

## **Impact of Quality Dimensions on Performance of Higher Educational Institutions (HEIs) and Its Linkage to Faculty Satisfaction**

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### **ABSTRACT**

In this era of knowledge economy, it is of paramount importance to maintain quality in higher educational institutions. This study has considered three dimensions, namely, strategic planning, leadership and data & knowledge management to investigate (a) whether they exert any influence on the performance of higher educational institutions (HEIs), and (b) if that performance would lead to faculty satisfaction. For this, a total of one hundred usable responses from faculty members of both public and private universities in Bangladesh had been considered. Structural equation modeling technique was used to test the fitness of the research model, and the study hypotheses. Confirmatory factor analysis has been performed to ascertain the fitness of the measurement models. The full-fledged structural model indicates that strategic planning and leadership do not influence the performance of the HEIs; only data & knowledge management directly affects the performance of HEIs that also exerts positively on faculty satisfaction. The findings have important implications on the part of the top management of the universities operating in Bangladesh as far as implementation of strategic vision by the top management is concerned. The paper concludes stating a number of directions for future research in this regard.

**Keywords:** Quality Management, Higher Educational Institutions (HEIs), Faculty Satisfaction, Structural Equation Modeling.

### **1. INTRODUCTION**

In this era of a globalized economy, ensuring superior performance by offering higher quality of products or services provided by an organization is paramount. There are a number of quality management frameworks practised by organizations to achieve this objective. One such framework is Malcolm Baldrige National Quality Award (MBNQA) established by U.S. Congress to create awareness in quality management issues and award the organizations for performance excellence (Porter and Tanner,

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2004). Since its inception in 1987, it has been widely used by organizations as a model of performance improvement (Evans *et al.*, 2012; Ghosh *et al.*, 2003). In 1999, education sector was added as another category to award the institutions for outstanding performance. There are seven criteria of MBNQA, namely, Leadership, Strategic planning, Student, stakeholder and market focus, Measurement, analysis & knowledge management, Faculty and staff focus, Process management, and Organizational performance results (Islam, 2005).

Higher education plays a key role toward developing a knowledge economy in a country. Higher educational institutions (HEI) are thus required to assess the quality of education being provided through their various programs (Donlagic and Fazlic, 2015). As stated above, various aspects that impact this quality of program offerings include, among others, role of administrative leadership, strategic planning, process improvement, customer focus, etc. Specifically, in an institution of higher learning, faculty members are considered internal customers and a key stakeholder in the overall process of imparting quality education (Raouf *et al.*, 2007). Issues of how the relevant antecedents interplay in effective management of HEI performance and consequent faculty satisfaction thus call for a closer scrutiny in these times of fiercely competitive higher education landscape.

In a developing country like Bangladesh, over the last decade there has been a rapid proliferation of the number of private universities that cater to the needs of a growing population in the area of higher education. Faced with intense competition in their external environment, universities are grappling how best to provide quality education with their limited resources (Angell *et al.*, 2008). It is, therefore, pertinent to focus on the role of the quality dimensions that would affect the performance of the country's higher educational institutions (HEIs), which, in turn, could bear upon the level of faculty satisfaction. This study thus considers three important dimensions vis-à-vis MBNQA model, namely, strategic planning, leadership and data & knowledge management, and investigates (a) whether they exert any influence on the performance of higher educational institutions (HEIs), and (b) if that performance would lead to faculty satisfaction.

While the MBNQA model has been widely applied in manufacturing and other service industries, there is a relatively smaller number of studies conducted in the arena of higher education, particularly in the context of a developing country. The extant literature reveals that no study had been done in the context of higher education in Bangladesh using MBNQA as the theoretical perspective. This apart, as suggested by Badri *et al.* (2006), faculty members from both public and private universities were not considered in prior research. As the country is attaching significant importance in the tertiary level of education, this study is expected to fill the lacuna in this arena of research, and bear some implications on the part of the management of the institutions of higher learning.

The paper is organized as follows: after this introduction, a brief literature review on the research variables and the related hypotheses is provided. This is followed by the methodology section that includes the sample size, sampling technique, data collection and data analysis. Next, the findings of the study are presented with a discussion on their possible implications for the administrators in the institutions of higher learning. The paper concludes by stating the study limitations and offering a few suggestions for future research.

## 2. LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT

This section presents a brief overview of the research variables as well as the related literature in developing the research hypotheses. The research framework as illustrated at the end of this section comprises three exogenous variables, namely, strategic planning, leadership, and data & knowledge management; one mediating variable, i.e., performance of HEIs, and one endogenous variable, namely, faculty satisfaction.

## **2.1 Strategic Planning & its impact on HEI Performance**

Strategic planning is an exercise undertaken by an organization that helps its managers deal effectively with the challenges posed by its competitive environment (Owolabi and Makinde, 2012). There is a plethora of studies that shed light on the existence of a positive relationship between strategic planning and corporate performance (Robbins et al., 2015; McIlquham-Schmidt, 2010). Schendel (2009) stated that strategic planning is not only concerned about dealing with uncertainty in business environment but also geared to stimulate the employees of an organization to improve performance. This view is also shared in other studies, where the authors observe that strategic planning has positive correlation with the performance of an organization (Anastasia, 2012; Daniel & Martinez-Costa, 2009). Organizations are required to address strategic planning as it helps them respond to the continual interaction of internal environmental factors with the dynamic nature of the external environment (Pearce and Robinson, 2011).

In the context of higher education, strategic planning is considered vital for making informed decision-making, setting priorities, and enhanced performance (Albon *et al.*, 2016; Rowley et al., 1997). In recent times, universities are confronted with numerous challenges in their environment, such as, growing demand for quality academic programs, changing demographics, industry requirements, social needs, etc. As a result, universities are engaged in a strategic planning process to adapt to this rapidly shifting environment (Angell et al., 2008). In this era of knowledge generation that takes place at an exponential rate, and creates numerous challenges for universities, the need for rigorous strategic planning in higher educational institutions is of vital importance. It can help universities offer innovative programs and create a niche in its competitive environment for its sustainable performance (Aleong, 2007). From the above discussion, thus, the following hypothesis may be inferred:

**H1:** *Strategic Planning has a direct impact on HEI Performance*

## **2.2 Leadership & its impact on HEI Performance**

Leadership is the process of influencing others to work with enthusiasm toward attaining organizational goals (Newstrom and Davis, 2002). It is considered one of the most important determinants on organizational processes. There is evidence available suggesting that leadership exerts a positive significant effect on organizational performance (Changiz, 2011). Though success of the organization relies on everyone's involvement in quality management initiatives, the responsibility of top management is imperative (Deming, 1982). In the extant literature, it is found that the leadership is classified as a driver of quality management implementation process (Meyer and Collier, 2001; Pannirselvam and Ferguson, 2001; Winn and Cameron, 1998; Flynn and Saladin, 2001).

There is a large number of studies that consider leadership as a key variable (Lomas, 2004; Owlia and Aspinwall, 1997). In a university, one of the most important initiatives that can be undertaken by administrative leadership pertains to accreditation (Di Nauta et.al, 2004), as it helps them evaluate quality of a whole university or any particular

program that conforms to pre-determined quality standards (Vlasceanu et.al., 2004). Besides, leaders are also concerned about collaboration programs with other universities as it supports research, training and knowledge transfer in this age of information explosion. In recent years, the leaders are ready to spend resources to improve their position in ranking of a university in order to maintain their competitiveness in the market (Maric et al., 2010; Azoury et al., 2014). The above discussion leads to the following hypothesis:

**H2:** *Leadership has a direct impact on HEI Performance*

### **2.3 Data & Knowledge Management and its influence on HEI Performance**

The effective use of IT is an essential element of competing in a knowledge-based economy, and educational institutions have made increased usage of this resource in attaining their objectives (Shah, 2014). It can provide administrators and teachers with the information required for informed planning, policy making and evaluation. As a vital resource, information plays a crucial role in every organization, and therefore, its management has attracted the attention of practitioners and academics as well (Opoku, 2015). When such information is leveraged as knowledge, its utilization would help the organizations to reap the benefits of a continually evolving business landscape in a knowledge-based economy (Hung *et al.*, 2005). Management of data and information requires a closer scrutiny of various types of analyses, such as, trend, cause-and-effect, correlations, etc. through various statistical tools and methods (Evans, 2007); in an educational setting, this may include trend analysis of student enrolment in various disciplines, correlation between the performances of students in their admission tests and cumulative grade point averages, alumni performance, faculty research output in reputed journals and conference proceedings, funding allocated by an HEI and its effect on faculty performance and satisfaction, etc.

In their study, Abugabah et al. (2009) contend that information systems are thought to have significant impact on users' jobs. In their qualitative study, Martin and Thawabieh (2017) explored the benefits of big data and analytics on the performance excellence in higher education. As reported in the study, the findings pointed to a positive effect on HEI performance through the use of cloud computing and other decision-tree algorithms. In their study conducted in fifteen universities in Jordan, Bani-Hani et al. (2009) observed that there exists a positive relationship between MIS and HEI performance. Besides, as validated by Zack *et al.* (2009), knowledge management is found to have a positive effect on organizational performance. The preceding discussion thus leads to the following hypothesis:

**H3:** *Data & Knowledge Management has a direct impact on HEI Performance.*

### **2.4 HEI Performance and its impact on Faculty Satisfaction**

Organizations performance comprises the actual output or results of an organization achievement as measured against its intended goals and objectives. Organizations adopt performance measurement because it creates accountability, provides feedback to operations, and result in more effective planning, budgeting and evaluation (Ammons, 2001). In an HEI setting, the performance indicators would include, among others, ranking by independent agencies, stakeholder satisfaction, number of publications coming out of the faculty-industry partnerships, collaborative partnerships with other institutions (Arif & Smiley, 2004), faculty publication, community outreach and engagement (Ballentine & Eckles, 2009), etc.

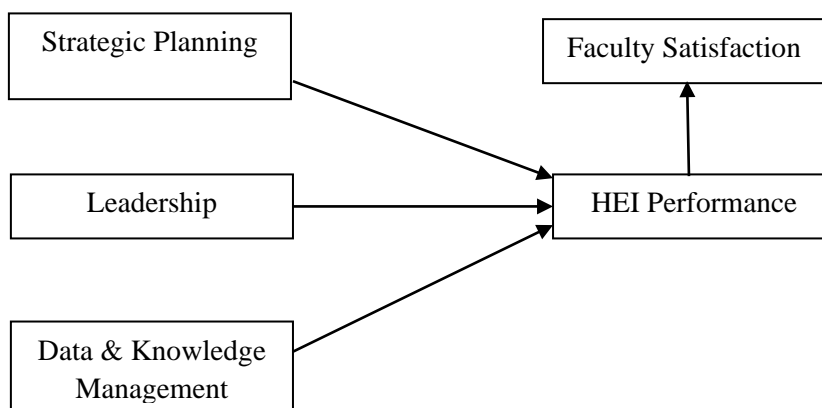
Faculty satisfaction is an important aspect in higher education that contributes significantly to their organizational commitment and work engagement in their institutions (Manalo, *et al.*, 2020). To achieve quality education and cultivate resourceful faculty members, faculty job satisfaction is a key parameter; its various dimensions should be studied because satisfaction is translated into higher productivity and performance of individuals in the organization (Macerinskiene & Vaiksnoraite, 2006).

In a study conducted in Taiwan by Yang (2015), it was observed that most faculty members perceiving a positive institutional organizational climate as well as a relatively higher level of research resources and internationalization coupled with organizational justice tend to be more satisfied with their jobs. Moreover, issues like university ranking both nationally and internationally, students' participation in different nation-wide or international competitions, getting recognition for teaching excellence, collaborating with national or international institutions on different research projects having impact on quality of education or to the society matter the most to faculty satisfaction as much as HEI performance of an institution is concerned. The above discussion, therefore, leads to the following hypothesis:

**H4:** *HEI Performance has a direct impact on Faculty Satisfaction.*

## 2.5 Research Framework and Research Hypotheses

The research framework as illustrated in Figure I includes three quality dimensions, namely, strategic planning, leadership and data & knowledge management; these dimensions are considered as exogenous variables. These variables are deemed to have a direct impact on the performance of higher educational institutions (HEI) culminating to faculty satisfaction. Thus, HEI performance (HEIP) has been considered as the mediating variable and faculty satisfaction as the endogenous variable.



**Figure I: Research Framework**

Based on the discussions in the preceding sections and as highlighted in the research framework, following hypotheses are stated as follows:

**H1:** *Strategic planning has a direct impact on HEI performance*

**H1(a):** *Strategic planning has a mediated impact on faculty satisfaction through HEI performance*

**H2:** *Leadership has a direct impact on HEI performance*



**H2(a):** Leadership has a mediated impact on faculty satisfaction through HEI performance

**H3:** Data & Knowledge management has a direct impact on HEI performance

**H3(a):** Data & Knowledge management has a mediated impact on faculty satisfaction through HEI performance

**H4:** HEI performance has a direct impact on faculty satisfaction

### 3. METHODOLOGY

A total of 215 questionnaires were distributed to the faculty members to the leading universities of the country. These are two public universities (the oldest university of the country, and the premier engineering university) and two leading private universities; in order to include more faculty members from public universities, one leading university outside the capital city was also considered. As for the faculty members chosen, purposive sampling technique was used where the faculties considered were employed as full time and had at least one year of experience in their respective universities. Out of 215, 100 usable questionnaires were considered after having done the data screening due to missing values, resulting into a response rate of 46%.

Data were collected using survey questionnaires containing various statements regarding the study variables. Respondents were requested to express their opinions vis-à-vis the statements on a 1-5 Likert scale. The measurement items constituting the variables were gleaned and modified from previous studies (such as, Sawaluddin et al., 2013; Badri et al., 2006; Rowley et al., 1997; Di Nauta et al., 2004; Winn & Cameron, 1998; Vlasceanu et al., 2004; Opoku, 2015; Chau, 1996; Lam & Zhao, 1998).

In order to test the research hypotheses, structural equation modeling (SEM) was applied (Kline, 2010). It is a two-stage method (Byrne, 2010): measurement model & structural model. Measurement models were tested through confirmatory factor analysis (CFA). Fit indices considered for model fitness were Normed Chi-square, RMSEA & CFI with their threshold points set at  $< 2$ ,  $< 0.08$ , and  $> 0.90$  (Hair et al., 2010), respectively. In order for any scale item to load on a particular construct, a factor loading of 0.40 is set as the cut-off point (Majzub, et al., 2010) in this study.

### 4. FINDINGS OF THE STUDY

This section presents the demographic profile of the respondents, descriptive and reliability measures of the study variables, results of confirmatory factor analyses of measurement models, and the full-fledged structural model done by AMOS version 16.0 that highlights the results of testing of the research hypotheses.

#### 4.1 Analysis of Demographic Variables

Table I presents the demographic profile of the respondents that include their gender mix, academic qualifications, designation, and length of their teaching experience.

**Table I: Demographic Profile of the Respondents**

Demographic Variables	Frequency
Gender Male	78

Female	22
Total	100
<b>Academic Qualifications</b>	
Bachelor	20
Masters	60
PhD	20
Total	100
<b>Designation</b>	
Lecturer	50
Asst. Prof.	28
Assoc. Prof.	11
Professor	11
Total	100
<b>Teaching Experience</b>	
1 to 5 years	55
6 to 10	24
11 to 20	13
Above 20	8
Total	100

As seen from Table I, out of 100 respondents, 78 are male and 22 are female. In terms of their academic qualifications, 60 faculty members were having Masters degrees and 20 were PhD holders. In terms of their designation, 50 were lecturers; this is followed by those at the level of assistant professor (28%), associate professor (11%) and professor (11%). When it comes to their teaching experience, more than 50% of the respondents had 1 to 5 years followed by those with 6 to 10 years (24%), and others above 10 years (21%). As far as their position is concerned, 4 were Head/Chairman of the departments, 1 was the Dean of an engineering school, while 20 faculties held different administrative positions, with the rest having academic load only. It is to be mentioned that faculty members from both public and private universities participated in the study with their number being 24 and 76, respectively.

#### 4.2 Descriptive Statistics and Reliability

The descriptive statistics of the five variables are shown in Table II through their mean and standard deviation. Besides, the reliability of the scale items concerning each variable as mentioned by Cronbach Alpha is also presented in Table II.

**Table II: Descriptive Statistics and Reliability**

Variables	Mean	SD	Cronbach Alpha
Strategic Planning (STPL): (5 items)	3.38	0.25	0.64
Leadership (LEAD): (4 items)	3.69	0.14	0.69
Data & Knowledge Management (D&KM): (4 items)	3.11	0.34	0.76
HEI Performance (HEIP): (4 items)	3.29	0.05	0.72
Faculty Satisfaction (FSAT): (4 items)	3.57	0.40	0.80

The five items in strategic planning refer to establishing vision (sp1), responding to changing environment (sp2), involvement of faculty members in strategic planning (sp3), emphasis on research in line with industry demand (sp4) and making necessary infrastructural support (sp5); the four items in leadership comprise support of top management (adl1), promoting a culture of teamwork (adl2), transparent & fair process in HR recruitment (adl3), and demonstration of ethical consideration (adl4); the four items in data & knowledge management include MIS in measuring research performance (dim1), subscription of online research databases (dim2), maintaining & updating alumni directory (dim3), and online availability of academic information (dim4); the items comprising HEI performance refer to focusing on international accreditation (heip1), collaborative/exchange programs with reputed universities (heip2), ranking by different national & international bodies (heip3), and organizing events of significance (heip4); the four items in faculty satisfaction consider high morale (fsat1), pride in job (fsat2), reward for excellent performance (fsat3), and overall satisfaction (fsat4).

From Table II, it is observed that the means of each of the five variables fall below 4.0, the value that corresponds to 'agree' on a 1 to 5 Likert scale used by the respondents to provide their opinions. This would imply that there is room for improvement in all these five areas pertaining to the arena of higher education in the country.

As for the reliability measures of the study variables, we can say that all the scales demonstrate adequate internal consistency as the values of Cronbach Alpha of all the five constructs meet the threshold point of equal to or greater than 0.60 (Hume et al., 2006; Norman and Streiner, 2010), with SPL (strategic planning) having the minimum value of 0.64 and FSAT (faculty satisfaction) being the maximum value of 0.80.

### 4.3 Analysis of Measurement Models

In this section, the measurement models of the five constructs are tested through confirmatory factor analysis (CFA) with the three indices, normed chi-square, RMSEA and CFI considered to measure the fitness of the models. The results of CFAs are presented in Table II.

**Table II: CFA of Measurement Models**

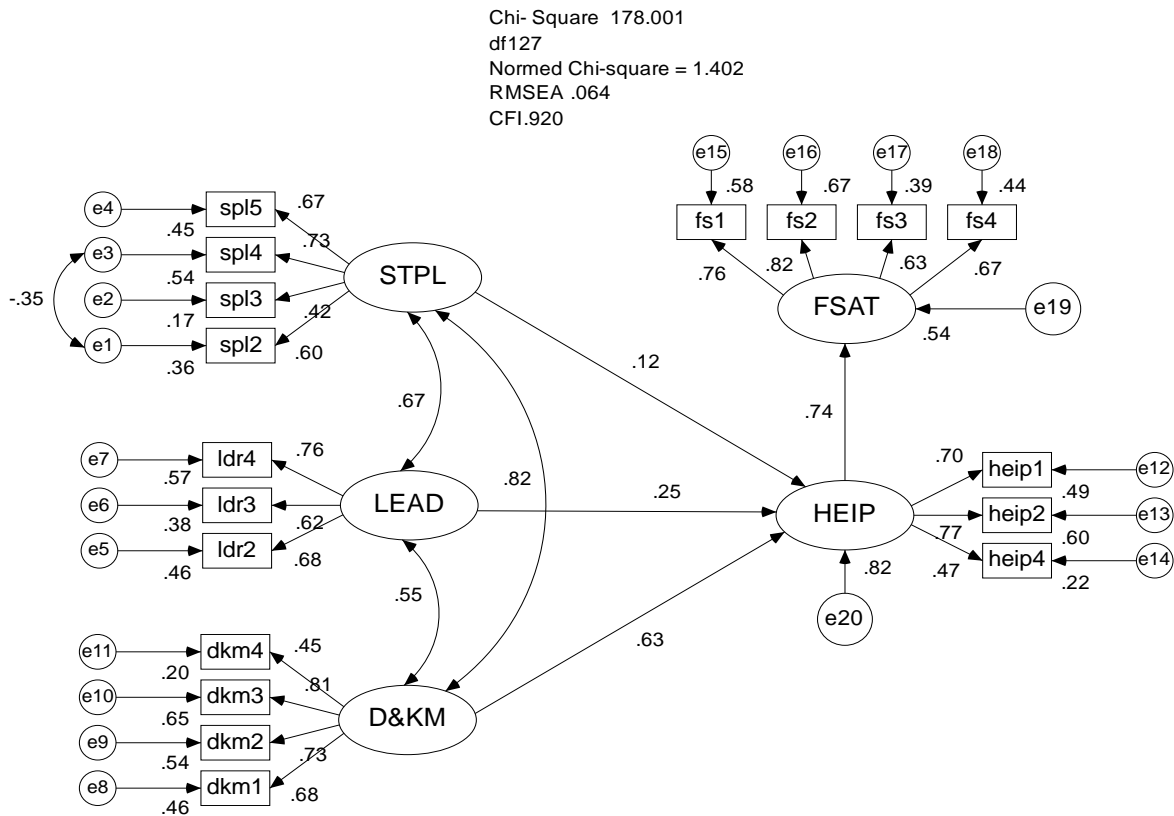
	<b>Normed Chi-Square</b>	<b>RMSEA</b>	<b>CFI</b>
<b>Strategic Planning (STPL)</b>	<b>0.988</b>	<b>0.000</b>	<b>1.000</b>
<b>Leadership (LEAD)</b>	<b>0.082</b>	<b>0.000</b>	<b>1.000</b>
<b>Data &amp; Knowledge Management (D&amp;KM)</b>	<b>0.595</b>	<b>0.000</b>	<b>1.000</b>
<b>HEI Performance (HEIP)</b>	<b>1.683</b>	<b>0.083</b>	<b>0.992</b>
<b>Faculty Satisfaction (FSAT)</b>	<b>0.088</b>	<b>0.000</b>	<b>1.000</b>

The results of CFAs indicate that the measurement models meet the threshold points of the fit indices. As far as factor loadings are concerned, except a few, namely, sp1, all, heip3, all the other loadings are deemed adequate as these exceed the cut-off point of 0.40 set in this study. These three items are, therefore, omitted while illustrating the full-fledged structural model.

### 4.4 Analysis of Structural Model



Figure II shows the full-fledged structural model showing the inter-relationships among its five constructs. A look at the modification indices revealed the necessity of putting an earring among the pertinent error items of the construct, named strategic planning (STPL). Once the earring is provided, the fitness of the model was better achieved with the fit indices (normed chi-square: 1.402, RMSEA: 0.064, CFI: 0.920), thereby adequately meeting their cut-off points of < 2, < 0.08, and > 0.90, respectively.



**Figure II: Full-fledged Structural Model**

From Figure II, it is observed that the constructs exhibit adequate convergent validity as all the loadings have values of above threshold point of 0.40. From Table IV and Figure 1, it is observed that two path co-efficients, namely, D&KM→HEIP and HEIP→FSAT prove to be statistically significant at  $p < 0.001$  and  $p < 0.01$ , respectively, while the other two, i.e., STPL→HEIP, and LEAD→HEIP do not appear to be statistically significant. It can, therefore, be inferred that two study hypotheses, namely, H3 (Data and Knowledge Management have direct effect on faculty satisfaction), and H4 (Performance of HEI have direct effect on the faculty satisfaction) are validated by the data. The other two hypotheses, H1 (strategic planning has a direct effect on performance of HEI) and H2 (leadership has a direct effect on performance of HEI), are not supported by the model (Table IV). As for the mediated effect, only H3(a), which corresponds to the effect of data & knowledge management (D&KM) on faculty satisfaction (FSAT) through HEIP, is supported, while the other two, H1(a) and H2(a) are not supported.

**Table IV: Regression Weights: (Group number 1 - Default model)**

	Estimate	S.E.	C.R.	P	Result
HEIP <--- STPL	.149	.320	.464	.643	[H1]: Not Supported
HEIP <--- LEAD	.241	.140	1.716	.086	[H2]: Not Supported
HEIP <--- D&KM	.563	.208	2.708	.007	[H3]: Supported at p < 0.01 level
FSAT <--- HEIP	.801	.150	5.356	***	[H4]: Supported at p < 0.001 level

The model in Figure II further demonstrates that three exogenous variables, strategic planning (STPL), leadership (LEAD) and data & knowledge management (D&KM) in combination explain for 82% variance in the performance of HEIs and 54% variance in faculty satisfaction through the performance of HEIs.

## 5. DISCUSSION OF THE FINDINGS AND THEIR IMPLICATIONS

The study shows that two study variables, *viz.*, strategic planning and leadership do not seem to affect the performance of higher educational institutions in the country. This falls in line with a previous study (Owolabi and Makinde, 2012), where the authors argue that effective implementation of strategic planning requires the involvement of all internal stakeholders, especially the staff working at various levels of a university. Apart from establishing strategic vision, its proper communication by the leadership across all hierarchical levels is extremely important to have a positive effect on institutional performance. This however, is not prevalent in HEIs, and Bangladesh is no exception. Lack of strategic planning, as observed by the authors, encompasses a myriad of challenges facing the universities that may comprise lack of seriousness on the part of the management in articulating the university vision and mission, non-existence or non-compliance of academic calendar, low quality of intake and graduates, community outreach activities, etc. Particularly, at the tertiary level of education, being accredited and ranked by a reputed organization is an important indicator of a rigorous strategic exercise as well as focused leadership that has a corollary effect on the higher performance and image of an HEI (Di Nauta et.al, 2004). However, the issue of getting accredited and ranked by reputed international bodies is conspicuous by its absence in an overwhelming majority of universities in Bangladesh. It is thus imperative that HEIs should establish and communicate strategic vision guided by strong leadership, involving all faculty members and staff which would facilitate the process of realizing these above-stated institutional goals and objectives.

The current study demonstrates that data and knowledge management exerts a significant impact on the performance of HEIs in Bangladesh. This is validated by prior studies (Zain et al., 2004; Telem, 1999). This finding may be attributed to the assessment of research performance by faculty members, online availability of academic information, such as course & curriculum, academic calendar, students' results and other related information; this is also shared by (Gurr, 2000). This apart, subscription to research databases and maintaining the alumni database also seem to have contributed to this effect. However, dissemination of information to the relevant stakeholders concerned is yet to be fully online-based. HEIs in the country need to pay attention to this issue by instituting a robust technology infrastructure in respective institutions (Shah, 2014). Besides, the alumni should be involved and their valuable inputs taken in designing as well as updating the curriculum that would go a long way in providing skilled graduates with employability skills to the industry.

The present research finds that the performance of HEIs has an impact on the satisfaction of faculty members. This may be due to the fact that the departmental leadership tries to foster a culture of teamwork among its faculty members, and carry out the task of recruitment of staff in a fair and transparent manner. Besides, the universities have taken up collaborative programs with reputed foreign institutions, and played a leading role in organizing events with industry and other organizations on a regular basis; these seem to have had a positive impact on the level of satisfaction of the faculties serving in the universities. This finding is supported in previous studies (Arif & Smiley, 2004; Yang, 2015) as well. However, as stated earlier, the issue of the universities not being ranked by recognized international bodies has been raised by the faculty members and HEIs in the country should strive to gain international acclaim of their academic and research activities through a concerted effort of all the relevant stakeholders concerned.

## **6. CONCLUSION AND DIRECTIONS FOR FUTURE RESEARCH**

The present study investigates the impact of quality dimensions on the performance of higher educational institutions (HEIs) of Bangladesh and its possible fallout on faculty satisfaction. For this, faculty members from both public and private universities have been surveyed through a structured questionnaire. 100 usable responses with a response rate of 46% are considered for data analysis. Structural equation modeling (SEM) was applied to test the research hypotheses. The findings of the study demonstrate that only data and knowledge management exerts a positive effect on the performance of HEIs that as well positively influences the satisfaction of faculty members working in their respective universities. However, neither leadership nor strategic planning seems to have any direct bearing on HEI performance.

The current study has some limitations; these along with a few suggestions for future research are presented below:

- This study was done with 100 faculty members and in only five universities; besides, an overwhelming majority of the respondents are male compared to female faculties though an increasingly greater number of female faculties are joining the workforce in the universities of Bangladesh. Thus, a much bigger sample size with more private and public universities and a fairly equal gender mix of the faculty participants should be considered in any future study in order to get a better insight into the prevalent scenario of the effectiveness of performance of higher educational institutions in the country.
- Only four dimensions of MBNQA were considered; other dimensions should be incorporated to examine both direct and indirect impact on faculty satisfaction. The various scale items comprising the constructs considered in this study may need to be further refined. Apart from satisfaction, other variables such as faculty turnover intentions or faculty engagement might also be investigated in any subsequent research in this area.
- This is a cross-sectional, quantitative study; longitudinal studies with a mixed-method approach could be done in any future investigation.
- Structural invariance of the model may be performed to test the moderating effect along some pertinent variables, such as gender, designation, public versus private universities, etc.

## REFERENCES

- [1] Abugabah, A., Sanzogni, L. & Poropat, A. (2009). "The impact of information systems on user performance: a critical review and theoretical model". Published in the conference proceedings in the International Conference on Computer Science and Engineering (ICCSE 2009), World Academy of Science, Engineering and Technology, Griffith University, Australia.
- [2] Albon, S. P., Iqbal, I, Pearson, M. L. (2016). Strategic Planning in an Educational Development Centre: Motivation, Management, and Messiness, *CELT (Collected Essays on Learning and Teaching)*, IX, 207-225.
- [3] Aleong, C. (2007). An empirical and qualitative study of the strategic planning process of a higher education institution, *Journal of College Teaching & Learning*, 4(4), 33-44.
- [4] Ammons, D., *Municipal Benchmark*, 2nd ed., Oaks: Sage Publication, Thousand, 2001.
- [5] Anastasia A. K. (2012), "Investigating reverse causality between human resource management policies and organizational performance in small firms, *Management. Research Review*, 35(2), 134-156.
- [6] Angell, R.J., Heffernan, T.W., Megicks, P. (2008), "Service quality in postgraduate education", *Quality Assurance in Education*, 16(3), 236-54.
- [7] Arif, M., Smiley, F. (2004), "Baldrige theory in practice: a working model", *International Journal of Educational Management*, 18(5), 324-328.
- [8] Azoury, N., Daou, L., Khoury, C. E. (2014), "University image and its relationship to student satisfaction: case of the Middle Eastern private business schools. *International Strategic Management Review*, 2(1), 1-8.
- [9] Badri, M. A., Selim, H., Alshare, K., Grandon, E. E., Younis, H., Abdulla, M. (2006), "The Baldrige Education Criteria for Performance Excellence Framework – Empirical test and validation", *International Journal of Quality and Reliability Management*, 23(9), 1118-1157.
- [10] Bani-Hani, J. S., Al-Ahmad, N. M. M., Alnajjar, F. J. (2009), "The impact of management information systems on organizationas performance: field study at Jordanian universities, *Review of Business Research*, 9(2), 127-137.
- [11] Ballentine, H., & Eckles, J. (2009), "Dueling scorecards: How two colleges utilize the popular planning method", *Planning for Higher Education*, 37(3). 27-35.
- [12] Barney, J.B. (2007). *Gaining and Sustaining Competitive Advantage*. 3rd Ed. New Jersey: Pearson
- [13] Byrne, B. M. (2010): *Structural equation modeling with AMOS. Basic concepts, application, and programming*. 2nd Edition. Ney York: Routledge.
- [14] Changiz, V. (2011), "The impact of TQM implementation on the organizational performance of Iranian manufacturing SMEs", *The TQM Journal*, 23(5), 496-509.
- [15] Chau, P. Y. K. (1996), "An empirical assessment of a modified technology acceptance model", *Journal of Management Information Systems*, 13(2), 185-204.
- [16] Daniel, J., Martí'nez-Costa. D. M. (2009), "The performance effect of HRM and TQM: a study in Spanish organizations", *International Journal of Operations & Production Management*, 29(12), 1266-1289.
- [17] Deming, W.E. (1982), "Quality, Productivity & Competition position", Massachusetts Institute of Technology, Centre of Advanced Engineering Study.
- [18] Di Nauta, P., Omar, P.J., Schade, A., Scheele, J.P., (2004), *Accreditation models in higher education –Experiences and Perspectives*, ENQA.

- [19] Donlagic, S., Fazlic, S. (2015), "Quality assessment in higher education using the SERQUAL model", *Management*, 20(1), 39-57.
- [20] Evans, J. R., Ford, M. W., Masterson, S. S., Hertz, H. S. (2012), "Beyond performance excellence: research insights from Baldrige recipient feedback", *Total Quality Management & Business Excellence*, 23(5-6), 489-506.
- [21] Evans, J. R. (2007). "Impacts of information management on business performance", *Benchmarking: An International Journal*, 14(4), 517-533.
- [22] Flynn, B., Saladin, B. (2001), "Further evidence on the validity of the theoretical models underlying the Baldrige criteria", *Journal of Operations Management*, 19(6), 617-652.
- [23] Ghosh, S., Handfield, R.B., Kannan, V.R., Tan, K.C. (2003), "A structural model analysis of the Malcolm Baldrige National Quality Award framework", *International Journal of Management and Decision Making*, 4(4), 289-311.
- [24] Gurr, D. (2000), "The Impact of Information and Communication Technology on the Work of School Principals", *Leading and Managing*, 6(1), 60-73.
- [25] Hair, J. F., Black, W. C., Babin, J. B., & Anderson, R. E., (2010). *Multivariate Data Analysis*. (7<sup>th</sup> ed.). Upper Saddle River, NJ: Prentice Hall.
- [26] Hume C, Ball K, Salmon J. (2006), "Development and reliability of a self-report questionnaire to examine children's perceptions of the physical activity environment at home and in the neighborhood", *Int J Behav Nutr Phys Act*. 3:16.
- [27] Hung, Y., Huang, S., Lin, Q., & Tsai, M. (2005). Critical factors in adopting a knowledge management system for the pharmaceuticals industry. *Industrial Management and Data Systems*, 105(2), 164-183.
- [28] Islam, R. (2007), "MBNQA criteria in education: Assigning weights from a Malaysian perspective and proposition of an alternative evaluation scheme", *International Transactions in Operational Research*, 14, 373-394.
- [29] Kline, R. B. (2010). *Principles and Practice of Structural Equation Modeling* (3rd ed.). New York: Guilford Press.
- [30] Lam, K., Zhao, X. (1998), "An application of quality function deployment to improve the quality of teaching", *International Journal of Quality & Reliability Management*, 15, 389-413.
- [31] Lomas, L. (2004). "Embedding quality: The challenges for higher education", *Quality Assurance in Education*, 12, 157-165.
- [32] Macerinskiene, I., & Vaiksnoraite, B. (2006), "The role of higher education to economic development", *Vadyba / Management*, 2(11), 82-90.
- [33] Manalo, R. A., de Castro, B., Uy, C. (2020). "The Mediating Role of Job Satisfaction on the Effect of Motivation to Organizational Commitment and Work Engagement of Private Secondary High School Teachers in Metro-Manila", *Review of Integrative Business and Economics Research*, 9(s1), 133-159.
- [34] Maric, M., Pavlin, J., Ferjan, M. (2010), "Educational institution's image: a case study", *Journal of Management, Information Systems and Human Resources*, 43(2), 58-65.
- [35] Majzub, R. M., Yusuf, M. and Turi, H. (2010). A psychometric analysis of the Self-Efficacy Encouragement Questionnaire (SEEQ) in the university environment. *Procedia Social and Behavioral Sciences*, 5523-5529.
- [36] Martin, A. L. and Thawabieh, F. A. (2017), "The Role of Big Data Management and Analytics in Higher Education", *Business, Management and Economics Research*, 3(7), 85-91.



- [37] McIlquham-Schmidt, A. (2010). "Appraising the empirical evidence of the relationship between strategic planning and corporate performance". Working paper, 2010-03, Department of Management, School of Business, Aarhus University, Aarhus, Denmark.
- [38] Meyer, S., Collier, D. (2001), "An empirical test of the causal relationships in the Baldrige Health Care Pilot Criteria", *Journal of Operations Management*, 19(4), 403-425.
- [39] Newstrom, J. W. and Davis, K. 2002. *Organizational Behavior: Human Behavior at Work*. 11<sup>th</sup> Edn., McGraw-Hill, New York, U.S.A.
- [40] Norman GR, Streiner DL. (1994). *Biostatistics: the Bare Essentials*. St Louis: People's Medical Publishing House.
- [41] Opoku, M. O. (2015), "Information management and organizational performance: a review of literature", *Mediterranean Journal of Social Sciences*, 6(6 S1), 62-70.
- [42] Owlia, M. S., Aspinwall, E. M. (1997). "TQM in higher education – a review", *International Journal of Quality & Reliability Management*, 14, 527–543.
- [43] Owolabi, S. A., Makinde, O. G. (2012), "The effects of strategic planning on corporate performance in university education", *Arabian Journal of Business and Management Review*, 2(4), 27-44.
- [44] Pannirselvam, G., Ferguson, L. (2001), "A study of the relationships between the Baldrige categories", *International Journal of Quality & Reliability Management*, 18(1), 14-34.
- [45] Pearce, A. J. II, Robinson B. R. (2011). *Strategic Management: Formulation, Implementation and Control*, 12th Edition, Boston: Irwin McGraw-Hill.
- [46] Porter, L. and Tanner, S. (2004). *Assessing Business Excellence* (2nd ed.), Butterworth-Heinemann, Oxford.
- [47] Raouf, A., Quraishi, U., and Kalim, R, 2007, "Development of a faculty satisfaction model for higher education", In: M.H. Elwany and A.B. Eltawil, 37th international conference on computers and industrial engineering. Alexandria: Egypt, October 20-23.
- [48] Robbins, S, Bergman, R, Stagg, I, Coulter M. (2015), *Management*, Seventh adaptation edition, Melbourne, Vic., Pearson Australia.
- [49] Rowley, D. J., Lujan, H. D., Dolence, M. G. (1997). *Strategic Change in Colleges and Universities: Planning to Survive and Prosper*. San Francisco, CA: Jossey-Bass Publishers.
- [50] Sawaluddin, Surachman, Djumahi, Rahayu, M. (2013), *Quality Management Practices of Malcolm Baldrige National Quality Award (MBNQA) Studies at College in Southeast Sulawesi, Indonesia*, *International Journal of Business and Management Invention*, 2(11), 11-25.
- [51] Schendel, D. (2009). *Strategic Management: A New View of Business Policy and Planning*. Boston, Little Brown.
- [52] Shah, M. (2014), "Impact of management information systems (MIS) on school administration: What the literature says", *Procedia - Social and Behavioral Sciences*, 116, 2799-2804.
- [53] Telem, M. (1999), "A case of the impact of school administration computerization on the department head's role", *Journal of Research on Computing in Education*, 31(4), 385–401.
- [54] Vlasceanu, L., Grunberg, L., Parlea, D., (2004), "Quality Assurance and Accreditation: a Glossary of Basic Terms and Definitions", *UNESCO*, 48-49



- [55] Winn, B., Cameron, K. (1998), “Organizational quality: an examination of the Malcolm Baldrige quality framework”, *Research in Higher Education*, 39(5), 491-512.
- [56] Yang, Cheng-Cheng. (2015), “The Effects of Higher Education’s Institutional Organizational Climate on Performance Satisfaction: Perceptions of University Faculty in Taiwan”, *International Business Research*, 8(8).
- [57] Zack, M., McKeen, J., & Singh, S. (2009). Knowledge management and organizational performance: an exploratory analysis. *Journal of Knowledge Management*, 13(6), 392-409.
- [58] Zain, M. Z., Atan, H., & Idrus, R. M. (2004). The impact of information and communication technology (ICT) on the management practices of Malaysian Smart Schools. *International Journal of Educational Development*, 24 (2), 201–211.