An Integration of Kano's Model and Exit-Voice Theory : A Case Study

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Abstract

The purpose of this study was to examine overall customer satisfaction associated with medical service quality in Taiwan by integrated Kano's model and customer satisfaction index model. Another purpose was to confirmed nonlinear and asymmetric relationship of Customer Satisfaction and Quality Performance by the research outcome. By analyzing 1,100 patients or their family members, this study used the structural equation model (SEM) with AMOS software for data analysis. The results show that must-be attributes, one-dimensional attributes and attractive attributes had a direct effect on overall customer satisfaction, Surprisingly, overall customer satisfaction had positively influenced customer loyalty customer satisfaction had negatively influenced customer complaints. The study also found that customer complaints have direct effect on customer loyalty. Importantly, the study found out the must-be attributes, the attractive attributes and one-dimensional attributes increased, the level of overall customer satisfaction also increased. The customer satisfaction positively influences customer loyalty in medical service quality in Taiwan. The findings might reveal new insights for researchers dealing with quality of medical service and for hospital managers who devote resources exclusively to achieving highest possible levels of patient satisfaction.

Key Words: Kano's Model, Medical Service Quality, Customer Satisfaction, Customer Loyalty

1. Introduction

Since implementation of the National Health Insurance (NHI) program in 1995, the Administration of Health Insurance established payment system to provide various services, which

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restricted medical service providers to compete in an insurance system with fixed payment scheme. The number of wards increased to 148,962 in 2006 to 103,733 in 1994, which was an increase of 30.56 percent, while the number of hospital reduced to 547 from 828 (Department of Health, Executive Yuan, 2005). The health care service market in Taiwan has been highly competitive. Kotler (2006) considered customer satisfaction to be the best indicator of a company's future profit. The good medical quality could improve customers and hospital staff member's satisfaction, increased customer loyalty to the hospital, and encouraged customers to return to the hospital and accept the possibility in medical treatment. Anderson *et al.* (1994) induced the past scholar's viewpoint; they believed customer satisfaction had a direct outcome on the primary source of future revenue streams for most companies. Consumerism is gaining momentum and causes health professionals to focus on quality of service in order to compete in the health care market. The excellent quality goal excellence is recognized as a driver for ward-wide competitiveness. Quality could be defined as satisfying or exceeding customer requirements and expectations, and hence to some extent it is the customer who ultimately judges the quality of a product or service (Tan and Shen, 2000). So the service quality could directly effects on customer satisfaction.

Since the Bureau of National Health Insurance set a payment schemes for all contracted providers for the various kinds of services, medical service providers had to compete for patients under a mostly fee-for service reimbursement system with nearly fixed payment schemes. In Taiwan, the hospital reputation or its bed size was nearly the only information available to prospective patients or their family members in order to select a preferred hospital (Cheng *et al.*, 2003). The resulting increasing competition had made providers of medical service more sensitive to notions of customer service. Customers-patients were the consumers of medical service. There was an emphasis on the use of outcome indicators as measures of quality in health care. Medical service leaders should be accountable for their role in assisting their staff in meeting patient satisfaction improvement goals and in decreasing the barriers to providing quality patient care (Tang and Cheng, 2001).

Most previous studies or surveys applying to PZB or SERVQUAL supported the view that patients did not view medical service quality in a direct or distinct manner (Yu *et al.*, 2005). The few research studies concerning the relationship among the quality attribute, customer satisfaction, and customer loyalty. Although in the latest research, such as Hesen *et al.* (2008) and Vukmir (2006a/b) discussion about medical service quality and customer satisfaction had not considered the nonlinear and asymmetric effects on customer satisfaction and customer loyalty yet. Kano's (1979) researches provided theoretical and empirical support for including

the direct effect of quality attributes on satisfaction and suggest that it might actually have a stronger influence in determining satisfaction. So we considered the different quality attributes by using use Kano's model and made sure of medical service quality attributes. Kano's two-dimensional quality study which the Tang and Cheng (2001) research quotes, analyses the quality characteristics and classifications, found that the hospital's quality items and increased the quality project satisfaction.

Several scholars (e.g. Anderson and Sullivan, 1993; Oliver, 1995; Füller and Matzler, 2008) and practitioners (e.g. Coyne, 1989) have agreed the nonlinear relationship of Customer Satisfaction and Quality Performance. Ting and Chen (2002) and Matzler *et al.* (2004) also further pointed out that the relationship is not only nonlinear but also asymmetric. The relationship proposed by Tan and Shen (2000) was adopted and modified by Shahin (2004) to integrate FMEA and Kano's model. The study used Tan and Shen proposed the equation to evaluate customer satisfaction: The consequences of satisfaction in this model derived from Customer Satisfaction Index Model. The consequences contained customer's complaint behavior and customer's loyalty. The main purpose of this study was to focus on patient and customer satisfaction and used new models for the relationship of customer satisfaction.

2. Literature Review

2.1 Customer Satisfaction Index

The customer satisfaction index was the evaluation outcome about customer satisfaction by the particular consequence. It was a brand-new index about product quality. It could evaluate the degree of customer satisfaction on product and service, and could provide the directions for quality service in order to strengthen the market competition and improved management performance. The index obtained the degree of customer satisfaction by the satisfaction index of structure variable that customer was satisfied with some specific product or service. Therefore, the index compared the market directly to the approbation degree of the service quality.

Customer Satisfaction Index followed Hirschman's (1970) exit-voice theory, which showed the immediate consequences of increased customer satisfaction. It also showed increased customer loyalty as well as decreased customer complaints (Fornell and Wernerfelt, 1988). When dissatisfied, customers had the option of exiting (e.g. going to a competitor) or voicing their complaints. An increase in satisfaction should decrease the incidence complaints. Increased satisfaction should also decrease of complaints. Increased satisfaction should also increase

customer loyalty. Loyalty was the ultimate dependent variable in the model because of its value as a proxy for profitable (Reichheld and Sasser, 1990) latent variables that could not be measured directly; each was assessed by multiple measures. The only direct way to find out how satisfied or dissatisfied customers were was to ask them. Customers were asked to evaluate the products and services that they had purchased and used. The consequences of satisfaction in the original Swedish Customer Satisfaction Barometer (SCSB) model (Fornell, 1992) and American Customer Satisfaction Index (ACSI) model were also derived from Hirschman's exit-voice theory (Johnson *et al.*, 2001).

2.2 Kano's model

Because of Kano's (1979) research, he developed the Motivation-Hygiene property of quality by adapting the work from Herzberg's (1959) theory. Further, Kano *et al.* (1984) proposed a two-dimensional model on quality (see Figure 1) based on customer perception and experience. Two-dimensional model was initially used in the development of the manufactured product quality in a survey conducted on TV and decorative clocks. The survey results show that users' conception of quality is not one-dimensional but two-dimensional; thus, one-dimensional quality is unable to cover users' quality conception.

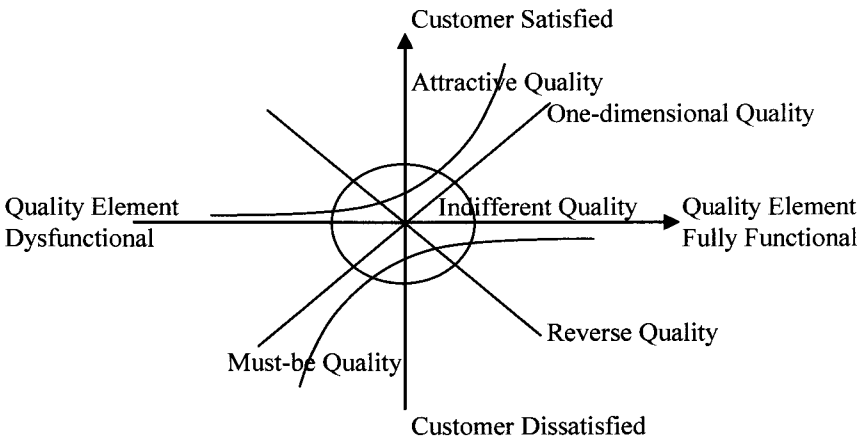

Figure 1. Kano's two-dimensional model

The Kano's model divides quality features into five distinct categories: must-be attribute, one-dimensional attribute, attractive attribute, indifferent attribute and reverse attribute. The model can illustrate the relationship between customer satisfaction and quality performance (customer perception); moreover, each category respectively affects customer satisfaction in a

different way as the following shows (Kano *et al.*, 1984):

(1) One-dimensional quality attribute: Customers would be satisfied if this quality attribute is provided; if not, they would be dissatisfied.

(2) Must-be quality attribute: Customers would be satisfied if this quality attribute was provided. However, customers would be dissatisfied if this quality attribute was not provided.

(3) Attractive quality attribute: Customers would be satisfied if this quality attribute was provided; otherwise they would not be dissatisfied.

(4) Indifferent quality attributes: Customers would be indifferent whether the quality attribute was present or not.

(5) Reverse quality attributes: When this quality attribute present, customers would be dissatisfied.

The basic idea of Kano's model is widely implemented in many areas and researches (eg. Schvaneveldt *et al.*, 1991; Matzler and Hinterhuber, 1998; Anderson and Mittal, 2000; Fuchs, 2002; Zhang and von Dran, 2002; Matzler *et al.*, 2004; Kuo, 2004; Füller and Matzler, 2007; Liu and Wu, 2008) and had been proven to be a useful tool in analyzing the characteristics of customer satisfaction. The model could illustrate the relationship between customer satisfaction and quality performance (customer perception); moreover, each category respectively affected customer satisfaction in a different way. According to Kano's model, the customer satisfaction contained three antecedents of satisfaction derived from Kano's model. These included must-be attributes, one-dimensional attributes, and attractive attributes with a product or service (show as Figure 2).

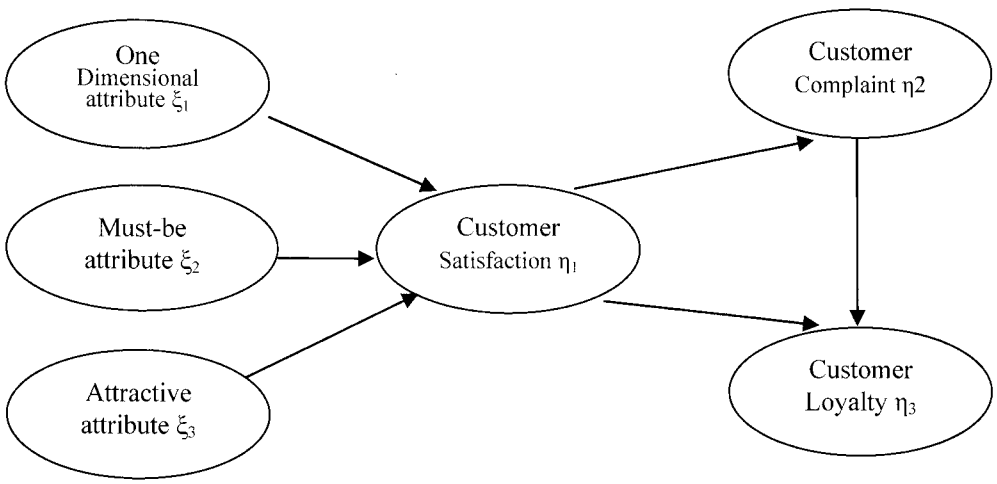

Figure 2. Model Estimation

2.3 The antecedents of customer satisfaction: one-dimensional attributes, must-be attributes, and attractive attributes

The antecedents of this study were based on the Kano's two-dimensional model as defined by Matzler and Hinterhuber (1998). Tang and Cheng (2001) pointed out that to be competitive in customer service in the 21st century, the key to success lies in offering quality products that meet customer's service needs. If the medical organization would offer the good medical quality service to patients, it could very quickly have a competitive advantage in the market. Two-dimensional quality breaks through general linear space of thinking and helps us not only to understand customer needs and also to understand potential customer's demands. Attractive attributes could encourage innovations and bring more attention to customer's complains. Kano's two-dimensional quality way was to discover the quality of different services from a customer's point of view, which then contributed to the understanding of the customer's tendency, and then to apply service quality tactics. The customer expected quality characteristics, and by improving patient's satisfaction hospital service was further improved. To improve patient satisfaction or reduce satisfaction in order to get patient satisfaction was a subject worthy of exploration. Therefore, the researcher proposed the following hypotheses.

H1: The one-dimensional attributes will positively affect overall customer satisfaction.
H2: The must-be attributes will negatively affect overall customer satisfaction.
H3: The attractive attributes will positively affect overall customer satisfaction.

2.4 The consequences of satisfaction: Customer loyalty and Customer complaints

Few studies had investigated the outcomes of customer satisfaction (Szymanski and Henard, 2001). Therefore, understanding the outcomes of customer satisfaction, including customer loyalty (Bei and Chiao, 2001) and the intention to continue to do business with a particular provider was of central importance to marketers (Burnham *et al.*, 2003). Considering possible outcomes, this study examined both customer complaints and customer loyalty (Yu *et al.*, 2005). Customer satisfaction led to greater customer loyalty (Anderson and Sullivan, 1993; Fornell, 1992; Yang, 2004; Richins, 1983). With increased loyalty, customer satisfaction secured future revenues (Bolton, 1998; Fornell, 1992); reduced the cost of future transactions costs (Reichheld and Sasser, 1990); decreased price elasticity (Anderson, 1996); and minimized the likelihood of customers would defecting if quality faltered (Anderson and Sullivan, 1993). It followed that satisfied customers spreading positive word-of-mouth might created new

customers for a business (Yu *et al.*, 2005). The literature study results found that customer behavior was highly relevant to the understanding of the importance of quality in customer purchase. Therefore, the researcher proposed the following hypotheses.

H4: Overall customer satisfaction will negatively affect customer complaint.
H5: Overall customer satisfaction will positively affect customer loyalty.
H6: Customer complaints will negatively affect customer loyalty.

3. Research Design

3.1 The questionnaires

Research tools were composed of three parts including "Medical Service Quality Scale", "Customer Satisfaction Scale", and "Personal Basic Information." Patients and family members personally gave the information. This scale referred to "Medical Service Quality Scale" by Tang and Cheng (2001). It was composed of 37 items after pretest and factor analysis.

Table 1. Constructs and measurements

Latent constructs	Measurement indicators
One dimension (ξ_1)	Environment comfortable, Traffic convenience, Parking convenience, Capacity, Moving line, Clothing, Correct materials, Modernized degree, Insurance service, Medical ethics, Reputation, Commitment, Medical prescription, Attendants, Waiting time, Follows patients regularly, Patients confidence, Security therapy, Accepts covert payment, Examining the purpose, States detailed degree of the prescription, Medical attitude, Listens to patients demand, Care to patient, Patients interests of the hospital, The improvement situation.
Must-be (ξ_2)	Explains directions, Equipment of security, Hospital all subject labeling, Professional technology, The doctor is punctual, Quality of the drug, Secret degree of the patient, Expenses Rationality.
Attractive (ξ_3)	Meals, Community relation, Contribution to the public activity.
Customer satisfaction (η_1)	Overall satisfaction from all experiences with Medical service. Expectancy disconfirmation from Medical service. Medical service performance compared to the customer's ideal product or services.
Customer complaint (η_2)	Customer complained about the hospital? If your friend asks about hospital information would you recommend the hospital?
Customer loyalty (η_3)	In the future, if you want to hospitalize would you choose this hospital again? Price increase, what percentage you will be repurchased. Price decreases, what percentage you will be repurchased.

The must-be quality contained 8 items, the one-dimension quality contained 26 items, and the attractive quality contained 3 items. The purpose was to measure the medical service quality perception of patients and family members. The scoring method was used the Likert-scale with ten points which means from bad to very good.

The scale refers to in the "Customer Satisfaction Scale" was in comparison to the original questionnaire by Fornell *et al.* (1996). It was composed of 8 items after pretest analysis and factor analysis. The customer satisfaction had 3 items, the customer complaints had 2 items, and the customer loyalty had 3 items. The complaint that a sub-question was a reverse question, the answer was "yes" or "no." The loyalty of two sub-questions asked for responses in terms of percentages. The purpose was to measure the customer satisfaction perception of patients and family members. The items of the scoring method were the Likert scale with ten points which mean from bad to very good. The customer satisfaction of medical care quality was descriptive statistics. Medical care quality, customer satisfaction topic and describing statistical data of this research are staled as Table 1 show. The research used structural equation model with AMOS software, a statistical technique with the ability to deal with multiple indicators and multiple constructs in the analysis of the data.

3.2 The Relationship between Customer Satisfaction and Quality Performance

There were several scholars point out that the facts effect customer satisfaction, customer loyalty and customer complaint had nonlinear and asymmetric relationship. So, the research data of the study convert nonlinear into linear before analysis by structural equation model. The convertible formula was developed by Tan and Shen. Tan and Shen (2000) proposed a relationship expressed as $s = f(u, p)$, where s, represents the customer satisfaction, p, represents the product or service performance and u is the adjustment for each Kano category, to integrate Kano's model in the planning matrix of QFD. Tan and Shen argue that according to the Kano model, the attractive attributes result more easily in customer satisfaction than must-be attributes do. Moreover, for attractive attributes, the customer satisfaction increases progressively with the improvement of the service performance. Therefore, for attractive attributes, we can get $\triangle s/s > \triangle p/p$, where s and p, respectively represent the customer satisfaction degree and service performance level; $\triangle s$ and $\triangle p$, respectively represent the small shifts of s and p. Similarly, for one-dimensional attributes, $\triangle s/s = \triangle p/p$; for must-be attributes, $\triangle s/s < \triangle p/p$. To be simple, the relationship between $\triangle s/s$ and $\triangle p/p$ is assumed to be linear. Consequently, using a parameter u, the above three relationship formula can be expressed by one equation, $\triangle s/s = u(\triangle p/p)$. For attractive attributes, $u > 1$; for one-dimensional

attributes, $u = 1$; and for must-be attributes, $0 < u < 1$. The selection of u value is basically dependent on experts' experience and understanding of the relationships. It should be noted that experts might choose different numerical values for k as long as they think the chosen values can appropriately reflect the real relationship. Tan and Shen finally proposed the following equation to evaluate customer satisfaction:

$$s = cp^u \tag{1}$$

where u is a constant for different categories

The relationship proposed by Tan and Shen (2000) was adopted and modified by Shahin (2004) to integrate FMEA and Kano's model.

3.3 The Evaluation of Customer Satisfaction by the Nonlinear Functions

It is natural and convenient to assume that the performance level perceived by customer, that is p in equation (1), is between 0 and 1; and the customer satisfaction, that is s in equation (1), is between -1 and 1. According to Tan and Shen (2000), u values in equation (1) were suggested to be 2, 1 and 0.5 for attractive, one-dimensional and must-be attributes. In this paper, we adopt the both ideas of Tan and Shen (2000) and Shahin (2004). Let $s_{(a)}$ and p imply the customer satisfaction and customer perceived performance level of a given quality element which is attractive, thus by Kano's definition for canonical attractive attribute, the lowest customer satisfaction would equals 0 with respect to the lowest customer perceived performance level which is equal to 0 and the highest customer satisfaction would equals 1 with respect to the highest customer perceived performance level which is equal to 1, then equation (2), implied the relationship for canonical attractive attribute between customer satisfaction and performance level perceived by customer, can be obtained from equation (1) as follows:

$$s_{(a)} = p^2 \tag{2}$$

Similarly, for canonical one-dimensional attribute, the lowest customer satisfaction would equals -1 with respect to the lowest customer perceived performance level which is equal to 0 and the highest customer satisfaction would equals 1 with respect to the highest customer perceived performance level which is equal to 1; for canonical must-be attribute, the lowest customer satisfaction would equals -1 with respect to the lowest customer perceived perform-

ance level which is equal to 0 and the highest customer satisfaction would equals 0 with respect to the highest customer perceived performance level which is equal to 1; Thus let $s_{(o)}$ and $s_{(m)}$ denote the customer satisfaction of one-dimensional, and must-be attribute, equations (3) and (4), implied the relationship between customer satisfaction and performance level perceived by customer, can be obtained from equation (1) respectively as follows:

$$s_{(o)} = 2p - 1 \tag{3}$$

$$s_{(m)} = p^{0.5} - 1 \tag{4}$$

When quality element is completely dysfunctional and hardly not to be perceived by customer as functional, the customer satisfaction increment for attractive, one-dimensional, and must-be attributes would be p^2, $2p$, and $p^{0.5}$ respectively.

4. Result Analysis

4.1 Sample Description

This research used convenient sampling. A total of 232 questionnaires were sampled for pre-test from Miaoli hospitals in Taiwan, and a total of 1,100 questionnaires were distributed to 15 hospitals in Taiwan for the Main Survey in 2008. The sampling included 401 patients and 609 family members or 497 males and 513 females. There are 923 usable questionnaires used in the analysis, which represents a valid response rate of 83.9%.

4.2 Analysis

Factor analysis and reliability analysis were proceeded through a standard procedure on the pretest sheets. As for reliability, this research used Cronbach's α coefficient to test the unity of subscales in the Medical Service quality Scale. In the scale, the Cronbach's α coefficient of "one-dimension attributes", "must-be attributes", and "attractive attributes" were 0.9735, 0.9261, and 0.7892, respectively. The Cronbach's α coefficient of the whole scale was 0.9809 which showed that the reliability of this research was excellent. The Cronbach's α coefficient of the Customer Satisfaction scale was 0.8159 which showed that the reliability of this research was excellent (McDaniel, 1994).

Because the complaint measurement of this research including dichotomous variable in a sub question, so by changing one to vary fictitiously while carry on the way of the struc-

ture equation analysis. The skewed problem didn't exist and the critical value of one-dimensional attributes was -0.982, must-be attributes was -1.943, attractive attributes was 0.049, customer satisfaction was -0.582, customer complaint was -0.964, and customer loyalty was 1.584. So the parameters of research model estimated by maximum likelihood method. The χ^2 ratio was 3.012 (df = 6, N = 923), P < 0.05, CFI was 0.999, TLI was 0.997, all above 0.9 ideal fitness request standard, RMSEA was 0.045, It shows the overall goodness-of-fit of the model.

First this research explored variable one-dimension attributes, Must-be attributes, and attractive attributes, and had good correlation, The medical service quality scale had good inside consistency in this research which was developed by Tang and Cheng (2001). From the Figure 3 and Table 2, the study found that the t-values of one-dimensional attributes and must-be attributes were significant, with a correlation coefficient of 0.851. These were significant because they had a positive correlation. The attractive attributes and must-be attributes had t-values of 12.124 with the correlation coefficient of 0.493 were significant. These were significant because they had positive correlation. The attractive attributes and one-dimensional attributes also had a positive correlation, with t-values of 12.645 and a coefficient correlation of 0.527. Based on the research findings, the medical service quality of must-be attributes, one-dimensional attributes, and attractive attributes had good inside consistency and could represent the index of medical quality.

Secondly, based on the SEM analyzed result, the study explored the medical service quality which can predict or measure the customer satisfaction. It meant that the medical service

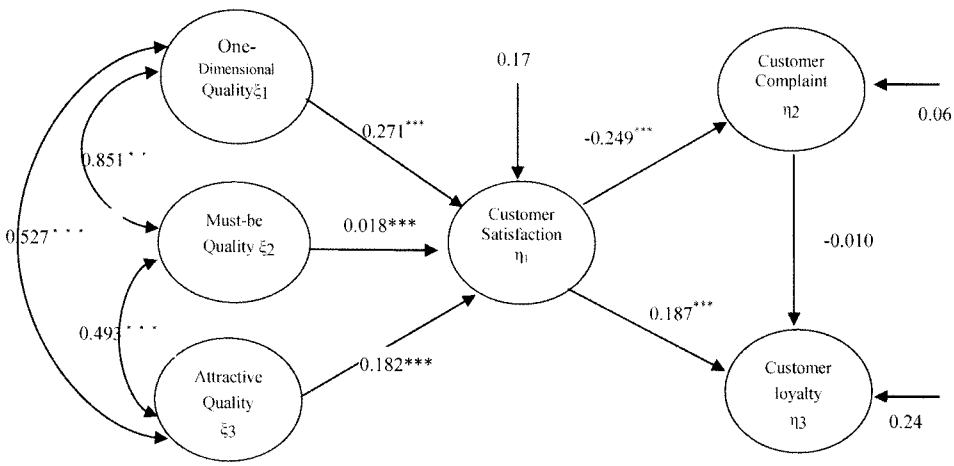

Figure 3. Result obtained by regression coefficient on overall Customer satisfaction

Table 2. The estimation model of customer satisfaction about the regression coefficient and correlation coefficient

	Estimates of Covariances	Standard Error	t-value	Correlation Coefficient
One-dimensional ⟷ Must-be	1.454	0.133	10.933***	0.851
Attractive ⟷ Must-be	0.184	0.015	12.124***	0.493
One-dimensional ⟷ Attractive	0.588	0.047	12.645***	0.527
One-dimensional → Satisfaction	0.704	0.146	4.839***	0.271
Attractive → Satisfaction	2.170	0.379	5.719***	0.182
Must-be → Satisfaction	0.141	0.451	0.313	0.018
Satisfaction → Complaint	-0.257	0.031	-8.274***	-0.249
Satisfaction → Loyalty	0.533	0.066	8.052***	0.187
Complaint → Loyalty	-0.027	0.084	-0.320	-0.010

Note: $^{*}P < 0.05$; $^{**}P < 0.01$; $^{***}P < 0.001$.

quality had direct results concerning customer satisfaction. The medical service quality could be divided into one-dimensional attributes, must-be attributes, and attractive attributes. The one-dimensional attributes could predict customer satisfaction, where t-value was 4.839, the relation was significant ($P < 0.001$), and the regression coefficient r-value was 0.271. The one-dimensional attributes could positively to predict customer satisfaction, meaning that we might increase one-dimensional attributes elements and positively influence customer satisfaction, this supports the hypothesis that the t-value of attractive quality customer satisfaction with respect to was 5.719 that the relationship is significant ($P < 0.001$). The attractive attributes could positively predict customer satisfaction. The correlation coefficient was 0.182. Therefore, hypothesis 3, which stated that the attractive attributes positively influenced customer satisfaction, found support in the research data. For hypothesis 2, we see that the t-value of must-be attribute with respect to customer satisfaction was 0.313, which means that the relationship is insignificant ($p > 0.05$), and, thus, hypothesis 2 was not supported. Therefore, must-be attribute could not influence customer satisfaction.

From Table 2, the hypothesis 4, the t-value of customer satisfaction with respect to customer complaint was -8.274 with a significant relationship ($P < 0.001$). Therefore, hypothesis 4 was support in overall customer satisfaction negatively influenced customer complaints. It simply means that the customers deal with complaint well and that customer satisfaction will increase. According to table 2, the hypothesis 5, the t-value of overall customer satisfaction

with respect to customer loyalty was 8.052, which is a significant ($P < 0.001$). Therefore, the hypothesis 5, which stated that overall customer satisfaction could predict the customer loyalty. For the final hypothesis, number 6, the t-value of customer complaints compared to customer loyalty was -0.320, which is an insignificant relationship ($p > 0.05$). Therefore, hypothesis 6 is rejected. From this rejection we may deduce that overall customer complaint could not negatively influence customer loyalty.

5. Conclusions and Practice Implications

5.1 Conclusions

Applying a survey approach, based on the estimated results of the modified new model which integrated the Kano's model and the Customer Satisfaction Index, the following conclusions with respected to the implications of customer satisfaction could be inferred. It is important for the study that is support the nonlinear and asymmetric relationship exit in the new model. First, attractive attributes and one-dimensional attributes positively and directly influence overall customer satisfaction. Thus, as the attractive attributes and one-dimensional attributes increased, the level of overall customer satisfaction also increased. The quality that was strongly demanded by the customer could be the key to customer satisfaction. That is customers had different views on quality and "no customer dissatisfaction" was not necessarily equal to "customer satisfaction" (Kondo, 2001).

Secondly, must-be attribute did not have significant effect on overall level of customer satisfaction. By the definition proposed by Kano's satisfaction increment, customers would be satisfied if must-be quality attribute was provided, but even with more efforts, they are useless in improving customer satisfaction, when customer needs was met. Thus, the influence of this must-be quality attribute is insignificant. It would be helpful to consider on which priority service attribute the latter studies should focus. This integrated approach enriched Kano's categorization information; for example, there can be better targeting of resources with a better prioritization plan for improving medical service quality attribute performance to, first and foremost, the attractive attribute and the one-dimensional attribute. Finally, overall customer satisfaction had a significantly negative effect on customer complaints. Overall customer satisfaction had a significant direct effect on customer loyalty, and customer complaints had an insignificant and negative effect on customer loyalty. According to its correlation coefficient, it was most interestingly, medical service quality did a masterful job of han-

dling customer complaint. It might be said that after a customer had voiced a complaint with medical service, the possibility of that customer's becoming satisfied with his experience. It was encouraging to know that effectively handling customer complaints enabled a firm to retain customers.

5.2 Practice Implications

Today's attractive quality attribute can convert to must-be quality attribute and eventually become one-dimensional quality attribute. As a consequence, the research model seems to be an interesting and necessary extension of the medical service quality literature. One-dimensional quality element is the one which is taken for granted. Patients will not like the medical service if general quality is lacking, and they will not be satisfied with the medical service if it does not have a must-be quality, even if there is general quality. A lack of attractive quality is not necessarily a big concern, but if the medical service provides an attractive quality, it may be a patient's favorite service. To medical service providers, how to create attractive elements for increasing a customer's satisfaction level and how to gain a customer's loyalty are an important study issue. Services the medical treatment and health care provide concern human life, so substituting elasticity of products is not good. The unpredictable happens because wounds and disease's, the cause for the need of medical service, time and space were indefinite. The medical activity was difficult because of standardization. Attitudes, service behavior, and the customer/patient's expectation was difficult to weigh (Tang and Cheng, 2001). It is obvious in today's medical market that some patient might (if convenience, identity, or seeking medical advice continuity lack message) influence or limit the variety of choices they have for medical service, but the hospital also must try to improve service quality in order to increase their customer's satisfaction. Otherwise, in the fierce medical market of day by day competition, the hospital would gradually lose living space competitiveness.

The largest contributor of this study was the application of the Tang and Cheng (2001) concept based on Kano's model about medical service and the Customer Satisfaction Index Model which provided an integrated model. The model was helpful in understanding customer needs and expectations, as well as the relationship between customer satisfaction, customer complaints, and customer loyalty. The findings might reveal new insights for researchers who deal with the quality of medical service and also for hospital managers who devote resources exclusively for achieving the highest possible levels of patient satisfaction. Based on these empirical study results in Taiwan, it is important to explore the affect factors for fur-

ther study. Several limitations of the foregoing study were to be noted. The 37 items used in our study might be arbitrary and too limited. This study had been limited to only15 local hospitals. Further research should examine similar research objectives across more hospitals.

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