Sys Rev Pharm 2020;11(10):230-242
A multifaceted review journal in the field of pharmacy

Critical Success Factors Affecting the Implementation of TQM in Public Hospitals: A Case Study in UAE Hospitals

[1]Ahmad Aburayya*, [2]Muhammad Alshurideh, [3]Amina Al Marzouqi, [4]Osama Al Diabat, [5]Alanood Alfarsi, [6]Roberto Suson, [7]Said A. Salloum, [8] Dhoha Alawadhi and [9] Aisha Alzarouni

[1] Quality & Corporate Development Office, Dubai Health Authority, Dubai, UAE (Email Amaburayya@dha.gov.ae).
[2] Department of Management, College of Business Administration, University of Sharjah, Sharjah, UAE (Email: malshurideh@sharjah.ac.ae).
[2]Marketing Department, School of Business, The University of Jordan, Amman, Jordan. (Email: m.alshurideh@ju.edu.jo).
[3]College of Health Sciences, University of Sharjah, Sharjah, UAE (Email Amalmarzouqi@sharjah.ac.ae).
[4] Practice Development Department, Dubai Health Authority, Dubai, UAE (Email Oqaldiabat@dha.gov.ae).
[5] Health Centers Department, Dubai Health Authority, Dubai, UAE (Email Alamahmad@dha.gov.ae).
[6]Development Education, College of Education and Technology, Cebu Technological University (Cebu), Philippines (Email robertosuson29@gmail.com).
[7]Research Institute of Sciences and Engineering, University of Sharjah, Sharjah, UAE, (Email ssalloum@sharjah.ac.ae).
[8] Quality & Corporate Development Office, Dubai Health Authority, Dubai, UAE, Email: daalawadhi@dha.gov.ae
[9] Dubai Health Authority, Dubai, UAE, (Email: Aishaaa@dha.gov.ae).
Corresponding Author: Ahmad Aburayya
Email: Amaburayya@dha.gov.ae

ABSTRACT

The implementation of quality management strategies is a global phenomenon, particularly in organizations in developing countries, who have used different quality management systems to improve the quality of their services and to satisfy their customers. In the healthcare sector, the implementation of Total Quality Management (TQM) philosophy can help to enhance patient safety and help healthcare organizations improve performance and adopt cost-effective management practices. This research paper aims to identify and measure the Critical Successful Factors (CSFs) that affecting the implementation of TQM in hospitals. A literature review on TQM was examined to identify the CSFs for its implementation in healthcare between 2010 and 2020. In addition, this study employed quantitative methods to achieve its research objectives. A questionnaire was designed to gather empirical data from senior staff in hospitals adopting a self-administered technique to measure the CSFs that affecting TQM implementation. Of the 600 questionnaires circulated in two public hospitals in Dubai, 356 questionnaires were analyzed, producing a response rate of 59.3%. Descriptive and inferential statistical techniques were applied to analyse the data employing central tendency (Mean), measures of dispersion (Standard Deviation) and Principle Component Analyses (PCA). The findings in this study revealed that an effective TQM implementation in hospitals require abundant top management commitment, employee involvement, training and education, recognition and reward, process management, strategic planning, information analysis, organization culture, continuous improvement, and customer focus. The results in this study further indicated that among the ten TQM implementation CSFs, top management commitment and customer focus were found to be the most CSFs affecting the implementation of TQM in hospitals with highest mean value of 4.8 and 4.7, respectively. This study has contributed to the existing TQM literature concerning the CSFs affecting the implementation of TQM in the healthcare context, particularly in hospitals. In addition, the findings of this research paper provide vital knowledge to hospital managers with a precious understanding of the factors that enable TQM implementation in hospitals.

Keywords: Total Quality Management, TQM Critical Success Factors, Quality Improvement Initiatives, Quality Healthcare, Dubai Healthcare Corporation.

Correspondence:
Ahmad Aburayya
Quality and Excellence Officer, Quality & Corporate Development Office, Dubai Health Authority, Dubai, UAE Email: Amaburayya@dha.gov.ae

INTRODUCTRION

The new millennium saw a dramatic rise in the customer demands and expectations in service (Halis *et al*., 2017; Baidoun *et al*., 2018; Aburayya *et al*., 2020a; Al Kurdi *et al*., 2020; Suson *et al*., 2020b). The customers have not spared the healthcare sector from increased demands and expectations. Healthcare sector is important for every member of the community (Alshurideh *et al*., 2016; Alshurideh *et al*., 2017; Abu Zayyad *et al*., 2020). Therefore, ensuring efficiency and quality in the delivery of services is not only demanded but also desired (Alhashmi, *et al*., 2020). Over the past 25 years, the operation costs in the healthcare sector, especially in hospitals, have been growing, and this trend is expected to continue (Aburayya *et al*., 2020b). Comparative analysis data of over 21 countries in Europe presented by Organization for Economic Co-operation and Development (2018) showed in 2018 healthcare accounted for 9.5% of Gross Domestic Product (GDP) in the European countries. Similarly, in the United States (US), the health costs have escalated, with expenditure accounted for 16.9% of GDP in 2018, which was a 33% increase on the previous 18 years. In developed countries, hospitals take the largest share of public health resources and absorb more recurrent government spending on health. For instance, in England, hospital care is typically provided by publicly owned National Health Service (NHS) hospitals. Medical spending per capita in England doubled in real terms between 1997 and 2010 (Institute for Fiscal Studies, 2015). In 2013, NHS hospitals accounted for 44% of all NHS spending (Aburayya *et al*., 2020c).

Healthcare systems operate within an environment of hasty social, economic and technological change. Those systems are further under inspection by organisers, regulators, and operators of the system (Dickinson & Mannion, 2012: Hayajneh *et al*., 2020). At the time of the foundation of the United Arab Emirates (UAE), healthcare was limited. For example, the country only had seven

hospitals and 12 health centres providing primary care. However, investments in healthcare over the decades have seen the country undergo a radical transformation. For example, the number of hospitals has grown dramatically from 7 to 120, both public and private (U.S.-U.A.E. Business Council, 2018). In addition, the number of health centres has increased as well from 12 to 150 (U.S.-U.A.E. Business Council, 2018). The focus over the recent past has been on expanding the healthcare infrastructure and bringing it to par with international standards. Spending on health by the government has grown significantly in the recent past. For example, the allocation for the health in 2018 stood at $1.3 billion, which is double the amount the government spent on health eight years ago (Aburayya *et al*., 2020b). Notably, the growth in health spending has been informed by the growth in the population. In addition, incidences of chronic diseases and lifestyle diseases have increased thus requiring more money to be allocated to the health (Ardent Advisory & Accounting, 2015). In essence, implementation of quality management practices is regarded as of utmost importance. Particularly in healthcare, quality management is regarded as essential in gaining a competitive advantage. Apart from the healthcare, within the UAE, there has been a general focus on quality among the service sector, business, and industries. According to Dubai Department of Economic Development (2018), the Emirate of Dubai follows a clear policy derived from the directives of His Highness Sheikh Mohammed Bin Rashid Al Maktoum, the Ruler of Dubai, aimed to keep the Emirate of Dubai topmost in applying the highest standards in doing business economically, socially and culturally, in addition to making it a highly advanced digital economy. Consequently, the government has established several quality awards to reward agencies and organizations that demonstrate high-quality standards such as Dubai Quality Award (DQA). In UAE, some healthcare organizations have started implementing quality needs to be driven by scientific research to ensure quantifiable expected benefits from implementation of quality management systems (QMSs). The implementation of the QMS by healthcare organizations can increase the satisfaction of the patient (Al Attal, 2009; Lashgari *et al*., 2015; Schakaki & Watson, 2017). In fact, implementing of TQM will help in saving money by ensuring efficient use of the available resources. Moreover, implementation of TQM will help to reduce errors and improve efficiency thus saving not only money but also improving the quality of services that are delivered to the patients. According to Talib *et al.* (2019), the improvement of healthcare outcomes requires an organizational-wide improvement of the process of delivering care to the patient so that it is efficient and effective.

Organizations seeking to implement TQM must embark on understanding the factors that affect its success. Notably, by understanding the potential factors, organizations are more likely to predict problems that may arise in the implementation process and thus develop mitigation measures. Typically, organizations that spend the time to understand the cultural factors that affect the implementation of the TQM stand a better chance to succeed (Aburayya *et al*., 2019). The benefits of the TQM are well enumerated, but in practice, they are not easy to achieve. Despite its success across several organizations, there is evidence to suggest that attempts to implement TQM are often unsuccessful (Salaheldin, 2009; Lashgari *et al*., 2015; Varma, 2015; Chiarini & Baccarani, 2016; Schakaki & Watson, 2017). Ignorance of the cultural factors is among the key reasons why organizations fail to successfully implement TQM (Koh & Pheng 2008; Zu *et al*., 2010; Talib *et al*., 2019). In essence, to implement the TQM successfully, there is a need to measure the culture, attitude, and values of organizations towards change (Aburayya *et al*., 2020d). Therefore, organizations that are successful at implementing TQM endeavour to shape their culture and align them with new trends when introducing new philosophies. In many cases, when organizations fail to consider the cultural values, they fail to implement TQM successfully (Mosadeghrad, 2014; Biadoun *et al*., 2018). The culture of the organizations affects the success of the implementation of the TQM. Therefore, organizations need to pay due regard to this factor when they set to implement TQM. The other factors that have been identified as contributing to the failure of the TQM implementation are poor training and management as well as failing to link the compensation to achievement goals (Mosadeghrad, 2013; Oakland, 2014; Aburayya *et al*., 2020d). In addition, the failure to focus on strategic planning and lack of commitment by the management also cause failure (Aburayya *et al*., 2019).

A systematic analysis of literature on TQM implementation in hospitals indicates that there is a gap in tackling the elements associated with their successful implementation in UAE hospitals (Khadour *et al*., 2016; Alqasimi, 2017; Schakaki & Watson, 2017; Aburayya *et al*., 2019, Aburayya *et al*., 2020d). Therefore, this study is a contribution to bridging this gap, so helping healthcare providers and managers to implement the TQM program successfully in UAE hospitals. In this regard, this research study discusses these factors and its impacts on healthcare services in UAE hospitals with a focus on Dubai Health Authority (DHA), which runs public hospitals in Dubai. This study contributes to the body of knowledge in a number of ways. According to Al Attal (2009); Halis *et al.* (2017); and Aburayya *et al.* (2020d) there is very limited literature on the subject of TQM in the healthcare services in the Arab region in general. Therefore, this study provides greater clarity and insight into the issue. The study is unique because it is the only one that attempts to systematically review the CSFs for TQM implementation in the UAE healthcare context. Thus, it is considered an attempt on the way to theory building relating to TQM in UAE healthcare industry. Among the major difficulties that the healthcare organizations face in implementing TQM is the use of the ineffective model and inappropriate environment for implementing TQM (Mosadeghrad, 2013). Therefore, this study will study TQM factors affecting the implementation of TQM in hospitals. It thus provides future researchers with a wider and deeper understanding of these factors that can inform the development of more effective models for TQM implementation in the healthcare sector.

LITERATURE REVIEW

The literature revealed that there are various definitions of quality. The concept of quality is diverse (Alshamsi *et al*., 2020; Alshurideh *et al*., 2020). In particular, different scholars consider quality in diverse views (Al-Khayyal *et al*., 2020; Assad & Alshurideh, 2020). However, at its basic, quality is based on the evaluation of products, service and the satisfaction of the customer. There is no single universal definition of quality, and several authors and experts have defined it in different ways. The gurus and authors in the TQM area define quality as: "Conformance to requirements" (Crosby, 1979, p.17); "The

characteristics through which the product and service meet the expectations of the customer" (Feigenbaum, 1983, p. 7); "Whatever the customer needs and wants" (Deming, 1986, p. 5); "Fitness for use, product features which respond to customer needs, and freedom from deficiencies" (Juran, 1992, p. 5); "Quality and customer satisfaction are the same thing: and quality is a broad concept that goes beyond just product quality to also include the quality people, process, and every other aspect of the organization" (Ishikawa, 1985, cited in Goetsch & Davis, 2010, p. 5). In addition, Dove and Juran (2010, p.2) defined quality as "Fitness for purpose", while Oakland defined quality as "Meeting the customer requirements" (Oakland, 2014, p. 4). The basic underlying theme of these major definitions of quality is that they have a customer in mind. In essence, quality implies that the expectations of the customer must be met within a particular acceptable range of the product or service, For an organization, they must ensure that their design process of the product or service is tailored to meeting the particular needs of the customer. The goals of the organization are thus to ensure that services and products meet these set quality benchmarks of the client. Therefore, it can be concluded from these definitions that quality is perceived as meeting the needs and expectations of customers by ensuring that the organization's product, service and process are meeting its design specifications in order to achieve the goals of the organization. The fourth stage in the evolution of quality management was TQM. The application of the process was first adopted in Japan. However, the development of the theoretical concepts for its application was developed in the US. The wave of TQM gained popularity in the mid-1980s. However, many of the ideas underlying the TQM principles were developed in the earlier years, especially in the 1950s and 1970s (Oakland, 2014). The story of TQM development would be incomplete without considering the people who championed it. Notably, while the five main scholars in the field used different approaches in defining total quality, the basic ideas or principles were the same (Oakland, 2014). The major scholar in this field includes Crosby, Deming, Juran, Feigenbaum, and Ishikawa. The contribution of the quality gurus such as Ishikawa, Crosby, and Deming among others has been central to understanding the concepts of quality. Importantly, their ideas served as the launch pads for research especially in organizations on how to implement quality improvement strategies. In addition, they have given opportunities for the development of quality award models.

The global economy in the twenty-first century means that business must find ways of cutting cost and delivering quality to the customers. The use of TQM offers one such opportunity for business to build capacity through which they can compete in a global market. In particular, the use of TQM gives business flexibility and a way of guaranteeing quality to the customers (Pyzdek & Keller, 2013). TQM is conceptualized as allowing for the continuous improvement of the quality so that the products and services offered meet or exceed the expectations of the customers (Evans & Lindsay, 2017). The advantages offered by TQM has led to its worldwide adoption by businesses (Saad *et al*., 2014). The general understanding within management is that the adoption of TQM builds the efficiency of an organization thus making it competitive globally (Oakland, 2014). Apart from the well-documented advantages of adopting TQM such as enhanced competitiveness and leadership skills, the adoption of TQM helps organizations in improving skills among the employees who help in enhancing the customers' satisfaction (Mosadeghrad, 2014).

While there is no unanimously conventional definition of TQM, there have been efforts to arrive at a description for the ideal of TQM. It is evident in the literature definitions that improvement of the quality is a key philosophy underpinning the application of TQM (Prajogo, 2005; Maram, 2008; Talib, 2013; Akhtar *et al*., 2014; Oakland, 2014; Evans & Lindsay, 2017; Biadoun *et al*., 2018; Aburayya *et al*., 2020d; Suson & Ermac, 2020). Importantly, the focus on meeting or exceeding the needs and the expectations of the customers is a major philosophy of TQM. Importantly, it seeks to introduce a quality improvement in all the stages of a process and all levels of an organization. However, to guarantee success, organizations seeking to implement TQM needs to understand its principles and factors developed by people like Deming and Juran to ensure success. Importantly, TQM should be viewed as part of organization culture (Aburayya *et al*., 2020d). The core principles that underlie TQM have now been implemented in a diverse range of industries, which reinforces that TQM is not industry specific (Prajogo, 2005). These businesses must simply focus on improving performance, in order to be motivated to implement TQM practices. Therefore, in varied industries, the implementation of TQM is necessary, rather than desireable. The implementation of TQM within the service sector has focused on 'soft' aspects, such as leadership, customer service, employee training, and the promotion of a culture of continuous QI (Talib & Rahman, 2012; Suson *et al*., 2020c). Therefore, in the service sector, successful implementation of TQM requires the presence of these soft aspects, such as quality management and leadership. This is notably different from manufacturing and industrial production, where support tools and techniques are required to guarantee the success of TQM implementation (Kumar *et al*., 2011). Major service sector players that have focused on implementing TQM practices include banks, hotels, and advertising agencies (Talib *et al*., 2012a). The service industry currently employs a vast number of people, and new employees continue to enter the industry, which illustrates the need to adopt best practices in the sector.A review of the literature in developing countries exposes a lack of knowledge about the nature and process of TQM implementation in some parts of the world, including South America, Africa, and the Middle East (Aamer *et al*., 2017; McAdam *et al*., 2019; Suson *et al*., 2020a). Despite the number of publications and the amount of research exploring TQM, few empirical studies have been conducted in the Arab world (Sabella *et al*., 2015; Aamer *et al*., 2017; Baidoun *et al*., 2018). Furthermore, the literature identifies a number of gaps related to quality management in developing countries, along with common challenges, which include differing perceptions of quality, the legacy of colonisation, and restrictions imposed by protectionist policies and tight governmental controls (Twaissi, 2008; Awan & Raouf, 2009; Baidoun *et al*., 2018). Indeed, many TQM programs that have been implemented in developing countries have failed because of a lack of understanding about TQM principles (Mosadeghrad, 2014). This level of misunderstanding is a cause for concern and highlights the need for an effective country initiative, including increased education and training, to develop a quality TQM mindset within workforces and, in particular, within leadership (Talib *et al*., 2011b). However, TQM's industrial success

has encouraged healthcare managers in developing countries to examine the feasibility of TQM in the health sector. Many healthcare organizations have subsequently increasingly implemented TQM principles to improve the quality of their outcomes and the efficiency of their healthcare service delivery (Mosadeghrad, 2014). In essence, the objective of implementing TQM in the healthcare sector is the same as within banks, hotels, advertising, and other sectors (Talib *et al*., 2012a): its primary goal is to improve performance and increase efficiency (Talib *et al*, 2012a; Mosadeghrad, 2014; Baidoun *et al*., 2018). Moreover, implementing TQM focuses on meeting the expectations of customers, who, in this case, are patients. The patient must feel satisfied with the quality of the medical services and care that they receive. In addition, optimal use of available resources must be exhibited, to ensure the best care outcomes for patients (Talib *et al*., 2011a).

A study assessing the existence of TQM in Kenya hospitals concluded that TQM could offer a solution to the problems of incompetence, but required strategic decision-making (Awuor, 2013). Moreover, the study concluded that the implementation of TQM could be the solution to building efficient healthcare systems in developing countries. The study illustrated that quality management in public hospitals what was required in developing an efficient healthcare system. Another study on Saudi organizations by Abdulrahman *et al.* (2015) evaluated the success factors for TQM implementation in hospitals. The study gathered the views of the administrative staff and assessed the level of preparedness of the organizations to implement TQM. The factors that the study evaluated include leadership, availability of complaints handling systems, educational achievements among others. The study provided a conceptual framework through which the success factors of TQM could be evaluated. The study concluded that organization culture, involvement of the employees, communication, training, and development was all key to the success of TQM implementation within the healthcare context. Another focus of studies on TQM implementation in the healthcare sector is how it influences the flexibility of organizations. Alolayyan *et al.* (2011) study found that the implementation of TQM was associated with organization flexibility. Judeh and Al Zubi (2011) recommend that for the improvement of the performance and efficiency of the hospital administration. TQM should be implemented. Studies have also evaluated how TQM implementation influences the culture of the administration. A study by Khadour *et al.* (2016) compared the level of TQM application in UAE and Jordan hospitals. The study also evaluated the monetary and non-monetary incentives of implementation. The study gathered the views of the administrators, nurses, and technicians on the application of TQM in both UAE and Jordan. The study found that the level of TQM application in both countries was satisfactory. The results of the study showed that in the level of TQM application in both countries was good. However, UAE had a higher level of TQM implementation as compared to Jordan hospitals. The monetary incentives for TQM implementation in Jordan hospitals were higher as compared to UAE. Hospitals in the UAE were motivated through non-monetary incentives to implement TQM. In both countries, the participation of the employees was seen as contributing significantly to both the monetary and non-monetary dimensions of TQM implementation. However, the other aspects of TQM such as the focus on the customers, teamwork, and commitment by the top management had no role both the monetary and non-monetary incentives of TQM implementation in both UAE and Jordan. The summary from the review of the literature in the healthcare industry is that the success of TQM results in higher quality of services and increased satisfaction levels of the patients. Moreover, it results in greater efficiency, profitability, business and organizational performance (Alexander *et al*., 2006; Talib *et al*., 2010; Talib *et al*., 2011a; baidoun *et al*., 2018).

Across the industries, many organizations have implemented the TQM strategy. However, they have also experienced failure in the course of the implementation (Mosadeghrad, 2013). Failures in TQM implementation raised interest in understanding the barriers that impede the success of TQM. The most factors that have been identified as contributing to the failure is the incompetence of the management in the implementation of the TQM (Hamidi& Zaman, 2008; Mosadeghrad., 2013). A number of challenges face implementation of TQM in organizations. In general, a myriad of issues leads to the failure in the implementation of the TQM. For example, within the healthcare service sector, TQM has presented as a fit all formula, which resulted in the reduced organizational effectiveness in the process of implementing the change. The factors that have been identified as contributing to the failure in the implementation of the TQM include the failure to link compensation to the achievement of quality goals (Aburayya *et al*., 2020d; Peconcillo *et al*., 2020). In addition, failure was contributed by a lack of focus on training on aspects such as group discussions, communication, teamwork, and quality improvement skills (Al Khamisi *et al*., 2018). In addition, lack of allocation of enough resources to support the implementation of quality management also contributes to the failure in TQM implementation. Despite the well-known benefits of TQM implementation, organizations in the healthcare industry face many difficulties in applying principles of TQM in their operations. Among the major difficulties that the healthcare organizations face in implementing TQM is the use of the ineffective model and inappropriate environment for implementing TQM (Mosadeghrad, 2013). In essence, the implementation of TQM in healthcare faces theoretical and practical shortcomings (Mosadeghrad, 2013). For the healthcare industry, TQM is insufficiently developed (Aburayya *et al*., 2020d). Therefore, an integration of other theories of management is needed to ensure effective implementation of TQM. If the aspects of psychology, sociology and change management are used, they can complement TQM and ensure its successful implementation.

This study has undertaken a systematic review of TQM CSFs, in the context of healthcare between 2010 and 2020. To this end, several electronic databases were searched, including PubMed, the Directory of Open Access Journals, EBSCO research databases, Elsevier Science, Emerald, JSTOR, the Social Science Citation Index, the Social Science Research Network, and the Web of Knowledge. In order to identify published research papers that were appropriate for this study, a search strategy was conducted that used a number of expressions and phrases, including 'TQM', 'TQM implementation', 'TQM strategy', 'TQM critical success factors', 'quality improvement', 'quality management', 'hospital guidelines and administration', 'healthcare organizations', 'TQM framework and implementation', 'TQM barriers and problems', 'quality management system

and practices', and 'hospital service quality'. The primary literature search identified 46 empirical studies, literature review and peer-reviewed papers that focused on TQM CSFs in healthcare organizations. In total, 29 TQM CSFs were derived from the literature review analysis and subsequently categorized into 10 constructs, namely, Top Management Commitment (TMC), Employee Involvement (EI), Training and Education (TE), Recognition and Reward (RR), Process Management (PM), Strategic Planning (SP), Information Analysis (IA), Organization Culture (OC), Continuous Improvement (CI), and Customer Focus (CF). The results of the systematic review in the healthcare context indicated that TMC, PM, EI and CF were the most frequently TQM CSFs (Table 1).

Table 1. TQM CSFs in Healthcare Investigated from Literature Review

TQM CSFs Constructs Symbol	No .of Occurrence	Rank
TMC	41	1
PM	39	2
EI	34	3
CF	31	4
TE	29	5
CI	24	6
OC	21	7
IA	17	8
SP	16	9
RR	13	10

Note: Top Management Commitment (TMC); Employee Involvement (EI); Training and Education (TE); Recognition and Reward (RR); Process Management (PM); Strategic Planning (SP); Information Analysis (IA); Organization Culture (OC); Continuous Improvement (CI); Customer Focus (CF).

The focus of the TQM on this study will be the 10 constructs highlighted above. Therefore, TQM in this study is defined as 'A management philosophy for continuously improving overall hospital performance based on top management commitment, employee involvement, training and education, recognition and reward, process management, strategic planning, information analysis, organization culture, continuous improvement, and customer focus'. Notably, the implementation of the elements just requires that a set of tools and techniques are applied to ensure that the philosophy of TQM is successfully implemented. The chart on Figure 1 provides a process of implementing TQM .

Figure 1. TQM Implementation Process in Hospital

METHODOLOGY

Concerning the nature of the research objectives investigated in this study, the distinctive paradigm in line with positivism is adopted. In this study, the researcher focuses on facts to seek causality and the survey strategy is in line with the belief that the researcher is independent from that which is being researched, and the researcher methods are in line with excluding subjective interpretations. The positivist approach will be used through engaging with a large survey sample to explore success factors affecting the implementation of TQM strategy. A positivist approach was fitting for this study since it has a tendency towards the use of questionnaires for data collection and statistical analysis for specific quantitative testing. Additionally, this study is planning to provide sets of recommendations for DHA hospitals based on its expected findings that are statistically reliable. Accordingly, the positivist approach will be appropriate for this study since reliability is reached via the use of large sample sizes representative of the population and allows results to be generalized. Therefore, this study adopted a quantitative research approach based on a survey study design using the self-administered questionnaire technique to measure the CSFs that affecting the implementation of TQM in hospitals. Notably, the proper selection of data collection methods depends commonly on enhancing the value of the research. Mainly, the selected methods should assist the researcher to obtain the objectives of the study and answer its questions. In this study, senior staff who are working in hospitals filled questionnaires measuring the 10 identified TQM CSFs extracted from literature. Of the 600-questionnaire circulated in two public hospitals in Dubai, 356 questionnaires were analyzed, producing a response rate of 59.3%. The sample unit in this study includes all administration and clinical senior staff at DHA hospitals (e.g., hospitals CEOs, director of department, head of section, head of unit, quality managers, clinical and non-clinical supervisors and quality delivery staff). As noted by Sit *et al.* (2009), those staff are a worthy origin of information concerning quality practice within any organization. This study was conducted at Dubai Healthcare Corporation (DHC) in Emirate of Dubai involving 2 public hospitals from 17 December 2019 until 29 December 2019. Due to inability to get the list of sampling frame in those hospitals, the convenience-sampling technique was adopted in this research. In essence, convenience sampling is considered as the

cheapest and the least time-consuming sampling technique and has easy access to a big enough sample (Malhotra *et al*., 2006). In this syudy a deffernt set of items were developed for measuring TQM CSFs in both hospitals. In essence, the developed measurement instrument in this study includes the 10 identified TQM constructs. In total, 73 items were used for computing TQM constructs. In this regard, 8 items were used to gauge TMC, 7 items were used to gauge EI, 7 items were used to gauge TE, 5 items were used to gauge RR, 9 items were used to gauge PM, 6 items were used to gauge SP, 6 items were used to gauge IA, 9 items were used to gauge OC, 10 items were used to gauge CI, and 6 items were used to gauge CF. A commonly designed 5-point Likert scale was employed for recording responses extended from 1, specifying "strongly disagree", to 5, specifying "strongly agree". Descriptive analysis was performed with central tendency analysis (Mean) and measures of dispersion (Standard Deviation) using the SPSS version program 25.0. In computing measurement instruments developed in this study, Cronbach alpha and PCA analyses were applied to assess whether measurement constructs were reliable and valid.

DATA ANALYSIS

Characteristics of Respondents

The sample included both males and females. The results show that 33.1% of respondents were male while 66.9% of them were female. There are two main reasons for this result. First, the high percentage of female respondents in this study is due to the fact that the majority of the sample of employees in this study has been taken from hospital "A" where most of the employees are females. Hospital "A" in this study is a pediatric and gynecology specialist hospital where most of the patients are females and children. The results also show that the age category is presented at four main levels, where (31-40) and (41-50) age groups accounted for over two-thirds of the sample (72.2%), which indicate that most respondents had a good experience in relation to the healthcare work and that DHA's management prefers to employ expert staff in their hospitals rather than the inexpert staff who are usually too young. The results further reveal that 37.2% of respondents hold postgraduate degrees (Master and PhD degree), 47.2% hold bachelor's degrees, and 10.6% hold diploma, and 5.0 % of them hold high school. This indicates that the respondents are well educated and that DHA's hospitals have an interest in educational qualifications for their managers and employees. %). In respect to the respondents' current working department characteristic, the results prove that the majority of them 64.80% were working in the clinical affairs department, while 35.20% of them were working in the administrative affairs department. With regard to the distribution of respondents by hierarchical level, results show that the majority of the respondents 55.0% were senior employees.

Measurement Model Analysis

In this study the reliability and validity of the study instrument were computed before employing the main study's analysis tools to assure the reliability and validity of the developed scales. This study identified 10 factors contribute to the successful of TQM implementation in hospitals. Therefore, ten measurement scales for measuring the ten TQM CSFs in hospitals were developed, where each of the CSFs scale includes a number of items to gauge it. The SPSS 25 reliability and validity tools were applied separately for the items of each scale. Table 2 presents the reliability test (Cronbach's alpha), and the validity test (PCA) for several TQM implementation scales. The table shows that the reliability Cronbach's alpha coefficients ranged from 0.724 to 0.916, indicating that some scales were more reliable than others. In respect to the PCA, each TQM implementation scale was assessed individually. The results are further presented in Table 2, which obviously indicates that all of the items had high factor loadings greater than 0.50 on all TQM CSFs. In PCA, all factors with eigenvalues less than 1 are counted insignificant. In this study, the results obtained for PCA indicated that all items of each of the TQM scales shaped a single factor. Thus, the instruments developed for measuring TQM CSFs were considered to be reliable and valid (Table 2).

Table 2. Internal Consistency Coefficients and PCA Tests for TQM CSFs

Item No.	Cronbach's alpha	Eigenvalues& (%) of Variance	Factor Loadings									
			TMC	EI	TE	RR	PM	SP	IA	OC	CI	CF
8	.842	4.186 With (62.627) % of variance.	.715 .729 .848 .728 .881 .813 .621 .735									
7	.847	5.451 With (61.225) % of variance.		.713 .789 .678 .718 .726 .873 .731								
7	.826	4.871 With (67.253) % of variance.			.847 .674 .782 .733							

					.794 .736 .824							
5	.724	3.921 With (67.411) % of variance.				.879 .817 .724 .881 .877						
9	.816	6.467 With (66.228) % of variance.					.821 .784 .744 .863 .808 .897 .847 .885 .863					
6	.853	4.483 With (61.836) % of variance.						.775 .612 .757 .737 .810 .873				
6	.786	3.442 With (60.775) % of variance.							.677. 741 .724 .762 .763 .794			
9	.748	5.653 With (72.123) % of variance								.896 .807 .760 .849 .835 .901 .833 .911 .899		
10	.916	6.431 With (73.648) % of variance									.786 .816 .768 .784 .883 .790 .683 .891 .889 .784	
6	.736	4.556 With (62.435) % of variance										.669 .660 .572 .549 .725 .616

Analysis of CSFs Affecting TQM Implementation

In an attempt to infer the outcomes, the extracted TQM CSFs were assigned labels. "TMC" was the first factor had 8 items. The second factor was named by "EI" and comprised of 7 items. The third factor was labeled by "TE" and entailed of 7 items. The fourth factor was named by "RR" and consisted of 5 items. The fifth factor was titled by "PP" and consisted of 9 items. The sixth factor was labeled "SP" and had 6 items. The seventh factor was labeled by "IA" and entailed of 6 items. The eighth factor was named by "OC" and consisted of 9 items. The ninth factor was titled by "CI" and consisted of 10 items. Finally, "CF" was the tenth factor which consisted of 6 items. In this study, the central tendency analysis (Mean) was consequently measured by receiving an average of all the items in TQM CSFs. A mean greater than 3.0 is an indicator of a standing influence of the factor on the successful of TQM implementation, while a mean less than 3.0 indicates the opposite. A mean exceeding 4.0 indicates that the hospitals' staff consider the factor as having a great effect on TQM implementation. In respect to the extracted TQM factors in this research paper, the study employed

analyses, and the results showed that senior staff overpoweringly support the claim that the factor of TMC has a great impact on TQM implementation at hospitals (4.8). The effect was followed by the CF factor (4.7). The staff further asserted that the OC factor (4.5) also contributed significantly to the successful of TQM implementation in hospitals, followed by CI (4.4) and EI (4.3) factors. Moreover, PM (4.2), TE (4.2), RR (4.1), SP (4.1) and IA (4.0) factors are determined by the targeted senior staff in both hospitals as CSFs for effective TQM implementation in hospitals (Table 3).

Table 3. Average Towards CSFs contribution to TQM Implementation in Hospitals

TQM CSFs	*N*	*Mean*	*Std. deviation*
TMC	356	4.8	0.664
EI	356	4.3	0.798
TE	356	4.2	0.809
RR	356	4.1	0.891
PM	356	4.2	0.816
SP	356	4.1	.0897
IA	356	4.0	0.901
OC	356	4.5	0.779
CI	356	4.4	0.799
CF	356	4.7	0.742

DISCUSSION AND CONCLUSION

TQM is conceptualized as allowing for the continuous improvement of the quality so that the products and services offered meet or exceed the expectations of the customers. The advantages offered by TQM has led to its worldwide adoption by healthcare organizations. The general understanding within management is that the adoption of TQM builds the efficiency of an organization thus making it competitive globally. Apart from the well-documented advantages of adopting TQM such as enhanced competitiveness and leadership skills, the adoption of TQM helps healthcare organizations in improving skills among the employees who help in enhancing the customers' satisfaction and incraese the level of healthcare services quality. The main aim of this study was to identify and measure the CSFs that affecting the implementation of TQM in Dubai public hospitals. For the successful implementation of the TQM philosophy that will eventually lead to quality improvement of the provided healthcare service. This study identified ten CSFs for TQM implementation in hospitals that were derived for the TQM literature between 2010 and 2020 and considered necessary. The factors are TMC, EI, TE, RR, PM, SP, IA, OC, CI and CF. Subsequently, this study measured those factors and their contributions to the successful implementation of TQM in hospitals based on the perceptions of senior hospital staff. The unambiguous results from this study was that the TMC factor was found to be the most influential factor affecting the implementation of TQM in hospitals with a mean of 4.8. Furthermore, the findings in this study revealed that CF has recorded the second highest influential factor affecting the implementation of TQM in hospitals with a mean of 4.7. The staff further asserted that the OC factor (4.5) also contributed significantly to the successful of TQM implementation in hospitals, followed by CI (4.4) and EI (4.3) factors. Moreover, PM (4.2), TE (4.2), RR (4.1), SP (4.1) and IA (4.0) factors are determined by the targeted senior staff in both hospitals as CSFs for effective TQM implementation in hospitals. Overall, the findings revealed a strong indication that the participated senior managers in this study were aware of the significant role that TQM implementation could play in improving service quality in their hospitals. Furthermore, the findings indicated that all TQM implementation factors were adopted in the DHA's hospitals with high consideration given to their values for achieving successful TQM philosophy.

The findings signified to the fact that the hospital staff strongly believe that the TMC factor was the most contributor to the successful implementation of the TQM in hospitals. In essence, literature review emphasises the importance of the leadership in the successful implementation of TQM in hospitals. Particularly, TMC is a vital contributing factor of success in implementing TQM (Talib *et al*., 2011a; Faloudah *et al*., 2015; Al Damen, 2017, Baidoun *et al*., 2018; Aburayya *et al*., 2020d). The leadership support TQM by showing commitment to the application of the practices in different organized activities (Aburayya *et al*., 2020d). Without strong TMC, the implementation of TQM may experience difficulties (Mosadeghard, 2014; Al Damen, 2017). Generally, the commitment of the leadership influences the attitude of the staff concerning the implementation of TQM. It is important that the management explain to the employees that TQM is a continuous process in order to gain their continued support in the implementation of the TQM practices (Mosadeghrad, 2014). Okaland (2014) notes that apart from planning, setting policies and supervising the implementation of TQM, the top management becomes a source of motivation and support. Importantly, the top management supports the implementation of TQM by creating a climate of success for the program (Brah & Lim 2006). Mishra and Pandey (2013) note the influence of top management as essential in ensuring the success of TQM implementation. Patel (2009) have made a similar observation on the importance of top management in the implementation of TQM. Notably, the management is involved at each stage or level of TQM implementation, and thus his or her support and commitment are crucial. Similarly, Talib *et al*. (2011a) found that top management commitment is a prerequisite for effective and successful TQM implementation in the healthcare sector. They concluded that this factor was well supported by 11 published studies between 1995 and 2010. Importantly, articles and books regarding the implementation of quality focus a lot on leadership signifying how vital it is to guaranteeing success in implementing quality practices (Pyzdek & Keller, 2013; Oakland, 2014, Evans & Lindsay, 2017). Moreover, teaching and developing leadership are key advocacy points developed by Deming (1986) in TQM

implementation. The MBNQ award recognizes leadership as a driver of implementing quality systems. Faloudah *et al.* (2015) cite the commitment of the top management as essential to the success of TQM. In essence, the top management must be seen as the champions of quality in the organizations. A survey in India found that the participation of the top management in quality improvement was a key determinant of success (Talib *et al*., 2012a). CF was another factor identified in this study which contribute to the successful implementation of the TQM in hospitals. In essence, focus on customers is a key aspect of TQM implementation in the healthcare industry (Aburayya *et al*., 2019). The focus on the customer is motivated by the need to deliver quality and value which is seen from the perspective of customer's satisfaction. Fotopoulos and Psomas *et al.* (2014) found that customer focus was essential to the organizational performance in Greek hospitals certified by ISO 9001:2000. Moreover, Talib *et al.* (2013) found that a focus on the customers for both the service and manufacturing industries were crucial to delivering success in TQM implementation. Bayraktar *et al.* (2008) identified leadership, vision, program design, employee involvement, recognition and reward as critical success factors for the success or failure of TQM implementation. Sadikoglu and Zehir (2010) study established 8 practices crucial to the success of TQM implementation and delivery of value to the customers. The study found that customer focus was a key determinant of TQM success. Similarly, Talib *et al.* (2010) suggested a model of eight practices for the implementation in the service sector. The creation of a culture of customer orientation was cited as crucial to the success of TQM. The need to satisfy the needs of the customers was a major motivation for initiating TQM in the service industries.

The finding denoted further that the staff perceive the OC factor also contributed significantly to the successful of TQM implementation in hospitals. OC is a key factor that determines the success of TQM implementation in the healthcare sector (Alqasmi, 2017). The OC dictates the relationship between the staff and the patients and among the employees. An atmosphere of friendliness and respect, towards the patients and among the staff fosters cohesiveness among the staff and can influence the patient care outcomes (Aburayya *et al*., 2020d). The eight elements found by Talib *et al*. (2011a) for instance, focus on the customers, organiztion culture are all essential in guaranteeing success in the implementation of TQM in the healthcare industry. Importantly, adoption of the elements leads to better performance and improved satisfaction of the patients. Importantly, by adopting quality management practices, health organizations can reduce the operating costs. Adoption of the eight elements is considered as the best approach to the implementation of TQM. Notably, the literature has shown that these elements play a crucial role in the successful implementation of TQM. In particular, Aburayya *et al.* (2020d) found that OC influenced the success of TQM implementation in UAE hospitals. Most studies agree that OC is a key variable in determining the success of TQM implementation. Mosadeghrad (2013) refers to it as the most influencing variable in the implementation of the TQM in the healthcare. In almost half of the TQM failures, cultural variables are implicated (Aburayya *et al*., 2020d). Cultural factors have been identified as the most difficult obstacle in the implementation of TQM in healthcare (Mosadeghrad, 2014).

CI was found also to be one of the contributors to the successful implementation of the TQM in hospitals. The idea of CI is central to the concept of TQM (Buchbinder & Shanks, 2007; Alolayyan *et al*., 2011; Talib *et al*., 2011a; Ali & Alolayyan, 2013). Indeed, CI is the most cited aspect of TQM practices in the literature (Talib *et al*., 2011a). CI, when coupled with quality management systems, can help improve the delivery of care to patients (Aburayya *et al*., 2019). Notably, CI incorporates quality into the day-to-day running of an organization, which subsequently helps to maintain a continuous cycle of improvement. This results in customers receiving better value and better quality services. Toussaint and Leonard (2013) noted that the use of Lean and quality improvement practices in US hospitals has reduced the total cost of inpatient care by 25%, decreased patient waiting times for appointments by 28%, improved departmental capacity by 10%, and increased patient satisfaction from 4.3 to 4.7 (on a 5-point scale). However, the Toussaint and Leonard study highlights the need for CI in hospitals, as this would have a positive impact on healthcare quality and efficiency. That is to say, Lean enables improved quality and efficiency in the provision of optimum patient care, while also helping to control costs. Dixon-Woods *et al.* (2012) similarly emphasise the need for hospitals in the UK to adopt organization-wide CI initiatives and to continue to sustain them. The results showed that senior staff strongly support the claim that the factor of EI has a great impact on TQM implementation. Apart from the commitment of the top management, cooperation among the different stakeholders is key to ensuring the success of TQM implementation (McFadden *et al.,* 2006; MBNQA, 2011; Khawka, 2016; Baidoun *et al*., 2018; Hawi & Alzyadat, 2019; Maqsood *et al*., 2019). EI is especially crucial in hospitals where different departments and professionals must collaborate in delivering quality care to the patients (Talib *et al*., 2010; Maqsood *et al*., 2019). Effective implementation of TQM will require that all the departments are integrated and looked like part of the same system (Evans & Lindsay, 2017). Notably, The involvement of the employees is at the centre of TQM implementation principles (Hawi & Alzyadat, 2019; Maqsood *et al*., 2019). Therefore, for an organization seeking to successfully implement TQM, it has to empower the employees and then involve them in the whole process of implementing TQM. The success of the TQM also requires that a team of experts be assembled to offer assistance on the implementation of the program (Maqsood *et al*., 2019). The use of such a team reduces the risks of failure and significantly boosts chances of successful implementation of TQM.

The findings also indicated that PM, TE, RR, SP and IA were contributors to the successful of TQM implementation in hospitals. The key objective of TQM is to study and improve a process (Talib *et al*, 2010; Pyzdek & Keller, 2013; Oakland, 2014; Neetha *et al*., 2016; Aburayya *et al*., 2019; Aburayya *et al*., 2020d). Process improvement increases efficiency and helps cut down on defects (Raja *et al*., 2007). Several studies have pointed on the need to build effective PM practices (Raja *et al*., 2007; Mosadeghrad, 2013; Oakland, 2014). Effective implementation of TQM requires training of the employees (Oakland, 2014). Withanachchi *et al.* (2007) found that education and training were key aspects of successfully implementing TQM in Sri Lanka hospitals. Khawka (2016) made the same observation in Iraq healthcare sector. McFadden *et al*. (2006) found that

promotion of safety culture, staff training, and allocation of resources were crucial to implementing TQM in US hospitals. Investing in targeted training, which meets the needs of the individual employee, is essential in the efficient implementation of TQM practices (Ab Rahman & Tannock, 2005). Another key ingredient of success in TQM implementation is RR (James *et al*., 2015; Alqasimi, 2017). According to Efiaturi (2012), the goal of RR is to reinforce good values in order to influence positive or desirable performance. The idea of RR is to motivate the employees to commit to values and behaviours that promote a good image of the organization to the customers and stakeholders (Efiaturi, 2012). Importantly, by rewarding employees, an organization makes them work harder, thus supporting continuous improvement in quality and commitment to values (Alqasimi, 2017: Kurdi & Alshurideh & Al afaishat, 2020 ; Kurdi, Alshurideh & Alnaser, 2020). Aburayya *et al.* (2020d) note that developing an effective staff recognition and reward system is crucial in encouraging and influencing the change of employees towards the desired direction. The findings in this study further provided a robust hint that hospitals staff considered the SP element as a significant factor to the successful of TQM implementation in hospitals. Notably, SP help to improve the quality of services and increase patient satisfaction within healthcare organizations (Mosadeghrad, 2014). In essence, SP plays a vital role in framing goals and ensures effective communication to all employees to assure the changing needs of the patients, and subsequently deliver proper quality level to customers. IA essentially implicates the performs of success Performance Management System (PMS), and analyzing information based on facts. Several studies on TQM implementation underscore the vital role of IA factor in supporting TQM implementation in healthcare organizations (Sit *et al*., 2009; Baidoun *et al*., 2018).

Finally, a good study must contribute to knowledge, be original and have concrete research results and outcomes. Overall, the current study helps in understanding the CSFs of TQM implementation in UAE hospitals. In particular, it helps in understanding how each of those CSFs contriute to the successful of TQM implementation in hospitals and the implementation of quality management practices. In addtion, this study will add to the existing knowledge on TQM and its implementation as it is the first study in the UAE hospitals that has explicitly and empirically examined the CSFs for TQM implementation. Therefore, the findings of this study provide for a deeper and comprehensive understanding of the factors affecting the implementation of TQM in hospitals. This study was limited to one area in UAE which is Dubai city. Further empirical evaluation is needed to replicate the findings in different contexts and surroundings. In addition, the TQM literature review surveyed in this study was limited to documents written in English only. further figures and materials from other research documents written in other languages would deliver further valued indications.

REFERENCES

1. Aamer, A., Awlaqi, M., & Alkibsi, S. (2017). TQM implementation in a least developed country: An exploratory study of Yemen. *TQM Journal, 29*(3), 467-487.
2. Abdulrahman, H., Susan M., David, A., & Karen J. (2015). TQM in the Saudi Health Care System: A National Cultural Perspective. *World Review of Business Research*, *5*(2), 120 – 136.
3. Abu Zayyad, H. M., Obeidat, Z. M., Alshurideh, M. T., Abuhashesh, M., Maqableh, M., & Masa'deh, R. E. (2020). Corporate social responsibility and patronage intentions: The mediating effect of brand credibility. Journal of Marketing Communications, 1-24.
4. Aburayya, A., Al Marzouqi, A. Al, Ayadeh, I. Al, Albqaeen, A., & Mubarak, S. (2020b). Evolving A Hybrid Appointment System for Patient Scheduling in Primary Healthcare Centres in Dubai: Perceptions of Patients and Healthcare Provider. *International Journal on Emerging Technologies*, *11*(2), 251–260.
5. Aburayya, A., Al Marzouqi, A., Alawadhi, D., Abdouli, F., & Taryam, M. (2020a). An empirical investigation of the effect of employees' customer orientation on customer loyalty through the mediating role of customer satisfaction and service quality. *Management Science Letters*, *10*(10), 2147-2158.
6. Aburayya, A., Alawadhi, D., & Taryam, M. (2019). A conceptual framework for implementing TQM in the primary healthcare centers and examining its impact on patient satisfaction. *International Journal of Advanced Research, 7*(3), 1047-1065.
7. Aburayya, A., Alshurideh, M., Al Marzouqi, A., Al Diabat, O., Alfarsi, A., Suson, R., Bash, M., & Salloum, S. A. (2020d). An Empirical Examination of the Effect of TQM Practices on Hospital Service Quality: An Assessment Study in UAE Hospitals. *Systematic Reviews in Pharmacy, 11*(9), 347-362.
8. Aburayya, A., Alshurideh, M., Alawadhi, D., Alfarsi, A., Taryam, M., & Mubarak, S., (2020c). An Investigation of the Effect of Lean Six Sigma Practices on Healthcare Service Quality and Patient Satisfaction: Testing the Mediating Role of Service Quality in Dubai Primary Healthcare Sector. *Journal of Advanced Research in Dynamical and Control Systems*, *12*(8)- Special Issue, 56-72. DOI: 10.5373/JARDCS/V12SP8/20202502.
9. Akhtar, C.H., Arif, A., Rubi, E., & Naveed, S. (2014). Impact of organizational learning on organizational performance: study of higher education institutes. *International Journal of Academic Research, 3*(5),327-331.
10. Al Attal, Z. (2009). *Factors Affecting the Implementation of Joint Commission International Standards in United Arab Emirates Hospitals.* Ph.D. University of Salford. Available at: <http://usir.salford.ac.uk/14924/1/517645.pdf> [Accessed 20 April 2020].
11. AL Damen, R.A. (2017). The impact of Total Quality Management on organizational performance Case of Jordan Oil Petroleum Company. *International Journal of Business and Social Science, 8*(1), 192-202.
12. Al Khamisi , Y.N., Khan, M.K., & Munive-Hernandez, J.E. (2018). Assessing quality management system at a tertiary hospital in Oman using a hybrid knowledge-based system. *International Journal of Engineering Business Management, 10*(5), 1-13.
13. Al Kurdi, B., Alshurideh, M., Salloum, S., Obeidat, Z., & Al-dweeri, R. (2020). An Empirical Investigation into Examination of Factors Influencing University Students' Behavior towards Elearning Acceptance Using SEM Approach. *International Journal of Interactive Mobile Technologies*, 14(2), 19-41.
14. Alexander, J.A., Weiner, B.J., & Griffith, J. (2006). Quality improvement and hospital financial

performance. *Journal of Organizational Behaviour*, *27*(7), 1003-29.
15. Alhashmi, S. F., Alshurideh, M., Al Kurdi, B., & Salloum, S. A. (2020, April). A Systematic Review of the Factors Affecting the Artificial Intelligence Implementation in the Health Care Sector. In Joint European-US Workshop on Applications of Invariance in Computer Vision (pp. 37-49). Springer, Cham.
16. Al-Khayyal, A., Alshurideh, M., Al Kurdi, B., & Salloum, S. A. Factors Influencing Electronic Service Quality on Electronic Loyalty in Online Shopping Context: Data Analysis Approach. In Enabling AI Applications in Data Science (pp. 367-378). Springer, Cham.
17. Alolayyan, M. N. F., Mohd Ali, K. A., Idris, F., & Ibrehem, A. S. (2011). Advance mathematical model to study and analyze the effects of total quality management (TQM) and operational flexibility on hospital performance. *Total Quality Management and Business Excellence, 22*(12), 1371-1393.
18. Alqasimi, I. (2017). Can total quality management improve the quality of care in Saudi Arabian hospitals? A patient and service provider's perspective. PhD thesis. University of Salford.
19. Alshamsi, A., Alshurideh, M., Al Kurdi, B., & Salloum, S. A. (2020, October). The Influence of Service Quality on Customer Retention: A Systematic Review in the Higher Education. In International Conference on Advanced Intelligent Systems and Informatics (pp. 404-416). Springer, Cham.
20. Alshurideh, M., Al Kurdi, B. H., Vij, A., Obiedat, Z., & Naser, A. (2016). Marketing ethics and relationship marketing-An empirical study that measure the effect of ethics practices application on maintaining relationships with customers. *International Business Research*, 9(9), 78-90.
21. Alshurideh, M., Al Kurdi, B., Abu Hussien, A., & Alshaar, H. (2017). Determining the main factors affecting consumers' acceptance of ethical advertising: A review of the Jordanian market. *Journal of Marketing Communications*, 23(5), 513-532.
22. Alshurideh, M., Al Kurdi, B., Salloum, S. A., Arpaci, I., & Al-Emran, M. (2020). Predicting the actual use of m-learning systems: a comparative approach using PLS-SEM and machine learning algorithms. *Interactive Learning Environments*, 1-15.
23. Ardent Advisory & Accounting. (2015). *GCC Healthcare Sector: A Focus Area for Governments October 2015.* [pdf] Available at: <http://www.ardentadvisory.com/files/GCC-Healthcare-Sector-Report.pdf > [Accessed 2 October 2020].
24. Assad, N. F., & Alshurideh, M. T. (2020) Financial Reporting Quality, Audit Quality, and Investment Efficiency: Evidence from GCC Economies. *WAFFEN-UND KOSTUMKUNDE JOURNAL*. XI(III), 194-208.
25. Baidoun, S.D., Mohammed, Z.S., & Omran, A.O. (2018). Assessment of TQM implementation level in Palestinian healthcare organizations: The case of Gaza Strip hospitals. *The TQM Journal*, *30*(2), 98-115.
26. Bayraktar, E., Tatiglu, E., & Zaim, S. (2008). An instrument for measuring the critical factor of TQM in Turkish higher education. *Total Quality Management and Business Excellence*, *19*(6), 551–574.
27. Brah, S.A., & Lim, H.Y. (2006). The effects of technology and TQM on the performance of logistics companies. *International Journal of Physical Distribution & Logistics Management*, *39*(3), 192 – 209.
28. Chiarini, A., & Baccarani, C. (2016). TQM and lean strategy deployment in Italian hospitals: Benefits related to patient satisfaction and encountered pitfalls. *Leadership in Health Services*, *29*(4), 377-391.
29. Crosby, P. B. (1979). *Quality is free: The art of making quality certain.* New York: McGraw-Hill.
30. Deming, W. E. (1986). *Out of the crisis.* Cambridge: MIT Press.
31. Dickinson, H., & Mannion, R. (2012). *The Reform of Healthcare.* New York: Palgrave Macmillan.
32. Dixon-Woods, M., McNicol, S., & Martin, G. (2012). Ten challenges in improving quality in healthcare: lessons from the Health Foundation's programme evaluations and relevant literature. *BMJ Quality & Safety, 21*(4), 876–884.
33. Dove, J.A., & Juran, J.M. (2010). *Jurans' quality handbook: the complete guide to performance excellence.* New York: McGraw Hill.
34. Elfaituri, A. (2012). An assessment of TQM implementation, and the influence of organizational culture on TQM implementation in Libyan banks. Ph.D. The University of Gloucestershire. Available at: <http://eprints.glos.ac.uk/2127/1/Elfaituri%20Ashref%20final%20PhD%20copy.pdf> [Accessed 8 March 2020].
35. Evans, J.R., & Lindsay, W.M. (2017). *Managing for Quality and Performance Excellence.* 10th ed. USA: Cengage Learning.
36. Faloudah, A., Qasim, S., & Bahumayd, M. (2015). *Total Quality Management in Healthcare. International Journal of Computer Applications, 120*(12), 22-24.
37. Feigenbaum, A.V. (1983). *Total Quality Control*. New York: McGraw-Hill.
38. Halis, M., Twati, M., & Halis, M. (2017). Total quality management implementation in the healthcare industry: Findings from Libya. *Management Issues in Healthcare System, 3*, 4-21.
39. Hamidi, Z., & Zamanparvar, A. (2008). Quality Management in Health Systems of Developed and Developing Countries: Which Approaches and Models are Appropriate? *J Res Health*, *8* (2), 40-50.
40. Hawi, R., & Alzyadat, W. (2019). TQM Measured Students' Satisfaction in the Jordanians' Private University for Achieving Institutional Excellence. *TEM Journal*, *8*(2), 409-416.
41. Ishikawa, K. (1985). *What is Total Quality Control? The Japanese Way.* London: Prentice-Hall.
42. James, O.E., Ella, R., Nkamare, S.E., Lukpata, F.E., Uwa, S.L., & Mbum, P.A. (2015). Effect of reward system among health care workers performance: a case study of university of Calabar teaching hospital Calabar, Nigeria. *Journal of Hospital Administration*, *4*(3), 45-53.
43. Judeh, M., & Al Zubi, H.A. (2011). Measuring the Implementation of Total Quality Management: Ibn Al-Haytham Hospital Case Study. *International Journal of Business and Management, 6*(5), 114.
44. Juran, J. M. (1992). *Juran on quality by design: the new steps for planning quality into goods and services.* New York: Free Press.
45. Khadour, N., Durrah, O., & A'aqoulah, A. (2016). The Role of Applying Total Quality Management in Improving Incentives: A Comparative Study between Jordanian and United Arab Emirate Hospitals.

International journal of Business and Management, 11(11), 126-138.
46. Khawka, Z.M. (2016). Detecting Total Quality Management Status and Teamwork Orientation in Al-Yarmouk Teaching Hospital. *American Journal of Industrial and Business Management*, *6*(03), 232-248.
47. Koh, T.Y., & Pheng, L.S.,(2008). Organizational culture and TQM implementation in construction firms in Singapore. *Construction Management and Economics, 26*(3), 237-248.
48. Kumar, R., Garg, D., & Garg, T.K. (2011). Total quality management success factors in North Indian manufacturing and service industries. The TQM Journal, 23(1), 36-46.
49. Kurdi, B., Alshurideh, M. & Al afaishat, T. (2020). Employee retention and organizational performance: Evidence from banking industry. Management Science Letters, 10(16), 3981-3990.
50. Kurdi, B., Alshurideh, M., & Alnaser, A. (2020). The impact of employee satisfaction on customer satisfaction: Theoretical and empirical underpinning. *Management Science Letters*, 10(15), 3561-3570.
51. Lashgari, M.H., Arefanian, S., Mohammadshahi, A., & Khoshdel, A.R. (2015). Effects of the Total Quality Management Implication on Patient Satisfaction in the Emergency Department of Military Hospitals. *Arch Mil Med.Journal, 3*(1), 1-5.
52. Malhotra, N., Hall, J., Shaw, M., & Oppenheim, P. (2006). *Marketing research: an applied orientation*, 3rd ed. New South Wales: Prentice-Hall.
53. Maqsood, M., Tahir, S., Muhammad, R., Ajmal, M., Hussain, Z., & Al Arab, M. (2019). TQM Practices and their Effect on Non-financial Performance: An Empirical Study of Pakistani Hospitals*. International Journal of Medical Research & Health Sciences, 8*(4), 147-162.
54. Maram, A. (2008). Reassessment of the application of TQM in the public sector. *International Public Management Review*, *9*(1), 194-2011.
55. McAdam, R., Miller, K., & McSorley, C. (2019). Towards a contingency theory perspective of quality management in enabling strategic alignment. *International Journal of Production Economics*, *207*(1), 195-209.
56. Mishra, P., & Pandey, A. (2013). The Role of Leadership in Implementing Total Quality Management (TQM) in Higher Education: A Review. *European Academic Research*, *1*(8), 2149-2166.
57. Mosadeghrad, A. (2014). Essentials of total quality management: a meta-analysis. *International Journal of Health Care Quality Assurance*, *27*(6), 544-558.
58. Mosadeghrad, A.M. (2013). Obstacles to TQM success in health care systems. *International Journal of Health Care Quality Assurance*, *26*(2), 147-173.
59. Neetha, K., Srinivas, T. R., Ramachandra, C. G., & Manjunatha, B. (2016). *A Study on Implementation of Total Quality Management (TQM) in Hospital to Improve Service Quality.* [pdf] Available at: <https://www.researchgate.net/publication/311107465_A_Study_on_Implementation_of_Total_Quality_Management_TQM_in_Hospital_to_Improve_Service_Quality>. [Accessed 9 January 2020].
60. Oakland, J.S. (2014). *Total quality management and operational excellence*. 4th ed. New York: Routledge.
61. Patel, G. (2009). *Total Quality Management in Healthcare*. [pdf] Available at: <http://hdl.handle.net/10380/3062>. [Accessed 19 March 2020].
62. Peconcillo Jr, L. B., D. Peteros, E., O. Mamites, I., T. Sanchez, D., L. Tenerife, J. J., & L. Suson, R. (2020d). Structuring Determinants to Level Up Students Performance. *International Journal of Education and Practice*, *8*(4), 638–651.
63. Prajogo, D.I. (2005). The comparative analysis of TQM practices and quality performance between manufacturing and service firms. *International Journal of Service Industry Management, 16*(5), 217–228.
64. Psomas, E., Vouzas, F., & Kafetzopoulos, D. (2014). Quality management benefits through the "soft" and "hard" aspect of TQM in food companies. *The TQM Journal*, *26*(5), 431 444.
65. Pyzdek, T., & Keller, P. (2013). *The Handbook for Quality Management: A Complete Guide to Operational Excellence.* 2nd ed. New York: McGraw Hill.
66. Raja, M. P. N., Deshmukh, S. G., & Wadhwa, S. (2007). Quality award dimension: A strategic instrument for measuring health service quality. *International Journal of Health Care Quality Assurance*, 20, 363–378.
67. Saad, A., Su, D., Marsh, P., & Wu, Z. (2014). Total Quality Environmental Management toward Sustainability: Need and Implementation in Libyan food Industry. *Key Engineering Materials, 572*(3), 84-89.
68. Sadıkoğlu, E., & Zehir, C. (2010). Investigating the effects of innovation and employee performance on the relationship between total quality management practices and firm performance: An empirical study of Turkish firms. *International. Journal Production Economics. 127*(1), 13-26.
69. Salaheldin, I., & Mukhalalati, B. (2009). The Implementation of TQM in the Qatari Healthcare Sector. *Journal of Accounting – Business & Management*, *16* (2), 1-14.
70. Schakaki, O., & Watson, A. (2017). A Study on the Effectiveness of Total Quality Management in Dental Patient Satisfaction. *EC Dental Science, 14*(3),114-149.
71. Sit, W.Y., Ooi, K.B., Lin, B., & Chong, A.Y.L. (2009). TQM and Customer satisfaction in Malaysia's service sector. *Industrial Management and Data Systems*, *109*(7), 957–975.
72. Suson, R., & Ermac, E. (2020a). Computer aided instruction to teach concepts in education. *International Journal on Emerging Technologies*, *11*(3), 47–52.
73. Suson, R., Baratbate, C., Anoos, W., Ermac, E., Aranas, A. G., Malabago, N. Galamiton, N. Capuyan, D. (2020c). Differentiated instruction for basic reading comprehension in Philippine settings. *Yakugaku Zasshi*, *8*(9), 3814–3824.
74. Suson, R., Malabago, N., Capuyan, D., Galamiton, N., & Ermac, E. (2020b). An empirical analysis of behavior management counsel for students. *International Journal of Psychosocial Rehabilitation*, *24*(8), 4971–4983.
75. Talib, F. (2013). An overview of total quality management: understanding the fundamentals in service organization. *International Journal of Advanced Quality Management*, *1*(1), 1-20.
76. Talib, F., & Rahman, Z. (2012). Total quality management practices in manufacturing and service

industries: a comparative study. *Advanced Operations Management, 4*(3), 155-176.

77. Talib, F., Asjad, M., Atrii, R., & Khan, A. (2019). Ranking model of total quality management enablers in healthcare establishments using the best-worst method. *The TQM Journal, 31*(5), 790-814.
78. Talib, F., Rahman, Z., & Azam, M. (2010). Total quality management implementation in the healthcare industry: a proposed framework. Paper presented at the 2nd International Conference on Production and Industrial Engineering, Punjab, India, 3-5 December 2010. Available at: <https://www.researchgate.net/publication/292592303_Total_quality_management_implementation_in_the_healthcare_industry_a_proposed_framework> [Accessed 18 March 2020].
79. Talib, F., Rahman, Z., & Azam, M. (2011a). Best Practices of Total Quality Management Implementation in Health Care Settings. *Health Marketing Quarterly*, *28*(3), 232-252.
80. Talib, F., Rahman, Z., & Qureshi, M. (2012a). Total quality management in service sector: a literature review. *International Journal of Business Innovation and Research, 6*(3), 259-301.
81. Talib, F., Rahman, Z., & Qureshi, M. (2012a). Total quality management in service sector: a literature review. *International Journal of Business Innovation and Research, 6*(3), 259-301.
82. Talib, F., Rahman, Z., & Qureshi, M. (2012b). Impact of Total Quality Management and Service Quality in the Banking Sector. *Journal of Telecommunications System & Management. 1*(2), 102.
83. Talib, F., Rahman, Z., & Qureshi, M. (2013). An empirical investigation of relationship between total quality management practices and quality performance in Indian service companies. *International Journal of Quality and Reliability Management, 30*(3), 280-318.
84. Toussaint, J.S., & Leonard, L.B. (2013). The Promise of Lean in Health Care. Mayo Clinic Proceedings, *88*(1), 74-82.
85. Twaissi. (2008). *An Evaluation of the Implementation of Total Quality Management (TQM) Within the Information and Communications Technology (ICT) Sector in Jordan.* Ph.D. A thesis submitted in partial fulfilment of the requirements of the University of Huddersfield for the Degree of Doctor of Philosophy. United Kingdom: University of Huddersfield.
86. U.S.-U.A.E. Business Council. (2018). *The UAE's Growth Manufacturing Sector*. [pdf] Available at: <http://www.usuaebusiness.org/wp-content/uploads/2018/01/Manufacturing-Report.pdf > [Accessed 7 January 2020].
87. UAE Ministry of Economy. (2019). *Annual Economic Report 201-26th Edition.* [pdf] Available at: <https://www.economy.gov.ae/EconomicalReportsEn/Annual%20Economic%20Report%202018.pdf >[Accessed 1 July 2020].
88. Varma, S.P. (2015). *Total quality management (TQM) of clinical engineering in New Zealand public hospitals*. DBA thesis, Southern Cross University, Lismore, NSW.
89. Zu, X., Robbins, T.L., & Fredendall, L.D. (2010). Mapping the critical links between organizational culture and TQM/Six Sigma practices. *International Journal of Production, 123*(1), 86-106.