

EXAMINATION OF THE EFFECT OF TQM IMPLEMENTATION ON INNOVATION PERFORMANCE: AN ASSESSMENT STUDY IN UAE HEALTHCARE SECTOR

Ibrahim Al Eideh, Roads and Transport Authority
Marouane Khallouk, University of Wollongong in Dubai
Ala Albaqaen, Dubai Health Authority
Fares Dahabreh, Northumbria University
Maryam Alawadhi, Dubai Health Authority
Talal Mouzaek, Sheikh Khalifa General Hospital
Umm Al Quwain, UAE
Said A. Salloum, University of Salford
Ahmad Aburayya, Dubai Health Authority

ABSTRACT

Today, offering customers excellent quality is crucial to the survival of an organization and international competitiveness. Ideally, providing innovative quality enhances the satisfaction of customers and improves institutional productivity. Organizations are seeking to implement quality improvement initiatives, like Total Quality Management (TQM), to offer high-quality and innovative services to customers. This research paper's primary objective is to examine the determinants of adopting TQM in healthcare settings and gauge their impact on innovation performance. Self-administered questionnaires applying the drop-off tactic was used to collect empirical data. Senior healthcare practitioners completed questionnaires exploring two variables: innovation performance and TQM. The study analyzed 108 questionnaires out of the 250 questionnaires distributed, representing a 43.2% response rate. Inferential and descriptive statistical analysis methods were applied for data analysis using multiple regression analyses, Pearson correlation coefficient, and principal component analysis. This study's results support the positive impacts of customer focus, employee engagement, process management, organizational culture, top management commitment, and continuous improvement as independent variables on enhancing the innovation practices that improve general innovation performance as the dependent variable. Also, the study established that from the eight TQM implementation factors, customer focus has the highest coefficient value (0.374), thereby presenting the most significant impact on innovation performance. The study has contributed to the existing literature on the correlation between innovation performance and TQM implementation factors which can be used to deliver substantial knowledge to healthcare professionals to improve the TQM practices that they have and successfully enhance the quality of service and realize customer satisfaction.

Keywords: TQM, TQM Factors, Innovation Performance, Innovation Practices, Organization Performance, Customer Satisfaction, Multiple Regression Analysis

INTRODUCTION

Over the past decades, the business environment has changed and evolved. In particular, there has been increased competition within the service and manufacturing sectors, thanks to globalization (Suson & Ermac, 2020). Today, competition is more complicated compared to any previous time in history (Aburayya et al., 2020c; Alshurideh et al., 2020; Alzoubi et al., 2020; Suson et al., 2020a; Yeng et al., 2018). The new problems imply that organizations need to

modify their operations to cope with competition in the business environment (Alshurideh, 2019; Alshurideh et al., 2020). One strategy an organization can apply to attain and maintain its competitiveness is restructuring the culture, operations and implementing systems focused on customers to provide quality and attain client satisfaction (Alshurideh et al., 2012; Kurdi et al., 2020; Oakland, 2014). As such, the key to surviving and being competitive globally is providing customers with excellent quality and innovative services (Al Dmour et al., 2014; Sheikholeslam & Emamian, 2016). Ideally, organizational performance and customer satisfaction are enhanced through delivering top quality (Sheikholeslam & Emamian, 2016). Adopting quality concepts like Total Quality Management (TQM) is one of the ways organizations are using to deliver quality and innovative services to end-users (Obeidat et al., 2012; Toke & Kalpande, 2020).

Developing an organizational attitude and culture devoted to meeting customer needs by providing innovative services matching customer demands is the basis of TQM (Talib et al., 2020). While TQM, as a management practice, gained popularity in the 1980s, it started in the 1950s (Oakland, 2014). Today, the TQM acronym is used in management circles as a catchphrase. Quality is the focus of this management practice, where wastages and defects in the process are minimized and eliminated (Biadoun et al., 2018). With the elimination or minimization of defects and wastage, organizations are efficient and enjoy cost benefits. They can deliver high-quality products by cutting the rework and wastage costs. TQM enables employee-management collaborations (Ghannajeh et al., 2015). This collaboration allows for continuous quality development in service provision (Al Shurideh et al., 2019; Talib, 2013). As a result, there is widespread acceptance among managers that TQM is an important method of effecting changes in organizations to improve quality (Sweis & Alsayyed, 2019). Besides enhancing quality, TQM also plays an active role in implementing innovation practices of an organization (Khadour et al., 2016; Schakaki & Watson, 2017; Talib et al., 2020).

Some healthcare managers have started implementing the TQM concept, despite having its foundation in industrial production. In the medical field, the TQM concept has a background in leadership and innovative management practices committed to continuous quality improvement. It can provide motivation and vigor for improving the delivery of service in healthcare (Alshurideh et al., 2019; Brown, 2010). The global tendency to implement TQM is committed to gradually improving healthcare service quality to meet patient expectations and guarantee efficient utilization of resources available to enhance healthcare outcomes. The TQM systems' adoption within healthcare can aid in enhancing patient safety. Besides, TQM implementation can assist healthcare facilities in enhancing performance and implementing cost-effective strategies and practices for managing innovation (Al Attal, 2009; Biadoun et al., 2018; Jaiswal et al., 2019; Schakaki & Watson, 2017). For instance, medical errors account for about 200000 deaths in America every year (Aburayya et al., 2019a). Adopting TQM can reduce such errors and the resulting deaths and enhance patient satisfaction by employing innovative management practices. Specifically, TQM can help develop a patient-focused system that is efficient, safe, and innovative, thereby improving patient satisfaction levels (Jaiswal et al., 2012; Talib et al., 2020). TQM practices have proved challenging to adopt, although they have been reported as effective in introducing a drastic change or improvement in healthcare. TQM's success in healthcare would require managers to undergo training on various models of business management (Mosadeghrad, 2013).

An organization seeking to adopt TQM must direct its efforts in understanding the determinants of its success. This way, an organization has a higher chance of predicting challenges that may occur in the adoption process and overcoming them by developing mitigation measures. Usually, an organization that spends time comprehending the various aspects of an innovation culture and its impacts implementing TQM has a higher probability of being successful (Al Shdaifat, 2015; Schakaki & Watson, 2017). A broad literature review concerning TQM employment in healthcare indicates a need to gain an understanding that can help describe the elements associated with successful TQM implementation in the Gulfstream region, particularly in the United Arab Emirates (UAE) (Aburayya et al., 2019a; Alqasimi, 2017; Khadour et al., 2016; Schakaki & Watson, 2017). Therefore, this research paper seeks to

bridge the gap in the previous works, thereby enabling healthcare professionals to successfully conduct the TQM program in the healthcare sector. In this respect, this study discusses TQM elements and their effects on service delivery in UAE healthcare organizations, focusing on Dubai Health Authority (DHA) that operates clinics and public health facilities in Dubai. There are sincere practical and theoretical needs in healthcare to examine the correlation between implementing TQM and innovation practices. There have been efforts to study the TQM concept within healthcare in the past, but many gaps are still there to be filled (Alqasimi, 2017; Chiarini & Baccarani, 2015; Halis et al., 2017; Lashgari et al., 2015; Mosadeghrad, 2014; Talib et al., 2011a). Additionally, this research study tries to provide relevant information about the insulation of TQM in healthcare, especially in clinics, and seeks to quantify the impacts of adopting it on innovation performance. This means that the findings and recommendations made in this research study can aid in improving the quality and innovation management practices in the UAE's healthcare industry and boost customer satisfaction and innovation performance. Furthermore, the research study is exceptional as it is the first to systematically review the Critical Success Factors (CSFs) for adopting TQM in the UAE healthcare setting. As such, the research paper is regarded as an effort on the path to theory building associated with TQM in the UAE healthcare sector. In most cases, applying an ineffective model and an unsuitable environment is among the primary challenge's healthcare institutions encounter when attempting to implement TQM (Mosadeghrad, 2013). Therefore, the objective of this study is to examine the CSFs affecting TQM implementation in the healthcare setting and measure their impact on innovation performance.

LITERATURE REVIEW

Total Quality Management (TQM)

The definitions of TQM are many. However, the most widely used definition is Oakland's (2014), who described TQM as "A comprehensive approach for improving competitiveness and flexibility through planning, organizing and understanding each activity, and involving everyone at each level." It allows the executive to implement a strategic outline of quality and emphasizes prevention instead of inspection. That is, TQM is a thorough strategy that allows for continuous improvement of effectiveness in organizations by engaging every person involved in comprehending the process. Specifically, the objective of adopting this concept is to emphasize prevention rather than inspection. Based on this definition, it can also be noted that TQM's focus is improving the whole process instead of constituent parts. The focus is also to meet customer expectations by improving quality continually. From the available literature, it is suggested that the fundamental philosophy underpinning TQM application is a quality improvement (Aloe & Gorantiwar, 2013; Beckford, 2010; Biadoun et al., 2018; Dale, 2003; Evans & Lindsay, 2017; Kreitner, 2004; Montgomery et al., 2011; Oakland, 2014; Slack et al., 2007; Talib et al., 2020). TQM aims at introducing quality improvement in all organization's levels and every stage of a process. However, an organization committed to applying TQM must understand its tools and principles developed by pioneers such as Deming and Juran to guarantee success. An organization must consider TQM as part of its innovative culture.

TQM practices have also gained acknowledgement in service sectors, although its concepts are founded on industrial produces and depend on teachings and ideas of founders like Deming (Akhtar et al., 2014; Maram, 2008; Prajogo, 2005; Talib, 2013). The main difference between the service and manufacturing sectors occurs in the techniques and tools applied and the diverseness of the resulting outputs (Talib & Rahman, 2012). These vital differences between the service and industrial sectors mean that many challenges are bound to occur when TQM is applied in the service setting (Parshuram, 2015). This prompts firms in the service sector to devise ways of implementing quality management practices in a bid to meet customer expectations. TQM has successfully been applied in the service sectors over time, helping firms

to enhance their productivity and provide customers with high-quality services that satisfy their expectations (Aladwan & Forrester, 2016; Alhashmi et al., 2020; Talib, 2013; Weckenmann et al., 2015; Zylfijaj & Pira, 2017). Recently, there has been an increase in literature exploring how TQM is implemented in the service sector. The emergence of new knowledge has been noted as the basis of continuous growth techniques and tools used to apply quality services in the service sector successfully. Most studies that focus on the implementation of TQM in the service industry explore how practices can be applied to aid organizations create, improve, and maintain their competitive advantage (Al Falah, 2017; Alshurideh et al., 2019; Al Qahtani et al., 2015; Kim, 2016; Talib et al., 2013).

The significance of applying quality management practices is recognized extensively in research (Aamer et al., 2017; Aladwan & Forrester, 2016; Baidoun et al., 2018; Fu et al., 2015; Gimenez-Espin, 2013). Most healthcare institutions yearn for owning well-organized systems at clinical and managerial levels to streamline processes and improve medical services' quality (Mosadeghrad, 2014). Competent systems should also create room for continuous quality improvement, guarantee that resources are utilized at optimal levels, and set response mechanisms when challenges occur (Aburayya et al., 2019b; Al Attal, 2009). In the healthcare sectors, the aim of TQM implementation is like within hotels, banks, advertisement sectors, among others (Talib et al., 2012a): its chief objective is to enhance performance and improve efficacy (Baidoun et al., 2018; Talib et al., 2012a). Besides, TQM implementation emphasizes meeting customer expectations (here, customers are patients). Patients need to feel contented with the care and medical service quality. Additionally, there should be maximum utilization of the resources available to ensure patients exhibit the best care results (Aburayya et al., 2019a). For the healthcare context, the adoption of TQM has adhered to the fruitful pilot studies that indicated that the model could be effective in the healthcare sector. The NDPQIH, composed of twenty-one experts from various healthcare organizations, held that TQM strategies could realistically be implemented in the healthcare sector (Aburayya et al., 2019a). Generally, the adoption of TQM is projected to present constructive impacts on the healthcare context (Al Attal, 2009; Baidoun et al., 2018). Due to the projected advantages of implementing TQM, several healthcare institutions in developed countries have adopted the concept (Baidoun et al., 2018). For instance, findings from various studies indicate that TQM can assist in resolving problems that arise in healthcare (Chiarini & Baccarani, 2016; Lashgari et al., 2015; Miller et al., 2009; Schakaki & Watson, 2017; Talib et al., 2011a; Varma, 2015). Healthcare facilities that have already adopted TQM are enjoying some benefits. For instance, such organizations have witnessed higher efficiency, enhancement in productivity, quality, improvement in innovation performance, and higher quality and patient satisfaction (Lashgari et al., 2015; Talib et al., 2020).

Many organizations across industries have adopted the TQM concept. However, some have witnessed failure when trying to implement it (Mosadeghrad, 2013). Implementations failures increased interest in knowing the factors that hinder the success of TQM practices among many researchers. Many factors contribute to failures when implementing TQM. One of the leading factors that have been identified is the incompetence of the management when implementing TQM (Hamidi & Zaman, 2008; Mosadeghrad, 2013). Also, within the healthcare sector, a one-fits-all approach has been presented by TQM, which has led to reduced effectiveness in an organization during change implementation. Another factor that has also been identified to contribute to failed TQM implementation is the inability to associate compensation with achieving quality objectives (Aburayya et al., 2020d; Peconcillo et al., 2020).

Furthermore, failure is attributed to the absence of developing training programs that include aspects like teamwork, communication, quality improvement skills, and group discussion (Al Khamisi et al., 2018). Failing to allocate adequate resources to reinforce quality management implementation also results in the ineffective application of TQM. Despite the benefits of the TQM application being well-known, healthcare organizations encounter many challenges when integrating TQM practices in their operations. Using ineffective models and an

unsuitable business environment is among the most pressing challenges faced when implementing TQM in healthcare organizations (Mosadeghrad, 2013). TQM is not sufficiently developed in the healthcare industry (Aburayya et al., 2020d). Therefore, incorporating other management theories is required to pave the way for successful TQM implementation. For instance, TQM implementation can be complemented by incorporating concepts from change management, sociology, and psychology.

This paper undertakes systematic reviews of TQM's critical success factors in the healthcare context between 2015-2021. The searches included several electronic databases, including Emerald, Elsevier Science, EBSCO, Open Access Journals, PubMed, the Web of Knowledge, Social Science Research Network, and the Social Science Citation Index. The search strategy involved using phrases and expressions to identify relevant research papers published to help complete this study. Some of those phrases and expressions include TQM, TQM critical success factors, TQM strategy, TQM implementation, quality management, quality improvement, healthcare organization, hospital administration and guidelines, hospital service quality, quality management practices and systems, TQM problems and barriers, and TQM implementation and framework. The primary literature search found 26 peer-review papers, literature reviews, and empirical studies that emphasized TQM's critical success factors in healthcare institutions. A total of 12 CSFs of TQM were obtained from analysis of the literature review and later divided into eight constructs, including Customer Focus (CF), Continuous Improvement (CI), Organization Culture (OC), Process Management (PM), Recognition and Reward (RR), Training and Education (TE), Employee Involvement (EI), and Top Management Commitment (TMC). The systematic review found that the common CSFs of TQM in the health context include CF, EI, PM, and TMC. This study focuses on these eight constructs. In this study, TQM is described as a management concept that seeks to continuously improve the overall performance of healthcare clinics based on the customer focus, continuous improvement, organization culture, process management, reward and recognition, education and training, involvement of employees, and commitment from top management. Applying these constructs requires devising techniques and tools that can make it possible to implement the TQM concept successfully.

Innovation Performance

Innovation is the "adoption of an internally generated or purchased device, system, policy, program, process, product, or service that is new to the adopting organization" (Alain et al., 2010, p.416). Chesbrough (2003) also advocated for the concept of open innovation in which organizations are encouraged to utilize both internal and external ideas and paths to markets as they seek to develop and improve their technologies. Organizations can share information externally and internally with the help of TQM, thereby enhancing their innovation performance. Innovation can emerge in the organization, process, and service domains. For Rogers (1995), innovation is "an idea, service or process, system or device that is perceived to be new to an individual, a group of people or firms, an industrial sector, or a society as a whole" (p.11). Organizational innovation integrates the creation and adoption of new ideas, technologies, services, or systems (Hung, 2011). Innovation performance in this study is the dependent variable. It is perceived in relation to process and service innovation performances (Tang et al., 2013). Service innovation entails the development of improved and new services to the markets, and it emphasizes identification of the needs of the customers, creating an effective strategy for market expansion, and managing the quality of products (Aburayya et al., 2020). In contrast, process innovation involves adopting improved and new techniques to produce goods and services. The process innovation' primary objectives include minimizing operational cost, lead-time, and improving the flexibility of services (Baki et al., 2011). It emphasizes the optimization of the efficiency in activities leading to the production of services. Both process and service innovations play a significant role in organizational growth in the healthcare business environment (Zweifel, 2021). Although the impacts of process innovation tend to be

unclear to the external market, the effects of service innovation tend to be more direct and clearer on organizations' bottom lines (Deloitte, 2021). However, each time a new service needs a delivery process to reach consumers, process innovation can impact the production innovation's idea-to-launch process and encourage "new" services. As such, it is paramount to clearly measure both process and service innovation performance, as is the case in this research paper.

Relationship between TQM and Innovation Performance

Although there is recent research on the association between innovation and TQM, it is less extensive compared to studies on the correlation between quality and other organizational performance measures. Besides, there are mixed findings from those studies. TQM and innovation have many similarities despite being different in some aspects. For example, some critical features of both innovation and TQM are elements of continuous improvement and open culture. This shows that organizations that have TQM practices are more likely to be innovative compared to those that have not implemented such practices. This is to say, for an organization to be innovative, it must use TQM as the vehicle to realize that goal. That is, TQM results in innovativeness (Hung et al., 2011). There is extensive contention on the nature of the association between innovation performance and TQM. Some researchers hold that there is a positive relationship, while others suggest a different correlation. Basically, the nature of the correlation between innovation and TQM divides researchers into two groups: those who claim that there is no correlation between the TQM and innovation management and performance in firms and those who hold that there is a positive relationship between the two (Deloitte, 2021; Cole & Matsumiya, 2008; Pinho, 2008; Yusr, 2016; Zweifel, 2021). Proponents of the constructive correlation between innovation and TQM hold that organizations that implement TQM and apply it to their cultures and systems provide a conducive environment for innovativeness (Deloitte, 2021; Zweifel, 2021). They argue that this conviction is based on TQM principles that create room for innovation.

Researchers who hold that innovation is positively associated with TQM have recognized customer focus as one of the leading TQM elements because it stimulates an organization to increase innovativeness in creating and initiating new services and products (Aburayya et al., 2020; Long et al., 2015). According to Perdomo-Ortiz, et al., (2009), TQM creates a favorable environment for innovation. In their study involving Australia-based manufacturing and non-manufacturing firms, Perdomo-Ortiz, et al., (2009) found that TQM had a positive effect on service innovation and quality performance, but TQM had a stronger relationship with service quality. According to Pinho (2008), the performance of Small and Medium Enterprises (SMEs) relies on TQM practices. Organization culture, process management, involvement of employees, managerial training, and top management commitment are some of the TQM practices critical to the success and performance of SMEs. According to Pekovic & Galia (2009), innovation performance is influenced by TQM, putting a special emphasis on the ability to create a culture and environment that encourages innovation. Besides, dimensions such as team spirit, motivation, the frequency of meetings, and accessibility to tools, leadership commitment, continuous improvement and involvement of employees improve innovation. For Santos-Vijande & Alvarez-Gonzalez (2011), regardless of ripples in the markets where organizations operate, TQM significantly influences administrative and technical innovation. As established by these researchers, it follows that TQM implementation in relation to the management of people and actively engaging employees in organizational management may affect the vision and mission of a company. This is because TQM positively relates to innovation performance. In a different but supporting study, Abrunhosa & Moura (2008) found that philosophies of TQM, including hard aspects (continuous improvement and process management) and soft aspects (organization culture, training and education, employee involvement, and leadership), have a positive relation to the implementation of process and service innovation. TQM practices cannot be successful if workers do not know their meaning

and purpose in an organization. To realize organizational goals, employees must be reminded about their roles and pushed continuously. Ooi, et al., (2012) established that innovation performance is strongly associated with many TQM practices such as organization culture, continuous improvement, customer focus, process management, and people management (reward and recognition, education and training, and involvement). In a questionnaire survey, Aburayya, et al., (2020); Cemal, et al., (2012) found comparable results with Ooi, et al., (2012). Unlike Ooi, et al., (2012), who conducted their research in Malaysia, Aburayya, et al., (2020) and Cemal, et al., (2012) based their study in the UAE and Turkey, respectively, including 261 upper and middle-level managers from 110 non-manufacturing and manufacturing, health services, and information technology companies.

Based on past studies, many factors affect innovation in the healthcare sector. The researchers group positive factors based on many TQM principles and explain how they influence innovation in healthcare. However, most researchers hold the same opinion that TQM implementation in healthcare positively affects innovation performance. With regard to Top Management Commitment (TMC), many studies indicate that the commitment of leaders in healthcare organizations to quality practices is attributed to an increase in innovation performance. For instance, Carmo Caccia Bava, et al., (2009) & Länsisalmi, et al., (2006) suggested that leaders need to have an innovative vision and encourage experimentation with new concepts and ideas to improve innovation. Top management needs to support efforts aimed at creating a conducive environment to innovation, like availing funds, staff management, and providing space and time. They also need to take risks when it comes to investment and changes in the environment. Additionally, organizational policies impacting innovativeness in organizations should be passed from above. In healthcare facilities, TQM factors such as continuous improvement and customer focus are positively linked to innovation performance. De Vries, et al., (2016) & Wu & Hsieh (2015) concluded that when developing innovation, there is a need to consider the needs of the patients to match their demands. Furthermore, the continuous creation of treatment methods, examining gaps in patient services, probing newly-recognized illnesses, and being aware of changing society can usher in innovation. Similarly, Wu & Hsieh (2011); Yellowlees, et al., (2011) suggested that implementation of excellent innovation practices in hospitals was significantly influenced by adopting the TQM principle successfully. Such principles included employee training and education and employee involvement. They also established that every person in an institution needs to look for avenues to offer new services and products and should collaborate when implementing technology in all departments; specific knowledge constitutes innovation. With regard to process management, suitable organizational management can create room for being innovative in an organization. All stakeholders within a healthcare facility should be engaged in advancing innovation and collaborating in developing systems that comply with medical ethics and law. This minimizes the risk of making medical errors when patients seek treatment in healthcare facilities. These researchers realized that the variability of innovation practices in healthcare facilities is significantly determined by these management practice success factors.

The following hypotheses were proposed based on the above review:

- H1: TMC positively affects innovation performance.*
- H2: EI positively affects innovation performance.*
- H3: TE positively affects innovation performance.*
- H4: RR positively affects innovation performance.*
- H5: PM positively affects innovation performance.*
- H6: CI positively affects innovation performance.*
- H7: OC positively affects innovation performance.*
- H8: CF positively affects innovation performance.*

Theoretical Model

A research model of innovation performance and TQM elements was framed based on the eight hypotheses proposed above, as shown in Figure 1.

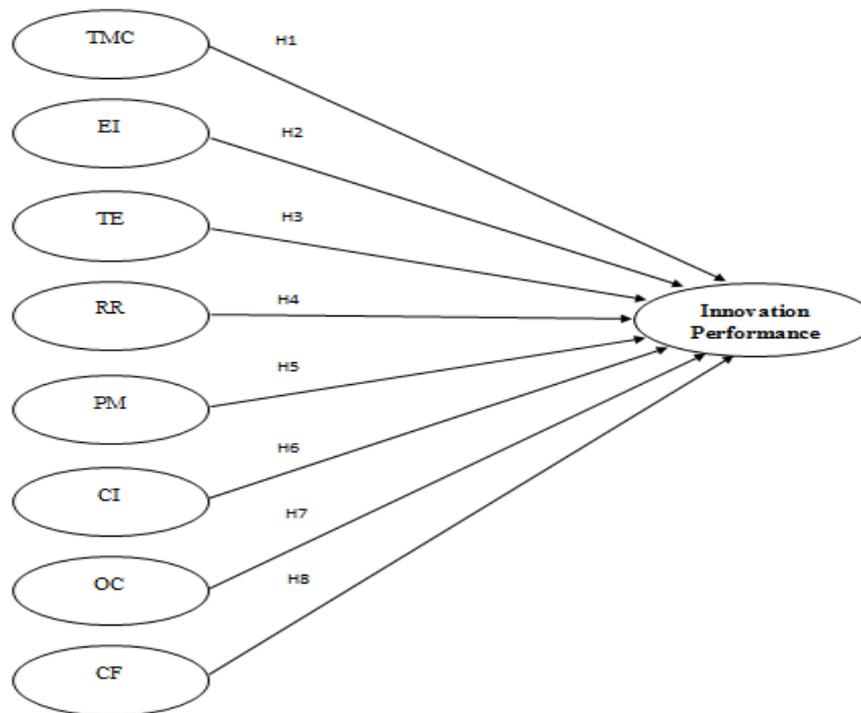


FIGURE 1
RESEARCH THEORETICAL MODEL

Methodology

This study has applied the distinct paradigm based on conceptualized theoretical model and positivism as per the extensive analysis of the available literature on TQM used second research. Hypotheses were tested using primary data. Therefore, this study has shifted from theory to data. The research paper applied a qualitative research method in line with a survey study design for testing the proposed hypotheses to examine the correlation between innovation performance and elements of TQM. To collect primary data from participants, questionnaires that were self-administered were deployed. The sample unit included every clinical and administration senior staff at clinics, such as quality assurance staff, clinical and non-clinical heads, quality managers, head of units, head of sections, directors of departments, and Chief Executive Officers (CEOs). These staff members are a critical source of information regarding quality practices in organizations, as suggested by Sit, et al., (2009). The study is set in Dubai, and the survey was conducted between 16-30th October 2021. Healthcare clinics were situated across the UAE main cities, where the majority of the population resides around them. The convenience-sampling method was utilized as the researcher could not acquire the list of a sampling frame in those healthcare clinics. The method is regarded as the least time-consuming and most affordable sampling method and makes it possible to access a sample size that is big enough (Malhotra et al., 2006). Furthermore, according to Malhotra, et al., (2006), the convenience-sampling approach is commonly used in research because it is well-convenient. Out of 250 questionnaires administered to the senior staff members of the clinics, this study considered 108 questionnaires reliable for analysis, representing a 43.2% response rate.

This research paper has devised a different set of parameters for measuring TQM constructs and innovation performance to make it possible to test the proposed research model

empirically. In this respect, 42 parameters were utilized to compute TQM constructs. An extensively developed 5-point Likert scale was implemented to record responses, with 5 representing “strongly agree” and 1 used to indicate “strongly disagree.” Besides, an 8-item innovation performance scale (process and service innovation) proposed by Prajogo & Sohal (2006); Singh & Smith (2004) was applied to measure innovation performance. The utilized scale included two dimensions: process innovation and services innovation. The innovation performance dimension was measured using the 5-point Likert scale. Also, the Statistical Package of Social Sciences (SPSS) version 25 was employed as this research paper was regarded as quantitative research. SPSS is used extensively in quantitative studies to process and analyses data. With regard to quantitative analysis, several statistical approaches are applied for testing the formulated hypotheses to make a conclusion regarding a population segment. The multiple regression analysis and correlation analysis, as methods of inferential data analysis, were used for hypotheses testing in this study. The hypotheses were tested at two significance levels: $\alpha=0.05$ and $\alpha=0.01$. The principal component analysis and Cronbach alpha were used to estimate and examine whether the measurement constructs were valid and reliable.

Data Analysis

Characteristics of Participants

Of the 108 senior staff members considered in this research, 36.2% of respondents were males, while 63.8% were females. The results further indicate that over two-thirds (73.1%) of the sample was composed of age clusters of (31-40) and (41-50). Regarding the education level of the participants, the results of this study showed that most participants were well-education, with 42.3% of them holding a postgraduate degree. Regarding the present working department profile of the respondents, the results of this study show that most participants (69.7%) were working in the department of clinical affairs and the rest working in the department of administrative functions. Also, the results of this study reveal that most participants (51.4%) were senior staff members, indicating that the responses about methods to enhance quality practices are well-informed.

Measurement Model Analysis (MMA)

The study formulated one instrument to collect primary data from senior staff at healthcare centres to explore the framework of the proposed research. The Measurement Model Analysis (MMA), which is concerned with the instrument's validity and reliability, was projected before exploring the proposed model in this research. In this study, the testing of the hypothesis can be performed in line with the valid and reliable measurement scales. To gauge eight constructs of implementing TQM, this study used eight measurement scales and one measurement scale for innovation performance element. All the measurement scales have many items to estimate. The SPSS 25 validity and reliability programmes were implemented at individual levels for each scale's items. Table 1 below provides principal component analysis and Cronbach's alpha for different innovation performance and TQM implementation scales. The table shows that Cronbach's alpha's reliability coefficients range from 0.651-0.837, showing that there are scales with higher reliability than others. In contrast, every scale for principal component analysis was projected separately. Table 1 also provides the detailed results. It is shown that on all innovation performance and TQM implementation constructs, each item has a high factor loading of more than 0.50. The instruments created for gauging innovation performance constructs and TQM implementation elements were found to be valid and reliable.

Table 1 CRONBACH'S ALPHA COEFFICIENT & PCA										
Item No.	Cronbach's alpha	Eigenvalues and percentage (%) of Variance	TQM Factor Loadings							
			F1	F2	F3	F4	F5	F6	F7	F8
TMC 6	0.719	5.165 With (61.236) % of Variance.	0.732							
			0.768							
			0.761							
			0.734							
			0.694							
EI 4	0.653	3.645 With (63.524) % of variance.		0.705						
				0.785						
				0.672						
				0.639						
TE 5	0.707	3.487 With (65.484) % of Variance.			0.637					
					0.694					
					0.792					
					0.739					
RR 4	0.672	2.821 With (62.212) % of Variance.				0.747				
						0.825				
						0.504				
						0.523				
PR 7	0.838	5.321 With (66.701) % of variance.					0.823			
							0.873			
							0.864			
							0.849			
							0.742			
							0.769			
CI 6	0.734	6.570 With (71.769) % of variance.						0.719		
								0.724		
								0.959		
								0.931		
								0.838		
OC 5	0.705	3.578 With (61.107) % of variance.							0.731	
									0.787	
									0.741	
									0.569	
CF 5	0.714	3.601 With (71.902) % of variance								0.841
										0.873
										0.781

										0.849
										0.921
Item No.	Cronbach's Alpha	Eigenvalues and percentage (%) of Variance	Innovation performance							
8	0.837	6.759 with (76.557) % of variance	0.794							
			0.755							
			0.878							
			0.873							
			0.829							
			0.889							
			0.736							
			0.938							

Causal Model Analysis (CMA)

This section is meant for testing the hypothesized theoretical model that is composed of eight primary hypotheses proposed in this study. All these hypotheses were linked to the individual impact of the eight elements of TQM considered independent variables one dependent variable, which is innovation performance. Eight critical success factors of TQM and innovation performance factors were proposed in the model of this study. The eight hypotheses proposed were tested concurrently by using SPSS 25 multiple regression analysis. From the analysis, there is a strong association between each independent variable and dependent variable, as shown in Table 2 below. From the table, the level is at 0.01. The table further indicates that the relationship between dependent and independent variables is $r=0.898$, representing the correlation between innovation performance and customer focus (CF), as shown in Table 2 below.

**Table 2
CORRELATION BETWEEN VARIABLES**

		TMC	EI	TE	RR	PM	CI	OC	CF	IP
TMC	Pearson Correlation	1	0.571**	0.579**	0.375**	0.526**	0.538**	0.563**	0.438**	0.639**
EI	Pearson Correlation	0.571**	1	0.718**	0.568**	0.734**	0.669**	0.736**	0.723**	0.762**
TE	Pearson Correlation	0.579**	0.718**	1	0.524**	0.634**	0.681**	0.663**	0.735**	0.731**
RR	Pearson Correlation	0.375**	0.568**	0.524**	1	0.409**	0.423**	0.568**	0.474**	0.525**
PM	Pearson Correlation	0.526**	0.734**	0.634**	0.409**	1	0.722**	0.748**	0.775**	0.753**
CI	Pearson Correlation	0.538**	0.669**	0.681**	0.423**	0.722**	1	0.764**	0.762**	0.847**
OC	Pearson Correlation	0.563**	0.736**	0.663**	0.568**	0.748**	0.764**	1	0.716**	0.869**
CF	Pearson Correlation	0.438**	0.723**	0.735**	0.474**	0.775**	0.762**	0.716**	1	0.879**
IP	Pearson Correlation	0.639**	0.762**	0.731**	0.525**	0.753**	0.847**	0.869**	0.879**	1

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

Table 3 shows the results of the multiple regression analysis involving one innovation performance, the dependent variable, as predicted by the eight TQM constructs, independent variables.

Table 3						
MULTIPLE REGRESSION ANALYSIS OF TQM CRITICAL FACTORS' AFFECTING INNOVATION PERFORMANCE						
Model Summary						
Model	R	R Square	Adjusted R Square		Std. Error of the Estimate	
1	0.746a	0.768	0.762		0.18857	
a. Predictors: (Constant), Customer Focus, Recognition & Reward, Top Management Commitment, Employee involvement, Continuous Improvement, Employee Training & Education, Process Management, Organisation Culture						
ANOVA^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	48.429	7	5.176	108.718	0.000b
	Residual	7.919	161	0.050		
	Total	56.348	168			
a. Dependent Variable: Innovation performance						
b. Predictors: (Constant), Organization Culture, Process Management, Employee Education and Training, Continuous Improvement, Employee Involvement, Top management Commitment, Reward and Recognition, Customer Focus,						
Coefficients^a						
Model		Unstandardized Coefficients		Standardize d Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.040	0.124		0.361	0.610
	Top Management Commitment	0.154	0.034	0.177	4.422	0.012
	Employee Involvement	0.131	0.045	0.137	2.859	0.041
	Employee Training & Education	0.008	0.043	0.009	0.222	0.821
	Recognition & Reward	0.013	0.019	0.024	0.717	0.479
	Process Management	0.136	0.060	0.125	2.248	0.027
	Continuous Improvement	0.308	0.057	0.297	5.410	0.000
	Organization Culture	0.188	0.052	0.189	3.677	0.001
Customer Focus	0.347	0.054	0.374	6.458	0.000	
a. Dependent Variable: Innovation Performance						

The regression analysis found 0.746 and 0.768 robust fitness R-value and R-squared, respectively, as shown in Table 3. This indicates variation in innovation performance as determined by TQM constructs. The multiple regression analysis with eight TQM implementation independent variables (as provided in the ANOVA table, which shows an F-statistic= 108.718 (p-value=0.000)) is significant at a 1% level in projecting innovation performance variability. As such, the regression model is an excellent choice of the data. Table 3 indicates the Beta coefficient of all independent variables and their significance levels. The table shows that the TQM adoption constructs: EI, CF, OC, CI, TMC, and PM indicates a considerable impact on innovation performance, with a significant level of below 5%. From the eight elements of implementation, CF exhibits the most significant influence on innovation performance with a 0.374 ($p < 0.01$) coefficient value. PM, EI, TMC, OC, and CI account for a relatively lesser impact at $p < 0.05$, respectively. However, the independent variables RR and TE are the only TQM elements that do not have a significant impact on innovation performance at the 5% level. Therefore, H1, H2, H5, H6, H7 and H8 are confirmed from the model analysis results; that is, TMC, EI, PM, CI, OC, and CF have a huge impact on innovation performance. In contrast, H3 and H4 are rejected from the model analysis results; that is, TE and RR have no considerable impact on innovation performance. Figure 2 shows the developed theoretical model testing results.

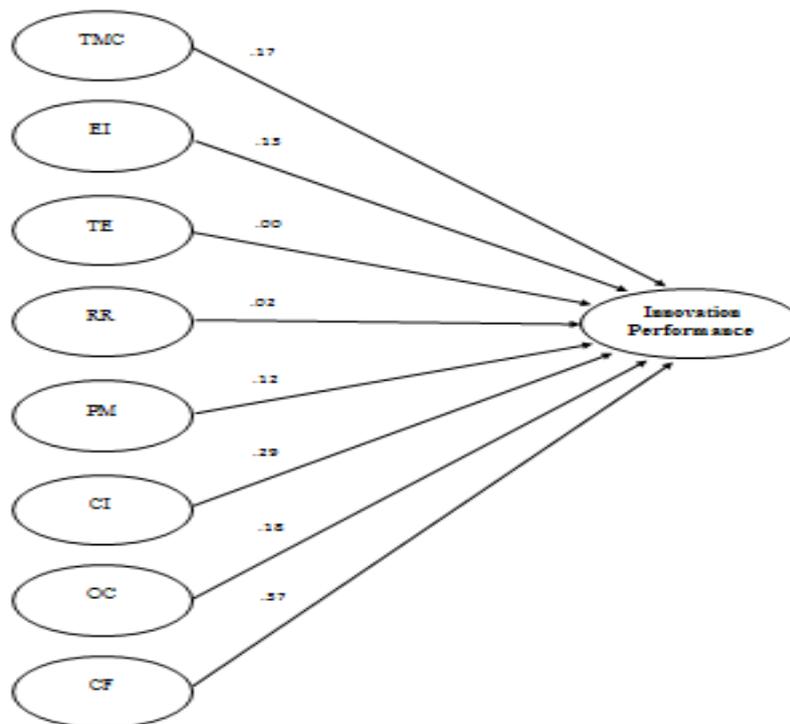


FIGURE 2
INNOVATION PERFORMANCE

DISCUSSION AND CONCLUSION

This research paper’s main objective was to examine the critical success factors (CSFs) that influence TQM implementation in the healthcare context and gauge its impact on innovation performance. From the multiple regression analysis, results indicate that TQM significantly and positively impacts innovation performance. The eight elements of TQM presented in this study include CF, OC, CI, PM, RR, TE, EI, and TMC.

The questionnaire outcomes indicated that Top Management Commitment (TMC) positively impacts innovation performance ($p < 0.06$) with a 0.177 Beta coefficient value. The results show that top executives at DHA are committed to the adoption of TQM in healthcare centres, demonstrating their awareness of TMC’s role in implementing TQM to improve the level of performance of services delivered in their facilities. Basically, it is leaders’ responsibility in healthcare to understand concepts related to quality and be actively engaged in accomplishing quality management and establish the strategy and vision of healthcare centres and how to realise these obligations. Besides, the top management of a clinic has a critical role in the management of their staff and creating an enabling environment to address quality problems. The present study shows that the implementation of TMC practices has a significant effect on innovation performance, consistent with various studies about TQM. Previous studies have established that effective TMC implementation results in improving organisational performance, especially innovation outcomes (Lee et al., 2010; Long et al., 2015). The hypothesis that EI is positively associated with innovation performance was established by the data ($p < 0.05$) and 0.137 Beta coefficient value. The results of this research reiterate that increasing EI practices lead to higher innovation performance levels. It follows that the management at DHA comprehensively knows the significance of having employees involved in their clinics to enhance innovation performance. Besides, the findings show that the management at DHA has invested in developing their employees, and it is successful in appreciating their significance as valuable assets in healthcare facilities. When healthcare personnel are engaged in addressing quality issues, it is helpful because patients can be confident that they are going to get high-

quality services. Healthcare staff are encouraged to report problems in their workplaces and other areas, which enhances innovation management in return. Therefore, healthcare centres at DHA depend on the participation and ability of service providers to offer innovative services. The findings of this study are comparable with previous studies on the subject (Aburayya et al., 2020; Boakye, 2015; Jones et al., 2008; Long et al., 2015; Sadikoglu & Zehir, 2010; Talib et al., 2013).

This study confirms that more practices geared towards process management result in higher innovation performance levels. This also indicates that most managers at DHA are accorded significant attention concerning process management to ensure that services provided meet the intended purpose and improve practices for innovation management in their healthcare centres. The results of this study contrast with many previous studies in TQM literature (Abedaziz, 2015; Hoang et al., 2006; Long et al., 2015; Talib et al., 2011). This study also revealed that CI has the second-leading impact on innovation performance among the TQM factors, with a 0.297 Beta coefficient value. These results show that managers in various healthcare centres are conversant with the significance of implementing CI practices. This is consistent with findings by Singh & Singh (2015), who argued that CI is a fundamental factor for organisational success. Consumer needs and desires are dynamic, meaning what is regarded as innovative and distinctive service features today will become monotonous tomorrow. Ali & Alolayyan (2013); Alolayyan, et al., (2011); Buchbinder & Shanks (2007); Talib, et al., (2011a) also share the same opinion, suggesting that CI is at the centre of the TQM concept. When combined with quality management systems, CI can improve innovation practices and aid in enhancing care delivery to the patients (Aburayya et al., 2019a). The findings of this study are consistent with most of the existing literature on TQM (Long et al., 2015; Singh & Singh, 2015; Yusr, 2016).

This study has established that strengthened OC practices result in higher innovation performance levels. This is a strong indication that the management at DHA considered OC as a critical success factor in implementing TQM to enhance innovation performance practices. The findings of this study are consistent with other studies, such as Aburayya, et al., (2020), who argued that OC practices significantly influence the success of activities aimed at quality improvement. The researchers described culture as the DNA of an organisation. It was found that healthcare organisations emphasising high morale and cohesion exhibit a high level of innovation performance because they create a conducive environment where co-workers respect and help each other freely. Such healthcare facilities emphasise acquiring new resources, encourage employees to be creative, emphasise accomplishing quality goals, place great significance on efficient healthcare delivery placing, and encourage health workers to follow the laid down procedures, policies, and rules. Similarly, Long, et al., (2015); Yusr (2016) suggested that organisational culture is critical to fostering employee performance, which results in increasing the overall organisation's innovation performance.

Finally, the results of this study indicated that CF has the most significant impact on innovation performance among the eight TQM critical factors with a 0.374 Beta coefficient value. This means DHA's clinics implemented many CF practices in TQM adoption to improve the level and quality of services offered by healthcare centres and meet patients' expectations. CF is the extent to which organisations are devoted to increasing customer satisfaction by meeting their expectations. This objective can be achieved by using customers to develop products and services that meet their wants and needs (Al Damen, 2017). Customer focus is considered one of the most important requirements for organisations to meet their short- and long-term growth and innovation performance (Baidoun et al., 2018; Oakland, 2014). The primary objective of activities geared towards customer focus is enhancing the level and quality of service delivered and pursuing practices aimed at innovation management as indicated in many studies, including Miyagawa & Yoshida (2010); Ooi, et al., (2011); Talib, et al., (2013); Yusr (2016).

IMPLICATIONS AND LIMITATIONS

The results of the research increase comprehension of the correlation between innovation performance and TQM implementation critical factors in the healthcare sector in the United Arab Emirates. Specifically, the study sought to determine how each TQM practice impacted innovation performance. However, the results of this study also suggest there is a need for further research to examine the effect of TQM implementation practices on innovation performance in other settings besides healthcare and other elements of innovativeness such as innovation capability. This is consistent with the perception that various industries and sectors may lead to different outcomes but identifying and assessing more radical innovations is attainable by conducting a comprehensive study. Additionally, this study proposes theory development concerning TQM implementation in a healthcare setting. The study provides future researchers with comprehensive and extensive knowledge of TQM critical success factors, which can inform the development of models that are more effective and empirically grounded to address these CSFs. Furthermore, the model developed can act as a guideline for managers at DHA as they are informed of success factors that foster the delivery of high-quality services. This study also has limitations. First, the study was based in Dubai, and as such, the findings may be limited to Dubai, which is one region in the United Arab Emirates. Further empirical evaluation would be required before applying the findings of this study to other different surroundings and contexts. Second, this study was carried out at one point in time because it was a cross-sectional study. Therefore, using a longitudinal study design can help address this limitation as it would present causation evidence among variables over time, which is most important. Third, this research paper only included senior employees' viewpoints, which were collected using survey questionnaires as the main tool of data collection. Future research is recommended, and it should consider the subjectivity of this method of collecting data. This can be achieved by using data triangulation methods, like interviewing and observing healthcare managers.

REFERENCES

- 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.
- 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.
- Aburayya, A., Alshurideh, M., Al Marzouqi, A., Al Diabat, O., Alfarsi, A., & Salloum, S.A. (2020). 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.
- Aburayya, A., Alshurideh, M., Al Marzouqi, A., Al Diabat, O., Alfarsi, A., Salloum, S.A. (2020). 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).
- Ahmad, A., Alshurideh, M., Al Kurdi, B., Aburayya, A., & Hamadneh, S. (2021). Digital transformation metrics: A conceptual view. *Journal of management Information and Decision Sciences*, 24(7), 1-18.
- 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.
- Al Dmour, H., Alshurideh, M., & Shishan, F. (2014). The influence of mobile application quality and attributes on the continuance intention of mobile shopping. *Life Science Journal*, 11(10), 172-181.
- Al Falah, T. (2017). Total quality management tools: Are they necessary for improving service quality and customer satisfaction? *International Review of Management and Marketing*, 7(3), 121-125.
- 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.
- Al Kurdi, B., Alsurideh, M., Nuseir, M., Aburayya, A., & Salloum, S.A. (2021). The effects of subjective norm on the intention to use social media networks: An exploratory study using PLS-SME and machine learning approach. In Hassanien, A., & K. Chang. *Advanced Machine Learning Technologies and Applications*, 324-334.

- Al Qahtani, N.D., Alshehri, S.S., & Abd.Aziz, A. (2015). The impact of total quality management on organizational performance. *European Journal of Business and Management*, 7(36), 119-127.
- Alaali, N., Al Marzouqi, A., Albaqaeen, A., Dahabreh, F., Alshurideh, M., & Aburayya, A. (2021). The impact of adopting corporate governance strategic performance in the tourism sector: A case study in the kingdom of Bahrain. *Journal of Legal, Ethical and Regulatory Issues*, 24(1), 1–18.
- Aladwan, S., & Forrester, P. (2016). The leadership criterion: Challenges in pursuing excellence in the Jordanian public sector. *The TQM Journal*, 28(2), 295-316.
- Al-Emran, M., & Salloum, S.A. (2017). Students' attitudes towards the use of mobile technologies in e-evaluation. *International Journal of Interactive Mobile Technologies (IJIM)*, 11(5), 195–202.
- Al-Emran, M., Arpaci, I., & Salloum, S.A. (2020). An empirical examination of continuous intention to use m-learning: An integrated model. *Education and Information Technologies*, 1–20.
- Alghizzawi, M., Ghani, M.A., Som, A.P.M., Ahmad, M.F., Amin, A., Bakar, N.A., Habes, M. (2018). The impact of smartphone adoption on marketing therapeutic tourist sites in Jordan. *International Journal of Engineering & Technology*, 7(4.34), 91–96.
- Alghizzawi, M., Salloum, S.A., & Habes, M. (2018). The role of social media in tourism marketing in Jordan. *International Journal of Information Technology and Language Studies*, 2(3).
- Alhashmi, S.F.S., Salloum, S.A., & Mhamdi, C. (2019). Implementing artificial intelligence in the United Arab Emirates healthcare sector: An extended technology acceptance model. *International Journal of Information Technology and Language Studies*, 3(3).
- 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* (37-49). Springer, Cham.
- Al-Khayyal, A., Alshurideh, M., Al Kurdi, B. & Aburayya, A. (2020). The impact of electronic service quality dimensions on customers' e-shopping and e-loyalty via the impact of e-satisfaction and e-trust: A qualitative approach. *International Journal of Innovation, Creativity and Change*, 14(9), 257-281.
- Al-Marroof, R.S., Alhumaid, K., Alhamad, A.Q., Aburayya, A. & Salloum, S. (2021a). User acceptance of smart watch for medical purposes: An empirical study. *Future Internet*, 13(5), 127.
- Al-Marroof, R., Akour, I., Aljanada, R., Alfaisal, A., Alfaisal, R., Aburayya, A., & Salloum, S. (2021c). Acceptance determinants of 5G services. *International Journal of Data and Network Science*, 5(4), 613-628.
- Al-Marroof, R., Ayoubi, K., Alhumaid, K., Aburayya, A., Alshurideh, M., Alfaisal, R. & Salloum, S. (2021b). The acceptance of social media video for knowledge acquisition, sharing and application: A comparative study among YouTube users and TikTok Users' for medical purposes. *International Journal of Data and Network Science*, 5(3), 197–214.
- 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.
- AlSuwaidi, S.R., Alshurideh, M., Al Kurdi, B., & Aburayya, A. (2021). The main catalysts for collaborative R&D projects in Dubai industrial sector. *In The International Conference on Artificial Intelligence and Computer Vision* (795–806). Springer.
- 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.
- Beckford, J.L. (2010). *Quality a critical introduction, (3rd edition)*. London: Routledge.
- Capuyan, D.L., Capuno, R.G., Suson, R., Malabago, N.K., Ermac, E.A., & ... Medio, G.J. (2021). Adaptation of innovative edge banding trimmer for technology instruction: A university case. *World Journal on Educational Technology: Current Issues*, 13(1), 31–41.
- Dale, B.G. (2003). *Managing quality, (4th edition)*. Oxford: Wiley-Blackwell.
- Evans, J.R., & Lindsay, W.M. (2017). *Managing for quality and performance excellence, (10th edition)*. USA: Cengage Learning.
- Hamidi, Z., & Zamanparvar, A. (2008). Quality management in health systems of developed and developing countries: Which approaches and models are appropriate? *Journal of Research Health*, 8(2), 40-50.
- 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.
- 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. *Journal of Archives in Military Medicine*, 3(1), 1-5.
- Maram, A. (2008). Reassessment of the application of TQM in the public sector. *International Public Management Review*, 9(1), 194-2011.
- Miller, W.J., Sumner, A.T., & Deane, R.H. (2009). Assessment of quality management practices within the healthcare industry. *American Journal of Economics and Business Administration*, 1(2), 105–113.
- Mosadeghrad, A. (2014). Essentials of total quality management: A meta-analysis. *International Journal of Health Care Quality Assurance*, 27(6), 544-558.
- Mosadeghrad, A.M. (2013). Obstacles to TQM success in health care systems. *International Journal of Health Care Quality Assurance*, 26(2), 147-173.

- Mouzaek, E., Al Marzouqi, A., Alaali, N., Salloum, S.A., Aburayya, A., & Suson, R. (2021). An empirical investigation of the impact of service quality dimensions on guests satisfaction: A case study of Dubai hotels. *Journal of Contemporary Issues in Business and Government*, 27(3), 1186–1199.
- Oakland, J.S. (2014). *Total quality management and operational excellence*, (4th edition). New York: Routledge.
- Obeidat, B., Sweis, R., Zyod, D., & Alshurideh, M. (2012). The effect of perceived service quality on customer loyalty in internet service providers in Jordan. *Journal of Management Research*, 4(4), 224-242.
- Parshuram, H. (2015). Total quality management as applied to service sector with relevance to Indian situations. *Journal of Management Research and Analysis*, 2(2), 127-132.
- Peconcillo Jr, L.B., Peteros, E.O.D., Mamites, I., Sanchez, D.T., Tenerife, J.J.L., & Suson, R.L. (2020d). Structuring determinants to level up students performance. *International Journal of Education and Practice*, 8(4), 638–651.
- Salloum, S.A., Alhamad, A.Q.M., Al-Emran, M., Monem, A.A., & Shaalan, K. (2019). Exploring students' acceptance of e-learning through the development of a comprehensive technology acceptance model. *IEEE Access*, 7, 128445– 128462.
- Salloum, S.A., Al Ahbabi, N., Habes, M., Aburayya, A., & Akour, I. (2021). Predicting the intention to use social media sites: A hybrid SME- machine learning approach. In A. Hassanien & K. Chang (Eds.), *Advanced Machine Learning Technologies and Applications*, 324-334.
- 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.
- Sheikholeslam, M.N., & Emamian, S. (2016). TQM and customer satisfaction towards business excellence. *International Journal of Learning Management Systems*, 4(1), 25-42.
- Slack, N., Chambers, S., & Johnston, R. (2007). *Operations management*, (5th edition). London: Prentice Hall.
- Suson, R., & Ermac, E. (2020). Computer aided instruction to teach concepts in education. *International Journal on Emerging Technologies*, 11(3), 47-52.
- Talib, F., & Rahman, Z. (2012). Total quality management practices in manufacturing and service industries: A comparative study. *Advanced Operations Management*, 4(3), 155-176.
- Talib, F., Asjad, M., Atrii, R., Khan, A. (2020). Ranking model of total quality management enablers in healthcare establishments using the best-worst method. *The TQM Journal*, 31(5), 790-814.
- 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.
- Taryam, M., Alawadhi, D., Al Marzouqi, A., Aburayya, A., Albaqa'een, A., & Alaali, N. (2021). The impact of the covid-19 pandemic on the mental health status of healthcare providers in the primary health care sector in Dubai. *Linguistica Antverpiensia*, 21(2), 2995-3015.
- Toke, L., & Kalpande, S. (2020). Total quality management in small and medium enterprises: An overview in India context. *Quality Management Journal*, 27(3), 159-175.
- Varma, S.P. (2015). Total Quality Management (TQM) of clinical engineering in New Zealand public hospitals. DBA thesis, Southern Cross University, Lismore, NSW.
- Yeng, S., Jusoh, M., & Muhammad, P. (2018). The impact of total quality management on competitive advantage: A conceptual mixed method study in the Malaysia luxury hotel industries. *Academy of Strategic Management Journal*, 17(2), 1-9.
- Zweifel, P. (2021). Innovation in health care through Information Technology (IT): The role of incentives. *Social Science & Medicine*, 289, 114441.
- Zylfijaj, R., & Pira, B. (2017). Assessment of critical success factors of TQM culture in hospitality sector in Kosovo. *International Journal of Research in Business and Social Science*, 6(1), 65-77.

Received: 15-Jan-2021, Manuscript No. ASMJ-21-10547; **Editor assigned:** 17- Jan -2021, PreQC No. ASMJ-21-10547 (PQ); **Reviewed:** 31-Jan-2021, QC No. ASMJ-21-10547; **Revised:** 04-Feb-2021, Manuscript No. ASMJ-21-10547 (R); **Published:** 09-Feb-2022.