fcus)	Interval
	Long term focus of business (LS_long)	Interval
Employee Participation	Cross-functional team (Ep_cfteam)	Interval
	Quality control circle (EP_QCcir)	Interval
	Involvement in quality related activities (EP_inv)	Interval
	Suggestion inputs from employees (EP_sug)	Interval
	Implementation of employee suggestions (EP_imp)	Interval
	Employee commitment to quality (EP_compt)	Interval
	Employees can fix problems by themselves (EP_fix)	Interval
	Employee reporting to top management is encouraged (EP_report)	Interval

Supplier Quality Management	Long-term relationship with suppliers (SQ_long)	Interval
	Product quality is the primary concern in supplier selection (SQ_pq)	Interval
	Supplier participation in quality programs (SQ_part)	Interval
	Feedback from suppliers (SQ_feedback)	Interval
	Written quality documentation for supplies (SQ_written)	Interval
	Conducting supplier audit (SQ_audit)	Interval
Customer Focus	Collects complaints from customer (CF_compln)	Interval
	Priority for quality related complaints (CF_prior)	Interval
	Customer satisfaction survey (CF_survey)	Interval
	Long term customer focus (CF_long)	Interval

4. Analysis and Discussion of Results

4.1 Descriptive Statistics

Table 4 provides the descriptive statistics for independent and dependent variables. All Cronbach alpha coefficients exceeded the 0.7 threshold (except one) considered acceptable for scale reliability (Nunnally, 1978, p.245). A five point Likert scale was used in measuring the dependent and independent variables. Variables were measured using measures from Zhang (2000). In addition, a validity analysis was also conducted. Validity is concerned with how well a concept is defined by its measures. This study uses content validity. The main purpose of content validity is to ensure that the selection of construct items extends to all past empirical issues, theories, as well as practical considerations (Robinson et al., 1991). This study used content validity. The development of measurement items was based on an extensive review of the existing literatures and detailed evaluations undertaken by industry personnel. Moreover, a pretest indicated that the content of each factor was well represented by the measurement items employed.

Table 3: Summary of Reliability Test: Internal consistency analysis for individual factors

Variable	No of items	No of items deleted	Cronbach's Alpha
Leadership	8	None	0.737
Employee Participation	8	None	0.835
Supplier Quality Management	6	None	0.688
Customer Focus	4	1	0.779
Product Quality	3	None	0.922

Table 4: Implementation of TQM in organizations

Existence of Department	Frequency	Total	Percentage response
Independent quality control department	23	48	11.04%
Assigned manager (single) for quality control	19	48	9.12%
Common managerial position deals with quality iss	06	48	2.88%

Table 5 indicates that little over one in tenth (11.04%) of the organizations have individual quality control department. Only 9.12% of the organizations showed to have minimum one assigned quality control manager. Only 2.88% of respondents agreed to have designated positions responsible for quality activities.

4.2 Cross Tabulations

However, while interaction between variables would be useful to gain managerial insight, for the analysis a cross-tabulation was used. Table 5 shows the percentages calculated row wise based on column totals:

- Among organizations reporting high empowerment, the majority (96.6%) reported about high allocation of resources. Among organizations reporting low empowerment, half of the cases (52.6%) reported low allocation of resources.
- Among organizations reporting low empowerment, 47.4 percent reported high allocation of resources. This figure indicates that resource direction is not toward employee empowerment.
- Only one respondent among 48 reported low level of resource allocation as well as high level of employee empowerment.

Table 5: Cross-Tabulation: Employee Empowerment* Resource Allocation

		Resource allocation for quality issues		
		Low resource allocation	High resource allocation	Total
Empowering Employees	Low level of empowerment	10 52.6%	9 47.4%	19 100%
	High level of empowerment	1 3.4%	28 96.6%	29 100%
Total		11 22.9 %	37 77.1 %	48 100 %

Result of Chi-square test:

Category	Observed Value	Expected Value	(Obs-Exp)	(Obs-Exp) ²	(Obs-Exp) ² /exp
Low level of empowerment	10	4.35	5.65	31.9225	7.338505747
High level of empowerment	1	6.65	-5.65	31.9225	4.80037594
Low resource allocation	9	14.65	-5.65	31.9225	2.179010239
High resource allocation	28	22.35	5.65	31.9225	1.428299776
				Chi-square=	15.7461917

The calculated value is 15.75 and table value P=3.48 at .05 significant level and DF is 1. From the Chi-square test it is found that the association is statistically significant.

The table 6 shows the percentages calculated column wise based on column totals:

- Among organizations reporting high employee authority to fix problems by themselves, the majority (88.9%) reported about high empowerment. Among organizations reported low employee authority to fix problems, less than half of the organizations (46.2%) reported low empowerment.

Table 6: Cross-Tabulation: Empowering Employees*Employees Authority

		Empowering employees		Total
		Low level of empowerment	High level of empowerment	
Fix problem by themselves	Low level of employee authority	18 46.2%	21 53.8%	39 100.0%
	High level of employee authority	1 11.1%	8 88.9%	9 100.0%
Total		19 39.6%	29 60.4%	48 100.0%

- Among organizations reporting low employee authority, 53.8 percent reported high employee empowerment, a figure that is not consistent.

Result of Chi-square test:

Category	Observed Value	Expected Value	(Obs-Exp)	(Obs-Exp) ²	(Obs-Exp) ² /exp
Low level of employee authority	18	15.44	2.56	6.5536	0.424455959
Low level of employee authority	1	3.56	-2.56	6.5536	1.840898876
Low level of empowerment	21	23.56	-2.56	6.5536	0.278166384
High level of empowerment	8	5.44	2.56	6.5536	1.204705882
				Chi-square=	3.748227101

The calculated value is 3.75 and table value P=3.48 at .05 significant level and DF is 1. The result shows that the relationships among the variables are statistically significant.

		Resources for employee training		
		Low resource allocation	High resource allocation	Total
Customer satisfaction survey	Occasional customer survey	8 61.5%	5 38.5%	13 100.0%
	Regular customer survey	3 8.6%	32 91.4%	35 100.0%
Total		11 22.9%	37 77.1%	48 100.0%

- Among organizations reporting high resource allocation, less than half of the organizations (38.5%) reported occasional/ irregular customer surveys-which indicates allocation of resources to address quality issues have not been customer focused.

Result of Chi-square test:

Category	Observed Value	Expected Value	(Obs-Exp)	(Obs-Exp) ²	(Obs-Exp) ² /exp
Occasional customer surveys	8	2.98	5.02	25.2004	8.456510067
Regular customer surveys	3	8.02	-5.02	25.2004	3.142194514
Low resource allocation	5	10.02	-5.02	25.2004	2.51500998
High resource allocation	32	26.98	5.02	25.2004	0.93404003
				Chi-square=	15.04775459

The calculated value is 15.05 and table value P=3.48 at .05 significant level and DF is 1. The result shows that there is an association between resource allocation and customer surveys.

The table 8 shows percentages calculated column wise, based on column totals:

- Among organizations reporting regular customer surveys, a majority of the cases (94.3%) reported regular collection of customer complaints. Among organizations reporting occasional/ irregular customer surveys, 23.1 percent reported occasional customer surveys.
- Among cases reporting regular customer surveys, a very few (5.7%) reported occasional collection of customer complain.

Table 8: Cross-Tabulation: Collection of Customer Complaint * Customer Survey

		Collects complaints from customer		
		Occasional collection of customer complaints	Regular collection of customer complaints	Total
Customer Satisfaction Survey	Occasional customer surveys	3 23.1%	10 76.9%	13 100.0%
	Regular customer surveys	2 5.7%	33 94.3%	35 100.0%
Total		5 10.4%	43 89.6%	48 100.0%

Result of Chi-square test

Category	Observed Value	Expected Value	Obs-Exp	(Obs-Exp) ²	(Obs-Exp) ² /exp
Occasional customer surveys	3	1.35	1.65	2.7225	2.01666667
Regular customer surveys	2	3.65	-1.65	2.7225	0.745890411
Occasional collection of customer complaints	10	11.65	-1.65	2.7225	0.233690987
Occasional collection of customer complaints	33	31.35	1.65	2.7225	0.086842105
				Chi-square=	3.08309017

The calculated value is 3.08 and table value P=3.48 at .05 significant level and DF is 1. The result shows that there is an association between occasional customer surveys and regular customer surveys.

4.3 Multivariate Analysis

Logistic Regression: Logit Regression Model estimates the probability of an observation belonging to a particular group. The regression model predicts the logit, that the natural logs of the odds have made one or the other decision. That is,

$$\log_e(p/1-p) = a_0 + a_1x_1 + a_2x_2 + a_3x_3 + \dots + a_ix_i$$

Where,

$$\log_e(p/1-p) = \ln(\text{ODDS}) = \log \text{ of odds}$$

p= probability to have high product quality

a_i = parameter to be estimated

x_i = independent variable

In logistic regression, the log odds that $\log e(p/1-p)$ is a linear function of the estimated parameters. Thus, if x_i is increased by one unit, the log odds will increase by a_i unit(s), when the effect of other independent variables is held constant. Thus a_i is the size of the increase in the log odds of the dependent variable even when the corresponding independent variable x_i is increased by one unit and the effect of the other independent variables are held constant.

Estimated Logit Regression Model: This study estimates the logit regression model in the following way:

Each error term assumes only two values. Here, If $y=0$, the error is p and if $y=1$, the error is $1-p$. Therefore, the parameter is estimated in a way that the estimated values of p would be close to 0 when $y = 0$ and close to 1 when $y=1$. The model is constructed by an iterative maximum likelihood procedure. The program starts with arbitrary values of the regression coefficients and constructs an initial model for predicting the observed data. It then evaluates errors in such prediction and changes the regression coefficients so as make the likelihood of the observed data greater under the new model. This procedure is repeated until the differences between the new model and the previous model are trivial.

4.4 Model Fit

In binary logistic regression, commonly used measures of model fit are based on the likelihood function and are Cox & Snell R square and Nagelkerke R square. If estimated probability is greater than 0.5 then the predicted value of Y is set to 0. Findings show that the -2 Log Likelihood statistics is 23.934. This statistic measures how poorly the model predicts the decisions -- the smaller the statistic the better the model. Therefore, the statistic is quiet satisfactory. The Cox & Snell R2 can be interpreted like R2 in a multiple regression, but cannot reach a maximum value of 1. The Nagelkerke R2 can reach amaximum of 1. Cox & Snell R square (0.331) and Nagelkerke R square (0.558) measures indicate a reasonable fit of the model to the data.

4.5 Significance of Testing

Table 10: Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	19.320	9	.023
	Block	19.320	9	.023
	Model	19.320	9	.023

Moreover, Omnibus Tests of Model Coefficients shows that a Chi-Square of 19.320 on 9 *df*, significant beyond .05. This is a test of the null hypothesis

that adding variables to be considered to the model has not significantly increased the ability to predict the decisions made by the subject that is rejected and justify the research as per the expectation.

Moreover, the variables in the Equation output shows that the regression equation is $\log_e (p/1-p) = a_0 + b_1x_1 + b_2x_2 + b_3x_3 + \dots + b_ix_i$

Here,

$\log_e(p/1-p) = \ln(\text{ODDS}) = \log$ of odds, $p =$ probability to have high product quality, $a_i =$ parameter to be estimated, $x_i =$ independent variable.

Table 11: Variables in the Equation

	B	S.E.	Wald	df	Sig.	Acceptance/rejection of hypotheses	Exp(B)
LS_empw(1)	.984	.491	4.013	1	.038	accepted	2.675
LS_resrs(1)	.427	.216	3.901	1	.043	accepted	1.534
EP_cftteam(1)	.051	.026	3.841	1	.050	accepted	1.052
EP_QCcir(1)	75.288	1.747E4	.000	1	.997	Not accepted	4.980E32
EP_fix(1)	.800	.401	3.982	1	.041	accepted	2.225
SQ_written(1)	-.120	1.025	.014	1	.907	Not accepted	.887
SQ_audit(1)	.912	.456	4.005	1	.021	accepted	2.489
CF_cmpln(1)	-.535	1.618	.109	1	.741	Not accepted	.586
CF_survey(1)	.814	.363	5.016	1	.027	accepted	2.257
Constant	.195	1.081	.032	1	.857	Not accepted	1.215

a. Variable(s) entered on step 1: LS_empw, LS_resrs, EP_cftteam, EP_QCcir, EP_fix, SQ_written, SQ_audit, CF_cmpln, CF_survey.

Result reveals that the ODDS is 0.215. Moreover, the Variables in the Equation output also show the Exp (B). The model presenting the interpretation of odds ratios in the following way:

Leadership- employee empowerment and product quality

If organizations have employee empowerment, then the ODDS= 2.675. That means an organization having a high level of product conformity is 2.675 times higher for higher level of employee empowerment than for low level of employee empowerment.

Leadership- resource allocation for TQM implementation and product quality

If the organizations have resources for TQM deployment, then the ODDS= 1.534. That means an organization having a high level of product conformity is 2.675 times higher for higher level of resource allocation than for low level of resource allocation.

Employee participation in cross-functional team(s) and product quality

If organizations participate in cross-functional team, then the ODDS= 1.052. That means an organization having regular cross-functional team is 1.052 times more likely to have a high level of product conformity than an occasional cross functional team.

Employee authority to fix problem and product quality

If organizations enjoy authority to the quality problems, then the ODDS= 2.225. That indicates that an organization's perceived high level of employee authority is 2.225 times likely to have a high level of product conformity than low level of employee authority.

Supplier audit and product quality

If organizations report routine and frequent supplier audit, then the ODDS= 2.489. That reveals that an organization having regular and frequent supplier audit is 2.489 times more likely to have a high level of product conformity than infrequent and occasional audit.

Customer survey and product quality

If organizations report regular consumer surveys, then the ODDS= 2.257. That indicates that an organization having frequent consumer survey is 2.257 times more likely to have a high level of product conformity than an occasional customer survey.

5. Conclusion

The objectives of this study were to identify TQM practices and to examine the association of TQM practices with product quality in the garment firms of Bangladesh. Results reveal that TQM practices, including leadership (employee empowerment, resource allocation), employee participation (cross-functional teams, employee authority), supplier relationship (supplier audit), and customer focus (customer survey) have positive association with product quality. The result indicates that in the sample garment organizations associations exist among the measures of TQM practices, such as resource allocation with employee empowerment, resource allocation with customer survey's employee empowerment with fixing problems, and customer complaints with customer surveys. Therefore, it is important for managers to ensure employee empowerment in order to improve quality. The results also indicate that adequate resource allocation is a crucial factor for quality improvement. The findings suggest that while, high level of resources are allocated to and directed for a quality improvement, that will yield improvement as much as 1.5 times higher than that of organizations where resource allocations are low. Therefore, managers need to carefully allocate adequate resources to influence quality. regular use of cross functional team. Those who have regular teams in the workplace have showed 1.05

times higher product conformity than occasional users of cross-functional teams. Considering the importance of teams in quality improvement, managers must create several cross-functional teams.

In addition, the findings reveal the advantages of conducting regular audits for supplier quality management, which allows generation 2.5 times more conformity in products than those that do not have regular supplier audit. Therefore, in order to ensure product quality, managers should conduct regular audits through developing a trustworthy relationship with the suppliers. In addition, managers should develop periodic customer surveys in order to ensure higher product conformity, as the customer is the key source of knowing about product quality. These findings reveal that organizations that adopted TQM as a working philosophy within their organizations can make improvement in product quality.

Therefore, it can be assumed that if sample organizations can achieve quality improvement through TQM practices, then other garment organizations of Bangladesh may also achieve the same. It is important to create right awareness for all organizations to realize these improvements.

6. Limitations and Suggestions for Future Research

The study has some limitations. Firstly, data was gathered from only 48 organizations. Although the samples were drawn using the Stratified Random Sampling Technique and obtained 133 as samples, due to time and cost limitations finally, 48 firms were chosen using purposive sampling techniques. While multivariate analysis requires probability sampling, this study conducted logistic regression using non-probability sampling.

Secondly, in this study only the management level was considered as samples while shop floor workers were directly related to the quality activities.

Thirdly, while there are several measures of product quality, including features, aesthetics, performance reliability, conformance durability etc, this study used only “conformity” to measure product quality as it is found to be the most commonly used measure in the literature (Zhang et al., 2000; Karim, 2009). Future research may consider these limitations and conduct similar kind of research on large number of organizations. Moreover, future research may consider all the other dimensions for measuring product quality.

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Mental Health Well-being among Undergraduate Students of East West University: Evidence from a Cross-sectional Survey

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Abstract

Poor mental health is common among university students every where, including in Bangladesh. Since information about mental health well-being (MHWB) of private university students are still scarce, this study aims to estimate the prevalence of poor mental health and associated determinants, using cross-sectional data (N=670) collected from undergraduate students of East West University. The WHO Well-Being Index, composed of five Likert Scale questions with possible answers from 0 (not at all) to 5 (all the time), was used to measure the state of MHWB using a cut-off 13 for the total score. The overall prevalence of poor mental health was 34.6%, and was significantly higher among female (38.9%) than among male (30.5%) students. Its prevalence was also significantly higher among students who had no close friends for sharing problems, and among students with low level of satisfaction about their current residences in Dhaka, academic performance at EWU, and relationship with faculty members. Since a large proportion of students suffer from poor MHWB, EWU administration should consider this as a serious issue and apply feasible prevention strategies in a comprehensive manner.

Keywords: Mental health well-being, Undergraduate students, East West University, Academic performance.

1. Introduction

Mental health is an integral and crucial aspect of overall student health. Literally, there is “no health without mental health” (Prince et al., 2007). This statement is clearly reflected by the definition of health given by the World Health Organization (WHO) in 1948, which defined health as “a state of complete, physical and social well-being and not merely the absence of disease or infirmity” (Grad, 2002). Also, there is no group which is immune to mental health problems (Dachew, Bisetetegn, & Gebremariam, 2015). Unfortunately, the mental health status of large number of undergraduate students across countries are not satisfactory. According to a review conducted by Ibrahim, Kelly, Adams, & Glazebrook (2013), which included

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universities from both developed and developing countries, around one-third of the university students surveyed suffer from mental health disorders such as depression and anxiety. Some studies even report a higher prevalence of mental health problems among university students than among the general population (Ibrahim et al., 2013; Hersi et al., 2017; Kuruppuarachchi, Kuruppuarachchi, Wijerathne, & Williams, 2002). For example, the prevalence of mental health problems was 39.8% among university students in Sri Lanka, although it was 25.7% amongst the general population (Kuruppuarachchi et al., 2002).

The mental health well-being of university students is adversely affected by multiple factors associated with economic, social, environmental, academic and future aspects. These factors may include gender, a family history of mental illness, poor socioeconomic (e.g., housing, income, environmental) condition of the student's family (Ngin et al., 2018; Richardson, Elliott, Roberts, & Jansen, 2017; Dachew et al., 2015; Simic-Vukomanovic et al., 2016; Dessie, Ebrahim, & Awoke, 2013) and poor academic performance in the university (Ngin et al., 2018; Jaisoorya et al., 2017; Simic-Vukomanovic et al., 2016; Dachew et al., 2015). Having no close friends and conflicts involving friends (Dachew et al., 2015; Dessie et al., 2013), high level of academic stress, and living alone (Islam, Low, Tong, Yuen, & Abdullah, 2018), lack of vacations/breaks (Dachew et al., 2015), adoption of unhealthy lifestyles (e.g., drug abuse, junk food eating, lack of physical activities, smoking and alcohol drinking) are also associated with poor mental health (Ngin et al., 2018; Jaisoorya et al., 2017; Nur, Kibik, Kilic, & Sümer, 2017). Rural background of students (Ngin et al., 2018; Kuruppuarachchi et al., 2002), negative perception about body shape (Ngin et al., 2018), exposure to physical, sexual and psychological violence (Ngin et al., 2018; Jaisoorya et al., 2017), human right violations, lack of recreation facilities and engagement, and limited job opportunities also increase the risk of poor mental health (Lund et al., 2018; Silva, Loureiro, & Cardoso, 2016).

The poor mental health of university students is of increasing concern worldwide because of its long-lasting multidimensional consequences (Simic-Vukomanovic et al., 2016; Yerramilli & Bipeta, 2012). It is a source of immense suffering, and can substantially affect a student's personal, family and social life (Adewuya, Ola, Aloba, Mapayi, & Oginni, 2006). The negative impact of poor mental health can also be seen in the family and in the workplace. For instance, overall productivity can fall down due to high sickness-related absenteeism and a family can be affected due to poor nutrition and higher healthcare cost (Yerramilli & Bipeta, 2012). Although various research on university students' mental health have already been conducted, they are mainly related to universities in developed countries (Ibrahim et al., 2013). Moreover,

mental health studies using the WHO Well-Being Index are scarce in developing countries, including Bangladesh. Only a few studies have addressed the issue of students' mental health in Bangladesh, which are mainly related to medical colleges (Hossain, Rehena, & Razia, 2018; Eva et al., 2015). Only one relevant abstract of the current topic based on private university students has been found (Hoque, 2015). However, the sample size is very small. In sum, information on students' mental health based on the WHO Well-Being Index is scanty or almost absent, which is particularly true for private universities in Bangladesh. Therefore, this study firstly aims to estimate the prevalence of poor mental health well-being (MHWB) and secondly tries to identify some associated factors utilizing a large cross-sectional sample of undergraduate students from East West University, Dhaka, Bangladesh.

2. Methodology

This study was conducted among undergraduate students of East West University (EWU) between September 23 and October 7, 2018. This university was established in 1995 in the megacity of Dhaka. This is one of the leading private universities in Bangladesh, with a total of approximately 11,000 students. These students come from both rural and urban areas of Bangladesh, the majority of whom are male students. According to the annual report of the University Grant Commission in Bangladesh, the total number of private university students in 84 functional universities was 4,63,767 in 2014 with 40% female students (Ahmed, Iqbal, & Abbasi, 2018). So, male-female composition of students at EWU is comparable to the aggregated situation of Bangladeshi private universities.

2.1 Sample Size Calculation

In order to generate results with precision based on a cross-sectional survey (also called prevalence survey), it is extremely important to have the appropriate sample size (Naing, Wing, & Rusli, 2006). The main aim of a cross-sectional study is to estimate the prevalence of unknown parameter(s) from the target population using a random sample (Pourhoseingholi, Vahedi, & Rahimzadeh, 2013). Some information such as the expected prevalence or proportion (P) of the outcome (here proportion of poor mental health) from any representative/pilot study, Z statistic for the selected level of significance, and the precision (also called effect size) are also necessary. For the present study, the following simple statistical formula has been used to estimate the sample size:

$$n = P * (1 - P) * \frac{(Z_a)^2}{d^2} \dots \dots \dots (1)$$

Where P = expected prevalence or proportion of students with poor well-being. Since the value of “ P ” based on a sound and representative study is not available in Bangladesh, an approximate value of $P = 0.30$ was chosen from a systematic review to calculate the sample size. This review included many representative studies from different countries, which were methodologically sound. The exact prevalence of mental disorders in this review article was 30.6% (Ibrahim et al., 2013). Information for other parameters were:

$d = 0.035$

$Z_{\alpha} = 1.96$ (two tailed Z value at 5% level of significance)

Based on the abovementioned values, the formula provided a sample of 659 samples.

2.2 Data Collection Process

The cross-sectional data was collected by using a pre-tested questionnaire administered by well-trained faculty members of the Department of Social Relations at EWU. This department generally provides general education courses, which are taken by all university students. Because of this characteristic of the department, the researcher expected a representative sample of EWU students. The questionnaire was very brief (consist of only 15 questions, mostly close-ended ones) since it was applied during regular classes. Before conducting the survey, each faculty member explained the main objective of the study in the class. The confidentiality and anonymity of the respondent to be maintained by the researcher was stressed. Participation in the survey was completely voluntary. Each student had the option not only to skip the whole interview but also some items of the questionnaire. The response rate was nearly 100%. In total, 677 students provided data. The data for the WHO well-being index was incomplete for only seven cases and so they were excluded during data analysis.

2.3 Dependent Variable: WHO Well-being Index

The subjective mental well-being of undergraduate students was measured by the tool called “WHO Well-being Index”, developed by the World Health Organization in 1998. This is a tool that is very popular among researchers worldwide because of its good qualities. It is a short questionnaire consisting of five simple and non-invasive Likert Scale questions, along with six possible answers, ranging from “not at all” (0) to “all the time” (5) (See Table 1). It is/has already been translated into 30+ languages and has been successfully applied in various settings. It also demonstrates high clinimetric validity and sensitivity (as a screening tool for depression) (Topp, Østergaard, Søndergaard, & Bech, 2015). The total score for each respondent ranges from 0 (worst imaginable well-being) to

25 (best imaginable well-being), which was later dichotomized using the cut-off point of 13. According to the WHO criteria, the total score of below 13 indicates “poor” MHWB of the respondent, and is an indication for testing for depression under ICD-10. In contrast, a score 13 and above indicates “good” MHWB of the respondent (Gruebner et al., 2012). For detailed analysis, the dependent variable is dichotomized as “poor” (the total score from 0 to 12) and “good” (the total score from 13 to 25) MHWB based on the recommended cut-off point.

Table 1: WHO five items to measure mental well-being with possible answers

Items/Statements	0 = At no time	1 = Some of the time	2 = Less than half of the time	3 = More than half of the time	4 = Most of the time	5 = All of the time
Over the last 2 weeks, I have felt cheerful and in good spirits	0	1	2	3	4	5
Over the last 2 weeks, I have felt calm and relaxed	0	1	2	3	4	5
Over the last 2 weeks, I have felt active and vigorous	0	1	2	3	4	5
Over the last 2 weeks, I woke up feeling fresh and rested	0	1	2	3	4	5
Over the last 2 weeks, my daily life has been filled with things that interest me	0	1	2	3	4	5

2.4 Independent Variables

There are several independent variables in the questionnaire. These are age (in completed years), sex (1 = male, 2 = female), current semester (1, 2, 3,...), name of the faculty (1 = Science and Engineering, 2 = Liberal Arts and Social Science, 3 = Business and Economics), location of college (1 =

Dhaka city, 2 = Outside Dhaka city), duration of residence in Dhaka (in months), whether living with parents or other family members (1 = yes, 2 = no), number of close friends for sharing problems without any hesitation (0,1,2 ...), satisfaction about current place of residence (1 = low satisfaction, 2 = moderate, 3 = high). These variables were included in the questionnaire based on other studies.

2.5 Statistical Analysis

All statistical analyses were performed by IBM SPSS Statistics 23. Various kinds of analyses, ranging from descriptive analysis to multivariable analysis were carried out. Under descriptive analysis, we performed frequency analysis and calculated percentage for categorical variables and mean and standard deviation for continuous variables. The bivariate (mainly cross-table) analysis was performed to assess the association of poor MHWB with independent variables. Since the MHWB of the student (i.e., the outcome variable) was dichotomized (poor MHWB = 1, good MHWB = 0), the binary logistic regression analysis adjusted for many categorical variables (namely age group, semester level, name of faculty, location of college, duration of residence in Dhaka, staying with parents or other family members) was finally applied to estimate the odds ratio (OR) of poor MHWB and 95% confidence interval (CI) for sex and other variables of interest. To assess whether the association between dependent and independent variables are significant, we set the level of significance at $P = 0.05$.

3. Results

3.1 Description of Sample

The frequency distribution of the study sample of 670 undergraduate students is provided in Table 2. Out of the total sample, 341 (50.9%) were male and 329 (49.1%) were female students. The mean and median age of the students was 21.8 years and 22 years, respectively. The minimum and maximum age of the students varied from 19 to 28 years with a standard deviation (SD) of 1.37. Over 50% (52.7%) were covered by the age group of 21 – 22 years. Most students belonged to the faculty of Business and Economics (51.1%), followed by Science and Engineering (30.4%) and Liberal Arts and Social Science (17.0%). Over 60% of the total students reported their semesters from 4 to 9, followed by the semesters of 10 and above. Almost 8 in 10 students (78.1%) finished their college education from Dhaka city. Most of the students (54.0%) reported their duration of residence in Dhaka as over 18 years. Similarly, approximately 80% of students reported that they were staying with parents or close family members. Most students (65.5%) stated that they had 1 to 3 close friends with whom they could share their problems without any hesitation. The mean and median number of close friends were

2.93 and 2, respectively. Only 8.1% mentioned that they had no friend to share their problems. The percentage of students with “low” versus “high” level of satisfaction were: 4.5% versus 38.1% for their current place of residence, 14.9% versus 10.6% for their academic performance at the university and 11.3% versus 23.9% for their relationship with teachers at EWU. Moderate satisfaction was expressed by most respondents, ranging from 57.5% (related to the current place of residence in Dhaka) to 74.5% (related to the academic performance).

Table 2: Frequency distribution of students and percentage of poor MHWB by covariates

Variable	Categories	Sample		Poor MHWB	
		n	%	%	P
Age	19-20	128	19.1	32.0	0.614
	21-22	354	52.8	34.2	
	23-28	188	28.1	37.2	
Sex	Male	341	50.9	30.5	0.022
	Female	329	49.1	38.9	
Semester level	1-3	54	8.1	37.0	0.917
	4-6	209	31.2	34.9	
	7-9	210	31.3	32.9	
	10+	197	29.4	35.5	
Name of faculty	Sci. and Eng.	207	30.9	36.2	0.807
	Lib. Arts & Soc. Sci.	117	17.5	35.0	
	Bus. and Econ.	346	51.6	33.5	
Location of college	Dhaka city	523	78.1	35.8	0.247
	Outside Dhaka	147	21.9	30.6	
Duration of living in Dhaka	Until 6 years	197	29.4	31.5	0.275
	Over 6 years	111	16.6	40.5	
	Over 18 years	362	54.0	34.5	
Staying with parents or other family members	Yes	529	79.0	34.4	0.815
	No	141	21.0	35.5	
Number of close friends to share problems without hesitation	0	54	8.1	57.4	0.000
	1-3	439	65.5	36.0	
	4+	177	26.4	24.3	

Satisfaction about current place of residence in Dhaka	Low	30	4.5	56.7	0.000
	Moderate	385	57.5	37.9	
	High	255	38.1	27.1	
Satisfaction about academic performance at the university	Low	100	14.9	56.0	0.000
	Moderate	499	74.5	31.9	
	High	71	10.6	23.9	
Satisfaction about relationship with teachers	Low	76	11.3	61.8	0.000
	Moderate	434	64.8	35.3	
	High	160	23.9	20.0	

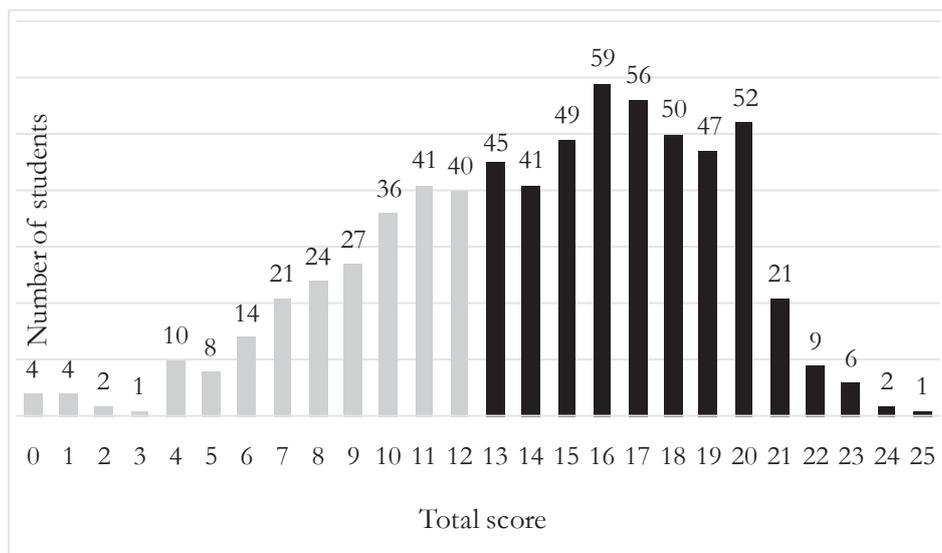


Figure 1: Distribution of students by total score of the WHO well-being index

The distribution of students by the total score of the WHO well-being index varied from 0 (“worst imaginable mental well-being”) to 25 (“best imaginable well-being”). The values of mean, median and mode were 14.2, 15 and 16, respectively. Based on the recommended cut-off point of 13, a total of 232 undergraduate students (34.6%) revealed “poor mental well-being”. In contrast, 438 students (65.4%) indicated “good mental well-being” (see Figure 2). Since the total score reveals a negatively skewed distribution (mean or median < mode), we categorized it for both cross-table (bivariate) and multivariable logistic regression analyses. The appropriate test statistic (namely the Chi-Square test) was used for both types of analyses.

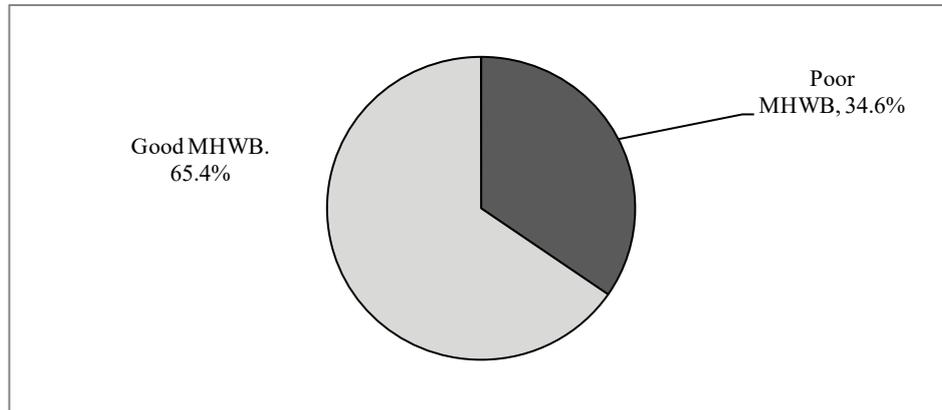


Figure 2: Prevalence of poor mental health well-being among EWU students

3.2 Cross-table (bivariate) Analysis

Using cross-table analysis, the prevalence of poor mental well-being was calculated for each category of the independent variable and the corresponding p-value was reported (Table 2, last two columns). Out of 11 independent variables, only five variables revealed significant associations (for which p values were less than 0.05) with well-being index at 5% level of significance. The prevalence of poor MHWB was significantly higher among female (38.9%) than male (30.5%) students ($P = 0.022$). The prevalence of poor MHWB was significantly ($P < 0.001$) lower among students who reported 4+ close friends (24.3%) for sharing their problems without any hesitation than those students who reported either no (57.4%) or 1-3 friends (36.0%). Low satisfaction about (i) current place of residence in Dhaka, (ii) academic performance at the university and (iii) relationship with teachers also appeared as strong significant factors for “poor” MHWB of students. For instance, the prevalence of “poor” MHWB was the lowest (23.9%) among students, who expressed high satisfaction about academic performance than students who expressed low satisfaction (56.0%).

3.3 Multivariable Logistic Regression Analysis

The multivariable adjusted results of the logistic regression analyses (Table 3) are presented through odds ratios (ORs) and 95% confidence intervals. All five significant factors of the cross-table analyses also remained significant in the logistic regression. The likelihood of reporting “poor” MHWB was almost 1.6 times more (OR = 1.55, 95% CI: 1.11 – 2.18, $P = 0.011$) among female than male students. Similarly, the likelihood of reporting “poor” MHWB was about 6.7 times (OR = 6.65, 95% CI: 3.60 – 12.28, $P < 0.001$) and 2.2 times (OR = 2.19, 95% CI = 1.41 – 3.40, $P < 0.001$) more among students who reported “low”

satisfaction and “moderate” satisfaction about their relationship with teachers as compared to students with “high” satisfaction (reference category).

Table 3: Odds ratio and 95% confidence interval for poor MHWB by categories of different independent variables

Variable	Categories	OR	95% CI	P
Sex	Male (Ref.)	1.00		
	Female	1.55	1.11 – 2.18	0.011
Number of close friends to share problems without hesitation	0	4.36	2.27 – 8.36	<0.001
	1-3	1.78	1.20 – 2.67	0.005
	4+	1.00		
Satisfaction about current place of residence in Dhaka	Low	3.89	1.75 – 8.64	0.001
	Moderate	1.71	1.20 – 2.43	0.003
	High (Ref)			
Satisfaction about academic performance at the university	Low	4.29	2.15 – 8.54	<0.001
	Moderate	1.54	0.86 – 2.77	0.149
	High (Ref)	1.00		
Satisfaction about relationship with teachers	Low	6.65	3.60 – 12.28	<0.001
	Moderate	2.19	1.41 – 3.40	<0.001
	High (Ref)	1.00		

Note: Odds ratios are adjusted for age, semester, faculty, college location, duration of staying in Dhaka, and staying with parents or other family members

4. Discussion

According to my review of literature, no similar study based on a large sample had been previously conducted to assess poor MHWB of undergraduate students at East West University. Hence, this study could be considered as one of the pioneering studies undertaken by researchers dealing with mental health issues

of private universities in Bangladesh. Approximately 1 in 3 undergraduate students reported poor MHWB, which is significantly higher among female students than male students. A higher prevalence of poor MHWB among female students have also been reported in Cambodia (Ngin et al., 2018), Ethiopia (Dachew et al., 2015), Malaysia (Islam et al., 2016) and UK (Richardson et al., 2017). These results indicate a worrying condition in the university, which should be improved as quickly as possible through adoption of proper strategies. Future studies based on triangulation (combination of quantitative and qualitative research methods) approach should be designed to find possible answers to the question “Why do female students suffer more from poor well-being than male students?” Qualitative studies may provide better explanation for this problem.

Since the present study and other studies (Ngin et al., 2018; Jaisoorya et al., 2017; Simic-Vukomanovic et al., 2016; Dachew et al., 2015) have found a strong association of poor MHWB with academic performance, further exploration based on a triangulation approach is necessary to find the reasons of poor academic performance at the university. Particularly, why do students fail to cope with academic matters in such a private university? Are academic issues such as syllabuses, teaching methods, resources, vacations or student advising not pursued appropriately for students with poor MHWB?

According to our findings, having no close friends or fewer friends is an important factor for poor MHWB of the students. Similar association has also been reported by another study in Ethiopia (Dachew et al., 2015). Friendly infrastructures and activities (e.g., group assignments, club activities) for students may improve the situation in many cases.

The positive association between poor well-being and low satisfaction about teacher-student relationship also deserve increasing attention from the university administration. This is needed to find feasible strategies for both students and teachers to improve teacher-student relationship. Both parties should try to minimize unjust barriers which can weaken such relationships. For this purpose, further research based on the mixed method should be conducted.

Low level of satisfaction about current place of residence in Dhaka is significantly associated with poor MHWB of students. Since EWU does not provide accommodation for its students, it could be difficult for the university administration to address this problem. Actually, lack of accommodation facilities (e.g., student halls and residential campus) in private universities is identified as a common weakness (Ahmed et al., 2018) in such cases.

The study has several strengths and is important for these reasons. One of its

major strengths is that it is based on a large sample size which is quite representative for undergraduate students. Another important strength of the study can be related to the topic, which has not only been addressed for the first time here but it also generated some important findings for East West University. If these findings are considered by the university and all relevant stakeholders (e.g. students' families, to arrange better housing for them in Dhaka) for improving the MHWB of undergraduate students, we may expect better achievements from students at the family, social and national levels. The major aim of university education can be achieved through rapid and sustainable development. Generally, university education focuses on providing timely and innovative education and converting students into highly skilled and efficient manpower/workforce for different sectors of the country (Islam and Salma, 2016). Since many of these students belong to a relatively privileged section of society, they can be viewed as future leaders, administrators, managers, planners and architects of the country (Bostani et al., 2014). However, they can contribute over more to the development sectors (Islam and Salma, 2016) if they are able to remain healthy physically, mentally and socially after their graduation.

However, this study has some limitations. Since the questionnaires were distributed in classes, some students may have felt uncomfortable (for stigmatization and discrimination) to report their actual mental health status in the classroom. As a result, the prevalence of poor MHWB may have suffered from under-reporting (Mahroon et al., 2018). The WHO Well-being Index, considered as a screening tool for assessing poor MHWB or depression, is purely subjective and hence suffers from self-reported biases. To minimize the information bias, clinical diagnosis should be used (Hossain et al., 2014). The results of the study may also suffer from limited generalizability because the prevailing conditions of EWU is no doubt different from those in other private universities (Lun et al., 2014). Generally, MHWB of the students is challenged by many aspects. However, this study only covered some of these aspects, mainly because of time constraints. Exclusion of qualitative research methods (missing triangulation) is also a limitation. The last but not least limitation is that the results are cross-sectional and hence we can only study associations rather than causation (cause-effect), which means it is not possible to establish cause-effect relationships between identified factors and poor mental health well-being (Lun et al., 2018).

5. Possible strategies

Since consequences and psychological morbidities of poor MHWB of university students are long-lasting and negatively affect their adult lives, including family, social and professional aspects (Ngin et al., 2018; Simic-Vukomanovic

et al., 2016; Ibrahim et al., 2013; Yerramilli & Bipeta, 2012), and since rates of poor MHWB in universities is alarmingly high, each university should have some university-based mental health programs and interventions. The author recommends some of them based on other relevant studies, which seems to be feasible. These are as follows:

- The university should expand facilities for counseling students with poor MHWB.
- Early detection through time to time screening processes must be followed by prompt in-house counseling or treatment by well-trained experts (Ngin et al., 2018; Jaisoorya et al., 2017; Hossain & Wahab, 2016).
- Organized campaigns and health education seminars organized on a regular basis by the counseling section of the university to increase mental health-related awareness among students, teachers and other ancillary staff members and to reduce misconceptions, stigmatization and discrimination towards students suffering from poor MHWB (Hossain, Rehana & Raiza, 2018).
- Supportive infrastructure and environment for physical, recreational and socialization activities such as improved facilities for playing indoor and outdoor games, and club activities should be available for students (Eva et al., 2015). Lun et al (2018) found an inverse association between regular exercise and depression because of both physiological and psychological mechanisms. Good interpersonal relationships with peers is also identified as a protective factor for having good MHWB (Lun et al., 2018).
- Since self-reporting data may suffer from information biases (e.g., misclassification bias, under-reporting bias), further studies based on well-designed epidemiological and clinical methods should be conducted (Hossain, Rehana & Raiza, 2018).
- Friendly attitude and behavior of teachers, families and friends towards students with poor MHWB are also important (Eva et al., 2015).
- Easy access to mental health services, especially for female students, should be ensured (Hossain, Ahmed, Chowdhury, Niessen, & Alam, 2014).

6. Conclusion

The prevalence of poor mental health well-being among the undergraduate students of EWU is alarming. The university administration should take this issue up as a matter of urgent concern and some feasible strategies should be developed based on the significant predictors of poor well-being. Particularly, increased attention should be given to female students, as they are more vulnerable than their male counterparts.

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