Employee Perceptions of Service Quality Based on Hospital Quality Improvement Strategy

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Following reforms in the Taiwanese healthcare system, hospitals are facing an increasingly competitive healthcare market. Hospital administrators, in response to this competition, are placing increasing importance on improving the quality of healthcare in order to ensure patient satisfaction. How can service quality (SQ) be improved in healthcare settings? This study explored how total quality management (TQM) influences employee perceptions of SQ. A cross-sectional study was performed, for which a sample was drawn from five regional hospitals in central Taiwan. This study used questionnaires to investigate employee perceptions of TQM and SQ in five regional teaching hospitals in Central Taiwan. A total of 300 questionnaires were distributed, of which 226 valid questionnaires were returned. The findings of this study revealed that TQM influenced employee perceptions of SQ. Therefore, hospital managers should use TQM strategy to influence employee perceptions of SQ. When promoting a TQM strategy, hospital managers should develop a clear vision for quality management within their organizations combined with distinct quality improvement policies and initiatives.

Keywords: Total quality management, service quality, quality improvement, healthcare management

As a result of the changing medical environment in Taiwan, hospitals are under increasing competitive pressure. To survive in this environment, hospital managers are enhancing the quality of service delivered to patients (Tsai and Tang, 2008). Healthcare quality improvement has also been a crucial issue for American hospitals (Izumi, 2012). Underlying these developments is an important question: how can healthcare quality be improved for patients? Researchers believe that healthcare organizations, when faced with an increasingly competitive market, can use total quality management (TQM) to lower the cost of healthcare and, at the same time, obtain customer satisfaction (Masters and Masters, 1993).

Many studies have confirmed the impact of TQM on the performance of organizations (e.g., Samsona and

Terziovskib, 1999; Kaynak, 2003; Kannan and Tan, 2005). Most of the research on TQM, however, has been in the manufacturing sector (Long, 2003) with very little focused on service providers (Saravanan and Rao, 2006). As markets grow more competitive, service organizations have begun to value the importance of providing quality service to customers. Consequently, service quality (SQ) has become one of the performance targets service organizations are pursuing. For service organizations in the health care sector, such as hospitals, providing quality health care to patients has become an important objective, but few studies have explored the effect of TQM strategy on hospital performance.

Therefore, the current study assesses whether TQM can be used to help healthcare organizations control costs, pursue high standards of care, and ensure customer satisfaction simultaneously. It also investigates the influence of a hospital quality improvement strategy on employee perceptions of SQ. Results of this study can provide hospital administrators with a useful management tool to influence employee perceptions of SQ.

LITERATURE REVIEW

Modern healthcare is patient-centered; it must be customized to meet the needs of patients with a wide array of physiological conditions and illnesses. Patient-centered healthcare refers to the therapeutic relationship between healthcare providers and recipients of healthcare services, with an emphasis on meeting individual patient needs to accomplish patient satisfaction (Dabney and Tzeng, 2013). SQ is one of the most important factors in patient satisfaction. Recognizing this, hospital administrators have begun to promote health care quality policies to raise the quality of healthcare in their institutions, reduce the frequency of careless mistakes, and improve the efficiency of healthcare services (Arndt and Bigelow, 1996; Gillam and Siriwardena, 2013).

TQM is defined as a set of procedures used to reduce variations from a service-delivery or production process in order to improve efficiency, reliability, and quality (Steingrad and Fitzgibbons, 1993). Motwani (2001) asserts that TQM is a management strategy. It can be seen as a strategy with executive management commitment as the foundation and four pillars: process management, quality measurement and control, employee training, and customer focus. TQM can be employed by hospital administrators who are interested

in improving both the quality of the service process and its efficiency simultaneously. Studies confirm that increasing attention is being paid to the quality of hospital processes with the aim of improving productivity and cost-effectiveness (Hiidenhovi *et al.,* 2002). In addition to healthcare cost and efficiency, quality is another important indicator of hospital performance (Kenagy *et al.,* 1999). In hospitals, health services and their consumers are linked by service-providing employees, such as doctors, nurses, dieticians, and physiotherapists (Nashrath *et al.,* 2011), and SQ is an evaluation of the overall quality of the service interaction between these personnel and patients (Parasuraman *et al.,* 1988). Hospital employees, then, are well-placed to judge the quality of service that they deliver to patients. The challenge is that service is by nature intangible, heterogeneous, and inseparable, rendering its quality difficult to measure (Büyüközkan *et al.,* 2011). In response to this dilemma, the authors propose five constructs that can be used to measure SQ: tangibles, reliability, responsiveness, assurance, and empathy (Araceli *et al.,* 2005). This study explores the influence of TQM on employee perceptions of SQ.

METHODOLOGY

-Setting and Sample

A cross-sectional study was performed to investigate employee perceptions of TQM and SQ in five regional teaching hospitals in Central Taiwan. The method of sample selection was convenience sampling; the instrument used was a questionnaire. Respondents who were not acquainted with the researchers included administrative, medical, medical-technology, and nursing staff. The survey period was from November 1, 2009 to December 31, 2009. A total of 300 questionnaires were distributed, of which 226 valid questionnaires were returned.

After distributing the questionnaires, researchers informed subjects that responses would be used for research purposes only. Subjects agreed to these conditions and completed the questionnaires. Responses to all questions were anonymous.

-Sample Distribution

Among respondents, there were more females than males, with 203 females (89.8%) vs. 23 males (10.2%). A majority of respondents were from the administration (44.2%) and nursing (37.2%) departments. A majority of respondents (37.2%) had a seniority of 2-3 years, while 31.0% had a seniority of more than 8 years. Also

in the sample, a majority of respondents (62.4%) had some university education, while college graduates (22.1%) comprised the next largest group. A majority (47.3%) were 20-29 years of age, while 28.3%. were 30-39 years of age. A majority were frontline hospital workers (80.5%), while first-line managers comprised 10.6% (Table 1).

Demographics	Number	%
Gender		
Female	203	89.8
Male	23	10.2
Department		
Administration	100	44.2
Medical	33	14.6
Medical technology	9	4.0
Nursing	84	37.2
Age		
20-29	107	47.3
30-39	64	28.3
40-49	41	18.1
Over 50	14	6.2
Education Background		
High School	8	3.5
College	50	22.1
University	141	62.4
Master and PhD	27	11.9
Position		
Frontline employee	182	80.5
First line manager	24	10.6
Middle manager	5	2.2
Top manager	7	3.1
Others	8	3.5
Seniority		
Below 1 year	31	13.7
2-3 years	84	37.2
4-5 years	25	11.1
6-7 years	16	7.1
Over 8 years	70	31.0

Table 1. Participant Demographics (n=226)

-Data Collection Instruments

We referred to the TQM concept proposed by Motwani (2001) to design the questionnaire items. Respondents specified their level of agreement with 19 items using a five-level Likert scale: strongly agree, agree, neither agree nor disagree, disagree, and strongly disagree.

To measure SQ, researchers used SERVQUAL, a self-reporting instrument with previous applications in the healthcare sector (Vartiainen, 1997; Hiidenhovi *et al.,* 2002). Respondents were asked to respond to 22

items on a five-point Likert Scale, ranging from 1= "very unimportant" to 5= " very important." In most studies of SQ, customers have served as subjects, with an emphasis on understanding these customers' perception of SQ after a service was delivered. Tsai and Wu (2010), however, utilized hospital nurses as subjects, drawing on nurses' perceptions to measure SQ. The current study used an approach similar to Tsai and Wu (2011) to define SQ, relying on employee rather than customer perceptions.

Because the primary language of respondents was Mandarin Chinese, the author translated the Motwani (2001) questionnaire from English to Chinese. The Chinese questionnaire was then translated back to English to ensure semantic coherence. After translation, the director of a regional hospital's healthcare quality department and two medical university professors with hospital management experience were invited to evaluate the questionnaire for expert validation. Then, fifty staff members of a regional hospital participated in the pilot study, for which the Cronbach's α was 0.947 for TQM and 0.952 for SQ. All Cronbach's coefficients exceeded 0.70, which was considered acceptable (DeVellis, 2011). According to the Bartlett test, the P value of TQM in this study was 0.000 and the P value of SQ was 0.000.

The data were analyzed with SPSS 20.0 using descriptive statistics to characterize the demographics of the sample. To understand the relationships between demographic characteristics of participants and their perceptions of TQM and SQ, a one-way ANOVA was conducted with equal variance assumed. A Scheffe post-hoc comparison, focusing on results with statistically significant differences, was also performed. Furthermore, linear regression was used to test the impact of TQM on SQ, and a Pearson correlation test was conducted to determine the relationship between the constructs of TQM and SQ. The Cronbach's α obtained from the reliability analysis of the 226 valid questionnaires was 0.936 for TQM and 0.973 for SQ.

RESULTS

The mean of TQM was between 3.83 and 4.20. The mean of SQ was between 3.91 and 4.41. The standard deviation of TQM was between 0.604-0.788, while the standard deviation of SQ was between 0.581-0.784 (see Appendix-I).

A One-Way ANOVA was used to analyze how demographics influenced TQM and SQ. It was found that medical department employees were less aware of TQM than medical technology and nursing department

employees (F value=2.603, P value=0.053). Department of employment also influenced perception of SQ. Medical technology, administration and nursing department staff reported greater awareness of SQ than medical department staff (f value=5.541, p value=0.001). Occupation also influenced perception of TQM (f value=3.116, p value=0.016) but had no impact on perception of SQ (f value=1.483, p value=0.208). Overall, middle and first-line managers' awareness of TQM was greater than that of frontline employees (f value=3.116, p value= 0.016).

Employee seniority did not have a significant impact on perception of TQM (F value=1.558, p value=0.187) and SQ perception (f value=1.699, p value=0.151). Educational background had a significant impact on perception of TQM (f value=2.260, p value =0.082) and a non-significant impact on perception of SQ (f value=0.747, p value=0.525). Employees with Masters or PhDs had greater awareness of TQM than employees with only college degrees. Employee age had a significant impact on perception of TQM (f value=2.178, p value=0.092) and a non-significant impact on perception of SQ (f value=1.808, p value=0.147). Employees aged 40-49 were more aware of TQM than those aged 30-39 (Table 2).

Dependent Variables	Independent Variables	f value/t value (p value)	Scheffé's post hoc
Total Quality Management	Gender	2.194(0.029*)	Male>Female
	Department	2.603(0.053 †)	Nursing>Medical, Medical technology>Medical
	Age	2.178(0.092 †)	40-49>30-39
	Education Background	2.260(0.082 †)	Master and PhD>College
	Position	3.116(0.016*)	Middle manager>Frontline employee, First line manager >Frontline employee
	Seniority	1.558(0.187)	
SQ	Gender	0.276(0.783)	
	Department	5.542(0.001***)	Administration>Medical, Medical Technology>Medical, Nursing>Medical
	Age	1.808(0.147)	
	Education Background	0.747(0.525)	
	Position	1.483(0.208)	
	Seniority	1.699(0.151)	

Note. †p<.10 *p<.05 **p<.01 ***p<.001

Table 2. One-Way ANOVA and Scheffé's Post Hoc Analysis

Due to the number of variables involved, an exploratory factor analysis was used to reduce the TQM and SQ constructs. Kaiser (1974) maintained that when the Kaiser-Meyer-Olkin value exceeds 0.90, a factor analysis can be undertaken. For this study, TQM had a KMO score of 0.947, while SQ had a score of 0.946, indicating that TQM and SQ were both suitable for factor analysis. Maximum likelihood estimation was used to extract the factor and the varimax method for factor rotation.

It was found that the two TQM constructs according to each construct's characteristics were quality policy and initiatives and customer-centeredness. It was found that the three SQ constructs according to each construct's characteristics were reliability and assurance, empathy, and tangibles (Appendix-I). Linear regression was used to test the impact of TQM on SQ. We obtained P value=0.000, β =0.418, and R^2=0.175. Thus, TQM had a positive influence on SQ. In addition, a Pearson correlation was used to test the relationship between the constructs of TQM and SQ. The TQM quality policy and initiatives construct, the SQ tangibles construct, and related coefficients yielded the rather high prime number of 0.445 (P=0.000). The TQM's customer centeredness construct, SQ tangibles construct, and related prime number quality were also quite high at 0.354 (P=0.000) (Table 3). All constructs of TQM were positively correlated with all constructs of SQ.

	Quality Policies and Initiatives β	Customer Centeredness β	Reliability and Assurance β	Empathy β	Tangibles β
Quality Policies and Initiatives	1	0.742**	0.353**	0.346**	0.445**
Customer Centeredness	0.742**	1	0.306**	0.312**	0.354**
Reliability and Assurance	0.353**	0.306**	1	0.757**	0.682**
Empathy	0.346**	0.312**	0.757**	1	0.543**
Tangibles	0.445**	0.354**	0.682**	0.543**	1

Note. †*p*<.10 **p*<.05 **p<.01 ***p<.001

Table 3. The Correlation Analysis between TQM and SQ

DISCUSSION

TQM is a comprehensive organizational strategy and philosophy. Healthcare quality management should simultaneously consider structure, process, and results (Donabedian, 1980). This study explores TQM (as an organizational structure factor) and SQ (as a result) and at the same time analyzes the correlation

between the TQM strategy and SQ. The study finds that TQM and SQ are positively correlated. These results can help hospital managers understand that when a hospital employs a TQM strategy to implement its quality management policy, there is a positive impact on employees' perceptions of SQ.

In this study there are also notable disparities in TQM awareness among different departments' staff. For example, nursing and medical technology department staff have greater awareness of TQM than staff in the medical department. Managers' awareness of TQM also differs notably from non-managers' awareness, in that managers demonstrate greater awareness of TQM than frontline staff. Furthermore, males have greater awareness of TQM than females, and those with Masters and PhDs have greater awareness of TQM than those with only college degrees. Based on these results, it may be advantageous for hospital managers to design educational and training programs for all employees, regardless of role, gender or educational background, to advance their organization's vision of TQM.

Disparities in SQ perception are also noted among employees from different departments. Medical technicians, nurses and administrators demonstrate greater awareness of SQ than those in the medical department. This is perhaps because doctors' workloads are comparatively greater. They must manage teaching, service, and research simultaneously (Nuckols *et al.*, 2009). In addition, being on-call and working long hours can take a toll on doctors (Drolet *et al.*, 2017) causing them to neglect the importance of SQ compared to staff in other departments. It is recommended that hospital managers start by lessening doctors' workload, reducing their work-related pressures, and fostering in them a greater awareness of SQ.

Hiidenhovi *et al.* (2001) maintain that healthcare organizations, while pursuing improvements in SQ, should aim to make patients the center of SQ. The construction of the SQ instrument was a logical process of consecutive stages that took several years. It was developed to measure patients' perceptions of the quality of service provided by outpatient department staff. Because employees are the vehicle through which healthcare is delivered to patients, employee behavior can influence patients' perception of healthcare quality. In order to understand employee perception of healthcare, this study uses hospital employees as subjects. The study finds that TQM can positively influence employees' SQ perception, lending support to the hypothesis put forward by Hiidenhovi *et al.* (2001).

CONCLUSION

Due to changing policies in the healthcare sector, hospitals must improve internal management capacities to sustain competitive advantage. Scholars believe TQM is the best management strategy for organizations to meet the demands of a competitive market (Motwani, 2001). SQ is often used by scholars as a measure of an organization's performance. This study is an empirical investigation of the influence of hospital management strategies (TQM) on management performance (SQ). The findings are that TQM strategy can positively impact employee perceptions of SQ. It is suggested that hospital managers use TQM policy to influence the employee perceptions of SQ. When promoting a TQM strategy, hospital management should develop a clear organizational vision for quality management and combine it with distinct quality improvement initiatives.

LIMITATIONS AND FUTURE DIRECTIONS

This study focused on five regional teaching hospitals in Central Taiwan, potentially limiting the generalizability of results, though a cross-sectional methodology was used. The attitude and behavior of employees or the implementation of a motivation policy could influence the quality of the services that employees provide to patients, which also means that, over time, SQ could change. With sufficient time and budget, future studies could use longitudinal data to track the effectiveness of TQM and quality improvement activities of hospitals over time.

This study sample was comprised of five kinds of hospital employees, and perceptions of SQ belong solely to these groups of respondents. In other words, we did not take into account the perceptions of SQ of the patients themselves. According to the concept of the SQ gap, there may have been a difference between staff and patient perceptions (Tsai and Wu, 2011), and therefore, we suggest that future studies use patients in the study samples to explore SQ. Kenndy *et al.* (2011) found when hospital managers link compensation with employee performance, it may improve the employee's perception of SQ. Thus, we suggest that future research explore the impact of compensation on SQ.

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Factor Naming (Pattern Matrix) and Reliability Analysis Results

No.	Content of items / constructs / scales	Mean	SD	Factor Loading	Variance Explained (%)	Cronbach's α
	TQM					0.957
	Customer Centeredness				47.225	
18	Our hospital has an open and trusting organizational culture.	3.83	0.723	0.809		
16	In order to improve healthcare quality, our hospital collects and analyzes customer data and information.	3.88	0.668	0.684		
19	The employees at our hospital know that providing healthcare to customers is one of our hospital's goals.	3.92	0.716	0.664		
2	The employees at our hospital are actively involved in quality-improving activities.	3.88	0.717	0.658		
15	Our hospital avoids waiting time on internal service processes.	3.88	0.818	0.519		
3	The employees at our hospital are committed to quality-improved activities.	3.77	0.768	0.499		
1	Our hospital provides a supportive environment to implement the total quality management.	3.86	0.614	0.494		
4	The employees at our hospital have authority to design and to finish their work.	3.90	0.642	0.482		
6	Our hospital provides the training of total quality management to employees.	4.15	0.734	0.466		
	Quality Policies and Initiatives				3.327	
9	Customer satisfaction is our hospital's goal.	4.20	0.604	0.683		
10	Our hospital improves and develops its relationship with customers for a long-term goal.	4.12	0.648	0.658		
11	Our hospital knows the customer's healthcare needs and wants.	3.94	0.681	0.620		
7	The work teams at our hospital are asked to coordinate and communicate with each other.	4.01	0.686	0.618		
12	For customer satisfaction, our hospital is looking for a method to improve services.	4.05	0.694	0.613		
13	Our hospital emphasizes how to improve the service value for customers.	3.97	0.653	0.608		
14	In order to improve SQ, our hospital improves the employees'	4.01	0.693	0.605		

No.	Content of items / constructs / scales	Mean	SD	Factor Loading	Variance Explained (%)	Cronbach's α
	service skills.					
8	Our work teams are asked to use innovative methods to work.	3.85	0.788	0.509		
17	There is a clear vision, long-term planning and quality policy in our hospital.	4.05	0.662	0.508		
5	The employees at our hospital knows what our hospital's philosophy and objectives are.	3.95	0.697	0.422		
	SQ					0.978
	Reliability and Assurance				52.570	
15	Provide safety experience during the medical services.	4.40	0.598	0.836		
14	Medical Staffs' behaviors build patients confidence to medical services.	4.34	0.620	0.723		
16	Medical Staffs were being politeness to patients.	4.39	0.611	0.705		
10	Medical Staffs should inform patients the service contents.	4.35	0.600	0.697		
11	Medical Staffs should help patients immediately.	4.31	0.634	0.670		
17	Medical Staffs are capable to answering patients' questions.	4.41	0.592	0.664		
12	Medical Staffs are highly willing to service patients.	4.28	0.646	0.588		
6	Do its best to help patients resolve problems.	4.36	0.581	0.511		
7	Do the right thing the first time.	4.33	0.639	0.494		
9	Keep records on do not make mistakes.	4.22	0.689	0.418		
	Empathy				5.643	
20	Medical Staffs provide proper services to different patients.	4.26	0.645	0.783		
22	Medical Staffs should know different patients have different needs.	4.34	0.655	0.755		
21	Patients' benefit is the first priority.	4.27	0.636	0.729		
19	Set up proper service executive time according to different patients'' needs.	4.16	0.640	0.707		
18	Provide proper care to different patients.	4.28	0.609	0.529		
8	Provide services to patients on time.	4.30	0.617	0.508		
13	Medical Staffs were not too busy to ignore patients.	4.25	0.640	0.489		
	Tangibles				3.977	
3	The staffs in the hospital keep appearances clean	4.34	0.628	0.810		
4	Perfect services and service explanation.	4.34	0.649	0.702		
5	Executed commitment to patients on time.	4.28	0.651	0.631		
1	The hospital has modern equipment.	4.15	0.676	0.609		

No.	Content of items / constructs / scales	Mean	SD	Factor Loading	Variance Explained (%)	Cronbach's α
2	The hospital has modern building exterior.	3.91	0.784	0.561		