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Revista de Antropología, Ciencias de la Comunicación y de la Información, Filosofía, Lingüística y Semiótica, Problemas del Desarrollo, la Ciencia y la Tecnología

Año 34, 2018, Especial N° 16

Revista de Ciencias Humanas y Sociales
ISSN 1012-1587/ ISSNe: 2477-9385
Depósito Legal pp 198402ZU45



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Opción, Año 34, Especial No.16 (2018): 638-652
ISSN 1012-1587/ISSNe: 2477-9385

# The aspects of Total Quality Management in higher education institutions

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## Abstract

This study aims to identify the most important aspects of total quality management in the Community College of Qatar (CCQ) and attention paid by decision-makers to these aspects. The study adopted a quantitative approach using a self-reported questionnaire for collecting the data from both academician and administrative staff at CCQ (Critical Care Quarterly). The results revealed that TQM (Total Quality Management) at CCQ could be classified into four dimensions named quality management system recognition, stakeholders focus, leadership and vision, and measuring and continues improvement. In conclusion, the descriptive statistics of the data shows that these aspects have gained good attention from the management of CCQ.

**Keywords**: Total Quality Management, Education, Statistics.

Recibido: 04-12--2017 •Aceptado: 10-03-2018

# Los aspectos de la Gestión de Calidad Total en instituciones de educación superior

**Resumen**

Este estudio tiene como objetivo identificar los aspectos más importantes de la gestión de la calidad total en el Community College of Qatar (CCQ) y la atención que los responsables de la toma de decisiones prestan a estos aspectos. El estudio adoptó un enfoque cuantitativo utilizando un cuestionario autoinformado para recopilar datos tanto del personal académico como del personal administrativo en CCQ (Cuidados Trimestrales). Los resultados revelaron que la TQM (Gestión de calidad total) en CCQ podría clasificarse en cuatro dimensiones denominadas reconocimiento del sistema de gestión de calidad, enfoque de los interesados, liderazgo y visión, y medición y mejora continua. En conclusión, las estadísticas descriptivas de los datos muestran que estos aspectos han recibido una buena atención por parte de la gerencia de CCQ.

**Palabras clave:** Gestión de la Calidad Total, Educación, Estadística.

## 1. INTRODUCTION

The concept of quality in education is quite new and until now not a well-developed field of study. There is no unified terminology and the term quality of education is understood in different ways by different authors (Shauchenka & Busłowska, 2010). TQM is a systematic quality improvement approach for firm-wide management for the purpose of improving performance in terms of quality, productivity, customer satisfaction, and profitability (Sadikoglu & Zehir, 2010). Thus, the concept has attracted the attention of many researchers from different

areas. The focus of these researches was on using TQM as a tool for maintaining competitive advantage and ensuring the overall effectiveness in the manufacturing sector (Alsughayir, 2014). However, there was still a call for its applicability to work in educational institutions. The literature indicates that there is a need for using TQM in educational institutions (Asad et al., 2018). Consequently, the concept has made its way into higher education institutions (HEIs) in many developed countries.

The success of several significant companies in applying TQM principles as a way out of the crisis, stimulated higher educational institutions to follow similar management strategies (Adedoyin and Okere, 2017; Yanga & Yenb, 2016). For example, in the US, the success of implementing TQM in large industrial corporations has influenced higher educational institutions to adopt it. They were influenced by the critical state of education in the 1980s in terms of student grades, funding, and complaints from employers and parents. Thus, many higher educational institutions started implementing TQM in the early 1990s and have been successful. In UK higher education, the progress of TQM is rather slow, with examples represented by only a few new universities. However, these institutions have benefited from a TQM process similar to their counterparts in the US, such as improved student performance, better services, reduced costs and customer satisfaction (Alhawiti and Abdelhamid, 2017). Additionally, the empirical studies of investigating the role of TQM in both educational and industrial sectors have mainly been conducted in industrialized countries such as Western Europe, USA, and Australia. Less attention has been given to the developing countries, in particular to the Arab region. Therefore, this study helps in providing a

picture of the actual practices at one of the fastest economies in the Arabic region. Thus, the paper aims to answer the following questions.

Q1: what are the main aspects of TQM in the community college of Qatar?

Q2: what are the levels of implementing the practices of TQM in the community college of Qatar?

## 2. EDUCATIONAL INSTITUTIONS IN QATAR

Qatar is considered one of the fast developing regions, which are quickly growing commercial and industrial hubs within emerging economies that have achieved high economic growth rate. The government of Qatar published in 2008 Qatar National Vision 2030, which reflect the agenda of transforming the state into an advanced country. Human capital development was a part of the economic progress of the vision. The Human Development Index (HDI) for Qatar rose by 0.64% annually and is recorded at 0.910 by 2009, which gives Qatar a rank of 33rd out of 182 countries (Klugman, 2009). the literacy rate of the country rose from 80.80 % in 2004 to 93.1% in 2009, and the country per capita education expenditure rose from $66 in 2004 to $3460 in 2009 (Khodr, 2011). The sector of higher education in Qatar has experienced significant reforms to establish itself as a regional hub and prepare its own citizens for higher education. These reforms reflect Qatar's desire to

harness its present and significant economic wealth and global orientation to drive a future knowledge-based economy (Qureshi et al., 2017).

## 3. METHODOLOGY

The study adopts a survey questionnaire design using an email survey. The email survey requires that the respondents have e-mail access and the researcher has access to the targeted network (Hair, et al., 2007). Interestingly, all CCQ staff have vialed and accessible email addresses. Therefore, the email survey is an appropriate for this study. The questionnaire is adopted from previous related literature to measure the variables of this study. It contains two sections, the first section represents the sample characteristics (Gender, position, experience and qualification), while the second section covers the items of TQM. Total quality management implementation will be measured using 64 items adapted from (Almurshidee, 2017). The respondents are asked to rate the extent to which they agree/disagree with the statements of the questionnaire on five-point Likert scale ranged from 1 (Strongly disagree), 2 (Disagree), 3 (Neutral), 4 (Agree) and 5 (Strongly agree). Additionally, the study uses exploratory factor analysis to identify the most important factors that create the TQM practices. Factor analysis is the most commonly used test to determine the construct validity of the data (Bhattacherjee, 2012). It takes a large set of variables and looks for a way the data may be reduced or summarized using a smaller set of factors or components (Pallant, 2011).

## 4. RESULTS

Analyzing the data requires the data should be detected to ensure its ability to reflect the phenomena under study. Screening the data considers aspects such as the response rate, non-response bias, and outliers. All previous tests have conducted and data validity and reliability are confirmed. The following sections discuss the results of analyzing the data.

### 4.1. Factor analysis for TMQ practices

Table 1 below illustrates the results of factor analysis. For the purpose of determining whether factor analysis was appropriate for TQM, KMO and Bartlett tests were first applied. The results in Table 1 indicate that the KMO measure for the items has a value of 0.850 which indicated a meritorious adequacy Hair et al. (2010), and thus was appropriate for using factor analysis. Moreover, the value of Bartlett sphericity was also very large (3438.500) and its associated significance level is very low (0.000). Both the KMO measure and the Bartlett test of sphericity results showed that the items used in the instrument obviously met the conditions for factor analysis. This meant that factor analysis could be applied for the independent variable (Watson, 1998).

Table 1. O and Bartlett's Test for TQM Practices

| KMO and Bartlett's Test | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .850 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 3438.500 |
| | df | 253 |
| | Sig. | .000 |

According to the rule of thumb of Hair, et al. (2010), for practical significance, the factor loadings should have values greater than 0.50. However, they recommended that the sample size could be a determinant of the accepted value of factor loading. In other words, when the sample size was small, a higher value is required for significantly factor loading. Table 2 below summarizes the relationship between sample size and factor loadings values according to (Hair et al., 2010).

Table 2. The Relationship between Sample Size and Factor Loadings Values

| Factor loading | Sample size needed for significance |
|---|---|
| 0.30 | 350 |
| 0.35 | 250 |
| 0.40 | 200 |
| 0.45 | 150 |
| 0.50 | 120 |
| 0.55 | 100 |
| 0.60 | 85 |
| 0.65 | 70 |
| 0.70 | 60 |
| 0.75 | 50 |
| Source: Hair, et al. (2010: p.116) | |

Following the criteria listed in Table 2 above, the factor loading values for the analysis in this study should be higher than 0.50. This

because of the sample size of this study is 138. Therefore, Items exhibiting low factor loadings (< 0.50), high cross loadings (> 0.50), or low communalities (< 0.30) were candidates for elimination (Hair et al., 2010). Conducting factor analysis resulted in four factors that explained a variance of 75.095%. These factors namely Quality management system recognition (8 items), stakeholders focus (5 items), Leadership and vision (5 items), and Measuring and continue improvement (5 items). Some items have been deleted because of either low factor loading, low commonalities, or high cross loading. (For the loading of items, refer to table 3).

Table 3. Rotated Component Matrix[a]

| | Component | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Q35 | .820 | | | |
| Q47 | .775 | | | |
| Q46 | .766 | | | |
| Q38 | .764 | | | |
| Q21 | .715 | | | |
| Q40 | .694 | | | |
| Q18 | .625 | | | |
| Q27 | .592 | | | |
| Q64 | | .851 | | |
| Q63 | | .817 | | |
| Q57 | | .766 | | |
| Q60 | | .757 | | |
| Q61 | | .737 | | |
| Q4 | | | .784 | |
| Q1 | | | .740 | |
| Q2 | | | .695 | |
| Q16 | | | .692 | |
| Q53 | | | .540 | |
| Q34 | | | | .758 |
| Q24 | | | | .636 |
| Q51 | | | | .628 |
| Q49 | | | | .606 |
| Q43 | | | | .576 |
| Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. | | | | |
| a. Rotation converged in 7 iterations. | | | | |

### 4.2. Descriptive analysis of the constructs

As noted early, the study aims to measure the levels of TQM implementation in the Community College of Qatar. A descriptive statistics method was used to answer the questions of the study as follow: This section considered the activities undertaken by the college understudy to adopt the TQM practices. First, the dimension TQM recognition scored a mean value of 3.19 for all items that measuring this concept with a standard deviation of 1.102. Because the mean value is above that of the average of 5-point scale (2.5), it can be accepted that these practices have been given acceptable attention. Table 4 below illustrates the importance of each item of the TQM recognition.

Table 4 (Descriptive Statistics of TQM recognition)

| | N | Mean | | Std. Deviation |
|---|---|---|---|---|
| | Statistic | Statistic | Std. Error | Statistic |
| The college has clear procedures for employees' rewards and applies them transparently. | 69 | 2.87 | .141 | 1.175 |
| The college has well defined academic and administrative processes and performance measures as well as policies. | 69 | 3.09 | .146 | 1.210 |
| The college meets the expectations of our students and employees. | 69 | 3.14 | .148 | 1.228 |
| The college is committed to Quality Management Systems to establish our quality system to a level to be certified by ISO 9000. | 69 | 3.22 | .113 | .937 |
| The college benchmarks our academic and administrative processes with other institutions. | 69 | 3.26 | .136 | 1.133 |
| The college has cross-functional team and supports team-work. | 69 | 3.29 | .124 | 1.030 |
| The college has a reward program to recognize employee Quality Management | 69 | 3.30 | .139 | 1.154 |

| | | | | |
|---|---|---|---|---|
| Systems efforts and their participation to the activities related to the college's mission. | | | | |
| Curriculum and academic programs are evaluated and updated every year | 69 | 3.35 | .115 | .952 |
| Overall | 69 | 3.19 | | 1.102 |

n = 69. Five -point Likert scale, in which 1 means strongly disagree, and 5 means strongly agree

Second; the descriptive analysis of stakeholders' focus resulted in a mean value of 3.384 for this concept with a standard deviation of 1.1056. The given mean value indicated that there is an agreement that these practices are implemented by CCQ, which indicates that CCQ pays attention to its internal and external stakeholders. Table 5 below shows the mean and standard deviation values for each item.

Table 5. Descriptive Statistics of stakeholders focus

| | N | Mean | | Std. Deviation |
|---|---|---|---|---|
| | Statistic | Statistic | Std. Error | Statistic |
| The college follows up the career path of our graduates. | 69 | 3.28 | .134 | 1.110 |
| The college has some organized efforts to identify the academic and administrative needs of our employees. | 69 | 3.28 | .144 | 1.199 |
| The college supports the extra-curricular activities for students. | 69 | 3.35 | .143 | 1.186 |
| The college takes into consideration the changing needs of the business world. | 69 | 3.39 | .119 | .988 |
| The college regularly conducts surveys on job satisfaction of the employees. | 69 | 3.62 | .126 | 1.045 |
| Overall | 69 | 3.384 | | 1.1056 |

n = 69. Five -point Likert scale, in which 1 means strongly disagree, and 5 means strongly agree

Third; the descriptive analysis of the five items of Leadership and vision resulted in an overall mean value of 3.342 and a standard

deviation of 1.1188. This concept is above the average level of the 5-point scale, which indicated that the majority of respondents believe that the top management and vision of CCQ support the implementation of TQM practices. Table 6 below provides the mean and standard deviation values for each item.

Table 6. Descriptive Statistics of Leadership and vision

| | N | Mean | | Std. Deviation |
|---|---|---|---|---|
| | Statistic | Statistic | Std. Error | Statistic |
| The top management discusses many quality related issues on Quality Management Systems in their management meetings. | 69 | 3.17 | .129 | 1.070 |
| The top management has knowledge about Quality Management System (QMS) and its implementation. | 69 | 3.32 | .128 | 1.064 |
| The top management is well aware of the quality related concepts, new work environment and new skills in the implementation of Quality Management Systems. | 69 | 3.33 | .148 | 1.233 |
| Financial resources are available for employee's education and training in our college. | 69 | 3.35 | .137 | 1.135 |
| Our vision effectively encourages our staff to improve the performance of our students and our institution. | 69 | 3.54 | .132 | 1.092 |
| Overall | 69 | 3.342 | | 1.1188 |

n = 69. Five -point Likert scale, in which 1 means strongly disagree, and 5 means strongly agree

Fourth; Measurement and continues improvement process scored a mean value of 3.328 and standard deviation of 1.0696 as shown in Table 7 Such results indicated that CCQ maintains its performance and implements practices toward continues improvements.

Table 7. Descriptive Statistics of Measurement and continues improvement process

| | N | Mean | | Std. Deviation |
|---|---|---|---|---|
| | Statistic | Statistic | Std. Error | Statistic |
| The college has an established suggestion system to improve the process by the employees. | 69 | 2.97 | .137 | 1.137 |
| Standard performance measures are used to evaluate the performance of academic units such as colleges, institutes and departments. | 69 | 3.36 | .132 | 1.098 |
| Special training for work-related skills is provided to all employees. | 69 | 3.39 | .136 | 1.127 |
| The needs and suggestions from the business world are thoroughly considered in the design of curriculum and new academic program. | 69 | 3.43 | .119 | .992 |
| Appointments to the administrative and academic positions are based on the necessary skills required by the positions. | 69 | 3.49 | .120 | .994 |
| Overall | 69 | 3.328 | | 1.0696 |

n = 69. Five -point Likert scale, in which 1 means strongly disagree, and 5 means strongly agree

The previous tables provide an indicator that CCQ maintains a good performance in all TQM practices. All dimensions scored mean values over 3 of 5, which could be considered as a good sign of good implementation of TQM practices. The highest value is scored for stakeholders' focus, then leadership and vision, then continues the improvement process and finally, the lowest score is observed for total quality management recognition (Thach, 1995).

## 5. CONCLUSION

This paper studied the current practices of TQM in Community College of Qatar. The previous literature showed that there is a lack of studies consider the practices of TQM in an educational field. Although there are few studies, these studies focus mainly on developed countries. There is no evidence on the actual practices of TQM in educational institutions in Qatar. Therefore, this study represents the first study consider this issue in Qatar. The study concluded that the main practices implemented in CCQ regarding TQM management are quality management system recognition, stakeholders focus, Leadership and vision, and Measuring and continues improvement. The descriptive statistics show that these practices have received a considerable attention from the decision makers of CCQ. Therefore, it provides a good sign of the educational system adopted by the college. This could be an indicator that CCQ might gain good advantages from implementing such practices. Although previous contributions of this paper, it suffers from some limitations. First, the study used self-reported questionnaire which might lead to desirability bias. Second, it focuses on only one institution, which makes it difficult to generalize the results of the study. In addition to the contributions, the researchers recommended future studies to compare the result of this study with other studies in a similar context. Additionally, there is a need to study the effects of implementing TQM practices on aspects such as moral motivations, satisfaction and individual and organizational performance.

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opción
Revista de Ciencias Humanas y Sociales

Año 34, Especial N° 16, 2018

Esta revista fue editada en formato digital por el personal de la Oficina de Publicaciones Científicas de la Facultad Experimental de Ciencias, Universidad del Zulia.
Maracaibo - Venezuela

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