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BEHAVIORAL INTENTION TO UNDERTAKE HEALTH EXAMINATIONS: TRANSACTION COST THEORY AND SOCIAL EXCHANGE THEORY

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Abstract

This paper proposes a conceptual model for understanding the effect of behavioral intention in people undertaking health examinations in Taoyuan, Taiwan. To explain and predict this behavioral intention, transaction cost theory (TCT), social exchange theory (SET), and the perceived quality–perceived value–behavior intention (QVB) model were integrated in this study to construct a theoretical model. We administered questionnaires during face-to-face interviews in Taoyuan, Taiwan. All study participants were volunteers. From the 1,830 questionnaires we distributed, we received 1,476 completed questionnaires, resulting in a response rate of 80.7%. The data were analyzed using structural equation modeling to yield the following results. (1) Exchange of information, communication, reputation, and relationship tenure had significant positive effects on both perceived quality and perceived value; (2) uncertainty

had significant negative effects on both perceived quality and perceived value; (3) perceived quality had a significant positive effect on perceived value; (4) perceived quality and perceived value had significant positive effects on behavioral intention. Finally, based on empirical evidence, references for formulating strategies were provided for hospitals and for practitioners who intended to establish health examination centers.

Keywords: Transaction Cost Theory (TCT), Social Exchange Theory (SET), and Perceived Quality-Perceived Value-Behavior Intention Model (Q-V-B model), Health Examinations

Introduction

In the field of marketing strategy, satisfaction is generally a core research concept. However, numerous researchers have recognized that although improving customer satisfaction is crucial, understanding customer values is a key factor in developing customer loyalty. Moreover, promoting customers' perceived value is the pivotal factor for the success of service providers (Woodruff, 1997; Gale, 1994; Zeithaml, 1988). Of the research models for determining consumer behavior, the most commonly used is the perceived quality–perceived value–behavior intention (QVB) model (Sweeney & Soutar, 2001). Previous studies have focused on determining purchase behavior, such as online purchase behavior and tourism-service purchase behavioral intention (Chiou, Wu, & Sung, 2009; Ryu, Han, & Kim, 2008; Chen & Tsai, 2007). However, because of the intangibility of services, the QVB model may not be able to explain purchase behavior for service products. Moreover, a shortcoming of this model is that the quality and value perceived by customers prior to purchasing was difficult to assess (Kwun & Oh, 2004). Therefore, the factors that affect the quality and value perceived by customers and those that cause them to spend time researching relevant information must be identified before the QVB model can be understood. In particular, when customers select a service that requires collaboration with the producer, such as medical services, the effective delivery of the quality and value of such service is necessary. Therefore, when customers perceive the validity of the service provided by the manufacturer, they believe that the manufacturer would prioritize the interests of customers when any problems occur. As a result, when describing consumer behavior, the QVB model neglects the factors that are considered prior to purchasing that affect customers' perceptions of quality and value, which therefore further affects the explanatory power of this model.

The concept of transaction cost theory (TCT) was first proposed by Coase (1937) to explain the reason for the existence of firms and the definition of its boundaries (Watjatrakul, 2005; Coase, 1937). From the TCT point of view, customers may incur costs from purchase decisions during the transaction process. In a transaction partnership, economic factors are usually examined by using this theory as a fundamental theory; moreover, cost is used to evaluate, control, and redesign the relationship. Additionally, social factors are generally discussed based on social ex-

change theory (SET), which has begun to acquire substantial value and is one of the principal theoretical perspectives of the four main schools of thought in sociology, namely social exchange theory, symbolic interactionism, conflict theory, and structural-functional theories. By fusing multiple theoretical perspectives, such as economics (Ricardo, 1817; Smith, 1776), behavioral psychology (Bandura, 1986; Skinner, 1950), anthropology (Firth, 1951), social psychology (Thibaut & Walker, 1978; Thibaut & Kelley, 1959), sociology (Emerson, 1976; Blau, 1964; Homans, 1961, 1958; Gouldner, 1960), and philosophy (Rawls, 1971), this theory presents an analysis and explanation of the reason for the formation of a social exchange relationship. Homans (1958), Thibaut and Kelly (1959), Blau (1964), and Emerson (1972a, 1972b) have provided crucial contributions to the development of SET. Homans (1958) proposed the exchange theory at an individual level, which became the basis for the development of SET. Blau (1964) and Emerson (1972a, 1972b) have applied SET for practical use. Blau (1964) further expanded the exchange theory to an integral level and emphasized on the value of regulations, namely the exchange behavior between social institutions and organizations. Homans (1961, 1958) emphasized that social exchange was a process of interpersonal interaction; moreover, during this process, both parties participated in the exchange of valuable resources to continue the interaction (Münch, 1993). However, Blau (1964) stressed that the development of interpersonal relationships is based on the subjective evaluation of interest and cost. In other words, when an individual or organization provides reciprocity for another party, they expect probable return or feedback in the future, although the form or timing for this feedback is uncertain (Blau, 1964). In recent years, SET has been extensively used in a variety of research fields to determine human social exchange behavior; such fields included E-commerce, mobile services, social media interaction (e.g., micro-blogging and Facebook), crowdfunding, information sharing, and knowledge sharing(Zhao et al., 2017; Liu, Min, Zhai, & Smyth, 2016; Surma, 2016; Yan, Wang, Chen, & Zhang, 2016; Wu, Chuang, & Hsu, 2014).

Overall, although most researchers have employed the QVB model to explain purchase behavior for service products, this theory is problematic for explaining purchase behavior. Moreover, one shortcoming of this model was its difficulty in being used to assess the quality and value perceived by customers prior to purchase. Therefore, the present study employed the transaction perspective and social perspective as predispositions for quality and value and used TCT and SET to understand the QVB model within an integral framework. Furthermore, on the basis of perceived quality, perceived value, and behavioral intention in the QVB model, this study integrated TCT and SET to conduct research on the local public regarding the behavioral intention to undergo health examinations at the case hospital. The modified model was then tested empirically. The present study had four aims: (1) to develop an extended QVB model for health examinations by incorporating the TCT dimension (uncertainty and exchange of information) and SET dimension (communication, reputation, and relationship tenure); (2) to examine whether the TCT dimension (uncertainty and exchange of

information) and SET dimension (communication, reputation, and relationship tenure) could be used to predict perceived quality and perceived value; (3) to examine whether perceived quality and perceived value could predict behavioral intention; and (4) to assess the resulting model empirically. Finally, the research results can serve as a reference for the strategy planning of hospitals or individuals hoping to establish health examination centers.

Research Methodology

Research model

The present study investigated the whether the TCT dimension (uncertainty and exchange of information), SET dimension (communication, reputation, and relationship tenure), and QVB model (perceived quality and perceived value) could be used to predict behavioral intention. The proposed model was constructed using (1) exogenous variables (uncertainty, exchange of information, communication, reputation, relationship tenure, perceived quality, and perceived value); and (2) an endogenous variable (behavioral intention). The hypotheses are numbered and presented in the proposed path model in Figure 1.

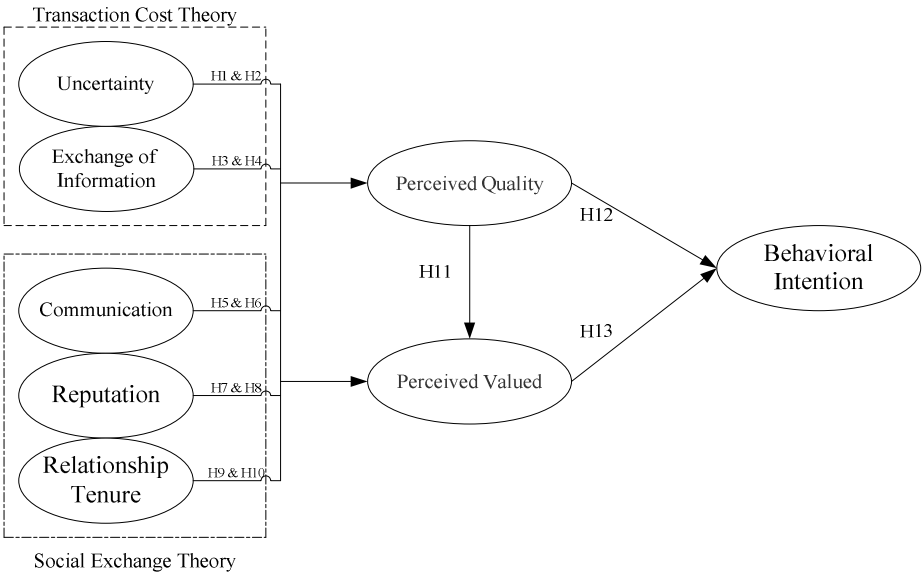

Figure 1. Research framework

Research hypotheses

The following hypotheses were proposed:

Hypothesis 1: Uncertainty has a significant effect on perceived quality.

Hypothesis 2: Uncertainty has a significant effect on perceived value.

Hypothesis 3: Exchange of information has a significant effect on perceived quality.

Hypothesis 4: Exchange of information has a significant effect on perceived value.

Hypothesis 5: Communication has a significant effect on perceived quality.

Hypothesis 6: Communication has a significant effect on perceived value.

Hypothesis 7: Reputation has a significant effect on perceived quality.

Hypothesis 8: Reputation has a significant effect on perceived value.
Hypothesis 9: Relationship tenure has a significant effect on perceived quality.
Hypothesis 10: Relationship tenure has a significant effect on perceived value.
Hypothesis 11: Perceived quality has a significant effect on perceived value.
Hypothesis 12: Perceived quality has a significant effect on behavioral intention.
Hypothesis 13: Perceived value has a significant effect on behavioral intention.

Instrumentation

Data were collected using two-part questionnaires. The first part used a nominal scale to obtain basic information regarding respondent characteristics, including sex, age, monthly income, formal education, marital status, and response to exercise. The second part involved examination of the respondents in terms of TCT constructs (uncertainty and exchange of information), SET constructs (communication, reputation, and relationship tenure), and the QVB model (perceived quality, perceived value, and behavioral intention) using a 5-point Likert scale with values ranging from 1 (strongly disagree) to 5 (strongly agree).

The instrument was developed after a thorough review of several studies on TCT (uncertainty and exchange of information), SET (communication, reputation, and relationship tenure), and the QVB model perceived quality, perceived value, and behavioral intention). The development of our scale corresponded to that by MacKenzie, Podsakoff, and Podsakoff (2011) as well as the development procedures suggested by Devellis (2003) for standard psychometric scales. The measurement items for the TCT dimension included uncertainty (four items) and exchange of information (five items). We translated the measurement items proposed in other studies (Watjatrakul, 2005; Coase, 1937) for the TCT dimension into traditional Chinese. The measurement items for the SET dimension included communication (four items), reputation (three items), and relationship tenure (three items). The measurement items proposed in other studies (Zhao et al., 2017; Liu et al., 2016; Yan et al., 2016; Wu et al., 2014; Blau, 1964) for the SET dimension were translated into traditional Chinese. The measurement items for the QVB model included perceived quality (five items), perceived value (four items), and behavioral intention (six items). Dimensions were adapted from the measurements developed by several other researchers (Chiou et al., 2009; Ryu et al., 2008; Chen & Tsai, 2007; Sweeney & Soutar, 2001).

For the pretest of this study, patients at a hospital in Taoyuan were recruited to participate in the questionnaire survey through purposive sampling. A total of 200 questionnaires were administered for the pretest, and 154 valid questionnaires were retrieved after eliminating the invalid responses that were either incomplete or contained regular answers. A reliability analysis was conducted in this study on these valid pretest questionnaires. The results yielded the following Cronbach's alpha values of 0.700 for perceived value and –0.909 for behavioral intention. According to Hair et al. (2010), the value for Cronbach's alpha must be higher

than 0.7 to confirm reliability, indicating that the variables investigated by the pretest questionnaire in this study were reliable.

Sample and descriptive statistics

Questionnaires for this study were administered in face-to-face interviews with patients at a hospital in Taoyuan, Taiwan. All respondents were volunteers and were assured that their responses would remain anonymous, their confidentiality would be maintained, and their answers would only be used for research purposes. The research procedure was reviewed and approved by the institutional review board of the Tri-Service General Hospital (1-107-05-020). A total of 1800 questionnaires were distributed in this study to users of a medical app system that were selected through convenience sampling, and all 1,830 questionnaires were returned. Responses in which 1/3 of the items remained unanswered or incompletely answered were excluded from the analysis. Subsequently, 354 incomplete responses were rejected, resulting in a response rate of 80.7%, and 1,476 valid questionnaires were available for formal data analysis.

The general characteristics of participants are listed in Table 1. Men and women comprised 67.8% and 32.2% of participants, respectively, most of whom were aged ≤30 years (60.8%). The majority (47.4%) had a monthly income <NT$20,000, and 68.3% had attended college and university. The majority (53.3%) reported being somewhat tired after exercise, and most of the research participants (56.0%) were single.

Table 1. Profiles of Respondents (N=1,476)

Factor/ Level	N	%	Factor/ Level	N	%
Gender			*Age*		
Male	476	32.2	≦30	897	60.8
Female	1000	67.8	40-49	289	19.6
Monthly Income			50-59	146	9.9
< 20,000	699	47.4	60-69	92	6.2
20,001-40,000	532	36.0	≧ 70	52	3.5
40,001-60,000	150	10.2	*Formal Education*		
60,001-80,000	57	3.9	Elementary school and below	34	2.3
80,001-100,000	25	1.7	Junior high school	71	4.8
>100,001	13	0.9	Senior/vocational high school	305	20.7
Exercise Perceived			College and university	1008	68.3
Not at all tired	38	2.6	Graduate institute and above	58	3.9
Not tired	440	29.8	Marital status		
Somewhat tired	787	53.3	Married	529	35.8
Tired	141	9.6	Bachelor	827	56.0
Very tired	70	4.7	Other	120	8.2

Results

Measurement Model Analysis

Measurement model analysis is primarily used to examine model construct validities, namely discriminant validity and convergent validity (Anderson & Gerbing, 1988). Bagozzi

and Yi (2012) recommended using the following three indexes to evaluate measurement models: (1) individual item reliability, (2) composite reliability (CR), and (3) average variance extracted (Bagozzi & Yi, 2012; Hair et al., 2010; Chin, 1998; Fornell & Larcker, 1981). Results of the reliability and validity analysis for each variable were as follows (Table 2).

Individual item reliability is primarily used to evaluate the factor loading of measured variables to latent variables and determine their statistical significance. The factor loadings of the variables in this study met the standard proposed by Hair et al. (2010), which was higher than 0.6, and the findings were statistically significant ($p < 0.05$). Moreover, all Cronbach's alpha coefficients for the variables in this study were higher than 0.7, which was the standard proposed by Hair et al. (2010); this result indicated that the variables were reliable. The CR coefficients in this study were 0.712 for uncertainty and –0.934 for behavioral intention. Both results exceeded the standard of 0.6 proposed by Fornell and Larcker (1981), which demonstrated the exceptional internal consistency of the model established in this study. Additionally, the average variance extracted of all variables in this study exceeded the standard of 0.5 proposed by Fornell and Larcker (1981), indicating the exceptional internal consistency of the model in this study.

Table 2. Validity and Reliability

Construct	Items	Mean	S.D.	Cronbach's α	AVE	CR
Uncertainty	4	3.41	0.54	0.718	0.513	0.712
Exchange of information	5	3.88	0.59	0.855	0.638	0.897
Communication	4	3.82	0.68	0.854	0.697	0.902
Reputation	3	4.19	0.63	0.859	0.779	0.914
Relationship Tenure	3	4.00	0.67	0.856	0.776	0.912
Perceived quality	5	3.94	0.58	0.733	0.521	0.823
Perceived valued	4	3.78	0.53	0.701	0.516	0.796
Behavioral intention	6	3.95	0.67	0.915	0.703	0.934

Hypothesis Testing

To verify our research hypotheses, we specified paths between the constructs to create a structural model matching the proposed relationships. Standardized beta coefficients for the estimated structural model and the associated t values for each construct are presented in Table 3. Figure 2 displays the results of the estimation from structural equation modeling, including standardized path coefficients for each hypothesized path in the model, the level of significance based on one-tailed t tests, and the amount of variance explained (R^2).

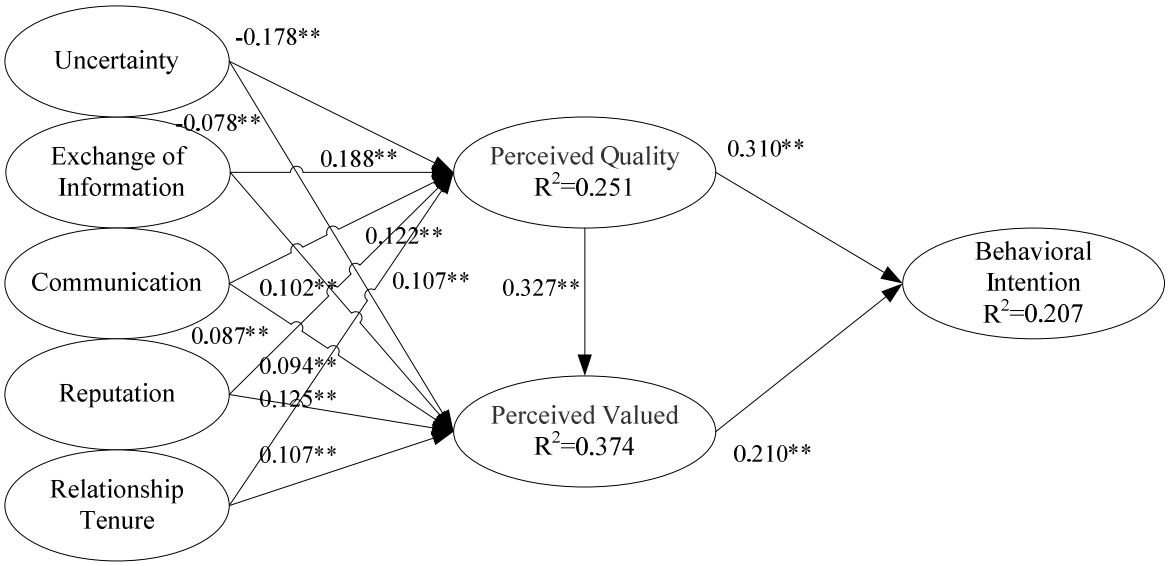

Figure 2. Path coefficients for the research model
Value on path: standardized coefficients (β),
R^2: Coefficient of determination and *p<0.05, **p<0.01

The dimension of uncertainty had significantly negative effects on both perceived quality and perceived value (β = –0.178 and –0.078), and exchange of information was a significant determinant for both perceived quality and perceived value, (β = 0.188 and 0.102). These two dimensions of TCT were all crucial antecedents of perceived quality and perceived value, thereby supporting Hypotheses 1, 2, 3, and 4. These three dimensions of SET (communication, reputation, and relationship tenure) were significant determinants of both perceived quality and perceived value (β = 0.122, 0.094, 0.087, 0.125, 0.107, and 0.107, respectively), thus demonstrating that Hypotheses 5, 6, 7, 8, 9, and 10 were supported. The TCT dimension (uncertainty and exchange of information) and SET dimension (communication, reputation, and relationship tenure) explained 25.1% of the variance in perceived quality. The construct of perceived quality was a significant determinant of perceived value (β = 0.327), thereby supporting Hypothesis 11. These constructs explained 37.4% of the variance in perceived value. Finally, the components of behavioral intention, perceived quality, and perceived value were all proven to be crucial antecedents of behavioral intention (β = 0.310 and 0.210, respectively), thereby supporting Hypotheses 12 and 13. Perceived quality and perceived value together explained 20.7% of the variance in behavioral intention (R^2 = 0.207).

Discussion

The primary purposes of preventive healthcare are disease prevention and health promotion. Health examinations boast numerous advantages and perfectly represent the ideology that "prevention is better than a cure." Facilities in health examination centers have improved, but the behavioral intentions of the general public to undergo health examinations have decreased. Therefore, this study integrated TCT, SET, and the

QVB model to identify the substantial factors affecting the behavioral intentions of the general public to undergo health examinations. This empirical study yielded optimal outcomes regarding reliability, validity, path coefficients, and coefficient of determination (R2). In the research model proposed in this study, results of the R2 for each latent variable in the integral model were as follows: perceived quality, R2 = 0.251; perceived value, R2 = 0.374; and behavioral intention R2 = 0.207. These data indicated that the theoretical framework proposed in this study was suitable for identifying the factors affecting the behavioral intentions of the general public toward undergoing health examinations.

Table 3. Estimation Results for Hypotheses 1–15

Hypotheses	Path from/to	Standardized coefficient	t-value	Test results
H 1	Uncertainty →Perceived quality	-0.178**	5.423	Supported
H 2	Uncertainty →Perceived valued	-0.078**	3.104	Supported
H 3	Exchange of information → Perceived quality	0.188**	5.692	Supported
H 4	Exchange of information → Perceived valued	0.102**	3.188	Supported
H 5	Communication →Perceived quality	0.122**	3.230	Supported
H 6	Communication →Perceived valued	0.094**	3.114	Supported
H 7	Reputation →Perceived quality	0.087**	3.061	Supported
H 8	Reputation →Perceived valued	0.125**	4.621	Supported
H 9	Relationship Tenure → Perceived quality	0.107**	2.895	Supported
H 10	Relationship Tenure →Perceived valued	0.107**	3.079	Supported
H 11	Perceived quality → Perceived valued	0.327**	12.154	Supported
H 12	Perceived quality → Behavioral intention	0.310**	8.028	Supported
H 13	Perceived valued → Behavioral intention	0.210**	6.172	Supported

*p<0.05, **p<0.01

The empirical evidence demonstrated that under the TCT constructs, uncertainty demonstrated significant negative effects on perceived quality and perceived value. This result indicated that, when the examination method used at a health examination center is uncertain or the health examination center cannot meet a patient's request for a short-notice change, the patient's perceived quality and perceived value toward the health examination center decreased. Additionally, the exchange of information demonstrated significant positive effects on perceived quality and perceived value. This indicated that, when a health examination center regularly shared medical news or discount information with the public, their quality and value as perceived by the general public increased, particularly if the center could provide sufficient information when the patient received abnormal examination results.

Regarding SET constructs, communication, reputation, and relationship tenure demonstrated significant positive

effects on perceived quality and perceived value. Providing comprehensive health examination results and communicating with patients regarding their conditions promoted the perceived quality and perceived value of the public toward the health examination center. Moreover, the integrity and reputation of a heath examination center as well as its long-term relationship with patients was crucial, because these factors enhanced the perceived quality and perceived value of the public toward the health examination center.

Finally, in the QVB model, perceived quality and perceived value had significant positive effects on the behavioral intentions of members of the general public to undergo health examinations. This result indicated that a positive reputation, excellent examination quality, reasonable price, extensive examination items, and an exceptional service quality increased the behavioral intention of the general public to undergo health examinations. Therefore, health examination centers should not only improve their service quality but also provide extensive examination items. Moreover, customizing the examination items in accordance with the particular requirements of each patient would also positively influence patients' behavioral intention to undertake health examinations.

Limitations and future research

This study identified factors that influenced the behavioral intention of the general public to participate in health examinations in Taoyuan, Taiwan; however, several research limitations were noted and several relevant topics in this field were not addressed. First, this study only recruited participants from clinical patients in the case hospital in Taoyuan, Taiwan. Therefore, the results do not fully represent the views of all Taiwanese people. Future studies should be conducted to expand the scope of this research and identify differences among people in different regions. Second, this study employed questionnaires to assess the perceptions and cognition of respondents toward each item. The results of this study could only be compared and discussed in relation to those of the previous studies. As a result, the discussion was limited with regard to its scope and comprehensiveness. Moreover, the primary factors affecting patient participation in health examinations were undetermined. Therefore, in future studies, researchers should strengthen these research results by conducting comprehensive interviews following data analysis to further determine the primary factors affecting the behavioral intentions of the general public regarding participation in health examinations.

Finally, although this study employed TCT, SET, and the QVB model to understand the behavioral intention of public participation in health examinations, the analytical results provided relatively little explanatory power with regard to behavioral intention (20.7%). Therefore, we believe that other factors also affected behavioral intention, and we recommend that future studies apply additional theories or variables to this discussion, such as the theory of motivation and the theory of planned behavior.

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