

Developing a Comprehensive Balanced Scorecard for the Banking Sector in Bangladesh: An Empirical Study

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Abstract: *This study is aimed to develop a comprehensive set of performance measurement variables or Key Performance Indicators (KPIs) from Balanced Scorecard (BSC) perspective serving as a benchmark or basis for performance measurement and management system in the banking industry in Bangladesh. The study also analyzed the perspective of the Balanced Scorecard (BSC) that has significant impact on the performance of banks. Here, stratified random sampling technique has been used to select the 26 banks as the samples of the study. The respondents of this study are the top managers and responsible senior officers of each sample bank. Data have been collected through self-administered questionnaires. A five-point Likert scale ranging from 1 (never) to 5 (always) has been used to assess the extent to which a bank uses the performance measurement variables. From the factor analysis, fifteen factors are extracted explaining a total of 73.84% of the total variance. The regression analysis reveals that the performance of banks is significantly and positively associated with the learning and growth measures usage of Balanced Scorecard (BSC). Finally, the researchers believe that the contribution of this study is very much relevant, significant and pragmatic for the banking sector in Bangladesh.*

Keywords: *Balanced Scorecard (BSC), Key Performance Indicators (KPIs), factor analysis, Performance measurement and management system (PMMS).*

1. Introduction

Performance measurement is a comprehensive concept that is considered very crucial in the age of globalization and competition. In management accounting literature, performance measurement and management system have occupied a unique place. In the past few decades, performance measurement literature has continuously been changed and developed towards wider performance measures. The determination of proper performance indicators is an area with no certain boundaries, because different purposes require different types of performance measurement indicators and performance measurement needs are also diverse (Fitzgerald, Johnston, Brignall, Silveston & Voss, 1991). Performance measurement system is a set of variables (or metrics) used for quantification of the efficiency and effectiveness of activities, as well as the infrastructure (software, hardware) and the procedures associated with the data collection (Lohman, Fortuin and Wouters, 2004; Neely et al., 1995). The traditional financial and accounting based performance management systems were criticized by many authors for being short term oriented, considering

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past performance, being non consistent with current business environment, focusing on tangible assets, lacking predictive power, and being irrelevant for all levels in the organizations (Johnson, 1983; Kaplan, 1983 and Singh & Kumar, 2007). In order to overcome the shortcomings of using traditional performance measurement system, Kaplan and Norton (1992, 1996, 2000) have introduced the balanced scorecard offering a superior combination of non-financial and financial performance measures along four perspectives-financial, customers, internal business processes, and learning and growth- to measure firm performance. According to Kaplan and Norton (1996) 'the balanced score card translates an organization's mission and strategy into a comprehensive set of performance measures and provides the framework for strategic measurement and management'.

According to Business Intelligence, in UK 71 per cent of big companies use it, while in the US, almost 50 per cent of 1,400 global businesses apply some kind of BSC (Paladino, 2000). Brewer (2002) also observed that, 50 per cent of the Fortune 1,000 and 40 to 45 per cent of larger companies in Europe use the BSC. Meanwhile, a survey by Kald and Nilsson (2000) on 236 Nordic multi-business companies shows that 61 companies use scorecards and another 140 planned to adopt the model within the next two years.

Despite widespread practitioner interest in BSC, far little empirical research has been conducted on the implementation or performance consequences of its concept (Ittner and Larcker, 1998). Consequently, this study attempts to reveal the extent of usage of Balanced Scorecard (BSC) in the banking sector in Bangladesh.

2. Definition of Performance Measurement

Performance measurement and management system (PMMS) have become a multidisciplinary issue. Researchers from diverse fields such as- strategy management, operations management, human resources, organizational behavior, information systems, marketing, and management accounting and control are contributing to the field of performance measurement (Neely, 2002; Marr and Schiuma, 2003; Franco-Santos and Bourne, 2005). As a result, performance measurement has been defined from various perspectives with different angles.

Neely et al. (1995) defined performance measurement as the process of quantifying the efficiency and effectiveness of action. Neely went on to identify the activities required to measure performance by defining a performance measurement system as consisting of three inter-related elements:

- Individual measures that quantify the efficiency and effectiveness of actions.
- A set of measures that combine to assess the performance of an organization as a whole.
- A supporting infrastructure that enables data to be acquired, collated, sorted, analyzed, interpreted and disseminated.

2.1. Traditional Performance Measures (Accounting based/ Financial performance measures) and its limitations

Firms have traditionally relied almost exclusively on financial measures such as budgets, profits, return on investment, or cash flow to measure performance (Price water house Coopers, 2004; Said et al., 2003; AICPA, 2001; Otley, 1999; Ittner et al., 1997; Bushman et al., 1996; Hoque & James, 2000).

Over the last decade, traditional performance measurement systems have been increasingly criticized on the basis that they were designed for an environment of mature products and stable technologies (Drucker, 1990; Skinner, 1986; Ghalayini et al., 1997; Eccles, 1991; Kaplan, 1983; Johnson and Kaplan, 1987). Johnson (1983 & 1987) and Kaplan (1984 & 1987) highlighted the failure of financial performance measures to reflect changes in the competitive circumstances and strategies of modern organizations. Financial measures show lack of relevance for the control of production and are not directly related to manufacturing strategy. Excessive use of ROI also distorts strategy building and may conflict with strategic objectives followed by sub-optimisation. (Kaplan and Cooper, 1998; Bititchi, 1994; Skinner, 1986 and Olve et al., 1999). Financial performance measurement systems provide a historical view, giving little indication of future performance (Bruns, 1998).

To respond to the criticisms of the traditional performance measurement systems, many scholars tried to develop new concepts of performance measurement systems that can solve the limitations of the traditional performance measures (Kaplan and Norton, 1992; Otley, 2001). The concept of Balanced Scorecard overcomes these drawbacks and inadequacies of the conventional financial measures and tries to measure corporate performance both from financial and operational perspectives of an organization.

2.2. Balanced Scorecard (BSC)

The concept of 'Balanced Scorecard' was first introduced in the journal "Harvard Business Review" (January-February, 1992) by Robert S. Kaplan and David P. Norton. BSC uses both 'lag' (financial) and 'lead' (non-financial) indicators, as well as it set the objectives in four main perspectives: financial, customer, internal business process and learning and growth (McLaney & Atrill, 2005).

2.2.1 The Four Perspectives of Balanced Scorecard (BSC)

The four perspectives of Balanced Scorecard (BSC) are discussed below based on Kaplan and Norton (1992 & 1996):

Financial Perspective: Financial measures convey the economic consequences for the actions already taken by the organization, and focus on the profitability related measures on which the shareholders verify the profitability of their investment. Under this perspective the most common performance measures are: return on investment (ROI), cash flow, net operating income, revenue growth, etc.

Customer Perspective: This perspective provides a view on how customers perceive the organization. The customer perspective should be considered the central element of any business strategy that provide the unique mix of products, price, relationship, and image that the company offers to its customers. Typical measures used under this perspective are: customer satisfaction, customer complaints, customer lost/won, sales from new product, etc.

Internal Business Process Perspective: Internal business processes provide the organization with the means by which performance expectations may be accomplished. The central theme of this perspective is the results of the internal business processes which lead to financial success and satisfied customers. Commonly used measures for this perspective are: cost of quality, cost of non-conformance, process innovation, time savings etc.

Learning and Growth Perspective: Actually, this perspective is related to the employees of the organization, and it measures the extent to which the organization exerts efforts to provide its employees with opportunities to grow and learn in their domain. Typical measures used under this perspective are: employee empowerment, employee motivation, employee capabilities, and information systems capabilities.

3. Empirical Research on Performance Measurement and Management System throughout the World

A number of studies have sought to link specific non-financial measures to financial performance (Banker et al., 2000; Behn and Riley, 1999; Foster and Gupta, 1999; Ittner and Larcker, 1998). Recent research by Hackett Group suggests that the balanced scorecard is becoming a widely used performance measurement tool in the USA (Kaplan and Norton, 1992). Silk (1998) highlighted that 60 percent of the U.S. *FORTUNE 500* companies implemented or are experimenting with a BSC.

Ahmad et al. (2010) conducted a study in which they surveyed a sample of 27 banks in Pakistan to identify the measures that are used by the banks to evaluate their performance according to the four perspectives of the BSC. The research concluded that the commercial banks were following all the perspectives of the Balanced Scorecard without knowing that they were following the Balanced Scorecard.

Fakhri et al. (2011) attempted to explore the usefulness of a multi-perspective performance measures in the banking sector in Libya. Based on a survey of 55 banks in Libya, the study reported that most banks place their emphasis on financial measures as a first step to evaluate performance, however, many of the banks tended to implement customer related measures and other non financial measures such as learning and employee growth.

Nimalathasan (2009) examined the key performance indicators (KPIs) used by private sector banks in Srilanka. By using sophisticated statistical tool like 'Exploratory Factor Analysis', he found that cash flow, return on capital employed, customer satisfaction rate, return on investment etc. were the major KPIs used in the Banking industry of Srilanka.

Al-Najjar and Kalaf (2012) made a study about how BSC was developed and applied in evaluating the performance of Large Local Banks (LLB) in Iraq. By using case study approach, they found that return on investment, return on equity, profit margin, productivity growth, credit growth, customer satisfaction, customer growth, employee productivity, employee turnover rate etc. are the major KPIs that play significant role in the LLB in Iraq.

Ahmad et al. (2010) conducted a study to know the extent to which the Balanced Scorecard was being followed by the commercial banks in Pakistan. Their study revealed that only 16% of the respondents knew about the Balanced Scorecard and the remaining 84% knew nothing about it. Over 95% of the respondent said that their banks used financial measures to assess their performance, at the same time 81% of the respondents stated that the financial measures were not sufficient to assess the performance of an organization.

In another study, Ahmad et al. (2011) found that return on investment, profit per employee, profit per account, number of complaints, market share, customer feedback, response time to customer, research & development expense, employee turnover, number of training etc. are the significant KPIs used by the Pakistani commercial banks.

Al-mawali et al. (2010) examined the Balanced Scorecard usage and financial performance of branches in Jordanian banking industry. The authors took 120 branches as sample out of 480 branches and the branch managers were the respondents. The result of their study showed that many branches of Jordan still focus heavily on the use of financial measures as compared to non-financial measures. They observed the most frequently used KPIs are branch profit, product profitability, return on net assets, customer satisfaction, customer acquisition & retention, staff turnover, employee satisfaction etc.

Vola et al. (2009) examined the implementation of a management control system in co-operative banks in Italy with reference to the Balanced Scorecard model suggested by Kaplan and Norton (1996). Following a case study approach, the researchers proposed some significant KPIs that include intermediation margin, average risk of the invested capital, total volumes managed per employee, number of customer per employee, operating costs etc.

Zaman (2004) investigated the current state of BSC use in Australian corporations. The author surveyed the top 50 Australian companies. The survey results revealed that only 33% of companies use the BSC and that 25% are planning to implement it in the future. The author argues that Australian companies are at the edge of adopting a strategic posture or intention to implement the BSC in the near future.

Al Sawalqa et al. (2011) analyzed the implementation state of the balanced scorecard among industrial companies in Jordan. The authors surveyed 168 companies to obtain an insight on the level of BSC implementation. The study showed that 35.1% of the surveyed companies applied BSC, while 30% were considering or implementing the BSC approach.

Anand, Sahay and Saha (2005) conducted a questionnaire based survey to capture the issues in the design and applications of the performance scorecard in Indian companies. They selected 75 most valuable diversified companies to make a fair representation of corporate India. They observed that return on investment, cash flow, return on investment, market share, percentage of sales from new product, customer satisfaction, on time delivery, unit cost, number of defect per million etc. are the KPIs those are considered significant by the Indian companies.

3.1. Empirical evidence of performance measurement & management system in Bangladesh

In Bangladesh very few researches have been carried out regarding performance measurement and management system in the banking sector.

Khan et al. (2011) in this research paper “The use of multiple performance measures and the balanced scorecard (BSC) in Bangladeshi firms: An empirical investigation” examined the use of financial & non-financial measures and the balanced scorecard (BSC) in Bangladeshi companies; the reasons for BSC adoption; and associated problems. Data were obtained through questionnaires from the chief accounting and finance officers of a cross section of 60 Bangladeshi companies listed on the Dhaka Stock Exchange. The results indicate that financial measures are more widely used, but that 78.4% of companies use some non-financial indicators. Further, the exercise of a full BSC is limited to only 10 per cent of the sample.

Moreover, Khan et al. (2010) in their research paper “Empirical study of the underlying theoretical hypotheses in the Balanced Scorecard (BSC) model: Further evidence from Bangladesh” examined the impact of Balanced Scorecard adoption on the financial performance of the organization. The researchers found that the BSC perspectives are positively correlated with each other at a statistically significant level. They also found that the companies those have greater ROE and ROA also emphasize on learning and growth perspective. The research revealed that the Bangladeshi companies can improve their financial performance by applying BSC model in their organization.

Again, Khan and Dyball (2012) further investigated the factors that influence the use of multi-dimensional performance measures (MPM) in Bangladeshi banks and to examine the effect of the use of MPM on organizational performance. They observed that the influence of the central bank, fierce competition, technological innovation and pressure from peer banks are the institutional factors that are associated with the use of MPM in Bangladeshi banks. Their study also found the positive association between multi-dimensional performance measures and improved financial performance.

In another study, Khandoker et al. (2013) examined the determinants of profitability of non-bank financial institutions in Bangladesh. They found that Total Asset, Term Deposit, Operating Revenue, Operating Expense significantly influence the Profitability of Non-Banking sector in Bangladesh.

Purohit and Mazumder (2006) in their theoretical study “Performance Measurement of Banks: An Application of Balanced Scorecard” stated that the performance measurement of a bank under traditional measures including CAMEL rating technique covers only the financial ratios (quantitative factors) but under BSC technique it covers both quantitative (financial ratios) and qualitative (customer, internal business and innovation and learning aspects) factors. So the researchers suggested that the concept of CAMEL rating for performance evaluation of a bank can be widened by incorporating the long-term perspective of performance evaluation of Balanced Scorecard.

Bhuiyan and Masum (2010) in the research paper “BALANCED SCORECARD: A Multi-Stream Performance Measurement tool for Public Sector Corporations in Bangladesh” found that the BSC can be applicable to the Public Sector Corporations (PSC) in Bangladesh. Like the original BSC, their proposed PSC-BSC incorporates both financial and nonfinancial as well as both lag and lead performance measures. In addition, another extra perspective is suggested for the public sector corporations named as non-market perspective.

4. Objective of the Study

4.1. Broad Objective

- This study is aimed to develop a comprehensive set of performance measurement variables or key performance indicators (KPIs) from Balanced Scorecard (BSC) perspective those will serve as a benchmark or basis for performance measurement and management system in the banking industry in Bangladesh.

4.2. Specific Objectives

- To extract the Key Performance Indicators (KPIs) under financial perspective, customer perspective, internal business process perspective and learning & growth perspective of Balanced Scorecard those have significant impact on the performance measurement and management system of the banks.
- To reveal which perspective of Balanced Scorecard has more impact on the performance measurement and management of the banks.
- To provide a Balanced Scorecard (BSC) framework with suitable Key Performance Indicators (KPIs) for the banking sector in Bangladesh.

5. Methodology of the Study

5.1. Research Method

In this study, we have used mixed method of research which is a blend of qualitative and quantitative approaches. At first qualitative data is collected through questionnaire, after that we have used five point Likert scale to transform the qualitative data into quantitative format. From the literature review, interview with the top management of the banks and a Focus Group

Discussion (FGD), we have selected 51 Key Performance Indicators (KPIs) which are widely used by the banks. After that, we run factor analysis to identify the significant KPIs, which are then grouped into the four perspectives of Balanced Scorecard. Other statistical analysis like- multiple regression is conducted to identify which perspective of BSC has significant impact on the performance of the banks. The detail is explained in the later part.

5.2. Data Collection Method and Data Sources

5.2.1. Data Collection Method

In this study, we have used the survey method to collect data. Many researchers have used survey method in performance measurement and the multiple performance measure usage research (Al-mawali, Zainuddin and Ali, 2010; Jusoh, Ibrahim and Zainuddin, 2008; Maiga and Jacobs, 2003; Hoque and James; 2000). So survey method is quite appropriate for this study.

5.2.2. Data Collection Sources

The population for the study is the entire banking industry of Bangladesh, which includes State Owned Commercial Banks, Conventional Private Commercial Banks, Islami Shariah based Private Commercial Banks, Foreign Commercial Banks and Specialized Banks. A stratified random sampling technique is used to select the sample banks. The sample of this study comprises 2 State Owned Commercial Banks out of 4; 15 Conventional Private Commercial Banks out of 29; 4 Islami Shariah based Private Commercial Banks out of 8; 4 Foreign Commercial Banks out of 9 and 1 Specialized Banks out of 4. So the total number of sample is 26 that can be said approximately 50% of the total population. The sample banks for this study are shown in appendix 1. We have collected data from four different managers and responsible senior officers of each sample bank. The targeted respondents of the survey are the top management of head office, senior officials who involve in the design and evaluation in the performance measurement and management process of their banks.

5.2.3. Data Collection Instrument

Data was collected through self-administered questionnaires, but in some cases, personal assistance is provided. All the questions in the questionnaire were kept close ended to maintain objectivity. Some questionnaires were incomplete and hence excluded from the study. The number of usable questionnaires is 89 from all the respondents (from 26 sample banks).

5.3. Measurement of Variables

5.3.1. Independent Variable

In this research, independent variables indicate the multiple performance measures usages. Most of the performance measures or KPIs are developed from the previous study of Hoque and James (2000), which are originally adopted from Kaplan and Norton (1992), and the remaining items are constructed from the literature. Besides previous studies and literature, a focus group discussion

(FGD) is made consisting of three academicians and three top managers of different banks. A five point Likert scale ranging from 1 (never) to 5 (always) is used to assess the extent to which a bank uses each performance measure or KPIs. Finally, 51 KPIs have been selected from literature review and FGD those are shown in appendix 2.

5.3.2. Dependent Variable

Dependent variable indicates the firm performance. Firm performance is measured by a self-rating scale using 12 indicators taken from Mia and Clarke (1999) and Govindarajan (1984). The 12 indicators are: productivity, cost, quality, on time service delivery, market share, sales growth rate, operating profit, cash flow from operation, return on investment, new product development, R&D activity, and personnel (employee) development. Respondents are asked to indicate the changes in the performance in the last three years of their respective banks using the above 12 performance indicators on a scale from 1 = decreased tremendously to 5 = increased tremendously. Thus, a weighted average performance index is obtained for each bank.

5.4. Validity and Reliability of the Scale:

5.4.1. Validity:

Regarding validity, a research instrument with small modifications from the model developed by Kaplan & Norton (1992) is used. The variables or the multiple performance measures (KPIs) used in the questionnaire are quite appropriate, because many prior studies used those variables to measure performance (Kaplan & Norton, 1992; Hoque & James, 2000; Ittner & Larcker, 1997). So, the researchers are satisfied regarding the validity of the scale.

5.4.2. Reliability:

Cronbach's alpha is the one that is most commonly used reliability indicator (Malhotra, 2000; Cronbach, 1951). Hair et al. (2006) suggests that the rule of thumb for a good reliability estimate is 0.7 or higher. In this study, we have calculated Cronbach's alpha using SPSS software. However, Cronbach's basic equation for alpha can be written as $\alpha = \frac{n}{n-1} \left(1 - \frac{\sum V_i}{V_{test}} \right)$

Here, n = number of questions in the questionnaire

V_i = variance of scores on each question

V_{test} = total variance of overall scores on the entire test

Table 1: Reliability Analysis

Performance measures	Cronbach alpha
Financial perspective	0.81
Customer perspective	0.70
Internal business process perspective	0.79
Learning & growth perspective	0.90
Overall	0.92

In the present study, we find that the overall value of Cronbach alpha coefficient is 0.92 and the values of all four perspectives are 0.70 or above. If we compare our reliability value with the standard value alpha of 0.6 as advocated by Cronbach (1951), Nunnally & Bernstein (1994) and Bagozzi & Yi's (1988), we find that the scales used in this study are highly reliable for data analysis.

6. Analysis and Findings

6.1. Factor Analysis

The appropriateness of factor analysis depends upon sample size. Hair et al. (1998) suggested that factor analysis is not appropriate for a sample size less than 50 and the preferable sample size is 100 or more. In this research, 89 questionnaires are ultimately selected for further factor analysis which is close to sample size hundred as recommended by Hair et al. (1998). So, it is believed that there will be no problem relating to sample size.

Again, Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy is still another useful method to show the appropriateness of data for factor analysis. Kasier (1974) recommended that values greater than 0.5 are acceptable. Between 0.5 and 0.7 are mediocre, between 0.7 and 0.8 are good, between 0.8 and 0.9 are superb (Field, 2005). In this study, Table- 2 shows the value of KMO for overall matrix is 0.667 which is more than the minimum acceptable limit of 0.5 (Kasier, 1974). Hence the sample taken for the factor analysis is statistically significant.

Table-2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.667
Bartlett's Test of Sphericity	Approx. Chi-Square	2608.442
	df	1275
	Sig.	.000

Bartlett's test of sphericity (Bartlett, 1950) is another statistical test applied in the study for verifying its appropriateness. This test should be significant, having a significance value less than 0.5. In the present study, test value of Chi – Square is 2608.442 signifying the appropriateness of the data for the factor analysis.

After examining the reliability and validity of the scale and testing appropriateness of data, next we carried out factor analysis to identify the significant KPIs or performance measurement variables those are used by the banking sector in Bangladesh. Principal Component Analysis (PCA) is followed by the varimax rotation for the 51 items and then tried to determine their groups according to Balanced Scorecard's four perspectives.

In case of factor analysis, factor loading cut off point determination is very important and hence it requires strong attention. Hair et al. (1998) suggested that for a sample of 100 respondents, factor

loadings of 0.55 and above are significant. Prior researches which are similar with the current study used 0.5 as factor loading cut off point. So, for this study, the researchers believe a factor loading cut off point 0.5 is quite appropriate.

Table- 3: Eigenvalues of Un-rotated Factors

No. of factors	Eigenvalues	As Percentages (%)	Cumulative Percentage (%)
1	12.154	23.831	23.831
2	4.230	8.295	32.126
3	3.047	5.975	38.101
4	2.350	4.609	42.709
5	2.293	4.497	47.206
6	2.099	4.116	51.323
7	1.749	3.429	54.751
8	1.434	2.812	57.563
9	1.401	2.747	60.310
10	1.277	2.504	62.814
11	1.260	2.470	65.285
12	1.188	2.330	67.614
13	1.113	2.183	69.797
14	1.040	2.038	71.836
15	1.020	2.000	73.836

In principal component analysis, one of the most commonly used criteria for solving the number of components problem is the eigenvalue-one criterion, also known as the Kaiser criterion (Kaiser, 1960). When the factor analysis is run in the SPSS, fifteen factors are extracted with eigenvalues exceeding 1, explaining a total of 73.84% of the total variance (Table-3). Factors 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 account for largest contribution- 62.81% of the total variance. The remaining 5 factors (from factor 11 up to 15) contribute only 11.02% in the total variance. The detailed description about rotated component matrix is provided in appendix 3.

Factor-1: This factor is related with the learning & growth perspective of Balanced Scorecard (BSC). Factor-1 comprises with 12 variables with factor loadings ranging from 0.842 to 0.529. They are efficiency & productivity of employee, relation with customer & branch employee, education level & training skill up gradation, contribution of employee in the development, employee satisfaction, employee suggestion, loyalty & discipline, update with new software & technology, research & development expense, cost to develop new product, process innovation and number of new product. Factor-1 accounts for 23.831% of the total variance. Among the fifteen factors, factor-1 alone explains the highest portion of the total variance.

Factor-2: This factor is related with the financial perspective of Balanced Scorecard. Four variables belong to factor-2 with factor loadings ranging from 0.833 to 0.536. The variables included in factor-2 are profit per customer, profit per employee, EPS growth and product profitability. Factor-2 explains 8.295% of the total variance.

Factor-3: This factor can further be related with the financial perspective of Balanced Scorecard. Factor-3 consists of 4 variables with factor loadings ranging from 0.793 to 0.530 which explains 5.975% of the total variance. The variables included in this factor are return on investment, return on equity, leverage ratio and economic value added.

Factor-4: Two variables are included in this factor whose loadings range from 0.818 to 0.698. The variables are number of complain from customer and number of errors of employees. This factor is not related with any specific perspective, rather related with two perspectives namely customer perspective and internal business process perspective. Factor-4 explains 4.609% variance.

Factor-5: Factor-5 is made up with three variables with factor loadings ranging from 0.703 to 0.503. The variables are maintain desired level loans & advances, liquidity ratio and on time service. This factor is not clubbed under any specific perspective of BSC. Factor-5 accounts for 4.497% of the total variance.

Factor-6: This factor is related with the internal business process perspective of Balances Scorecard. Two variables belong to factor-6 with factor loadings ranging from to 0.795 to 0.618. The variables included in factor-6 are proper risk identification and efficiency in credit proposal processing. Factor-6 explains 4.116% of the total variance.

Factor-7: This factor can also be related with internal business process perspective. This factor is constructed with two variables namely advertising expense and cost of service quality maintenance. They carry factor loadings of 0.745 and 0.525. The factor-7 explains 3.429% variance.

Factor-8: Factor-8 is formed with three variables of financial perspective of Balanced Scorecard. The variables are capital adequacy, net operating income and non performing loan. The factor loadings of these variables range from 0.729 to 0.562. Factor-8 accounts for 2.812% of the total variance.

Factor-9: Further, this factor is related with customer perspective of Balanced Scorecard. Factor-9 consists of two variables namely customer feedback/suggestion and market share with factor loadings 0.692 and 0.596 respectively. This factor explains a tiny portion of total variance that is 2.747%.

Factor-10: This factor comprised of one variable namely number of branches within a geographic area which explains only 2.504% of the total variance. This factor is related with internal business process perspective of BSC.

Factor-11: Again, Factor-11 is linked with customer perspective of BSC. This factor has one variable which is average length of account whose factor loading is 0.842. This factor explains very insignificant portion of total variance that is 2.470%.

Factor-12: This factor is further related with the learning & growth perspective of Balanced Scorecard. This factor is made up with one variable namely growth of bank branches which had a factor loading of 0.783 explaining 2.330% of the total variance.

Factor-13: This factor can also be related with financial perspective of BSC. This factor is constructed with only one variable namely profitability of each branch. It carries factor loading of 0.862. This factor indicates a small variance that is 2.183%.

Factor-14: Factor-14 is also related with the financial perspective. It consists of one variable – net interest margin. It explains 2.038% of total variance.

Factor-15: The last factor is further related with the internal business process perspective of BSC. Factor-15 is comprised with one variable which is percentage of process covered by IT that has a factor loading of 0.596. This factor explains 2% of the total variance.

From the above fifteen factors it is observed that factor-2, factor-3, factor-8, factor-13, factor-14 are related with the financial perspective of Balanced Scorecard. The variables under those factors are (factor-2) profit per customer, profit per employee, EPS growth and product profitability; (factor-3) return on investment, return on equity, leverage ratio and economic value added; (factor-8) capital adequacy, net operating income and non performing loan; (factor-13) profitability of each branch; (factor-14) net interest margin. All these factors jointly explain 21.303% of the total variance.

Again, factor-9 and factor-11 are related with customer perspective of Balanced Scorecard. The names of the variables under these two factors are (factor-9) customer feedback/suggestion and market share; (factor-11) average length of account. All these factors jointly explain 5.217% of the total variance.

Further, factor-6, factor-7 and factor-10 are linked with internal business process perspective of BSC. The variables under these three factors are (factor-6) properly risk identification and efficiency in credit proposal processing; (factor-7) advertising expense and cost of service quality maintenance; (factor-10) number of branches within a geographic area. When these three factors are combined altogether, they explain 10.049% variance.

Lastly, factor-1 and factor-12 represent learning & growth perspective of BSC. The variables of these two factors include (factor-1) efficiency & productivity of employee, relation with customer & branch employee, education level & training skill up gradation, contribution of employee in the development, employee satisfaction, employee suggestion, loyalty & discipline, update with new software & technology, research & development expense, cost to develop new product, process innovation and number of new product; (factor-12) Growth of bank branches. If these factors are combined together, they explain 26.161% of the total variance.

It is obvious that learning & growth perspective has the most significant percentage of variance (26.161%) among the four perspectives of Balanced Scorecard followed by financial perspective (21.303%). The customer perspective has very insignificant portion of total variance (5.217%). Internal business process perspective has mediocre position in this regard (10.049%).

6.2. The perspective that has most influence on the performance measurement & management system

At this point, we will test which perspective of Balanced Scorecard has the most significant influence on the performance measurement & management system in the banking sector in Bangladesh. From the factor analysis 11 items or variables out of 51 items have been deleted due to insignificant factor loadings (factor loadings less than 0.5). So the number of surviving variables from the factor analysis is 40 which will be used for further regression analysis. The multiple regression is run:

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + e$$

Where,	Y = Performance of the bank
	X ₁ = Financial measures
	X ₂ = Customer measures
	X ₃ = Internal business process measures
	X ₄ = Learning & growth measures
	b ₀ = The intercept
	b ₁ = Regression coefficient of financial measure
	b ₂ = Regression coefficient of customer measure
	b ₃ = Regression coefficient of internal business process measure
	b ₄ = Regression coefficient of learning & growth measure

Before running the multiple regression, it is essential to test multi-collinearity. Multi-collinearity is the extent to which one construct can be explained by the other constructs in the analysis (Hair et al., 2006). In this situation, a correlation matrix is done by the weighted average mean of financial, customer, internal business process and learning & growth perspectives. From Table-4, it is revealed that four BSC measures are significantly correlated with each other which indicate the high possibility of multi-collinearity.

Table-4: Correlation Matrix

	Financial measures	Customer measures	Internal business process measures	Learning & growth measure	Overall BSC measures	Performance of the organization
Financial measures	1	.482(**)	.510(**)	.458(**)	.740(**)	.194
Customer measures	.482(**)	1	.509(**)	.442(**)	.766(**)	.099
Internal business process measures	.510(**)	.509(**)	1	.640(**)	.836(**)	.306(**)
Learning & growth measures	.458(**)	.442(**)	.640(**)	1	.828(**)	.482(**)
Overall BSC measures	.740(**)	.766(**)	.836(**)	.828(**)	1	.354(**)
Performance of the organization	.194	.099	.306(**)	.482(**)	.354(**)	1

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

Another rule of thumb is that if the variance-inflating factor (VIF) of a variable exceeds 10, the variable is said to be highly collinear (Kleinbaum, Kupper and Muller, 1998).

Table-5: Collinearity Statistics

	Collinearity Statistics	
	Tolerance	VIF
Financial measures	0.657	1.522
Customer measures	0.664	1.506
Internal business process measures	0.499	2.003
Learning & growth measures	0.558	1.793

After performing tolerance and variation-inflating factor test (VIF) which is shown in Table-5, the values of VIF are found to be less than 10. The tolerance level is also satisfactory (tolerance level does not tend to zero). It is evident that multi-collinearity does not exist. Thus, there is no major problem for regression analysis.

6.2.1. Regression Analysis

We run the regression by taking the performance of bank as dependent variable. Here, we use the weighted average mean of bank performance. Performance of banks is measured by a self-rating scale using 12 indicators taken from Mia and Clarke (1999) and Govindarajan (1984). The four perspectives of BSC are used as independent variables. After the factor analysis, the number of variables is reduced to 40. Then these 40 items are grouped under the four perspectives of BSC. For each performance measure or variable, we have calculated the weighted average mean. At last, these weighted means of each perspective are used as independent variables in the regression.

Table-6: Regression Analysis: Individual BSC Measures and Bank Performance

	Standardized Coefficients Beta	t	Sig.
Financial measures	0.007	0.062	0.951
Customer measures	-0.159	-1.372	0.174
Internal business process measures	0.054	0.401	0.689
Learning & growth measures	0.514	4.065	0.000
F =6.991, Sig. F = 0.000,	R Square = 0.250		

From Table-6, it is found that the coefficient of learning & growth measure is both positive and significant. Here, $b_4 = 0.514$, $t = 4.065$ and $p = 0.000$. The whole model is significant $F=6.991$ and $p = 0.000$. The value of R Square is 0.250 which indicates that the independent variables explain 25% of the performance variance of the banks (please, see Appendix-4). The lower value of R Square is quite consistent with the similar prior performance research (Maigaand Jacobs, 2003; Jusoh, Ibrahim and Zainuddin, 2007; Al-mawali et al., 2010).

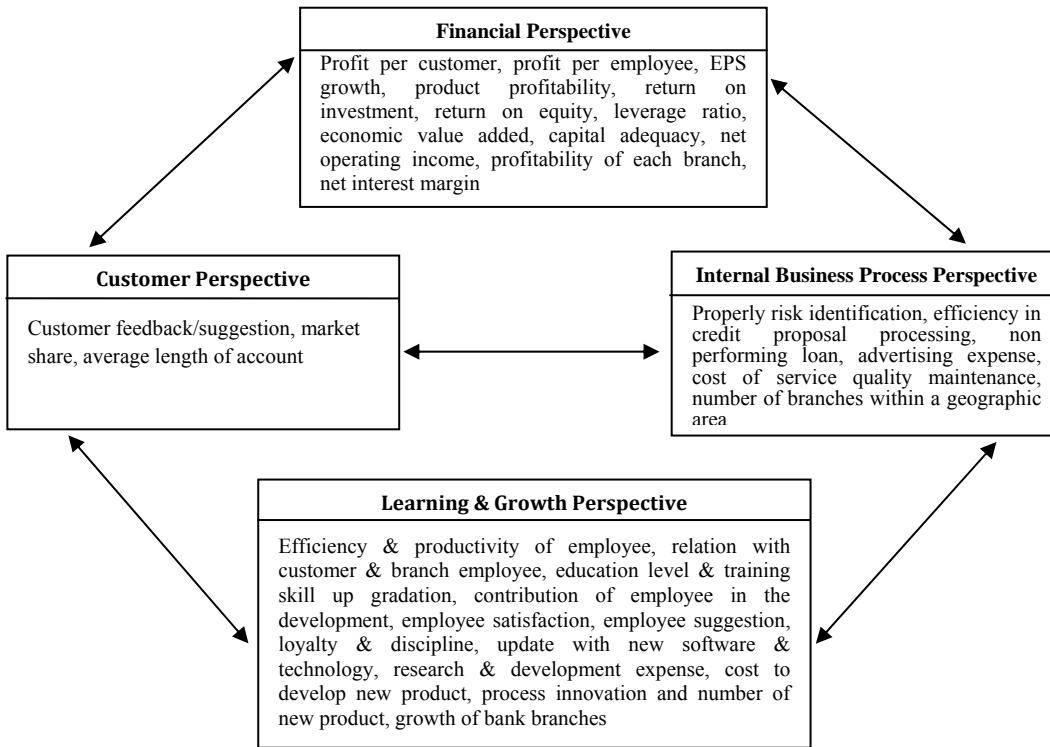
The result of regression shows that the performance of banks is significantly and positively associated with the learning & growth measures usage. The results also reveal that the financial measures, customer measures and internal business process measures have no significant impact on the performance of the banks. As it is discussed earlier, financial measures are too short term oriented and severely flawed with major drawbacks that it has no significant impact in modern sophisticated business environment. The competition among the banks is fierce and intensive. So, learning & growth measures are the only way to survive in this competitive industry. The regression result is obviously practical and pragmatic.

7. Proposed Balanced Scorecard Framework for the Banking Sector in Bangladesh

After doing factor analysis, 40 variables or KPIs are extracted from the 51 variables. These 40 performance measures explain 73.836% of the total variance. Now, attempt is taken to formulate a Balanced Scorecard model as suggested by Kaplan and Norton (1992) with these 40 performance

measures or variables. These selected 40 items can be grouped into four perspectives of BSC and have been framed as follows:

Figure 1: The Balanced Scorecard framework for performance measurement & management for the banking sector in Bangladesh (own construction)



8. Conclusion

Balanced Scorecard (BSC) is gaining its momentum around the world. Many successful companies are using the BSC framework and many others are going to adapt it because of its comprehensive nature. This analytical study provides a structured & systematic guideline for the performance measurement and management system in the banking sector in Bangladesh. It is clearly found that only traditional financial measures are insufficient to manage the performance of the bank and to achieve its strategic goals. So the new non-financial measures become crucial factor for modern banking sector. This study reveals that learning & growth perspective has significant relationship with the performance of banks. The banks should develop their own intellectual capabilities to survive in the market place. So the banking sector in Bangladesh should pay special attention to develop their Balanced Scorecard for their own interest. We have mentioned a BSC model for the banking sector in this study. However, the particular bank may customize it according to its own needs, goals and capabilities.

Research is an ongoing process which never ends. The performance measurement literature is very much rich and diversified. So, it is quite possible to examine the performance measurement system from different outlook & models. It is very much natural that new knowledge will emerge in future in different environments. In recent time, many researchers are trying to add new perspectives with the existing BSC literature to enrich it. Moreover, this study is conducted on the banking sector in Bangladesh; further research may be conducted on different sectors to generalize the applicability of Balanced Scorecard in Bangladesh.

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Appendix 1: The Sample Banks

Ownership & Type of the bank	Name of the banks	
State Owned Commercial Banks 2	1.	Sonali Bank Limited
	2.	Agrani Bank Limited
Conventional Private Commercial Banks	1.	Dutch Bangla Bank Limited
	2.	Trust Bank Limited
	3.	United Commercial Bank Limited
	4.	Southeast Bank Limited
	5.	Bank Asia Limited
	6.	AB Bank Limited
	7.	Pubali Bank Limited
	8.	National Bank Limited
	9.	Mercantile Bank Limited
	10.	Mutual Trust Bank Limited
	11.	Uttara Bank Limited
	12.	The Premier Bank Limited
	13.	The City Bank Limited
	14.	BRAC Bank Limited
	15.	Eastern Bank Limited
Islami Shariah based Private Commercial Banks	1.	Islami Bank of Bangladesh Limited
	2.	Shahjalal Islami Bank Limited
	3.	Export Import Bank of Bangladesh Limited
	4.	Al-Arafah Islami Bank Limited
Foreign Commercial Banks	1.	Citibank NA
	2.	HSBC
	3.	Bank Alfalah
	4.	Standard Chartered Bank
Specialized Banks	1.	BASIC Bank Limited (Bangladesh Small Industries and Commerce Bank Limited)

Appendix - 2: Performance Measures or KPIs Selected from Literature and Focus Group Discussion (FGD)

Performance measures or KPIs	References
Return on investment (ROI)	Hoque & James (2000); Kaplan & Norton (1992); Jusoh, Ibrahim & Zainuddin (2008); Maiga & Jacobs (2003); B. Nimalathasan (2009); Z. Ahmed et al. (2011); S.M. Al-Najjar et al. (2012); M. Anand et al. (2005); H. Y. Wu (2012);
Return on equity (ROE)	B. Nimalathasan (2009); S. M. Al-Najjar et al. (2012);
Net interest margin (Net interest income)	Paola Vola et al. (2009);
Economic value added (EVA)	Jusoh, Ibrahim & Zainuddin (2008); M. Anand et al. (2005);
Cash flow	Jusoh, Ibrahim & Zainuddin (2008); B. Nimalathasan (2009);
Net operating income	Hoque & James (2000); Kaplan & Norton (1992); Jusoh, Ibrahim & Zainuddin (2008); Maiga & Jacobs (2003); S. M. Al-Najjar et al. (2012); Paola Vola et al. (2007); H.Y. Wu (2012);
Price- earnings ratio (P/E ratio)	Z. Ahmad et al. (2011);
Capital adequacy	From Focus Group Discussion (FGD)
Liquidity (Liquidity ratio)	S. M. Al-Najjar et al. (2012);
Leverage ratio	S. M. Al-Najjar et al. (2012);
Non interest income	From Focus Group Discussion (FGD)
Profitability of each branch	H. H. Al-mawali et al. (2010);
Profit per customer	Z. Ahmad et al. (2011); H. Y. Wu (2012);
Profit per employee	Z. Ahmad et al. (2011); M. Anand et al. (2005); Paola Vola et al. (2009);
Product profitability	H.H. Al-mawali et al. (2010);
Revenue growth	Hoque & James (2000); Kaplan & Norton (1992); Jusoh, Ibrahim & Zainuddin (2008); Maiga & Jacobs (2003); Z. Ahmad et al. (2011);
EPS growth	H.Y. Wu (2012);
Comparison between standard cost with actual cost	Z. Ahmad et al. (2011);
Market share	Hoque & James (2000); Kaplan & Norton (1992); Jusoh, Ibrahim & Zainuddin (2008); Maiga & Jacobs (2003); Z. Ahmad et al. (2011); M. Anand et al. (2005); H.Y. Wu (2012);
Total number of customer per branch	From FGD
Customer satisfaction	Hoque & James (2000); Kaplan & Norton (1992); Jusoh, Ibrahim & Zainuddin (2008); Maiga & Jacobs (2003); H. H. Al-mawali et al. (2010); B. Nimalathasan (2009); S. M. Al-Najjar et al. (2012); M. Anand et al. (2005); H. Y. Wu (2012);
Number of complaints from customer	Hoque & James (2000); Kaplan & Norton (1992); Jusoh, Ibrahim & Zainuddin (2008); Maiga & Jacobs (2003); H.H. Al-mawali et al. (2010); Z. Ahmad et al. (2011); H.Y. Wu (2012);
Customer growth	Z. Ahmad et al. (2011); S. M. Al-Najjar et al. (2012); M. Anand et al. (2005); Paola Vola et al. (2009); H. Y. Wu (2012);
Average length of time of an account	Z. Ahmad et al. (2011);

Customer retention	H.H. Al-mawali et al. (2010); B. Nimalathan (2009); Paola Vola et al. (2009); H. Y. Wu (2012);
Customer feedback/suggestion	Z. Ahmad et al. (2011); M. Anand et al. (2005); H.Y. Wu (2012);
Non-performing loan (Default loan)	From FGD
Proper risk identification	From FGD
Efficiency in credit proposal processing	From FGD
Maintain desired level of loans and advance	From FGD
On time service	Hoque & James (2000); Kaplan & Norton (1992); Jusoh, Ibrahim & Zainuddin (2008); Maiga & Jacobs (2003); Z. Ahmad et al. (2011); M. Anand et al. (2005);
Advertising expense	From FGD
Cost of branches	H.H. Al-mawali et al. (2010);
Cost of service quality maintenance	From FGD
Number of branches within a geographical area	From FGD
Process innovation	From FGD
Number of error in activities of employee	From FGD
Percentage of process covered by IT	Z. Ahmad et al. (2011); S. M. Al-Najjar et al. (2012);
Cost to develop new product	From FGD
Employee satisfaction	Hoque & James (2000); Kaplan & Norton (1992); Jusoh, Ibrahim & Zainuddin (2008); Maiga & Jacobs (2003); H.H. Al-mawali et al. (2010); Hung-Yi Wu (2012);
Efficiency & productivity of employee	H.H. Al-mawali et al. (2010); S.M. Al-Najjar et al. (2012); Paola Vola et al. (2009);
Contribution of employee in the development of the organization	From FGD
Relation with customer & branch employee	From FGD
Loyalty and discipline	From FGD
Education level & training skill up gradation	Jusoh, Ibrahim & Zainuddin (2008); H.H. Al-mawali et al. (2010); Z. Ahmad et al. (2011); S.M. Al-Najjar et al. (2012); M. Anand et al. (2005); H.Y. Wu (2012);
Employee turnover	H.H. Al-mawali et al. (2010); B. Nimalathan (2009); Z. Ahmad et al. (2011); S. M. Al-Najjar et al. (2012);
Update with new software & technology	Z. Ahmad et al. (2011);
Research & Development expense	Z. Ahmad et al. (2011);
Employee suggestions	Z. Ahmad et al. (2011); M. Anand et al. (2005);
Growth of bank branches	Z. Ahmad et al. (2011); S. M. Al-Najjar et al. (2012);
No. of new product	Hoque & James (2000); Kaplan & Norton (1992); Jusoh, Ibrahim & Zainuddin (2008); Maiga & Jacobs (2003); H.H. Al-mawali et al. (2010); Z. Ahmad et al. (2011); M. Anand et al. (2005); Paola Vola et al. (2009); H. Y. Wu (2012);

Non performing loan								.562						
Customer feedback/suggestion								.692						
Market share								.596						
Customer per branch														
Customer growth														
No. of branches within a geographic area										.765				
Avg. length of account										.842				
Comparison between standard cost with actual														
Growth of bank branches											.783			
Profitability of each branch												.862		
Non interest income														
Price/Earnings ratio														
Net interest margin													.811	
Percentage of process covered by IT														.596

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Appendix - 4: Regression**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.500(a)	.250	.214	.33052	1.641

a Predictors: (Constant), AVG_GROW, AVG_CUST, AVG_FIN, AVG_INTE

b Dependent Variable: Performance of the organization

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.055	4	.764	6.991	.000(a)
	Residual	9.177	84	.109		
	Total	12.232	88			

a Predictors: (Constant), AVG_GROW, AVG_CUST, AVG_FIN, AVG_INTE

b Dependent Variable: Performance of the organization

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2.831	.363		7.807	.000		
	AVG_FIN	.006	.099	.007	.062	.951	.657	1.522
	AVG_CUST	-.109	.080	-.159	-1.372	.174	.664	1.506
	AVG_INTE	.040	.099	.054	.401	.689	.499	2.003
	AVG_GROW	.305	.075	.514	4.065	.000	.558	1.793

a Dependent Variable: Performance of the organization

Collinearity Diagnostics

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions				
				(Constant)	AVG_FIN	AVG_CUST	AVG_INTE	AVG_GROW
1	1	4.965	1.000	.00	.00	.00	.00	.00
	2	.013	19.230	.12	.04	.09	.03	.59
	3	.010	22.316	.24	.05	.85	.00	.00
	4	.006	28.515	.07	.01	.03	.96	.40
	5	.005	30.711	.57	.90	.03	.01	.01