Asia-Pacific Management Accounting Journal, Volume 5 Issue 2, 45-73, 2010

EMPIRICAL STUDY OF THE UNDERLYING THEORETICAL HYPOTHESES IN THE BALANCED SCORECARD (BSC) MODEL: FURTHER EVIDENCE FROM BANGLADESH

Md Habib-Uz-Zaman Khan[1]
Department of Business Administration
East West University, Bangladesh
and
PhD Candidate, Department of Accounting and Finance
Macquarie University, Australia

Abdel K. Halabi
Department of Accounting and Finance
Monash University Gippsland Campus, Australia
and
School of Accountancy, University of the Witswaterrand, South Africa

Md. Zakaria Masud
Department of Accounting
American International University-Bangladesh (AIUB)
Dhaka, Bangladesh

Abstract

This paper examines the underlying hypotheses of the Balanced Scorecard (BSC) which states that improvements relating to customers, learning and growth and internal processes improve the financial performance of an organization. In designing current research, the study focused on leading manufacturing and service companies based in Bangladesh and involved a structured questionnaire supported by financial data extracted from financial reports over three years. The results show that the BSC perspectives are positively correlated with each other at a statistically significant level and in a sequential way. Results also evidence that the companies that have improved their ROE and ROA had increased their efforts towards characteristics that involve the learning and growth perspective. This research has shown that Bangladeshi companies that apply a BSC model benefit from increased performance, and these findings have a

ISSN 1675-3194

number of important implications for managers and customers and contribute to our knowledge of the BSC in developing countries.

Keywords: Management Accounting, Balanced Score Card (BSC), Manufacturing sector, Service sector, Bangladesh.

Introduction

Performance measurement is an integral part of management accounting (Emmanuel and Otley, 1995). While financial indicators continue to dominate corporate performance, there has been rising use of non-financial and forward-looking measures (Anderson and Lanen, 1999; Joshi, 2001). Since beginning of the 1990's and onwards, the Balanced Scorecard (BSC) has been advocated as a superior combination of encompassing both financial and non-financial measures of performance (see for example Ax and Bjørnenak, 2005; Davis and Albright, 2004; Lipe and Salterio, 2002; Kaplan and Norton, 1992; 1993; 1996a). The BSC bases its success on the hypothesis that all four perspectives (Learning and Growth, Internal Business Processes, Customer and Financial) are linked to each other in a cause-and-effect relationship, and that the financial perspective is the end point where efforts of other perspectives should be directed (Aidemark, 2001). The clear statement of these connections provides the opportunity for managers to realize how an action classified in one perspective will influence, through chain effects other dimensions, and ultimately lead to improved financial results (Hoque and James, 2000).

Using BSC model, the number of studies have conducted to examine cause and effect relationship of BSC model proposed by Kaplan and Norton (1996) in performance measurement literature (see for example, Malmi 2001; Malina et al., 2007; Banker et al., 2000; Bryant et al., 2004; Speckbacher et al., 2003; Ittner et al., 2003; Davis and Albright, 2004; Othman, 2006). These studies, however, have evidenced the mixed finding. At the same time, all of the earlier studies have conducted in western economics context. Little is known how these casual linkages of BSC model are applied and worked in more traditional developing countries context. One of the motivations of current study is to level out the extant gap in the performance measurement literature.

The present study investigates whether the suggested interconnection of the four performance dimensions of BSC can be supported by empirical evidence in the Bangladesh context. Bangladesh is a country in South Asia with a per capita Gross National Income of only US$440 per year (World Bank, 2007). While the agricultural sector has traditionally dominated the economy, there is a growing importance in the manufacturing and services industries which have grown from 18% of GDP to 30% between 1980 and 2007. A review of related literature suggested that not many known research providing empirical evidence

on the BSC exist in Bangladesh. In the few available Bangladesh research, Morium (2002) suggested that the Balanced Scorecard (BSC) would be effective in the banking industry; however, there were no further research attempts to support this suggestion. There is some substantiation on the use of comprehensive type performance measures in Bangladeshi pharmaceutical industry in recent years (e.g., Mosarraf and Ahmed, 2008), however, the sample size for the study was very minimal (n = 10) and confined only in one industry (Mosarraf and Ahmed, 2008). Khan and Halabi (2009) in their study of a multinational corporation attempt to measure the organization's perception on learning and growth with the help of Balanced Scorecard Model. The results evidence that BSC, as a strategic performance measurement tool, helps in strategic management by linking some strategically significant, relevant, and interrelated measures or indicators with organizational emphasis on knowledge and learning initiatives. Recently, Khan et al. (2010) in their study applying contingency theory reveal that two contextual factors namely business strategy and market competition have the impact on the use of multiple measures of performance in Bangladeshi manufacturing firms. Another very recent study by Khan et al. (2011) reports that financial measures are dominated in Bangladeshi manufacturing and service sector and the adoption of BSC model is only 10%. Their study however, confirms that organizations are relying non- financial information as well (around 78%). However, on the Management accounting system (MAS) practices in less developed countries, Hopper et al., (2009), noted that these studies are rare, the current paper will thus add to the body of knowledge on the BSC with specific reference to the developing country of Bangladesh. Empirical data was collected from a mailed out questionnaire, and this was supported by an analysis of published annual reports.

The remainder of this paper is constructed as follows: The next section gives an overview of the BSC Model and reviews the BSC literature, and states the research hypotheses. The section then presents the methodology followed by results. The final section discusses the results, and then presents the conclusions, the implications, possible further research and limitations of the study.

Literature Review

a. BSC Model at a Glance:

Since its introduction, the BSC as a performance measurement and management model has received an increased recognition not only among private sectors but also in non-profit organizations ((Malmi, 2001; Modell, 2004; Kaplan and Norton, 2001; Irwin, 2002; Smith, 2000; Lawrie and Gobbold, 2004). In their early writings on the BSC, Kaplan and Norton (1992) described it as a multidimensional model,

designed for organizational performance evaluation and control (see Kaplan and Norton, 1992). In their subsequent publications, however, the BSC model has been placed in the centre of strategy making and communication and/or signalling tool for the organizations (Kaplan and Norton, 1996, 2001a and 2001b). While implementing BSC, an organization assumes to start with the definition of its strategic vision and mission, analysing its environment and potential. The strategy is then described by means of a strategic map which pictures strategic objectives critical to organizational success and the relationships among them. Noted that, Kaplan and Norton (1996) describe that the strategic objectives are not chosen and presented separately but linked by means of cause-and-effect chains. Organizations' strategy is thus translated into a set of cause-and-effect relationships about how it can be achieved. Malmi, (2001) mentioned that the strategic objectives are classified typically into four major perspectives, namely learning and growth, internal business processes, customers and financial performance with a view to ensure the interests of major stakeholders, employees, clients and shareholders. Kaplan and Norton, (1996a) opined that to operationalize the company's strategic objectives, the indicators of these four perspectives are linked together into the cause-and-effect chains. For instance, workforce's training leads to their excellence when performing jobs. Superior jobs completed by employees would lead to satisfaction of company's customers and ensure more customer loyalty. This increased customers' loyalty would have subsequent positive effect on the increase of company product sales. Growing sales result in better financial performance of the company, which in turn brings the superior dividend for the shareholders'. Kaplan and Norton (1996a) address that BSC model contains both outcome measures (lag indicators) and performance drivers (lead indicators) where financial measures are lagging indicator whereas the rest three non-financial measures are leading indicators. For instance, if the increased quality is a lag indicator, employees' skills is a lead one. The indicators of learning and growth perspective are the drivers for the indicators of the Internal Business processes. The measures of internal business processes are in turn the drivers for the indicators of the customer perspective. Finally, the latter indicators are the drivers for financial results (Kaplan and Norton, 1996a). Kaplan and Norton, (1996a) further add that each perspective should contain up to five objectives and quantifiable indicators and the indicators can be linked into causal chains horizontally within each perspective and vertically between them. So, the strategy of the company is converted into a set of cause-and-effect hypotheses.The four perspectives of the BSC (see Kaplan and Norton, 1996a) are described in turn.

The *Learning and Growth* perspective emphasizes innovation, creativity, competence and capability, and refers to the intangible assets that are important for strategy (Hoque, 2004). The objectives of this perspective are to identify the jobs (human capital); the systems (information capital), and the kind of organizational climate (organization capital) required to support the internal

processes. Learning and Growth also focuses on people and their attitude, knowledge, development and ability to learn and improve.

The Internal Business Process perspective identifies the processes that create and deliver to the customer a value proposition. (Kaplan and Norton, 1996a; Fisher, 1995; Norreklit, 2003 and Cohen et al., 2005). These processes should ensure that the firm's products and services are meeting customer needs, and is considered the most critical for the success of an organization. Some key performance indicators are process improvement and cooperation with suppliers. An important aspect of this perspective is to be able to capitalize on operational achievements.

The *Customer* perspective defines the value proposition used to generate sales and loyalty from targeted customers. The customer perspective requires managers to identify what customers in targeted segments want and consequently choose the value parameters an organization should deliver to customers (Kaplan and Norton, 2001; Irwin, 2002). This is because poor performance in customer satisfaction would be a leading indicator for financial decline of a firm.

Finally the *Financial performance* perspectiv*e* describes the tangible outcomes of the strategy in traditional financial terms. (Speckbacher et al., 2003 Chenhall, 2005; Hoque, 2004; Hepworth, 1998). The financial objectives represent the long-term aims of the organization, and are the outcomes of other non- financial factors.

According Norton and Kaplan (1996b) a cause and effect relationship exists among the perspectives of BSC in a sequential manner. This is depicted in Figure 1, and shows that improved performance in Learning and Growth will result in ameliorated performance in Internal Business which will positively affect Customers and this will eventually influence Financial Performance.

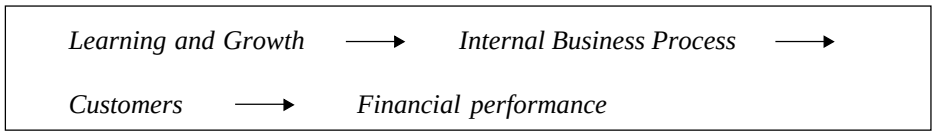

Figure 1: The Cause and Effect Concept of Balanced Scorecard

b. Research on the BSC Model: A Short Review

The BSC model has received worldwide acceptance since this model has successfully been applied across a diverse range of private and public sectors in the US, Canada, UK, Australia, Europe, Scandinavia, South America, and Asia (Hepworth, 1998; Speckbacher et al., 2003; Rigby, 2001; Silk, 1998; Schneiderman, 1999; Kald and Nilsson, 2000; Arnold et al., 2005; Hoque and James, 2000; Aidemark, 2001; Gehrke and Horváth, 2002; Nørreklit and Mitchell, 2007; Joshi,

2001, Anderson and Lanen, 1999). Silk (1998) for instance, stated that 60% of Fortune's top 1,000 companies in USA have experimented with the BSC, while Gehrke and Horváth (2002) reported that firms in the UK and throughout Europe are familiar with the BSC concept at rates of above 70%, and up to 98% . Hoque and James (2000) found that the use of BSC is related to improved performance in a sample of Australian companies.

Despite the perceived international triumph, the BSC approach has also its critics. Ittner et al. (2003) for instance, found that the BSC process exhibits almost no association with economic performance. Likewise, Pandey (2005) criticized the BSC model in that the time lag – the period in which an action in the context of one dimension will have an effect on another – is not incorporated in the model. Although the "cause-and-effect" relationship is the basis of the BSC's success, many researchers have noted that organizations seem to use BSC as an aggregation of independent performance measures (see Aidemark, 2001). A study conducted by Ittner et al. (2003) for example revealed that 77% of companies using BSC give little or no attention to causal models. Speckbacher et al. (2003) furthermore found that half of their sample companies using BSC were not able to formulate cause-and-effect relationships among the different objectives and measures. A further study of Finnish companies by Malmi (2001) showed that most companies appear to have scorecards in which the resulting measures and perspectives are fairly independent lacking the claimed cause-and effect interconnections Finally, Nørreklit (2003) noted that the BSC hypothesis does not provide a sufficient description of the assumed causal relationships, and that this relationship cannot be characterized as "causal" but "logical".

BSC and Casual Linkage: A Review of Literature and Hypotheses Development

There have been increasing debates on the proposition of BSC model and its validity along with empirical studies on BSC implementation that documents problems with the assumption of causality. In his interviews on the BSC implementations with the managers of seventeen Finishes companies, Malmi (2001) points out that the majority of the interviewees misunderstand and get the wrong impression about the cause-and-effect logic. Norreklit (2000) criticizes causal assumption, suggesting that the character of relationship between the BSC perspectives is logical in nature, given that some of them cannot be observed and involved financial calculus or abstract thinking. He further added that it is impractical to assume the relationship between the perspectives to be unidirectional. Instead, circular logic underpins many of the relationships (p. 75). For instance, innovation may lead to increased sales and better financial results. However, in order to boost innovation companies may need to undertake considerable financial

investment. Otley (1999) considers the causal assumption of the BSC simplistic: ".....a linear chain is suggested whereby better trained employees (now in the Innovation and Learning Growth will lead to better business processes being designed (one input to such changes, but surely by no means the only one); these in turn, will lead to more satisfied customers and then to happier shareholders. Although a plausible chain of events, it is again very much simplification of reality" (p.375). Other research studies substantiated that numerous implemented BSCs are deficient in any reflection of cause-and-effect relationships. (Speckbacher et al., 2003; Ittner et al. 2003; Davis and Albright, 2004; Othman, 2006). Nørreklit and Mitchell (2007) mentioned that users simply have a belief in the relationship between measures rather than testing and identifying the nature of actual relationships in practice. Bryant et al. (2004) investigate the BSC framework on the sample of 125 firms included in American Society for Quality and Compustat databases. The authors collected seven indicators over five years. They use pension benefits variable to proxy for employees' skills in the Learning and Growth perspective, new product introductions variable for Internal Business Processes, customer satisfaction and market share variables for Customer Perspective and revenue, operating expenses, profitability variables for financial perspective. Using structural equation modelling for data analysis, Bryant *et al.,* (2004) arrive to a number of interesting conclusions. For example, the authors compared two types of the models: one gives a complex and one a simplistic representation of the BSC links. The simplistic version of the BSC represents its links as vertical vector going through the four perspectives. The complex version admits that each lower perspective, in addition to influencing the following perspective, can also directly impact the other perspectives. It is concluded that the complex model better fits the data. For example, employee productivity is not only directly associated with new product introductions, but also with market share, revenue, and operating costs. Other research studies illustrate that financial outcomes are associated positively and significantly with customer satisfaction and product innovations for those companies who bases their compensation schemes on both financial and non-financial indicators. (Banker et al., 2000; Davis and Albright, 2004). This relationship however, is not valid for the companies which base their compensations solely on financial indicators. To illustrate, Banker et al. (2000) examined the relationship between non-financial performance measures and financial performance using time-series data for 72 months from 18 US hotels, enabling them to explore the timing of lead-lag relationships in the data (see p. 67). Nevertheless, they looked at only two non-financial performance measures, both related to customer satisfaction. While their findings indicated that non-financial measures of customer satisfaction are significantly associated with future financial performance, they did not explore the cause-and-effect relationships between the other dimensions of the BSC framework and that the measurement of customer satisfaction is inherently arbitrary (Banker et al., 2000, p. 89). Likewise, in their

attempt on branches within a US bank, Davis and Albright's (2004) reveal that financial performance after two years was superior in branches that implemented the BSC. They suggest that by incorporating leading non-financial indicators, the BSC can improve financial performance (p.150). However, they recognize several limitations of their study, in particular the lack of obtaining specific information on non-financial measures, results in making no causal inferences between financial and non-financial measures and the inability to investigate time-lag effects over different periods and to generalize their findings. (p. 144). Recently, Malina et al. (2007) have conducted a study for BSC casualty logic on 31 distribution units of a large US firm using time series data. The statistical findings of the study gave no clear support for the assumption of cause-and-effect relations in the BSC used. The findings also question whether cause-and-effect relationships are yet pertinent within the BSC, since this firm appeared to identify benefits with the BSC in spite of its obvious dearth of any causal relationships.

This study is expected to provide an empirical test of BSC links on the sample data taken from non-western settings. Although a particular BSC is unique in its nature, some indicators are common to most of the companies' scorecards (Bryant et al., 2004, Kaplan and Norton, 1996, 43). In particular, these are the indicators of the return on investment, customer satisfaction, market share, employee productivity, and new product introduction. Therefore, it can be suggested that the BSC perspectives can be characterized with some common variables for a given sample of companies.

The conflicting findings on the BSC mentioned earlier, leads to the first three hypotheses of the study which deal with the interrelation of the non-financial BSC perspectives (being Learning and Growth; Internal Business, and Customers).Setting hypotheses in the developing countries context can be argued and interpreted from the theoretical point of view. Since there are little research in developing and less developing countries (LDCs) context and since mixed finding are evidenced in earlier studies in developed countries context, further studies in different context in particular developing countries setting is warranted to add rigor or modify the proposition claimed in Kaplan and Norton's (1992) BSC model. As a result, to test the hypothesis, in this study independent variables with similar characteristics were grouped into each non-financial perspective. Numbers of non-financial variables mentioned in the literatures for each of the perspectives used in this study has been attached in the appendices.

The first hypothesis (H1.1) is presented as follows:

H1.1: The *Learning and growth* perspective variables positively correlate with the *Internal Business processes* perspective variables.

The second hypothesis (H1.2) is presented as follows:

H1.2: The *Internal Businesses processes* perspective variables positively correlate with the *Customer* perspective variables

The third hypothesis (H1.3) was developed to test whether a positive correlation existed between non-sequential variables.

H1.3: The *Learning and growth* perspective variables positively correlate with the *Customers* perspective variables.

The second set of hypotheses for this study tested whether the three non-financial BSC perspectives affect the fourth perspective, i.e. financial performance. To test this, a number of company financial ratios were compared at the end of the reporting period to the start to test for statistically significant differences on whether financial performance had improved. Six ratios chosen in the present study have been widely used as a measure of financial performance in prior studies. Using six ratios allows conclusions to be drawn on which area of financial performance is improved most by the respective non-financial perspective factors. The ratios were: Return on Assets – ROA (Evans, 2004; Ittner et al., 2003); Return on Equity – ROE (Evans, 2004; Kaplan and Atkinson, 1998; Kaplan and Norton, 1996a ; Kaplan and Atkinson, 1998); Inventory Turnover – IT (Banker et al., 2004; Lipe and Salterio, 2002); Debtors Turnover – DT (Banker et al., 2004; Lipe and Salterio, 2002); Sales Margin - SM (Lipe and Salterio, 2002; Libby et al., 2004) and Assets Turnover – AT (Banker et al., 2004).

The three hypotheses (H2.1 – H2.3) that deal with the effect of non-financial BSC perspectives on financial performance are presented as follows:

H2.1: Firms that had improved their financial performance had improved their *Learning and growth* perspective factors more than the firms that had worsened their financial performance.

H2.2: Firms that had improved their financial performance had improved their *Internal Business processes* perspective factors more than the firms that had worsened their financial performance.

H2.3: Firms that had improved their financial performance had improved their *Customer* perspective factors more than the firms that had worsened their financial performance.

Research Method

This study involves collection of both primary and secondary source of information to answer the research objectives. Primary data regarding non-financial performance perspectives were collected using a structured questionnaire. The structured questionnaire was sent to 150 of Bangladesh's leading listed companies in the manufacturing, retail and service sectors[2]. Instructions were attached to the questionnaire (a copy of questionnaire is attached in the appendix). The selection of companies was made on the basis of their net income and sales for 2006 – a procedure consistent with prior studies (see Libby and Waterhouse 1996; Cohen et al., 2006). Since there are no commercial firms maintaining the directory of Bangladeshi companies, we relied on sample companies name and other information maintained by Dhaka Stock Exchange.

The questionnaire was directed at managers who were asked to define the level of change in relation to a set of non-financial variables during the period of 2006-2008. As the time lag effect is well documented in the literature (i.e., the time period needed for a lead factor change to influence a lag factor) the data was selected for a three – year period. The questionnaire's statements were provided on a five-point Likert type scale where 1 = substantially decreased to 5 = substantially increased. The variables that made up the three BSC perspectives were shuffled in the questionnaire so that the respondents would not encounter successive variables. The questionnaire was sent companies top level executives (Vice president and above) because it was assumed top level management possess more comprehensive knowledge in relation to organizational management control system, business strategy and performance practices. Questionnaires with a cover letter and a postage-paid, self-addressed envelope were mailed during the first week from January 2007, to end of February, 2008. Two reminder letters were also sent for follow-up in order to get more responses. Surveys are burdened with problems linked to measurement error and bias. This problem however may be aggravated when the survey is written in the respondents' second language. The concern of language is, conceivably less important in the Bangladeshi manufacturing perspective where fluency and writing in English is very common, especially among top managers due to their high academic background and professional attainment (see Ishtiaque et al., 2007; Khan and Halabi, 2009).Within three weeks after the final reminders, 65 completed questionnaire were received, representing a response rate of 43.3%. The Cronbach's Alpha test was used to assess whether the variables accumulated to calculate the four factors were reliably measured. The result ($\alpha = 0.803$), indicates that all variables are effectively measured (Nunally, 1978; Bagozzi, 1994). Table 1 shows the detailed break up of sample companies. The abbreviations of the qualitative variables are presented in Appendix 1.

Table 1: Sample Size and Respondent Types >

Manufacturing/ service firms	Sample size	Sample percentage (%)
Food and allied	15	23.00%
Pharmaceuticals and Chemicals	20	30.75%
Engineering	10	15.38%
Tannery (leathers)	5	7.19%
Other manufacturing sector (Cement and Construction, Ceramic, Paper and printing, Textile)	5	7.19%
IT, leasing , banking and other service sector	10	15.38%
Total (N)	65	100%

Secondary data regarding the calculation of financial ratios used to examine H2.1 – H2.3 were readily available from published annual reports of the surveyed companies. The financial measures were properly identified from the companies published annual reports and independently verified as correct. Consistent with previous studies, the current study has used six financial measures such as return on assets (ROA), return on equity (ROE); inventory turnover (IT); debtors turnover (DT); sales margin (SM) and assets turnover (AT) (see for example, Banker et al., 2004; Evans, 2004; Ittner et al., 2003, Kaplan and Atkinson, 1998; Kaplan and Norton, 1996; Lipe and Salterio, 2002; Libby et al., 2004; Cohen et al., 2006). Care was, however, taken not to use particular ratio (e.g. inventory turnover ratio in case of banks and other service sectors) that is not consistent with any industry within our sample.

Results Analysis and Discussion

The hypotheses were tested for significance by paired comparison t test and the acceptance or rejection of the hypothesis served the basis for further analysis. Through factor analysis the variables have been rotated and the major variables have been discovered through which a significant portion of the changes in each of the perspectives outcome were explained.

Descriptive Statistics

The descriptive statistics (mean values and standard deviations) of all non-financial variables that were included in the questionnaire are presented in Table 2. Table 2 shows the mean value and standard deviation of each of the non-financial variables. The results highlight an average mean value of 3.84 (SD = .688) for Learning and Growth; 3.78 (SD = .828) for Internal Business process and 3.72 (SD = .812) for Customers.

Table 2: Descriptive Statistics of the Learning and Growth Perspectives

Learning and Growth Variables	Mean	Standard Deviation
Investments in New Technology (Inv Tech)	3.94	.645
Innovative Products and Services (IPS)	3.94	.676
Frequency of Collaboration and Information Exchange in the organization (FcoEx)	3.67	.739
Frequency of Promotion of Common Business Plans with Cooperating Companies (FPCBP)	3.67	.712
Frequency of Exchange of Information with Co-operating Companies (FexCo)	3.96	.599
Cooperative Companies Monitoring (CCM)	3.90	.755
Overall Mean and SD	3.84	.688
Internal Business Process Variables		
Effective Dispatching of Orders (in terms of price, specifications and delivery time) (EDO)	3.78	.856
Cooperation with Suppliers (CwS)	3.76	1.012
Cooperation with Distribution Channels (CwDc)	3.92	.717
Speed of Adopting Innovations already introduced in the Market (SoAlal)	3.71	.782
Speed of Adopting Innovations not yet introduced in the Market (SoAInI)	3.75	.771
Overall Mean and SD	3.78	.828
Customer Variables		
Market Share (MSh)	4.20	.633
Brand Awareness (BA)	3.96	.631
Brand Image (BI)	3.75	.717
Perceived Level of Service (PLos)	3.76	.651
Perceived Level of Quality (PLoQ)	3.78	.642
Perceived Level of Trust to the Products (PLoT)	3.86	.775
After-Sales Service (AfSS)	3.53	.809
Percentage of Lost Clients (PLC)	3.35	1.055
Percentage of Customers' Complaints (PCC)	3.37	1.399
Overall Mean and SD	3.72	812

Where 1 = substantially decreased to 5 = substantially increased.

Correlations Analysis

Correlations were then performed to see if a linear relationship existed between variables from the different perspectives (Gupta and Gupta, 1992). Table 3 shows the correlations among all twenty variables. Two main conclusions that can be drawn from this data are that not all variables are statistically significantly correlated to each other. That is, the improvements in some non-financial measures are not necessarily reflected in other aspects. The second conclusion

Table 3: Correlations Among Non-financial Perspectives' Variables

	Inv-Tech	IPS	FcoEx	FPCBP	FExCo	CCM	EDO	CwS	CwDC	SoAlal	SoAlnl	MSh	BA	BI	PloS	PLoQ	PLoT	AfSS	PLC	PCC
InvTech	**1.00**																			
IPS	.303**	**1.00**																		
FCoEx	.786	.152	**1.00**																	
FPCBP	.092	.087	.281**	**1.00**																
FexCo	.135	.052	.056	.058	**1.00**															
CCM	.362**	.008	.279*	.049	.157	**1.00**														
EDO	.086	.002	.199	.229*	.102	.423*	**1.00**													
CwS	.018	.099	.140	.254*	.009	.105	.333**	**1.00**												
CwDC	.298**	.076	.066	.014	.215	.576*	.298**	.084	**1.00**											
SoAlal	.129	.109	.196	.115	.065	.243*	.501**	.164	.006	**1.00**										
SoAlnl	.154	.221*	.147	.084	.038	.505**	.431**	.227*	.253*	.305**	**1.00**									
MSh	.204	.191	.263*	.112	.274*	.125	.105	.073	.230*	.002	.182	**1.00**								
BA	.228*	.120	.465**	.159	.065	.267*	.095	.048	.051	.298**	.308**	.070	**1.00**							
BI	.435**	.103	.273*	.234*	.205	.227*	.104	.284**	.138	.078	.278*	.024	.596**	**1.00**						
PloS	.076	.342**	.169	.446**	.314**	.381**	.230*	.055	.131	.254*	.396**	.066	.269*	.512**	**1.00**					
PloQ	.079	.253*	.265*	.256*	.413**	.299**	.023	.049	.037	.150	.230*	.106	.373**	.313**	.402**	**1.00**				
PloT	.221*	.156	.325**	.305**	.307**	.360**	.135	.246*	.304**	.064	.342**	.189	.234*	.440**	.490**	.421**	**1.00**			
AfSS	.109	.128	.473**	.074	.220*	.123	.139	.089	.246*	.097	.189	.090	.394**	.479**	.233*	.186	.405	**1.00**		
PLC	.056	.066	.118	.103	.136	.063	.086	.079	.249*	.138	.158	.244*	.099	.364**	.123	.485**	.360**	.105	**1.00**	
PCC	.131	.175	.179	.225*	.102	.290**	.152	.050	.429**	.102	.405	.084	.417**	.583**	.076	.158	.030	.142	.153	**1.00**

*Correlation is significant at the 0 .05 level (2 - tailed)

** Correlation is significant at the 0.01 level (2 - tailed)

The abbreviations of the variables shown on this table are provided in Appendix 1.

is that all statistically significant relations are positive. That means that a business that improves one aspect that deals with any non-financial variable should expect only positive outcomes from such a move. However, this conclusion works also the other way around; that by neglecting some non-financial aspects several other variables will be negatively affected.

Factor Analysis

Factor analysis was then performed with the primary goal of reducing the data to accurately test hypotheses H1.1 – H1.3. The principal components method, using Varimax rotation, reduced the 20 explanatory variables to four factors (Malhotra, 2004). For the sake of convergent validity, 0.4 was used as a factor loading cut-off point. Factors including less than three items were eliminated (Jabnoun, 2003). The factors are extracted in such a way that the first factor accounts for the highest variance in the data, the second the next highest and so on. Therefore, factor analysis has been used to identify the variables which have high degree of involvement to the BSC as well as the variables which are comparatively less prominent (Malhotra, 2004)[3].

The six variables that were included in the *Learning and Growth* perspective were grouped into two factors. The first factor - named "External Environment orientation-IGL1" accounted for 32.59% of the variance explained (mean 3.67, SD. 0.540). The second factor that was named "Internal Environment orientation - IGL2" accounted for 27.55% of the variance explained (mean 4.00, SD. 0.514). The five variables that were classified into the *Internal business process* perspective were grouped into one new factor named "New Process Efficiency and Effectiveness – BP" and accounted for 77.08% of the variance explained (mean 3.825, SD. 0.667). Finally, the nine variables that were categorized as dimensions of the *Customers* perspective were grouped into one factor and named "Customer Satisfaction - CS" which accounted for 60.87% of the variance (mean 3.98, SD. 0.495). The results of the factor analysis are highly consistent with BSC literature in relation to the measures that are commonly encountered in the non-financial BSC perspectives (Cohen, et al., 2006; Hoque and James, 2000; Othman, 2006).

The correlations among the four factors are presented in Table 4. Table 4 reveals that the first factor of the Learning and Growth perspective dealing with External Environment Orientation is not statistically related to the Internal Business Processes perspective. The Internal Environment Orientation factor on the other hand, is positively and statistically significantly related to the Internal Business Processes perspective. As only one dimension of Learning and Growth has a direct effect on the Internal Business process perspective, H1.1 is only partially proven. Table 4 also shows that the Internal Business Processes perspective

factor is statistically significantly related to the Customers perspective factor, however, the Customers perspective factor (r = 0.651) is more positively related to Internal Business Processes. This finding indicates that increased performance in internal processes is reflected in improved customer satisfaction, and thus, H1.2 is supported. Finally, the analysis of the correlations among the Customer Perspective factors and the Learning and Growth Perspective factors does not exhibit statistically significant relationships with the exception of the positive statistically significant correlation between the customer satisfaction factor and the Internal Environment Orientation. By analyzing the variables that constitute the Internal Environment Orientation factor, it is evident that customers appreciate innovation and technology, and thus H1.3 is only partially supported.

Table 4: Correlations Among Factors of the Three Non-financial Perspectives

Factors	IGL1	IGL2	BP	CS
External Environment Orientation (IGL1)	1	.435**	0.119	0.118
Internal Environment Orientation (IGL2)	0.349	1	.639**	.544**
New Process Efficiency and Effectiveness (BP)	0.025	.765**	1	0.576**
Customer Satisfaction (CS)	0.152	.533**	.651**	1

Notes: The Correlations above diagonal are Pearson two-tailed correlations below the diagonal are Spearman two-tailed correlations.

**Correlation is significant at the 0.01 level (2-tailed).

Hypotheses Testing

In order to test hypotheses H2.1, H2.2 and H2.3 of this study, the values of the six selected financial ratios were calculated for both 2006 and 2008 for the 65 companies. For that, the sample companies were divided into two groups; those that have evidenced an increase in the financial ratio (ratio 2008 ≥ ratio 2006) and those that have experienced a decrease in the value of the corresponding ratio (ratio 2008 < ratio 2006).

One sample t-tests were used to analyze the information, and the results are summarized in Table 5 by individual ratios. Table 5 provides supportive evidence that the companies that had increased their Return on Assets (ROA) from 2006 to 2008 had improved their "Internal Environment Orientation" significantly more than the companies that had experienced a decrease in this ratio (p = 0.017). The same conclusion can be made regarding the Return on Equity (p = 0.013) and inventory turnover (p = 0.017), and therefore H2.1 is supported. The results also show that the companies that had increased their ROA had improved their New Process Efficiency and Effectiveness (p = 0.010) more than the companies whose ROA for the same time period was worsened, and therefore H2.2 is partially supported. The customer perspective factors proved to be a source of differentiation only in relation

Table 5: Statistical Results of T-tests

Factors	Return on Assets (2006-2008)			t-Value (p-Value)
	$ROA_{2008} \geq ROA_{2006}$	$ROA_{2008} < ROA_{2006}$	Diff	
External Environment Orientation	3.852	3.602	-0.250	.453(.652)
Internal Environment Orientation	4.155	3.891	0.264	-2.442(.017)
New process Efficiency and Effectiveness	3.811	3.500	0.311	-1.177(.010)
Customer Satisfaction	3.850	3.800	0.05	-1.367(.176)

Factors	Return on Equity (2006-2008)			t-Value (p-Value)
	$ROE_{2008} \geq ROE_{2006}$	$ROE_{2008} < ROA_{2006}$	Diff	
External Environment Orientation	3.639	3.692	-0.053	.453(.652)
Internal Environment Orientation	4.153	3.891	0.262	-2.542(.013)
New process Efficiency and Effectiveness	3.711	3.690	0.021	-2.544(.021)
Customer Satisfaction	3.950	3.800	0.15	-1.367(.176)

Factors	Inventory Turnover (2006-2008)			t-Value (p-Value)
	$IT_{2008} \geq IT_{2006}$	$IT_{2008} < IT_{2006}$	Diff	
External Environment Orientation	3.639	3.692	-0.053	.453(.652)
Internal Environment Orientation	4.153	3.891	0.262	-2.442(.019)
New process Efficiency and Effectiveness	3.811	3.500	0.311	-2.184(.030)
Customer Satisfaction	3.950	3.800	0.15	-1.367(.176)

Factors	Debtors' Turnover (2006-2008)			t-Value (p-Value)
	$DT_{2008} \geq DT_{2006}$	$DT_{2008} < DT_{2006}$	Diff	
External Environment Orientation	3.639	3.692	-0.053	.453(.021)
Internal Environment Orientation	4.153	3.891	0.262	-2.442(.117)
New process Efficiency and Effectiveness	3.811	3.500	0.311	-1.184(.130)
Customer Satisfaction	3.950	3.800	0.15	-1.534(.012)

Factors	Sales Margin (2006-2008)			t-Value (p-Value)
	$SM_{2008} \geq SM_{2006}$	$SM_{2008} < SM_{2006}$	Diff	
External Environment Orientation	3.639	3.692	-0.053	.453(.652)
Internal Environment Orientation	4.153	3.891	0.262	-2.442(.017)
New process Efficiency and Effectiveness	3.811	3.500	0.311	-2.184(.030)
Customer Satisfaction	3.950	3.800	0.15	-1.367(.317)

(*Continued*)

(*Con't* Table 5)

Factors	Asset Turnover (2006-2008)			t-Value (p-Value)
	$AT_{2008} \geq AT_{2006}$	$AT_{2008} < AT_{2006}$	Diff	
External Environment Orientation	3.639	3.692	-0.053	1.453(.652)
Internal Environment Orientation	4.153	3.891	0.262	-2.442(.151)
New process Efficiency and Effectiveness	3.811	3.500	0.311	.184(.250)
Customer Satisfaction	3.950	3.800	0.15	-1.367(.176)

to the debtors' turnover ratio. More specifically, the companies that had improved their debtors turnover ratio had increased their financial performance more than the companies that had not done so ($p = 0.012$), consequently, H2.3 is partially supported. The analysis did not find any statistically significant differences between companies that had improved their sales margin and asset turnover in terms of the values of their non-financial BSC perspectives' factors.

Conclusion, Implications and Limitations of the Study

The present study investigates that most lead BSC perspectives are correlated with each other at a statistically significant level for the selected Bangladeshi companies. This supports the theoretical grounding of the BSC, being that there is a sequential dependency among the non-financial BSC perspectives. The relationship between customer perspective factors and internal business process factors seems to be stronger that the relationship between learning and growth factors and internal business process. Further, the relation between customers and learning and growth (i.e. those that are not modeled sequentially) exhibit limited statistical significant relationships. The study also found supportive evidence that the companies that have improved their financial indicators have increased their efforts towards business activities more than the companies that have not. For example, companies that have increased the ROA and ROE had shown an increased orientation to their internal environment compared to the companies that had these ratios decreased. The study also indicates that a lead-lag relationship hypothesis can be supported from empirical data. Management accounting literature advocates the use of non-financial performance measures as a tool in order to support and overcome deficiencies attributed to financial measures. The proponents of Balanced Scorecard (BSC) claim that lead factors interrelate and their improvement ultimately leads to increased financial performance (see Kaplan and Norton, 1996a).

In the light of findings stated above, the result of this study has a number of implications and has increased our knowledge of the management accounting practices of a developing country such as Bangladesh. To begin with, the study

has shown that Bangladesh companies which implement and improve their non-financial perspectives ultimately benefit from increased financial performance. This then provides managers with greater motivation to adopt various learning and growth factors, internal business process factors and customer factors. In today's rapidly changing business environment, this would ultimately result in the company better coping with competition. A further implication is that this study has shown that given a company actually applies BSC models and given firms can systematically monitor, it would contribute to performance in organizations. This study also has implications for customers, who by their spending habits influence company performance. The results show that companies which initiate and increase their customer focus improve financial performance. If companies are to achieve long term superior financial performance, they must create and deliver products and services that are valued by customers, and improve customer relationships. That is to say, good customer relationships / satisfaction should be maintained by surveyed firms and other Bangladeshi companies to increase bottom line. Moreover, our study contributes to the literature by incorporating in the analysis some variables which are not available in the external databases. Our study is also different in that we used published data to see casual link among perspectives. The use of survey data in this paper coupled with additional secondary sources overcomes the mono-method bias suffered by studies that rely solely on data retrieved by questionnaires. The present study used generic ratio measures in order to deal with the heterogeneity of the sample companies, and the performance variables chosen were objective indicator. Lastly, because there are limited research on Bangladesh and other developing countries in BSC context, the findings of this study is considered most important which is expected to add to our understanding on this issue from developing countries data.

This study is not without its limitations, however; these can be used to further research and contribute to knowledge. The present study made no endeavor to investigate or differentiate companies on the basis of their "BSC adoption", or "non-Adoption". Further, the study made no endeavor to investigate the actual use of the BSC model or the degree or level of BSC usage. That is, do companies follow the BCS model fully or partially, and if it is followed partially which of the perspectives are being followed? Future studies could investigate these areas, and whether the conclusions drawn from this study - particularly the cause and effect concept of the BCS – are consistent. Future studies with a BCS focus can contribute to literature on why and how companies implement BSC, the pitfalls in implementing BSC, and its success in achieving intended goals. A further limitation of the study is that no statistical testing was performed to study non-response bias. This is frequently instituted in the survey approach. For the present study, the response was considered quite adequate, and the Cronbach's Alpha test noted

the data was reliably measured, therefore the authors believe non-response to have no real effect on the findings. In addition, the study focused on companies in the Bangladesh context, and the results therefore cannot be generalized beyond the sample or the sample size. Further research could be done using the similar questionnaire and methodology in other Asian developing economies to see if the results are consistent. This resonates with the call for more research in developing countries (see Hopper et al., 2009). Moreover, consistent with Cohen et al. (2006) the study made no attempt to see whether sample firmed actually integrates strategy with balanced scorecard linkage. Finally, a further limitation that can be inferred here is that the survey questionnaire essentially measures belief not actions.

Even though more research is required, this study has shown the importance of BSC and that Bangladesh companies support the theoretical hypotheses of BSC model. This finding is important, and contributes to our knowledge of the BSC model and specifically for the country of Bangladesh.

Note

[1] Corresponding Author: sumkadu@yahoo.com

[2] The study does not analyze companies that actually implement a BSC system. As Bangladesh usually shows a delay in adopting management accounting innovations (Mazumdar, 2007; Sarker et al., 2006), restricting the study only in BSC implementing companies would be problematic mainly due to the fact that it could considerably decrease the sample of companies available. Thus, our analysis has a broader scope and its conclusions are easier to generalize.

[3] The detailed results of factor analysis result are not reported in a table, however, can be available on request from the lead author.

References

Aidemark, L.G. (2001). The Meaning of Balanced Scorecards in the Health Care Organization, *Financial Accountability and Management*, 17, 1: 23-40.

Anderson, S. W. and Lanen, W. N. (1999), Economic Transition, Strategy and the Evolution of Management Accounting Practices: The Case of India, *Accounting, Organizations and Society*, 24, 5 and 6: 379-412.

Arnold.M., Sahay, B.S. and Saha, S. (2005). Balanced Scorecard in Indian Companies, *Vikalpa*, 30, 2: 12-13.

Ax, C. and Bjørnenak, T. (2005). Bundling and Diffusion of Management Accounting Innovations-The Case of the Balanced Scorecard in Sweden, *Management Accounting Research*, 16, 1: 1-20.

Bagozzi, R. P. (1994). Measurement in Marketing Research: Basic Principles of Questionnaire Design , in Bagozzi R.P. (Ed.), Principles of Marketing Research, Blackwell, Oxford.

Banker, R. D., Chang, H.D. and Pizzini, M.J. (2004). The Balanced Scorecard: Judgmental Effects of Performance Measures Linked to Strategy, *The Accounting Review*, 79, 1: 1-23.

Banker, R. D., Potter, G. and Srinivasan, D. (2000). An Empirical Investigation of An Incentive Plan that Includes Nonfinancial Performance Measures, *The Accounting Review*, 75, 1: 65-92.

Bryant, L., Jones D. A. and Widener, S.K. (2004). Managing Value Creation within the Firm: an Examination of Multiple Performance Measures, *Journal of Management Accounting Research*, 16: 107-131.

Cohen, S., Thiraios, D. and Kandilorou, M. (2006). Do Non-Financial and Financial Performance Parameters Interrelate in Practice? Empirical Evidence from A BalancedScorecard Perspectives, available at SSRN http:/ /ssrn.com/abstract = 941392 [Accessed October 31, 2006].

Cohen, S., Venieris, G. and Kaimenaki, E. (2005). ABC: Adopters, Supporters, Deniers and Unawares, *Managerial Auditing Journal*, 20, 9: 981-1000.

Chenhall, R.H. (2005). Integrative Strategic Performance Measurement Systems, Strategic Alignment of Manufacturing, Learning and Strategic Outcomes: An Exploratory Study, Accounting, Organizations and Society, 30, 3: 395- 422.

Davis, S. and Albright, T. (2004). An Investigation of the effect of Balanced Scorecard Implementation on Financial Performance, *Management Accounting Research*, 15: 135-153.

DeBusk, G.K., Brown, R.M. and Killough, L.N. (2003). Components and Relative Weights in Utilization of Dashboard Measurement Systems Like the Balanced Scorecard, *The British Accounting Review*, 35: 215-231.

Emmanuel, C. and Otley, D. (1995). Readings in Accounting for Management Control, Chapman and Hall, London.

Eccles, R. and Pyburn, P.J (1992). Creating a Comprehensive System to Measure Performance, *Management Accounting (UK)*, 74, 4: 41-44.

Evans, J.R. (2004). An Exploratory Study of Performance Measurement Systems and Relationships with Performance Results, *Journal of Operations Management*, 22: 219-32.

Fisher, I. (1995). Use of Non-financial Performance Measures, in Young. S. M. (Eds), Readings in Management Accounting, Englewood Cliffs, Prentice Hall NJ: 329-335.

Gehrke, I. and Horvath, P. (2002). Implementation of performance measurement: a comparative study of French and German organizations, in Epstein, M.J. and Manzoni J.F. Performance Measurement and Management Control: A compendium of research, studies in financial and Management Accounting, JAI Press, London: 159-180.

Gupta, S.P. and Gupta, M.P. (1992). Basic Statistics,10th edition, Sultan Chand and Sons. Hoque, Z. (2003), Strategic Management Accounting: Concepts, Processes and Issues, 2nd Edition, Spiro Press, USA.

Hepworth, P. (1998). Weighing It Up: A Literature Review for the Balanced Scorecard, *Journal of Management Development*, 17, 8: 559-563.

Hopper, T., Tsamenyi, M., Uddin, S. and Wickramasinghe, D. (2009). Management Accounting in Less Developed Countries: What is Known and Needs Knowing' *Accounting, Auditing and Accountability Journal*, 22, 3: 469-514.

Hoque, Z. and James, W. (2000). Linking Balanced Scorecard Measures to Size and Market Factors: Impact on Organizational Performance, *Journal of Management Accounting Research*, Vol. 12, pp. 1-15.

Ittner, C.D., Larcker, D.F. and Randall, T. (2003). Performance Implications of Strategic Performance Measurement in Financial Services Firm, *Accounting, Organizations and Society*, 28: 715-741.

Jabnoun, N. and Chaker, M. (2003). Comparing the Quality of Private and Public Hospitals, *Managing Service Quality*, 13, 4: 290-299.

Johnson, G., Scholes, K. and Whittington, R. (2005). Exploring Corporate Strategy: Text and Cases (7th edition), Prentice Hall.

Joshi, P. L. (2001). The International Diffusion of New Management Accounting Practices: The Case of India, *Journal of International Accounting, Auditing and Taxation*, 10, 1: 85-109.

Kald, M. and Nilsson, F. (2000). Performance Measurement at Nordic Companies, *European Management Journal*, 18, 1: 113-127.

Kaplan, R.S. and. Atkinson, A.A. (1998). Advanced Management Accounting, 3rd Edition, Prentice Hall International, Inc.

Kaplan, R. S. and Norton, D.P. (1992). The Balanced Scorecard – Measures that Drive Performance, *Harvard Business Review*, January-February: 71-79.

Kaplan, R. S. and Norton, D. P. (1993). Putting the Balanced Scorecard to Work, *Harvard Business Review*, September-October, pp. 134-142.

Kaplan, R.S. and Norton D.P. (1996a). Translating Strategy into Action, The Balanced Scorecard, Harvard Business School Press.

Kaplan, R. S. and Norton, D. P. (1996b). Using the Balanced Scorecard as a Strategic Management System, Harvard Business Review, January-February: 75-85.

Kaplan, R.S. and Norton. D.P. (2001). The Strategy-Focused Organization, How Balanced Scorecard Companies Thrive in the New Business Environment, Harvard Business School Press.

Khan, M.H.U.Z and Halabi, A.K. (2009). Perceptions of Firms Learning and Growth under Knowledge Management Approach with Linkage to Balanced Scorecard (BSC): Evidence from a Multinational Corporation of Bangladesh, *International Journal of Business and Management*, 4, 9: 257-282.

Khan, M.H.U.Z., Ahmed, R. and Halabi, A.K. (2010). The Roles of Degree of Competition and Types of Business Strategies in Adopting Multiple Performance Measurement Practices: Some Reflections from Bangladesh, in Mathew Tsamenyi, Shahzad Uddin (ed.) (*Research in Accounting in Emerging Economies*, 10: 201-232), Emerald Group Publishing Limited.

Khan, M.H.U.Z and Halabi, A.K, Sartorius, K. (2011). The Use of Multiple Performance Measures and the Balanced Scorecard (BSC) in Bangladeshi Firms: An Empirical Investigation, *Journal of* Accounting *in Emerging Economies*, 1 (forthcoming issue).

Libby, T. and Waterhouse, J.H. (1996). Predicting Changes in Management Accounting Systems, *Journal of Management Accounting Research*, 8: 137-150.

Lipe, M.G. and Salterio, E. (2002). A Note on the Judgmental Effects of the Balanced Scorecard's Information Organization, Accounting, Organizations and Society, 27, 3: 531-540.

Malhotra, N.K. (2004). Marketing Research, 4th edition, Prentice Hall, New Jersey.

Malina, M.A., Nørreklit, H.S.O. and Selto, F.H. (2007). Relations among Measures, Climate of Control and Performance Measurement Models, *Contemporary Accounting Research*, 24, 3: 935-982.

Malmi, T. (2001). Balanced Scorecards in Finnish Companies: A Research Note, *Management Accounting Research,* 12: 207-220.

Mazumder. B.C. (2007). Application of Management Accounting Technique in Decision Making in the Manufacturing Business Firms in Bangladesh, *The Cost and Management*, 35, 1: 5-18.

Morium. S. (2002). Measuring Business Performance in Banking Sectors: Balanced Scorecard Approach, *Bank Parikrama*, 27, 2: 103-104.

Mossaraf, L. and Ahmed, F. (2008). Evaluating Business Performance with the Presence of Non-Financial Measures – An Empirical Investigation, *Journal of Business Administration and Social Science*, 2, 2: 14-25.

Nunally, C. J. (1978). Psychometric Theory, McGraw-Hill, New York, NY.

Nørreklit, H. (2000). The Balance on the Balanced Scorecard – A Critical Analysis of some of its Assumptions, *Management Accounting Research*, 11: 65-88.

Nørreklit, H. (2003). The Balanced Scorecard: What is the Score? A Rhetorical Analysis of the Balanced Scorecard, *Accounting, Organizations and Society*, 28: 591-619.

Nørreklit, H. and Mitchell, F. (2007). The Balanced Scorecard. In: T. Hopper, D. Northcott and R. Scapens (eds.), Issues in Management Accounting (3rd edition). London: Pearson Education: 175-198.

Needles, B. E. and Crosson, S. V. (2005). Managerial Accounting, Boston, Houghton Mifflin Company.

Othman, R. (2006). Balanced Scorecard and Causal Model Development: Preliminary Findings, *Management Decision*, 44, 5: 690-702.

Otley, D.(1999). Performance Management: A Framework for Management Control Systems Research, *Management Accounting Research*, 10: 363-382.

Pandey, I.M. (2005). Balanced Scorecard: Myth and Reality, *Vikalpa*, 30, 1: 134 -142.

Rigby, D. (2001). Management Tools and Techniques: A Survey, *California Management Review*, 43, 2: 139-160.

Sharker. Z.H.M, Sobhan, M. A. and Sultana, S. (2006). Management Accounting Development and Practices in Bangladesh, *BRAC University Journal*, 3, 2: 113-119.

Shneiderman, A.M. (1999). Why Balanced Scorecards Fail, *Journal of Strategic Performance Management*, January: 6-11.

Silk S. (1998). Automating the Balanced Scorecard, *Management Accounting*, 79, 11: 38-40.

Speckbacher, G., Bischof, J. and Pfeiffer, T. (2003). A Descriptive Analysis on the Implementation of Balanced Scorecards in German – Speaking Countries, *Management Accounting Research*, 14: 361-387.

World Bank (2007). World Development Indicators Database, available at: www.worldbank.org/ data/dataquery.html (accessed 12 October, 2007).

Zimmermann, K. (2002). Using The Balanced Scorecard for Inter Organizational Performance Management of Supply Chains – A Case Study, *Cost Management in Supply Chains*: 399-415.

Appendix 1: List of Abbreviations

Qualitative Variables	Abbreviations
Investments in new Technology	***InvTech***
Innovative Products or Services	***IPS***
Frequency of Collaboration and Information Exchange in the Organization	***FCoEx***
Frequency of Promoting Common Business Plans with Co-Operating Companies	***FPCBP***
Frequency of Exchanging Information with Cooperating Companies	***FExCo***
Cooperative Companies Monitoring	***CCM***
Effective Dispatching of Orders	***EDO***
Cooperation with Suppliers	***CwS***
Cooperation with Distribution Channels	***CwDc***
Speed of Adopting Innovations already introduced (in the Market)	***SoAIaI***
Speed of Adopting Innovations not yet introduced (in the Market)	***SoAInI***
Market Share	***MSh***
Brand Awareness	***BA***
Brand Image	***BI***
Perceived Level of Service	***PLos***
Perceived Level of Quality	***PLoQ***
Perceived Level of Trust to the Products	***PLoT***
After-Sales Service	***AfSS***
Percentage of Lost Clients	***PLC***
Percentage of Customers' Complaints	***PCC***

Appendix 2: List of Variables Identified in Prior Literature for Three Qualitative Perspectives

Qualitative Variables	Who else used in prior studies
For the *Learning and Growth* perspective	
Investments in new Technology	(Zimmerman, 2002; Kaplan and Norton, 1996a)
Innovative Products or Services	(Evans, 2004; Kaplan and Norton, 1996a)
Frequency of Collaboration and Information Exchange in the Organization	(Aidemark, 2001; Kaplan and Norton, 1996a
Frequency of Promoting Common Business Plans with Co-Operating Companies	(Johnson et al., 2005; Kaplan and Norton, 1996a)
Frequency of Exchanging Information with Cooperating Companies	Ittner et al., 2003; Kaplan and Norton, 1996a; Fisher, 1995
Cooperative Companies Monitoring	(Malina and Selto, 2001; Kaplan and Norton, 1996a; Bryant et al , 2004).
For the *Internal Business Process* perspective	
Effective Dispatching of Orders	Zimmerman, 2002; Needles and Crosson, 2005; Evans, 2004
Cooperation with Suppliers	Johnson et al., 2005; Laudon and Laudon, 2004; Chenhall, 2005; Zimmerman, 2002; Aidemark, 2001; Lipe and Salterio, 2002
Cooperation with Distribution Channels	Johnson et al., 2005; Zimmerman, 2002; Aidemark, 2001; Kaplan and Norton, 1996a
Speed of Adopting Innovations already introduced (in the Market)	(Pandey, 2005; Evans, 2004; Kaplan and Norton, 1996a);
Speed of Adopting Innovations not yet introduced (in the Market)	Evans, 2004; De Busk et al., 2003; Otley, 1999

For the *Customers* perspective	
Market Share	Evans, 2004; Banker et al., 2004; Zimmerman, 2002; Malina and Selto, 2001; Kaplan and Atkinson, 1998; Kaplan and Norton, 1996a
Brand Awareness	Kaplan and Norton, 1996a
Brand Image	Kaplan and Atkinson, 1998; Kaplan and Norton, 1996a.
Perceived Level of Service	(Malina and Selto, 2001; Kaplan and Atkinson, 1998; Kaplan and Norton, 1996a);
Perceived Level of Quality	Evans, 2004; Zimmerman, 2002
Perceived Level of Trust to the Products	Lipe and Salterio, 2002; Kaplan and Norton, 1996a);
After-sales Service	Evans, 2004; Kaplan and Norton, 1996a;
Percentage of Lost Clients	DeBusk et al., 2003; Needles and Crosson, 2005; Kaplan and Atkinson, 1998; Kaplan and Norton, 1996a); Percentage of Customers' Complaints
Percentage of Customers' Complaints	Lipe and Salterio, 2002; Needles and Crosson, 2005; Kaplan and Atkinson, 1998; Kaplan and Norton, 1996a.

Appendix 3: Questionnaire Used for this Study

Dear participants:

We are some of academician working in the different universities and conduct academic research to balance our theoretical knowledge and what is practising in the practical world. This study aims to examine the underlying hypotheses of the Balanced Scorecard (BSC) which states that improvements relating to customers, learning and growth and internal processes improve the financial performance of an organization as part of our academic research. For this

purpose, we need your co operations and assistances by way of answering the following questions given below. In this regards, we assure that your name and organizational identity will not be disclosed at any case and only aggregate generalizations would be made in research outcomes. Thank you very much for your help and co operations.

Regards:

Md Habib-Uz-Zaman Khan and Zakaria Masud

Section I: Main Questionnaire Items

(Q-1) Using the scale given below, Please specify the level of changes for the following learning and growth variables in your firms during the last 3 years *(i.e. for the period of 2006-2008)*

1 = Substantially decreased

2 = Decreased

3 = No change

4 = Increased and

5 = Substantially increased

Items	1	2	3	4	5
Investments in new Technology					
Innovative Products and Services					
Frequency of Collaboration and Information Exchange in the organization					
Frequency of Promotion of Common Business Plans with Cooperating Companies					
Frequency of Exchange of Information with Co-operating Companies					
Cooperative Companies Monitoring					

(Q-2) Specify the level of changes for the following variables representing business process within your firms during the last 3 years. Please note that your opinion will be on the basis of 1-5 scale given below

1 = Substantially decreased; 2 = Decreased; 3 = No change; 4 = Increased and 5 = Substantially increased.

Items	1	2	3	4	5
Effective Dispatching of Orders (in terms of price, specifications and delivery time)					
Cooperation with Suppliers					
Cooperation with Distribution Channels					
Speed of Adopting Innovations already introduced in the Market					
Speed of Adopting Innovations not yet introduced in the Market					
Effective Dispatching of Orders (in terms of price, specifications and delivery time)					

(Q-3) Specify the level of changes for the following customer related measures within your firms during the last 3 years *(i.e. for the period of 2006-2008).*

Items	1	2	3	4	5
Market Share					
Brand Awareness					
Brand Image					
Perceived Level of Service					
Perceived Level of Quality					
Perceived Level of Trust to the Products					
After-Sales Service					
Percentage of Lost Clients					
Percentage of Customers' Complaints					

Section II: General Information

(Q-4) Please provide following demographic information for your organizations.

i. Types of business organization, Please circle (a) Manufacturing (b) Service organization
ii. Please write exact nature of operation (e.g. automobiles, IT or banking) of your organization in the space given …….
iii. Mention your designation level with your organization in the space given …….
iv. Mention number of years you are working in this organization …….

Thank you