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EDITORIAL NOTE: MULTIDISCIPLINARY RESEARCH

We are delighted to welcome you to this current issue of school of business and economics (SBE) Journal "North South Business Review" (NSBR). We are quite happy to acknowledge that day by day, international researchers are becoming more interested to publish their paper in this journal. Many researchers from different institutions in Bangladesh have shown immense interest to publish their scholarly articles in NSBR. After thorough blind review, we have selected five advance research papers to publish in this issue. We deeply hope that these papers can create scholars' interest as well as these can fulfill their inquisitive learning expectations. The central focus of this issue is to address multidisciplinary problems, paradigms and theoretical concepts.

The first paper of this current issue is focused on a very contemporary topic of good governance. It is engaged in identifying plausible relation between good governance of a company and its market performance after the implementation of the new code in 2012 in Bangladesh market. The authors of this paper Mabel D'Costa, Kamrul Huda Talukdar and Adnan Habib revealed that good governance does not have any significant impact on the market performance of the company.

The second paper on consumer behavior has addressed an important aspect of tourists in Bangladesh. This study is attempted to address and find out the factors influencing the tourists' purchase intention of local food by testing the mediating effect of satisfaction. The authors of this paper Muhammad Sabbir Rahman, Mehdi Hussain, Md. Aftab Anwar and Bashir Hussain, through detail empirical study, identified that the mediation effect of tourists' satisfaction plays a partial mediation role in the relation of service quality and purchase intention of the local foods.

The third paper written by Ahmend Ameya Prapan, Paromita Rakhi and Adnan Gazi is focused on a potential issue of local financial market. It examines the changes in volatility dynamics of Bangladesh Stock market. The return series revealed the presence of skewness with differing signs in different sub-periods. The unit root test showed that the data series was not stationary at level but integrated at first difference for all periods.

The fourth study is conducted by Kazi Nazmul Huda. This study is aimed to explore women behavior in readymade garments (RMG) factory in Bangladesh. The author is engaged in identifying the determining factors of positive work environment and their role in ensuring a supportive workplace for the female workers in RMG factories. The study accomplished its research question by conducting an empirical study among female workers in RMG.

The fifth paper, authored by Mohammad Mahboob Rahman, Narmin Tartila Banu and Parisa Shakur is designed to investigate the specific goal of corporate social responsibility

(CSR) to collaborte with competitors. This seminal paper has derived the conditions under which firms will collaborate when they are competitors, and conditions under which they will collaborate when they are strategic partners.

This issue contains the above mentioned five papers which focused on different issues of business administration related to good governance, consumer behavior for food industry, financial sector management and application outcome, rganizational environment concerning women relations, and mission for CSR. Integrating these application based concepts, this issue ultimately presents a comprehensive view of consumer behavior and strategic management which have immense significance for managerial implications.

It is our earnest hope that the readers will enjoy reading this issue as much as we did during our review of the papers for this issue.

Mahmud Akhter Shareef, PhD
Managing Editor
NSBR

ACKNOWLEDGMENTS

I would like to thank Professor Mohammad Mahboob Rahman, Dean, School of Business & Economics, North South University and Editor-in-chief of NSBR for giving me the opportunity and support to edit this issue. As Managing Editor, I have been impressed by the many scholarly articles we received in response to the call for papers for this issue. All submissions went at least through two blind review cycles before receiving final acceptance. We gratefully acknowledge the support of the referees who reviewed the manuscripts and provided thoughtful suggestions for improving the quality of the papers.

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IN LIGHT OF THE NEW CODE DOES CORPORATE GOVERNANCE IMPACT PERFORMANCE OF BANGLADESHI FIRMS?

Mabel D'Costa[1], Kamrul Huda Talukdar[2], Adnan Habib[3]

This paper primarily addresses the gap in existing literature and strives to find a causal relationship between good governance and firm performance after the implementation of the new code in 2012 in Bangladesh market. The purpose of this study is to find out if firm performance, both accounting-based and market-based, is affected by the corporate governance factors in Bangladeshi public limited companies. Ordinary Least Square regression was applied to 106 companies listed in the Dhaka Stock Exchange (DSE) with Price/Earnings ratio, Return on Asset, and Return on Equity as the dependent performance variables and Board Size, Board Composition, Audit Committee Size, Composition and Grade as the independent governance variables. It was found out that good governance does not have any effect on the market performance of the companies. While for accounting-based performance the audit committee size and composition has significant impact on companies other than banks and non-bank financial institutions (NBFIs). Performances of banks and NBFIs had no significant impact due to governance variables.

1. INTRODUCTION

In Bangladesh, it is common that the founding immediate or extended family members hold the position of board of directors. Hence, control of decision making lies in the hands of those founding members which is relatively different from companies in western countries (Rashid, 2013). The major obstacle for implementation of corporate governance policies in Bangladeshi companies is the dominance of founding family members in decision making (Rashid, 2013).

The Securities and Exchange Commission (SEC) has imposed current corporate governance code (herein after referred to as the "Code") on listed companies on "comply" basis by a notification issued on August 07, 2012. The deadline to comply with the Code was December 31, 2012. Prior to this notice the Code was based on "comply or explain" basis which is still in practice in western countries such as UK and USA.

This paper adds on to the scarce literature, like Saha and Akter (2013) and Haque, Arun and Kirkpatrick (2014), on corporate governance issues of Bangladeshi companies. Bangladesh,

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being a conservative developing economy, is of great interest to potential investors as well as development researchers. However no study had been conducted on corporate governance issues of Bangladeshi companies after the implementation of the code. Thus, in effect this paper addresses two research issues or gaps:

- Impact of governance factors i.e. board size, board independence, audit committee size, audit committee independence and audit quality on firm performance since the implementation of the code.
- Extending the literature of corporate governance in Bangladeshi economy

To the best of the authors' knowledge the existing body of literature creates an index of good governance, rather than individual governance factors. The value that this paper adds through its empirical approach is the use of individual governance factors namely board size, board independence, audit committee size, audit committee independence and audit quality as independent variables instead of an index. This study is important as it is yet to be tested whether the apparent accountability due to more strict governance policies cause the firm to improve in its financial performance. The study also adds value by providing the managerial implications of the findings. This paper plans to meet the research gap through OLS regression of individual governance factors with various financial performance measures.

The following section of this paper investigates the past literature to find research gaps and develop appropriate hypotheses. This is followed by a description of sampling and methodology, in-depth analysis of the findings, implication and finally concluding remarks with limitation and scope for further research.

2. LITERATURE REVIEW & HYPOTHESES DEVELOPMENT

Implementation of effective governance practices helps businesses to attract investors and lenders for capital; minimizes risk of capital providers and ensures sustainable growth through efficient use of scarce resources which in long run fosters economic growth of a country (Ehikioya, 2009). Ehikioya (2009) in a study done on Nigerian market found that companies which are both higher in performance and valuation and lower in bankruptcy risk are the ones which have implemented good governance practices. However, establishing a well-functioning corporate governance mechanism in developing economies is challenging due to weak legal systems, bureaucracy, high level of corruption, dominance of family-owned businesses and lack of skilled and educated human capital (Adegbite, 2012; Waweru, 2014). This paper investigates whether different corporate governance variables impact performance of family dominant firms of an emerging economy, Bangladesh.

2.1 Board Size, Composition & Independence

Due to separation of ownership from control there is a presence of information asymmetry between owners (principals) and managers (agents) which may increase the possibility of immoral and unethical behaviour of managers (Mostovicz, Kakabadse & Kakabadse, 2011). These self-seeking, unethical and fraudulent activities of managers can be diminished by monitoring or by appointing independent directors (Alchian & Demsetz, 1972; Bukhvalov & Bukhvalova, 2011). Hence, according to authors Clifford and Evans (1997), composition of board is crucial in ensuring independence in boardroom. Board composition is the number of independent directors (IDs) on board in relation to total number of directors. According to the Code, at least one fifth of total number of directors on the board has to be IDs (previously it was one tenth).

Executive directors (EDs) are salaried full-time employees of the business. Promotion and compensation of EDs depend on the CEO; thus, it is very likely to be biased when evaluating CEO or another executive's performance (Rebeiz, 2015). In contrast, IDs are part-time non-salaried advisors with no personal or professional affiliation with the company or top management; hence, can provide an unbiased evaluation of top managements' performance (Rebeiz, 2015). According to Weisbach (1988), the probability to replace a poor performing CEO by a board with higher proportion of IDs is higher than a board with lower proportion of IDs.

Rosenstein and Wyatt (1990); and Ameer, Ramli, and Zakaria (2010) found proportion of IDs on board, significantly positively impact firm performance. In contrast, researches undertaken by Agrawal and Knoeber (1996) and Bhagat and Black (2002); found significant negative relation between board independence and firm performance. Afrifa and Tauringana (2015), Al Farooque, Zijl, Dunstan and Karim (2007); and Abdullah (2004) in their separate studies found that there is no significant relation of board independence on firm performance.

Code suggests a company should have minimum 5 members on the board and maximum 20 members. According to Hillman and Dalziel (2003) and Hillman, Cannella and Paetzold (2000) directors use their expertise and skills to acquire required resources and information for the business which leads to reduced uncertainty for the business. Larger board size makes coordination, communication and decision-making difficult and time consuming (Afrifa & Tauringana, 2015). Conversely, larger board size means better monitoring of resources and availability of diverse skills, knowledge and expertise to make decisions which would maximize shareholders' wealth (Fama & Jensen, 1983).

According to Yasser and Mamun (2015) and Rodriguez-Fernandez, Fernandez-Alonso and Rodriguez-Rodriguez (2014) larger board size results in better firm performance. Lehn,

Patro and Zhao (2009) and Yammeesri and Herath (2010) concluded in their studies that there is no relation between board size and firm performance. Afrifa and Tauringana (2015) and Guest (2009) found significant negative relation of board size on firm performance.

Current code increased the proportion of IDs on board. This indicates that more IDs on board imply independence of board which fosters better decision making and monitoring which should result in better firm performance. Hence, based on current change in code and previous literature the following two hypotheses have been developed –

H1: Companies with larger board size performs better

H2: Higher proportion of IDs on board leads to better firm performance

2.2 Internal Control/ Audit Committee

The purpose of audit committee is to ensure good monitoring mechanisms and to report true and fair picture of the financial statements and company affairs. Code specifies that listed companies should have an audit committee consisting of at least three "financially literate" members of which at least one should be an ID.

Similar to board size and board composition audit committee fosters internal governance mechanism (Weir, Laing & McKnight, 2002). Larger audit committee implies combination of more auditing knowledge and expertise leading to better financial management and firm performance (Weir et al., 2002). Larger board also implies more people to scrutinize the activities top management. However, more people in a committee means varied opinions, difficulty in processing problems and more time spent to come to a conclusion. Presence of higher number of IDs in audit committee indicates higher independence of the committee. According to prior studies, larger audit committee and higher proportion of IDs in audit committee increases quality of governance and decreases agency cost (Mande, Park & Son,2012; Anderson, Mansi & Reeb, 2004; Blue Ribbon Committee, 1999). Although Weir et al., (2002) and Klein (1998) found no significant impact of audit committee size and audit committee composition on firm performance. Based on previous studies and current code next set of hypotheses are –

H3: Companies with larger audit committee performs better

H4: Higher proportion of IDs in audit committee leads to better firm performance

2.3 Role of Auditing Firm

Auditing firms, as an external mechanism to foster good governance, can restrict companies from engaging in fraudulent activates and to identify any misrepresentation, manipulation

and/or omission in financial reporting. Higher quality auditor is assurance for the investors of higher quality financial reporting (Mande et al., 2012). Prior researches by Dye (1993); Becker, DeFond, Jiambalvo and Subramanyam (1998); Francis, Maydew and Sparks (1999) concluded that larger auditing firm with higher reputation provide better monitoring of financial reporting than smaller auditing firm because of more wealth at stake. According to Chee Haat, Rahman, and Mahenthiran (2008) if a large reputed audit firm's work does not match the standard quality of auditing then that audit firm's goodwill and future business will be severely damaged. Hiring the best auditor (s) of market means higher payments for their service which means only companies with sound financial health would be willing and able to pay high price for auditing service. Research shows that companies audited by Big Four audit firms perform better (Mitton, 2002). Bliss (2011) found a positive correlation between auditing firm and firm performance. Based on prior literature and current code next set of hypothesis is –

H5: Higher quality audit firm leads to better firm performance

2.4 Firm Performance

Company performance means how successfully the operations of that company were performed. Haniffa and Hudaib (2006) states it very clearly that corporate performance is presumably reflected in the way the firm is managed as well as the efficacy of the firm's governance structure. Some of the popular accounting-based performance measures are return on asset (ROA), return on equity (ROE), net profit, etc. The advantage of this approach is that it measures the actual economic benefit of the operation of the firm. The idea is that any operating performance should be reflected in the economic gain of the company. Most of the papers had chosen ROA as the appropriate measure for accounting-based firm performance because assets are the core aspect of a business' operations. Thus profitability of assets should reflect success of the operation.

Market-based performance measures take changes in share prices or market returns into account. The shareholders' value addition is the most important goal which is better explained with market-based performance. Some papers (Custodio, 2014; Afrifa & Tauringana, 2015) used Tobin's Q ratio as the appropriate market-based measure while some others (Alzahrani & Rao, 2014) used Market to Book value of stocks ratio in their study. However price-earnings ratio (PER), which is a market-based measure that reflects investor perception according to many scholars like Brigham and Houston (2012) and Ross Westerfield and Jaffe(2010), was less studied.

3. METHODOLOGY

3.1 Sample Size & Data Collection

This paper focuses on companies listed in DSE based on their data in the year 2013. Data from earlier time period was ignored as it will cause inconsistency due to the new corporate governance act issued by the SEC from 2012. As of December 8, 2014 DSE consist of 547 constituents. After excluding corporate bonds, debentures, mutual funds, treasury bonds, government/stated owned and newly enlisted (in 2013 and onwards) companies, there were 223 companies. The sample size was mainly decided based on availability of data at the cheapest cost. In the end, a total of 106 companies from various industries were chosen (Table 1).

Banks and NBFIs are heavily regulated and thus follow more conservative governance approach. Bangladesh Bank, being the central bank of the country, monitors and governs all the commercial banks and most of the NBFIs, while Insurance Development & Regulatory Authority (IRDA) Bangladesh does the same for all the insurance companies. Taking this fact into account the study was conducted mainly in two sub-samples. Based on the previous studies by Rodriguez-Fernandez et al. (2014); Black, Kim, Jam and Park (2010) and Jackling and Johl (2009) Banks and NBFIs were excluded from the main sample because of different accounting structure. Therefore, "Banks & NBFIs" is one sub sample that comprised of Banks, Insurance and Financial Institutions industries. The size of that sample was 58. The rest of the 48 companies were part of the second sub-sample group named "others".

Table 1: Industry Based Sample Distribution

Industry	Sample Size
Banks & NBFIs	
Financial Institution	18
Insurance	16
Banks	24
Others	
Telecom	1
Travel & Leisure	1
Paper & Printing	1
Fuel & Power	4
Cement	3
Service & Real Estate	3
Ceramic	3
Food and Allied	5
Tannery	3
Engineering	9
IT	2
Pharmaceuticals	6
Textile	4
Miscellaneous	3
Total	**106**

3.2 Regression Model

With a cross-sectional study using the Ordinary Least Square regression, this paper tries to capture the causal effect of good governance on firm performance regardless of time. Since the dataset consists of data for one year only for the sample firms, panel data regression in not relevant. A significant number of studies such as Al Farooque et al. (2007); Cheung, Raub and Stouraitis (2006); Baliga, Moyer and Rao (1996); Pi and Timme (1993); Bhagat and Black (2002); Klein (1998); Ezzamel and Watson (1993) have applied OLS regression. According to Kraft, Leone and Wasley (2007) Ordinary Least Square method is straightforward, better understood and easier to implement in applied research.

Based on the hypotheses created in the literature review a basic linear model has been shown below

$$PERFORM = \alpha + \beta_1 BSIZE + \beta_2 BCOMP + \beta_3 ASIZE + \beta_4 ACOMP + \beta_5 AUDF + \beta_6 LN\_AST + \beta_7 LN\_DTE + \varepsilon$$

Where:

α	intercept
β_n	coefficient for each of the independent variables
ε	theerror term
PERFORM	Performance measures
BSIZE	Board size (total number of board members on the board)
BCOMP	Board composition or proportion of IDs sitting on the board
ASIZE	Audit committee size
ACOMP	Audit Committee composition or proportion of IDs in Audit committee
AUDF	Auditing firm i.e. quality of auditing firm (as dummy variable; for grade A "1" and other "0")
LN_AST	Natural log of Total Assets (as a measure of firm size)
LN_DTE	Natural log of Debt to Equity ratio (as a measure of firm structure)

3.3 Variables

Three performance measures are used as dependent variables: PER (Price-Earnings Ratio), ROE (Return on Equity) and ROA (Return on Asset). Since there are two sub samples and three dependent variables, we can say that in total there will be six different models to be used on the available data.

On Sub-Sample "Others"

$$ROA_{Others} = \alpha + \beta_1 BSIZE + \beta_2 BCOMP + \beta_3 ASIZE + \beta_4 ACOMP + \beta_5 AUDF + \beta_6 LN\_AST + \beta_7 LN\_DTE + \varepsilon \quad \textbf{(1)}$$

$$ROE_{Others} = \alpha + \beta_1 BSIZE + \beta_2 BCOMP + \beta_3 ASIZE + \beta_4 ACOMP + \beta_5 AUDF + \beta_6 LN\_AST + \beta_7 LN\_DTE + \varepsilon \quad \textbf{(2)}$$

$$PER_{Others} = \alpha + \beta_1 BSIZE + \beta_2 BCOMP + \beta_3 ASIZE + \beta_4 ACOMP + \beta_5 AUDF + \beta_6 LN\_AST + \beta_7 LN\_DTE + \varepsilon \quad \textbf{(3)}$$

On Sub-Sample "Banks & NBFI"

$$ROA_{Banks\ \&\ NBFI} = \alpha+\beta_1 BSIZE+\beta_2 BCOMP+\beta_3 ASIZE+\beta_4 ACOMP+\beta_5 AUDF+\beta_6 LN\_AST+\beta_7 LN\_DTE+\varepsilon \quad \textbf{(4)}$$

$$ROE_{Banks\ \&\ NBFI} = \alpha+\beta_1 BSIZE+\beta_2 BCOMP+\beta_3 ASIZE+\beta_4 ACOMP+\beta_5 AUDF+\beta_6 LN\_AST+\beta_7 LN\_DTE+\varepsilon \quad \textbf{(5)}$$

$$PER_{Banks\ \&\ NBFI} = \alpha+\beta_1 BSIZE+\beta_2 BCOMP+\beta_3 ASIZE+\beta_4 ACOMP+\beta_5 AUDF+\beta_6 LN\_AST+\beta_7 LN\_DTE+\varepsilon \quad \textbf{(6)}$$

3.3.1 Dependent variables

As measures of firm performance the three dependent variables were chosen specifically to get a broader picture of both market-based and accounting-based performance. PER is the market-based measure chosen mainly due to its ability to reflect investor perception. ROA is the operational efficiency measure while ROE is the financial efficiency measure and together they comprise the accounting-based measures.

3.3.2 Independent variables

The independent variables are mainly associated with corporate governance to address the various hypotheses developed in the literature review. In order to test the first hypothesis (H_1) the independent variable board size was chosen that is the total number of board members. The board composition, which is the proportion of IDs in the board, will be used to test the second hypothesis (H_2). This variable is not directly found in the annual reports but it can be calculated by dividing the total number of IDs with the board size. The number of audit committee members is another independent variable which is selected to test the third hypothesis (H_3). Audit composition is a variable similar to that of board composition. Here the number of IDs in the audit committee is divided by the total number of committee members to find the proportion and this is required to test hypothesis four (H_4). Finally in order to test the fifth hypothesis (H_5) the grade of audit firm variable is used. Bangladesh Bank has categorized the audit firms in two grades: A and B based on their qualities which are eligible to audit Banks & NBFIs. This paper uses that categorization as a mean to evaluate the effect of the quality of audit firms on firm performance by using dummy variable. Hence, for "A" category of auditing firms "1" has been assigned and for "B" and other auditing firms "0" has been assigned.

A firm's performance does not only depend on good corporate governance. There have been too many studies of various factors affecting a firm's performance both internal and market-based. This study focuses on only corporate governance and so the other factors are considered unobserved. However, some of those unobserved factors, if ignored, can cause specification errors. Therefore those variables need to be placed in the model as control variable to better interpret the results. Most of the previous studies like Bliss (2011) and Elsayed (2007) have included the firm size and capital structure/capital intensity as factors having significant impact on firm performance. The wide range of values for the two control

variables can cause skewness in the result which was avoided by taking the natural logarithm of the values.

4. RESULTS ANALYSIS AND DISCUSSION

Table 2: Descriptive Statistics

Variables	Observations (N)	Mean	Median	Maximum	Minimum	Standard Deviation
A. Independent Variables	106	10.8962	10	21	5	4.401145
BSIZE	106	0.2076	0.2	0.8	0	0.117929
BCOMP	106	4.1604	4	9	3	1.243166
ASIZE	106	0.3561	0.3333	1	0	0.176238
ACOMP	106	0.8868	1	1	0	0.318352
AUDF	106	22.5985	22.722	26.2199	14.21094	2.573753
LN_AST	106	0.4728	0.1173	3.1844	-3.01156	1.479431
LN_DTE						
B. Dependent Variables						
PER	106	16.6112	17.925	69.56522	-228.75	29.14327
ROA (%)	106	4.69%	2.79%	26.67%	-29.89%	6.67%
ROE (%)	106	10.52%	10.83%	55.32%	-129.02%	16.68%

Table 2 summarizes the descriptive statistics of all the variables. The board size of the 106 sample firms ranges from 5 to 21 and has a mean, median and standard deviation of 10.89, 10 and 4.4 respectively. This implies that except for few cases, most of the firms in the sample are following the code which requires the firms to have a board size of not less than 5 and not more than 20. The board composition ranges from 0 to 0.8 and has a mean, median and standard deviation of 0.2076, 0.2 and .12 respectively. From the results, it is evident that most of the companies are complying with the governance code which requires them to have a board composition of at least 0.2 (i.e. 20 % of the board members should be independent directors). However, a few firms in the sample do not have any independent director in their boards. The minimum audit committee size is the sample is 3, which implies that all the firms meet the minimum requirement of having at least 3 members. The audit committee composition of the firms ranges from 0 to 1, which implies at least one firm do not have any independent director in the audit committee. However, on an average most of the firms meet the minimum requirement of having independent directors of one third of its committee size. At least 89% of the sample firms get audited by the A rated audit firms.

Among the dependent variables, ROE ranges from -129% to 55.32% and has a mean, median and standard deviation of 10.52%, 10.83% and 16.68% respectively. On the other hand, ROA oscillates between -29.89% and 26.67% and has a mean, median and standard devia

tion of 4.69%, 2.79%, and 6.67% respectively. Lastly, P/E ratio ranges from -228.75 to 69.57 and has a mean, median and standard deviation of 16.6, 17.9 and 29.14 respectively

Table 3 and 4 illustrates the correlation between the variables in the regression model for the financial institutions and non-bank financial institutions (Table 3) and other industries (Table 4). From Table 3, it is noticeable that ROA is negatively correlated with audit committee composition at 5% significant level and positively correlated with audit committee size and board size at a significance level of 10% and 5% respectively. From the sample of other industries we see that ROA is positively correlated with audit committee size at 10% significance level.

Table 3: Correlation for Variables of Banks & NBFIs

	N	ACOMP	ASIZE	AUDF	BCOMP	BSIZE	LN_AST	LN_DTE	PER	ROA	ROE
ACOMP	58	1.000000									

ASIZE	58	-0.487042	1.000000								
		(0.0001)*	-----								
AUDF	58	0.094792	-0.023821	1.000000							
		(0.4791)	(0.8591)	-----							
BCOMP	58	0.420049	-0.150271	0.103229	1.000000						
		(0.0010)*	(0.26 02)	(0.4406)	-----						
BSIZE	58	-0.126148	0.140399	-0.260153	-0.555083	1.000000					
		(0.3454)	(0.2932)	(0.0486)**	(0.0000)*	-----					
LN_AST	58	0.381776	-0.382666	0.183680	0.193726	-0.171533	1.000000				
		(0.0031)*	(0.00 30)*	(0.1675)	(0.1451)	(0.1979)	-----				
LN_DTE	58	0.380487	-0.347404	0.109347	0.179387	-0.238010	0.895668	1.000000			
		(0.0032)*	(0.0075)*	(0.4139)	(0.1779)	(0.0720)***	(0.0000)*	-----			
PER	58	-0.135653	0.199586	-0.083069	0.063425	-0.147134	-0.432750	-0.396076	1.000000		
		(0.3100)	(0.1331)	(0.5353)	(0.6362)	(0.2704)	(0.0007)*	(0.0021)*	-----		
ROA	58	-0.288609	0.220095	-0.215983	-0.205701	0.271698	-0.754870	-0.703865	0.050559	1.000000	
		(0.0280)**	(0.0969) ***	(0.1034)	(0.1214)	(0.0391)**	(0.0000)*	(0.0000)*	(0.7062)	-----	
ROE	58	-0.020487	-0.121661	-0.148571	-0.112779	0.064407	0.064631	0.133155	-0.513427	0.353139	1.000000
		(0.8787)	(0.3629)	(0.2657)	(0.3993)	(0.6310)	(0.6298)	(0.3190)	(.000 0)*	(.0065)*	-----

Probabilities in parentheses
*Correlation is significant at 1% level
** Correlation is significant at 5% level
***Correlation is significant at 10% level

Table 4: Correlation for Variables of Other Industries

	N	ACOMP	ASIZE	AUDF	BCOMP	BSIZE	LN_AST	LN_DTE	PER	ROA	ROE
ACOMP	48	1.000000									

ASIZE	48	-0.225076	1.000000								
		(0.1240)	-----								
AUDF	48	-0.053109	0.041179	1.000000							
		(0.7200)	(0.7811)	-----							
BCOMP	48	0.765520	-0.113844	-0.161198	1.000000						
		(0.0000)*	(0.4410)	(0.2737)	-----						
BSIZE	48	-0.212054	0.153248	0.087589	-0.398721	1.000000					
		(0.1479)	(0.2984)	(0.5539)	(0.0050)*	-----					
LN_AST	48	-0.076702	-0.069401	0.165433	-0.031255	-0.053365	1.000000				
		(0.6043)	(0.6393)	(0.2611)	(0.8330)	(0.7187)	-----				
LN_DTE	48	-0.027065	0.100789	-0.030010	0.165886	-0.045317	0.144247	1.000000			
		(0.8551)	(0.4955)	(0.8395)	(0.2598)	(0.7597)	(0.3280)	-----			
PER	48	0.131313	0.055946	-0.097003	0.103193	-0.000831	-0.020990	0.004550	1.000000		
		(0.3737)	(0.7057)	(0.5119)	(0.4852)	(0.9955)	(0.8874)	(0.9755)	-----		
ROA	48	0.035940	0.249274	-0.162778	-0.135110	0.150314	-0.182915	-0.228558	0.215704	1.000000	
		(0.8084)	(0.0875)***	(0.2690)	(0.3599)	(0.3078)	(0.2134)	(0.1182)	(0.1409)	-----	
ROE	48	0.032947	0.177465	-0.162910	-0.140981	0.168597	0.010456	-0.076948	0.107685	0.879903	1.000000
		(0.8241)	(0.2275)	(0.2686)	(0.3392)	(0.2520)	(0.9438)	(0.6032)	(0.4663)	(0.0000)*	-----

Probabilities in parentheses
*Correlation is significant at 1% level
** Correlation is significant at 5% level
***Correlation is significant at 10% level

Table 5: Correlation for Variables of Other Industries

Other Industries			Banks & NBFIs		
ROA	***Coefficient***	***Std. Error***	***ROA***	***Coefficient***	***Std. Error***
Constant	0.004222	0.144752	Constant	0.296123	0.076279
ACOMP	0.199695***	0.118390	ACOMP	-0.007256	0.022852
ASIZE	0.038830**	0.018303	ASIZE	-0.002723	0.002808
BCOMP	-0.288664	0.181921	BCOMP	0.008657	0.037651
BSIZE	0.001290	0.005582	BSIZE	0.001285	0.001025
AUDF	-0.044853	0.030125	AUDF	-0.011416	0.024074
LN_AST	-0.002841	0.005009	LN_AST	-0.010761*	0.003404
LN_DTE	-0.014022	0.011598	LN_DTE	-0.001979	0.004929
R^2	0.239268		R2	0.602441	
Adjusted R^2	0.106140		Adjusted R2	0.546783	
N	48		N	58	

*Significant at 1% level
** Significant at 5% level
*** Significant at 10% level

The above model (Table 5) where ROA has been used as the dependent variable for other industries, the model explains 23% (R2) of variability of the dependent variable and 60% (R2) in the sample of Banks and NBFIs. For the sample of other industries all the hypotheses are rejected except for hypotheses three and four. ASIZE is positively significant at 5% significance level. ACOMP is positively significant at 10% significance level with ROA and ROE (Table 6). This strengthens the findings of Weir et al. (2002) that larger board audit committee and higher proportion of IDs means more auditing knowledge and expertise and more brain to scrutinize the activities. It also proves that independence of audit committee leads to better firm performance as IDs can utilize their knowledge to evaluate activities of a business without any restriction in Bangladeshi firms. The results of this study also confirms the findings of Mande et al. (2012) and Anderson et al.(2004) that larger audit committee and higher proportion of IDs in audit committee increases quality of governance and decreases agency cost.

In contrast, none of the variables are significant at any conventional significance level for the sample of Banks and NBFIs except for LN_AST. It can be inferred that as Banks and NBFIs have separate external monitors hence the role and independence of internal audit committee does not affect the firm performance. Whereas, for other industries where there are no formal financial monitors present the role of internal audit committee is vital, hence the audit committee size and independence have positive impact on firm's financial performance.

The control variable LN_AST (a measure of firm size) is negatively related with ROA at 1% significance level in the Bank and NBFIs sample this is consistent with the findings on

Australian, Pakistani and Malaysian firms (Yasser & Mamun, 2015). According to Waweru (2014), firm size influences quality of governance in South Africa. Whether good governance influences firm performance is inconclusive and result of this study reveals that firm size negatively impact firm performance. Regression result indicates as firm size increases firm performance decreases this may perhaps be due to the fact that when a firm has grown beyond an optimum level, it may not be able to utilize its assets efficiently or assets may remain under utilized to produce profit. Based on the law of diminishing return, beyond the optimal level of firm size the management may be unable to use assets efficiently to generate profit.

Table 6: Comparative OLS Regression Results for ROE

Other Industries			**Bank & NBFIs**		
ROE	***Coefficient***	***Std. Error***	***ROE***	***Coefficient***	***Std. Error***
Constant	-0.339017	0.409274	Constant	0.322711	0.174428
ACOMP	0.617693***	0.334735	ACOMP	-0.027190	0.052255
ASIZE	0.080332	0.051751	ASIZE	-0.006050	0.006420
BCOMP	-0.916934***	0.514364	BCOMP	-0.035437	0.086096
BSIZE	0.006785	0.015782	BSIZE	0.000629	0.002345
AUDF	-0.140535	0.085177	AUDF	-0.044294	0.055049
LN_AST	0.009064	0.014161	LN_AST	-0.006215	0.007785
LN_DTE	-0.006531	0.032793	LN_DTE	0.013465	0.011272
R2	0.176084		R2	0.084384	
Adjusted R2	0.031898		Adjusted R2	-0.043802	
N	48		N	58	

*Significant at 1% level
** Significant at 5% level
***Significant at 10% level

The ROE model (Table 6) explains 17% (R2) of variability in dependent variable (ROE) in the sample of other industries and 8% (R2) of variability in the sample of Banks and NBFIs. None of the variables are significant at any conventional significance level for the sample of Banks and NBFIs; hence, all five hypotheses are rejected implying good governance practices do not impact firm performance. As already mentioned banks and NBFIs are highly regulated by external regulatory organizations; therefore, good governance practices does not add any extra value to financial performance of the company.

When the ROE model tested for other industries one hypothesis is supported by the regression results. Hypothesis four says higher proportion of IDs on audit committee (indicator of

independence) leads to better firm performance. This was tested by the variable ACOMP which is significantly positively related to firm performance at 10% significance level. Hence this study shows, for less regulated industries internal control plays a vital role. Independence of internal audit committee assures better firm performance. To put this into perspective efficient utilization of company resources results in higher profitability.

The study contradicts hypothesis two which is higher proportion of IDs on board (indicator of board independence) leads to better firm performance. This was tested by the variable BCOMP which is found negatively related with firm performance at 10% significance level. The result questions independence of board which can lead to better firm performance suggested by Clifford and Evans (1997). Findings of this paper also questions the results of Rosenstein and Wyatt (1990) and Ameer et al. (2010) who found proportion of IDs on board, significantly positively impact firm performance; however, strengthens the claims of Agrawal and Knoeber (1996) and Bhagat and Black (2002) who found significant negative relation between board independence and firm performance. Boardrooms of Bangladeshi firms are dominated by founding family members. Perhaps IDs are overshadowed by EDs during decision making. Hence, higher proportion of IDs does not mean their voices will be heard. Another reason for the CEO and EDs to be dominant in the decision making is due to inadequate knowledge of IDs which can also prolong the decision making process. Slow decision making process in long run could negatively impact company's profitability.

When PER is used to test whether good governance practices have impact on market-based firm performance measure, none of the variables are found significant at any conventional significance level in either samples. The variation in dependent variable (PER) is explained 3% (R2) and 25% (R2) in other industries and Bank & NBFIs respectively. Why good governance practices have no relation with market-based performance measure (PER)? According to Margoshes (1960) PER or price of stock is affected by many different factors. Margoshes (1960) identified price or PER is affected by investor perception about forecasted earnings, future dividends, investment period, growth rate of the company, and overall perception of the company in future. This suggests that although PER is a market-based measure, it is heavily influenced by the perceived operational success of the company by the investor. In addition, how much an investor is willing to pay for a company's share may also depend on length of operation, brand name/market reputation, market share, management skills and leadership which has not been included in this model. Hence investor decision of investment may depend on many other factors other than good governance practice.

5. IMPLICATION OF CORPORATE GOVERNANCE IN BANGLADESH

Dominance of founding family members on board and controlling decision making is common in companies in the Asian region (Johnson, Boone, Breach & Friedman, 2000; Ho & Wong, 2001). Decisions are predominately made by founding members as a result board

size has no significant impact on firm performance (ROA, ROE and PER). Some researchers concluded that larger board size makes coordination, communication and decision-making time consuming and ineffective and increases the chance of free-rider problem among the many board members (Afrifa & Tauringana, 2015). Boards of Thai companies are dominated by founding family member similar to Bangladesh and result of this paper also confirms the findings of Yammeesri and Herath (2010) that there is no relation between board size and firm performance.

Past studies show that companies audited by Big Four audit firms perform better (Mitton, 2002) and Bliss (2011) found a positive correlation between auditing firm and firm performance. In the context of Bangladesh, there is no significant relation between quality of audit firm and company performance. As audit firm fees depend on its market reputation; hence, the ability to pay large audit fee will depend on the company's financial soundness. It could be inferred from this study that rather than auditing firm quality influencing firm performance, it could be better performing firms hire better quality auditing firm which justifies the result of this study that auditing firm quality does not impact firm performance.

The study found board independence has significant negative relation with ROE; whereas, in Nigeria (Ehikioya, 2009), Thailand (Yammeesri & Herath, 2010) and Malaysia (Abdullah, 2004) board composition did not have any significant relation with firm performance. In the context of Bangladesh due to high level of dominance of founding members and lack of in-depth day-to-day business knowledge of IDs, IDs are overshadowed by CEO and EDs. This makes the decision ineffective and in long run firm performance suffers. Studies conducted in Singapore and Malaysia suggests that board should consist of at least 25% of IDs in order IDs to be effective monitor and impact firm performance positively (Abdullah, 2004). However, in Bangladesh the Code mentions at least 20% of the board should consists of IDs. Since the mean of BCOMP is 20.76% (Table 2), board and decision making are not independent resulting in negative impact on firm performance. Hence, the authority should consider changing the board composition from 20% to 25%. In addition, appointing IDs is another area of concern. Though the Code defines characterises of IDs, there is no nomination committee to appoint IDs; hence, appointment process may not be completely independent similar to the situation in Malaysia and unlike in the U.K. or Australia (Abdullah, 2004). In emerging economies like Bangladesh where legal system is weak, highly politically connected firms exploit political links to engage in opportunistic behaviour which destroys shareholders wealth (Muttakin, Monem, Khan & Subramaniam, 2015). With politically connected EDs on board, 20% of IDs may not be able to voice their objections. Hence, authority may consider including nomination committee as part of Code and increasing IDs presence for better decision making to ensure sustainable growth of the business.

On the contrary, audit committee size and composition significantly positively impact firm performance unlike in Thailand (Yammeesri & Herath, 2010). According to Code at least 33.33% of audit committee should comprise of IDs and all the members of audit committee should be financially literate. Since the mean of ACOMP is 35.61% (Table 2) higher than the 25% cut off point (Abdullah, 2004); hence, audit committee was successful in effectively evaluating financial activities which influenced firm performance.

External control mechanism such as legal system, corruption level (La Porta, Lopez de Silanes, Shleifer & Vishny, 1998) and takeover market (Stulz, 1999; Jamali, 2008) of a country play vital role in effective implementation of corporate governance. These aforementioned macro elements are country specific which validates why some factors of corporate governance have no impact on Bangladeshi firm performance; whereas, these same factors impact firm performance of other countries.

6. CONCLUSION

Overall, it may be concluded that in Bangladesh corporate governance variables are more important for firms which do not belong to the Banks and NBFI sector. Among the corporate governance variables, the proportion of IDs in the audit committee could lead to a better performance of firms which belong to other industries. However, market-based performance (PER) is not affected by implementation of governance mechanism. Because PER also reflects investor perception of a company which depends on various factors, such as forecasted earnings, dividends, investment period, growth rate of the company, and age of the company (Margoshes, 1960).

The results of this study can have significant managerial implication. The code does not have significant impact on the firm's market performance due to governance factors other than audit committee independence. This might influence managers to be reluctant to strictly maintain the suggested audit committee size, board size and audit quality. As appointing a high quality auditor will require higher audit fees. Similarly audit committee size and board size as suggested by the code might raise the cost of the firm and affect profitability, which is the basis for the accounting based performance.

The study found that board independence has significant negative relation with firm performance (ROE). In the context of Bangladesh where CEO and EDs are dominant because of family ties, political links; IDs have little power over the CEO or board. This makes IDs role in the decision making ineffective and in long run firm performance suffers.

This study features few limitations which are discussed as follows. Firstly, this study relied on the data available free of cost which include the annual reports and the website of the DSE. Annual reports of many public limited companies were not available on any public

portal. Secondly, a lot of companies lacked the data required for our research. Hence companies which had insufficient data on variables were disregarded form this study. Lastly, new Code was implemented in 2012 and the study period is 2013, it might take few years to reflect the true impact of new corporate governance policies on firm performance. This study can be expanded by increasing the sample size which may make changes in findings as well as including few more variables like firm age, institutional ownership. A study such as this will influence researchers to focus more on the emerging economy of Bangladesh and how conservative governance practices can affect the economic development.

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STRUCTURING TOURISTS' INTENTION ON LOCAL FOOD PURCHASE: TESTING MEDIATING EFFECT OF SATISFACTION

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ABSTRACT

This study aims to examine the factors influencing the tourists' purchase intention of local food by testing the mediating effect of satisfaction. The research employed a self-administered questionnaire of 250 foreign tourists from the major cities in Malaysia. The resulting data were analysed with confirmatory factor analysis (CFA) and structural equation modeling (SEM) techniques. The result of the data analysis revealed that the mediation effect of tourists' satisfaction plays a partial mediation role in between service quality and purchase intention of the local foods. Interestingly, all the direct relationships were also accepted. The results from this study can be used for looking in-depth nature of service quality, customer satisfaction and their purchase intention under the perspective on food tourism. Thus, the findings of this research may assist the ministry of tourism, higher education scholar and professional bodies to understand in details about the issues of service quality and customer satisfaction under the context of tourists' purchase intention of local foods.

Key words: Service Quality, Customers Satisfaction, Purchase Intention, Tourism

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INTRODUCTION

Tourism has become one of the most attractive and potential industries in an economy (Som & Badarneh, 2011). In Malaysia, the rate of foreign tourists' has started since 2004 (Kosnan et. al, 2012). As Malaysia consists of diversified culture and loaded with majestic natural resources (Mohd Isa and Ramli, 2014). For the purpose of developing tourism and hospitality sector, the Malaysian government announced to provide RM 2 billion. According to Ujang and Muslim (2014) Malaysia has rapid progressive structures for attracting tourist throughout the year. Due to stable climate and clam nature, foreign people, mostly prefer the places for their holidays and vacations. Therefore, local foods made by different Malay, Indian and Chinese restaurants are the key elements to attract both domestic and foreign tourists in various places in Malaysia. The varioustests and feature of these local foods could play a role which may draw the attention of the tourists. As local food is one of the significant components for expansion of both leisure and hospitality segments of any tourism industry (Kivela & Crotts, 2005; Qian & Rong, 2016).

Therefore the level of consumption of local food purchasing from different restaurants is influenced by the desire service quality and tourists' satisfaction (Cohen and Aioli; 2004; Björk & Kauppinen-Räisänen, 2016; Correia & Kozak, 2016). On the other hand, the image and test of local food may also play a significant role in structuring destination image as well. As the positive experience of the tourists' in consumption of local food may aid in the sustainable development and strengthen individual country specific identities.

Past researchers in the field of food and tourism perspective have mainly focused on the context of western and European context (Romano & Natilli, 2009; Chen & Huang, 2016; Getz & Brown, 2006; Ali et. al., 2016) However, recent years a number of studies have conducted with structuring tourists' intention through applying service quality and satisfaction variable on different scope of the tourism industry (Su et. al., 2016; Choo et.al., 2016; Nilplub et. al., 2016; Hall et. al., 2016). But the research with the intention of tourist's in purchasing local food embedded by service quality and satisfaction variable have not been highlighted in the details under Malaysian context.

Furthermore, until researchers only investigate food perception by the tourists' through comparison based study, where they have taken Malaysia with other Asian nations like Singapore, Hong Kong and Thailand (Altintzoglou et. al., 2016; Frisvoll et. al., 2016; Ma'moun et. al., 2016). So far research also proved that in food business the function of service quality by the restaurant in selling food is profoundly influenced towards the individual intention to purchase (Guesalaga & Pitta, 2016; Del Chiappa et. al., 2016; Messner, 2016).

Despite the central role of holiday experiences in different tourism destination in Malaysia, the attention towards understanding their intention on local food purchase by considering

perceived quality and satisfaction has received less attention in scholarly research. Existing studies including Shah Alam and Mohamed Sayuti (2011) and Mak et. al. (2012), have focused on the nature of Halal food purchasing by the locals and antecedents of tourists' food consumption. Specifically, Ling et. al. (2010) investigated the relationships between the Malaysian food image by considering tourist satisfaction and their behaviouralintentions. On the other hand, Karim et. al. (2009) investigated the Malaysian destination under the perspective of tourism destination and international tourist's perspective. These constitute a knowledge gap that needs to be filled by this empirical study.

The motivations for the research are twofold: firstly, This research addresses one of the gaps that exist in tourists' intention to purchase local food in Malaysia. Although Malaysia has promoted their tourism sectors for nearly two decades there is not enough empirical research tourists' intention to purchase local foods. As a result, this research makes a valuable contribution by highlighting on tourists' purchasebehaviour in Malaysia. Second, this study is intended to build a model embedded with perceived quality and satisfaction towards intention which explains in more in-depth understanding of the functions of quality as an independent construct and satisfaction as a mediating construct in between the relationship of perceived quality and intentions. Therefore, the researcher'sbelief that the findings of this research will provide a vital role to explore on local food preferences which could be a useful indicator for food suppliers to understand the kind of local food stuff on high demand on the tourism market. As Mitchell et al. (2000) suggest that the research on consumer behaviour is important for the related industry and the stakeholders to provide valuable insights on what is food tourist and how the restaurants and owners can effectively segment, target and develop their markets.

Hence it is clear that touristspurchase local foods from the destinations where they visit, their intention of purchasing determine the different components of perceived service quality from the restaurant they expect. Therefore this research work propose to investigate the nature of the relationship of service quality and the tourists' intention of taking the mediation function of satisfaction under the context of buying local food. The unit of the analysis in this study was the individual tourists. The outcome of this research assists the policy makers and managers of the restaurants to restructure their service quality to attain positive intention from the tourists' under the perspective from local food consumption. Also, this research has also helped to the related industry understand the expectation of the visitors which may assist them to gain acompetitive advantage among others to capture more customers for their restaurants.

However, this research will answer the following research questions:

- In what extent the relationships exist between the perceived service quality towards tourists' intention in purchasing local foods in Malaysia?
- How does tourist satisfaction play a mediating role in these relationships?

CONCEPTUAL FRAMEWORK DEVELOPMENT

The tourism and food industry mainly associated with the number of theoretical debate and empirical investigation (Henderson, 2016; Yeoman et. al., 2015; Henderson, 2015; Everett & Slocum, 2013). Chheang (2011) found that tourist intention is positive when their experiences are beyond their expectations. Verbeke and Lopez (2005) explored the perception of Latin-American ethnic food through nine food attributes: such (price, colour, charm), experience (taste, spicy, convenience) and credence (cleanliness, safety, healthiness). Qing-Chi et al. (2013) also revealed that the image of local food should have some multidimensional factors, including with food quality, presentation, diversity, accessibility, and singularity. Service quality has been distinguished as the measurement of expectation of usages, durability, features that meet the requirement of the customer for a special period regarding expenditure (Injac, 1998). Researchers claim that purchase intention of a buyer mostly influenced by service quality (Colgate and Lang, 2001). Studies also confirmed that overall satisfaction of customers is extremely linked to perceived service quality (Sofi et. al., 2016; Wu & Liao, 2016;Jang & Namkung, 2009).

Research has also shown that local food is one of the most important factors for the tourist's overall experience and intention that may contribute to the purpose of visiting the place and purchase behaviour (Kivela and Crotts, 2006). Boulding et. al., (1993) identified tourists' perceived service quality and demonstrated its influence their intended behaviours. In this regard, Bigné et al. (2001) also added that perceived service quality lead to overall satisfaction and close towards the behavioural intentions.

Meanwhile, satisfaction is a sensation of pleasant experience that is felt by an individual while he or she uses or purchase any product or service from the seller (Hussein, 2016). Tat et. al. (2011) looks into the connection between satisfaction and purchase intention in hotel and restaurant industry. Intention to purchase is the experience of a customer that they buy any product or get any services from a particular organisation (Reynolds & Arnold, 2000). Dmitrovic et al. (2009) explored a model to conceptualise the tourist's satisfaction at the destination level and tested empirically. The model identified eight latent constructs where the construct of quality, image, value, costs and risks were proved as the primary antecedents of customer satisfaction. This research adapted Dmitrovic et al. (2009) research to measure the customer satisfaction scale. Also, the research from Chen and Tsai (2007) also developed a tourist behavioural model embedded with destination image and perceived value under the perspective of ''quality–satisfaction–behavioural intentions'' paradigm. The researchers explored that the role of destination image has both direct and indirect effects on the behavioural intentions of tourists'. However, the research also proved the relationship of ''destination image-trip quality-perceived value-satisfaction behavioural intentions''. Therefore, the current research adapted Chen and Tsai (2007) research to operationalise the perceived service quality scale. Above all, the study from Zeithaml et al. (1996) revealed that service quality relates to the purchase intention of the consumers at the aggregate level. As this research adapted Zeithaml et al. (1996) research to operationalise tourists' purchase intention scale.

The satisfaction derives from tourism experiences mostly refers to the emotional state of the tourist who has received the chance to see some particular tourist place (Baker & Crompton, 2000). Kotler (2016) claimed that satisfaction is the individual's perceived feelings regarding enjoyment and displeasure resulting from comparing a product or services are perceived performance (or outcome) about one's first moments.
Tourist satisfaction with facilities, ease of accessibilities, consumptions of the right products and services, foods have been identified the most imperative factors that profoundly linked with the development and attraction in the tourism business (Ryu & Jang, 2006; Chen and Tsai, 2007). De Oña (2016) highlighted that a high quality of product and services relate to the satisfaction of the tourists.

By referring to the discussions, following hypotheses for this research are developed:
Hypothesis 1: There is a significant positive relationship exists between perceived service quality and tourist's satisfaction.
Hypothesis 2: There is a significant positive relationship exists between tourist satisfaction and intention to purchase.
Hypothesis 3: There is a significant positive relationship exists between perceiving service quality and tourists' intention to purchase local food.
Hypothesis 4: The relationship between perceived service quality and tourist intention to purchase mediated by tourist satisfaction

The conceptual framework includes independent variables, mediating variable and dependent variable. The independent variable of the research is perceived service quality, which is presented in Figure 1 on the left side in a rectangular box. The mediating variable of the study is tourist satisfaction which shows in the middle of the framework. Finally, the dependent variable is the tourist intention to purchase shown on the right side of the framework in a rectangular box.

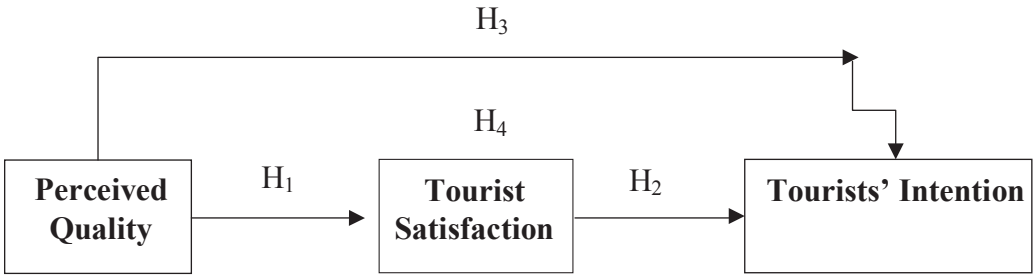

Figure 1: Conceptual Framework of Structuring Tourists' Intention on Local Food Purchase Methods

SAMPLE AND DATA COLLECTION

The research was selected the main cities of Malaysia for conducting the data collection procedure. The survey mainly covered Kuala Lumpur and Selangor area where multicultural peoples' are living, and most local from another state, foreign tourists have been seen. The

study questionnaire was distributed among 250 local and international tourists. The details demographic information of the respondents is shown in Table 1:

Table 1: Demographic Profile of the respondents

Demographic Information	Category	Frequency	Percentage (%)
Gender	Male	113	45.2
	Female	137	54.8
Origin	Local	170	68
	Foreign	80	32
Age	Less than 20 years	28	11.2
	20 to less than 25 years	25	10.0
	25 to less than 30 years	70	28.0
	30 to less than 35 years	60	24.0
	35 to less than 40 years	40	16.0
	40 years and above	27	10.8
Marital Status	Single	111	44.4
	Married	130	52.0
	Divorced/Widowed	5	2.0
	Separated	4	1.6

MEASUREMENT DEVELOPMENT

This research adapted different measurement scales to understand the hypothesised relationships between the constructs. The studies measure perceived service quality using five items from Chen and Tsai (2007) research. The tourist satisfaction scale was measured by using five items modified items adapted from Dmitrovic et al. (2009) research. Lastly, tourist purchase intentions were assessed by five items adapted from Zeithaml et al. (1996) research. This study applied 5 point scale to assess the rating of the respondents. The scale rating 1 (strongly disagree) to 5 (strongly agree), for Perceived quality (1=Very Unsatisfactory, 5=Very Satisfactory), for tourist perception (1=Very Low, 5=Very High) and finally, intention to purchase 1 (strongly disagree) to 5 (strongly agree).

STATISTICAL ANALYSIS

The study conducted confirmatory factor analysis (CFA) to acquire the measurement model that shows the unidimensionality of the research construct. Later, the study performed structural equation modeling (SEM) to identify the full structural model to assess the direct and indirect relationships among the constructs. As this research applied MLE (maximum likelihood estimation) to understand the estimate of the parameters in the proposed model (Hair et. al., 2006). To identify the model fitness the study used Chi-square, goodness-of-fit (GFI), AGFI, CFI RMSEA and normed chi-square (Bollen, 1989; Joreskog & Sorbom, 1979). The research conducted mediation test through examination of total, direct and indirect effect among the exogenous and endogenous variables.

RESULTS & FINDINGS

Measurement Model of the Research

The studyexaminedmeasurement model through CFA analysis to identify the unidimensionality and the factor loadings of each item among the constructs. In order to check the multicollonearity correlations analysis among the construct were conducted. The outcomes indicate that all the constructs correlations are in acceptable level which is not more than 0.85. This model shows there is no interrelationships were found that exceed the value of 0.85 (see Figure 2). It means the model confirms that there is no issue of multi-colloniarity. The measurement model shows that good fit indices to the data: ($\chi 2$ = 213.222; DF= 86; Relative chi-square = 2.479; CFI=. 891). An overview of the measurement model is displayed in Figure 2.0 below. From the model it has found that the CFI is closer to 1, and the Normed chi-square upper limit is 3 or 5. All the indication shows good fit. The measurement model represented in Figure 2.

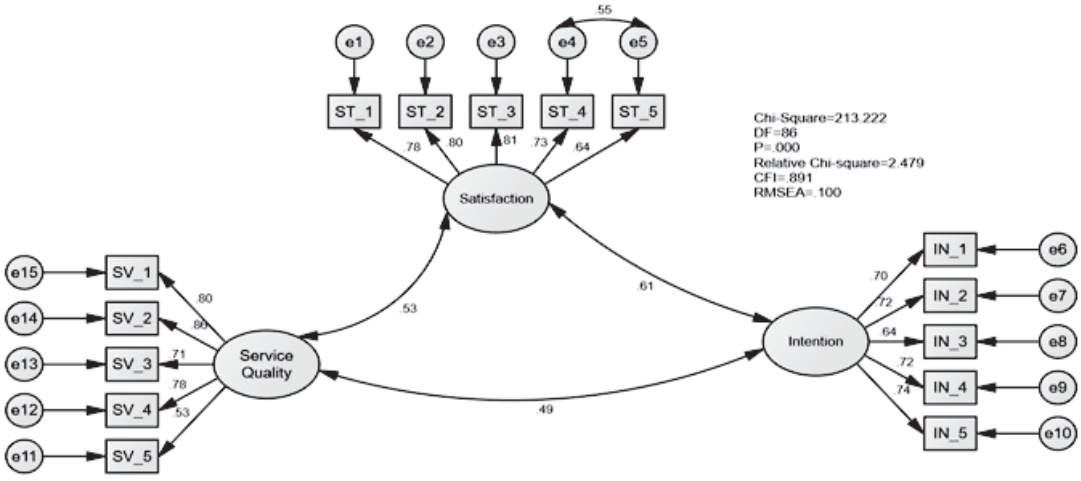

Figure 2: Measurement Model of the Research

Table 2: Correlations Matrix among the constructs

Construct Relationship			Estimate
Tourist Satisfaction	<-->	Intention to Purchase	.614
Tourist Satisfaction	<-->	Perceived Service Quality	.529
Intention	<-->	Perceived Service Quality	.489

VALIDITY AND RELIABILITY ASSESSMENT:

This study successfully meets the validity test assumptions for each construct. The Table presents that all the loadings of the items under each construct are in expected level (Hair et al. 2010). The researchers also calculated Cronbach's alpha of perceived service quality, tourist satisfaction and intention to purchase. The value of Cronbach's alpha is 0.80 or higher for each construct (See Table 2).

Table 2: Composite Reliability and distribution of factor loadings

Variable	Loading	Cronbach's Alpha
Perceived Service Quality	0.80	**0.815**
	0.80	
	0.71	
	0.78	
	0.53	
Tourist Satisfaction	0.78	**0.801**
	0.80	
	0.81	
	0.73	
	0.64	
Tourist Intention to Purchase	0.70	**0.866**
	0.72	
	0.64	
	0.72	
	0.74	

STRUCTURAL MODEL OF THE RESEARCH

After confirming the measurement model the study employed SEM for exploring the relationships among the independent, mediating and dependent variables. The structural model shows that good fit indices: ($\chi 2 = 213.222$; df=86; Relative Chi Square = 2.479; CFI=.891). An overview of the measurement model is displayed in Figure 2.0 below. From the model it has found that the CFI is closer to 1, RMSEA is in between.05 – 0.10, and the Normed chi-square upper limit is 3 or 5. The indication shows the fit of the model. Figure 3 presents the structural model of the research.

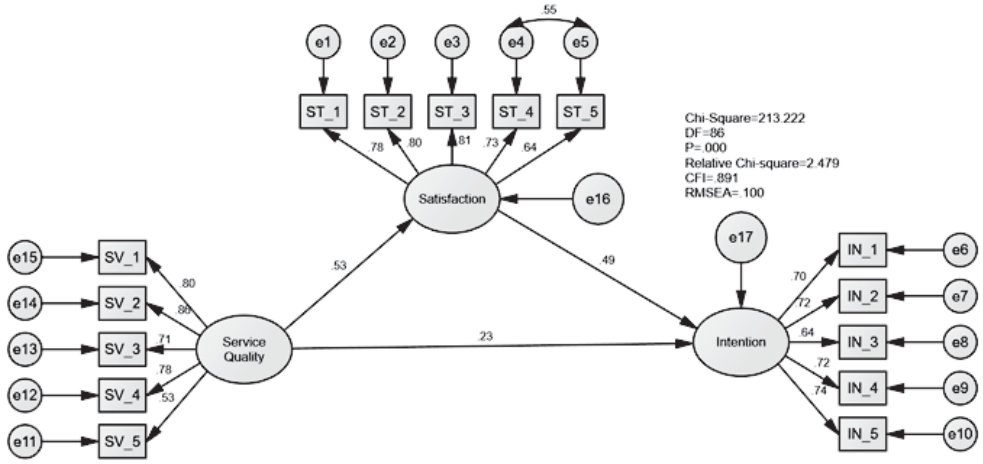

Figure 3: Structural Model of the Research

Table 3 highlights the hypothesised path coefficients of the suggested model. The table presented all the hypothesised paths, coefficients and p-values. The significance tests for the structural path model parameters were used for accepting or rejecting the hypotheses of the proposed relationship. According to Hair et al., (2010) all the path coefficient value should be minimum 0.15 and above to consider as statistically significant.

There is a significant positive relationship exists between perceived service quality on local foods and their satisfaction. Hypothesis 1 is supported(standardised path coefficient=. 732). The research also explored the significant positive relationship exist between satisfaction and intention to purchase local foods (standardised path coefficient =.289). Thus, hypothesis 2 are also accepted. Table 2 shows the standardised path coefficient between tourist satisfaction and intention to purchase is 0.289 ($p \leq 0.05$). In summation, the research also confirms hypothesis 3, where the outcome of the SEM analysis shows that there is a significant relationship exist between perceived service quality and purchase intention. Thus, all the direct relationships of the research hypotheses are confirmed by empirical justifications.

The research conducted mediation test according to the suggestions by Baron and Kenny's (1986). Based on the literature on mediationtest, this study revealed that the relationship between service quality and tourist satisfaction is significant (β =. 732, CR = 4.572, P=0. 000). The relationship between tourist satisfaction and intention to purchase is also significant (β =.453, CR = 4.371, P= .000). So, when these two relationships were controlled for, a previously significant relationship between the exogenous variables and the endogenous variable is also significant. As a consequence, this research explored that the tourist satisfaction plays a partial mediator in between the relationship of service quality and intention to purchase local foods from a restaurant (See Table 3). Therefore, the hypothesis 4 is not supported.

Table 3: Regression Weights

Construct Relationship			Estimate	S.E	C.R.	P	Label
Tourist Satisfaction	<---	Service Quality	.732	.160	4.572	***	par_15
Purchase Intention	<---	Service Quality	.289	.133	2.167	.020	par_14
Purchase Intention	<---	Tourist Satisfaction	.453	.104	4.371	***	par_16

The outcome of this research establishes that the restaurants who sell local foods need to focus both domestic and foreign tourists. The study also explored that the main reason for intention-behaviour of the tourists to purchase foods from a restaurant is the service quality of the restaurant. As Rahman etal (2012) noted that the significant variety of consumer perception about the quality of foods provided by the restaurants has also impacted on the development of the hospitality industry. However, perceived service quality is not only the sole antecedent of purchase intention rather the players need to look for the customer's satisfaction as well in their every step of operation (Spreng & Mackoy, 1996; Kettinger & Lee, 1994). For this reason, it is necessary to understand the critical antecedents of purchase intention of local foods to develop and restructure their strategy regarding making and selling the product in more convenient ways. Ultimately, this research holds the aim to confirm that both local and foreign tourists are aware of the local foods and don't hesitate to buy it if the standards meet their expectation. As tourism as an experience of learning, appreciating and consuming of locally branded things (Gössling et. al.,2012; Scott et. al.,2008). Based on that, local food plays an important role of cultural, reflecting the character of the destination. Thus the findings from this research suggest that satisfying physical needs through the facilitating of local foods from the destination restaurants may create an opportunity to ascertain about the local community and the related people in that industry (Buhalis, 2000; Horng & Tsai, 2010; Chang et. al., 2010).

This research may contribute to the wider discussion on local food purchase intention by the tourists and relates to service quality and customer satisfaction construct in a combined model. Therefore, this research explored the significant relationship among the variables which may assist the tourism planners, academicians, policy makers and managers from the perspective of Malaysian as well as another country. The researchers also agreed that the optimisation of service quality in the delivery of local foods by the restaurant owners to the tourists mightfulfil the desire, expectation of the tourists' in purchase intention of the local foods produced by the local community.

CONCLUSIONS, RECOMMENDATION AND LIMITATIONS:

The outcome of this research also recommends that any ordinary visit to a restaurant is not considered as a food tourism rather it involves more on culinary, gastronomy, gourmet or cuisine. So based on that, the ministry and the related industry may organise different food festivals around the year in a particular location to improve the overall service quality and tourist satisfaction.

The findings from this research explored that understanding tourists' local food selection intention may serve as a valuable input for the food retailers in destinations where tourism plays a major role in the national development. As this research considered both local and foreign travellers so their choice of selection could be a pointer of the foods have the highest demand in the existing market. With particular reference to Malaysia, the result from the statistical analysis showed that perceived service quality and satisfaction play a significant role on the intention. Therefore, the ministry of tourism requires supporting the improvement in the quality of Malaysian traditional foods by improving the infrastructure of the local food industry. As consumer research is an ongoing process which involves the assessment of current service quality perceived by the customers and enhances the level of satisfaction over time. Therefore, the present research in line with the marketing practices to understand the nature of service quality and satisfaction to determine the perception of local and international tourists' intention of local food purchase in the Malaysian context. As a result, this research would help to draw a corrective strategy to address the gaps in the tourism industry, particularly from Malaysian context.

This research yields scientific data that can form the basis of Malaysian local food purchase intention from tourist's perspective. As Quan and Wang (2004) argued that an in-depth understanding of tourists' food preferences and their behaviours are required to enable managers of hospitality businesses to face the challenge of how correctly portray and present their local cuisines as an attraction for their target market. Therefore the findings from this research suggest that the there is a substantial market of food-interested visitors that need to be nurtured in Malaysia. The current awareness and interest in Malaysian local foods need to be sustained by improving the service quality.

The findings of this research also identify the factors influencing the local food purchase intention by the tourists, so that restaurants need to be located in a tourist destination places by assuring the optimum service quality tofulfil the expectation of the tourists. As a result, the marketing strategies of the restaurants need to more on service quality centric. The researchers also believe that intention to purchase is influenced by many other components. This research used only two determinants of the intention to purchase; they are namely; perceived service quality and tourist satisfaction. This research has confirmed that all these three predictors are significantly influencedtourist's intention to purchase local foods under the perspective from Malaysian environment. This studyis based on a cross-sectional survey. So the future research needs to look at the data collected from different times. As the sample size of the current study is below 300 so future research may conduct on a larger sample size togeneralise the findings.

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TIME-VARYING VOLATILITY DYNAMICS OF DHAKA STOCK EXCHANGE (DSE) USING GARCH-TYPE MODELS

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ABSTRACT

Our study in this paper examines the changes in volatility dynamics of Bangladesh stock market, due to stock market crash back in 2010 using Generalized Autoregressive Conditional Heteroscedasticity (GARCH) models. Both symmetric and asymmetric GARCH models were used to estimate the conditional volatility in daily returns of the main stock exchange of Bangladesh namely as the Dhaka Stock Exchange (DSE). Using the closing values of DSE General (DGEN) and DSE broad (DSEX) indices, we conduct our analysis by keeping the crash period of 2010 in focus and dividing the data series into three sub-periods namely as crash, pre-crash and post-crash periods. The data series exhibit evidences of skewness, kurtosis and deviations from normality as expected from Finance literature. The unit root test concludes that the data series is not stationary at level but become stationary when we take returns of the series into consideration. The conditional variance is found to be highly persistent with leverage and asymmetric effects. Our results also indicate that asymmetric GARCH models are better fitted to model volatility dynamics than the symmetric GARCH model for all sub-periods. Lastly, the comparison among various model parameters in different sub-periods in our study also exhibit significant change in volatility patterns of DSE from pre-crash to post-crash period as indicated by ARCH, GARCH, Leverage and Power coefficients.

Key words: Volatility, Symmetric GARCH, Asymmetric GARCH, DSE, Leverage, Stock market crash

INTRODUCTION

Volatility of the financial market is considered as one of the major indicators of the dynamic fluctuation in stock prices around the world (Raja & Selvam, 2011). Stock market volatility is synonymous with risk and unlike the constant volatility assumption of Classical Linear Regression Model (CLRM); the stock market volatility is not stable over time as it changes frequently. This time-varying nature of volatility and the asymmetry within a financial time series have become an important financial research area in recent times.

Historically most of the stock market crashes had significant influence on volatility patterns of the affected markets. Bangladesh stock market also experienced severe market crash back in 1996 and then again most recently in 2010. Same as global markets, volatility patterns of

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Bangladesh stock market was also expected to change after these market crashes. While many literatures related to market crash in 1996 tried to uncover reasons and aftermath of that financial crisis, a little study has been made till date regarding the impact of 2010 stock market crisis and its impact on the market return volatility.

Our main objective for this research is to capture the time-varying volatility dynamics of DSE through using various univariate symmetric and asymmetric GARCH model parameters and their coefficients. We use time series data of the DSE indices to find the best fitted GARCH model/models. This helps us to analyse the conditional volatility of the market. Besides, we also focus on the change of coefficient values for selected model parameters due to change in volatility dynamics before and after the 2010 stock market crash.

Various studies so far have been made regarding the impact of 2010 stock market crisis in Bangladesh. However to the best extent of our knowledge, none of these studies have focused on the shifting patterns of time-varying conditional volatility due to the market crash using asymmetric GARCH parameters. Thus, our study will help to understand the market dynamics more thoroughly and enrich literatures related to volatility movement pattern due to market crash for the Bangladeshi stock market.

LITERATURE REVIEW

In the case of financial time series, constant volatility assumption over a period of time is statistically insignificant and logically inconsistent (Campbell, Lo, & MacKinlay, 1996). In most cases, the volatility of a financial time series actually moves in 'cluster' which means large(small) change in asset price will follow a further large(small) change (Mandelbrot, 1963). Therefore, unlike the Homoscedasticity assumption of Classical Linear Regression Model (CLRM), error variance of a financial time series is not constant. To capture the impact of lagged residuals on the volatility exhibited by financial time series, Autoregressive Conditional Heteroscedasticity (ARCH) class of models were proposed (Engle R., 1982).

Since then, different studies of investment and financial market volatility have been made by Hsieh (1984), Akgiray (1989), Engle (1990), Engle and Mustafa (1992) and others using the ARCH models to confirm and capture the existence of ARCH effect in various global financial markets. With the use of high frequency daily and weekly data, significant ARCH effects are shown in different global stock markets (Diebold F. X., 1988), (Drost & Nijman, 1993). This ARCH effect exists mainly due to the amount/quality of information that reaches in financial markets and the time required between information arrivals and processing by market participants. However, with the decrease in data frequency, the ARCH effect actually fades away (Diebold & Nerlove, 1989).

Various studies are made to conduct the presence of ARCH effect in different financial markets. For instance, Brailsford and Faff (1996) use ARCH and simple regression models to capture and forecast the volatility pattern for Australian stock market. However, a major

constraint of these ARCH type models is their sensitivity to the error statistics which are mainly used to measure the model forecasting accuracy. To overcome this constraint, a new improved extension of the ARCH, namely as GARCH model, was proposed (Bollerslev, 1986). GARCH performs better than ARCH and simple regression models in capturing volatility dynamics using Fourier analysis. The model eases the process of calculating diffusion process of volatility for a particular time point (Barucci & Reno, 2002b). Besides, GARCH has superior forecasting power over other linear and ARCH type models (Akgiray, 1989). Akgiray (1989) forecasts the monthly variance using 4 linear and non-linear models namely as Historical Estimate, Exponentially Weighted Moving Average (EWMA), ARCH and GARCH models and among these, GARCH model outperforms others and the forecasts obtained from this model are highly accurate and less biased.

GARCH type models are able to capture and forecast the time-varying conditional variance of a financial time series which has past random changes in its return. Observation reveals that the simple first order symmetric GARCH (1, 1) model performs better to capture the conditional volatility dynamics of time series compared to historical standard deviation and EWMA models. However, this GARCH (1, 1) model lacks forecasting accuracy because of its simplistic symmetric nature in contrast to the asymmetric behaviour of the financial market volatility (Erdington & Guan, 2004). To capture this asymmetry of the market (popularly known as leverage effect), several improvements of the original GARCH model such as the Exponential GARCH (EGARCH), the Power GARCH (PGARCH), the Threshold GARCH (TGARCH) and others are proposed. Several studies conducted by Pagan and Schwert (1990), Lee (1991) and Randolph & Najand (1991) suggest that the simple GARCH is only accurate in period with small volatility changes, thus proving that the model is inferior and has persistent forecast capability compared to other asymmetric GARCH models. In addition, Taylor *et al.* (2010) suggests that although model free volatility expectation and at-the-money (ATM) implied volatility out- perform other volatility models, asymmetric GARCH models are still better for short forecasting horizon period.

In recent years, volatility modelling in emerging stock markets has gained much popularity mainly due to the global shift of investors' focus from developed markets to the developing emerging markets. Studies such as Moosa and Al-Loughani (1995) and Saatcioglu and Starks (1998) examine the volatility dynamics of different emerging stock markets. Bekaert and Harvey (1995) concludes that the dynamics of volatility is difficult to capture in emerging markets unlike developed markets although the paper confirms the importance of world factors to model the emerging market volatility. Later, a further study by Bekaert *et al.* (1998) and A. Ng (2000) exhibit the applicability of univariate asymmetric GARCH process in emerging markets and thus introduce significant improvement in the volatility modelling of emerging market. Other studies such as Poshakwale and Murinde (2001) observes persistent volatility using the GARCH in Mean (GARCH-M) technique on Hungary and Poland stock markets while Siourounis (2002), Bologna and Cavallo (2002) and Gonzalez *et al.*

(2003) find out the best suited GARCH models for Athens, Italian and Mexican stock markets respectively by using different GARCH-type models.

Recently Asian emerging stock markets have gained significant attention and discussions due to economic growth of China, India and several other East Asian countries. Researchers such as Raju and Ghosh (2004) observes a high volatility pattern for Indian and Chinese stock markets compared to other emerging markets.

Studies of Rijo (2004), Kaur (2004), Padhi (2006), Radha & Thenmozhi (2006) and Fahimifard *et al.* (2009) have found the presence of ARCH effect in various Asian stock markets. Their studies conclude that non-linear ARCH/GARCH-type models actually can perform better than different linear models for these markets. However, other studies such as the one of Mukherjee *et al.* (2011) reveals the presence of asymmetric leverage effect for Asian, mainly Indian stock market. The paper suggests that the asymmetric EGARCH can capture the market dynamics of Indian SENSEX index better compared to TARCH model as the index return data exhibits considerable amount of asymmetry with higher skewness. Hassan & Shamiri (2007) also confirms the better applicability of EGARCH model to explain the asymmetry of Singapore and other important Asian stock markets.

Literatures related to emerging and developed markets volatility dynamics is rich. However, a little has been done so far with Bangladesh and other frontier markets, mainly due to lack of data and size dimension in these markets. Researches such as Haque *et al.* (1998) examines the risk return pattern and market efficiency of DSE and the effect of automated trading system on this pattern. In addition, Hassan and Maroney (2004) analyses the effect of thin trading and non-linearity on DSE market efficiency by fitting a cubic function of stock and AR(1) return processes using data over 13 years period. The study of Chowdhury and Ratan (2012) estimates and forecasts volatility of All Share Index (DSI) using symmetric GARCH and asymmetric GJR-GARCH models for the market return data of 2005-2010 period. The study concludes that the GJR-GARCH model can capture the market dynamics better compared to simple GARCH model. Other studies such as Huq *et al.* (2013) examines modelling and forecasting ability of ARCH, GARCH, TGARCH and EGARCH on DSE data for a period of 2010-2013. The results of this study shows that GARCH (1, 1) and GARCH (2, 1) models provide superior performance to capture conditional volatility dynamics for this period compared to other models.

The stock market of Bangladesh has experienced two major crashes back in 1996 and 2010. As shown by developed and emerging markets, the volatility patterns of stock indices actually shift after each market crash. Therefore, it's essential to analyse the volatility dynamics during the market crash period to get a full understanding about volatility pattern change. However, little has been made so far regarding the relationship between stock market crash and volatility change for Bangladesh. For example, Imam & Amin (2004)

divides 1996 market crash period into two sub-periods: pre and post-crash and applies symmetric GARCH model for both these sub-periods. The result of this test exhibit different GARCH parameter values for these sub-periods. Imam & Amin (2004) explains that the presence of high volatility pattern in 1996 post-crash period and the change in the behaviour of investor after market crash was responsible for these parameter values.

Same as 1996, the market crash in 2010 has also changed market dynamics, policy regulations and trading patterns of DSE. Studies in Choudhury (2010), Saha (2012), and Sarker & Nargis (2012) try to expose reasons behind this severe market crash and the implication of this crash on different stakeholders. However, no study related to volatility patterns before and after 2010 market crash period has been conducted till date to the best extent of our knowledge. In addition, unlike Imam & Amin (2004), it is also essential to test asymmetric GARCH models for Bangladeshi stock market as these models have superior predictability than the symmetric ones and they can improve the literature by enabling us to understand reasons behind the true shift of market volatility dynamics from before crash to after crash period in 2010.

DHAKA STOCK EXCHANGE AT A GLANCE

Dhaka Stock Exchange (DSE), the main bourse operating in Bangladesh, began its trading back in 1956 with a total number of 196 listed securities and USD 0.051 billion paid up capital (Chowdhury A. R., 1994). As of June 2014, the market capital of DSE has reached at USD 38.223 billion (see table 1 below).

Table 1: DSE Market Highlights

Key Indicators of DSE	**June 30, 2006**	**June 30, 2014**	**% Change**
	(numbers)	(numbers)	
Listed Companies	256	263	2.7%
Mutual Funds (MFs')	13	41	215.4%
Debentures Issuers	8	8	0.0%
Treasury Bonds Issuers	26	221	750.0%
Corporate Bonds Issuers		3	
Total No. of Listed Securities	*303*	*536*	*76.9%*
	(million numbers)	(million numbers)	
Listed Companies	139.050	4304.610	2995.7%
Mutual Funds (MFs')	16.130	408.040	2429.7%
Debentures Issuers	0.040	0.040	0.0%
Treasury Bonds Issuers	0.020	0.550	2650.0%
Corporate Bonds Issuers		0.630	
Total No. of Listed Securities	*155.230*	*4713.870*	*2936.7%*

Annual Traded Securities (in Billion Numbers)	0.593	24.318	4002.3%
Annual Traded Securities (in USD Billion)	0.598	14.620	2344.8%
	(USD Billion)	(USD Billion)	
Capital Issued for Companies & MFs'	0.840	6.187	636.5%
Issued Treasury Bonds	0.273	7.135	2512.1%
Issued Corporate Bonds	0.000	0.081	
Total Issued Capital	*1.113*	*13.404*	*1104.0%*
	June 30, 2006	**June 30, 2014**	
Total Market Capital (in USD Billion)	2.798	38.223	1266.3%
Market capital as % of GDP	7.6%	24.8%	
Index Point	1339.53(DGEN)	4480.52(DSEX)	234.5%
YoY % Change in Index Point	-21.8%	9.2%	

As a Public Limited Company operating in Bangladesh, DSE is regulated by its Articles of Association along with Bangladesh Securities and Exchange Ordinance, 1969, the Companies Act, 1994 and the Securities and Exchange Commission (SEC) Act, 1993. DSE has provisions for 500 members and this membership is open to home as well as foreign investors. The trading activity of DSE is operated through an automated on-line system every day except public holidays. Four categories of shares are traded in DSE namely as 'A', 'B', 'N' and 'Z'. These categories are made mainly based on companies' variability of earning and their dividend payment ability to investors. All transactions made in a day are settled after netting and cleared through the DSE Clearing House on the 2nd working day for category 'A', 'B' and 'N' shares and on the 10th working day for category 'Z' shares, calculated from the date of trading.

The current major index that is maintained, monitored and used as a reference at DSE is known as DSE Broad Index (DSEX). Designed and developed under 'DSE Bangladesh Index Methodology' by S&P Dow Jones indices, DSEX index was introduced on 27th January, 2013 (with an index value of *4055.90645*) as a reformative measurement by the DSE authority after the stock market crash in 2010. Before DSEX, the main index was the DSE General Index (DGEN) which was discontinued right after introducing the DSEX.

METHODOLOGY

A financial time series is a sequence of data points, measured typically at successive times spaced at uniform time intervals (Rayhan, Sarker, & Sayem, 2011). To model and forecast with time series data, first we need to figure out whether the data in consideration are stationary or not. Stationarity of a time series can be checked by finding out the presence of unit root for that series. The Augmented Dickey Fuller (ADF) test is a renowned method to check the unit root and thus the Stationarity of the data set.

Before applying the ARCH/GARCH models on a time series, we first need to figure out whether the 'ARCH effect' presents in a given data set. There are several procedures to test the 'ARCH effect' within a time series. Among these procedures, ARCH Lagrange Multiplier (LM) test is the most prominent one. ARCH-LM test considers a null hypothesis of the presence of no ARCH. According to (Bollerslev, 1986), the LM statistic follows an asymptotic χ^2 distribution where the degree of freedom under null hypothesis is q. If the evaluated test statistics is greater than $\chi^2_{1-\alpha}(q)$, the null hypothesis of no ARCH effect is rejected at a level of α which means a significant 'ARCH effect' exists in the time series and ARCH/GARCH models can be applied in this series to capture its time-varying volatility dynamics.

The ARCH (Engle R., 1982) model is one of the most extensively used time varying model in Finance to model volatility dynamics. The general form of an ARCH (q) process is shown as

$$\sigma_t^2 = \alpha + \sum_{i=1}^{q} \beta_i \varepsilon_{t-1}^2$$

As the ARCH (q) models volatility, the value of α and β_i should always be greater than zero. Besides, the sum of α and β_i should always be greater than 1 to make the process stationary. However, a problem with ARCH (q) model is that the conditional standard deviation modelled in this process has high frequency oscillation with volatility coming with short bursts. To overcome this problem, Bollerslev (1986) extended the ARCH (q) process by taking the lag value of conditional variance in the modelling process and this new improved and extended process is known as GARCH model. The general specification of a simple GARCH (p, q) model is given below:

$$\sigma_t^2 = \alpha_0 + \sum_{i=1}^{q} \alpha_i \varepsilon_{t-1}^2 + \sum_{i=1}^{p} \beta_i \sigma_{t-1}^2$$

The 2nd part of the model $\alpha_i \varepsilon_{t-1}^2$ is known as ARCH component whereas the last part with lagged conditional variance $\beta_i \sigma_{t-1}^2$ is known as GARCH component. This simple GARCH (p, q) process has problem in capturing market dynamics as this process is a symmetric process. However, most of the financial time series data are characterized by their asymmetric nature in conditional variance which is known as the 'leverage effect' which simple GARCH (p, q) can't model. simple GARCH (p, q) process is restricted from considering the asymmetric effect as the positive and negative shock will have same symmetric response in simple GARCH model (Brooks, 2002) which is unlikely to observe in real market.

To capture this asymmetric shock in conditional variance, the Exponential GARCH (EGARCH) model was proposed by Nelson (1991). EGARCH is modelled using the natural logarithm of the conditional variance and this conditional variance is allowed to vary over time as a function of the lagged error terms rather than lagged squared errors. The general form of an EGARCH (p, q) model is given as below:

$$\ln(\sigma_t^2) = \alpha + \sum_{i=1}^{p} \alpha_i \ln(\sigma_{t-1}^2) + \sum_{j=1}^{q} \beta_i \frac{\varepsilon_{t-j}}{\sigma_{t-j}} + \sum_{k=1}^{r} \gamma_i \frac{\varepsilon_{t-k}}{\sigma_{t-k}}$$

The exponential structure of the EGARCH allows the model conditional variance to be always positive even though the parameters can be negative. Thus, EGARCH model makes it redundant to impose non-negativity restrictions within the model. The presence of the asymmetric market condition can be confirmed by testing whether the parameter γ_i is significantly different from zero. If γ_i is significantly different from zero, then the asymmetric effect exists within the financial time series.

Other asymmetric GARCH models such as the Threshold GARCH (TGARCH) proposed by Zako¨ıan (1994) actually captures the asymmetries within a financial time series using a dummy variable. The specification of the TGARCH model is given as below:

$$\sigma_t = \alpha_0 + \sum_{i=1}^{p} \alpha_i \varepsilon_{t-i} + \sum_{j=1}^{q} \gamma_j \varepsilon_{t-j}\, 1(\varepsilon_{t-j} < 0) + \sum_{k=1}^{z} \beta_k \sigma_{t-k}$$

Here, $\varepsilon_{t-1}^2 1(.) = 1$ if $\varepsilon_{t-j} < 0$ and $\varepsilon_{t-1}^2 1(.) = 0$ if $\varepsilon_{t-j} > 0$ .If the coefficient has positive values, it indicates the presence of asymmetries known as 'leverage effect'.

Unlike the other asymmetric models, the Power GARCH (PGARCH) proposed by Ding *et al.* (1993), models standard deviation instead of the variance. An optional parameter γ_i is added within this process to capture the asymmetry up to order r. The PGARCH model also allows estimating the power parameter δ instead of imposing the restriction from outside of the model. The general specification of PGARCH (p, q) is given below:

$$\sigma_t^{\delta} = \alpha_0 + \sum_{i=1}^{p} \alpha_i (|\varepsilon_{t-i}| - \gamma_i \varepsilon_{t-1})^{\delta} + \sum_{j=1}^{q} \beta_j \sigma_{t-1}^{\delta}$$

Here, α_i and β_j are the ARCH and GARCH parameters, γ_i is the asymmetric 'leverage effect' parameter and δ is the power parameter. When $\delta = 2$, the above equation transforms into a classical GARCH model with a parameter to capture leverage effect. However, when $\delta = 1$, the equation becomes an estimation of the conditional standard deviation.

DATA FOR ANALYSIS

We have used an extensive period of time series data comprising of 15 years starting from 27th January 2000 to 4th August 2015. Daily closing values of DSE indices have been taken for this selected time frame from the DSE library. There were a total of 3402 observations excluding the public holidays. To calculate daily returns, we have taken log differences of the daily closing prices.

The stock market crash of 2010 resulted in collapsing the General Index for an extended period of time. During the market collapse the deviations of the stock prices were significantly different from any other period. To witness the change in the volatility pattern and asymmetry of market returns during this crash, we have divided the whole sample into three distinct sub-periods; Pre-Crash, Crash and Post-Crash. Figure 1 in the Appendix shows that prior to the market crash, the General Index of the Dhaka Stock Exchange namely as DGEN was relatively stable. We have taken this comparatively stable period from 27th January 2000 to 30th December 2009 as the pre-crash period. The crash period starting from 3rd January 2010 to 27th January 2013 covers both the bullish effect experienced in the market for an extended period of time before stock market crash and the bearish force associated with the market crash. Both in the pre-crash and crash period, the closing values of the DGEN index were taken. After the stock market crash the DGEN was replaced by the DSEX. Therefore, we have taken the index value data of the post-crash period i.e. from 28th January 2013 to 4th August 2015 from the DSEX.
Summary Statistics

We have given descriptive statistics of the DGEN and DSEX return series for the three sub-periods in table 2. The mean return is the highest in pre-crash period and naturally the lowest with a negative mean return in crash period. The daily standard deviation is found to be the highest during crash period indicating a high level of fluctuations in the daily returns of the DGEN. In the post-crash period the standard deviation of the daily return series again have fallen down and become almost similar to that of the pre-crash period. Besides these, there are evidences of asymmetric tails as the returns are negatively skewed in the post-crash period and positively skewed in other two periods. We have also found highly leptokurtic return series in the pre-crash period as these are more centred on the mean value. When the data series is leptokurtic, large price movements are more frequent than small ones and the central peak becomes narrower with fat tails. Our Jarque-Bera normality test statistics also reject the normal distribution null hypothesis at 1% level of significance.

Table 2: Summary Statistics

Particulars	Pre-Crash	Crash	Post-Crash
Mean	0.000834	-0.000114	0.000292
Median	0.000509	0.000482	0.000000
Maximum	0.203821	0.144799	0.036847
Minimum	-0.073589	-0.093300	-0.053584
Std. Dev.	0.011730	0.021796	0.010450
Skewness	2.446955	0.100944	-0.140519
Kurtosis	48.646040	7.955294	5.000957
Jarque-Bera	181421.6000	754.2680	101.7301
Sum	1.722449	-0.083688	0.174807
Sum Sq. Dev.	0.284140	0.349176	0.065195
Observations	*2066*	*736*	*598*

ANALYSIS OF THE VOLATILITY

Test for Stationarity

To test the Stationarity of data set, we have used Augmented Dickey Fuller (ADF) unit root test as prescribed by Dickey and Fuller (1981) for different time periods. According to the test results given in table 6 of the appendix, data series in each sub-period is not stationary at level. However, we have found the significant ADF test statistics of the return series at 1% level in each of these sub periods. We conclude that the data series is not stationary at level but stationary when log difference is taken.

TEST FOR HETEROSCEDASTICITY

Before applying any of the ARCH/GARCH methods to model volatility, it is recommended to test for the presence of ARCH effect in the residuals of return series. Thus, we have conducted ARCH-LM test on the residuals of the return series for the lag lengths of 1, 5 and 10. Table 7 in the appendix summarizes the results of the ARCH -LM test. The p values of ARCH-LM test during crash and post-crash periods reject null hypothesis of no ARCH effect at 1% significance level for all lag lengths. On the other hand during pre-crash period, there are evidences of ARCH effect at 10% significance level for lag 1 only. Therefore, the presence of ARCH effect in the residuals of data series is more evident in the crash and post-crash period compared to the pre-crash one.

MODELLING VOLATILITY

As the results of ARCH-LM test in table 6 shows momentous presence of ARCH effect in the residuals, we can now apply selected GARCH- models for these three separate sub-periods. According to Brooks (2002), GARCH models of smaller lags are sufficient to detect the volatility clustering effect. Therefore, all GARCH models are taken with (1, 1) lags. Moreover, we have used both symmetric and asymmetric GARCH models to analyse the daily stock return volatility dynamics for these three sub-periods.

PRE-CRASH PERIOD

In the pre-crash period, we have found significant ARCH and GARCH effects at 1% level in all selected GARCH models. Moreover, as observed in GARCH models of other stock markets, the sum of ARCH and GARCH coefficients are found closed to 1 in all cases, thus concluding the presence of highly persistent shocks in the conditional variance. A large total sum of these coefficients implies that a large positive or a negative return will lead future forecasts of the variance to be high for a prolonged period. The asymmetric GARCH models used here also successfully capture leverage effects experienced in the DGEN returns as we have rejected the null hypothesis of no leverage effect was 1% significant level. The coefficient of the power parameter is also significantly different from both 1and 2 at 1% significance level.

Table 3: GARCH models in the Pre-Crash period

Particulars	GARCH (1,1)	TGARCH (1,1)	EGARCH (1,1)	PGARCH (1,1)
Risk Premium	0.089263 (.2064)	-0.070127 (.3178)	0.170489 (.0181)	-0.067166 (.3451)
α_0 (Constant)	1.15E-05 (.0000)	1.11E-05 (.0000)	-1.943999 (.0000)	1.53E-05 (.3554)
α (ARCH Effect)	0.470470 (.0000)	0.239450 (.0000)	0.582106 (.0000)	0.435449 (.0000)
β (GARCH Effect)	0.607785 (.0000)	0.615681 (.0000)	0.830098 (.0000)	0.617970 (.0000)
Υ(Leverage Effect)	-	0.469723 (.0000)	-0.171781 (.0000)	0.267671 (.0000)
$^{\delta}$(power parameter)	-	-	-	1.937091 (.0000)
$\alpha + \beta$	1.47	.94	1.41	1.05
Log Likelihood	6409.591	6441.740	6447.603	6441.742
SIC	-6.186358	-6.213785	-6.219461	-6.210092
AIC	-6.199991	-6.230145	-6.235821	-6.229179

We have found the presence of a statistically significant risk return relationship only for the EGARCH (1, 1) as indicated by risk premium coefficient in table 3. To confirm the existence of remaining ARCH effects, we have conducted Arch-LM test once again on the residuals of the GARCH models and the p values of this test are given in table 8 of

the appendix. The high P values found from this test concludes that all GARCH models used in this research are correctly specified leaving no further ARCH effect to be explained. Moreover, our research states that the asymmetric EGARCH (1, 1) is the best method for modelling volatility dynamics of DGEN index in its pre-crash period as shown by AIC, SIC and Log Likelihood model selection criteria.

CRASH PERIOD

In the crash period, EGARCH (1, 1) and PGARCH (1, 1) confirm statistically significant negative risk return relationship at 5% and 10% levels respectively. We have found significant GARCH coefficients for this sub-period in both symmetric and asymmetric GARCH models. However we have found insignificant ARCH effect only for TGARCH (1, 1). In addition, the sum of ARCH and GARCH coefficients are found close to 1 for all models apart from TGARCH (1, 1) which represents highly persistent shocks on the conditional variance.

Table 4: GARCH models in the Crash Period

Particulars	GARCH (1,1)	TGARCH (1,1)	EGARCH (1,1)	PGARCH (1,1)
Risk Premium	-0.058580 (.5141)	-0.146293 (.1243)	-0.167714 (.0443)	-0.174215 (.0551)
α_0 (Constant)	7.22E-06 (.0045)	8.48E-06 (.0001)	-0.525912 (.0000)	0.000183 (.5028)
α (ARCH Effect)	0.187034 (.0000)	0.035044 (.2202)	0.263764 (.0000)	0.130411 (.0000)
β (GARCH Effect)	0.808586 (.0000)	0.849158 (.0000)	0.960523 (.0000)	0.855370 (.0000)
Υ(Leverage Effect)	-	0.187816 (.0000)	-0.118509 (.0000)	0.522797 (.0001)
$^{\delta}$(power parameter)	-		-	1.304081
$\alpha + \beta$	0.98	0.87	1.23	0.99
Log Likelihood	1947.039	1958.269	1958.302	1960.057
SIC	-5.246021	-5.267568	-5.267659	-5.263459
AIC	-5.277279	-5.305078	-5.305169	-5.307221

We have found significant Leverage impact at 1% level in all asymmetric GARCH models as exhibited in table 4. In PGARCH (1, 1) model, the optimal power transformation value is significantly different from 1 and 2 at 1% significance level. Further ARCH-LM test conducted on the residuals of the models conclude that apart from the EGARCH (1, 1), all other GARCH models are correctly specified. The p values of the residuals of EGARCH (1, 1) exhibit evidence of remaining un-captured ARCH effects in the model. According to AIC and Log Likelihood model selection criteria, PGARCH (1, 1) is the best model for this selected time frame. On the other hand, we have found contradictory result for SIC criterion as SIC states EGARCH as the best model for the crash period. However considering the results from ARCH-LM

test for this period, it is evident that the PGARCH (1, 1) eliminates the ARCH effect better compared to EGARCH (1, 1). Therefore, we have concluded that PGARCH (1, 1) should be the chosen model for crash period in 2010.

POST-CRASH PERIOD

As mentioned earlier, we have taken the post-crash period data from DSEX instead of DGEN. We have found insignificant risk return relationship during this period as indicated by p values of the risk premiums. On the other hand, ARCH and GARCH coefficients are statistically significant in both symmetric and asymmetric GARCH models at 1% level. There are evidences of persistent shocks for all selected models for this period as the collective values of ARCH and GARCH coefficients are really closed to unity. Our leverage impact coefficients captured for all these models are significant at 5% level in contrary to the 1% significance level found in pre-crash and crash periods indicating less persistency compared to other periods.

Table 5: GARCH models in the Post-Crash period

Particulars	GARCH (1,1)	TGARCH (1,1)	EGARCH (1,1)	PGARCH (1,1)
Risk Premium	0.087313 (.5915)	-0.053302 (.7412)	-0.027034 (.8650)	-0.054504 (.7373)
α_0 (Constant)	4.13E-06 (.0302)	3.93E-06 (.0300)	-0.583315 (.0018)	4.54E-07 (.8270)
α (ARCH Effect)	0.147680 (.0000)	0.095851 (.0094)	0.265221 (.0000)	0.128064 (.0000)
β (GARCH Effect)	0.816545 (.0000)	0.824550 (.0000)	0.959892 (.0000)	0.810402 (.0000)
Υ(Leverage Effect)	-	0.093162 (.0156)	-0.046171 (.0410)	0.161049 (.0486)
$^{\delta}$(power parameter)	-	-	-	2.468837 (.0124)
$\alpha + \beta$	.97	.92	1.23	.94
Log Likelihood	1935.048	1937.554	1936.288	1937.647
SIC	-6.418274	-6.415964	-6.411728	-6.405583
AIC	-6.455009	-6.460047	-6.455811	-6.457013

The residual diagnostic Arch-LM test concludes that all GARCH models are correctly specified and no significant ARCH effect is left by these models. The coefficient of power parameter in the PGARCH (1, 1) model is significant at 5% level. According to the Log Likelihood criteria, PGARCH (1, 1) model is the best fitted model in the post-crash period. On the contrary, the values of AIK and SIC signal that TGARCH (1, 1) should be the best model to study the volatility of the DSEX returns at post-crash period.

COMPARISON OF MODEL PARAMETERS

Table 9 shows the percentage changes in model parameters in different sub-periods. From the table we can see that GARCH coefficients have increased for all selected models from pre-crash to crash period. These increases in GARCH coefficients explain that the persistency in the conditional variance has increased from pre-crash to crash period. On the other hand, the rate of change in the conditional variance expressed by ARCH coefficients has decreased in all models from pre-crash to crash period. The leverage coefficients of TGARCH and EGARCH models decrease from pre-crash to cash period whereas the same coefficients increase significantly in the same period for PGARCH model. The changes in GARCH coefficients are not significant from crash to post-crash period. However, the leverage effect exhibited by asymmetric GARCH models used here has decreased significantly from the crash to post-crash period.
Lastly all coefficients considered here have changed significantly from the pre-crash to post-crash period as indicated by the last column of *table 9*.

Table 9: Model differences in different periods

Models	Pre-Crash	Crash	Post-Crash	% change (Pre-Crash to Crash)	% Change (Crash to Post-Crash)	% Change (Pre-Crash to Post-Crash)
ARCH Coefficients						
GARCH (1,1)	0.47047	0.18703	0.14768	-60.2%	-21.0%	-68.6%
TGARCH (1,1)	0.23945	0.03504	0.09585	-85.3%	173.5%	-59.9%
EGARCH(1,1)	0.58211	0.26376	0.26522	-54.6%	0.5%	-54.4%
PGARCH(1,1)	0.43545	0.13041	0.12806	-70.0%	-1.8%	-70.5%
GARCH Coefficients						
GARCH (1,1)	0.60779	0.80859	0.81655	33.0%	0.9%	34.3%
TGARCH (1,1)	0.61568	0.84916	0.82455	37.9%	-2.9%	33.9%
EGARCH(1,1)	0.83010	0.96052	0.95989	15.7%	-0.1%	15.6%
PGARCH(1,1)	0.61797	0.85537	0.81040	38.4%	-5.2%	31.1%
Leverage Coefficients						
TGARCH (1,1)	0.46972	0.18782	0.09316	-60.0%	-50.4%	-80.1%
EGARCH(1,1)	-0.17178	-0.11851	-0.04617	-31.0%	-61.0%	-73.1%
PGARCH(1,1)	0.26767	0.52280	0.16105	95.3%	-69.1%	-39.8%
Power Coefficients						
PGARCH(1,1)	1.93709	1.30408	2.46884	-32.6%	89.3%	27.4%

From table 9, we can thus conclude that the volatility pattern changes for the DSE after 2010 market crash which is evident through changes in parameter coefficients for all three sub-periods.

CONCLUSION

Our research tests four symmetric and asymmetric GARCH models to capture the change in volatility dynamics of DSE due to stock market crash of Bangladesh in 2010. The descriptive statistics calculated for the selected data varies significantly in the pre-crash, crash and post-crash sub-periods. Through these statistics we have shown that our return series exhibit skewness in all three sub-periods. The unit root test shows that the data series is not stationary at level but integrated at first difference for all periods. The ARCH LM-test signifies the presence of ARCH effects and volatility clustering in all sub-periods.

After confirming the presence of ARCH effect, we have tested GARCH models for three sub-periods. In the pre-crash period, positive risk premium offered by the market is confirmed solely by EGARCH (1, 1) model whereas the market exhibit negative risk premium with EGARCH (1, 1) and PGARCH (1, 1) models during crash period. We haven't found significant risk premium in post-crash period. We have found significant ARCH and GARCH coefficients using our selected models for all sub-periods except TGARCH (1, 1) in the crash period. In addition, the asymmetric GARCH models successfully captures the presence of leverage effect in all the sub-periods.

Our research finds a significant shift in volatility pattern due to 2010 market crash. The ARCH, GARCH and Leverage parameter coefficients for all selected models have changed significantly from pre-crash to crash and crash to post-crash period confirming the shift in volatility pattern. Lastly, our research also concludes that compared to the symmetric GARCH (1, 1) model, asymmetric GARCH models perform better at structuring volatility dynamics of the DSE Indices at different market conditions.

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APPENDIX

Figure 1: Closing price of the DGEN index in Pre-Crash and Crash Period

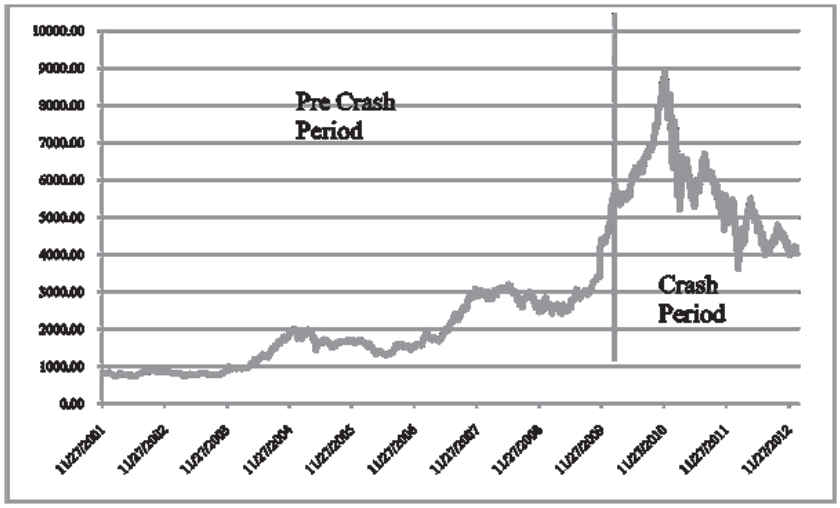

Figure 2: Closing price of the DGEM index in the Post-Crash period

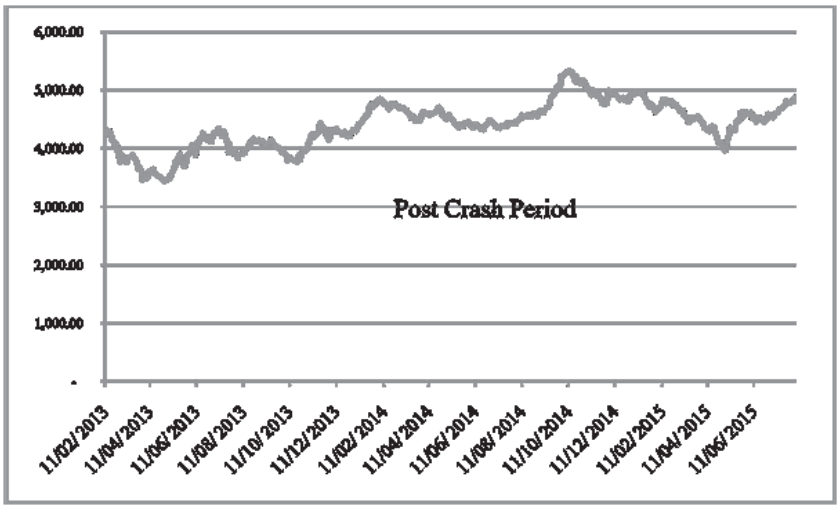

Table 6: ADF UNIT ROOT TEST for General index and return series

	At level				Return Series			
	ADF Statistics	**1%**	**5%**	**10%**	**ADF Statistics**	**1%**	**5%**	**10%**
Pre-Crash	0.760736	-3.44106	-2.866155	-2.56929	-41.08656	-3.44106	-2.86616	-2.56929
Crash	-1.333922	-3.44106	-2.866155	-2.56929	-27.27876	-3.44106	-2.86616	-2.56929
Post-Crash	-1.26255	-3.44106	-2.866155	-2.56929	-22.65433	-3.44106	-2.86616	-2.56929

Table 7: ARCH LM test for Heteroscedasticity

	Pre-Crash			**Crash**			**Post-Crash**			
Lag	1	5	10	1	5	10	1	1	5	10
F Statistics	3.15648 (.0757)	0.96056 (.4407)	0.4867 (.8996)	198.46 (.0000)	43.545 (.0000)	27.955 (.0000)	57.988 (.0000)	57.988 (.0000)	16.141 (.0000)	8.4773 (.0000)
Obs*R Squared	3.1547 (.0758)	4.80560 (.4401)	4.8817 (.8989)	156.60 (.0000)	168.82 (.0000)	204.0656 (.0000)	53.008 (.0000)	53.008 (.0000)	71.663 (.0000)	75.308 (.0000)

Table 8: GARCH models residual diagnostic (for Lag 1 only)

Models	**Particulars**	**Pre-Crash**	**Crash**	**Post-Crash**
GARCH (1,1)	F Statistics	0.8203	0.1392	0.2529
	Obs*R Squared	0.8201	0.1388	0.2522
TGARCH (1,1)	F Statistics	0.7905	0.3501	0.3107
	Obs*R Squared	0.7904	0.3494	0.3099
EGARCH (1,1)	F Statistics	0.8159	0.0881	0.3998
	Obs*R Squared	0.8158	0.0879	0.399
PGARCH (1,1)	F Statistics	0.7944	0.1309	0.2919
	Obs*R Squared	0.7943	0.1306	0.2911

SHORT INTRODUCTION OF AUTHORS

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FACTORS INFLUENCING POSITIVE WORK ENVIRONMENT: A STUDY ON FEMALE WORKERS OF RMG SECTOR IN BANGLADESH

Kazi Nazmul Huda [4]

ABSTRACT

Positive Work Environment (PWE) is a momentous issue for all kinds of organizations to ensure a quality workplace that adds essential value to the manufacturing organizations such as Ready Made Garments (RMG). The primary purpose of this study is to explore the determining factors of PWE and their role in ensuring a supportive workplace for the female workers in RMG factories. The current study is based on primary data collected through structured questionnaire from 100 female workers working in RMG factories outside Chittagong Export Processing Zone, Bangladesh. Results found five significant factors namely Effective Work System Factor, Job Security Factor, Emotional Support factor, Workplace learning factor, and Work life balance factor that are able to explain 80.81% of variation to understand the concepts of positive work environment. The study also identified two variables namely Counseling and Grievance Management, which are the most influencing variables in ensuring PWE. The study also offered few managerial implications of applying and ensuring PWE in RMG sector to contribute more to national income.

Key words: Ready Made Garments (RMG), Workplace, Positive Work Environment, Female Worker, Export Processing Zone.

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INTRODUCTION AND RATIONALE FOR THE STUDY

The main aim of this paper is to explore the factors that can contribute to ensure a positive work environment in RMG factories in Bangladesh. In addition, the paper will also try to evaluate current working condition in few selected RMG factories outside export processing zone with respect to the explored factors.

The export-oriented Ready Made Garments (RMG) sector has made vital contribution to the positive transformation of Bangladesh economy (Bhattacharya et al., 2002). The sector could grab the attention of global apparel business community through its quality production in an affordable cost that resulted from cheaper labor availability. RMG sector has both macro and micro economic contributions to the national growth, which has created an enormous employment of female workforce and enhanced women empowerment (Bhattacharya et al., 2002). Garment sector of Bangladesh provides 2.8 million employments of women and most of them are semi- literate about factory working conditions and environmental standards (Mahmud, 2012; Ahamed, 2013). Culturally it is very difficult for women in Bangladesh to adjust with the fast-changing work environment and making a balance between job and family life. This has become more severe in case of female workers of RMG sector in Bangladesh as the working conditions are reported to be below standard and labor rights are found to be commonly ignored by the employers of RMG factories in the country (Ahamed, 2013). It was claimed that RMG sector is climbing high at the cost of workers' social life, physical exploitation, and mental abuse (Kabeer, 2004; Siddiqi, 2003). Although the scenario is changing (Mahtab, 2003), it is important to evaluate the state of current work place environment in the said sector. Surprisingly, scholars have ignored this important field of research in Bangladesh. This study intends to close that gap by exploring the salient factors that can ensure positive work environment in RMG factories.

Positive work environment is a precondition to develop and maintain a productive (Fisk & Rosenfeld, 1997), innovative (Amabile, 1996), and peaceful (Hoff & Oberg, 2014) organization. But the RMG factories of Bangladesh have become death traps for the workers caused by chronic fire incidents and other life threatening hazards (Ahmed & Hossain, 2009). The catastrophe of Rana Plaza and Tazreen Fashions have urged us to radically rethink of how safety issues of the working environment of RMG has substantially deteriorated our image that we built with collective professional effort. Despite the phenomenal success of the RMG sector, it is claimed that lack of standard working environment is a serious concern that has led to a number of labor unrests resulting to damaging assets and human lives. The image problem caused by sub-standard working environment in Bangladeshi RMG factories may lead to declining demand and withdrawals of trade benefits such as Generalized System of Preference (USA-GSP). Thus, we trust, compliance with the standard working environment is the key to rejuvenate the image of this sector in the outer world. However, as mentioned earlier, there is lack of research on the

on the stated concept based on the opinion of the female workers who are the main workforce of the RMG sector (Rahman, 2012). Exploring the factors that dictate PWE in this sector will help the management for effective utilization of human resources and developing a women-friendly standard working environment. The study tried to reveal the current state of work environment in the RMG factories of Bangladesh through female workers' opinion.

By considering the objectives of the study, this paper will try to address the following research questions:

a. What are the influencing factors of positive work environment in the Garments factories of Bangladesh?
b. To what extent Bangladeshi RMG factories are complying with the PWE factors as suggested by the respondents?

LITERATURE REVIEW

To maintain an efficient work force, it is essential for employers to understand the employees perceptions about work environment and their opinion should be considered regardless of how good the environment may be viewed by management (Estes, 1963). Employees attitude towards work environment and their positive and negative comments in this issue should be considered with due diligence particularly to the working women. But, the cruel fact is the pressure of globalization, technological advancement, competitive market, work specialization, and heterogeneity in the workforce created an increased number of women employment in one side and this pressure is weakening the balance between work and family life on the other (Pitt-Catsouphes et al., 2006; Poelmans et al., 2008).
Changes in the labor market and shift in the high performing work culture, forcing workers to stay for long hours at work and creating disintegration between job responsibility and family liability (Cappelli, 1999; Moen & Roehling, 2005; Watanabe et al., 1997). The result of work life and family life conflict leads to performance problem and personal well-being (Allen et al., 2000; Aryee et al., 1999; Carr et al., 2008; Eby et al., 2005; Kossek & Ozeki, 1998). Long working hour is a damaging issue for a female worker as women are to shoulder the main responsibility to maintain a family and nurture children. Females working long shifts create a work life imbalance and according to Aryee et al., (2012), informal workplace and family support facilitates employees to integrate their work and family roles.

Wellness-focused working environment is the most efficient management tool for keeping employees happy and healthy and that leads to increase organizational performance and productivity (Hyman, 2014). Nurturing a positive work culture is very important for addressing work-life balance issues, promoting employee growth and development, maintaining health and safety, and fostering employee engagement leading to a sustainable employee well-being and organizational performance (Grawitch et al., 2006). Organizations

that foster greater employee wellbeing are more productive and profitable in the long run (Ryan & Deci, 2001; Warr, 2009& Wright, 2010) and it is beneficial for the employees, employers, and social sustainability in the longer term (Keller et al., 2009). A healthy work environment makes employees feel engaged and energetic in their workplace and family life (Kossek et al., 2014).

According to Hoff & Oberg, (2014) work environment are of three types like physical i.e. ambient conditions (lighting, ventilation, temperature, air quality and noise), interior design elements (furniture, equipment, and artistic objects) (DuVall-Early & Benedict, 1992; Fried, 1990), psychosocial (support) and inspirational (motivational) that supports to foster creativity in an organization. Harrington (1999) has discussed on the adequacy of tools (Gilbert, 1996), equipment and space helps to maintain a good physical work environment. Another literature by Holzhausen (2000), portrays about the structural issues of work environment comprising effective training programs, performance evaluation and attraction and retention of talented employees and some cultural issues like group identity, informal communication style and socializing among the peers (Keeley, 2001; Pearson et al., 2003).

Developing skills and attitude through self-directed learning are also highly influenced by employee's perceptions of work environment (Park & Kwon, 2004; Deci & Ryan, 1985; Litwin and Stringer, 1968; Robert, 1986). Understanding of work environment comprises all the relevant factors and variables that are extrinsic or surrounds to a workers' job description that can affect or support or promote performance and its continuation at standard level (Robinson & Robinson, 1996; Gilbert, 1996; Van Tiem et al., 2004). Intrinsic motivation like training, job challenge, autonomy, fewer working hours, and grievance (Muchinsky & Maassarani, 1980) & stress management policies (reduced work-loads and fewer working hours) are important variables of better work environment for the older employees (Van Den Berg, 2011; De Lange & Thijssen, 2007).

Dollard and Bakker (2010) in their research proclaimed that, psychosocial safety climate is a predecessor to favorable work environment that minimizes psychological health problems, and encourages the employee engagement. Their understanding of psychosocial safety climate is policies issue, good practices and procedures to promote workers' protection of psychological health and safety. Gupta and Kristensen (2008) investigated the health effects of an unsatisfactory work environment and fond that poor indoor air quality and psychosocial work environment aspects, such as stress, tempo of work or relations with co-workers have harmful effects on employees. Support of co-worker at workplace is a vital factor of work environment, i.e. mentoring, teamwork, networking, and socializing, (Salman & Okabe, 2003). There are many factors of work environment i.e. job design, gender equity (Bailyn, 2011) working hours (Kossek & Lautsch, 2008), positive engagement at work (Amible & Kramer, 2011), health & safety issues, Compensation (Youngblood et al., 1984) & financial growth, support and well-being programs. Result of positive work environment

are lower employee turnover, higher job satisfaction, and less stress symptoms, higher physical and mental health, and compliance to health and safety practices (Kossek & Hammer, 2008; Hammer et al., 2011; Kossek et al., 2012), creativity (Hoff & Oberg, 2014), informal communication, teamwork & socializing (Keeley, 2001; Pearson et al., 2003; Gupta & Kristensen, 2008), self-directed learning (Park & Kwon, 2004; Deci & Ryan, 1985; Litwin & Stringer, 1968; Robert, 1986) and if it is negative then it causes musculoskeletal disorders (HRFOCUS, 2010), conflict between work and family life, depression and stress, and work identity crisis (Schaufeli & Salanova, 2010; Radloff, 1977; Kristof-Brown, 2006; Hackman & Oldham, 1976), employee disengagement (Demerouti & Cropanzano, 2010; Shirom, 2010).

More visible result of positive work environment is talent retention and decreasing employee turnover rate. Hossan et al., (2012) have identified that mutual understanding among the workers and supervisors, supervisors' attention to the complaints and good behavior are critical in maintaining sound working condition and a prerequisite to better work relationship and higher worker productivity. According to Bell (2008), limited knowledge is being developed on employees view on work environment and how their perceptions influence behavior and performance at workplace. Therefore, sufficient understanding should be developed about the working conditions and environment of women in particular, as they are the largest labor force of the RMG sector of Bangladesh.

The study tried to unearth the current scenario of the working environment of the female workers of this sector by collecting and analyzing their observation about the influencing issue that makes positive work environment. The variables in the work environment influences behaviors and performance of employees at workplace (Blumberg & Pringle, 1982; Olsonand & Bornun, 1989) and from the Literature review it is initially identified that, there are 16 major variables of positive or favorable working environment (refer to Table 1) and it is also understood that, there are some positive results of maintaining good work environment and some negative. Positive work environment is a worker intensive workplace that leads to higher productivity and ensure workers wellness. On the other hand, a negative work environment is unfriendly to the workers results to declining productivity, poor moral, and unsafe work environment. There are sufficient literatures developed on the issue of workplace environment in general, but not very specific to women work environment and with respect to RMG factories. The current study will try to fill that gap by developing literature exclusively for women-friendly work environment.

Table 1: List of Variables of Work Environment

Code	Variables	Source
X_1	Ambient conditions	Hoff & Oberg, (2014); DuVall-Early & Benedict, (1992) and Fried, 1990)
X_2	Building Layout	Hoff & Oberg, (2014)
X_3	Interior design	Hoff & Oberg, (2014),
X_4	Health & Safety	Kossek & Hammer, (2008), Hammer et al., (2011) and Kossek, et. al., (2012),
X_5	Fire security	Ahmed & Hossain, (2009)
X_6	Equipment and Tools	Harrington (1999) and Gilbert, (1996)
X_7	Peer Support	Salman & Okabe, (2003), Hossan et al., (2012) and Ripley, (1998),
X_8	Supervision	Hossan et al., (2012)
X_9	Training	Park & Kwon, (2004); Deci & Ryan, (1985); Litwin & Stringer, (1968); Robert, (1986), and Holzhausen, (2000)
X_{10}	Counseling	Salman & Okabe, (2003) and Ripley, (1998),
X_{11}	Socializing	Salman & Okabe, (2003); Keeley, (2001); Pearson et al., (2003) and Gupta & Kristensen, (2008)
X_{12}	Teamwork	Salman & Okabe, (2003); Keeley, (2001); Pearson et al., (2003), and Gupta & Kristensen, (2008)
X_{13}	Equity	Bailyn, (2011)
X_{14}	Compensation	Youngblood et al., (1984)
X_{15}	Grievance Management	Muchinsky & Maassarani, (1980) and Youngblood et al., (1984)
X_{16}	Performance Evaluation	Holzhausen, (2000); Van Den Berg, (2011) and Gilbert, (1996)
X_{17}	Job design	Bailyn, (2011); Robinson & Robinson, (1996); Gilbert, (1996); Ripley, (1998) and VanTiem et al., (2004)
X_{18}	Waking hours	Van Den Berg, (2011); De Lange & Thijssen, (2007); Ripley, (1998) and Kossek & Lautsch, (2008)
X_{19}	Supportive Family Life	Aryee et al., (2012); Schaufeli & Salanova, (2010); Radloff, (1977); Kristof-Brown, (2006),and Hackman & Oldham, (1976)
X_{20}	Stress Management	Van Den Berg (2011); De Lange & Thijssen, (2007); Schaufeli & Salanova, (2010); Radloff, (1977); Kristof-Brown, (2006), and Hackman & Oldham, (1976).
X_{21}	Career Growth	Grawitch et al., (2006)
X_{22}	Wellbeing	Grawitch et al., (2006); Ryan & Deci, (2001); Warr, (2009), and Wright, (2010)

Source: Literature Review

METHODOLOGY AND SCOPE OF THE STUDY

The study is descriptive in nature, have flowed inductive research approach and a survey based research strategy. The methodological choice of the research is quantitative. Data have been collected through survey and by the way of using a structured questionnaire. Primary data on influential variables of positive work environment were collected through face-to-face interview. Data have been collected from 100 (one hundred) female workers of 5 (five) different garments factories outside the export processing zone (EPZ). The reason of selecting the sample factories outside EPZ is that, there are malpractice of industrial compliance mostly on the issues of labor health & safety and work environment (Ahamed, 2013; Amin, 2009; Mahmud, 2009; & Alam et al., 2004). The respondents were selected by considering their long time working experience in this sector (more than five years) so that the study could be more informative and representative. The respondents were female workers who are directly involved in RMG sector and uphold a married life. The questionnaire contains 22 questions and the contents of the questionnaire broadly covered the variables of work environment (refer to Table 1). A 5-point Likert rating scale was used to explore the importance of the variables that contributes to ensuring where 5 means most important and 1 means least important. The survey was carried out during December 2015 to January 2016. As the main intention of the study was to find the important indicators and dimensions of PWE, we used factor analysis, particularly principal component analysis with data extraction method. In addition, multiple regression analysis was performed to validate the findings of the factor analysis.

RESULTS AND FINDINGS

Twenty-two (22) initially sorted variables (refer to Table 1) of positive work environment were analyzed by using Principal Component Analysis, and our results explored that the items were grouped under five factors that covered around 80.81% of the total variance of the work environment. Factor loading of the variables determining the degree of significance of each factor and the Eigenvalue and percentage of variation explained by the factors are shown in Table 2. Our results provide statistical evidence to support newly identified five factors of positive work environment, which are coded as F1, F2, F3, F4, and F5. This shows the influence of these variables to ensure positive work environment as the variables covered 80.81 variances (Appendix 1). In terms of naming the factors, the name of the factor F1 is given as 'Effective Work System' as all the variables of this cluster i.e. Socializing; Peer Support, Team Work, Equipment & Tools, Wellbeing Program, Building Layout, Career Growth, and Performance Evaluation are direct contributors to development of an environmental system that enhances the efficiency and effectiveness of workers. Factor F2 is titled as 'Job Security', as the characteristic of the variables (Compensation, Fire Security, Working Hour, Interior Design, Ambient conditions, Health & Safety, and Job Design) of this cluster contributes to safeguarding the physiological and safety needs of the workers.

Factor F3 is termed as 'Emotional Support' as the items (Counseling and Grievance Management) of this dimension mostly aids in solving the emotional disorder that comes out of unfair treatment and mental stress at workplace. Factor F4 is termed as 'Workplace learning' as two of its variables facilitate learning at workspace. The equity variable of this cluster is not considered in naming the factor, as the loading value of this variable is negative (-0.748). Factor F5 is named as 'Work Life Balance' as the variables of this cluster assist in ensuring smooth and sound work and family life to bring a state of equilibrium in life-hood. In this study, five PWE factors and twenty-two relevant variables have been accepted with high reliability, as the value of Cronbach alpha of the model is found .926. This high alpha value justifies the reliability and internal consistency of the proposed model.

Table 2: Factor Summery

Factor Code	Factor	Variables	Factor Loading	Eigenvalue	Percentage of Variation Explained
F 1	Effective Work System Factor	Socializing Peer Support Team Work Equipment & Tools Wellbeing Program Building Layout Career Growth Performance Evaluation	.893 .893 .805 .759 .696 .682 .664 .634	9.308	42.307
F 2	Job Security Factor	Compensation Fire Security Working Hour Interior Design Ambient conditions Health & Safety Job Design	.838 .814 .795 .783 .756 .668 .641	2.931	13.323
F 3	Emotional Support	Counseling Grievance Management	.933 .932	2.479	11.268
F 4	Workplace learning	Equity Training Supervision	-.748 .726 .637	1.613	7.417
F 5	Work life balance Factor	Supportive Family life Stress Management	.929 .509	1.430	6.501
Total % of Variance 80.814					

Source: Compiled from SPSS Version 20

Role of factors in maintaining Positive Work Environment:The role of factors are justified by the regression analysis through factor scoring especially multiple regression analysis (similar method was used by Thurstone, 1935; DiStefano et al., 2009) and factor score analysis was conducted with the support of SPSS.

Table 3 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.912[a]	.832	.823	.41428	.832	92.789	5	94	.000

a. Predictors: (Constant), REGR factor score 5 for analysis 1, REGR factor score 4 for analysis 1, REGR factor score 3 for analysis 1, REGR factor score 2 for analysis 1, REGR factor score 1 for analysis 1
b. Dependent Variable: Positive Work Environment

Source: from SPSS Version 20

The table 3 depicts that the value of R is 0.912, which means our suggested dimensions and their underlying items can significantly express PWE in RMG factories. The value of R Square shows the fitness of the model as it is found 0.832. According to the table-3, the value of adjusted R Square is 0.823 meaning the variability of the model. The study also show that the model is statistically significant (p=.00) with F - test (92.789) by degree of freedom (df) 5 (refer to Table 3).

Multiple regression model: PWE= 3.680+0.438(F1) +0.657 (F2) -0.246(F3) +0.245(F4) +0.247(F5). Where, PEW = Positive Work Environment, F1 (REGR factor score 1) = Effective Work System, F2 (REGR factor score 2)= Job Security, F3 (REGR factor score 3) = Emotional Support, F4 (REGR factor score 4)= workplace learning and F5 (REGR factor score 5) = work life balance (Appendix 4)
The model demonstrates that, one (01) unit change of the factors will change the dependent variable (PWE) as factor 1 (0.438 or 43.8%) Factor 2 (0.657 or 65.7%) factor 3 (-0.246 or -24.6%) factor 4 (0.245 or 24.5%) and for factor 5 (0.247 or 24.7%). (Appendix 4)

DISCUSSION

The study reveals five factors that are found from 22 sorted variables of positive work environment. The Effective Work System Factor including the variables i.e. X11, X7, X12, X6, X22, X2, X21, and X16 is having eigenvalue of 9.30 and the percentage of variation explained 42.30. As the factor contains the highest eigenvalue, the percentage of variation explained amongst the five factors, and none of the other factors is nearer to it. So, it is proved that factor is the highly considerable factor in ensuring positive work environment. In this factor, variable X11, X7, and X12 (socializing, peer support and team work) are having the maximum factor loading. Looking at the character of these variables it could be stated that, the workers are in need of a caring environment that provides aid from coworkers

and line supervisors at the time of work and after work in social interaction. The variable X21, and X16 are also closer to the character of factors mentioned earlier and other variables are mostly having physical characteristic of a work environment. This could be mentioned that, the female workers in need of Abraham Maslow's third level of need of the need hierarchy theory that is social/love/belongingness need or the relatedness need level of the Clayton P. Alderfer's ERG model of motivation theory. It could be marked that, the factor loadings of the variables of factor emotional support are carrying the highest loading value that are 0.93 (Counseling) and 0.93 (Grievance Management). Therefore, it is evident that, this factor and its two variables are highly significant in ensuring positive work environment as the female RMG worker needs protection from physical and mental abuse. The factor with the lowest eigenvalue is work life balance and one of its variable is carrying the third highest loading (supportive family life 0.929) and another is the lowest loading (stress management 0.50). To comment on the issue of this factor it could be stated that, female RMG workers are expecting an environment where they could work being free from household tensions and their work environment facilitates them to maintain their family life. It is evident that the female workers are becoming more awaked about work-life balance issues and Hossan et al., (2012) stated a similar observation.

Most of the RMG workers in Bangladesh work for long hours to enjoy the shift premium or overtime benefits and for this reason, the married workers could hardly manage time to nurture their kids and maintain a happy conjugal life. There are also physical and mental stress existing in their work life and many cases they are the victims of physical and sexual abuse. Job Security factor carrying the second highest eigenvalue and containing a cluster of seven variables. Amongst these variables, two are with very significant sum of factor loading X14=0.838 and X5 =0.814. It is quite natural that RMG workers of Bangladesh will demand for living wages as they are ill paid comparing to market value of the commodity goods and for this reason, higher loading value of compensation variable is most likely to happen.

In the case of fire security, it is also reasonably accepted as the RMG sector witnessed a good number of fire accidents that caused a mentionable number of deaths at workplace and most of them were female workers. Workplace learning is clustered with three variables i.e. X13, X9 and X8. It is observed from the table that All the variables of this factor are having positive factor loading except X13 (equity). It could mean that, inequitable act in the workplace may lead to negative consequence in developing positive work environment. Rests of the two variables, training, and supervision sounds educational. That could mean, the workers want skill development through training and effective guidance from the supervisors to be productive at workplace.

The model of the study shows that, all the independent variables have extensively positive influence (p=.00) on the dependent variables except the factor F3. However, the factor namely effective work system is playing a greater positive role than the other factors in

ensuring positive work environment in the RMGs (where, B= 0.43 and p= 0.00). The study discovered that, at the time the number of Effective Work System Factor increases, the condition of Positive Work Environment would be increasing too. Other factors of the model like Job Security factor (B=0.65 and p=0.00), workplace learning (B= 0.24 and p=0.00) and work life balance factor (B= 0.24 and p=0.00) are also resulting the same to play a significant role in maintaining a positive work environment. The emotional support factor is having a negative relation with the positive work environment. It could mean that, if the number of negative emotional issues decreases, the state of positive work environment will increase as there will be less amount of complain, and grievance from the workers end.

RECOMMENDATIONS

From the findings of the study it is reviled that, the issue of positive work environment for the female RMG workers is dependent on five distinct work environmental factors i.e. Effective Work System, Job Security, Emotional Support, workplace learning and work life balance. The study have found that, the Effective Work System factor could be highly influential and may play a significant role to ensure positive work environment for the female workers of RMG. Management should take necessary steps to arrange socializing events on regular interval i.e. annual picnic, games and sports competition and weekly feast to create a scope for social interaction among each other. They should be provided with necessary support and to be allowed for interaction among themselves with in the factory capacity to foster social interaction, teamwork, and participative work environment. A study by Park & Kwon (2004) has also identified the same about valuing teamwork for developing positive work environment in Korean companies. Organizations also to create a convenient physical environment that (building structure, interior design and ambient conditions) encourages high level of interpersonal contact and informal relations. Zhou et al. (1998) also stated the same in their research work.

RMG factories should emphasize more on intangible motivation factors like job autonomy, fair evaluation, and promotion beside the tangible rewards like compensation. Van Den Berg (2011) also recommended the same in his research article. Ensuring Job Security and proactively minimizing the requirement of emotional support by taking measures to reduce anxieties, discontents and unfair labor practice make work environment positive and productive at the same. The RMG organizations must endeavor to ensure psychosocial safety of the workers as a precondition to positive work environments and should formulate necessary policies, practices, and procedures for the protection of worker psychological health and safety that may minimize the requirement of counseling, grievances, and stress management. Dollard & Bakker (2010) also discussed the same issue and termed it as psychosocial safety climate factor.

The workers should be free from all type of mental and physical strain that usually caused by the family pressure and imbalanced work and family management. Lack of balance between work and family life can lead to reduced commitment and loyalty to the organization. Singh & Amanjot (2012) also said the same in their research work. Therefore, adequate measures to be taken in ensuring work life balance through sponsorship of family support from the organization in a form of day care center and lactation room for kids, infant and mother nursing facilities, flexible office timing and some best practices of industries around the world. Line supervisors to be to be trained on mentoring skills to support the worker in learning and there should be a shift in their mindset that they are to play an educator role then a controller role to improve their relationship with the workers. Guest (2007) also suggested the same in his research.

CONCLUSION

Positive work environment is an important issue for 21st century organizations where managing millennia's is a challenging task as this generation of employees' demand liberal workplace with freedom and flexibility. Organizations, which aim at thriving the idea of innovating a new form of workplace, need to ensure a source of physical, mental, and moral strength to make them productive at workplace and happy in family life. The results of the study are very encouraging as it shown the significance of intangible or psychological issues as the most influencing factor rather than the tangible or physiological one. It is discovered that, female RMG workers are mostly in need of the intangible or intrinsic issues of work environment than the tangible or extrinsic. They expect for a workplace that gives importance to effective work system development at work and facilitates to improve their family life. There is a common perception that RMG workers' demands are mainly circling on the extrinsic reward issues or physical needs like compensation and tangible benefits. However, this study has revealed the idea that, these generations of workers are getting self-educated on the issues of physical and mental safety after the series of incidents happened in the RMG factories of Bangladesh. RMG entrepreneurs and executives should take necessary policies and interventions in actualizing PWE factors to design a good work culture and practices. Besides trying to develop a good working environment, there should have future action research on identifying the factor that hinders positive work environment with the participation of workers.

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APPENDIX

Appendix 1-Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.308	**42.307**	42.307	9.308	42.307	42.307	5.695	25.885	25.885
2	2.931	**13.323**	55.630	2.931	13.323	55.630	4.886	22.210	48.095
3	2.479	**11.268**	66.898	2.479	11.268	66.898	2.774	12.608	60.704
4	1.631	**7.415**	74.314	1.631	7.415	74.314	2.408	10.945	71.649
5	1.430	**6.501**	80.814	1.430	6.501	80.814	2.016	9.165	**80.814**
6	.926	4.209	85.023						
7	.834	3.793	88.816						
8	.649	2.948	91.764						
9	.505	2.297	94.061						
10	.449	2.043	96.104						
11	.256	1.162	97.266						
12	.184	.835	98.101						
13	.138	.626	98.727						
14	.106	.480	99.207						
15	.071	.324	99.531						
16	.039	.177	99.708						
17	.027	.122	99.830						
18	.022	.102	99.932						
19	.011	.049	99.981						
20	.004	.017	99.999						
21	.000	.001	100.000						
22	-4.359E-18	-1.981E-17	100.000						

Extraction Method: Principal Component Analysis

Appendix 2 - Rotated Component Matrix[a]

	Component				
	1	**2**	**3**	**4**	**5**
Socializing	**.893**	.146	.255	-.087	.216
Peer Support	**.893**	.146	.255	-.087	.216
Team Work	**.805**	.286	.276	-.097	.233
Equipment &Tools	**.759**	.164	-.261	-.061	-.187
Wellbeing Program	**.696**	.282	.117	.447	.133
Building Layout	**.682**	.154	-.450	.274	.250
Career Growth	**.664**	.458	-.141	.213	-.315
Performance Evaluation	**.634**	.368	.118	.230	.340
Compensation	-.029	**.838**	-.038	-.052	.048
Fire Security	.391	**.814**	.006	.111	.128
Working Hour	.389	**.795**	.118	.174	-.045

Interior Design	.159	**.783**	-.094	.419	.125
Ambient Condition	.182	**.756**	.347	-.026	.238
Health & Safety	.445	**.668**	-.250	.249	.251
Job Design	.302	**.641**	-.358	.321	-.131
Counseling	.112	.018	**.933**	.107	.013
Grievance Management	.130	-.009	**.932**	.124	.021
Equity	.330	.028	-.195	**-.748**	.265
Training	.266	.361	-.069	**.726**	.091
Supervision	.030	.152	.187	**.637**	.405
Supportive Family Life	.180	.104	.043	.010	**.929**
Stress Management	.433	.291	-.307	.319	**.509**

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization
a. Rotation converged in 7 iterations.

Appendix 3 ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	79.627	5	15.925	92.789	.000[b]
	Residual	16.133	94	.172		
	Total	95.760	99			

a. Dependent Variable: Positive Work Environment
b. Predictors: (Constant), REGR factor score 5 for analysis 1, REGR factor score 4 for analysis 1, REGR factor score, 3 for analysis 1, REGR factor score 2 for analysis 1, REGR factor score 1 for analysis 1

Appendix 4 Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	**3.680**	**.041**		**88.828**	**.000**
	REGR factor score 1 for analysis 1	**.438**	**.042**	**.445** **.668**	**10.518**	**.000**
	REGR factor score 2 for analysis 1	**.657**	**.042**	**-.250** **.249**	**15.769**	**.000**
	REGR factor score 3 for analysis 1	**-.246**	**.042**	**.251**	**-5.911**	**.000**
	REGR factor score 4 for analysis 1	**.245**	**.042**		**5.880**	**.000**
	REGR factor score 5 for analysis 1	**.247**	**.042**		**5.928**	**.000**

a. Dependent Variable: Positive Work Environment

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KEEPING YOUR FRIENDS CLOSE AND YOUR ENEMIES CLOSER: INVESTIGATING FIRM INCENTIVES TO PARTICIPATE IN STRATEGIC CoCSR

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ABSTRACT

We investigate firm incentives for engaging in collaborative corporate social responsibility (CoCSR) tasks. Our investigation continues in the vein of earlier theoretical research that established the branding role of strategic CSR. We first consider the case of strategic partners collaborating on CSR tasks. We demonstrate that CoCSR will not always be sustainable as it will be subject to free-riding. We then consider the case of competing firms collaborating on CSR tasks. We demonstrate that firms will be more likely to engage in CoCSR with their closest competitors than with indirect competitors or even firms selling complementary goods.

Key words: Strategic CSR; Managing CSR; Collaborative CSR

INTRODUCTION

CSR has steadily emerged as a dominant paradigm amongst firm management across the globe. Theoretical underpinnings that can explain this victory and proliferation of selfless firm-level behavior, that at first sight would appear to contradict foundation assumptions of neoclassical economics, have been proposed. This has helped to justify and pave ways for establishing a stream of research that investigates the CSR function itself and yields useful and robust managerial guidelines.

Whether it is a free clinic established by a pharmaceutical company or an ocean-floor clean-up program sponsored by a ship builder, a CSR project offers greater yield with higher investment. It is reasonable to assume however that firms have significant limits on the amount of resources they can expend on CSR projects. That leaves one to wonder whether many CSR projects, being auxiliary endeavors of firms, are deprived of success simply because firms are unable to inject critical doses of resources necessary for those projects to gain productivity inertia.

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It is quite reasonable then to ponder about the potential for collaborative CSR efforts (CoCSR) to improve the viability and productivity of otherwise ordinary CSR projects. In such an arrangement, different firms could pool in a variety of resources so that the CSR project itself could gain the momentum necessary for flourishing. Indeed, there can be many advantages of CoCSR efforts. At the very least, a larger number of contributors to a given CSR project would relieve capacity constraints arising due to resource constraints. Also, different firms could offer their various comparative advantages and improve the quality of the production engine of CSR projects.

To argue in favor of CoCSR by focusing solely on the viability of CSR projects, one needs to use a myopic lens. In particular, while it is easy to argue that CoCSR is good for CSR projects, it may not be as easy to argue that CSR is unconditionally good for firms, at least from a strategic viewpoint. For example, firms aiming to achieve differentiation by engaging in CSR may forego opportunities to collaborate on CSR with their competitors. Since it is reasonable to assume that the pervasiveness of CoCSR will depend largely on firm-level incentives for doing so, it is important for investigating those incentives.

In this paper we consider the strategic value of CoCSR to firms, and thereby investigate their incentives to participate in CoCSR. We consider two broad cases: that of firms which are competitors, and that of firms which are strategic partners (sharing some common goal). For our analysis, we set up a simple model and use it to derive the equilibrium output for the various scenarios. The next section provides a review of the literature, while the model and analysis follow that.

LITERATURE REVIEW

CSR or Corporate Social Responsibility is the term used for the "action of firms that contribute to social welfare, beyond what is required for profit maximization" (McWilliams, 2015). Today, CSR is a well-accepted phenomenon among practitioners and academics alike, even though implementation continues to be challenging (Kotler and Keller 2008; Lindgreen et al. 2009). Many major corporations such as Cisco, Microsoft and Accenture have even created entire departments or foundations to execute CSR activities (Brindley 2015).

There is a large and still growing body of literature on CSR (c.f. Greenfield 2004, Lindgreen and Swaen 2010, Maignan and Ralston 2002, McWilliams et al. 2006, Pearce and Doh 2005). They primarily addresses such topics as the motivation for CSR, the antecedents for increased CSR activities.

Despite the prolific investigation of CSR by academics today, the fact remains that CSR had a bumpy start. Perhaps the most famous critic of CSR was the late Nobel laureate Milton Friedman (Friedman, 1970). As an economist, Friedman argued staunchly against CSR as it

is incoherent and often antithetical to the profit-making goal of a firm. While this view of CSR was popular among economists, recent studies have indicated the strategic value of CSR using economic rationale. Rahman (2008) for example indicated the financial returns to CSR via signaling. The study belongs to a growing stream of literature known that can be labeled as strategic CSR (c.f. Brammer et al. 2007, Fombrun and Shanley 1990, Kotler and Lee 2005, Maignan et al 1999, Porter and Kramer 2006, Rupp et al 2006, Valentine and Fleischman 2008, Vogel 2005). Lindgreen and Swaen (2010) provide an excellent review.

Collaborative CSR has only recently received attention. Most of these are in the form of articles in the popular press, while rigorous academic studies have not generally been conducted directly in the area of collaborative CSR. Murray et al. (2010) is an exception as they investigate in broad terms the possibilities and problems of collaborating on CSR. They note that collaboration between agencies would be the next recommended step. They do not however rigorously assess any particular mode of collaboration, and focus instead on stimulating a research agenda. Patel (2015) observes that companies can effectively collaborate on CSR, particularly after recently passed legislation (the new Companies Act) in India, where CSR is mandatory for firms Brindley (2015) suggests in the popular press that collaborative CSR is the true form of CSR. In a publication by the Network for Business Sustainability (2013), it is observed that there are three major challenges to collaborative CSR: (i) high expenses of making organizational changes to execute it, (ii) power differences between partners, (iii) generation of similar economics value. While these are excellent insights, none of these conclusions have been rigorously determined. In fact, to the best of our knowledge we are not aware of another study other than this paper that investigates rigorously the incentives to participate in CoCSR.

MODEL AND ANALYSIS

Assumptions:

Strategic Role of CSR:

In the same vein as earlier theoretical research on strategic CSR, we assume that firms are interested in CSR if and only if it leads to positive financial returns. Further, we are interested in the case where a branding role of CSR is the mechanism linking it to profits.

Market Structure:

We assume an oligopoly market where there are n identical firms who are selling in the same market. Because these firms are identical, they do not possess any incentive to signal their brand value to consumers.

External Environment:

Each firm has one strategic partner firm such that they both benefit from any contribution to a CSR project made by either firm.

CSR financial returns model:
We assume that for each firm, engaging in any level $x \geq 0$ of CSR activities will result in a net payoff of

$$f(x) - cx < 0$$

That is the firm will not be able to engage in any CSR activity without incurring a financial loss. This is a valid assumption in light of the assumptions made regarding the strategic role of CSR and the market structure above.

We also assume that the function f is sigmoid. That is the CSR activity first benefits from high contribution, while later is subject to exhibiting diminishing marginal benefits. We further assume that when the n competing firms each contribute a level $x \geq 0$ in CSR activities, the net payoff for each firm is

$$\frac{1}{n} f(nx) - cx$$

Finally, we assume that when two strategic partners contribute amounts x_1, x_2 to a CoCSR project, firm i receives the following payoff

$$f(x_1 + x_1) - c_i x_i$$

Firm incentives for engaging in CoCSR with competitors

Suppose an opportunity arises for every firm to contribute a level $x \geq 0$ to a common CSR initiative. Each firm will decide to contribute whenever

$$\frac{1}{n} f(nx) - cx > 0$$

That will be the case iff

$$\frac{1}{n} f(nx) > cx > f(x)$$

We can investigate the situation graphically. In figure 1a, the solid line represents the cost function, whereas the dashed line represents the individual returns to each firm from engaging in CoCSR. Clearly, in this case, firms will not engage in CoCSR.

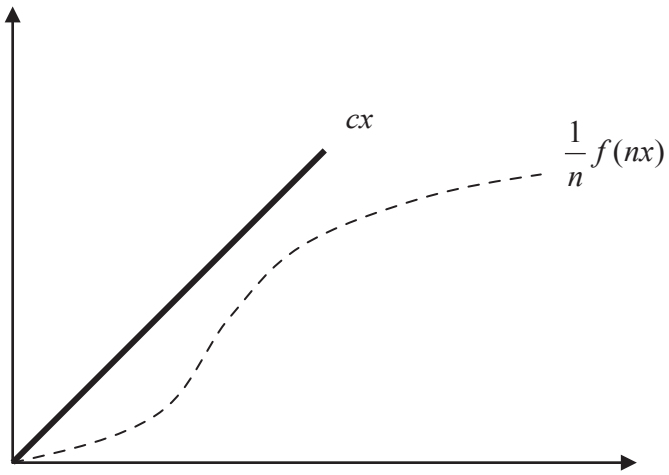

Figure 1a: No firm incentives to engage in CoCSR.

Figure 1b however shows a different situation, where firms will have the incentive to engage in CoCSR.

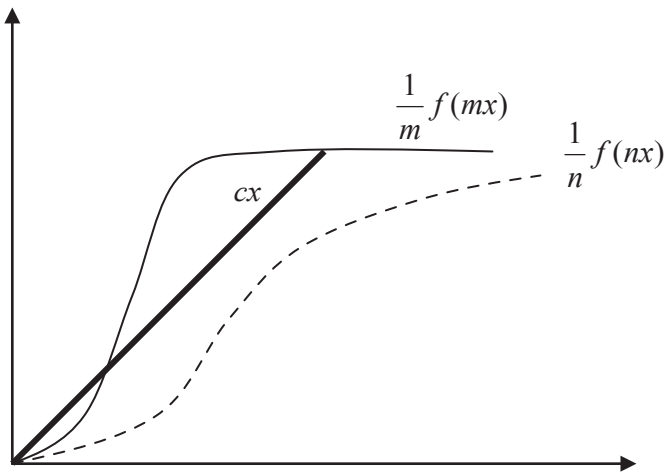

Figure 1b: Firms have incentives to engage in CoCSR when the number of firms *m* is larger.

The situation will arise whenever $\frac{1}{n} f(nx)$ is large enough for a given value of x. One necessary condition is that

$$\frac{1}{n} f(nx) > f(x) .$$

We can state that in another way

$$f(nx) > nf(x) .$$

In words, we can use a familiar phrase to describe that condition: that the whole needs to be greater than the sum of the parts.

Another condition is that n has to be large enough to cover the cost.

Proposition 1: *Each of the n firms will be interested to engage in CoCSR with its direct competitors only if*

(i) *the project is such that* $f(nx) > nf(x)$,

(ii) *c is sufficiently small, and/or*

(iii) *n is sufficiently large.*

Finally, we note that when the firms will have an incentive to engage in CoCSR, then each will contribute an amount x^* which solves

$$\max_x \frac{1}{n} f(nx) - cx .$$

If f is twice continuously differentiable, and has an inverse, then x^* is given by

$$x^* = \frac{f'^{-1}(cn)}{n} .$$

Firm incentives to engage in CoCSR with strategic partners

We now consider the incentives of two firms, $i = 1, 2$, to engage in CoCSR when they are strategic partners. For firm i, the net payoff after contributing a level x_i is given by

$$f(x_1 + x_2) - c_i x_i ,$$

given the other firm's contribution x_j , $j \neq i$. Note that because the firms are no longer identical, they have different cost functions as they face different opportunity costs. We can use the above expression to derive the reaction functions for the strategic partners

$$x_i(x_j) = \max \{0, f'^{-1}(c_i) - x_j\} .$$

Based on those reactions, there can be two different kinds of Nash Equilibrium.

Case 1: When $f'^{-1}(c_i) < 0 \quad \forall i$. The reaction function is then simply reduced to the following

$$x_i(x_j) = 0$$

In this case as the figure below indicates, the only Nash equilibrium involves both firms abstaining from CSR tasks.

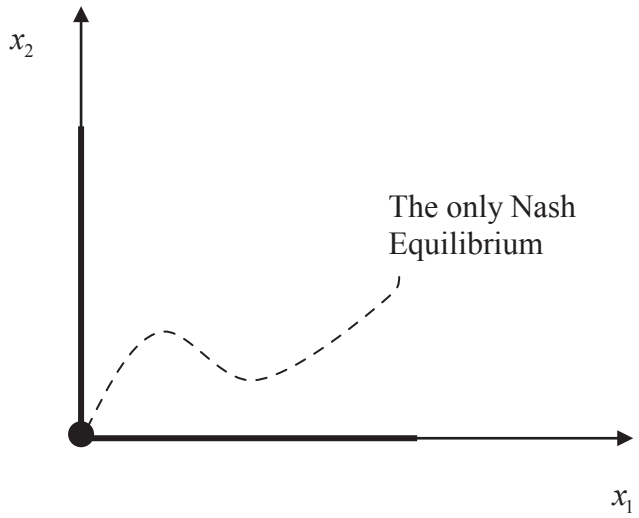

Figure 2a: **When $f'^{-1}(c_i) < 0 \quad \forall i$, in the unique Nash Equilibrium in the game, no CSR takes place. Further, collaboration is not an incentive to encourage CSR.**

Proposition 2a: *When any firm lacks the incentive to participate individually in CSR initiatives, the firm will not gain incentives to engage in CSR through CoCSR.*

Case 2: When $f'^{-1}(c_i) > 0$ for at least one i, and different for both. In this case, as the figure below indicates, there is always a Nash equilibrium in which CSR will take place, but CoCSR is not sustainable.

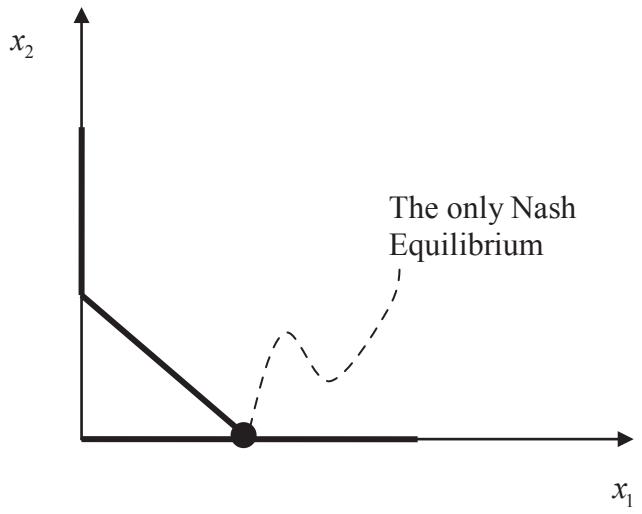

Figure 2a **In the unique Nash Equilibrium in the game, no CoCSR takes place.**

Proposition 2b: CoCSR among strategic partner firms will not be sustainable if one firm *likes* CSR more than another.

Case 3: When $f'^{-1}(c_i) = f'^{-1}(c_j) > 0$. In this case, a plethora of results are possible, as the figure below indicates.

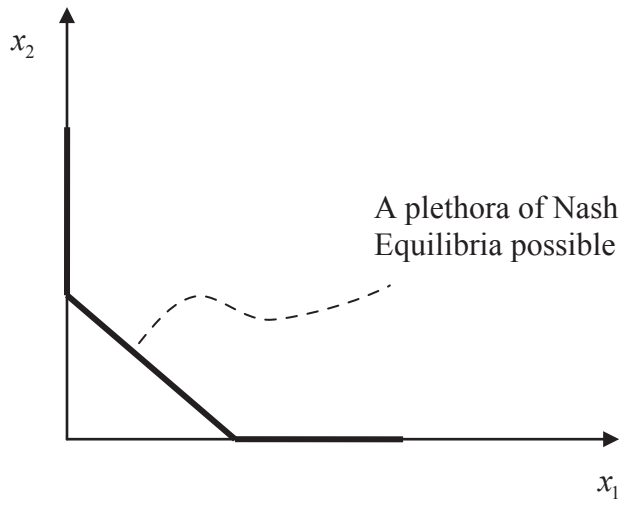

Figure 2c: **CoCSR may take place only when both strategic partner firms like CSR equally. It is however possible that either partner, in equilibrium, will free-ride completely on the other firm.**

DISCUSSION AND CONCLUSION

In this paper, we considered the strategic play of firms to collaborate on CSR. This is an important contribution to the literature as, to the best of our knowledge, this is the first technical assessment of the topic. Our analysis has resulted in three propositions that deliver insight on the nature of collaboration we can expect among firms on CSR. In particular, we have derived the conditions under which firms will collaborate when they are competitors, and conditions under which they will collaborate when they are strategic partners. When firms are competitors, they will be driven by the tendency to capitalize on exponential growth of project size/impact from greater investment. In many ways, this will be like pitching in to buy gifts; indeed it is a common practice for colleagues and friends to contribute to a common fund that results in a single but substantial gift. Although the intuition is quite simple, the result is impacting. Indeed, it is profound to consider that firms, even for strategic reasons, will actually collaborate with competitors on CSR, when strategic CSR is often associated with differentiation.

And when firms are strategic partners, we have demonstrated that in most cases, we will see free-riding. Once again, this is a surprising result, as free-riding is not typically an element of partnership. And intuitively, we would expect competitors to engage in less-than-noble acts such as free-riding. But our result does not defy intuition when we consider that strategic partners will work to maximize value generation, whereas duplication of efforts will be inefficient even if inequitable. Further, in light of our results, we can posit that partnerships can directly address equitable sharing of CSR activities a priori. We have demonstrated that those firms which like CSR will tend to engage in all of the activities. It may be that in real life, those same firms also have greater bargaining powers for a variety of reasons such as relative firm size, or by virtue of their position in the supply chain. For example, a major retailer and its supplier may involve a case of monopsony. Due to the retailer's branding efforts and/or its differentiation factor, it may be interested in engaging in a lot of CSR. Our result indicates that the retailer would engage in all of the CSR activities. However, due to its market power, it can force its suppliers to engage in CSR activities.

As future research in the area of strategic CoCSR, we encourage empirical work. Our results can be used to generate a series of hypotheses, and we offer a few examples. In observing CoCSR, our results suggest that we should observe that in the case of competitors, we should see firms that are similar in profile collaborating on CSR. The number of participants must be large, and the project itself must be large, offer visibility, and/or offer exponential returns on investment. We also expect to see less strategic CoCSR among firms that are vertically aligned, or are otherwise strategic partners.

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