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An Empirical Examination of the Effect of TQM Practices on Hospital Service Quality: An Assessment Study in UAE Hospitals

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ABSTRACT

Nowadays, the ability to deliver excellent quality to customers is key to an organization's survival and global competitiveness. Essentially, delivering excellent quality increases customer satisfaction and enhances the productivity of institutions. The implementation of quality improvement initiatives, such as Total Quality Management (TQM), is one way that organizations are seeking to deliver quality services to customers. The main aim of this resaerch paper is to examine the impact of TQM elements on hospital service quality in the United Arab Emirates (UAE), focusing on accredited hospitals in Dubai. The empirical data was collected via a self-administered questionnaire using the drop-off technique. Senior hospital employees filled questionnaires examining two variables: TQM and hospital service quality. Of the 480-questionnaire distributed, 292 usable questionnaires were analyzed, yielding a response rate of 60.8%. Descriptive and inferential statistical analysis methods were used to analyse the data using principle component analysis, Pearson correlation coefficient, and multiple regression analyses. The results in this study reinforce the positive effects of organization culture, continuous improvement, customer focus, teamwork and participation, process management, and top management commitment, as independent variables, on improving the quality of services delivered by hospitals as the dependent variable. It was also found that among the eight TQM implementation factors, organization culture expresses the strongest effect on hospital service quality with highest coefficient value of 0.373. The research paper has contributed to the current TQM literature regarding the association between TQM factors and hospital service quality that will deliver significant knowledge to hospital managers, to enhance their existing TQM practices and successively improve service quality.

Keywords: Total Quality Management, Hospital Service Quality, Quality Improvement Strategy, Quality performance, SERVQUAL, Patient Satisfaction, Dubai Hospital Services Sector.

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INTRODUCTION

The business world has changed over the past decades. In particular, globalization has increased competition within the manufacturing and service sector (Suson & Ermac, 2020). Competition is nowadays considered to be more challenging than any other time before (Yeng *et al*., 2018; Aburayya *et al*., 2020c; Alshurideh *et al*., 2020; Alzoubi *et al*., 2020; Suson *et al*., 2020a). The new challenges mean that businesses must also change to deal with competition (Alshurideh, 2019; Alshurideh *et al*., 2019). One approach organization can adopt to become competitive is to restructure the operations, culture and adopt systems that are customer focused to deliver quality and meet the satisfaction of the clients (Alshurideh *et al*., 2012; Oakland, 2014; Kurdi et el., 2020). Therefore, the ability to deliver excellent quality to the customers is a key to surviving and being globally competitive (Al Dmour *et al*., 2014; Sheikholeslam & Emamian, 2016). Importantly, delivering excellent quality enhances the performance of the organization and increases consumer satisfaction (Sheikholeslam & Emamian, 2016). Implementation of quality strategies such as Total Quality Management (TQM) is one-way organizations are seeking to provide quality services to the consumers (Obeidat *et al*., 2012; Toke & Kalpande, 2020).

The basis of TQM is to develop organizational culture and attitude, which are committed to satisfying the needs of the customer by delivering services that match the demands of the customers (Talib *et al*., 2020). Notably, this management practice started in the 1950s but has gained in popularity since 1980s (Oakland, 2014). In the management circles, TQM acronym is used widely within the management it is a buzzword. The focus of the practice is quality, with defects and wastage in the processes being eliminated or minimized (Biadoun *et al*., 2018). Notably, this gives the organizations efficiency and cost benefits

because they cannot only produce products of high quality but also cut on the costs of rework and wastages. The method allows collaboration between management and employees (Ghannajeh *et al*., 2015). The collaboration ensures incessant development of quality in the provision of services (Talib, 2013; Al Shurideh *et al*., 2019). Consequently, managers widely accept TQM as an essential method of instituting change in an organization to enhance quality (Sweis & Alsayyed, 2019). Another contribution of TQM is that its play an energetic role in developing organization's management practices (Khadour *et al*., 2016; Schakaki &Watson, 2017; Talib *et al*., 2020).

Healthcare leaders have already adopted the concept of TQM, which has its background in industrial production. In the healthcare, the philosophy of TQM is based on management and leadership practices that commit to continuous improvement of the quality. It can provide energy and motivation for improvement of service delivery in the healthcare (Brown, 2010; Alshurideh *et al*., 2019). The global trend to adopt TQM is aimed at gradual improvement of the quality of healthcare services so that they meet the expectations of the patients and ensure efficient use of the available resources to enhance care outcomes. The implementation of the TQM systems within the healthcare can help to enhance the safety of the patients. In addition, implementation of TQM will help healthcare organizations improve performance and adopt cost-effective management practices (Al Attal, 2009; Schakaki & Watson, 2017; Biadoun *et al*., 2018; Jaiswal *et al*., 2019). For example, every year approximately 200,000 persons in the US decease because of medical errors (Aburayya *et al*., 2019a). However, implementing TQM stands to minimize the errors and improve the satisfaction of the patients. In particular, TQM will help in developing a focused patient system, which is safe and efficient thus improving the satisfaction levels of the patient (Jaiswal *et al*., 20120; Talib *et al*., 2020). While TQM has been shown to be effective in introducing a dramatic improvement in the healthcare, they have been noted as difficult to implement. The success of the TQM would require that healthcare managers take training on a wide range of business management models (Mosadeghrad, 2013).

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 aspects that have an effect on TQM implementation stand a better chance to succeed (Al Shdaifat, 2015; Schakaki & Watson, 2017). A comprehensive review of TQM literature in hospitals shows that there is a need to dig a deep insight on delineating the elements related with their effective application in the Gulfstream region and especially in UAE (Khadour *et al*., 2016; Alqasimi, 2017; Schakaki & Watson, 2017; Aburayya *et al*., 2019a). Therefore, this study is a contribution to filling this gap, therefore supporting healthcare providers and decision makers to perform the TQM program successfully in UAE hospitals. In this regard, this paper deliberates those elements and its impacts on healthcare services in UAE healthcare facilities with a focus on Dubai Health Authority (DHA), which runs public hospitals in Dubai. In healthcare, there is a genuine theoretical and practical need to analyse the association concerning TQM implementation and hospital service quality. In the past, there has been an attempt to study the concept of TQM within healthcare, but there are gaps that are yet to be filled (Talib *et al*., 2011a; Mosadeghrad, 2014; Chiarini & Baccarani, 2015; Lashgari *et al*., 2015; Alqasimi, 2017; Halis *et al*., 2017). This research study further is trying to offer pertinent information on implementing TQM in healthcare particularly hospitals and aims to measure the effects of implementing it on hospital service quality. Therefore, the results and recommendations of this study will help in improving quality management practices in UAE hospitals.

LITERATURE REVIEW

Total Quality Management (TQM)

The exact time when the concept of quality emerged is difficult to determine. However, most consider the development of large-size industrial companies as the period when quality or its awareness gained prominence. In essence, companies needed to guarantee the quality of products to the consumers. While the idea of quality had no definite timeline when it was introduced, TQM development is well elaborated (Oakland, 2014). 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). In the mid-1990s, the role of the TQM in the management became clear. Importantly, organizations started seeing the approaches as crucial to building a competitive advantage. Notably, while different parts of the world started implementing TQM, the use was more spread in the developed countries. The main motivation for employing TQM was the efficiency that it offered. For example, it reduced lead times, cut defects and reworks thus helping companies to reduce the running costs and provide quality products to the market (Evans & Lindsay, 2017). Therefore, companies adopted TQM as a means of becoming competitive, profitable, flexible and meeting the satisfaction of the customers (Talib *et al*., 2016). 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).

The definitions of TQM are diverse. TQM therefore has many definitions, of which one of the most widely used is that presented by Oakland (2014, p. 30) "A comprehensive approach for improving competitiveness and flexibility through planning, organizing and understanding each activity, and involving everyone at each level. TQM ensures that the management adopts a strategic overview of quality and focuses on prevention rather than inspection". In other words, it as a detailed strategy for developing the effectiveness of an organization via involving all the people involved in understanding the process. Overall, the focus of the adoption of this strategy is to focus on prevention than inspection. Another important note from this definition is that the focus of TQM is an improvement of the whole process rather than the constituent parts. The focus is on the customer to meet their expectations through continuous improvement in quality. In essence, It is evident in the contemporary TQM

literature that improvement of the quality is a key philosophy underpinning the application of TQM (Dale, 2003; Kreitner, 2004; Slack *et al*., 2007; Beckford, 2010; Montgomery *et al*., 2011; Aloe & Gorantiwar, 2013; Oakland, 2014; Evans & Lindsay, 2017; Biadoun *et al*., 2018; Talib *et al*., 2020). Importantly, TQM 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 tools developed by people like Deming and Juran to ensure success. Importantly, TQM should be viewed as part of organization culture.

While the concepts of TQM are based on industrial production, and rely on the ideas and teachings of pioneers like Deming, TQM practices have also found favour in service sectors (Prajogo, 2005; Maram, 2008; Talib, 2013; Akhtar *et al*., 2014). The fundamental difference between the manufacturing and service sectors revolves around the tools and techniques which are used, and the heterogeneity of the respective outputs (Talib & Rahman, 2012). These fundamental variances among industrial and the service industry inform the expectation that applying TQM in the service context would raise a range of challenges (Parshuram, 2015). This has led businesses in the service sector to explore ways through which to implement quality management practices, as a means of meeting customers' expectations. Over time, TQM has been successfully implemented in the service sector, which has helped businesses to improve productivity and deliver services that satisfy their customers (Talib, 2013; Weckenmann *et al*., 2015; Aladwan & Forrester, 2016; Zylfijaj & Pira, 2017; Alhashmi *et al*., 2020). The body of literature examining TQM implementation in the service industry has recently increased. Notably, the emergence of new knowledge highlights the continuous growth of techniques employed for the successful application of quality practices within the service division. The majority of these studies, which focus on TQM implementation in the service sector, examine the ways in which practices can be used to help increase an organization's competitive advantage (Talib *et al*., 2013; Al Qahtani *et al*., 2015; Kim, 2016; Al Falah, 2017; Alshurideh *et al*., 2019).

The importance of implementing quality management strategies is extensively acknowledged (Gimenez-Espin, 2013; Fu *et al*., 2015; Aladwan & Forrester, 2016; Aamer *et al*., 2017; Baidoun *et al*., 2018). In essence, the healthcare facilities desire to own efficient systems at managerial and clinical levels to improve the process and quality of medical services (Mosadeghrad, 2014). An efficient system must also accommodate continuous improvement of the quality; ensure resources are used optimally and setting strategies of addressing problems when they arise (Al Attal, 2009; Aburayya *et al*., 2019b). The objective of implementing TQM in the healthcare industry 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; 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 (Aburayya *et al*., 2019a). In the healthcare setting, TQM application has followed the successful pilot studies that showed that the model could work in the healthcare. The NDPQIH which has 21 experts on healthcare from different organizations stated that the TQM techniques could be practically applied in the healthcare (Aburayya *et al*., 2019a). In general, TQM implementation is expected to bring positive effects on the healthcare particularly for hospitals (Al Attal, 2009; Baidoun *et al*., 2018). Following the expected benefits of TQM, many hospitals in the developed world have implemented it (Baidoun *et al*., 2018). For example, results from different studies suggest that TQM can help in solving challenges in healthcare (Miller *et al*., 2009; Talib *et al*., 2011a; Lashgari *et al*., 2015; Varma, 2015; Chiarini & Baccarani, 2016; Schakaki & Watson, 2017). Moreover, healthcare organizations that have implemented TQM have already enjoyed some benefits. For example, the organizations have enjoyed greater efficiency, improvement in the quality, productivity, and improved quality and satisfaction of the patients (Lashgari *et al*., 2015; Talib *et al*., 2020).

The review of the contemporary TQM literature in the healthcare sector indicates that TQM factors are vary from one author to another (Mosadeghrad, 2014; Biadoun *et al*., 2018, Aburayya *et al*., 2019a). In order to give a broader perspective of TQM implementation in this study, a comprehensive review of healthcare division TQM critical successes factor treatises after 2010 was carried out. To this end, several electronic databases were searched, for instant the Social Science Research Network, and the Web of Knowledge. The search strategy for the identification of the articles included searching for phrases such as TQM strategy and quality management. The other terms that were used in the search included TQM practices and barriers, quality improvement initiatives and applications. The outcomes of the search were further narrowed to keywords such as TQM, QM and TQM practices. The refinement resulted in 376 hits. From the articles selected in the hits, they were further narrowed down to empirical or review studies on the factors and practices influencing TQM application in the healthcare organization. Further search of TQM application in the healthcare led to another 289 to be excluded. Through a systematic review, only 87 articles were included in the study. The 87 articles were further analysed for their methodology of study and findings. The process resulted in a 44 single case study, 11 project papers, 15 papers on commentary and short articles. In total 17 articles consisting of 12 empirical studies and 5 reviews were included in the systematic review. In this study, eight TQM factors were recognized, namely Top Management Commitment (TMC); Teamwork and Participation (TWP); Employee Training and Education (ETE); Recognition and Reward (RR); Process Management (PM); Continuous Improvement (CI); Organization Culture (OC); and Customer Focus (CF).

Hospital Service Quality

Quality has become a crucial aspect for high customer industries such as hospitals. In essence, building a reputation of quality services to the customers could be key to supporting companies in the service industry build a competitive advantage and maintain long-term profitability (Punnakitikashem *et al*., 2012). Importantly, the emphasis on quality among industries in the service sector underpins its importance in helping to improve the business performance (Alghamdi, 2018). Customers demand quality, and thus companies have to adopt systems that help meet the expectations of the customers (Punnakitikashem *et al*., 2012). Quality comes from the

Latin word, *quails,* which means 'what kind of' (Baporikar, 2017). Nabaho *et al.* (2017) argues that quality is an abstract and elusive concept, with different meanings and interpretations. Usually, the definition of the quality differs depending on the perspective and the context it is taken. Consequently, quality has been referred to as excellence (Peters & Waterman, 1982), value (Feigenbaum, 1991), conformance to specifications (Crosby, 1992; Oakland, 2014) and satisfying the customer (Parasuraman *et al.*, 1985). Notably, quality is recognized by several authors as exceeding client's requirements through assuring the ability of organization's service and process are meeting its design specifications (Ojasalo, 2010; Punnakitikashem *et al.*, 2012; Mosadeghrad, 2011; Oakland, 2014; Aburayya *et al.*, 2020a).

While the definition of service quality across the literature is non-uniform, it is even more varied when considered from the standpoint of healthcare. In essence, it is hard to define within the healthcare context (Mosadeghrad, 2011). For instance, service quality definition within the healthcare context is made difficult owing to the fact that its features such as simultaneity of use, indescribability and heterogeneity (Ladhari, 2009). Service quality meaning in the healthcare industry is even more difficulty because of the nature of the services, the diverse professionals and ethical practices underpinning healthcare delivery (Eiriz & Figueiredo, 2005). Mosadeghard (2011) noted that one of the most healthcare service quality definition indicated in the literature is that the healthcare services whose aspects and characteristics meet up with determined specifications. In this regard, it is identified as "conformance to specifications". Consequently, quality in this research paper is demarcated as conformance to specifications. Accordingly, service quality is acknowledged as conformance to service specifications or requirements.

To conclude with, the use of the above defifintion in defining service quality is best because it is straightforward in assessment (Ojasalo, 2010; Oakland, 2014). In other words, evaluation of service quality only requires that the services that are provided be compared against the set standards and specifications to see whether there is conformance (Alshurideh *et al.*, 2018; Al Kurdi *et al.*, 2020). Notably, conformance to specified standards has become important in the era of globalization. Notably, this helps companies to benchmark their services against those provided by the peers in the other parts of the world (Ettorchi-Tardy *et al.*, 2012). The specifications or the standards are interpreted from the needs of the customers. Therefore, according to Oakland (2014), when customers are satisfied with a good or service, it implies that the set of requirements were met. Notably, this approach of quality from the perspective of meeting customer needs is also implied in several quality improvement models (MBNQA, 2010). However, others have developed a more robust view of quality. For instance, Feigenbaum (1991) considers service quality to be multi-dimensional encompassing aspects such as trustworthiness, responsiveness, courtesy, and maintainability of a service. He argued that quality is dynamic in nature due to the fact that clients' beliefs and values are subject to change.

Theoretical Model of TQM Implementation on Hospital Service Quality

Several studies on TQM implementation confirmed the proposition that the successful employment of TQM helps to improve firms' performance and enhance their productivity (Al Qahtani *et al.*, 2015; Shafiq *et al.*, 2017; Pattanayak *et al.*, 2017; Abu-Mahfouz, 2019) and leads to improve organizational service quality (Oakland, 2014). For the effective implementation of the TQM philosophy that will eventually lead to quality improvement of the provided healthcare service. This study identified eight elements that were derived for the TQM literature and considered necessary. The elements are TMC, TWP, ETE, RR, PM, CI, OC and CF.

Literature review underscores the significance of the senior management in the successful application of TQM. The leadership given by the senior management is a vital determinant of success in implementing TQM (Talib *et al.*, 2011a; Faloudah *et al.*, 2015; Al Damen, 2017, Baidoun *et al.*, 2018). The top management support TQM by showing commitment to the application of the practices in different organized activities (Al Damen, 2017). Without strong leadership commitment, the implementation of TQM may face difficulties (Mosadeghard, 2013). Usually, the TMC influences the attitude of the employees towards the application of TQM. In healthcare, the sustenance of the leadership and employee training is deemed imperative to the success of TQM (Salaheldin & Mukhalalati, 2009). TMC performs as the core driver for TQM implementation to improve service quality and satisfy their customers (Rad, 2006; Ngambi, 2015). As noted by Deming (1986), top management responsible to provide an effective training plan and education programs to the employees for creating a culture of continuous process of learning. In hospitals, the role of top management should be to improve the performance of hospital staff, which leads to develop hospital service quality (Neetha *et al.*, 2016). Particularly, several empirical studies examine the impacts of TMC on service quality. In facts, many researches evidence support the widely accepted view that the top management positively affects service quality (Twaissi, 2008; Abusa, 2011; Idris, 2011; Ooi *et al.*, 2011; Talib *et al.*, 2011b; Al Qahtani *et al.*, 2015; Ngambi, 2015).

The TWP programs have been introduced by several organizations with the expectation that the quality of services provided by them will be improved as an outcome from those programs. For instance, several reputable US organizations such as U.S. Air and Federal Express have applied employee teamwork and participation to improve service quality (Aburayya *et al.*, 2019a). Notably, the organizations who seek to improve their services quality and meet customers' expectations should motivate their staff to dynamically participate in various quality management activities (Oakland, 20014). Accordingly, Organizations should rely on the ability of utilize all employees' skill to improve productivity, enhance performance and obtain customer satisfaction (Talib *et al.*, 2013). Many of quality authors such as Deming and Crosby highlighted the importance of employee's involvement and participation at all organization levels to improve service quality and gain business performance. in essence, even non-managerial staff are significantly contributing to the service quality improvements when they are involved in decision-making processes (Sadikoglu & Zehir, 2010). The effect of TWP on service quality and organizational performance has been a topic of several researches in many service industries with the belief that teamwork and participation positively affect service

quality (Tsaur *et al*., 2004; Jones *et al*., 2008; Al Attal, 2009; Talib *et al*., 2013; Boakye, 2015).

Employees are valuable assets of an organization and the key to Success (Alshraideh *et al*., 2017; As' ad *et al*., 2018). Well-educated employees will always lead to better performance (Al Ettayyem & Al Zu'bi, 2015). In fact, education and training can lead to improve employees' knowledge, which will significantly influence their skills and have an important impact on organization's performance (Salloum *et al*., 2020 a&b; Alshurideh *et al*., 2019). Notably, training and education can offer an opportunity for communication organizations' strategy and means of performing job. Consequently, employees' commitment to service quality may be improved (Samat *et al*., 2006). In addition, quality of training provided by organization is the best way to develop quality of services (Khanfar, 2011). Essentially, training and education can lead in improving performance and minimizing work mistakes. Thus, this will help to improve service quality and obtain customer pleasure, which are the fundamental target to the organization management (Akhtar *et al*., 2011). Organizations across the world striving for a good and healthy business status. Better performance of staff can make organization successful. Particularly, Human resource processes are connected to the employee attitude and job satisfaction, which in return can affect organization performance and customer satisfaction (Ooi *et al*, 2009). To successfully support organizational quality efforts, a well-designed recognition scheme is an imperative factor in constantly inspiring the anticipated behavior in the direction of supporting morale and motivating employee involvement. Furthermore, institutions required to perform an employee recognition and reward program which intensely links organizations' performance with financial benefits (Duberg & Mollen, 2010; Kopelman *et al*., 2011; James *et al*., 2015). The views above were supported by Kopelman and Gardberg (2011) who concluded that one approach to improve service quality is through employee recognition and reward programs.

PM is concerned with a structural attitude in which all the organizations' assets are utilized in effective way to attain targeted performance, increase service quality level and gain consumer satisfaction (Talib *et al*., 2011b; Abedaziz, 2015). In an empirical study, Kim (2016) conducted a study in Korea to provide an intermediate step to understanding the complex connection between quality strategies and consumer satisfaction. Results shows that quality program can be initiated via PM. A paper published in 2015 written by Al Qahtani *et al* investigated the influence of TQM factors and practices on organizational performance. In their study, they identified eight TQM practices that include PM. Their findings indicate that when an institution applies TQM in appropriate way, then its performance will be generally improved from numerous sides such as service quality, enhance business and customer satisfaction. The study findings further were supported by Talib *et al.* (2011b) who indicated that PM among TQM practices positively affects service quality. CI is deliberated as an elementary conception to organization success. Effective TQM approaches depend on the concept of CI (Singh & Singh, 2015). CI strategy is a systematic approach, which involves everyone in the organization to ensure higher productivity, better service quality, fewer breakdowns, motivating working environments and enhancing safety (Tripathi, 2005). Sila and Ebrahimpour (2003) emphasize the significance of enhancing the quality of service in organizations throughout the process of implementing TQM. Many researches indicated the significant role of CI in improving the quality of services delivered to the consumers (Samat *et al*., 2006; AL Attal, 2009; Himanshu, 2009; Gorji, 2011; Singh & Singh, 2015; Kim, 2016).

OC has a vital role in accomplishing quality goals (Kunkel *et al*., 2007). Notably, reputable institutions have robust quality cultures that enhance CI in all areas of operation. OC exemplifies collective beliefs and values that may affect quality of services, and which could be employed for quality improvement (Hann *et al*., 2007). Several academic works have been carried out to explore the relationship between OC and service quality (Hann *et al*., 2007; Mathew, 2007; Twaissi, 2008; Ababaneh, 2011; Cho *et al*., 2013). For example, Ababaneh (2011) investigated empirically the impact of OC on service quality in Jordanian hospitals. The study findings indicated that OC has a positive effect on service quality dimensions. Generally, the results have inferences for the field of quality management and concluded that innovative culture in hospitals is clearly improve the quality of healthcare services. The focus on the customers is seen as essential for the long-term growth and performance of the business. Nowadays, it is obvious that an institution's survival relies heavily on its capability to please consumers and meet their expectations through improving the quality of services they provided (Oakland, 2014; Baidoun *et al*., 2018). Importantly, collecting, evaluating and reacting to client complaints on a service is crucial to improve service quality and reducing consumer dissatisfaction. In addition, it is very clear that comprehensively assessing client complaint information leads to improve service quality (Uusitalo *et al*., 2008). Notably, the main goal of any CF effort is to achieve consumer satisfaction (Samat *et al*., 2006; Siddiqui & Rahman, 2007; Miyagawa & Yoshida, 2010; Talib *et al*., 2013). In an empirical study, Talib *et al.* (2013) concluded that CF showed a positive relationship with quality performance. Furthermore, the strategy to focus on customer satisfaction considerably influences service quality (Miyagawa & Yoshida, 2010). Based on above discussions, the following hypotheses were proposed:

H1: TMC has a positive effect on hospital service quality.
H2: TWP has a positive effect on hospital service quality.
H3: ETE has a positive effect on hospital service quality.
H4: RR has a positive effect on hospital service quality.
H5: PM has a positive effect on hospital service quality.
H6: CI has a positive effect on hospital service quality.
H7: OC has a positive effect on hospital service quality.
H8: CF has a positive effect on hospital service quality.

Based on the above eight hypotheses, a research model of TQM elements and hospital service quality was framed, which is presented in Figure 1.

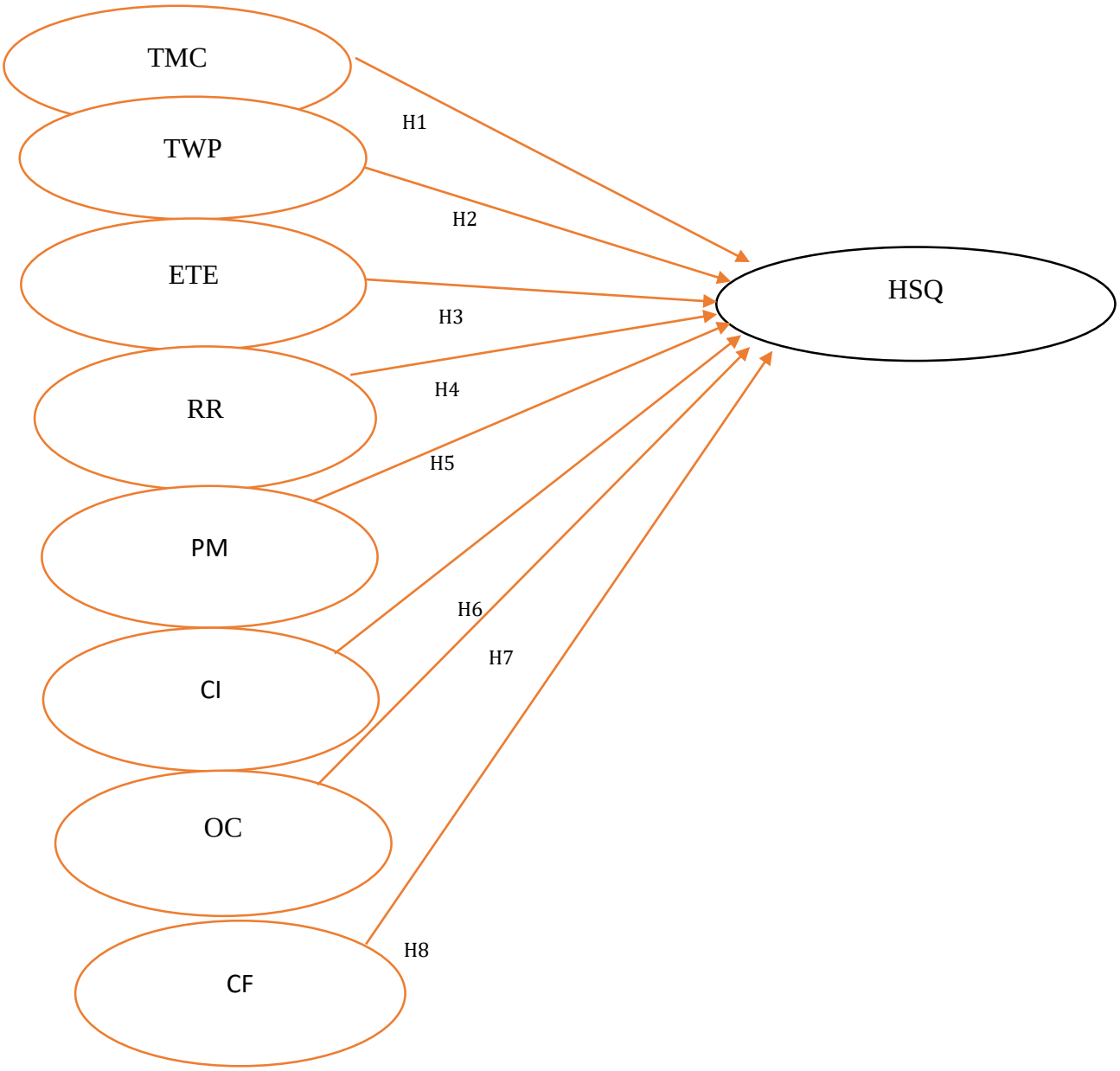


Figure 1. Research Framework

Note: Top Management Commitment (TMC); Teamwork and Participation (TWP); Employee Training and Education (ETE); Recognition and Reward (RR); Process Management (PM); Continuous Improvement (CI); Organization Culture (OC); and Customer Focus (CF). Hospital Service Quality (HSQ).

METHODOLOGY

This study adopted the distinctive paradigm in line with positivism and conceptualized theoretical model based on the extensive analysis of TQM literatures using secondary research, then moving to testing hypotheses via primary data, hence, this research paper has relocated from theory to data. The study used a quantitative research strategy based on a survey study design to test the formulated hypotheses to investigate the relationship between TQM elements and hospital service quality. Questionnaires were used to gather primary data from respondents deployed a self-administered technique. In this study, the ethical approval letter, which allowed this study to conduct surveys in the DHA's workplace, was issued by the Dubai Scientific Research Ethics Committee (DSREC). Having received this approval, hospital visits were conducted, to ensure the researcher and members of hospital management were properly acquainted. Hospital management were informed that a confidential box had been prepared within each department, into which participants could drop their completed questionnaires. Indeed, to emphasise the commitment to confidentiality, the researcher had sole access to these secure boxes. The sample unit 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 recommended by Sit *et al.* (2009), those staff are a worthy origin of information concerning quality practice within any organization. The extent of this study is in Dubai and the time of survey was from 16th of September 2019 to 11th of October 2019. These hospitals were distributed throughout one of the main UAE cities, namely Dubai, where most of Dubai population live around them. 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). Moreover, it is very common in research because it is "-well- convenient" (Malhotra *et al.*, 2006). In this research paper, 480 questionnaires were delivered to the hospital senior staff based on their number in each hospital. Of the 480-questionnaire distributed, 292 usable questionnaires were analyzed, yielding a response rate of 60.8%.

This study has developed a different set of items for gauging TQM and hospital service quality constructs to enable the proposed research model to be empirically tested. In this regard, 55 items were used for computing TQM constructs. A broadly designed 5-point Likert scale was applied for recording responses extended from 1, specifying "strongly disagree", to 5, specifying "strongly agree". In addition, a 13-item Service Quality (SERVQUAL) scale established by Parasuraman *et al.* (1988) was used to gauge hospital service quality. The adopted scale consisted of five dimensions, including responsiveness, reliability, tangibles, empathy and assurance. The SERVQUAL dimensions were gauged based on a 5-point Likert scale extended from 1, representing "strongly disagree", to 5, representing "strongly agree". Finally, as this study was considered as a quantitative research, the Statistical Package of Social Sciences (SPSS) version 25, which is extensively employed in quantitative studies was employed to process the data. In terms of 'quantitative analysis', many statistical methods are employed to test proposed hypotheses, in order to draw conclusions about a population. In this study, the methods of inferential data analysis that were included to test the proposed hypotheses were correlation analysis and multiple regression analysis. The hypotheses were examined at two significance levels: α =.01 and α = 0.05. In estimating measurement instruments, Cronbach alpha and principle component analysis were employed to evaluate whether measurement constructs were reliable and valid.

DATA ANALYSIS

Characteristics of Participants

A total of 292 hospital senior employees have participated in this study, where 61.20% of respondents were female while the rest 38.80% of them were male. The results further show that (31-40) and (41-50) age clusters accounted for over two-thirds of the sample 72.20%. In respect to the participants' education level, the results indicated that the majority of the respondents were well educated, where most of them hold postgraduate degrees (47.20%). In relation to the respondents' current working department profile, the outcome illustrates that the majority of the study sample 67.80% were working in the clinical affairs department, while 32.20% of them were working in the administrative affairs department. The results reveal further that the majority of the respondents 55.00% were senior staff, which indicate that they are good enough to deliver significant quality practices information.

Measurement Model Analysis (MMA)

The study developed 2 instruments to gather primary data from senior employees at DHA's hospitals to examine the proposed research framework. The Measurement Model Analysis (MMA), which concerns the reliability and validity of the instrument were estimated before examining the assumed model in this study. In essence, hypothesis testing in this research paper can be conducted only based on the reliable and valid measurement scales. In this study, there were eight measurement scales for gaging the eight TQM implementation constructs, and one measurement scale for gaging the hospital service quality construct for DHA's hospitals. In this study, each of the measurement scale has a number of items to estimate it. The SPSS 25 reliability and validity programs were employed individually for the items of each scale. Table 1 lists Cronbach's alpha and principal component analysis for different TQM implementation and hospital service quality scales. The table reveals that the reliability Cronbach's alpha coefficients ranged from 0.842 to 0.976, indicating that some scales were more reliable than others. In relation to the principal component analysis, each scale was estimated separately. The detailed results are also listed in Table 1, which evidently reveals that all of the items had high factor loadings greater than 0.50 on all TQM and hospital service quality constructs. In principal component analysis, the factors which have eigenvalues greater than 1 are considered significant. In this study, all factors with eigenvalues less than 1 are considered insignificant and should be disregarded. The factor analysis revealed that all items of each of the TQM and hospital service scales formed a single factor, according to the rule that the eigenvalues are greater than 1, which are listed in the table below (Table 1). Therefore, the rotated solution of Varimax or Quartimax cannot be performed. Accordingly, the instruments developed for measuring TQM implementation elements and hospital service quality constructs were judged to be reliable and valid.

Table 1. Cronbach's alpha coefficient & Principle Component Analysis

Item No.	Cronbach's alpha	Eigenvalues& (%) of Variance	TQM Factor Loadings							
			F1	F2	F3	F4	F5	F6	F7	F8
8	0.918	5.097 With (63.714) % of variance.	.825 .838 .759 .819 .793 .712 .733							

			.823							
7	0.909	4.560 With (65.136) % of variance.		.802 .878 .765 .809 .807 .764 .819						
6	0.897	3.982 With (66.364) % of variance.			.736 .784 .891 .844 .824 .809					
4	0.842	2.733 With (68.320) % of variance.				.869 .917 .726 .780				
8	0.923	5.210 With (65.119) % of variance.					.813 .848 .855 .836 .707 .786 .825 .776			
10	0.931	7.372 With (73.725) % of variance.						.684 .621 .858 .850 .809 .837 .814 .797 .837 .763		
7	0.897	4.331 With (61.868) % of variance.							.788. 830 .813 .871 .852 .685 .637	
5	0.907	3.667 With (73.346) % of variance								.869 .860 .772 .849 .925
Item No.	**Cronbach's Alpha**	**Eigenvalues& (%) of Variance**	**Hospital Service Quality Factor Loading**							
13	0.934	7.648 with (77.446) % of variance	.683 .644 .767 .762 .719 .779 .625 .827 .758 .763 .735 .552 .689							

Causal Model Analysis (CMA)

This section aims to test the hypothesized theoretical model which consists of eight leading hypotheses framed by this study, where all of them are associated to the individual effect of the eight TQM elements which are independent variables on the hospital service quality as dependent variable. In this study, the proposed study's model consists of eight TQM factors and one hospital service quality factor and has eight hypotheses that will be tested simultaneously by employing multiple regression analysis using SPSS 25. Table 2 below shows that there is a significant correlation between all the independent variables and dependent variable at 0.01 level. The table further shows that the highest correlation between the independent and dependent variables is between organization culture (OC) and hospital service quality (HSQ) (r=.887). This was expected since TQM hospitals require a focus on organizational culture to improve the quality of services that they provided. The second highest correlation between the independent and dependent variables is between continuous improvement (CI) and hospital service quality (HSQ) (r=.840) followed by customer focus (CF) and hospital service quality (HSQ) (r=.820), process management (PM) and hospital service quality (HSQ) (r=.767), teamwork and participation (TWP) and hospital service quality (HSQ) (r=.765), top management commitment (TMC) and hospital service quality (HSQ) (r=.738), employee training and education (ETE) and hospital service quality (HSQ) (r=.720), recognition and reward (RR) and hospital service quality (HSQ) (r=.512).

		TMC	TWP	ETE	RR	PM	CI	OC	CF	HSQ
TMC	Pearson Correlation	1	.661**	.600**	.437**	.652**	.639**	.683**	.556**	.738**
TWP	Pearson Correlation	.661**	1	.722**	.539**	.748**	.671**	.725**	.702**	.765**
ETE	Pearson Correlation	.600**	.722**	1	.530**	.659**	.644**	.699**	.743**	.720**
RR	Pearson Correlation	.437**	.539**	.530**	1	.408**	.415**	.574**	.469**	.512**
PM	Pearson Correlation	.652**	.748**	.659**	.408**	1	.724**	.754**	.760**	.767**
CI	Pearson Correlation	.639**	.671**	.644**	.415**	.724**	1	.789**	.756**	.840**
OC	Pearson Correlation	.683**	.725**	.699**	.574**	.754**	.789**	1	.705**	.887**
CF	Pearson Correlation	.556**	.702**	.743**	.469**	.760**	.756**	.705**	1	.820**
HSQ	Pearson Correlation	.738**	.765**	.720**	.512**	.767**	.840**	.887**	.820**	1

**. Correlation is significant at the 0.01 level (2-tailed).

Table 2. Correlation between Variables

The results of the multiple regression analysis that eight TQM independent variables predicting the one hospital service quality dependent variable are presented in Table 3.

Table 3. Multiple Regression Analysis of TQM Factors with Hospital Service Quality

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.937[a]	.879	.873	.19968

a. Predictors: (Constant), Customer Focus, Recognition & Reward, Top Management Commitment, Teamwork & Participation, Continuous Improvement, Employee Training & Education, Process Management, Organization Culture

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	49.318	8	6.165	154.616	.000[b]
	Residual	6.818	171	.040		

	Total	56.136	179			

a. Dependent Variable: Hospital Service Quality

b. Predictors: (Constant), Customer Focus, Recognition & Reward, Top Management Commitment, Teamwork & Participation, Continuous Improvement, Employee Training & Education, Process Management, Organization Culture

Coefficients[a]

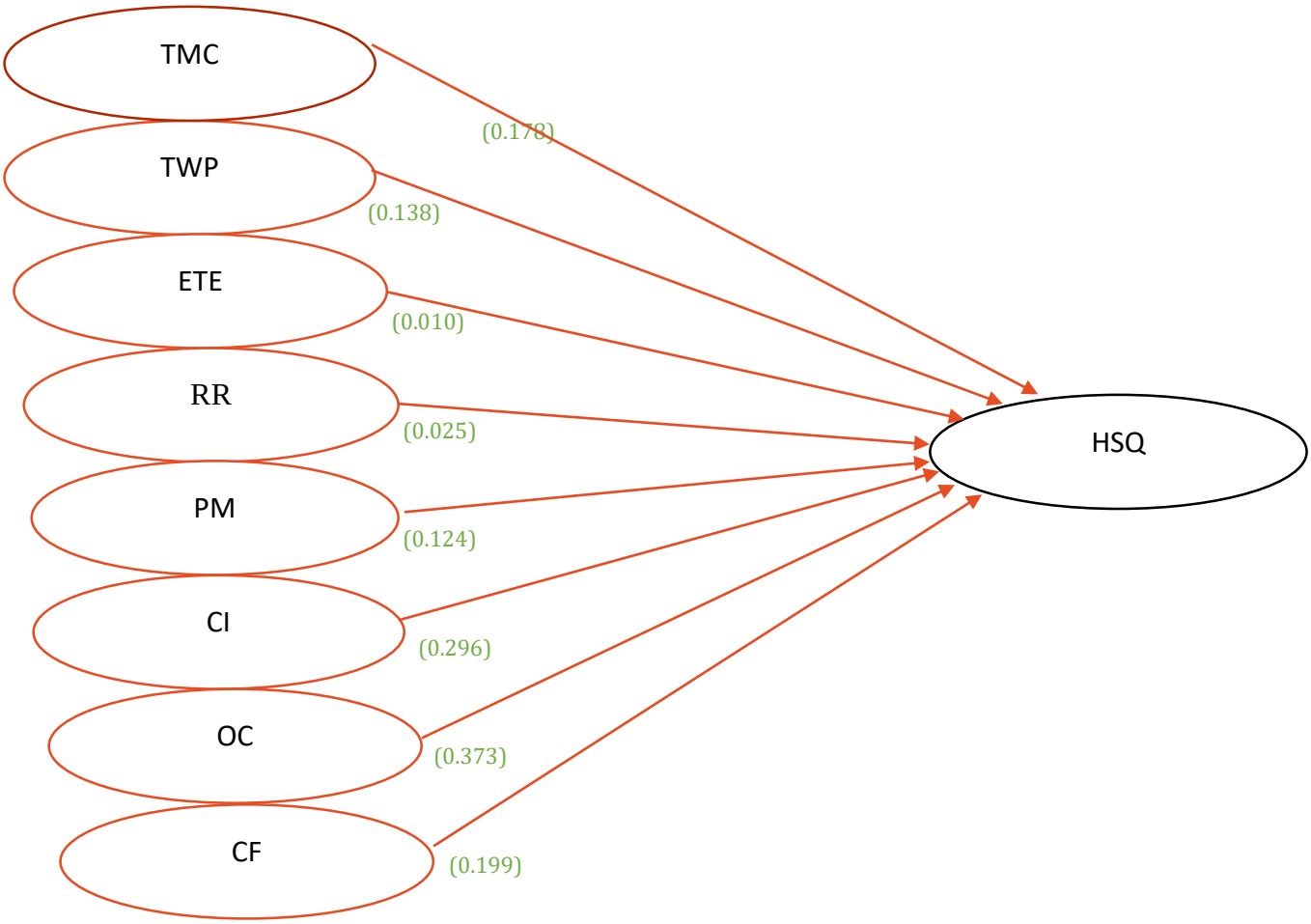
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.050	.135		.372	.710		
	Top Management Commitment	.155	.035	.178	4.411	.000	.436	2.293
	Teamwork & Participation	.132	.046	.138	2.861	.005	.304	3.287
	Employee Training & Education	.010	.045	.010	.224	.823	.346	2.893
	Recognition & Reward	.015	.021	.025	.718	.474	.600	1.667
	Process Management	.137	.061	.124	2.247	.026	.232	4.319
	Continuous Improvement	.307	.056	.296	5.499	.000	.246	4.068
	Organization Culture	.346	.053	.373	6.469	.000	.214	4.682
	Customer Focus	.187	.051	.199	3.676	.000	.243	4.109

a. Dependent Variable: Hospital Service Quality

Table 3 reveals that the regression model proves a robust fitness at R-value of 0.937 and R-squared of 0.879, which indicating that 87.9% of the variation in hospital service quality explained by TMC, TWP, ETE, RR, PM, CI, OC and CF. The ANOVA table shows an F-statistic= 154.616 (p-value = 0.000) indicating that the multiple regression model with independent variables of 8 TQM implementation is significant at 1% level in predicting the variability of hospital service quality. Thus, the regression model is a good fit of the data.

Table 3 shows the Beta coefficient of each independent variable and its significant level. The table above indicates that five of the TQM implementation elements include TMC, CI, OC, CF and TWP show the significant effect on hospital service quality at the 1% significant level. In addition, Table 3 indicates that one of the TQM implementation elements include PM show the significant effect on hospital service quality at the 5% significant level. Among the eight TQM implementation elements, OC expresses the strongest effect on hospital service quality with highest coefficient value of 0.373 (= 0.373, t = 6.469, $\rho < 0.01$). CI, CF, TMC, TWP and PM represent the relative smaller effects with coefficient values of CI: = 0.296, t = 5.499, $\rho < 0.01$; CF: = 0.199, t = 3.676, $\rho < 0.01$; TMC: = 0.178, t = 4.411, $\rho < 0.01$; TWP: = 0.138, t = 2.861, $\rho < 0.01$; PM: = 0.124, t = 2.247, $\rho < 0.05$, respectively. ETE and RR TQM elements, however, are the only independent variables which do not indicate the significant effect on hospital service quality at the 5% level (ETE: = 0.010, t = 0.224, $\rho > 0.05$; RR: = 0.025, t = 0.718, $\rho > 0.05$). Accordingly, the result of model analysis concluded that H1, H2, H5, H6, H7 and H8 are accepted. Thus, TMC, TWP, PM, CI, OC and CF have significant positive effects on hospital service quality. On the other hand, the result of model analysis concluded that H3 and H4 are rejected. Thus, ETE and RR do not have significant positive effects on hospital service quality. Results of testing the first developed theoretical model in this study can be seen in Figure 2.

Figure 2. Results of Testing Research Framework



DISCUSSION AND CONCLUSION

The main aim of this research paper was to measure the effects of implementing TQM elements on hospital service quality. Generally, the results of the multiple regression analysis indicated that TQM has a significantly positive effect on hospital service quality. In this study, eight TQM elements were identified, namely TMC, TWP, ETE, RR, PM, CI, OC, and CF.

The questionnaire outcomes showed that TMC has positive effects on hospital service quality (P<0.01) with Beta coefficient value effect of 0.178. The findings indicate that DHA top executives are obviously committed to the TQM implementation in their hospitals which reflect that they are aware of the significant role of TMC in applying TQM to enhance the quality level of services provided by their hospitals. In essence, it is the responsibility of leadership in hospital to learn quality-related concepts, actively participate in quality management accomplishments and determine the hospital's vision and strategy and the way to achieve these responsibilities. Furthermore, hospital's top management has an important role in managing hospital staff and enabling them to elucidate quality problems. However, results of the present study indicate a strong effect of implementing TMC practices on service quality, which are consistent with TQM studies. Previous extensive studies have confirmed that the effective implementation of TMC leads to improve organizations performance and enhance productivity (Al Qahtani *et al.*, 2015; Shafiq *et al.*, 2017; Abu-Mahfouz, 2019) and leads to improvements in organizational service quality (Oakland, 2014). The hypothesis that employee TWP has a positive effect on hospital service quality was confirmed by the data (p<0.01) with Beta coefficient value effect of 0.138. Thus, the findings in this study support that higher employee TWP practices leads to higher level of service quality. This reflects that the DHA's management has a comprehensive understanding of the value of involving employees in their hospitals to improve hospital service quality. In addition, this result indicates that the DHA's management invested on the development of their employees and so succeed to appreciate the significance of their employees as a valuable asset to the hospitals. In essence, it is helpful for patients to place confidence toward the quality of services when healthcare staff were involved to address quality problems and encouraged to report their own working problems they find in other areas. Therefore, DHA's hospitals rely on the ability and the participation of their service providers to deliver high quality service. The results of this study are also in contrast with the findings of other studies (Tsaur *et al.*, 2004; Jones *et al.*, 2008; Sadikoglu & Zehir, 2010; Talib *et al.*, 2013; Boakye, 2015). The questionnaire survey data did not support the hypothesis that ETE has a positive effect on service quality. The relationship between ETE from one side and hospital service quality from another side is found to be positive

(0.720) but insignificant (p > 0.05). This reveals that ETE practices do not have a great role to play in ensuring hospital service quality. Although the positive relationship and its direction of the influence was predicted, the lack of significance of this relationship is relatively unexpected. Various possible reason could be that the effectiveness of ETE practiced in the service organizations are more focused on the skills not on the delivery of service itself. The main objectives of education and training programs in the service organizations are to improve employees' skills and enhance their commitment rather than the delivery of service itself (Suson *et al.*, 2020b). Thus, employees had the capacity to do their jobs better. Similarly, the lack of monitoring and auditing the current training programs applications in regard to the outcome of the services provided in the hospitals might lead to disconfirm the positive impact of ETE on service quality. The results in this study are not in line with TQM literature (Chartrungruang *et al.*, 2005; Khanfar, 2011; Talib *et al.*, 2013; Tariq *et al.*, 2016; Yala, 2018). The relationship between RR and hospital service quality is found to be positive (0.512) but insignificant (p > 0.05). This reveals that RR practices do not have a great role to play in ensuring hospital service quality. A number of reasons might lead to this disconfirmation. First, the descriptive statistics indicated that RR factor has recorded the lowest level of TQM implementation compared with other TQM factors with a mean of 3.317. The presence of other TQM elements such as OC and CI elements which have been implemented in a very high level and had a great influential power on service quality might lead to make less influential power of RR on service quality. Second, RR activities encourage staff to increase their satisfaction level and commitment rather than focus on how to deliver services. As noted by Aburayya *et al.* (2019a), reward activities have a positive indirect effect on quality through the effect of employee satisfaction. Therefore, rewards simply appear to make employees happy and to stop them from being dissatisfied, but they do not seem to have an impact on employees' performance or on the way how to deliver services (Njanja *et al.*, 2013). Third, the DHA bonuses scheme is used to reward employees' performances during the year under appraisal, so it can be expected that not all the staff been rewarded for this year. This explains why there is no difference in perception of reward in regard to service quality for those health workers who have received it and those who have not. In addition, staff who did not received it will consider improving so that they can get it next time. Although the findings in this study are not in line with TQM literature (Duberg & Mollen, 2010; Kopelman *et al.*, 2011), some few studies supported the study findings (Njanja *et al.*, 2013; James *et al.*, 2015).

The findings in this study support that higher PM practices lead to higher level of service quality. This reflects that the majority of the DHA's managers are paid considerable attention to PM practices and improvement to make sure that their services achieved the purposes for which they were planned to match the requirements of process. Several studies in TQM literature are in contrast with current study results (Sit *et al.*, 2009; Gorgi, 2011; Talib *et al.*, 2011b; Abedaziz, 2015; Kim, 2016). Among the TQM factors identified in this research paper, the results revealed that CI recorded the second highest effect on hospital service quality with Beta coefficient value effect of 0.296. The reported findings in this study indicate that the hospital managers are aware of the importance of applying CI practices within their hospitals. In fact, this was expected for the reason that CI is deliberated as a rudimentary thought to organization success (Singh & Singh, 2015). Consumer desires are not static. A distinctive service feature that is considered innovative today will be considered just routine tomorrow. 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). CI, when coupled with quality management systems, can help improve the delivery of care to the patients (Aburayya *et al.*, 2019a). The results in this study are in line with TQM literature, for example, Samat *et al.* (2006), Himanshu (2009), Gorji (2011), Singh and Singh (2015), and Kim (2016).

Among the TQM factors in this study, the findings indicated that OC had the strongest effect on hospital service quality with Beta coefficient value effect of 0.373. There is a strong indication that the DHA's management considered the OC factor as a key determinant of success in TQM implementation to improve the quality of services within their hospitals. Notably, the success of quality improvement activities is anticipated to rely greatly on OC practices (Ginsburg, 2003). Several scholars on OC such as Laforet (2016) and Gillespie *et al.* (2007) have the same opinion that strong culture in the organization is very important to enhance the performance of the employees which leads to increase the overall performance of the organization. "Culture is the organizational DNA" (Belias *et al.*, 2015). This was supported by the study findings which indicate that hospitals are providing high level of services quality via emphasizing high cohesion and morale in the hospital, creating an atmosphere where staff respect and freely help each other, encouraging employees to be innovative, emphasizing acquiring new resources, emphasizing on quality goals accomplishment, placing great importance on efficient planning of healthcare service delivery and following the established rules, policies and procedures by health workers. Finally, the findings in this study support that higher CF practices lead to higher level of service quality. The study findings indicated that most of the CF practices in TQM implementation in the DAH's hospital were implemneted in a very high level to improve the services provided by the hospitals and to obtain their patients satisfaction. CF is the degree to which an organization is committed to meeting the expectations of the customers, to use customers in designing goods or services so that they meet their needs and wants (Al Damen, 2017). The focus on the customers is seen as essential for the long-term growth and performance of the business (Oakland, 2014; Baidoun *et al.*, 2018). In essence, it is no doubt that the main goal of any consumer focus activity is to increase the level of service quality and pursue consumer happiness, which are supported by many studies (Siddiqui a& Rahman, 2007; Miyagawa & Yoshida, 2010; Ooi *et al.*, 2011; Talib *et al.*, 2013).

This research paper contributes to the literature concerning the association between TQM practices and service quality. Consequently, it advances theory building relating to TQM in the healthcare context. In addition, it offers future scholars with an extensive and comprehensive understanding of TQM factors, which can advise the expansion of more effective and empirically grounded models that explicitly address TQM success factor. Furthermore, the developed model might serves as a guideline for DHA managers, by presenting successful factors that can facilitate service quality. Finally, this study

was limited to the city of Dubai, which is only one area of the UAE. Replicating findings in different contexts and surroundings would thus require further empirical evaluation. In addition, as a cross-sectional study, this study was conducted at a single point in time. As such, the use of a longitudinal study design could overcome this limitation, by presenting evidence of causation among variables but, notably, over time. Furthermore, the data in this study was only includes the perceptions of senior employees, which was gathered using the main tool of a survey questionnaire. Therefore, it is recommended that future research address the subjectivity of this data collection, through the use of data triangulation methods, such as observations and interviews with healthcare managers.

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