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A Proposed Framework of Service Quality for a Hospital Visiting

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Abstract

This paper attempts to integrate concepts of service quality and in-depth interviews with experts master on hospital management or medical care to build a framework for influencing factors of service quality for outpatient clinical care and empirically explore it. Data are collected through a survey of a large-scale medical center located in a megalopolis area that is actively involved in research and development of medical care. Five dimensions of service quality are constructed as process of healthcare, waiting for inspection and administration, environment of clinical visiting process, hospital environment, and supporting personnel by Factor Analysis in this study. The dimension of waiting for inspection and administration included service quality of inspection units, waiting time for inspection and inspection documentation. To improve and to computerize inspection process might upgrade customer satisfaction. Waiting for a doctor diagnosis is included into environment of clinical visiting process, so a comfortable waiting corner and plenty of seats near to a diagnosis waiting room might reduce complaints of a long waiting time for a doctor diagnosis. The convenient transportation and enough parking spaces are important for clinical visiting a large-scale hospital located in a megalopolis area.

1. Introduction

In Taiwan, the amount of spending on healthcare has tremendously increased in the past few years. Although healthcare and medical treatment business generates more and more profits, a medical center still concern her market share within her geography area. How to enhance the service quality for increasing her market share and to retain the loyalty from original patients are become a big challenge for managers in most of medical centers. Researches have demonstrated the strategic benefits of quality in contributing to market share, return on investment, lowering operating costs, and improving productivity, so enhancing on service quality in healthcare can be a path to achieve the goal.

Market share and loyalty are related to satisfaction of a consumer expected service and perceived service, therefore, this research tries to cover the findings of studies on service quality. The research methodology is comprised of three approaches:

- (1). Literature review for building a Research Model.
- (2). In-depth Interviews with experts master on health management or medical care to validate and justify

the Research Model.

- (3). Questionnaire Survey based on the Research Model and Factor Analysis was used to explore the influencing factors of service quality for hospital visiting.

Goal of this research is hence to present the Research Model for influencing factors of enhancing service quality in a medical center. These factors may create valuable information for hospital administrators to build appropriate strategies for their businesses.

2. Literature Review

Research has demonstrated the strategic benefits of quality in contributing to market share and return on investment as well as in lowering operating costs and improving productivity [1, 10, 14]. Most of literatures on services suggest three underlying themes: (1) Service quality is more difficult for the consumer to evaluate than goods quality, (2) Service quality perceptions result from a comparison of consumer expectations with actual service performance, and (3) Quality evaluation are not made solely on the outcomes of a service; they also involve evaluations of the process of service delivery. Consumers compare the service they expect with perceptions of the service they receive in evaluating service quality. Researchers and managers of service firms concur that service quality involves a comparison of expectations with performance [2, 5].

Satisfaction is related to the size and direction of the disconfirmation experience where confirmation is related to the person's initial expectation [3, 7, 8, 11, 13]. Parasuraman, Zeithaml and Berry [12] attempted to obtain an extensive exploratory investigation of quality in four service businesses and by developing a model of service quality. A set of key discrepancies or gaps exists regarding executive perceptions of service quality and the tasks associated with service delivery to customers. Five gaps are (1) consumer expectation-management perception gap will have an impact on the consumer's evaluation of service quality, (2) management perception-service quality specification gap will affect service quality from the consumer's viewpoint, (3) service quality specifications-service delivery gap will affect service quality from the consumer's standpoint, (4) service delivery-external communications gap will affect service quality from a consumer's standpoint, (5) expected service-perceived service gap that a consumer perceives in a service is a function of the magnitude and direction of the gap between expected service and

perceived service. Expected service-perceived service gap depends on the nature of the gaps associated with the design, marketing and delivery of service.

Three quality dimensions are also proposed by researchers [5,9] as physical quality, which includes the physical aspects of the service (e.g. equipment or building); corporate quality which involves the company's image or profile; and interactive quality which derives from the interaction between contact personnel and customers as well as between some customers and other customers. Gronroos [5] also postulated that two types of service quality exist; technical quality, which involves what the customer is actually receiving from the service, and functional quality, which involves the manner in which the service is delivered. Research of Parasuraman et al. [12] also revealed that, regardless of the type of service, customers used basically similar criteria in evaluating service quality. The criteria seem to fall into 10 key categories which are labeled "service quality determinants". They are reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding and tangibles. 10 important items of quality in healthy services are proposed by Hyde [6] as knowing the patient's needs, designing to meet them, faultless service, reliability, certified performance, clear instructions, suitable packing, punctuality, Efficient back-up service, and feedback.

3. Research Model

According to 10 key categories of "service quality determinants" revealed by Parasuraman et al.[12], several health managers and medical experts related to healthcare were selected for in-depth experts' interview to find resources for provide a satisfied healthcare service is summarized in Table 1. Based on the mapping between 10 key categories of "service quality determinants" revealed by Parasuraman et al and resources of healthcare service, an initial healthcare satisfaction model for a patient's hospital visiting is proposed as Figure 1. Expected service quality of healthcare is defined as the importance of a patient's cognitive feeling about hospital environment, waiting time and services from hospital resource during his visiting. Experienced Quality of healthcare is defined as the experience of services from hospital resource during his visiting. Degree of satisfaction is defined as the difference between the expected service quality and the experienced service quality of a patient during his visiting. Hospital environment includes public facilities and complaint solving by resources of healthcare service in Table 1. Patient attribute includes identify, gender, age, marital status, education, residency, occupation, clinic section visiting today, and reasons for this hospital visiting. Identity of a patient attribute is classified as patient himself, patients' family members or patient's accompanist. Resources of hospital and clinical operations related to each dimension in expected or experienced service quality were constructed by 10 important items of quality in healthy services which proposed by Hyde [6] and validated by in-depth

Table 1 Determinants and sources of service quality

Service quality determinants	Source of healthcare service
Access (approachability and ease of contact) -waiting time for services is acceptable -convenient office visiting hour	waiting time
Communication (keeping customers informed in language they can understand) -explaining the service thoroughly -complaint handling nicely	complaint solving
Competence (possession of the required skills and knowledge to perform the service) -knowledge and skill of service personnel -knowledge and skill of supportive personnel	medical staffing, supportive staffing
Courtesy (politeness, respect, consideration, and friendliness of contact personnel) -clean and neat appearance of personnel	medical staffing, supportive staffing
Credibility (trustworthiness, believability, honesty) -characteristics of service personnel -Attitude involved in interaction with customers	medical staffing, supportive staffing
Reliability (firm honors its promises, firm performs the service right the first time) -accuracy in billing -keeping records correctly	medical staffing, supportive staffing
Responsiveness (willingness or readiness of employees to provide service) -transferring patient's slips immediately -calling the customer back quickly	medical staffing, supportive staffing
Security (freedom from danger, risk, or doubt) -physical safety -confidentiality	public facilities, medical staffing, supportive staffing
Tangibles (the physical evidence of the service) -appearance of personnel -tools and equipment used to provide the service	public facilities, medical staffing, supportive staffing
Understanding/knowing the customer (the effort to understand the customer's needs) -learning the customer's specific requirements -providing individualized attention -recognizing the regular customer	medical staffing, supportive staffing

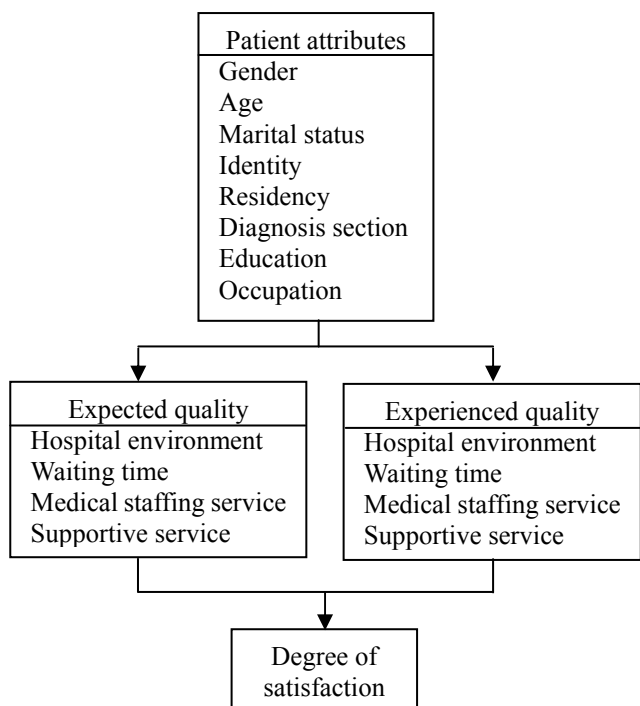


Figure 1 Initial hospital visiting satisfaction model

interviews with personnel of hospitals.

Excellent public facilities (public telephone, water fountain, toilet, etc), service quality of clinical appointment via phone are classified in hospital environment dimension. Waiting time of a patient's hospital visiting can be classified as service quality of clinical appointment via Internet, via personal register, or via clinic nurse, waiting time for a doctor's diagnosis, waiting time for payment billing, waiting time for blood drawing and urine checking, waiting time for X-ray, waiting time for medicine feeding. Medical staffing service includes doctor's medical skill, doctor's show up on time, doctor attitude, doctor kindly treatment, doctor's detailed diagnosis and explanation, nurse's friendly attitude, privately respected by nurses, convenient process for applying documentation of diagnosis or patient history, detailed descriptions for medicine taking. Supportive service quality includes registering windows, inspection operations, x-ray operation, Pharmacy, Q & A Desk, or complaint solving.

4. Primary Questionnaire Survey and Research Findings

A questionnaire with 33 questions was designed to conduct the initial framework of this study. Identity of a patient attribute is classified as patient himself, patients' family members or patient's accompanist. Residency is classified as city, countryside, or suburban, etc. Diagnosis section is defined as the diagnosis section that a patient is visiting today. Questions of the expected service quality operation are measured by five-point Likert scales to classify the degree of importance (4: absolutely important, 0: no influence), and five-point Likert scale of the experienced service quality during this visiting is used,

Table 2 Reliability of the initial model

Item	Dimensions of clinic operation	Expected quality	Experienced quality
1—10	Hospital Environment	0.9006	0.8505
11—18	Waiting Time	0.8939	0.8166
19—27	Medical nursing service	0.9375	0.9002
28—33	Supportive Service	0.9025	0.8348

Table 3 Process of healthcare dimension

Item	Factor loading	Expected quality (Mean)	Experienced quality (Mean)	Satisfaction gap
Doctor's medical skill	0.72	3.71	3.21	-0.50
On time doctor's show up	0.75	3.47	3.03	-0.44
Doctor attitude	0.88	3.67	3.31	-0.37
Doctor kindly treatment	0.91	3.64	3.27	-0.37
Doctor's detailed diagnosis and explanation	0.89	3.70	3.17	-0.53
Friendly nurse attitude	0.80	3.56	3.23	-0.33
Privately respected by nurses	0.78	3.62	3.15	-0.47
Detailed descriptions for medicine taking	0.67	3.52	2.88	-0.64
Dimension total		3.61	3.16	-0.46
Eigenvalue	13.047			
% variance	39.538%			
Cronbach α	0.9228			

too. (4: Very satisfactory, 0: Very dissatisfactory).

The content of this questionnaire was constructed from literature reviews and in-depth interviews with several professors or experts who master on Hospital Management or Medical Care, thus validity of experts is acceptable. Data were collected through a survey of patients visiting different diagnosis sections with inspection operations and medicine feeding during their visiting in a large-scaled medical center in Taiwan. 700 questionnaires were delivered and 537 were collected (94.2%). 506 are considered effective (34.14%). For

Table 4 Waiting for inspection and administration dimension

Item	Factor loading	Expected quality (Mean)	Experienced quality (Mean)	Satisfaction gap
Waiting time for blood drawing and urine checking	0.69	3.07	2.64	-0.44
Waiting time for x-ray	0.75	3.05	2.70	-0.35
Waiting time for medicine feeding	0.64	2.99	2.58	-0.41
Convenient process for applying documentation of diagnosis and patient history	0.70	3.24	2.71	-0.53
Registering windows service quality	0.81	3.19	2.65	-0.55
Inspection operations service quality	0.87	3.33	2.73	-0.60
X-ray operation service quality	0.82	3.31	2.78	-0.54
Dimension total		3.17	2.68	-0.49
Eigenvalue	2.917			
% variance	8.840%			
Cronbach α	0.8844			

examining the degree of satisfaction on hospital visiting, the number of effective questionnaire is reduced to 227 with effective answers in both sides. There are 91 from male patients and 129 from female patients. Pearson correlation analysis, Factor Analysis and Analysis Of Variance (ANOVA) are utilized to analyze the data. Pearson correlation analysis was also applied to validate correlation between the pairs of each two questions among 33 questions. Principal Components Analysis is used for extracting dimensions with eigenvalue > 1 and Promax. Level of significance is all up from 0.05 to 0.01, so Promax method in Factor Analysis was selected. ANOVA analysis and T test is used to test hypotheses. The reliability Cronbach's α for each dimension in the initial research model are shown on Table 2.

Five dimensions are extracted; they are named as process of healthcare, waiting for inspection and

Table 5 Environment of clinical visiting process dimension

Item	Factor loading	Expected quality (Mean)	Experienced quality (Mean)	Satisfaction gap
Comfortable and plenty seats in the waiting room	0.67	2.93	2.69	-0.25
Clearly sign for position of clinic	0.70	3.30	2.77	-0.53
Completely health facilities	0.76	3.63	2.98	-0.65
Perfectly public facilities (public telephone, water fountain, toilet, etc)	0.67	3.20	2.72	-0.48
Service quality of clinical appointment via phone	0.65	3.25	2.90	-0.35
Service quality of clinical appointment via personal register	0.63	3.11	2.58	-0.53
Service quality of next clinical appointment via nurse	0.70	3.15	3.00	-0.14
Waiting time for doctor visiting	0.64	3.18	2.41	-0.76
Waiting time for payment	0.63	2.99	2.48	-0.51
Dimension total		3.19	2.73	-0.47
Eigenvalue	1.843			
% variance	5.584%			
Cronbach α	0.8843			

administration, environment of clinical visiting process, hospital environment, and supporting personnel. The results were presented from Table 3 to Table 7 by each dimension. According to the results of tables, a proposed hospital visiting satisfaction model is reconstructed as Figure 2. Six primary hypotheses are also addressed from this proposed research model and shown in Table 8. Testing of the hypotheses was carried out via

Table 6 Hospital environment dimension

Item	Factor loading	Expected quality (Mean)	Experienced quality (Mean)	Satisfaction gap
Convenient transportation	0.61	2.98	2.40	-0.58
Enough parking spaces	0.64	3.14	1.66	-1.48
Brightly light	0.83	3.16	2.74	-0.42
Cleanly environment	0.85	3.45	2.74	-0.72
Moderately air-conditional	0.75	3.17	2.77	-0.41
Dimension total		3.18	2.46	-0.72
Eigenvalue	1.508			
% variance	4.568%			
Cronbach α	0.7988			

ANOVA and T Test; the summaries of analysis are shown on Table 9 and Table 10.

In a significant level of 0.05, the results of T test indicate that patients with different gender have significantly different expected service quality for process of healthcare, for waiting for inspection and administration, for environment of clinical visiting process, and from supporting personnel. Female patients have higher expectation of service quality for these four dimensions than these for male patients. Results of T test also reveal that patients with a different resident location have significantly different expected service quality for hospital environment; experienced service quality for process of healthcare, and experienced service quality from supporting personnel.

Table 7 Supporting personnel dimension

Item	Factor loading	Expected quality (Mean)	Experienced quality (Mean)	Satisfaction gap
Service quality of clinical appointment via Internet	0.62	2.90	2.80	-0.10
Pharmacy service quality	0.78	3.30	2.75	-0.54
Q&A service quality	0.79	3.25	2.92	-0.33
Complaint solving	0.76	3.26	2.65	-0.60
Dimension total		3.17	2.78	-0.39
Eigenvalue	1.304			
% variance	3.951%			
Cronbach α	0.7963			

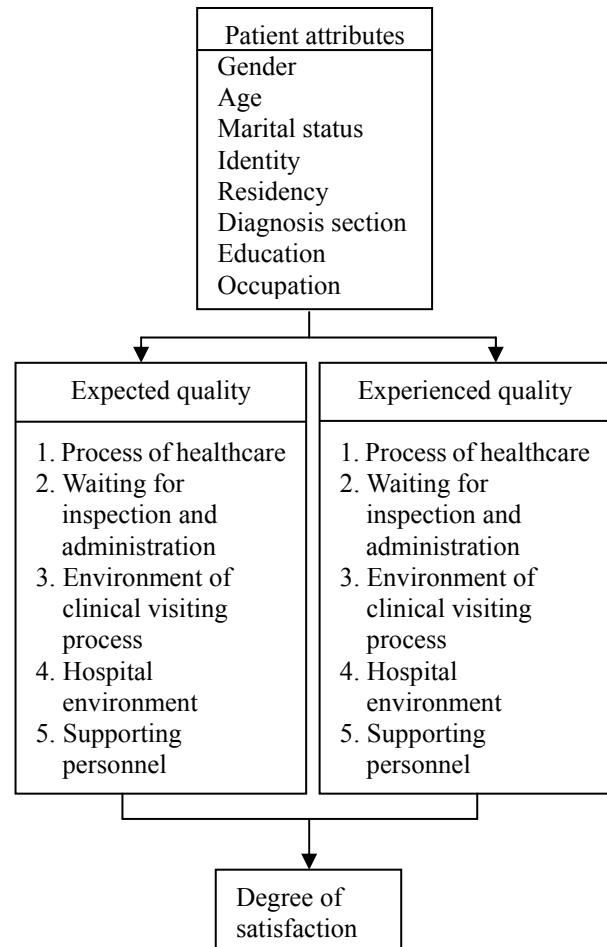


Figure 2 Proposed hospital visiting satisfaction model

Patients who lived in city have a higher expected quality of hospital environment than one who doesn't live in city. In the other words, patients who don't live in city have a higher experienced quality for process of healthcare, from supporting personnel than one who lived in city. In other words, patients who don't live in city that the hospital located have a higher degree of satisfaction. The reason is the shortage of parking lots and traffic jam around the area that the hospital located.

Results of ANOVA analysis denote that patients with a different occupation have significantly different expected service quality for process environment of clinical visiting, and experienced service quality of waiting for inspection and administration. Patient whose occupation belongs to business or industry has a lower expected service quality for environment of clinical visiting process than one with other occupations. And a public official has a lower experienced service quality of waiting for inspection and administration than one with other occupations. In the other words, public officials feel waiting for inspection and administration during his hospital visiting longer than what he expects, but students are willing to wait for longer during their visiting. Results also indicate that patients attending a different diagnosis section have significantly different expected service

Table 8 Hypothesis testing

Hypothesis		Accept
Hypothesis 1: No significant difference between gender on the expected service quality		
1-1	No significant difference between gender for process of healthcare	No
1-2	No significant difference between gender for waiting time	No
1-3	No significant difference between gender for environment of hospital visiting process	No
1-4	No significant difference between gender for hospital environment	Yes
1-5	No significant difference between gender from supporting personnel	No
Hypothesis 2: No significant difference between resident location on the expected service quality		
2-1	No significant difference between resident location for process of healthcare	Yes
2-2	No significant difference between resident location for waiting time	Yes
2-3	No significant difference between resident location for environment of hospital visiting process	Yes
2-4	No significant difference between resident location for hospital environment	No
2-5	No significant difference between resident location from supporting personnel	Yes
Hypothesis 3: No significant difference between resident location on the experienced service quality		
3-1	No significant difference between resident location for process of healthcare	No
3-2	No significant difference between resident location for waiting time	Yes
3-3	No significant difference between resident location for environment of hospital visiting process	Yes
3-4	No significant difference between resident location for hospital environment	Yes
3-5	No significant difference between resident location from supporting personnel	No
Hypothesis 4: No significant difference between occupation on the expected service quality		
4-1	No significant difference between occupation for process of healthcare	Yes
4-2	No significant difference between occupation for waiting time	Yes
4-3	No significant difference between occupation for environment of hospital visiting process	No
4-4	No significant difference between occupation for hospital environment	Yes
4-5	No significant difference between occupation from supporting personnel	Yes

Table 8 Hypothesis testing (cont.)

Hypothesis		Accept
Hypothesis 5: No significant difference between occupation on the experienced service quality		
5-1	No significant difference between occupation for process of healthcare	Yes
5-2	No significant difference between occupation for waiting time	No
5-3	No significant difference between occupation for environment of hospital visiting process	Yes
5-4	No significant difference between occupation for hospital environment	Yes
5-5	No significant difference between occupation from supporting personnel	Yes
Hypothesis 6: No significant difference between diagnosis section on the expected service quality		
6-1	No significant difference between diagnosis section for process of healthcare	Yes
6-2	No significant difference between diagnosis section for waiting time	Yes
6-3	No significant difference between diagnosis section for environment of hospital visiting process	Yes
6-4	No significant difference between diagnosis section for hospital environment	Yes
6-5	No significant difference between diagnosis section from supporting personnel	No

Table 9 T test summary

Item	T	Sig. (2-tailed)
Gender vs. expected service quality for process of healthcare	-2.10	0.037*
Gender vs. expected service quality for waiting time	-2.19	0.030*
Gender vs. expected service quality for process environment of hospital visiting	-2.29	0.023*
Gender vs. expected service quality from supportive personnel	-2.57	0.011*
Resident location vs. expected service quality for hospital environment	2.65	0.009**
Resident location vs. experienced service quality for process of healthcare	-2.00	0.047*
Resident location vs. experienced service quality from supportive personnel	-2.00	0.046*

Note: *. Alpha is significant at the 0.05 level (2 tailed).

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

quality from supporting personnel. Patients visiting Pediatrics, Obstetrics and Gynecology sections have a higher expected service quality from supporting personnel than one visiting other sections. So, service quality training is needed to enhance in these two departments.

Table 10 ANOVA summary

Item	F	Sig. (2 tailed)
Occupation vs. expected service quality for environment of hospital visiting process	3.646	0.003**
Occupation vs. experienced service quality for waiting time	2.615	0.026*
Diagnosis section vs. expected service quality from supportive personnel	2.760	0.043*

Note: *. Alpha is significant at the 0.05 level (2 tailed).

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

5. Conclusion

A hospital visiting satisfaction model is proposed by literature reviews, medical experts' in-depth interviews, and an experimental study in this research. Five dimensions of service quality are constructed as process of healthcare, waiting for inspection and administration, environment of clinical visiting process, hospital environment, and supporting personnel. The dimension of waiting for inspection and administration included service quality of inspection units, waiting time for inspection and inspection documentation. To improve and to computerize inspection process might upgrade customer satisfaction. Waiting for a doctor diagnosis is included into environment of clinical visiting process, so a comfortable waiting corner and plenty of seats near to a diagnosis waiting room might reduce complaints of a long waiting time for a doctor diagnosis. The convenient transportation and enough parking spaces are important for clinical visiting a large-scale hospital located in a megalopolis area.

The findings of this study reveal female patients have higher expectation of service quality for process of healthcare, for waiting for inspection and administration, for environment of clinical visiting process, and from supporting personnel than these for male patients. Patients who don't live in city that the hospital located have a higher degree of satisfaction. Public officials feel waiting for inspection and administration during his hospital visiting longer than what he expects, but students are willing to wait for longer during their visiting. Service quality training is needed to enhance in Department of Pediatrics and of Obstetrics and Gynecology.

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