

# Structured Equation Model on Strategic Quality Planning, HR Utilisation, Information Analysis and Hospital Quality Performance

**Dr. Muhammad Irfan<sup>a</sup>, Muhammad Shaukat Malik<sup>b</sup>, Laraib Aslam<sup>c</sup>, Naureen Afzal<sup>d</sup>, Muhammad Hasnain Ali<sup>e</sup>,** <sup>a</sup>Assistant Professor, Institute of Banking and Finance, Bahauddin Zakariya University Multan, <sup>b</sup>Institute of Banking and Finance, Bahauddin Zakariya University Multan, <sup>c</sup>MS scholar (Business Administration), Institute of Banking and Finance, Bahauddin Zakariya University Multan, <sup>d</sup>Lecturer, Institute of Management Sciences, The Women University Multan, <sup>e</sup>Visiting Lecturer, Department of Business Administration, University of Sahiwal, Email: <sup>a</sup>[dr.mirfan@bzu.edu.pk](mailto:dr.mirfan@bzu.edu.pk), <sup>b</sup>[shoukatmalik@bzu.edu.pk](mailto:shoukatmalik@bzu.edu.pk), <sup>c</sup>[laraibaslam11@gmail.com](mailto:laraibaslam11@gmail.com), <sup>d</sup>[naureen.afzal@wum.edu.pk](mailto:naureen.afzal@wum.edu.pk), <sup>e</sup>[m.hasnsinali270@gmail.com](mailto:m.hasnsinali270@gmail.com)

The study aimed to quantify how different quality aspects like strategic quality planning, information and analysis, leadership and human resource utilisation affect the treatment quality and overall TQM implementation in the health sector. Hospitals are key to a healthy and sustainable society. Quality is of utmost importance while treating the patients. Human health depends upon the better cure offered by hospitals. This research started on a broader view of literature about the impact of leadership, strategic quality planning and human resources on the incremental quality in the health sector. It was a survey-based study. The data was collected from doctors and paramedical staff in the hospitals of South Punjab region in Pakistan. The questionnaires used to collect the data for the survey research were adopted based on the Likert scale. The respondents were the middle-level managers including medical doctors, paramedical staff, and administrative heads of each hospital. All the respondents had at least a graduation in a qualification. The data was analysed using the structured equation model for accurate results. The findings show that strategic quality planning has a positive link with treatment quality. Human resource utilisation is also positively related to enhancing cure quality. Leadership plans for quality while human resource implements it to enhance treatment accuracy, timeliness, and patient satisfaction. The scope of the study of total quality management (TQM) is a critical success factor for public and private hospitals. There are many challenges faced by hospitals

regarding quality, efficiency, and adequacy. The study is limited to the health sector. The health sector management should give more importance to TQM practices to provide better treatment. It provides a guideline for policy makers to improve the treatment quality and quality management practices to achieve better patient satisfaction and promotion of health among the citizens. The study found the real problems in the hospital need to improve; future study can be conducted by improving sample size to make it more generalisable.

**Keywords:** *Human Resource Utilisation, Quality Management, Treatment Quality, Leadership, Information Analysis.*

## 1. Introduction

The total quality management (TQM) is a very important field commonly applied in the corporate sector to improve their efficiency and effectiveness. Globally, competition is stiff and it is indispensable for the companies to provide better-quality products and services to their customers. TQM is the set of tools and techniques to solve real business problems, it is not just about improving the product and services it also ensures as it is the mechanism of running a business and managing a business process that one may provide satisfaction to the customer in every phase. TQM ensures an organisation is capable of making the right decision at the right time in their first attempt. It ensures the best use of organisational resources in the best way to satisfy all the stakeholders. But the effectiveness of TQM in the service sector enterprises still needs to be quantified. Studies have been conducted on its application to enhance overall performance. According to Hendrick and Singhal (2001), the implantation of TQM is an essential factor that enhances the effectiveness of the organisation.

TQM was first coined by “Naval Air Systems Command” in 1985 to articulate Japanese management setup on quality control (Bemowski, 1992). During the 1980s TQM was used in the health sector i.e., health care institutions and hospitals. It led to improved performances. Providing quality of health service in this progressively volatile environment is harder than other services. People demand better health treatment and services. TQM has become an essential success factor of large and small organisations. This approach also motivates the managers in healthcare to use TQM in the healthcare sector as well as to improve their quality of treatment. Conclusively, in last 30 years, TQM was widely adopted as a core strategy in hospitals to improve quality of services, minimising the medical errors like medical diagnostics, operation theatre, and timeliness of cure. However, a few organisations failed to benefit from TQM as well (Huq & Martin, 2000).

There are numerous challenges faced by the healthcare centre and hospitals concerning quality, efficiency, and adequacy of the treatment. Many healthcare centres in Pakistan are incapable of delivering quality healthcare services. TQM approaches are used by many healthcare

managers. Globalist practices enhance the effectiveness and efficiency of healthcare organisations (Khamalah & Lingaraj, 2003). The studies have put more focus on quality in the healthcare sector. The private hospitals need to pay additional importance to TQM to facilitate their customers and patients to avoid losing the customers (Hasin, Seeluangsawat, & Shareef, 2001).

## 2. Overview of concepts

Healthcare spending has been enhanced in recent years keeping in view its importance (Rajda et al., 2018). During the 1990s TQM had one of the most important competitive approaches used by many firms and this approach has been implemented worldwide. Rad (2006) identified that TQM is a competitive strategy which helps the firm to sustain an increasingly volatile environment. TQM is used as a competitive strategy in most of the firms in Pakistan. TQM is used not only in manufacturing firms but also in hospitals as well. It helps to improve performance, provide quality of services through continuous improvement and increases effectiveness, the productivity of the organisations and the firm's competitive edge (Oackland, 1993). TQM is used for the improvement of the overall firm's functions and its structures. To implement it successfully, the strategic participation and cooperation of employees is required. Everyone should be involved in the decision-making process about TQM through which the level of their satisfaction will be enhanced (Dale, Van der Wiele, & Van Iwaarden, 1999).

Hospitals are now focused on how they can provide quality health services so that they can satisfy their patients. Patients are considered a key component in every health sector. Duggirala, Rajendran, and Anantharaman (2008) identified that the performance of every health sector is based on patient satisfaction and their delivery of effective healthcare services. Arasli (2002) identified that TQM implementation comes from the patient's satisfaction from service and quality. Moreover, it helps in the proper implementation of the policies, effective functioning of the human resource department, effective implementation of the firm's planning program and the continuous improvement in the performance. Previous studies and research have evidenced that TQM and performance of the firm have a positive relationship with each other. The early evidence on TQM shows that the practices and the approaches of TQM are the vital steps to enhance a firm's performance and effective implementation of TQM (Sila & Ebrahimpour, 2002).

The review of TQM literature revealed that a few studies have been conducted on its successful implementation in the health sector. Mehra, Hoffman, and Sirias (2001) examined that there are 45 major TQM practices extensively implemented. These 45 TQM practices are classified into five categories i.e. the HR department, the orientation of customers, quality instruments, supplier's relationship and management approaches. Saraph, Benson, and Schroeder (1989) analysed the practice of TQM in the previous research which includes leadership of top executives, duties and functions of the quality department, training of the employees at all

levels, designing of the new product/services and the satisfaction of the customer to meet their needs and expectations. This has significant importance as it helps the firms to increase their profit and revenue as well as help to enhance the growth of the company in the competitive environment. According to Waldman (1993), most of the companies in the US, as well as other developing countries, found their growth has rapidly increased because of the TQM practices in their systems.

Kara, Kim, Lee, and Uysal (2018) found that leadership improves overall working quality. The leadership and the culture are the main drivers of organisations that enable it to positively implement the TQM (Radnay, 1997). Administration and management of a hospital have a strong effect on a hospital's performance (Bhat, Verma, & Reuben, 2001). Fuentes-Fuentes, Albacete-Sáez, and Lloréns-Montes (2004) proved that TQM has a positive impact on employee performance. Garvin (1991) described the principles of TQM that were implemented by the winners of the Malcolm Baldrige quality award (MNBQA) which mainly include the leadership of top executives and the culture of employees' participation in the decision-making process. Teoman and Ulengin (2018) found the positive link of effective leadership and improved quality at various levels of a supply chain in the organisation. The role of leadership in implementing the principles of TQM is critical (Radnay, 1997; Saraph et al., 1989). The physician-led hospitals are higher in rating in quality than those with non-physician led leadership (Tasi, Keswani, & Bozic, 2019). Waldman (1993) identified that without leadership, TQM cannot be implemented successfully as it is an essential component for the improvement of the quality process. Based on the above literature the study proposes the following two hypotheses. Leadership and customer focus has a significant positive influence on operational performance (Samson & Terziovski, 1999). Bradley, Holmboe, Mattera, and Roumanis (2003) discussed elements regarding management involvement in efforts of quality improvement.

*Hypothesis 1 (H1). Leadership is positively associated with quality treatment.*

*Hypothesis 2 (H2). Leadership is positively associated with quality management.*

A TQM oriented organisation encourages its employees in a participative decision-making process. Waldman (1995) conducted a study about the importance of human capital in a firm and found that TQM is successfully implemented if organisations empower their employees to participate in the decision making process. Cantiello, Kitsantas, Moncada, and Abdul (2016) found that leaders should engage the employees more in decision making for the TQM efforts to be fruitful in the healthcare sector. The following hypothesis is proposed in the above literature:

*Hypothesis 3 (H3). Human resource utilisation is positively associated with quality treatment.*

*Hypothesis 4 (H3). Human resource utilisation is positively associated with quality management.*

TQM has a significant and positive effect on hospital performance in terms of services and treatment provided (Duggirala et al., 2008). Gowen, McFadden, and Tallon (2006) found that strategic HRM has a significant association with quality management practices error lessening mechanisms. Powell (1995) found the role of TQM increases employee performance. Marketing and quality variables were significant determinants of the hospitals' financial performance (Raju & Lonial, 2002). Douglas and Judge Jr (2001) emphasised that the scope of TQM implementation has been positively associated with industry expert-rated performance and perceived financial performance. HRM in hospital analysed research on administrative, paramedical and support staff and nurses and emphases on part of physicians in health management, clinical enhancement by including them in health service management (Scott, 1999; Spurgeon, 2001) physician's opinions on practices of health care, new patterns in clinical care delivery (Thompson, Barbour, & Schwartz, 2003), and insights of Doctor of Physician and quality satisfaction (Newman & Pyne, 1996). Performance and clinical quality must be measured to deliver feedback to the providers of care related to their performance (Donabedian, 2000). Gibbons and Dhariwal (2003) described the significance of practices of good audit that may be achieved through organisations, leadership, individual motivation, and guidelines. Climate variables have a significant effect on work effort and job satisfaction (Yoon, Beatty, & Suh, 2001).

*Hypothesis 5 (H3). Strategic quality planning is positively associated with quality treatment.*

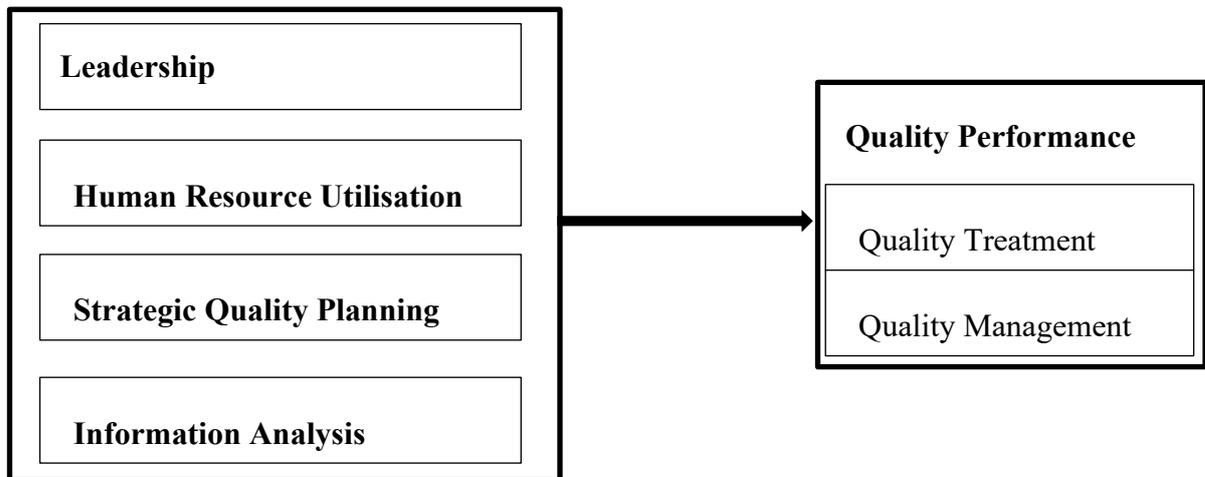
*Hypothesis 6 (H3). Strategic quality planning is positively associated with quality management.*

There are several challenges confronted by healthcare centres and hospitals regarding quality, efficiency and inadequacy. Wilson and Collier (2000) found that information analysis and process management had a positive impact on financial performance. TQM and quality improvement are needed in hospitals to avoid customer switching (Hasin et al., 2001).

*Hypothesis 7 (H3). Information and analysis are positively associated with quality treatment.*

*Hypothesis 8 (H3). Information and analysis are positively associated with quality management.*

Further, the authors framed the proposed relations of the variables under study in Figure 1 for the readers.



**Figure 1.** Research model.

## **Research methodology**

### *Study Type*

It was a causal study. The causality predictors and outcome variables were analysed. The authors collected the data at one point in time cross-sectionally. The study adopted a survey method mainly under the quantitative positivist approach to collect the data from the close-ended questionnaires (Neuman, Wirtalla, & Werner, 2014). The study lasted for six months in a non-contrived setting.

### *Measurement Scales*

Scales were adopted from previous studies. The questionnaire consisted of three portions; The first part introduced the purpose of the study and ensured the data privacy to the respondents. The second portion consisted of variables items on a five-point Likert scale from Strongly-agree (1) to Strongly disagree (5). The last portion raised their demographic information as suggested by the studies, putting demographic information at the end ensures more trust in the data provided. Moreover, respondents were not paid for filling out the questionnaires and the voluntary participation of the respondents was ensured.

**Table 1.**

*Predictors' latent construct items*

C	Items
Leadership (L)	L1: The senior executives provide highly visible leadership in maintaining an environment that supports quality improvement.
	L2: The CEO/Administrator is a primary driving force behind quality improvement efforts.
	L3: The senior executives consistently participate in activities to improve the quality of care and services.
	L4: Senior executives seek information on needs and suggestions for quality improvement directly from external customers (e.g., patients, families, and payers).
	L5: The senior executives have demonstrated an ability to manage the changes (e.g., organisational, technological) needed to improve the quality of care and services.
	IA1: The hospital collects a wide range of data and information about the quality of care and services.
Information analysis (IA)	IA2: The hospital uses a wide range of data and information about the quality of care and services to make improvements.
	IA3: The hospital continually tries to improve how it uses data and information on the quality of care and services.
	IA4: The hospital continually tries to improve the accuracy and relevance of its data on the quality of care and services provided.
	IA5: Hospital employees are actively involved in determining what data is collected for improving the quality of care and services.
	IA6: The hospital compares its data to data on the quality of care and services at other hospitals.
	Strategic quality planning (SQP)
SQP2: Each department and workgroup within this hospital maintains specific goals to improve quality.	
SQP3: Hospital employees are involved in developing plans for improving quality.	
SQP4: The hospital's quality improvement goals are known throughout the organisation.	
SQP5: Middle managers (e.g., department heads, program directors, and first-line supervisors) are playing a key role in setting priorities for quality improvement.	
SQP6: Non-managerial employees are playing a key role in setting priorities for quality improvement.	

C: Construct

**Table 2.**

*Predicted latent construct items.*

C	Items
Quality management (QM)	QM1: The hospital regularly checks equipment and supplies to make sure they meet quality requirements.
	QM2: The quality assurance staff effectively coordinate their efforts with others to improve the quality of care and services the hospital provides.
	QM3: The hospital has effective policies to support improving the quality of care and services.
	QM4: The hospital tries to design quality into new services as they are being developed.
	QM5: The hospital encourages employees to keep records of quality measurements.
	QM6: The hospital views quality assurance as a continuing search for ways to improve.
	QM7: The services which the hospital provides are thoroughly tested for quality before they are implemented.
Quality treatment	QT1: We have all the necessary to facilitate treatment.
	QT2: Complaints regarding treatment are decreasing every day.
	QT4: Patients do not have to wait for their treatment.
	QT5: Doctors are always available for the treatment of patients.

C: Construct

*Data collection and sampling*

The authors selected medical doctors and paramedical staff members as respondents. It is pertinent to mention that medical doctors also practice extra hours in addition to their regular duty hours at private clinics. The authors gathered the data in two phases. Firstly, the questionnaires were distributed physically among the respondents and they were given one week to fill it in, a few respondents filled in the questionnaires in researchers' presence. Secondly, other online questionnaires (using google forms) were distributed through social media including Facebook, Linked In, and WhatsApp. The responses were received online and downloaded. Respondents' enquiries regarding the constructs were clarified. The respondents were geographically distributed across Pakistan. The study employed convenient sampling technique to select the respondents for physical data collection while snowball sampling technique. Since medical staff are hard to reach in Pakistan due to a heavy flow of patients, the convenient sampling technique was the most suitable method available to us. The authors approached the respondents through our references as well since it was a better way to get reliable data because doctors and staff felt secure about privacy. Moreover, the accuracy of the data provided through reference was higher in a Pakistani cultural context. Similarly, studies also used snowball sampling techniques for online data collection (Ilango et al., 2020). Data collection took one month and was from six main hospitals in the region. Originally, a sample size of 500 (n=500) was intended but, due to high loads of patients and the high doctor/patient

ratio in Pakistan, a reduced sample composed of 430 responses was received and verified. The respondents were not asked their names in order to give them confidence about data privacy. Their obvious identities were altered in such a way that no other person could know about the propriety of the data.

### *Data analysis & reporting*

The data was analysed using smart-PLS version 3 software (Richter, Cepeda, Roldán, & Ringle, 2015). We used SEM technique to analyse the data. It has been the most effective technique for theory development and exploratory studies (Bamgbade, Kamaruddeen, Nawi, Yusoff, & Bin, 2018). SEM based SMART Pls application contains path analysis, confirmatory factor analysis, regression models, and correlation structure models (Lin & Jeng, 2017). Moreover, SEM is better to analyse the causal connection between the latent constructs and manifest variables (Gefen, Straub, & Boudreau, 2000). All the latent constructs were reflective. Their items were found to be similar. Non-significant results are also reported to avoid file drawer problem since it has been suggested to avoid duplication of research and to ensure informed decision-making (Scargle, 1999).

## **3. Results and discussion**

### *4.1 Evaluation of Outer Measurement Model*

The outer measurement model is aimed to assess reliability, validity and internal consistency of the measure variables (Ho, 2006). Reliability describes the loading of a single observed variable over the others. A variable with an outer loading of 0.7 or above is considered reliable (Ringle, Sarstedt, Mitchell, & Gudergan, 2020).

**Table 3.**  
*Reliability and composite validity of the variables*

Latent Variables	Cronbach's Alpha	rho_A	Composite Reliability	AVE
Human resource utilisation	<b>0.86</b>	0.86	0.90	0.64
Information & analysis	<b>0.87</b>	0.88	0.90	0.60
Leadership	<b>0.80</b>	0.82	0.86	0.56
Quality management	<b>0.87</b>	0.88	0.90	0.57
Quality treatment	<b>0.77</b>	0.77	0.85	0.59
Strategic quality planning	<b>0.81</b>	0.82	0.86	0.51

AVE: Average variance extracted

Cronbach is the measure of the reliability of the instrument. Its values range between 0-1. The higher the alpha the higher the reliability. The table produced the alpha values for different

scales. All the values are above 0.7 which means the instruments used were reliable. They measured the underlying constructs consistently. To check the convergent validity of the construct, AVE values are assessed. Here the AVEs are higher than 0.5, meaning that convergent validity is established. The instruments used and data collected is suitable for further analyses. Moreover, the table produced the value of more than 0.7 for each instrument, meaning composite reliability is established of the instrument. Overall, all the instruments utilised in this study were fit for the underlying constructs to collect the data from respondents.

**Table 4.**

*Discriminant validity (intercorrelations) of variable constructs  
Fornell-Larcker criterion*

Latent Variables	1	2	3	4	5	6
1. Human resource utilisation	<b>0.80</b>					
2. Information analysis &	0.62	<b>0.77</b>				
3. Leadership	0.55	0.59	<b>0.75</b>			
4. Quality management	0.71	0.69	0.64	<b>0.75</b>		
5. Quality treatment	0.63	0.48	0.42	0.44	<b>0.77</b>	
6. Strategic quality planning	0.67	0.68	0.65	0.78	0.40	<b>0.72</b>

Fornell-Larcker criterion develops the discriminants validity of the instruments. Since the values produced in the smart pls are higher than the value of 0.7, it proves that the Fornell-Larcker criterion is met, and the discriminant validity is established. It again reiterates that the instruments used in the study were suitable.

**Table 5.**

*Factor loadings (bolded) and cross loadings*

Items	HRU	IA	L	QM	QT	SQP
HRU1	<b>0.801</b>	0.49	0.47	0.59	0.46	0.59
HRU2	<b>0.79</b>	0.50	0.41	0.58	0.48	0.57
HRU3	<b>0.85</b>	0.55	0.49	0.66	0.50	0.55
HRU4	<b>0.74</b>	0.46	0.31	0.46	0.47	0.43
HRU5	<b>0.81</b>	0.47	0.50	0.53	0.58	0.54
IA1	0.42	0.70	0.43	0.52	0.29	0.48
IA2	0.46	<b>0.82</b>	0.45	0.52	0.40	0.52
IA3	0.49	<b>0.84</b>	0.52	0.58	0.36	0.56
IA4	0.41	<b>0.75</b>	0.46	0.46	0.28	0.51
IA5	0.55	<b>0.79</b>	0.55	0.59	0.42	0.59

IA6	0.51	<b>0.73</b>	0.33	0.52	0.41	0.48
L1	0.31	0.36	<b>0.74</b>	0.37	0.31	0.44
L2	0.44	0.34	<b>0.76</b>	0.48	0.34	0.50
L3	0.47	0.58	<b>0.87</b>	0.56	0.39	0.63
L4	0.32	0.47	0.60	0.46	0.23	0.38
L5	0.49	0.46	<b>0.75</b>	0.51	0.29	0.48
QM1	0.59	0.50	0.46	<b>0.76</b>	0.49	0.56
QM2	0.55	0.59	0.46	<b>0.77</b>	0.33	0.63
QM3	0.57	0.51	0.47	<b>0.76</b>	0.34	0.62
QM4	0.49	0.48	0.49	<b>0.73</b>	0.35	0.57
QM5	0.49	0.49	0.50	<b>0.77</b>	0.23	0.57
QM6	0.52	0.50	0.54	<b>0.77</b>	0.36	0.58
QM7	0.51	0.56	0.45	<b>0.71</b>	0.25	0.54
QT1	0.53	0.38	0.29	0.34	<b>0.80</b>	0.35
QT2	0.43	0.37	0.31	0.31	<b>0.80</b>	0.30
QT4	0.44	0.36	0.27	0.29	<b>0.78</b>	0.22
QT5	0.51	0.35	0.43	0.41	0.70	0.35
SQP1	0.44	0.58	0.31	0.54	0.43	0.66
SQP2	0.57	0.57	0.59	0.61	0.34	<b>0.81</b>
SQP3	0.47	0.48	0.51	0.59	0.25	<b>0.75</b>
SQP4	0.47	0.49	0.52	0.58	0.23	<b>0.79</b>
SQP5	0.56	0.43	0.54	0.60	0.26	<b>0.72</b>
SQP6	0.34	0.35	0.33	0.37	0.18	0.54

HRU: Human resource utilisation, IA: Information analysis, L: Leadership, QM: Quality management, QT: Quality treatment, SQP: Strategic quality planning

Table 5 illustrates the factor loadings mostly are above the threshold of 0.7 except three items L4(0.595), QT5(0.697) and SQP6(0.541). It shows the items were highly consistent in measuring the underlying constructs.

**Table 6.**

*Heterotrait-Monotrait Ratio (HTMT)*

No	Latent variables	1	2	3	4	5	6
1.	Human resource utilisation						
2.	Information & analysis	0.71					
3.	Leadership	0.66	0.71				
4.	Quality management	0.81	0.79	0.77			
5.	Quality treatment	0.76	0.57	0.53	0.54		
6.	Strategic quality planning	0.80	0.81	0.80	<b>0.91</b>	0.49	

Heterotrait-Monotrait Ratio (HTMT) depicts the multicollinearity among the latent constructs. The table produces the values of different collinear constructs. After reviewing the tables, the authors got to know that there is a slight problem of multicollinearity between the variables of quality management-strategic quality planning. All the other constructs show a good ratio since the HTMT ratios below 0.9 are considered good (Henseler, Ringle, & Sarstedt, 2015). Overall, the table shows a better picture of the lack of multicollinearity. It meets one of the basic assumptions of causal analysis. The causal analysis was done to have more rigor and reliable results.

**Table 7.**  
*Outer VIF values*

Items	VIF	Items	VIF	Items	VIF
HRU1	2.11	L1	1.63	QM7	1.64
HRU2	1.94	L2	1.67	QT1	1.76
HRU3	2.41	L3	2.17	QT2	1.91
HRU4	1.63	L4	1.36	QT4	1.58
HRU5	1.85	L5	1.74	QT5	1.25
IA1	2.12	QM1	1.92	SQP1	1.35
IA2	2.61	QM2	1.89	SQP2	1.87
IA3	2.86	QM3	1.82	SQP3	1.67
IA4	2.11	QM4	1.75	SQP4	1.88
IA5	1.99	QM5	2.01	SQP5	1.52
IA6	1.72	QM6	1.97	SQP6	1.28

HRU: Human resource utilisation, IA: Information analysis, L: Leadership, QM: Quality management,

QT: Quality treatment, SQP: Strategic quality planning

Variation inflation factors (VIF) values are the measures of collinearity among the latent variables in the model. The VIF values should be less than 10, in some cases, VIF should be lower than 5 while some authors also support the idea that multicollinearity can also accrue at a value of 3. So ideally VIF values should be around 3 (Mason & Perreault Jr, 1991). The above tables indicated that the maximum VIF value is 2.863 for code statement of IA3 in the questionnaires which is below the threshold of 10 for collinearity. There has been no indication of the presence of collinearity in the data. The model is fit to be analysed further.

**Table 8.**

*Inner VIF values*

No.	Variable	1	2	3	4	5	6
1.	Human resource utilisation					2.03	
2.	Information & analysis					2.14	
3.	Leadership					1.91	
4.	Quality management						
5.	Quality treatment						
6.	Strategic quality planning				1.00	2.64	

Inner VIF values are also within the range. The collinearity problem is not present as the values are far below than the threshold of 5.

#### 4.2 Evaluation of Inner Structural Model

**Table 9.**

*r<sup>2</sup> values of dependent variables*

Variable	r <sup>2</sup>	Adjusted-r <sup>2</sup>
Quality management	0.602	0.599
Quality treatment	0.420	0.405

Predictors: Human resource utilisation, Information & analysis, Leadership,

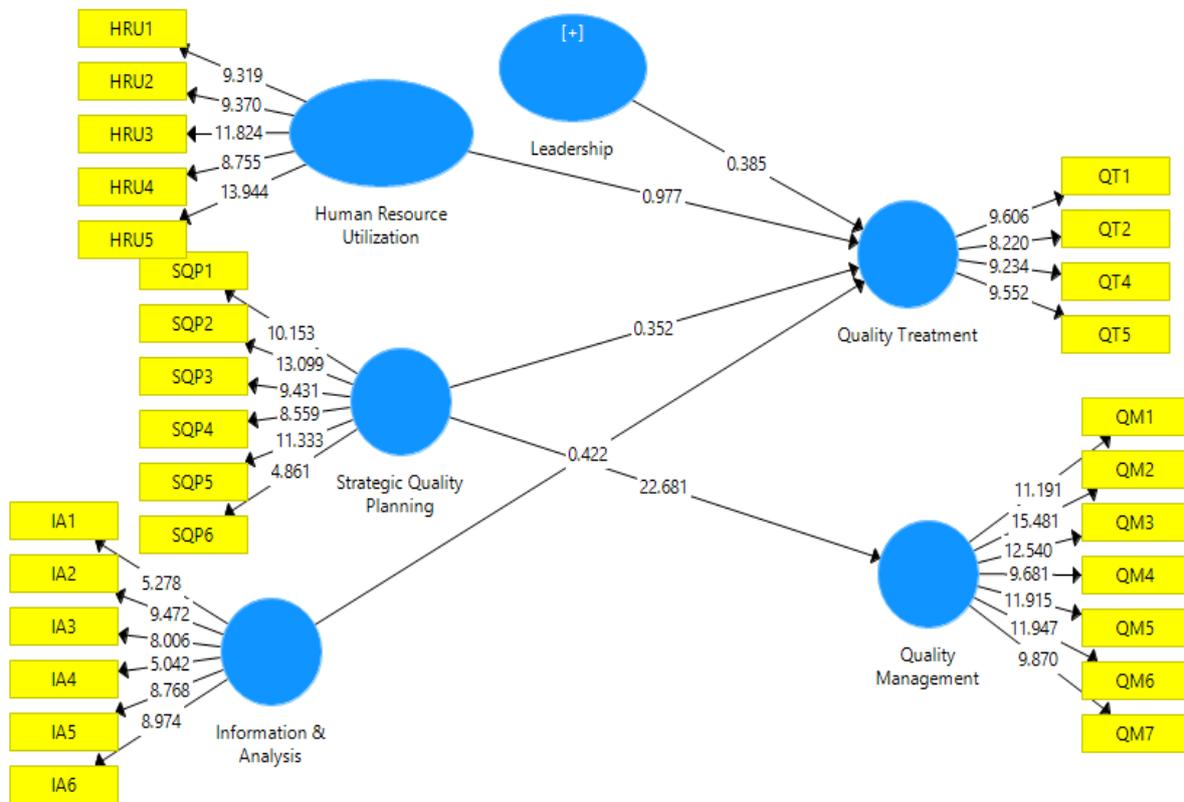
Strategic quality planning

The table produced r<sup>2</sup> values of quality management (r<sup>2</sup>=0.602) and for quality treatment as 0.42. Ideally, the r<sup>2</sup> value of 0.5 is considered moderate (Hair, Ringle, & Sarstedt, 2011). It shows a huge amount of variation has been extracted by the independent variables to dependent variables, showing that the predictors have a strong influence in defining the quality implementation pattern in the hospitals. The effect of human resource utilisation, information and analysis, leadership and strategic quality planning is highly influential. The policymakers to change the quality in the hospitals need to change the intensity of these predictors. On the other side it shows that since the quality is lower in Pakistani hospitals, the administration is less concerned about the predictor. It needs to shift its focus from other constructs to human resource utilisation, information and analysis, leadership, and strategic quality planning.

**Table 10.**  
*Total coefficient and T-Statistics*

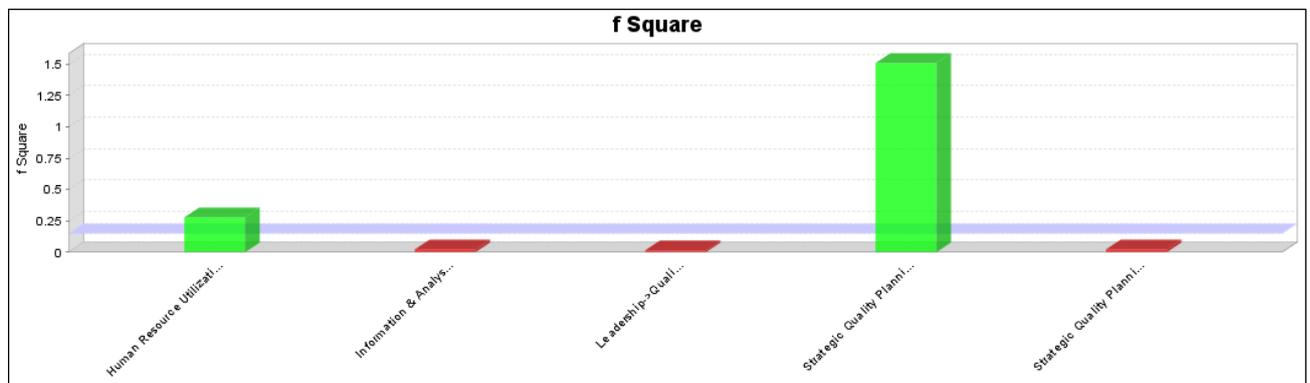
Hypothesised Path	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T-Statistics ( O/STDEV )	P Values
Human resource utilisation -> Quality treatment	0.95	1.03	0.56	1.70	0.08
Information & analysis -> Quality treatment	0.26	0.33	0.44	0.60	0.54
Leadership -> Quality treatment	0.29	0.36	0.54	0.54	0.58
Strategic quality planning -> Quality management	0.92	0.92	0.04	22.6	<b>0.000</b>
Strategic quality planning -> Quality treatment	-0.70	-0.89	1.28	0.54	0.58

The above tables show that there is only one hypothesis being substantiated, that is strategic quality planning and quality management ( $t=22.633$ ,  $P=0.000$ ). The inclusion of quality while making the strategy will enhance the quality management in the hospitals. Framework devised to achieve hospital goals must also incorporate quality implementation methods, procedures, and deadlines. Employees at hospitals are key to enhancing quality. The quality information sharing at all levels from the bottom line to upper management is necessary. Both managerial and non-managerial staff are an important pillar in improving organisational affairs. The study helps know the effects of human resource utilisation, leadership, strategic quality planning and information analysis on quality management and treatment quality in hospitals.



**Fig. 2.** Assessment of the structural equation model.

The model output shows the hypothesis outcome. From the figure, it is drawn that strategic quality planning has a strong influence on quality management within the organisation. It enhances patient care, record keeping, staff knowledge sharing and overall efficiency. Because strategy is translated into the courses of actions, the organisation makes plans to achieves its goals. Hospitals are aimed at providing better medical services to their patients. Planning about quality enhances the focus of the hospitals to achieve higher efficiency in all aspects of quality management. Other predictors seem to be ineffective in defining the enhanced quality of the treatment to the patients. The reasons might be manifold.



**Fig. 3.** F<sup>2</sup> statistics

Cohen (1988); (Henseler et al., 2015) described the F square values depicting the effect sizes of the variables. The value range of 0.02, 0.15 and 0.35 show the small, medium, and large effect sizes, respectively. Figure 3 illustrates that the f square value is above 0.02 which shows a strong effect size for human resource utilisation. Moreover, the effect of strategic quality planning for improvement in treatment quality as well as overall quality management is even stronger. If the hospitals incorporate quality management within the strategic planning the treatment quality will increase.

**Table 11.**

*Path coefficients*

*Mean, STDEV, T-values, P-values.*

N o.	Path	OS(O)	Sample Mean (M)	SD	T-Statistics ( O/STDEV )	P-Value
1.	Human resource utilisation -> Quality treatment	0.95	1.03	0.56	1.70	<b>0.089</b>
2.	Information & analysis -> Quality treatment	0.26	0.33	0.44	0.60	0.548
3.	Leadership -> Quality treatment	0.29	0.36	0.54	0.54	0.587
4.	Strategic quality planning -> Quality management	0.92	0.92	0.04	22.6	<b>0.000</b>
5.	Strategic quality planning -> Quality treatment	-0.70	-0.89	1.28	0.54	0.587

OS: Original sample, SD: Standard deviation.

The path coefficient table indicated that human resource utilisation has a positive effect on quality treatment. The treatment quality is dependent on the utilisation of human resources which may include either doctors or nursing staff, or both at once. Most importantly, a hospital needs to hire top-class human resources (both medical and paramedical staff). In Pakistan the human resource utilisation perspective is two-folded. Firstly, utilising talent, skills, and potential of the employees. Secondly, utilisation may also come in the shape of necessary equipment and medical machinery.

#### 4. Conclusion

The margin of error is intolerable in hospitals where people's lives are at stake. The importance of quality is paramount. The study showed diverse outcomes. Strategic quality planning has been proved as a significant indicator of quality management. It depends on organisation planning capability. Mostly, incorporation of quality in the strategy is overlooked in Pakistani hospitals. If the leadership input quality into the strategy the performance of the hospital will increase. On the other hand, leadership is not proved to be playing an upright role in enhancing quality management and treatment quality. The reason might be the ignorance of management



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about quality management tools and practices. Quality management as a discipline is not very famous among the top management in Pakistan. Human resource utilisation is seen to have a mild effect on treatment quality. Doctors practice in private hospitals, in that way they are unable to completely focus on quality treatment in their regular jobs. Thus, the treatment quality is lowering as they do not utilise their full skills set in their primary jobs. The policy makers need to keep align the findings for developing the strategies of the hospitals. Experimental designs or longitudinal studies may be carried out in future to validate the results further.



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