

A Proposed Measurement Instruments for Total Quality Management Practices in Higher Education Institutions

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Received: October 10, 2019

Accepted: November 5, 2019

Online Published: December 23, 2019

doi:10.5430/rwe.v10n5p36

URL: <https://doi.org/10.5430/rwe.v10n5p36>

Abstract

The purpose of this paper is to provide a comprehensive Total Quality Management (TQM) practices measurement instruments in Higher Education Institutions (HEIs) based on previous studies. HEIs just like other industries are facing challenges in order to survive. Today, quality has become important and a must for every marketable product or service due to the business world becomes more and more complex and competitive. In this context as a management process, TQM has been accepted to cope with the changes in market environment and to focus on continuous quality improvement. Many authors believed that the principles of TQM can contribute to the continuous improvement of HEIs. This paper provides a measurement instruments for TQM practices that emphasis on continuous improvements for quality measurement in HEIs. This instrument is based on a comprehensive study of previous studies of TQM practice measurement in education. Analysis focuses on customer orientation, continuous improvement, and employee engagement at all levels. This paper proposed nine dimensional measurement instruments that can be used as self-assessment in HEI. These nine dimensions are: leadership or top management commitment; strategic planning; customer focus and satisfaction; measurement, analysis, and knowledge management; human resources management; system and management processes; course delivery; campus facilities; and benchmarking and partnership. Measurement instruments were selected based on number of dimensions used from previous study and customers' perception on dimensions of quality, their rating of importance and their overall evaluation of the service provider.

Keywords: total quality management, higher education institutions, measurement instruments

1. Introduction

Total quality today is about an effort in which every individual and every organization involves, not just product or service reliability. Quality has been recognized by many organizations and companies as a strategy to compete and the key for survival in most major businesses in the world and quality improvement (Fotopoulos & Psomas, 2009; Abdullah, Jegak Uli & Tari', 2008; Calvo-Mora, Leal, & Rolda n, 2006; Romadhani Ardi, Akhmad Hidayatno, & Teuku Yuri M. Zagloel, 2012; Nawelwa, Sichinsambwe, & Mwanza, 2015; Psomas and Antony, 2017). The forces of quality improvement come from two sources; the ever-changing needs and expectations of customers, and the competitive forces.

Nowadays, quality become important and a must for every company or organization to market their products or services, due to the business world becomes uncertainty and more competitive. In today's environment requires Total Quality Management (TQM) concepts and methodology to achieve quality and be competitive (Calvo-Mora, et al., 2006; Ihsan, 2017). Consequently, every organization has to strive and give more attention for excellent quality. Moreover, they have to realise that this is the only way to put themselves ahead of their competitor or at least to equip them with an ability to compete with others. They have to accept that without quality they cannot even survive and definitely will be left behind (Psomas and Antony, 2017).

In today business environment, TQM has developed as an important and strategic weapon to compete in the industry. Many organisations also realised TQM is the new way of managing their organisations for the future. TQM is considered beyond in its application than assuring product or service quality, it is an approach of managing the whole business or organisation to ensure complete customer satisfaction at every level, internally and externally (Psomas and Antony, 2017). Obviously, we cannot avoid from some issues in implementing TQM practices. Among the

issues address by previous researchers on implementation on TQM in higher education are concerns about ratings, accreditation, assessment, and rankings are getting serious attention from the policy makers, government, and planners. This is impacting higher education institutions (HEIs) and they are all required to improve results and outcomes, become more effective, efficient, and customer oriented, so they should be able to increase their competitive edge (Sahney et al., 2008).

This paper aims to provide a TQM measurement instruments for self-assessment that stress on continuous quality improvements in HEIs. Based on a theoretical study of the dimensions of TQM in this area, this paper presents on the literature research from the previous study. TQM principals, philosophies and analysis of TQM adoption in HEIs provide the theoretical and practical background for this proposed measurement instruments.

2. An Overview of Quality

The word “quality” has been derived from the Latin word *qualis*, meaning, “what kind of” (Sahney, et al., 2004). Quality is a quite difficult and elusive term to define because of wide variety of meanings and connotations attached to it. Many of the gurus appear to propose and present diverse solutions to the issues of quality management and control. Actually, they are talking about the same thing but they use different terms. The most notable gurus on quality are Philip B. Crosby (1987), W. Edwards Deming (1991), and Joseph M. Juran (1982). Crosby (1987), defined quality as “conformance to requirement”; Deming (1991), defined as “a predictable degree of uniformity and dependability at low cost and suited to the market”; and Juran (1982) defines as “fitness for use”. Although there were differences in define quality, but they agreed that there are no simple ways to quality, no easy solution, and that particular improvement requires full top commitment and support, training and involvement of all employees.

Most customers have a difficult time when come to define quality, but they know it when they see it (Abdullah, Uli & Tari', 2008; Nawelwa, Sichinsambwe, & Mwanza, 2015; Zhao, & Lan, 2017). For example, if you want to buy a running shoe, you probably know which manufacturer produce good quality of shoes, but precisely you have difficulty to define your standard. Others also have different views on which running shoes are of good quality. The difficulty of defining quality exists in both manufacturing and service organizations. Just imagine, how difficult to define quality for products and services such as banking services, university facilities, school classes, or online activities. It would become complicated when the meaning of quality has changed over time.

Based on the discussion above, there is no single common or universal definition of quality. Some of the people may seen quality as “performance to standards” and others view it as “meeting the customer’s needs” or “satisfying the customer”. As a conclusion, based on a thorough literature review by Garvin (1988) in Lagrosen, Seyyed-Hashemi, & Leitner, (2004), has classified the definitions of quality into five major categories: (a) **Transcendent definitions**. Quality are subjective and personal. They are about to concepts such as delicious and beauty. (b) **Product-based definitions**. Quality is seen as can be measured variable. Characteristics of the product are used as the bases for measurement. (c) **User-based definitions**. Quality is about customer satisfaction. These definitions are personals and probably partly subjective. (d) **Manufacturing-based definitions**. Quality is seen as conformance to requirements and specifications. (e) **Value-based definitions**. Quality is seen as in relation to costs by providing good value for costs.

3. An Overview of TQM

The concept of quality has existed for many years, though it’s meaning has changed and evolved over time. During the 1980s, TQM has gained acceptance as a management tool. It builds on the ideas of W. E. Deming, J. Juran, K. Ishikawa, and others who introduced and developed the idea of quality beyond its prior emphasis on statistical control. Its popularity can be seen from the range of quality awards received at the national and international levels. The idea and popularity of the “quality movement” has expanse from manufacturing based into the service sector and also into public organizations (Sahney et al., 2008; Venkatraman, 2007).

In order to understand the TQM movement, we have to look at the philosophies of notable individuals who have shaped the evolution of TQM. Their teachings and philosophies have contributed to our knowledge and understanding of quality today. Their contributions are summarized in Table 1.

Table 1. Quality Gurus and their contributions

Quality Guru	Main Contribution
Walter A. Shewhart	<ul style="list-style-type: none"> Contributed to understanding of process variability. Developed concept of statistical control charts.
W. Edwards Deming	<ul style="list-style-type: none"> Stressed management's responsibility for quality. Developed "14 Points" to guide companies in quality improvement.
Joseph M. Juran	<ul style="list-style-type: none"> Defined quality as "fitness for use". Developed concept of cost of quality.
Armand V. Feigenbaum	<ul style="list-style-type: none"> Introduced concept of total quality control.
Philip B. Crosby	<ul style="list-style-type: none"> Coined phrase "quality is free". Introduced concept of zero defects.
Kaoru Ishikawa	<ul style="list-style-type: none"> Developed cause-and-effect diagrams. Identified concept of "internal customer".
Genichi Taguchi	<ul style="list-style-type: none"> Focused on product design quality. Developed Taguchi loss function.

Toremen, Karakus, & Yasan (2009) define TQM as a management process and a set of disciplines that are co-ordinated to ensure that the organization consistently meets and exceeds customer requirements. TQM engages all divisions, departments and levels of the organization. While Venkatraman, (2007), describes TQM in two main notions - continuous improvement and the tools and techniques/methods used. In general, TQM encompasses many business philosophies and management and its focus gets shifted based on the scenario where TQM is applied. TQM philosophy revolves around the customer, regardless whether they are in industry or higher education. As conclusion, TQM is an approach of managing for the future, and is beyond in its application than just ensuring the quality of product or service. It is also a way of managing business processes and people to ensure complete customer satisfaction at every level, internally and externally. The combination of TQM practices and effective leadership, will be resulting in an organisation doing the right things right, first time. The relationship of customer and supplier interfaces, both externally and internally is the core of TQM practices, and at each interface lie a number of processes. This relationship must be encompassed by commitment to quality, disseminate of the quality message, and recognition of the need to change the culture of the organisation to create total quality. These are the bases of TQM practices, and supported by the top management, processes and systems in the organization.

4. TQM in Higher Education Institutions

TQM implementation awareness level has increased considerably over the past few years. TQM in education have been discussed in many platforms and consider as a priority issue today for research and analysis (Khan, et al., 2016; Psomas & Antony, 2017). In order to understanding the conceptualization, assessment and measurement of quality in education, a number of studies are being conducted. Although TQM implementation established predominantly in industry, there has been a strong push for adopting TQM in educational organisations (Toremen, et. al., 2009; Venkatraman, 2007; Owlia and Aspinwall, 1998; Srikanthan and Dalrymple, 2004). Many researchers (Calvo-Mora, et al., 2006; Sirvanci, 2004) believed that the TQM principles can definitely contribute to the continuous improvement of HEIs, in particular towards better curriculum.

Many institutions of higher education and universities have committed themselves to TQM practices. A review of literatures on TQM experiences in the institutions also indicated that a strong positive relationship between the implementation of TQM practices and organization performance, student performance (Mehra dan Rhee, 2009; Calco-Mora, 2006; Sakthivel, *et al.*, 2005). It also can be implemented in higher education to improve student potential and curriculums reform (Toremen, *et al.*, 2009; Venkatraman, 2007; Badri, *et al.*, 2006; Calvo-Mora, *et al.*, 2006; Sirvanci, 2004; Michael, Sower, Motwani, 1997).

Managing and administrative area were the most related studies carried-out by the past authors (Calvo-Mora et al., 2006; Sakthivel, and Raju, 2006; Sahney, Banwet, Karunes, 2008; Badri, Selim, Alshare, Grandon, Younis, Abdulla, 2006; Robson, Yarrow, and Owen, 2005; Osseo-Asare, Longbottom, and Murphy, 2005; de Guzman, and Torres, 2004; Osseo-Asare and Longbottom, 2002; Aly and Akpovi, 2001; McAdam and Welsh, 2000; Kanji, Tambi and

Wallace, 1999; Kanji and Tambi, 1999; Winn and Cameron, 1998; Elmuti et al., 1996; Zink and Schmidt, 1995; Ho and Wearn, 1995), followed by teaching and learning (Mehra, and Rhee, 2009; Owlia and Aspinwall, 1998; Owlia and Aspinwall, 1996; Zairi, 1995). There are three main focus in defining TQM in higher education; (1) customer satisfaction (Sahney *et al.*, 2008; Venkatraman, 2007) – view quality as transformation of internal process; (2) process orientation; and (3) continuous improvement.

5. Developing TQM Measurement Instruments in Higher Education

Although education and industry differ from business process perspectives, some of their results such as focussing on building flexibility and improving customers base in a dynamic environment are very much similar (Venkatraman, 2007; and Srikanthan and Dalrymple, 2002). While Stensaasen (cited in Venkatraman, 2007) mentioned that HEIs can be considered also as industries. They provide the service with the student’s as incoming raw materials and processing through teaching and learning and turned out into graduates as the finished products.

Previous studies in manufacturing, services and HEIs, showed that TQM practices based on TQM instruments. These instruments were derived from key factors for the successful implementation of TQM. These factors provided by the contributions of quality leaders, formal assessment models and measurement studies (Abdullah, et al., 2008; Umaru, & Ombugus, 2017) (Table 2). There is a consensus that TQM practices is a way of managing an organization to improve its effectiveness and overall performance, and less consensus on the primary dimensions of TQM practices. Based on Table 2, no uniformity of TQM practices dimensions view exists, although some of them can be seen mostly used by previous study. Such as leadership or top management commitment, customer focus and satisfaction, human resource management and process and system management. To date, TQM has given different meanings to different people (Zhang, Waszink, and Wijngaard, 2000; Utibayeva et al., 2019).

Table 2 below showed the most widely used TQM practices according to measurement instruments in HEIs. Although they studied in same sector in education, they had discussed in different ideas and findings from authors to other authors, although there are general themes formed as follows: leadership; basic and strategy; customer focus; measurement, analysis & knowledge management; management of people; and system processes and management (Ahmad Jusoh, 2008; Badri, et al., 2006; Calvo-Mora, et al., 2006; Osseo-Asare, et al., 2005; Robson, et al., 2005; Baidoun, 2003; Osseo-Asare and Longbottom, 2002). Through the literature review, conceptual, empirical and prescriptive practitioners, these study identified nine of the following TQM practices instruments: (1) leadership or top management commitment; (2) strategic planning; (3) customer focus and satisfaction; (4) measurement, analysis and knowledge management; (5) human resource management; (6) process and system management; (7) course delivery; (8) campus facilities; and (9) benchmarking and partnership.

Table 2. TQM practices according to measurement instruments in HEIs

Study	Quality Management Measures								
	Leadership / Top Management Commitment	Strategic Planning	Customer Focus and satisfaction	Measurement, Analysis, Knowledge Management	Human Resource Management	Process and System Management	Course delivery	Campus facilities	Benchmarking and Partnership
Psomas and Antony, (2017).	✓	✓	✓	✓	✓	✓			
Romadhani Ardi, Akhmad Hidayatno, and Teuku Yuri M. Zagloel (2012).	✓		✓				✓	✓	

Mehra, and Rhee, (2009)			✓		✓	✓			
Sahney, Banwet, Karunes, (2008)	✓	✓	✓	✓				✓	
Ahmad Jusoh (2008)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Badri, Selim, Alshare, Grandon, Younis, Abdulla, (2006)	✓	✓	✓	✓	✓	✓			
Sakthivel, and Raju, (2006)	✓		✓	✓			✓	✓	✓
Calvo-Mora, Leal, and Rolda n, (2006)	✓	✓			✓	✓			✓
Lim and Tan (2005)	✓	✓	✓	✓	✓	✓			
Robson, Yarrow, and Owen, (2005)	✓				✓	✓			
Osseo-Asare, Longbottom, and Murphy, (2005)	✓	✓	✓	✓	✓	✓			
Sakthivel, Rajendran, and Raju (2005)	✓		✓				✓	✓	✓
Guzman, and Torres, (2004)	✓	✓	✓		✓	✓			
Osseo-Asare Jr, and Longbottom, (2002)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Kanji and Tambi, (1999)	✓	✓	✓	✓	✓	✓			
Kanji, Tambi, and Wallace, (1999)	✓		✓	✓	✓	✓			
Owlia, and Aspinwall, (1998)					✓	✓	✓		
Win, and Cameron, (1998)	✓	✓	✓	✓	✓	✓			
Owlia, and Aspinwall, (1997)	✓	✓	✓	✓	✓	✓			
Elmuti, Kathawala, and Manippallil, (1996)	✓	✓	✓	✓	✓	✓			

The role of the nine core dimensions of TQM practice measurement instruments in higher education institutions is described as follows:

(1) Leadership or Top Management Commitment

This dimension describes leadership or top management commitment as they should be examined the leadership and involvement of top management in establishing and maintaining customer focus, setting and delivering insights, values, directions, high expectation and a leadership system that will promote excellence in performance. It should also examine the internal systems and leadership policies that will affect employees, students and public responsibilities, creating partnerships with other stakeholders such as industry, parents, and the general public. The leadership effectiveness of improvements can be achieved through styles of management that include input from a comprehensive feedback system from internal and external stakeholders.

(2) Strategic Planning

This dimension emphasizes that the sustainability of long-term tertiary HEIs and competitive environments are the key strategic issue that should be an integral part of the overall planning of HEIs. This element identifies how the institution sets strategic direction and develops strategic objectives to guide and strengthen the performance of all institutions. This element also identifies how the institution transforms strategic goals into action plans and how the institution transports a whole set of strategic objectives and action plans at all levels of the institution.

(3) Customer Focus and Satisfaction

This dimension needs to identify how the institution identify the needs, requirements, expectations and priorities of students, stakeholders and market focus. This includes specifying different performance measurements and how the goals can be achieved. Some achievement steps and decision can be made based on student satisfaction surveys, student dialogue and forums sessions, evaluation of course delivery effectiveness, and industry needs and satisfaction surveys. This dimension also identifies how HEIs build the relationships with students and stakeholders and determine the key factors that attract students and bring to the satisfaction of students and stakeholders.

(4) Measurement, Analysis and Knowledge Management

In this dimension, it should identify the management and the effectiveness of data usage and information to support overall goals related to performance excellence. It should also ensure the reliability and access of essential information required for day-to-day operations management. It will also focus on making analysis of facts and information and respond to the situation quickly and effectively. This element also needs to identify the management and effectiveness of knowledge management and all information on basic performance and comparative information, as well as how such information is analyzed and used to optimize the performance of the institution.

(5) Human Resource Management

This dimension is also known as education and training, which focuses on human resource practices. This dimension is one of the most important factors for successful TQM implementation. Employees should be regarded as valuable resources, eligible to receive education and training throughout their careers. The managerial, supervisory, and employee staff should receive quality education and training such as quality awareness and quality management education. This dimension needs to identify how staff and training developments are in line with the objectives of the institution. It will also identify efforts to build and maintain a conducive climate for achievement of excellence, comprehensive participation and organizational growth. Among the strategic thrusts of this dimension are human resource development such as employee recruitment, training and career development, staff performance and quality recognition and work environment.

(6) Process and System Management

This dimension needs to identify the main aspects of process management, including student curriculum design, course delivery, business and services operations. It should identify how the main process is designed innovatively, effectively managed and constantly improved. Results of performance in this dimension will identify the performance and improvement of students by using the key steps and indicators. This dimension also identifies the process of organizational support and operational planning regarding financial management and planning for continuity of operations, with the aim of improving overall operational performance.

(7) Course Delivery

Teaching is one of the main functions in HEIs and a task and activity performed on a joint effort by lecturers and students. Learning is an interaction process between lecturers and students so that the process of mastering knowledge and knowledge can take effect. Delivery of teaching and learning is the activity of communicating information between lecturers and students undertaken in somewhere. This dimension identifies teaching and learning delivery systems conducted within an institution. The diversity of deliveries will benefit the institution, coupled with the technology era that is becoming a new intermediary.

(8) Campus Facilities

This dimension identifies the facilities and services provided and offered by the HEIs to internal or external customers. Facilities are provided to complement the convenience of the user/student. This element sees the provision of HEIs infrastructure, as well as teaching and learning facilities. HEIs will be equipped with a number of facilities such as library, lecture room, cafeteria, student hostel and others. Similarly, campus services are the infrastructure provided by the university to provide convenience and comfort to university students and staff.

(9) *Benchmarking and Partnership*

In this dimension, proposed to analyse the rapid change in market environment needs to respond appropriately. In this case, the HEIs should compare its services and practices against business partners or competitors to improve performance through benchmarking. To meet customer needs on an ongoing basis, HEIs need to benchmark their services and processes by analysing their leading competitors in the same sector or other sectors that use the same process. This element also proposed of creating partnerships with other stakeholders such as industry, parents, and the general public.

6. Conclusion

This article suggests that the TQM practices instruments developed would be useful for self-assessment to measure the performance of HEIs, decision makers and researchers. These instruments can be clearly defined and complete to examine the performance of HEIs. The result of previous studies proves a competitive environment amongst the institutions, promoting each institution to develop a unique market niche, and improve operational efficiencies. The best performance measurement system can effectively link HEIs perspectives and strategies, integrating different operational targets and institutional functions combined with the HEIs' performance. HEIs can use these instruments to develop objectives and strategies that transmit operational phrases as the core source of the institution to meet the daily tasks of each member, focusing on its vision and mission of education, using a key findings strategy and promoting quality of service as high quality of service can meet customer needs and overcome customer expectations.

Acknowledgement

This research is funded by Universiti Pendidikan Sultan Idris (Sultan Idris Education University) Research Grant (Code: 2017-0265-107-01)

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