

# Uncertain Supply Chain Management

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## Assessing quality performance through seven total quality management practices

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### ABSTRACT

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With growing concerns about healthcare services especially during and after the Covid-19 pandemic, hospitals are compelled to provide non-traditional forms of quality services. Total quality management (TQM) practices are gaining attention and becoming a driving force to improve quality performance. This research aims to investigate the impact of TQM practices and quality performance in Jordanian public hospitals. The research used an online survey to collect data from 222 respondents from several public hospitals in Jordan. The results of structural equation modeling (SEM) confirm a positive relationship between supplier quality management, customer focus, and quality performance.

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## 1. Introduction

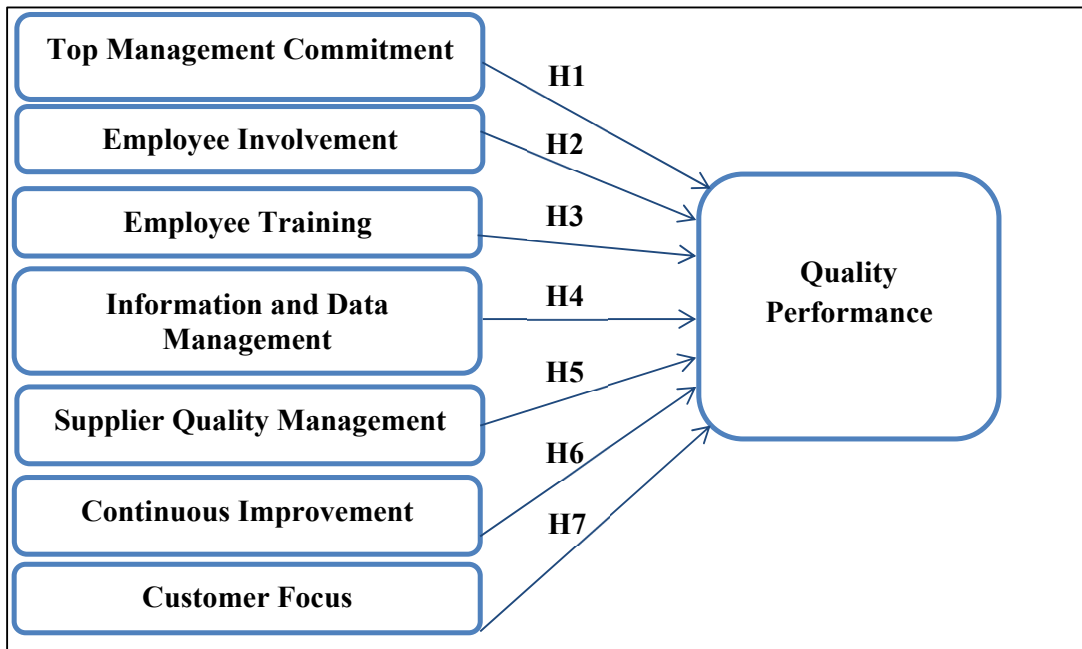
In recent years, the quality of healthcare has become a hot topic globally (Zaid et al., 2020). Currently, health organizations are encountering many challenges, which increase the cost of health services, the dependence on technology, customer dissatisfaction, and place pressure on health organizations to reduce costs and improve quality performance (Aiken et al., 2012). Moreover, increasing awareness, changes in preferences, interest in quality, and claiming to define responsibilities are significant obstacles for healthcare organizations (World Health Organization, 2016). Each of these challenges force health organizations to make continuous changes and adopt technological developments, in order to meet and exceed patients' needs (Alolayyan, 2011). The recognition of medical errors in the past two decades has generated healthcare legislation and increased patient awareness of the consideration of integrating quality into healthcare (Becher & Chassin, 2001). Consequently, the quality of the services delivered in the healthcare sector necessitated improvements (Chang et al., 2013). As well as the performance of hospitals is expected to offer solutions and high quality services (Nasution & Absah 2022). The service sector contributes roughly 70% of the Jordanian economy's GDP with hospitals making a significant contribution to the service sector (Alshourah, 2021). The annual statistical report for the Ministry of Health 2021 reveals that in Jordan there are 118 hospitals providing health care services in general There are 32 public hospitals, 68 private hospitals, 16 hospitals operated by the Royal Medical Services and two university hospitals. The total number of hospital beds in both sectors is 15,339, with 35.2% of the beds in public hospitals (the Ministry of Health Report, 2021). The public hospitals in Jordan provide healthcare services for people throughout Jordan. As of 2020, public hospitals in Jordan employed 31,085, specifically 14,559 medical staff and 16,526 administrative staff (the Ministry of Health Report, 2020).

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However, like many other public hospitals worldwide, the public hospitals in Jordan are experiencing numerous problems. The main challenges public hospitals in Jordan are confronting relate to meeting the demand for health services, the growing expectations due to population growth, increases in chronic health conditions, and the presence of refugees in the country (World Health Organization, 2016). There are also many problems that affect the quality of their performance, such as the enormous pressure caused by outpatients compared to the limited capacity of the facilities, departments, the number of doctors, as well as the expiry of a number of medicines (The National Strategy for Health Sector in Jordan 2020). Criticism is growing of public hospitals in Jordan due to their inability to meet the increasing demand for their services. This has resulted in people's growing dissatisfaction with the quality of the services they receive (World Health Organization, 2016). However, there is a gap in the previous literature which failed to investigate the impact of implementing total quality management practices on the quality performance of public hospitals in Jordan. Hence, this study aims to investigate the relationship between implementing total quality management (TQM) practices and the quality performance (QP) of public hospitals in Jordan (see Fig. 1). Therefore, this research is addressing the following research question:

***What is the relationship between total quality management (TQM) practices and quality performance (QP) in Jordanian public hospitals?***



**Fig. 1.** Research Model

## 2. Theoretical Background

### 2.1 Total Quality Management (TQM)

TQM is a management philosophy, tool or approach to increase the quality of products, services, processes and employee performance at all levels and in various environments (Permana et al., 2021; Othman et al., 2020; Algunmeeyn, 2019; Goetsch & Davis 2016; Cho et al., 2014; Ali & Alolayyan, 2013). The application of TQM improves the quality of services, which in turn, increases patient satisfaction (Othman et al., 2020; Nguyen & Nagase, 2019; Agency for Healthcare Research and Quality, 2012; Alexander et al., 2006). TQM practices will allow hospitals to recognize and comprehend medical mistakes (Mbatha & Garad, 2022). TQM practices, for instance, top management's commitment, employee involvement, training, the quality of the supplier, besides the cost of quality, will help to create services that enhance productivity and the quality of performance (Alshourah, 2021). The significance of TQM in the healthcare sector lies in facilitating it to improve hospital management, organize effectively, satisfy employees, strengthen administrative commitment, encourage participation between employees and management as well as improve their performance, resulting in improvements in the quality of the healthcare service provided to patients (Ali & Alolayyan, 2013). TQM is important for healthcare providers to provide effective services to meet the patient's needs (Mbatha & Garad, 2022).

Raising awareness among the health sector directors in Jordan or other developing countries is crucial concerning the implementation of TQM to the process of continuous improvement (Alolayyan et al., 2011). Various previous studies refer to several TQM dimensions. In this paper, seven dimensions were adopted from the previous studies (Babu & Thomas 2021; Ahmed et al., 2018; Ali & Alolayyan 2013; Talib et al., 2013). These dimensions consist of top management commitment,

employee involvement, employee training, information and data management, supplier quality management, continuous improvement, and customer focus.

## 2.2 Quality Performance (QP)

Organizational performance (QP) typically represents the dependent variable in measuring the impact of TQM (Yas et al., 2021). QP is a method that develops an understanding of the organization's vision and enhances the organization's employees, and its ability to develop high-quality products and services (Bathaei et al., 2021; Kurniawan et al., 2020; Ahmed et al., 2018). Quality performance in the public sector depends on improving the quality of services and products that are delivered to the public, reducing cost and waste, and improving efficiency (Twum et al., 2022). In this study, QP refers to the level at which the organization's performance is at the highest stage of proficiency in all its components and phases of work, to achieve the best tangible results, in order to meet the expectations, and needs of customers and their current and future requirements. Quality in health services has two dimensions, specifically technical quality (output quality) focuses on the accuracy of medical diagnoses and procedures, whilst functional quality (process quality) denotes the way healthcare services are delivered to patients (Zarei et al., 2012).

Quality cost is a tool that can assist with improvements in continuous quality and is incurred to prevent poor quality or costs that arise as a result of providing a poor-quality service or product (Farah et al., 2021). Quality costs comprise two components: the cost of good quality which is the cost of producing a quality product or service, and the cost of poor quality, which is the cost of correcting errors in a product or service. The cost of good quality consists of prevention costs and appraisal costs (Murumkar et al., 2018).

## 3. Literature Review and Hypotheses Development

### 3.1 Top Management Commitment

Top management comprises the highest-ranking managers, who are responsible for the organization, therefore, TQM must begin with the top management, which plays a dynamic role in the overall success of the firm and who are responsible for the required changes as regards the implementation of TQM (Wall, 2021; Trang & Do, 2020; Flynn et al., 1995). Top management believes that quality is more important than production and they consider quality as their responsibility (Nasution & Absah, 2022). Top management is responsible for developing the performance of hospital staff by preparing effective training programs, which generate improvements in service quality (Aburayya et al., 2020). Alshourah (2021) ascertained that the commitment of management is responsible for creating value, systems, and goals to improve the quality of services provided by hospitals and satisfy customer needs and expectations. This reflects the significant role of top management commitment in relation to improving the quality of services and subsequently, enhancing QP. Top management in hospitals is responsible for developing the performance of hospital staff by preparing effective training programs that assist staff to develop their skills and knowledge and which in turn, improve the quality of the services being delivered (Aburayya et al., 2020). It is essential to state that the commitment of top management significantly affects QP (Talib et al., 2010).

**H<sub>1</sub>:** *The commitment of top management has a positive impact on the quality performance of public hospitals in Jordan.*

### 3.2 Employee Involvement

Employee involvement is the process of allowing employees to participate and contribute to making managerial decisions and improve activities in the organization (Charles et al., 2021). This has an important role to play that leads to significant results at the organizational level (Yas et al., 2021; Carmeli et al., 2017). The process of engaging employees to participate in quality improvement procedures affects the quality of products and services, which promotes quality performance (Twum et al., 2022). TQM demands that the management ensure that employees are fully involved in quality improvement by providing a high-quality service to its customers (Daqar & Constantinovits, 2020). Similarly, organizations should depend on the employee's skills and ability to improve productivity, enhance the quality of performance and satisfy customers (Talib et al., 2013). Employees are the most essential asset of organizations in improving organizational performance (Marchington & Wilkinson, 2005). It is worth mentioning that there is a positive relationship between employee involvement and QP (Alshourah, 2021; Daqar & Constantinovits, 2020; Aburayya et al., 2019).

**H<sub>2</sub>:** *Employee involvement has a positive impact on the quality performance of public hospitals in Jordan.*

### 3.3 Employee Training

Training, which can be described as an educational chain is the process of preparing employees by developing their abilities, skills, knowledge, and changing their behavior for the sake of the organization (Purwanto, & Prasetya, 2021; Ismael et al., 2021). Achieving high-quality performance in the public sector depends on the employees' skills and knowledge, which can be achieved by means of training (Twum et al., 2022). Ismael et al. (2021), explained that the aim of the training is to increase productivity, improve performance and skills, minimize errors in the workplace, reduce defects, and waste, and improve the

quality of products and services. Therefore, when an organization provides excellent training programs it will significantly influence the level of QP (Talib et al., 2013). Training is a key element to improving performance (Purwanto & Prasetya, 2021; Ismael et al., 2021; Talib et al., 2013; Talib et al., 2010). More importantly, it is vital that hospitals should have a systematic training program to increase employee involvement, empowerment, and motivation which in turn, enhance QP (Alshourah, 2021; Talib et al., 2013).

**H<sub>3</sub>: Employee training has a significant impact on the quality performance of public hospitals in Jordan.**

### 3.3.1 Information and Data Management

The key elements pertaining to TQM include information and data management, along with data that is relevant to different aspects of the organization's functions is exceedingly important to collect information regarding performance, in order to determine areas of improvement, standardize operations and measurement with other organizations, with the intention of reducing the quality gap, and enhancing QP (Babu & Thomas, 2021; Akanmu & Mohamad, 2021; Ali & Alolayyan, 2013). Information and data management as a TQM practice influence the feedback that management receives which in turn, enables the top management to solve any problems, make correct decisions, and evaluate a situation based on appropriate, updated information (Twum et al., 2022). Similarly, in addition to facilitating communication amongst partner organizations, information plays a vital role in the optimal use of resources, ensuring that customers receive appropriate services by revealing their needs and preferences (Ali & Alolayyan, 2013).

**H<sub>4</sub>: Information and data management have a significant impact on the quality performance of public hospitals in Jordan.**

### 3.3.2 Supplier Quality Management

Supplier quality management signifies that the management seeks to choose the best suppliers and strives to build robust, long-term relationships with suppliers (Sin et al., 2021; Zhang et al., 2020). It emphasizes quality suppliers, as opposed to price (Chau et al., 2021). Likewise, an effective supplier's quality management reduces procurement costs and enhances quality performance by way of establishing good relationships with valued suppliers and focusing more on quality than price (Sin et al., 2021; Twum et al., 2022). In service firms, supply and procurement management has a key role in influencing TQM and requires continuous attempts to improve quality by choosing quality materials at a reasonable cost (Alolayyan et al., 2011). Effective supplier management focuses on having a sustained, strategic relationship with suppliers to ensure high-quality materials are obtained and to achieve continuous improvement. Babu & Thomas (2021), assert that service providers need more long-term relationships with suppliers to maintain the service level and QP. However, quality supplier management directly enhances the quality of products and services in the service and manufacturing industry (Talib et al., 2013).

**H<sub>5</sub>: Supplier quality management has a significant impact on the quality performance of public hospitals in Jordan.**

### 3.3.3 Continuous Improvement

Continuous improvement is an organized attempt to find and actively and regularly apply new ways of undertaking work to make process improvements (Van Assen 2021; Aburayya et al., 2020). Continuous improvement reduces the variability in the entire process which in turn, improves QP (Alshourah 2021). It is also perceived as a method that leads and controls the process together with firm orientation through their capabilities and therefore, reflects on the QP in the short and long-term based on improving employees' skills, customer satisfaction, and continuous improvement in procedures at all levels (Saffar & Obeidat, 2020). Similarly, it comprises the procedures of analyzing medicine, cases and disease management, and centers of patient care as a way to improve clinical performance (Nasution & Absah, 2022).

**H<sub>6</sub>: Continuous improvement has a significant impact on the quality performance of public hospitals in Jordan.**

### 3.3.4 Customer Focus

Customer focus indicates how much the organization cares about customer needs and expectations, which subsequently enhances organizational performance by identifying the needs of customers (Kalogiannidis, 2021; Badhurudheen, 2018). Customer focus is the key to implementing TQM in public sector firms due to the need to meet social needs (Twum et al., 2022). Organizations can improve quality performance by focusing on customer requirements and measuring their perceptions and expectations with respect to different products or services (Yas et al., 2021). Kulenović et al. (2021), stress that organizations should be able to respond promptly to changes in customer requirements because customer satisfaction influences the success or failure of the organization. Chau et al. (2021), stated that creating and implementing any quality program must be oriented to customers by identifying the needs and expectations of customers, measuring satisfaction, and using responses to improve QP. Alshourah (2021) and Chau et al. (2021), conclude that further investigation regarding the relationship between customer focus and QP should be conducted to formulate and enhance the quality performance within the entire organization.

**H7:** *Customer focus has a significant impact on the quality performance of public hospitals in Jordan.*

## 4. Research Methodology

### 4.1 Population and Sample

Convenience sampling was adopted as a form of non-probability sampling to gain access to the respondents in 32 Jordanian public hospitals. In total, 222 respondents participated in the study. The study sample was analyzed in terms of sample characteristics, as shown in Table 1.

**Table 1**  
Sample characteristics

| Variables       | Categorization           | Frequency | Percent |
|-----------------|--------------------------|-----------|---------|
| Gender          | Male                     | 76        | 34.2    |
|                 | Female                   | 146       | 65.8    |
| Age             | 20 to 35 years           | 117       | 52.7    |
|                 | 36 to 50 years           | 91        | 41.0    |
|                 | 51 years and above       | 14        | 6.3     |
| Education Level | Diploma or less          | 59        | 26.6    |
|                 | Bachelors                | 117       | 52.7    |
|                 | Masters and PhD          | 46        | 20.7    |
| Experience      | Less than 2 years        | 30        | 13.5    |
|                 | 2-5 years                | 60        | 27.0    |
|                 | 6 to 10 years            | 42        | 19.0    |
|                 | 11 years or above        | 90        | 40.5    |
| Profession      | Managers                 | 5         | 2.3     |
|                 | Head of departments      | 20        | 9.0     |
|                 | Doctors                  | 15        | 6.8     |
|                 | Pharmacists              | 20        | 9.0     |
|                 | Laboratories             | 17        | 7.7     |
|                 | Radiologists             | 9         | 4.1     |
|                 | Nurses                   | 63        | 28.3    |
|                 | Administrative employees | 73        | 32.8    |
|                 | Total                    | 222       | 100%    |

### 4.2 Instrument Development and Measures

A closed structured survey was used to collect the primary data. An online survey was distributed via Google Forms. The survey design included a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). To measure the research constructs, the survey items were adopted from previous literature (Table 2). The survey is divided into three sections. The first section comprises five items representing the respondents' demographic variables, the second section has 37 items (see Table 2), whereas the third section is the dependent variable connected to quality performance.

**Table 2**  
Research constructs and Items source

| Variable                        | No. of items | Source                | Cronbach's alpha ( $\alpha$ ) |
|---------------------------------|--------------|-----------------------|-------------------------------|
| Top management commitment       | 6            | Talib et al., 2013    | 0.956                         |
| Employee involvement            | 6            | Talib et al., 2013    | 0.930                         |
| Employee training               | 4            | Ali & Alolayyan, 2013 | 0.856                         |
| Information and data management | 5            | Babu & Thomas, 2021   | 0.722                         |
| Supplier quality management     | 4            | Babu & Thomas, 2021   | 0.872                         |
| Continuous improvement          | 5            | Ahmed et al., 2018    | 0.781                         |
| Customer focus                  | 7            | Babu & Thomas, 2021   | 0.79                          |
| Quality performance             | 5            | Ahmed et al., 2018    | 0.875                         |

### 4.3 Data Analysis

Partial least squares structural equation modelling (PLS-SEM) using Smart PLS was adopted to analyze the collected data. PLS-SEM is a flexible approach that can be adopted for exploratory, confirmatory, and predictive models (Hair et al., 2017). Moreover, PLS-SEM is an efficient method to assess the relationships between multi-item constructs (Richter et al., 2016).

4.3.1 Scale Validity and Reliabilities

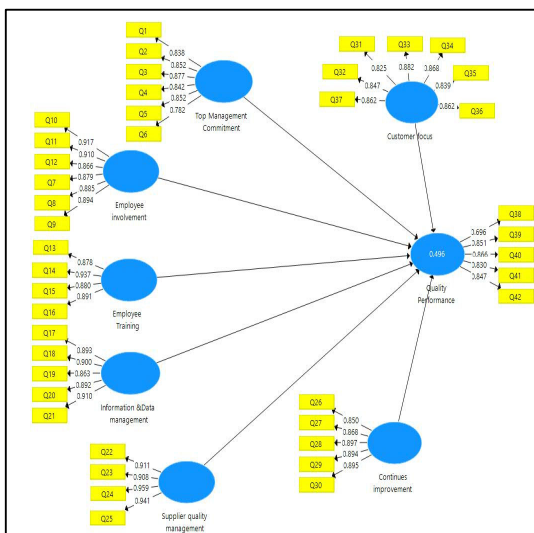
To measure the internal consistency, Cronbach’s alpha was applied with cut values (0.60) (Sekaran & Bougie, 2016; Bryman & Bell, 2007). Alpha values ranged between 0.877 and 0.949, indicating a good internal reliability. Convergent validity is measured following (Hair et al.,2017;2010) by calculating composite reliability (CR), average variance extracted (AVE), and factor loadings greater than 0.60. All these indicators exceed the cut-off values and indicate good convergent validity. Moreover, discriminant validity was checked following the (Hair et al., 2010) recommendations. Discriminant validity values ranged from 0.523 to 0.930, denoting a moderate effect to strong size among variables.

**Table 3**  
Reliability and Validity Measurements

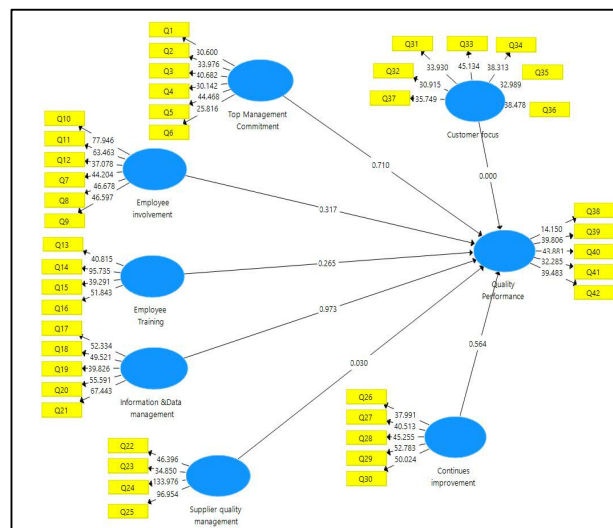
| Constructs   | Items   | Factor loading | Constructs  | Items   | Factor loading   |       |
|--|---|----------------|---|---|--|-------|
| Top Management Commitment<br>(Cronbach’s $\alpha$ =0.917 ; CR=0.935 ; AVE=0.707)       | Q1  | 0.838          | Supplier Quality Management<br>(Cronbach’s $\alpha$ = 0.948 ; CR=0.963 ; AVE=0.865) | Q22   | 0.911  |       |
|  | Q2  | 0.852          |   | Q23   | 0.908  |       |
|  | Q3  | 0.877          |   | Q24   | 0.959  |       |
|  | Q4  | 0.842          |   | Q25   | 0.941  |       |
|  | Q5  | 0.852          |   | Continuous Improvement<br>(Cronbach’s $\alpha$ = 0.928 ;CR=0.945 ; AVE=0.776) | Q26  | 0.850 |
|  | Q6  | 0.782          |   |   | Q27  | 0.868 |
| Employee Involvement<br>(Cronbach’s $\alpha$ = 0.949 ; CR=0.959 ; AVE=0.795)           | Q7  | 0.917          | Q28   |   | 0.897  |       |
|  | Q8  | 0.910          | Q29   |   | 0.894  |       |
|  | Q9  | 0.866          | Q30   |   | 0.895  |       |
|  | Employee Training<br>(Cronbach’s $\alpha$ = 0.918 ; CR=0.942 ; AVE=0.804) | Q10            | 0.879   |   | Customer Focus<br>(Cronbach’s $\alpha$ = 0.939 ; CR=0.950 ; AVE=0.732) | Q31   |
|  |   | Q11            | 0.885   | Q32   |  | 0.847 |
|  |   | Q12            | 0.894   | Q33   |  | 0.882 |
| Q13  |   | 0.878          | Q34   | 0.868   |  |       |
| Q14  |   | 0.937          | Q35   | 0.839   |  |       |
| Q15  |   | 0.880          | Q36   | 0.862   |  |       |
| Information and Data Management<br>(Cronbach’s $\alpha$ = 0.936; CR=0.951 ; AVE=0.795) | Q16   | 0.891          | Quality Performance<br>(Cronbach’s $\alpha$ = 0.877 ; CR=0.911 ; AVE=0.673)         | Q37   | 0.862  |       |
|  | Q17   | 0.893          |   | Q38   | 0.696  |       |
|  | Q18   | 0.900          |   | Q39   | 0.851  |       |
|  | Q19   | 0.863          |   | Q40   | 0.866  |       |
|  | Q20   | 0.892          |   | Q41   | 0.830  |       |
|  | Q21   | 0.910          |   | Q42   | 0.847  |       |

**Table 4**  
Discriminant Validity of Research Variables

| No. |                               | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     |
|-----|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1.  | Continuous improvement        | 0.881 |       |       |       |       |       |       |       |
| 2.  | Customer focus                | 0.814 | 0.855 |       |       |       |       |       |       |
| 3.  | Employee training             | 0.772 | 0.756 | 0.896 |       |       |       |       |       |
| 4.  | Employee involvement          | 0.809 | 0.753 | 0.775 | 0.892 |       |       |       |       |
| 5.  | Information & data management | 0.868 | 0.846 | 0.831 | 0.836 | 0.892 |       |       |       |
| 6.  | Quality Performance           | 0.591 | 0.687 | 0.523 | 0.569 | 0.618 | 0.820 |       |       |
| 7.  | Supplier quality management   | 0.807 | 0.722 | 0.702 | 0.709 | 0.811 | 0.589 | 0.930 |       |
| 8.  | Top Management Commitment     | 0.741 | 0.709 | 0.780 | 0.787 | 0.809 | 0.529 | 0.690 | 0.841 |



**Fig. 2.** Full Research Model with factor loadings



**Fig. 3.** Results of the research hypothesis

The previous analysis outcomes indicated a high level of validity and reliability. Likewise, the goodness-of-fit was measured by using three common indicators, namely  $\chi^2/df$ , Normed Fit Index (NFI), and Standardized Root Mean Square Residual (SRMR) following the recommendations made by Hair et al. (2017), (see Table 5).

**Table 5**

Measures the model fit

| Goodness-of-fit measures | Recommended value | Model Results |
|--------------------------|-------------------|---------------|
| $\chi^2/df$              | $\leq 3.00$       | 1.676         |
| SRMR                     | $< 0.08$          | 0.043         |
| NFI                      | $\geq 0.80$       | 0.827         |

## 5. Hypotheses Testing

Bootstrapping in SmartPLS 3 was applied to test the research hypotheses (see Fig. 3). The research results show that the five hypotheses rejected were  $\rho > 0.05$  for top management commitment, employee involvement, employee training, information and data management, and continuous improvement, H1, H2, H3, H4, and H6, respectively (see Table 6). The research results reveal that both H5 and H7 supported the relationship between supplier quality management and customer focus, respectively. Table 6 illustrates the results of the path coefficient used to test the research hypotheses.

**Table 6**

Results of Hypotheses Testing

| H. No | Construct Path  | Standard deviation | T-Value | P-Value | Results   |
|-------|---|--------------------|---------|---------|-----------|
| H1    | Top management commitment → quality performance       | 0.094              | 0.372   | 0.710   | Rejected  |
| H2    | Employee involvement → quality performance            | 0.098              | 1.003   | 0.317   | Rejected  |
| H3    | Employee training → quality performance               | 0.104              | 1.117   | 0.265   | Rejected  |
| H4    | Information and Data management → quality performance | 0.145              | 0.034   | 0.973   | Rejected  |
| H5    | Supplier quality management → quality performance     | 0.094              | 2.174   | 0.030   | Supported |
| H6    | Continuous improvement → quality performance          | 0.116              | 0.578   | 0.564   | Rejected  |
| H7    | Customer focus → quality performance                  | 0.107              | 5.363   | 0.000   | Supported |

## 6. Discussion

This study aims to examine the impact of TQM practices on the QP of public hospitals in Jordan. Two out of seven hypotheses were statistically supported. Hypothesis (H1) which examines the relationship between the commitment of top management and QP shows that the commitment of top management has no influence on quality performance. Therefore, the result of the research is not consistent with the literature (Alshourah, 2021; Wall 2021; Aburayya et al., 2020; Daqar & Constantinovits, 2020; Talib et al., 2013; Talib et al., 2010; Flynn et al., 1995). These results indicate that in regard to the perception of employees, top management commitment has no influence on quality performance due to the administrative recession that affected one of the most vital sectors in Jordan. According to what was posted on social media and news websites, the ineffective work undertaken by the top management and its lack of commitment in public hospitals led to medical and managerial errors, which caused the death of numerous patients, such as those who died at the Salt Hospital and in the Amman Covid-19 field hospital (oxygen shortage). Furthermore, top management was also seen as being responsible for the lack of medical staff in hospitals, whilst the increasing number of patients, confused the decision-making process, particularly during the Covid-19 pandemic (Dilawani, 2020).

The results of H2 confirm that employee involvement has no influence on the QP. This denotes that the result does not match those obtained by the field study or with the previous studies (Alshourah, 2021; Daqar & Constantinovits, 2020; Aburayya et al., 2020; Aburayya et al., 2019; Alaoun, 2018; Talib et al., 2013; Talib et al., 2010; Marchington et al., 2005). This signifies that hospital management does not have a clear understanding of the role of employees' involvement in the process of improving quality performance, and that employees do not participate in the decision-making process in their hospitals. This is as a result of the researcher's observations which identified that the employees in all departments complain continuously as regards management underestimating their role and not listening to the requirements.

In terms of the H3, the results reveal that employee training has no influences on the QP. The research results are not consistent with the literature (Purwanto & Prasetya, 2021; Ismael et al., 2021; Alshourah, 2021; Goetsch & Davis, 2016; Vasudevan, 2014; Talib et al., 2013; Talib et al., 2010). While the current research result indicates that the respondents did not receive the appropriate training or that the management in public hospitals failed to provide employees with sufficient, up-to-date training. This is in line with Abdulla (2008), which asserts that hospitals need training programmes for all levels of top managers, medical and administrative staff. In terms of the employee training variable, it was expected that employee training

would positively influence the quality performance of public hospitals, which increases the skills of employees and enhances their commitment to the services provided and the requirements of the patient.

In regard to the fourth hypothesis (H4), the results demonstrate that information and data management has no influence on the QP. The research results are not consistent with the previous literature (Alshourah, 2021; Kulenović, 2021; Babu & Thomas, 2020; Talib et al., 2013; Ali & Alolayyan, 2013; Teh et al., 2009). Nonetheless, it is consistent with the comprehensive assessment of Jordan's health information system (World Health Organization, 2016). The results denote that public hospitals suffer from inadequate information and data management, such as data collection and storage, analysis, reporting, dissemination and utilization.

As the Hakeem system used by the Ministry of Health has not been applied in all public hospitals and needs to be developed, as mentioned in the report published by World Health Organization (2016), most public hospitals do not have a system for managing data and information. Conversely, information system in the private hospitals supports the decision-makers to make quality decisions based on real and relevant analysis of data in hospitals, because it is profitable organizations that seek to achieve customer satisfaction and loyalty to achieve a profit (Alshourah, 2021).

According to Hypothesis (5), the results show that supplier quality management has influences on the QP, which is in accordance with the literature (Babu & Thomas, 2021; Sin et al., 2021; Talib et al., 2013; Alolayyan et al., 2011; Hoyt & Huq, 2000). This implies that Jordanian public hospitals have established effective long-term agreements and cooperation with a few reliable service providers, which has led to QP, reduced process and procurement costs and enhanced the quality of the services and products purchased. This indicates that hospital management can track and manage inventories more efficiently. It is natural to obtain this result in the public sector because governments and ministries are looking for long-term relationships in terms of buying and selling goods or services, due to the large quantities of materials that need to be purchased frequently and permanently for hospitals with large orders.

While the results for Hypothesis (6) (continuous improvement), are not in line with (Alshourah, 2021; Saffara & Obeidat, 2020; Al-Damen, 2017; Talib et al., 2013; Sadikoglu & Zehir, 2010). These results suggest that public hospitals do not follow clear strategies to improve the quality of their performance and reduce waste in time, resources and costs. Likewise, in relation to the research results, where there is no commitment by the top management, it is therefore logical that there is no continuous improvement in services., Less commitment from the top management will result in poor quality health services, more errors, waste and a reduction in customer satisfaction. Moreover, the number of medical and administrative errors that public hospitals are witnessing at the present time have not been addressed but rather continue to be repeated. Referring to the number of former ministers as the turnover at the Ministry has been observed to be high in the last ten years, there has been nine ministers, there is a strong and explicit indication that the Ministry of Health has no clear strategy and fixed programs concerning continuous improvement. Similarly, this result could be an indicator for the research results associated with H1 (top management commitment) and why it was rejected.

The results of Hypothesis (7) regarding the relationship between customer focus and QP was accepted. This result confirms the results of the previous literature (Alshourah, 2021; Chau et al., 2021; Yas et al., 2021; Aburayya et al., 2020; Kulenović, 2020; Talib et al., 2013). The results of the study reveal the commitment of public hospitals to provide comprehensive care services to patients that meet their needs and to provide partial health insurance with 80% government support in the case of a common disease. They will also offer free health coverage to any patient who suffers from a disease that is expensive to treat in public hospitals, such as cancer, kidney failure, and chronic blood diseases. Additionally, it should be noted that 650,000 children were given free health insurance to receive free healthcare in all public hospitals, while insurance also has been provided for patients over the age of 60 and blood and organ donors. Healthcare is also provided to the poor beneficiaries of the National Aid Fund and poor families who received health coverage in hospitals to achieve its target of 72% in (2018), according to a study conducted by the Department of General Statistics (2018).

## 7. Conclusion

The study aimed to investigate the impact of TQM practices on the QP of public hospitals in Jordan. TQM contains seven distinct dimensions: top management commitment, employee involvement, employee training, information and data management, supplier quality management, continuous improvement, and customer focus. The results of the study presented a positive relationship between two dimensions, namely supplier quality management and customer focus and QP, but there was no relationship in the current study between top management commitment, employee involvement, employee training, information and data management, and continuous improvement and QP. The research conducted on Jordanian public hospitals to investigate the relationship between implementing TQM practices and QP included 32 hospitals. The results provided empirical evidence that total quality management is poorly implemented in Jordanian public hospitals. In addition, the study included different positions and job levels, for instance managers, heads of departments, doctors, pharmacists, laboratory workers, radiologists, nurses, and administrative employees, who may have different perceptions towards the total



quality management that may generate different levels of quality performance. As for the research conducted in Jordanian private hospitals, the results of these studies indicate a high quality of performance (Alshourah, 2021).

Accordingly, many recommendations for Jordanian public hospitals are made as mentioned below.

Jordanian public hospitals should pay more attention to the concept of total quality management, and its application to the hospital setting, particularly the top management, and the importance of its role in the success of this approach. However, the performance evaluation should be based on the extent to which these hospitals adhere to quality control standards and procedures. Similarly, top management should determine its priorities in relation to improving and developing services and adopting new strategies that contribute to improving the levels of service provided in hospitals. Training the top management and all employees in these hospitals on total quality management and providing financial support for this training is essential.

Moreover, total quality management provides hospitals with their demand for administrative and medical staff, increases residency programs, and creates a scholarship system for medical specialties. Similarly, administrative units can be set up that can handle suggestions and complaints from patients and auditors and deliver an information system regarding the service provided to develop and improve quality performance, services, along with the decision-making process. In addition, there is a need to create a comprehensive and consistent strategy for continuous improvement and the management of medical and administrative errors to ensure that they are not repeated. Finally, there is an urgent need to automate all devices and procedures related to patients and resources, with the aim of avoiding all the errors that may occur due to manual procedures.

## 8. Implications

The implications of this study comprise two specific parts: theoretical implications and practical implications. This study contributed to the development of new knowledge for researchers and those looking to understand the reasons for adopting TQM and enriches the previous literature on total quality management in Jordan. Likewise, there has been a dearth of Jordanian studies about the implementation of TQM in public hospitals. In addition, this study is an important reference point since it studies total quality management, which has advantages in regard to increasing QP and business growth. The content of this study demonstrates how to enhance the performance of public hospitals in the healthcare sector, obtain the best level of QP, reduce costs, and reduce administrative and medical errors through the development of a strategy for continuous improvement and the application of total quality management among administrative and medical workers in all public hospitals. In addition, this study can help hospital managers to improve the competitiveness of hospitals by enhancing their ability to develop good, timely and accurate information as regards management decisions. Similarly, it encourages the hospital management to focus on the humanitarian aspects and focus on training medical and administrative staff.

## 9. Limitations and Future Research

The limitations of this research will be addressed in combination with future research directions. The current research examines the relationship between implementing TQM practices and QP. Thus, future researchers could study the barriers that affect or prevent TQM implementation in Jordanian public hospitals. Likewise, only one major key performance indicator was identified in this study, specifically performance quality. Therefore, it is suggested that future research studies the relationship of TQM on performance for other potential performances, for example strategy performance, organizational performance, and corporate green performance (CGP). Moreover, mediating variables could be added, such as manager's turnover, ISO9000 certification, human resource management or moderator variables for instance hospital size, and organizational structure. This research also was conducted during the Covid-19 pandemic, which was the reason for the limited size of the sample in the health sector and the exposure of public hospitals to huge pressure due to the pandemic. Additionally, this study implemented a quantitative approach. It is recommended that future studies can use interviews with administrative and medical staff to explain these results, which in most did not correspond to previous studies to obtain the best results. Furthermore, future research can compare the private hospitals, public hospitals and the hospitals provided by the Royal Medical Services in Jordan. Finally, it is important to mention that this research was conducted in Jordanian public hospitals, suggesting the generalization of the results could be affected.

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