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How satisfaction modifies the strength of the influence of perceived service quality on behavioral intentions

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How satisfaction modifies the strength of the influence of perceived service quality on behavioral intentions

Abstract

Purpose: The existence and form of interaction effects between service quality and satisfaction are still uncertain. The main purpose of this study is to examine whether satisfaction moderates the relationship between service quality and behavioral intentions. **Design/methodology/approach:** A structured questionnaire was distributed to the out-patients of 12 regional hospitals (the middle level) in Taiwan.

Findings: The findings show that the forms of moderators played by satisfaction are not always the same under different dimensions of service quality (i.e. reliability, responsiveness, assurance, and empathy).

Satisfaction positively moderates the influence of reliability/empathy on behavioral intentions, but negatively moderates the relationships between responsiveness/assurance and behavioral intentions.

Originality/value: This study reveals the moderating role of satisfaction in the translation from service quality to behavioral intentions in health care services. Moreover, the natures of the moderating effects are not the same for different service quality dimensions. Emerald Group Publishing Limited.

Keywords

influence, perceived, service, quality, modifies, behavioral, satisfaction, intentions, strength

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How satisfaction modifies the strength of the influence of perceived service quality on behavioral intentions

Perceived service quality

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Abstract

Purpose – The existence and form of interaction effects between service quality and satisfaction are still uncertain. The main purpose of this study is to examine whether satisfaction moderates the relationship between service quality and behavioral intentions.

Design/methodology/approach – A structured questionnaire was distributed to the out-patients of 12 regional hospitals (the middle level) in Taiwan.

Findings – The findings show that the forms of moderators played by satisfaction are not always the same under different dimensions of service quality (i.e. reliability, responsiveness, assurance, and empathy). Satisfaction positively moderates the influence of reliability/empathy on behavioral intentions, but negatively moderates the relationships between responsiveness/assurance and behavioral intentions.

Originality/value – This study reveals the moderating role of satisfaction in the translation from service quality to behavioral intentions in health care services. Moreover, the natures of the moderating effects are not the same for different service quality dimensions.

Keywords Customer services quality, Customer satisfaction, Health services, Health care, Taiwan

Paper type Research paper

1. Introduction

The relationships among perceived service quality, satisfaction, and behavior intentions are multifaceted (Bou-Llusa *et al.*, 2001). Perceived service quality has been demonstrated to directly and positively affect patients' satisfaction, whereas much evidence shows that satisfaction mediates the relationship between service quality and behavioral intentions (see González *et al.*, 2007; Olsen, 2002; Wu *et al.*, 2008). Both direct and indirect effects are found in different industries, but the existence of moderating effect, which presents numerous contradictory empirical evidence (Baker and Taylor, 1997; Bou-Llusa *et al.*, 2001; Lin, 2005), is still uncertain.

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In practice, high service quality does not guarantee the possibility of high satisfaction or positive behavior intentions. Sound physical environments or sufficient equipments, for example, certainly match customers' expectations but cannot offset a displeased experience with a long waiting time. Patients may be satisfied with core services (e.g. doctors' diagnoses), but the poor quality for supplement services (e.g. traffic inconvenience, slow processing speed in the payment counter or pharmacy, and so on) will give patients bad impression. These facts may be due to a lack of regarding that the relationship between service quality and satisfaction is nonlinear, and the existence of moderating effect needs to be considered.

The importance of the moderating effect arises from its ability to modify the form and/ or strength of the relationships between relevant independent variables and dependent variables (Sharma *et al.*, 1981). For service managers, the moderating relationship means that the degree of satisfaction/dissatisfaction with the service experience would change the extent to which prior perceived service quality remain a good predictor of patient intentions (Fullerton and Taylor, 2002). Checking the existence of the moderating effect is helpful to understand whether the relationship between perceived service quality and behavioral intentions varies depending on satisfaction and to know "when" or "for whom" service quality is strongly related to behavioral intentions (Frazier *et al.*, 2004).

This study tries to depict the moderating effect of satisfaction on the relationships between service quality and behavioral intentions in the context of the competitive health care system in Taiwan. This study attempts to provide empirical evidence for two issues:

- (1) Is there any moderating effect of satisfaction on the relationships between service quality and behavioral intentions?
- (2) If the moderating effect exists, is the nature of the moderating effect the same across different service quality dimensions?

The framework of this analysis is first to introduce the background of Taiwan's healthcare services and review the literature that discuss the relationships among service quality, satisfaction, and behavioral intentions. Next, the survey instrument and data collection are described. The article ends with a discussion of the results and practical implications when planning improvement strategies within healthcare services.

2. Literature review

2.1 A comparison of Taiwan's healthcare services

Renewed debate about health insurance coverage in the USA has attracted worldwide attention to Taiwan's health care system, because of its relatively low costs and short waiting times (Wen *et al.*, 2008).

Taiwan's government has launched a National Health Insurance (NHI) program in 1995, offering a comprehensive, unified, universal, and low-payment health insurance program to citizens. The healthcare providers are divided into four levels by the number of beds and healthcare proficiency:

- (1) academic medical centers (the highest level: minimum 500 beds);
- (2) regional hospital (the middle level: minimum 250 beds);
- (3) district hospital (the lowest level: minimum 20 beds); and
- (4) physician clinics and dental clinics.

All academic medical centers and the majority of regional hospitals are teaching hospitals, which normally enjoy higher priority in patients' opinions. Perceived service quality

Unlike the managed care models in the USA or other Western countries, the absence of a referral system and the completely free choice of providers in Taiwan have provided great incentives for patients to go "doctor shopping" (Wu *et al.*, 2008). Most patients like to purchase healthcare services from hospitals rather than from family doctors or clinics, even for minor illnesses. The increasing frequency of going to hospitals and the "doctor shopping" pattern have resulted in the increases in the number of hospitals in Taiwan and the competition between hospitals has become quite severe. As health care services get more competitive, managers are increasingly interested in exploring how patients perceive their care quality, form their satisfaction levels, and generate their behavioral intentions.

2.2 Service quality

Service quality is defined as how well the service meets or exceeds the customers' expectations on a consistent basis (Parasuraman *et al.*, 1985). Service quality, unlike product quality, is hard to define and measure because of the inter-relationship of user expectations and the impact of specific features of service such as intangibility, inseparability, heterogeneity, and perishability (Parasuraman *et al.*, 1985; Zeithaml *et al.*, 2006). The Service Quality Gaps Model and the SERVQUAL scale proposed by Parasuraman *et al.* (1985, 1988) are widely accepted tools for measuring service quality (Ladhari, 2008). In healthcare settings, two tools are also popular to assess service quality in a number of service categories such as acute care hospital, independent dental offices, at AIDS service agencies, with physicians and nurses, and hospitals (Taner and Antony, 2006).

2.3 Satisfaction

Satisfaction reflects the degree to which a customer believes that the use of a service evokes positive feelings (Rust and Oliver, 1994), and many studies have suggested that service quality and satisfaction are distinct constructs (Wu *et al.*, 2008). A main view on this issue is that service quality represents a cognitive judgment, whereas satisfaction is a more affect-laden evaluation (Gooding, 1995; Oliver, 1993).

Distinguishing between service quality as a cognitive construct and satisfaction as an affective construct suggests a causal order, that positions service quality as an antecedent to satisfaction (Goldstein and Schweikhart, 2002; Oliver, 1993; Rust and Oliver, 1994). Empirical evidence supports this causal linkage shown in health care settings (Bowers *et al.*, 1994; Reidenbach and Sandifer-Smallwood, 1990; Woodside *et al.*, 1989).

2.4 The relationships among service quality, satisfaction, and behavioral intentions

The effect of service quality on behavioral intentions takes on different forms: direct effect, indirect effect through satisfaction, or moderating effect by satisfaction (Bou-Llusar *et al.*, 2001).

For the direct effect, many studies in different industries have shown that service quality is an antecedent to behavioral intentions (see Boshoff and Gray, 2004; Bou-Llusar *et al.*, 2001; Parasuraman *et al.*, 1985, 1988; Zeithaml *et al.*, 1996). In health care settings, much evidence also shows that the direct impact exists (Gooding, 1995; O'Connor *et al.*, 2000; Wu *et al.*, 2008).

Regarding the mediating effect between perceived service quality and behavioral intentions, customer satisfaction is generally considered as a mediator (Bou-Llusar *et al.*, 2001). The conceptual nature of this relationship suggests that satisfaction is a more relevant predictor of behavioral intentions than service quality (Fullerton and Taylor, 2002). Evidence of the mediating effect of satisfaction has been found in many service industries including health care settings (e.g. O'Connor *et al.*, 1991; Shemwell *et al.*, 1998; Zeithaml *et al.*, 1996),

Both the direct and indirect effects are based on the assumption that the relationships among the three constructs are linear (Taylor and Baker, 1994). There should be nonlinear relationship between perceived service quality and satisfaction (Falk *et al.*, 2010; Pollack, 2008; Taylor and Baker, 1994), and the existence of the moderating effects was ignored. Two streams of literature suggest that there should be alternative relationship patterns: the one stream is from the zone-tolerance theory and another stream is based on Herzberg's two-factor theory (Pollack, 2008). Some studies have found that both overall satisfaction and repurchase intentions are affected asymmetrically by quality dimension-level performance. For example, Mittal *et al.* (1998) find that negative performance has a greater impact on a quality dimension than positive performance. Pollack (2008) provide evidence for the existence of non-linear relationships between some service-quality attributes and satisfaction and two types of non-linear patterns are identified. Falk *et al.* (2010) detect positive asymmetric main effects of functional-utilitarian quality attributes on customer satisfaction, and negative asymmetric effects of hedonic quality characteristics exhibit on customer satisfaction. Therefore, it is not suitable to consider satisfaction only to be a mediator, but ignores satisfaction as a moderator.

However, there is contradictory empirical evidence for the moderating effects of customers' service quality perception and satisfaction on their behavioral intentions. Taylor and Baker (1994) analyzed the relationships among the three constructs in four service sectors (communication, traffic service, entertainment, and health care). They found the moderating effect exists in three of the four sectors (except the health care service), and the influence of satisfaction was more important than perceived service quality. In 1997, they verified the moderator role of satisfaction again in both for-profit and not-for-profit hospital settings (Baker and Taylor, 1997). Although the results support the perspective that satisfaction is more closely related to consumer behaviors than quality perceptions, there is still no significant moderating effect in the two types of hospital settings. Bou-Llusar *et al.* (2001) selected the ceramic industry to test the relationships among quality perception, satisfaction, and behavioral intentions. Their results show that satisfaction acts as a mediator in the relationship between perceived quality and behavioral intentions, but no evidence reveals the existence of the moderating effect. Lin (2005) discussed the existence of the moderating effect in the banking service industry, and the findings revealed that satisfaction moderates the relationship between service quality and behavioral intentions.

3. Research method

3.1 Measures

Service quality was to evaluate how well patients perceived the level of service received during the process of going hospital. The development of service quality scale was based on original SERVQUAL (Parasuraman *et al.*, 1988), and other revised

SERVQUALs (see Rohini and Mahadevappa, 2006; Wu *et al.*, 2008). After designing a preliminary questionnaire there were 22 items included. Three healthcare service experts were asked to evaluate the questionnaire and served as expert judges to critically appraise its validity. Some vocabulary revisions were also made during the iterations. The purpose of this process is to achieve cultural equivalence among diverse populations while applying a different cultural questionnaire in a research study. In addition, service quality generally involves distinct facets of service dimensions in different industries, and hence, considering service-quality dimensions based on the industry context would be suitable (Ladhari, 2008). All the items were measured using a seven-point Likert scale (1 = strongly disagree, 7 = strongly agree) (see Appendix).

Patient satisfaction was assessed with two items based on patients' affective responses to the overall experiences of going this hospital (Wu *et al.*, 2008). They were:

- (1) "The overall feelings about the health care service in this hospital are better than I expected."; and
- (2) "Overall, I am satisfied with the services provided by this hospital".

Behavior intentions was defined as "patients' potential behaviors likely to be triggered by service quality and satisfaction" (Zeithaml *et al.*, 1996). Five items, which are modified from Zeithaml *et al.* (1996)'s scale, were used to operationalize behavioral intentions:

- (1) "I am willing to recommend this hospital to others who seek my advice".
- (2) "I will encourage my friends and relatives to go to this hospital".
- (3) "If I need medical service in the future, I will consider this hospital as my first choice".
- (4) "If I need medical service in the future, I will go to this hospital more frequently".
- (5) "If I feel sick in the next few years, I will go to this hospital less frequently (r)."

All the items of patient satisfaction and behavioral intentions were measured on seven-point Likert scales (1 = strongly disagree and 7 = strongly agree). Finally, since a premise of social psychological theory supports that patients' differences influence their attitudes (Tucker, 2002), individual patient characteristic, which include gender, age, education, personal average monthly income, and frequency of going hospital, are considered as control variables in this study.

After designing the questionnaire, a pilot test was conducted using twenty attendees selected within a regional hospital. Seven days after the first data collection, all the pilot samples were asked to complete the questionnaire a second time without reviewing any reference to the data from the first collection. Minor changes to the questionnaire were made accordingly for appropriateness of wordings, contents, and structures. The feedback was helpful in refining the quality of the measures.

3.2 Sampling

The target population for this study was the outpatients derived from the Around Taiwan Health Care Alliance (ATHCA), which have 12 member hospitals in 2007. The alliance's primary purposes are to serve communities throughout Taiwan and to develop high quality healthcare services. Its member hospitals distribute in different

districts in Taiwan and they all belong to the regional-hospital level (the second-ranking level). Since the intermediate area of healthcare services has not been analyzed in detail and it becomes increasingly important (Etgar and Fuchs, 2009), this study explores more about how perceived service quality and satisfaction influence behavioral intentions for healthcare services.

Since the objective of the survey was to obtain similar numbers of subject structures across different regions in Taiwan, rather than the subjects' representativeness of a specific hospital, each hospital was dispatched 100 questionnaires and the data was collected through convenience sampling. Convenience sampling was deemed appropriate because the purpose of this study was not to provide point and interval estimates of the variables, but to explore the relationships among the variables (Espinoza, 1999). Trained personnel randomly selected outpatients in the area where outpatients waited for taking medication after the whole process of seeing doctors. A total of 665 completed responses were received from 1,200 interviewed subjects and a satisfactory response rate of 55.42 percent was achieved. The respondents were composed of slightly more women (59.3 percent) than men (40.7 percent). Their ages mainly lie between 21-40 years old (55.4 percent), their education level mainly lays at college level (61.8 percent) and their personal average monthly income is largely less than N.T.50,000 (70.6 percent). As to the frequency of going the target hospitals, 59.5 percent of subjects went to hospital more than five times and the frequencies were from two to five for 29.9 percent of the subjects. These frequencies show that the selected subjects are qualified to evaluate service quality of these hospitals and hence, these responses could raise reliability of this study.

4. Analysis and results

4.1 Measurement analysis

To investigate the reliability of the scales, Cronbach's alpha was computed. Nunnally (1978) presented a rule of thumb, stating that alpha levels higher than 0.70 indicate internal consistency among the items of a scale. After this step, all corrected item-to-total correlation are higher than 0.5 and therefore, no item was deleted (Lin *et al.*, 2003).

Exploratory factor analysis was then performed on the raw scores of the items to identify the factors that could parsimoniously describe the data. The principal component factoring was applied. To make the extracted factors interpretable, the varimax rotation method was performed and the number of factors was determined based on the eigenvalue criterion ($\lambda > 1$). Four factors were selected from service quality. To further improve the distinction between factors, items that had factor loadings greater than 0.4 on two or more factors were removed from the measurement (Lin *et al.*, 2003). After these procedures, two items (SQ17 and SQ20 (italicized in the Appendix)) were deleted and hence, a set of 20 items across the four factors for perceived service quality were used in the following process. After a closer examination of the loading on the factors, a name was given to each factor according to the content of the variables making the greatest contribution to each of the dimensions. The four components of service quality are named as "Reliability," "Responsiveness," "Assurance," and "Empathy," respectively (see Table I). Reliability involves the hard and soft factors to provide the promised service dependably and accurately. Responsiveness involves service providers' willingness to help patients and to provide

					Perceived service quality
Variable Factors	Reliability	Service quality perception			
		Responsiveness	Assurance	Empathy	
<hr/>					
<i>Items</i>					
SQ3	0.82				<hr/> <div>97</div> <hr/>
SQ4	0.80				
SQ2	0.77				
SQ1	0.75				
SQ5	0.73				
SQ6	0.69				
SQ7	0.65				
SQ8	0.64				
SQ9	0.59				
SQ11		0.86			
SQ12		0.86			
SQ13		0.85			
SQ10		0.70			
SQ21		0.67			
SQ22		0.58			
SQ14			0.83		
SQ15			0.83		
SQ16			0.63		
SQ19				0.88	
SQ18				0.88	
Eigenvalue	7.78	3.80	1.18	1.02	Table I. Factor loadings and Cronbach's alphas of service quality perception
Cumulative % of variance explained	38.90	57.88	63.75	68.84	
Cronbach's alpha	0.92	0.88	0.85	0.94	

prompt response. Assurance involves service providers' courtesy and ability to convey trust and confidence. Empathy involves the provision of caring, individualized attention to patients. As the result, the alphas respectively were 0.92, 0.88, 0.85, and 0.94 for the four dimensions of service quality; 0.92 for patient satisfaction; and 0.91 for behavioral intentions. These values suggest a high internal consistency among the items and with their related constructs.

Based on the results of factor analysis, the values of these three manifest variables are determined by calculating the averages in the dimensional questions.

4.2 Hierarchical regression analysis

Hierarchical regression analysis (HRA) was used to assess the statistical significance of the moderating effects. Both full and restricted models were developed for this analysis, and the hypothesized moderating and main effects were examined by comparing of the full- and restricted- regression models (Murry and Dacin, 1996). The constituent variables were mean-centered before creating the moderating terms to eliminate multicollinearity (Aiken and West, 1991). The variance inflation factors were well below the cutoff of 10, which suggests that multicollinearity is not a problem (Neter *et al.*, 1990).

The whole procedure included three steps. An initial regression with the control variables was run in the first step, main variables were added (four factors of service quality and satisfaction) in the second step, and the hypothesized moderators were added in the last step. The results of a series of hierarchical models were reported in Table II.

Table II.
The results of
hierarchical regression
models

Dependent variable (behavioral intention)	Step 1		Step 2		Step 3	
	<i>b</i>	<i>t</i>	<i>b</i>	<i>t</i>	<i>b</i>	<i>t</i>
<i>Control variables</i>						
Gender	-0.10	-1.11	-0.07	-1.24	-0.08	-1.51
Age	0.16	3.86*	0.02	0.84	0.02	0.79
Education	-0.07	-1.63	0.00	-0.01	0.00	0.04
Income	0.06	1.23	0.03	0.99	0.03	0.90
Frequency	0.29	4.51*	0.18	4.62	0.18	4.55
<i>Main effects</i>						
Reliability (Rel)			0.18	4.31*	0.18	4.14*
Responsiveness (Res)			0.15	5.67*	0.14	5.31*
Assurance (Ass)			0.18	4.77*	0.16	4.30*
Empathy (Emp)			0.01	0.56	0.01	0.67
Satisfaction (Sat)			0.48	15.93*	0.49	16.25*
<i>Interaction effects</i>						
Rel × Sat					0.07	2.24*
Res × Sat					-0.05	-2.57*
Ass × Sat					-0.07	-2.25*
Emp × Sat					0.06	4.04*
R^2	10.12%		67.68%		69.04%	
<i>F</i> -value	13.11*		120.82*		91.27*	
Incremental R^2			57.55%		1.36%	
<i>F</i> -value for Incremental R^2			205.49*		6.30*	

Notes: *b* means the unstandardized coefficient; * $p < 0.05$

4.2.1 Results related to main effects. The result of step 1 showed that the regression model was supported ($R^2 = 10.12$ percent, $p < 0.001$). According to the regression coefficients, age ($b = 0.16$, $p < 0.001$) and frequency of going hospital ($b = 0.29$, $p < 0.001$) had significant effects on behavioral intentions. Subjects who are aged or usually go hospital have more favorable behavioral intentions to hospitals than who are youthful or occasionally go hospital.

In step 2, all the main variables (four dimensions of service quality perception and satisfaction) were put into the regression model. The results showed that the addition of the main variables increased R^2 by 57.55 percent ($\Delta F = 120.82$, $p < 0.001$). The regression model was also supported. Except empathy, all the other main variables have positively related to behavioral intentions. Consequently, the main effects have been supported the prediction that service quality perceptions (including reliability, responsiveness, and assurance) and satisfaction have a direct and positive influence on behavioral intentions.

4.2.2 Results related to the moderating effects. Regarding the moderating effects, adding the moderating terms to the main effects model increased R^2 by 1.36 percent ($\Delta F = 6.30$, $p < 0.001$) in the step 3. Therefore, there should be the moderating effects. To assist in the interpretation of interaction, subgroup regression lines were graphed using the mean plus or minus 1 standard deviation (Aiken and West, 1991). In this procedure, the regression equation was algebraically restructured to express the regression of the criterion variable on the predictor variable at various levels of the moderator variables. The moderating effects are plotted in Figure 1.

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Figure 1.
The moderating effect of satisfaction

According to the regression coefficients, step 3 showed that patient satisfaction positively moderates the relationship between reliability and behavioral intentions ($b_{\text{Rel} \times \text{Sat}} = 0.07$, $p < 0.05$) and the relationship between empathy and behavioral intentions ($b_{\text{Emp} \times \text{Sat}} = 0.06$, $p < 0.05$). The positive moderating effect means that patient satisfaction is likely to enhance behavioral intentions when reliability/empathy is high. With high satisfaction, subjects experiencing higher levels of reliability/empathy perception have higher behavioral intentions than those with low satisfaction.

However, the forms of the two moderating effects are different. Based on Sharma *et al.*' (1981) classification of moderators, satisfaction plays as a "quasi moderator" between reliability and behavioral intentions, but as a "pure moderator" between empathy and behavioral intentions since empathy is not related to behavioral intentions but has interaction with satisfaction. Figure 1(a) showed that satisfaction was like an "amplifier," which shows an increase in the association between reliability and behavior intentions (Jose, 2008). Under the high-satisfaction situation, the higher level of reliability the subjects perceived, the more favorable behavioral intentions the subjects presented. By contrast, the level of perceived reliability relatively has few effects on behavioral intentions under the low-satisfaction situation. In Figure 1(d),

subjects with high satisfaction are more likely perceive empathy and do well for hospitals than those with low satisfaction. Further, although the relationship between empathy and behavioral intentions is positive for high satisfied subjects, the relationship is slightly negative for low satisfied patient.

On the other hand, patient satisfaction negatively moderates the relationship between responsiveness and behavioral intentions ($b_{\text{Res} \times \text{Sat}} = -0.05$, $p < 0.05$) and the relationship between assurance and behavioral intentions ($b_{\text{Ass} \times \text{Sat}} = -0.07$, $p < 0.05$). Figure 1(b) and Figure 1(c) show the two moderating effects have similar patterns. Since the estimates of the predictors are both positive ($b_{\text{Res}} = 0.14$, $b_{\text{Ass}} = 0.16$, and $b_{\text{SAT}} = 0.49$) and the moderating effects are negative, the pattern indicates an antagonistic interaction and thus a complementary effect of the predictors (responsiveness and satisfaction) on behavioral intentions (Homburg and Furst, 2005). In other words, satisfaction is like a “blunter”, that shows a decrease in the association between responsiveness/ assurance and behavioral intentions (Jose, 2008). Figure 1(b) and Figure 1(c) showed that both responsiveness and satisfaction have positive effect on behavioral intentions. In addition, behavioral intentions is more strongly affected by reliability perception for low satisfied subjects than for high satisfied subjects.

5. Discussion and implications

5.1 Research issues

The results of this study provide additional insights into the relationship between perceived service quality and behavioral intentions by examining the moderating effects of satisfaction. Prior studies have examined the moderating effects of satisfaction, but there is numerous contradictory empirical evidence. In addition, no significant findings embedded on the hospital settings are shown. Our findings provide support for this notion. First, satisfaction indeed moderates the relationships between service quality and behavioral intentions. Second, a satisfied patient with low reliability/empathy perception will behave more beneficial to hospitals than an unsatisfied patient with high reliability/empathy perception. In conflict with our predictions, responsiveness/assurance and satisfaction present a complementary effect on behavioral intentions. These findings imply that the natures of the moderating effects are not the same for different service quality dimensions.

5.2 Implications for improving healthcare services

Intermediate healthcare services have an important role as they treat patients presenting with more complex medical problems compared to those presenting to district hospitals and physician-led clinics and dental clinics. The results of this study strengthen the importance of patients' perceived service quality in intermediate healthcare services. The study shows that patients' perceived service quality and their affective evaluation have non-linear influences on behavioral intentions for the intermediate healthcare services. The findings of this study can help health care providers and managers to have deep understanding about how patients' perceived service quality and satisfaction simultaneously affect behavioral intentions. Managers of health services need to carefully inspect the different quality dimensions of service delivery and their interactions with use satisfaction for several reasons.

First, since satisfaction is able to amplify the influence of perceived reliability on behavioral intentions, reducing patients' perceived risk during the service process is

important. Actually, patients have little ability to evaluate healthcare quality and hence, they are only able to choose hospitals based on some tangible cues such as physical equipments and facilities. In Taiwan, the NHI program is bound to the hospital accreditation system, which requires hospitals to maintain enough capacity (such as the amounts of human resources, equipments, hospital beds, and so on) of caring patients. These requirements provide the basic reliability (i.e. visible cues) that each patients could have enough health care resources. Therefore, to benefit customers' perceptions of price/quality trade-offs, service providers could find out which tangible elements are helpful to increase patients' perceived reliability and then present these elements through diversified channels. In addition, educating patients about the meanings of these tangible elements is equally important. If a manager just invests physical equipments and facilities without teaching his patients how these investments improve healthcare/service quality, customers may not perceive that quality is improving.

Second, there is a complementary effect of the predictors (responsiveness/assurance and satisfaction) on behavioral intentions. This means sufficient relationship focus and adequate responsiveness/assurance could make patients know that the hospitals really concern what they want, but responsiveness/assurance should not be given as much as possible. A physician who is willing to respond positively to patients' requests for additional tests or medicines may be regarded as unprofessional (Etgar and Fuchs, 2009). Also, requiring frontline employees to give too much responsiveness/assurance may cause them to suppress true feelings and only to show good emotional states. Emotional labor loading completely exhausts frontline employees and affected service quality. Therefore, managers should notice how to balance requirements between patients and employees. How to decide the suitable degree of responsiveness/assurance must consider a hospital capacity (e.g. equipments and human resources). Hospital managers can develop incentive program to attract outstanding members by the internal marketing that can increase responsiveness of service, ability of service and right of service then reduce emotional labor and emotional exhaust. As to the ways to gather market information, to personally visit patients, ask the contact people what patients expect, periodically collect patients' complaint, make organization plan for service failures, and so on are directions that could be considered (Zeithaml *et al.*, 2006).

Finally, these results provide guidance on how to incorporate quality improvement initiatives into service delivery plans. Instead of improving the quality levels on all attributes, managers should first investigate the nature of the relationship for each service dimension (Pollack, 2008). Managers must be aware that patient's satisfaction can be largely changed by enhancing reliability and empathy, whereas favorable behavior intentions can be further develop by the effect of patient satisfaction. In addition, designing the internal environment in terms of responsiveness/assurance is helpful for keeping satisfied patients.

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Appendix. Items used in service quality perception

- This hospital has modern looking equipment (e.g. C.T. Scan, X-Ray, M.R.I. Scan, Tread mill etc.).
- The physical facilities at this hospital are visually appealing (e.g. well maintained reception area, computerized billing and registration facilities, neat and clean pathology, biochemistry labs, hospital rooms etc.).
- Personnel of this hospital are neat in appearance (e.g. staff with uniform and appropriate name badges, professional appearance of staff etc.).
- Materials associated with out-patient services (e.g. clean and comfortable environment with good directional signs, informative brochures about services, stretcher, wheel chairs etc.) are visually appealing in this hospital.
- When this hospital promises to do something by a certain date (e.g. laboratory exams, follow-up checks, out-patient surgery etc.), it does so.
- When a patient has a problem, this hospital shows a sincere interest in solving it.
- This hospital is dependable (e.g. provide services at appointed time, record error-free or fast revised documents, perform treatment and care correctly etc.).
- This hospital provides its services at the time it promises to do so (e.g. emergency care, casualty services etc.).
- This hospital is competent in providing accurate services (e.g. correct records, accurate diagnosis, timely treatment etc.).
- Personnel of this hospital tell patients exactly when services are provided.
- Personnel of this hospital give prompt services to patients.
- Personnel of this hospital are always willing to help patients.
- Personnel of this hospital are never too busy to respond to patients' requests.
- Behavior of personnel in this hospital instills confidence in patients (e.g. convincing explanations etc.).
- Patients are able to feel safe while they receive services from personnel of this hospital.
- Personnel of this hospital are consistently courteous with their patients.
- *Personnel of this hospital have the knowledge and skills to respond to patients' requirements.*
- This hospital gives patients individual attention.
- Personnel of this hospital keep their patients informed and listen to them.
- *Personnel of this hospital understand the specific needs of their patients.*
- This hospital has the patients' best interest at heart.
- This hospital's operating hours are convenient for all patients and their families.

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