

The Effect of ISO 9001 to Oman Higher Education Operational Performance: Buraimi University College as a Case Study

Dr. Adalia Martin* and Dr. Fawaz Ali Thawabieh#

*Oman College of Management & Technology, Muscat, Oman.

#Modern College of Business and Science, Muscat, Oman.

Abstract

This paper examines the relationship between the ISO 9001 Total Quality Management (TQM) factors, that are presented in the Baldrige Education Criteria for Performance Excellence framework (leadership, strategic planning, stakeholder and market focus, measurement and analysis, staff focus and process management), and the seventh element which is the operational performance results. The study, which was conducted at the Buraimi University College of Oman, showed that TQM is applicable to higher education according to the perception of the staff members. The study also showed that leadership, stakeholder and market focus and staff focus have a significant positive influence on operational performance of higher education. The results agreed with the literature findings that the success of TQM appears to be determined by intangible or soft practices rather than tangible or hard practices.

Keywords: TQM, Performance Measures, Higher Education, Operational Performance, Baldrige Education Criteria

INTRODUCTION

The Buraimi University College (BUC) is the first university college in Al-Buraimi governorate, northwest of the Sultanate of Oman, on the border of United Arab Emirates. The institution has started its academic programmes in Academic Year 2003- 2004. Currently, the institution has a total of 100 academic and administrative employees. Within the Sultanate, BUC among with Gulf College, German University of Technology, and Shinas College adopts the ISO 9001:2008 standards as their external accrediting body for their programmes. Having its first institutional audit using ISO standards in 2012. Locally, the Oman Authority for Academic Accreditation (OAAA) is the national authority imposed the institutional accreditation standards. BUC has started adopting the ISO standards on 2015 in partnership with California State University.

Among the most rigorous empirical studies that examine how implementation of the ISO 9001 quality management standard affects employers' outcomes and practices, mostly were conducted by U.S. manufacturers. Terlaak and King (2006) found that plants which adopt ISO 9001 typically increase their rate of production growth. Others studies on ISO 9001 certification were to be associated with subsequent abnormal returns along a host of financial metrics including stock prices (Corbett et al. 2005; Sharma, 2005). Various studies found benefits strongest among small firms (Docking and Downen 1999; McGuire and Dilts 2008) and among those with a modest

level of technological diversity, and/or early adopters (Benner and Veloso 2008). King and Lenox (2001) found that adopting ISO 9001 leads plants to reduce waste generation and toxic chemical emissions suggests that implementing the quality management standard has positive spillover effects that can improve environmental management practices. Interestingly, few researches examined how the ISO 9001 quality standard affects product or process quality or employees.

The increasing pressure of globalization and the dynamism of the sector have resulted in the quality frenzy in the higher education sector since the last decade. Greater mobility of students and staff in paired with increasing demands on comparability and transparency on academic programmes (Holma & Pakalna, 2007) have led to the popular adoption and implementation of QMS such as the ISO 9001 that were originally designed for the industry sector (Pratasavitskaya & Sternsaker, 2010) by many higher education institutions (HEIs) with aims of improving their customer services and securing a competitive edge in the sector.

Total quality management (TQM) is an established field of study where academics, consultants, engineers and quality practitioners have contributed their ideas towards its advancement. This group has given many definitions to TQM. TQM is formally defined as both a philosophy and set of guiding principles that represent the foundation of continuous improving organizations (Besterfield et al., 2003). It is the process of changing the fundamental culture of an organization and redirecting it toward superior product or service quality. It is the philosophy that stresses the principles of customer satisfaction, employee involvement and continuous process improvement for achieving high levels of process performance and quality (Krajewski et al., 2007). TQM can be considered as a different approach to management, pioneered by Crosby, Deming, Ichikawa, Juran and others (Brah et al., 2000).

In response to government initiatives at standardizing and improving the quality of high education, there has been a trend of uniformity in the choice of QMS being implemented in the HEIs, namely the ISO 9001:2008 (Harvey, 2002). The ISO 9001:2008-based QMS is a process orientated system (Michalska-Ćwiek, 2009) that helps to ensure properly written and documented procedures are created and implemented by the organization. These procedures cover all functions of the operations which include the organization structure, responsibilities, procedures, documentation, division competency, processes and resources of the organization (Michalska-Ćwiek, 2009). Studies have been done throughout the years on the adoption and the implementation of the QMS in HEIs and have yielded both positive and negative reviews

(Becket & Brookes, 2008; Dobrzański & Roszak, 2007; Mizikaci, 2006; Sohail, Rajadurai & Rahman, 2003; O'Donnell, 1996). Among the positive reviews are on the improvement and standardization on processes and procedures, establishment of systematic record maintenance and filing system, increase of quality awareness among employees with clearly defined job responsibility (Sohail et al., 2003; Dobrzański & Roszak, 2007).

The following research questions are empirically investigated in this study:

- 1) The applicability of TQM to Oman higher education.
- 2) The relationship of TQM to Oman higher education operational performance.
- 3) The TQM elements or practices applicable to Oman higher education.
- 4) The best factors of operational performance of Oman higher education institutions in relation to ISO 9001.

The answer to these questions will contribute to a deeper understanding of TQM in higher education and better awareness of the strategic role of TQM in this sector. This will help higher education institutions to allocate resources to achieve better results and graduates that are more appropriately qualified.

RELATED RESEARCH

Deming defined quality as “multidimensional to produce a product and/or deliver a service that meets the customer’s expectations to ensure customer satisfaction” (Deming, 1986, P.54). Juran defined quality based on a multiple meaning, namely (1) “Quality consists of those product features which meet the needs of customers and thereby provide product satisfaction,” and (2) quality is apparently associated with customers’ requirements, and fitness suggests conformance to measurable product characteristics” (Juran, 1988, P.22). Crosby’s definition of quality is “conformance to requirements” (Crosby, 1979, P.7). Another definition of TQM: “an integrated approach to achieving and sustaining high quality output, focusing on the maintenance and continuous improvement of processes and defect prevention at all levels and in all functions of the organization, in order to meet or exceed customer expectations” (Flynn et al., 1994, p. 342).

Since the 2000 version of the standard, ISO 9001 integrated the Total Quality Management principles into the standard and more focuses on the process and performance rather than documentation (Hoyle, et al, 2009). In addition, ISO 9001 also adopted the methodology of PDCA (Plan Do Check Act) (ISO, 2008). More specifically, ISO 9001 is based on eight quality management principles, namely customer focus, involvement of people, process approach, system approach to management, continual improvement, factual approach to decision making, and mutually beneficial supplier relationship (Lewis, et al 2006).

Higher Education

According to UNESCO, the content of higher education support teaching and training programmes designed to reply directly to the identified needs of specific contexts. Also, promote innovation in content and methods which can assure enhanced access to higher education while still preserving the quality of education and its relevance to social requirements (www.unesco.org)

In Japan, higher education comprises all post-secondary education, training and research guidance at education institutions such as universities that are authorized as institutions of higher education by state authorities (www.jica.go.jp).

In Oman, higher education institution is defined as an institution (public/private, for profit/non-profit) that offers academic or technical programs that lead to a higher education academic qualification which follows a General Education Diploma or equivalent and is in line with the Oman Qualifications Framework (www.oaaa.gov.om).

Defining Main Stakeholders in Higher Education

Stakeholders are the persons, groups, and institutions who are affected in one way or another by the organization's performance. Important stakeholders common to the specific environment of most organizations include: customers, suppliers, competitors and regulators (Schermerhorn, 2002). There are a variety of stakeholders in higher education, including students, employers, teaching and non-teaching staff, government and its funding agencies, coeditors, evaluators and auditors (Burrows and Harvey, 1992). Each of these stakeholders has a different view on quality, influenced by his or her interest in higher education (Tam, 2001).

Mizikaci (2006) found that the three concepts; quality systems in higher education, program evaluation, and system approach, are to be consistent and compatible with one another with regard to the goals and the organizational structure of higher education institution. She proposed an evaluation model that provides a new perspective for higher education management for the effective and efficient implementation of the quality systems and program improvement. Educational quality is a multi-dimensional concept and cannot be easily assessed by only one indicator (Chen and Tam, 1997). Owlia and Aspinwall (1997), who depicted a causal diagram to show the dynamic behavior of quality related factors in a higher education system, approved this definition.

TQM in Higher Education

TQM is no longer limited to industries and business houses. The principles of TQM have been successfully adopted in the field of higher education by developed countries (Sakthivel and Raju, 2006). It is fascinating to observe the arrival of TQM in higher education (Marchese, 1993). Attempts to introduce industrial quality concepts like TQM into higher education began in the late 1980s (Sallis, 1993). Nevertheless, many colleges are attempting the TQM process, and some higher

education institutions are likely to succeed (Vazzana *et al.*, 2000). In this section the definition of quality in higher education will be discussed, the main stakeholders of higher education will be introduced and the applicability of TQM elements will be reviewed. Higher education institutions are considered as service organizations, therefore, the definition of quality and the application of TQM principles and techniques have always remained a major and challenge risk (Lakhe, 1995). Quality of education is a key factor in the invisible competition between countries; it means adding value to student and ultimately to society, so that the students are improved not only in their knowledge, skills, techniques but also in intellectual growth and development (Lakhe, 1995).

Applicability of TQM to Higher Education

Like businesses and industries, the educational institutions aim to turn out high-quality products. Like service-oriented organizations, education institutions are also offering their services to customers (Zabalawi *et al.*, 1998). In this respect, ISO 9001 seems to be applicable to higher education because many objectives of TQM are compatible with the work of higher education institutions which have used them – consciously or unconsciously– in their operations and in response to external quality assessment and audit (Bolton, 1995). Total Quality Management/ Continuous Quality Improvement (TQM/CQI) has been adopted in the administrative practices of colleges and universities (Birnbaum and Deshotels, 1999). Many authors focused on the applicability of quality principles and tools to higher education. Proponents of TQM in education have modified Deming's "Fourteen Points" to fit the needs of educational institutions. This TQM version encourages coordination and collaboration in improving the educational system but still focuses on improving quality, meeting customer (student and employer) needs, and involving the faculty and staff at all levels to reach the goals of the organization (Vazzana, 1997). Motwani and Kumar (1997) discussed the applicability of TQM to higher education. They concluded that TQM has already arrived in higher education, and suggested a five-step process for implementing TQM in educational institutions. Owlia and Aspinwall (1996) reported their findings of a survey that was launched to examine the different views on the application of industrial quality management principles to higher education. Owlia and Aspinwall (1996) concluded that:

- Customer orientation in higher education is a generally accepted principle.
- From the different customers of higher education, students were given the highest rank. The remainders in rank order were employees, society, faculty and families.
- The necessity of measurement was advocated
- The principles of TQM are applicable to higher education. Methodologies like system standards and quality awards were accepted with lower support and with some reservations on operational procedures.

Moreover, Winn and Cameron (1998) studied the applicability of the MBNQA framework in higher education. The study's

results pointed out that the individual MBNQA framework's dimensions can be appropriately applied to higher education.

According to Jaafreh (2013), an extensive literature survey has been carried out to select TQM/QM frameworks for their study. Research into quality management and TQM has identified many critical success factors that affect an organization's position. Most of the recent articles on QM CSFs utilized some of factors from Saraph *et al.* (1989), Flynn *et al.* (1994), Powell (1995), Ahire *et al.* (1996), etc., Or a set of factors from quality literature and very few authors empirically validated the QM CSFs. Based on the writings of Crosby, Deming, Feigenbaum, Juran, Ishikawa, and several QM implementation studies, and quality awards existing in different countries. However, most of quality awards in the world are basically derived from three basic: the Malcolm Baldrige National Quality Award (MBNQA), the European Quality Award (EFQM) and the Deming Prize.

RESEARCH HYPOTHESES

Hypothesis H1

H01: The TQM are not applicable to Oman higher education.

Ha1: The TQM are applicable to Oman higher education.

Hypothesis H2

H02: There is no significant positive relationship between TQM and higher education operational performance.

Ha2: There is a significant positive relationship between TQM and higher education operational performance.

Hypothesis H3

H03: There is no specific TQM factors or practices applicable to Oman higher education institution.

Ha3: There is specific TQM factors or practices applicable to Oman higher education institution.

RESEARCH METHODOLOGY

A questionnaire was designed based on the Baldrige Education Criteria for Performance Excellence Framework (2004). The sample population was a random sample drawn from all the members of the teaching staff in the Buraimi University College in Oman. The questionnaire consisted of three parts A, B and C. Part A is concerned with the personal data of the respondents (the academic rank and the years of experience in higher education). Part B consists of six main sections, each relating to the TQM factors presented in the Education Baldrige Criteria framework. Those factors that present the independent variables of the regression model are:

Leadership (LP): Leadership was assessed using seven key elements (LPA-LPG), those key elements included top management commitment to quality and customer satisfaction, their participation in the quality improvement process, their

responsibility for quality performance, their clear identification of quality goals, and effective communication and allocation of resources to improve quality.

According to Jaafreh (2013) studies says that therefore there is very strong evidence that the leadership factor is relevant in a quality management such as Top management accepts quality responsibility; evaluated on quality; participate in quality improvement efforts; makes strategies and goals for quality; alignment of IS strategy with business strategy; considering market demands and consumer needs; and organizational performance and profitability (Saraph et al., 1989; Flynn et al., 1994, 1995; Ahire et al., 1996; Anderson et al., 1995; Black & Porter, 1996; Crosby, 1979; Deming, 1986; Juran & Gryna, 1993; Kaynak, 2003; Powell, 1995; Prajogo & Sohal, 2003; Rao et al., 1999; Sila & Ebrahimpour, 2005; Wilson & Collier, 2000). Leadership is important in influencing groups of people and mobilizing resources. Effective leadership promotes the strategic direction of the company to achieve customer satisfaction and business results.

Strategic Planning (SP): Strategic planning was assessed using five key elements (SPA-SPE), these key elements included the development of a mission statement and long-term plans that focus on quality, the development of achievable long term goals, the comprehensiveness of the planning process and the consideration of quality in the strategic plans.

Strategic quality planning is defined by Juran & Gryna (1993, p. 300) and indicates the main concepts: "Strategic Quality Planning is a structured process for establishing long-range quality goals, at the highest levels of the organization, and defining the means to be used to reach those goals". Krumwiede & Charles (2006) emphasized that "the strategic aspects of quality are recognized and embraced by top management in the strategic planning process" (p. 37).

Stakeholder and Market Focus (SM): This TQM factors was assessed using six key elements (SMA-SMF). Those elements included the understanding of the internal customer concept, the identification of the customers' needs and the use of customer feedback, measuring internal and external customer needs and improving the customer's relationships.

Anderson defined Customer satisfaction as the degree to which a firm's customers continually perceives that their needs are being met by the firm's products and services (Anderson et al., 1995). An organization must identify Customer relationship to Measure customer needs and expectations; involve customers in quality improvement; determine customer satisfaction (Prajogo & Sohal, 2003; Sila & Ebrahimpour, 2005; Flynn et al., 1994, 1995; Powell, 1995; Ahire et al., 1996; Black & Porter, 1996).

Measurement and Analysis (MA): This TQM factors was assessed using six key elements (MAA-MAF). These elements included collecting and analyzing data using computers, using the timely and easily accessed information to improve processes, continuous evaluation of the information system and conducting benchmarking to find out best practices.

Based on prescriptions of Deming, Juran, Crosby, and Ishikawa; Saraph et al. Conducted one of a first empirical effort to validate an instrument for integrated quality management.

This study produced 8 different factors, which measure the quality practice of an organization. The major strength of this instrument was the high level of external validity, for both manufacturing and service industries were included in the sample (Saraph et al., 1989).

Staff Focus (SF): Staff focus (academic and administrative) was assessed using eight key elements (SFA-SFH). These key elements included employee empowerment, involvement and motivation, employee training in problem solving and in the total quality concepts, reward and recognition and measurement of employee satisfaction.

Empowering and involving all employees in making continuous improvement is essential; under such conditions (Flynn et al., 1995; Deming, 1986; Kaynak, 2003; Ho et al., 1999; Ishikawa, 1985; Ahire et al., 1996). The organization must ensure that an organization-wide training program is available in order to provide employees with the proper skills (Kaynak, 2003; Anderson et al., 1995; Flynn et al., 1995; Rao, Solis, & Raghu-Nathan, 1999).

Process Management (PM): Process management was assessed using seven key elements (PMA-PMG). These key elements included the existence of a framework for process management, continuous improvement, the use of statistical methods and TQM tools, the identification of a clear procedure to minimize error and long-term relationship and working partnership with key suppliers.

MBNQA criteria classify the process management category in "the central requirements for identification and management of core competencies to achieve efficient and effective process management" (NIST, 2010). In the EFQM Excellence Model and King Abdullah II Award, the process management is defined as "how the organization designs, manages and improves its processes in order to support its policy and strategy and fully satisfy, and generate increasing value for, its customers and other stakeholders" (KAAPS, 2010; EFQM, 2010).

Each key element described previously was measured on a Likert Scale of five. A score of five means strongly agree, a score of 4 means agree, a score of 3 means neutral, a score of 2 means disagree and a score of 1 means strongly disagree. Those elements were tested to reflect the perception of the academic staff members about the applicability of TQM to higher education and testing the application to Buraimi University College in Oman.

Finally, Part C consists of the section that represent the performance of higher education. The respondents were asked to circle the number representing the current performance level in their department. The performance factors that present the dependent variables in the regression model:

Operational Performance (OP): The operational performance was assessed using nine key elements (OP1-OP9). These key elements included customer satisfaction, employee productivity, employee satisfaction, employee morale, supplier partnership, quality of course offering, quality of graduate research, introduction of new courses and the reputation of providing quality education.

ISO certification is supposed to lead to advantages in the processes of organizations. These benefits include such things as improvement in throughput time, increase in technical flexibility, improvement of co-ordination of activities, improvement in product or service specifications, increase in internal and external delivery performance and improvement in efficiency.

A company operating within the requirements of the ISO 9000 standards should achieve customer satisfaction as the interactions with customers are improved and reductions in customer complaints are achieved. The standards are supposed to have a positive influence on employees which may lead to an increase in motivation albeit the fact that the standards increase the documentation workload and standardization of procedures which may impede the creative thinking of employees (Singels, Ruel & Water, 2001).

Martin and Ali (2017) concludes that operational performance at any business industry is affected by ISO implementation directly on customer satisfaction and indirectly on employee involvement. Quality Management System is a source of operational performance as it positively affects that organization's operational performance such that it can be increased if resources are managed properly.

DISCUSSION OF RESULTS AND FINDINGS

Profile of Respondents

A total of 44 faculty members' respondents of Buraimi University College randomly answered the questionnaire with a response rate of 100.0%. The profile of the respondents is shown in Table 1. Table 1A shows that a majority of respondents were having a rank of Lecturer (61.4%), followed by Assistant Professor (25%), Associate Professor (6.8%) and Professor (6.8%). In terms of respondents' job tenure in BUC, 18.2 percent of the respondents had less than 5 years of experience working in BUC, 20.5 percent had 5 to 10 years and 61.4 percent for respondents that had more than 10 years respectively is shown in Table 1B.

Table 1B. Respondents' Job Title Percentage

Respondents' Job Tenure	Response Rate	Percentage
More than 10 years	27	61.40%
5-10 years	9	20.50%
Less than 5 years	8	18.20%

Table 1A. Respondents' Job Tenure Percentage

Respondents' Job Title	Response Rate	Percentage
Professor	3	6.80%
Associate Professor	3	6.80%
Assistant Professor	11	25.00%
Lecturer	27	61.40%

Hypothesis H1

The descriptive statistics presented in Table 2 were used to determine whether TQM practices are applicable to higher education in accordance with the perception of the BUC staff members. The means of the six TQM factors are higher than 3.0, which indicate that TQM practices, are applicable to higher education to different degrees.

Leadership is the most applicable factors to higher education followed by stakeholder and market focus. Staff focus is the least applicable practice. The advancement of the applicability of leadership and stakeholder and market focus agrees with the work of Kanji et al. (1999) who presented their findings on TQM practices at higher education institutions in the US and Malaysia.

The result of t-tests applied to the means of all TQM factors shows that t equals -13.71 and the P value equals 0.000. Hence, H01 is rejected at a significance level of 0.05. Hence, the perception of the academic staff members at the faculty about the applicability of TQM to higher education is that TQM practices are applicable to higher education. This result is also evidenced by reviewing the mode of the responses. The mode of the mean value of the responses is between three and four, which means that responses agree with the applicability of TQM practices to higher education.

Table 2. Descriptive Statistics for TQM Factors

TQM Factors	Mean	Standard Deviation	Median	Mode
Leadership (LP)	4.04	0.18	4.14	4.16
Strategic Planning (SP)	3.88	0.16	3.90	3.64
Stakeholder and Market Focus (SM)	3.79	0.08	3.77	3.70
Measurement and Analysis (MA)	3.89	0.12	3.90	3.68
Staff Focus (SF)	3.41	0.09	3.41	3.30
Process Management (PM)	3.75	0.06	3.77	3.80

Hypothesis H2 and H3

In order to examine the applicability of TQM practices to higher education and to determine the most effective TQM practices on higher education performance, two regression models were obtained. The factor scores for the first six factors (leadership, strategic planning, stakeholder and market focus, measurement and analysis, staff focus and process management) were used as independent variables, and the factor scores of the seventh factor (operational performance) is used as dependent variables in the multiple regression. The stepwise procedure was employed to select variables with the significant level at 0.05. Table 3 presents a summary of the multiple regression analysis.

Examination of the results found in Table 3 revealed that stakeholder and market focus, staff focus, measurement and analysis and process management are the significant variables that affect the operational performance. The adjusted R² for the operational performance model equals 0.76, which means that 76% of the variance caused by the operational performance is explained by the independent TQM factors, rejecting the null hypothesis showing that there is a positive relationship between TQM and higher education operational performance.

Table 3. Multiple Regression Analysis

Dependent Variable:	Operational Performance
Multiple R	0.89
R-Square	0.80
Adjusted R-Square	0.34
Standard Error	0.13

Analysis of Variance			
	Df	Sum of Squares	Mean Square
Regression	6	0.25	0.15
Residual	2	0.05	0.08
F = 22.20		Significant F = 0.56	

Variables	Beta	T	Significant T
Leadership (LP)	0.02	1.92	0.26
Strategic Planning (SP)	- 0.13	- 0.07	0.81
Stakeholder and Market Focus (SM)	- 0.14	- 0.10	0.13
Measurement and Analysis (MA)	- 0.01	0.73	0.73
Staff Focus (DF)	- 0.10	0.72	0.72
Process Management (PM)	- 0.10	0.69	7.13

The regression results concerned with the effect of TQM practices on the performance of higher education agreed with most of the literature conducted in both manufacturing and service sectors. Samson and Terziovski (1998), who examined the TQM practices and operational performance of a large number of manufacturing companies, found that strong predictors of performance are the so-called 'soft' factors of leadership and human resources management and customer focus. They also found that the more systems and analytic oriented practices (information and analysis, strategic planning, process analysis) were not strongly and positively related to performance. Moreover, Hasan and Kerr (2003) concluded that top management and customer satisfaction are the most important independent variables in terms of their effect on organizational performance. Their sample included

organizations in various industrial/service classifications such as banks, construction companies and universities. Thou (2013) also concludes that the implementation of ISO 9001 is beneficial in terms of improving the operational performance. Managers should be aware that adoption of ISO 9001 is effective in organizations. It provides a framework for building a quality management system.

RESULTS OF ANOVA ANALYSIS

Analysis of variance (ANOVA analysis) was carried out to study the effect of the differences in academic ranks and years of experience of each respondent on assessing the applicability of specific TQM factors for Oman higher education institution. Table 4 presents a summary of ANOVA results.

Examination of the ANOVA results revealed that the academic rank of the faculty staff member (professor, associate professor, assistant professor and lecturer) affects their assessment of the applicability of two TQM factors (stakeholder and market focus and staff focus) to higher education, rejecting the null hypothesis. While years of experience of the staff members (less than 5, between 5 and 10, more than 10) did not affect the assessment of the applicability of TQM factors to higher education institution.

Table 4. Summary of ANOVA Results

TQM Factors	ANOVA Results
Leadership	The means of the respondents with different academic ranks and different years of experience are approximately equal.
Strategic Planning	The means of the respondents with different academic ranks and different years of experience are approximately equal.
Stakeholder and Market Focus	Differences exist among the means of the respondents with different academic ranks, where the means of the respondents with different years of experience are approximately equal.
Measurement and Analysis	The means of the respondents with different academic ranks and different years of experience are approximately equal.
Staff Focus	Differences exist among the means of the respondents with different academic ranks, where the means of the respondents with different years of experience are approximately equal.
Process Management	The means of the respondents with different academic ranks and different years of experience are approximately equal.

CONCLUSION

Based on the perception of the staff members of the Buraimi University College, the study showed TQM is applicable to higher education with different degrees. Leadership is the most applicable TQM factor to higher education, pointing out the positive relationship of the TQM factors to Oman higher education institutions. This could be considered as a good indicator to the success of implementing TQM in higher education because leadership is the driver of quality. From the regression analysis, stakeholder and market focus and staff focus are the significant elements that influence the operational performance of higher education. Therefore, Oman higher education institutions are required to give more attention to their stakeholders (internal and external) as well to their staff. They have to define their related requirements very well in order to improve their operational performance.

RESEARCH LIMITATION

The research is based on a sample of teaching staff of the faculty members of Buraimi University College. The academic staff of BUC was selected as a case study to represent staff at the institution. Despite the research results agreed with similar related literature, the results can be improved by increasing the sample size to include different staff and level at different universities and to explore other ISO 9001 factors applicable to Oman higher education institutions.

ACKNOWLEDGEMENT

The authors would like to thank the Dean of Buraimi University College and faculty members for their participation in the data collection.

REFERENCES

- [1] Anderson, M. and Sohal, S. (1999). A study of the relationship between quality management practices and performance in small business, *International Journal of Quality and Reliability Management*, Vol 16 No 9, 859- 877.
- [2] Ahire, S., Golhar, D., & Waller, M. (1996). Development and Validation of TQM Implementation Constructs. *Decision Sciences*, 27(1), 23–56. <http://dx.doi.org/10.1111/j.1540-5915.1996.tb00842.x>.
- [3] Becket, N. and Brookes, M. (2008). Quality Management Practice in Higher Education – What quality are we actually enhancing? *Journal of Hospitality, Leisure, Sports and Tourism Education* (Pre-2012). Oxford 7.1. pp 40-54.
- [4] Benner, MJ and Veloso, FM (2008). ISO 9001 practices and financial performance: A technology coherence perspective. *Journal of Operations Management*. Vol. 26, Issue 5 pp. 611-629
- [5] Besterfield, D. H., Besterfield-Michna, C., Besterfield, G. H., Besterfield-Sacre, M. (2003). *Total Quality Management*, 2nd Ed., Prentice Hall, New Jersey.
- [6] Birnbaum, R. and Deshotels, J. (1999). Has the Academy Adopted TQM? *Planning for Higher Education*. Vol 28 No 1, 29-37.
- [7] Black, S.A., & Porter, L.J. (1996). Identification of the Critical Factors of TQM. *Decision Sciences*, 27(1), 1-21. <http://dx.doi.org/10.1111/j.1540-5915.1996.tb00841.x>,
- [8] Bolton, A. (1995). A rose by any other name: TQM in higher education", *Quality Assurance in Education*, Vol 3 No 2, 13-18.
- [9] Brah, S.A., Wong, J.L., Rao, B.M. (2000). TQM and business performance in the service sector: a Singapore study, *International Journal of Operations and Production Management*, Vol 20 No 11, 1293-1312.
- [10] Burrows, A. and Harvey, L. (1992). Defining quality in higher education: the stakeholder approach, *The AETT Conference on Quality Education*, University of York.
- [11] Chen, Y. C. and Tam, W. M. (1997). Multi-models of quality in education, *Quality Assurance in Education*, Vol 5 No 1, 22-31.
- [12] Chepkech, W.K, and Cheluget, D.C. (2017). Effect of Total Quality Management practices on organizational performance in tertiary institutions, Kenya. *International Journal of Economics, Commerce and Management*. Vol. V, Issue 2.
- [13] Corbett, JC, Sancho, MM, and Kirsch, DA. (2005). The Financial Impact of ISO 9000 certification in the United States: An Empirical Analysis. *Management Science*. Vol. 51. pp 1046-1059
- [14] Crosby, P. (1979). *Quality Is Free*. New York, And Mentor.
- [15] Deming, W.E. (1986). *Out of the Crisis*. MIT Press: Cambridge, MA.
- [16] Dobrzański, L.A & Roszak, M.T (2007). Quality Management in university education. *Journal of Achievements in Materials and Manufacturing Engineering*. Vol 24, nr 2 pp. 223-226.
- [18] Docking, DS and Downen, RJ. (1999). Market interpretation of ISO 9000 registration. *The Journal of Financial Research*. Vol. 22 Issue 2 pp. 147-160
- [19] El-Tohamy, A.A. and Raoush, A.T. (2015). The impact of applying total quality management principles on the overall hospital effectiveness: An empirical study on the HCAC accredited governmental hospitals in Jordan. *European Scientific Journal*, Vol.11, No.10

- [20] EFQM. (2010). European Foundation Quality Model (EFQM 2010). [Online] Available: <http://www.efqm.org> (August 17, 2011)
- [21] Flynn, B.B., Schroeder, R.G., & Sakakibara, S. (1994). A Framework for Quality Management Research and an Associated Measurement Instrument. *Journal of Operations Management*, 11(4), 339-366. [http://dx.doi.org/10.1016/S0272-6963\(97\)90004-8](http://dx.doi.org/10.1016/S0272-6963(97)90004-8)
- [22] Harvey, L. (2002). Evaluation for what? Teaching in Higher Education, 7 (3), 245 – 263.
- [23] Hasan, M. and Kerr, R. M. (2003). The relationship between total quality management practices and organizational performance in service sector, *The TQM Magazine*, Vol 15 No 4, 286-291.
- [24] Hassan, M., Hassan, S., Sahukat, S. Nawaz, M. S. (2013). Relationship between TQM Elements and Organizational Performance: An Empirical Study of Manufacturing Sector of Pakistan. *Pakistan Journal of Commerce and Social Sciences*. 2013, Vol. 7 (1), 01-18
- [25] Holma, B. and Pakalna, D. (2007). Aspects of the Quality Management of the LIS Education. *INFORUM 2007: 13th Conference on Professional Information Resources Prague*, May 22-24, 2007.
- [26] Hoyle, D. (2009). *ISO 9000 Quality System Handbook, Using the Standards as A Framework for Business Improvement*. Sixth Edition. Butterworth-Heinemann.
- [27] ISO (2008). *ISO. Quality management principles*. Geneva.
- [28] Jaafreh, A.B. and Al-abadallat, A.Z. (2013). The Effect of Quality Management Practices on Organizational Performance in Jordan: An Empirical Study, *International Journal of Financial Research*, Vol. 4, No. 1.
- [29] Juran, J.M. (1988). *On planning For Quality*. London: Collier Macmillan
- [30] Juran, & F.M., Gryna. (1993). *Quality Planning and Analysis* (3rd Ed.). McGraw-Hill Book Company: New York.
- [31] KAAPS. (2010). King Abdullah II Award for Excellence in the private sector (KAAPS Booklet 2010). [Online] Available: <http://www.kaaps.jo/award-criteria> (August 25, 2011)
- [32] Kanji, G. K., Tambi, A. A., Wallace, W. 1999. A comparative study of quality practices in higher education institution in the US and Malaysia, *Total Quality Management*, Vol 10 No 3, 357-371.
- [33] Kaziliunas, A. (2010). The implementation of quality management systems in service organizations. *Public policy and administration*. Nr. 34, p. 71–82
- [34] Kaynak, H. (2003). The Relationship between Total Quality Management Practices and Their Effects on Firm Performance. *Journal of Operations Management*, 21(4), 405–435. [http://dx.doi.org/10.1016/S0272-6963\(03\)00004-4](http://dx.doi.org/10.1016/S0272-6963(03)00004-4)
- [35] Krajewski, L., Ritzman, L., and Malhotra, M. (2007), *Operations Management*, 8th Ed., Prentice Hall, New Jersey.
- [36] Krumwiede, K. R., & Charles, S. L. (2006). Finding the Right Mix. How to Match Strategy and Management Practices to Enhance Firm Performance. *Strategic Finance*, 87, 37-43.
- [37] Lakhe, R. R., Mohanty, R. P. (1995). Understanding TQM in service systems, *International Journal of Quality and Reliability Management*, Vol 12 No 9, 139-153.
- [38] Lewis, W.G., Pun, K.F., and Lalla, T.R.M. (2006). An Empirical Analysis of ISO 9004:2000 Maturity in ISO 9001 Certified SMEs. *The Asian Journal on Quality* 6(3): 190-203.
- [39] Marchese, T. (1993). *TQM: A Time for Ideas*. Change, Vol 25 No 3, 10-13.
- [40] Martin, A. (2017). ISO 9001 Impact on Operational Performance. *International Journal of Recent Advances in Multidisciplinary Research*. Vol. 04, Issue 03, pp.2407-2415.
- [41] McGuire, SJ. and Dilts, DM. (2008). The financial impact of standard stringency: An event study of successive generations of the ISO 9000 standard. *International Journal of Production Economics*. Vol 113 Issue 1
- [42] Michalska-Ćwiek, J. (2009). The quality management system in education - implementation and certification. *Journal of achievements in materials and manufacturing engineering*. Vol 37 Issue 2
- [43] Mizikaci, F. (2006). A systems approach to program evaluation model for quality in higher education, *Quality Assurance in Education*, Vol 14 No 1, 37-53.
- [44] Motwani, J. and Kumar, A. (1997). The need for implementing total quality management in education, *International Journal of Educational Management*, Vol 11 No 3, 131-135.
- [45] NIST. (2010). National Institute of Standards and Technology: the 2009-2010 Criteria for Performance Excellence (MBNQA). [Online] Available: www.nist.gov/baldrige/publications/criteria.cfm (September 16, 2011)
- [46] O'Donnell, F.J. and Duffy, A.H.B. (2002). "Modelling design development performance", *International Journal of Operations and Production Management*, Vol. 22 No 11, pp. 1198-1221.
- [47] Owlia, M. S. and Aspinwall, E. M. (1997). TQM in higher education: a review, *International Journal of Quality and Reliability Management*, Vol 11 No 3, 527-542.

- [48] Powell, T.C. (1995). Total Quality Management as Competitive Advantage: A Review and Empirical Study. *Strategic Management Journal*, 16, 15–37. <http://dx.doi.org/10.1002/smj.4250160105>
- [49] Prajogo, D.I., & Sohal, A.S. (2003). The Relationship between TQM Practices, Quality Performance, and Innovation Performance: an Empirical Examination. *International Journal of Quality and Reliability Management*, 20(8), 901-918. <http://dx.doi.org/10.1108/02656710310493625>
- [50] Pratasavitskaya, H. & Stensaker, B. (2010). Quality management in higher education – towards a better understanding of an emerging field. *Quality in Higher Education*, 16 (1), 37 – 50.
- [51] Rao, S. S., L. E. Solis, & Raghu-Nathan. (1999). A Framework for International Quality Management Research: Development and Validation of a Measurement. *Total Quality Management*, 10(7), 1047-1075. <http://dx.doi.org/10.1080/0954412997226>
- [52] Sakthivel, P.B. and Raju, R. (2006). Conceptualizing total quality management in engineering education and developing a TQM educational excellence model. *Total Quality Management and Business Excellence*, Vol 17 No 7, 913-934.
- [53] Sallis, E. (1993). *Total Quality Management in Education*, Kogan Page, London.
- [54] Samson, D. and Terziovski, M. (1998). The relationship between total quality management practices and operational performance, *Journal of Operations Management*, Vol 17, 393- 409.
- [55] Saraph, J.V., Benson, P.G., & Schroeder, R.G. (1989). An Instrument for Measuring the Critical Factors of Quality Management. *Decision Sciences*, 20, 810-829. <http://dx.doi.org/10.1111/j.1540-5915.1989.tb01421.x>
- [56] Schermerhorn, J. R. (2002). *Management*, 7th edition (Wiley, New York).
- [57] Sharma D. S. (2005). The association between ISO 9000 certification and financial performance. *Internat. J. Accounting*. 40(2):151–172.
- [58] Sila, I., & Ebrahimpour, M. (2005). Critical Linkages among TQM Factors and Business Results. *International Journal of Operations and Production Management*, 25(11), 1123-55. <http://dx.doi.org/10.1108/01443570510626925>.
- [59] Singels, J., Ruël, G. & van de Water, H. (2001). ISO 9000 series: Certification and performance. *International Journal Quality and Reliability Management*, 18 (1), 62 – 75.
- [60] Sohail, M. S., Rajadurai, J. & Rahman, N. A. A. (2003). Managing quality in higher education: A Malaysian case study. *International Journal of Educational Management*, 17 (4), 141 – 146.
- [61] Rao, S.S., L.E. Solis, and Raghu-Nathan. (1999). A framework for international quality management research: Development and validation of a measurement. *Total Quality Management* 10(7). 1047-1075.
- [62] Tam, M. (2001). Measuring quality and performance in higher education, *Quality in Higher Education*, Vol 17 No 1, 47- 54.
- [63] Tan, C.L, Hasnah, H., Sofri, Y., Noornina, D., Yee Nee, G., Ashaari, M.A. (2011). Perception of Concerns about the Quality Management System Implementation on Its Levels of Use. *International Journal of Business and Social Science*. Vol. 2 No. 17.
- [64] Terlaak A. & King A (2001). The effect of certification with the ISO 9000 quality management standard. A signaling approach: Retrieved from http://mba.tuck.dartmouth.edu/pages/faculty/andrew.king/docs/ISO_9KSignaling.pdf
- [65] Thuo, C.M. (2013). Adoption of ISO 9001 Quality Management Standard and Operational Performance of service organizations in Kenya. A Research Project submitted in partial fulfillment for the award of the Degree in Master of Business, University of Nairobi.
- [66] Vazzana, G., Elfrink, J. and Bachmann, D. P. (2000). A Longitudinal Study of Total Quality Management Processes in Business Colleges. *Journal of Education for Business*, Vol 76 No 2, 69-74.
- [67] Wilson, D. D., & Collier, D. A. (2000). An Empirical Investigation of the Malcolm Baldrige National Quality Award Causal Model. *Decision Science*, 31(2), 361- 390. <http://dx.doi.org/10.1111/j.1540-5915.2000.tb01627.x>.
- [68] Winn B. A. and Cameron K. S. (1998). Organizational quality: an examination of the Malcolm Baldrige National Quality framework, *Research in Higher Education*, Vol 39 No 5, 419-512.
- [69] Zabalawi, I., Majdoubeh, A. and Santarisi, N. (1998). TQM in higher education, Arab Regional Conference on Higher Education, Beirut.
- [70] www.unesco.org
- [71] www.jica.go.jp
- [72] www.oaaa.edu.om