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The Influence of Factors in Selection of Medical Institutions on Perceived Quality, Perceived Risk and use Intention: With a Focus on General Hospitals

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Abstract

The current research aimed to identify what factors of hospital and doctor attributes affect medical consumers' selection of general hospitals. Also was investigation was the question of how these factors influence a variety of perceived risk and their use intention. Finally, it aimed to find which of the two, hospital or doctor attributes, exerted more influence on customers'selection of general hospitals. The results wear as follows. First, a set of four factors of hospital attributes were extracted that influence their selection: convenience, reputation, public trust and externalities of hospitals. Second, from the set of hospital factors, waiting hours, consulting hours and convenience facilities were found leading to high perceived risk. Third, it was found that the reputation of hospitals exerted greatest influence on customers' use intention: awareness, word-of-mouth and popularity. Fourth, the professional expertise, favorable attributes and external characteristics were extracted for the factors of doctor attributes that affect customers' selection. Fifth, it was found that the factor of doctors' professional expertise had an impact on customers' perceived risk. Sixth, it was found that the greater attractiveness, favorability, kindness and intimacy would be more likely to lead to medical customers' use intention. And finally, of the factors of hospital and doctor attributes, the factor of public trust, which consists of expertise, reliability and medical equipment, was found exerting the greatest influence on medical consumers' selection of general hospitals.The results of the present research are expected to provide meaningful data for arranging marketing strategies of hospitals.

Keywords: Continuous Relationship, Doctor Attributes, Hospital Attributes, Perceived Risk, Selection of Medical Institutions

1. Introduction

Changes in medical industry environment such as diversification of medical demand and disease structure, and improvements in medical consumers' education and income have resulted in a transition to a customer-oriented market from a supplier-oriented one. Such a trend naturally requires a corresponding change in management of medical institutions[1]. Medical institutions are making efforts to provide customer-oriented medical services with the help of advanced medical technology, equipment and professionals. Medical consumers are also paying more attention to receiving better medical services thanks to acquisition of more medical information and wider criteria of selecting medical institutions.

The process of selecting a particular medical institution by medical consumers is very similar to that of selecting products[2]. The consumer behavior of purchasing products to satisfy their needs and desires is also witnessed in purchasing medical services: medical consumers try to solve their problems by maximizing their benefits in terms of consumer values and consumption values[3]. Consumers living in the Information Era possess a much wider variety of medical information and knowledge than

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ever before thanks to easy accessibility and usefulness of medical information, and, thus, require more complicated services[4]. In such a context, it is necessary that medical institutions should analyze customer behavior by identifying the factors affecting consumers' selection of medical institutions and the perceived risk of medical institutions in order to survive limitless competition and also endeavor to grow and develop[3].

The present research attempts to identify what factors are taken into consideration when medical consumers select a particular medical institution to have their diseases or illnesses treated. The list of topics under discussion is as follows. First, we intend to identify what attributes of hospitals and doctors affect consumers' selection of general hospitals.

Second, the current research aims to identify how these selection factors affect perceived risk and use intention, and also which of the hospital and doctor attributes are considered for their intention to use a general hospital. The results of the present research are expected to provide meaningful data for arranging marketing strategies of hospitals.

2. Theoretical Background

2.1 Perceived Risk

Perceived risk occurs from product purchase as a result of unsatisfied result, and unpredicted and uncertain outcomes[5]. It may occur when customers make transactions in any way or method (Taylor). Thus, perceived risk can be defined as consumers' uncertainty about latent positive or negative results in decision-making process[6].

Perceived risk, in contrast to objective or probabilistic risk, is subjectively perceived by consumers[5]. As the objectively same degree of risk can be differently perceived by different consumers, this subjective evaluation is called as perceived risk[7]. Slovic and his colleagues[8] found that subjective judgment involving perceived risk is an important element for risk evaluation. They also found in their experiments that nonprofessionals displayed differences in the methods of perceived risk from those of professionals in which a variety of convenience can be involved. In a similar vein, Dholakia[9] argued that perceived risk is subjective loss of expectation. Jacoby and Kaplan[10] tried to explain perceived risk from a multidimensional perspective.

Their 6 dimensions can be categorized into two angles: possibility of unexpected results and possibility of negative results. First, financial risk refers to perception of the possibility of financial loss that might occur from using a product or service. The second dimension is functional risk. It refers to perceived risk of the possibility of malfunction of a product or service. The third dimension is physical risk. It refers to the possibility of negative influence of a product or service on his or her body and health. Fourth, consumers might perceive psychological risk in which consumers might find a product or service unsuitable for their self-images or concepts. The fifth is social risk. Consumers may perceive this kind of risk, worrying about how their self-images are seen in others' eyes. The sixth is time risk. People perceive the risk of losing time and efforts in the process of purchasing a product or service.

Interestingly enough, Schiffman and Kanuk[11] also classified perceived risk into 6 dimensions: performance, monetary, physical, social, psychological and time risk. Such a six-dimensional perspective was also employed in other researches including[12]. Bettman[13], in turn, classified perceived risk into two types: inherent risk and handled risk. The former refers to probable risk that a certain mismatch and incompatibility of product classification might bring to consumers. The handled risk, on the other hand, refers to information effect and risk reduction process by dealing with the inherent risk.

Perceived risk can occur in a variety of ways depending on products and situations. Such characteristics of perceived risk might also depend on individuals, since they respond differently to the uncertainty of products[14].

As shown in these previous researches, perceived risk can comprehensively account for various risk elements occurring in the decision-making processes to purchase products from multidimensional perspectives, not from a single one. Also, it has been reported that perceived risk exerts a negative effect on perceived value of a product[15], and on purchase possibility as well[16]. Thus, adopting five dimensions of perceived risk, the current research attempts to identify which of the two, factors of hospital attributes or doctor attributes, exerts more influence on perceived risk when medical consumers select medical institutions.

2.2 Use Intention

In terms of consumer behavior, the concept of use intention is the closest to that of use, and it is an important factor to predict use behavior[17]. The use intention is determined by a customer's attitude and his or her own subjective criteria[18]. It might signify somewhat predicted or future behavior and thus a possibility for belief and attitude to be transformed into action[19]. Thus, the use intention refers

to customers' tendency toward purchasing a particular product or service[17].

A variety of factors might exert influence on use intention, which is determined by an individual's personal intention to purchase a particular brand: among them are expectation for the brand and thought of purchasing it[20]. Other factors might include service quality, attitude, satisfaction and publicity[21]. Cronin & Taylor[22] found in their research on service industry businesses that customer satisfaction had a clear impact on use intention. Kotler[23], in turn, found that customers satisfied with their product purchases had a favorable communication with potential customers and had intention to repurchase the products. In such a context, the present research aims to identify what factors of hospital and doctor attributes in medical customers' selecting general hospitals have an influence on their use content.

3. Research Problems

Research Problem 1. What are the hospital attributes that are considered in selecting general hospitals?
Research Problem 2. What hospital attributes of the selection factors affect perceived risk?
Research Problem 3. What hospital attributes of the selection factors affect perceived risk?
Research Problem 4. What are the doctor attributes that are considered in selecting general hospitals?
Research Problem 5. What doctor attributes of the selection factors affect perceived risk?
Research Problem 6. What doctor attributes of the selection factors affect their use intention?
Research Problem 7. Which of the two, hospital or doctor attributes, exerts more influence on use intention?

4. Methods

4.1 Respondents

The subjects of the current research are a group of college students, male and female, attending N University located in Cheonan and M University in Daejon, who have received medical treatments at least once in the previous year at a general hospital or a university hospital. After eliminating inadequate answers, a set of 220 questionnaires were used for final analysis. One thing to note is that we tried to balance the portion of male and female subjects to come to a more generalized conclusion.

4.2 Measurement Tools

The current research attempts to identify what factors of doctor attributes and hospital attributes influence customers' selection of general hospitals, and also which of these factors influence perceived risk and use intention. To that purpose, the sets of hospital attributes and doctor attributes were adopted from E. Kim and S. You's[24] research model.

Perceived risk refers to psychological risk perceived subjectively by individuals when selecting or purchasing a product or service[25]. The present research examines psychological, physical, social, economic and bodily risk when consumers perceive about the uncertainty in selecting general hospitals. In order to measure perceived risk, E. Kim & S. You's[24] rearranged version of Seddighi, Nuttall & Theocharous[26] was adopted: a set of five items, which were recognized as having reliability and validity (Cronbach's Alpha = .799).

Use intention refers to an individual's intention to perform a particular behavior[27]. The use intention for general hospitals under discussion was measured with a set of three items, which were a slightly revised version of Agarwal & Karahanna[28] (Cronbach's Alpha = .816).

4.3 Data Analysis Methods

First, a factor analysis was performed to identify common factors between the items of hospital attributes and doctor attributes in selection of a general hospital, and also to identify the validity of the construct variables. Second, multiple regression was conducted to identify which of the hospital and doctor attributes affects perceived risk of general hospitals and consumers' use intention. Cronbach's Alpha index was used to test the internal consistency among the items and the reliability of the scales. The statistical program of SPSS/PC+ Windows 18.0 was used to analyze the data.

5. Results

5.1 Factors of Hospital Attributes in Selecting General Hospitals

A factor analysis was conducted to minimize information loss and simplify a set of factors by combining related factors of hospital attributes in selecting general hospitals. The number of factors was thus reduced by performing principal component analysis, VARIMAX rotation,

KaiserMeyer-Olkin scales and Bartlett sphericity test. A factor was judged as appropriate if its Eigen value is greater than 1, and factor load[29] and commonality is greater than 0.4[30].

After the factor analysis of a set of 23 items, 3 items whose factor load and commonality were less than 0.4 and 2 items that are hard to be combined with others were eliminated. As a consequence, 4 factors were finally extracted for analysis. The result of the factor analysis is illustrated in Table 1. The explanatory power for the total distribution of factors of hospital attributes is 55.51%. The first factor named 'convenience' consisted of 6 items (Cronbach's Alpha = .805). The second factor was named 'reputation' and it consisted of 5 items. The third factor consisting of 3 items was named 'public trust'. The fourth was named 'externality' consisting of 2 items (Cronbach's Alpha = .772).

Table 1. Factors of hospital attributes

Items	Factors				
	Factor 1	*Factor 2*	*Factor 3*	*Factor 4*	*communality*
Consultation hours	.755				.631
Surrounding environment	.720				.589
Convenience facilities	.700				.570
Subsidiary facilities (parking lot)	.700				.506
Waiting hours	.690				.547
Convenience of transportation	.620				.484
Hospital awareness		.829			.713
Fame (popularity)		.811			.713
Word of mouth		.710			.557
Reputation		.643			.592
Visits by family and relatives		.467			.436
Expertise			.796		.666
Reliability			.742		.664
Medical equipment			.570		.446
Medical accidents			.514		.441
Size(number of beds)				.792	.661
Luxury of facilities				.621	.574
History				.593	.454
Eigen value	4.576	2.532	1.544	1.339	
Variance(%)	25.423	14.066	8.580	7.441	
Accumulated Variance(%)	25.423	39.489	48.069	55.510	

Kaiser-Meyer-Olkin = .787, Bartlett's sphericity test
$\chi^2 = 1240.357(df = 153, \text{Sig} = .000)$

5.2. Effect of Factors of Hospital Attributes on Perceived Risk

A multiple regression analysis of the effect of hospital attributes on perceived risk found, as shown in Table 2, that convenience and public trust had a significant influence on perceived risk, whereas public trust had a negative effect on perceived risk. Such a result indicates that perceived risk gets higher with more positive evaluation in consultation hours and convenience and with more negative evaluation in hospital evaluation and reliability.

5.3. Effect of Factors of Hospital Attributes on use Intention

The analysis of the effect of factors of hospital attributes on use intention found, as shown in Table 3, that reputation and externalities had a positive influence on consumers'use intention. It might tell us that when consumers select general or university hospitals, they often appeal to the reputation, word-of-mouth or external features like size and lexury.

5.4. Factors of Doctor Attributes in Selecting General Hospitals

A factor analysis of 18 items was conducted to identify the factors of doctor attributes that influence customers' selection ofgeneral hospitals. A set of 3 factors were finally extracted, eliminating one item that does not well belong to any of the subcategories. The explanatory power of the factors on total distribution was obtained at 53.71%. The

Table 2. Effect of factors of hospital attributes on perceived risk

Factors	Unstandardized Coefficients		Standardized Coefficients	t
	B	*Standard Error*	*Beta*	
Convenience	.189	.070	.193	2.712**
Reputation	.053	.075	.054	.700
Public trust	–.215	–.104	–.153	–2.063*
Externalities	.012	.076	.012	.158

F = 2.547, p<.05*p<.05, **p<.01, ***p<.001

Table 3. Effect of factors of hospital attributes on use intention

Factors	Unstandardized Coefficients		Standardized Coefficients	t
	B	*Standard Error*	*Beta*	
Convenience	.070	.070	.070	1.004
Reputation	.173	.074	.176	2.353*
Public trust	.151	.106	.102	1.419
Externalities	.180	.076	.173	2.364*

F = 5.251, p<.001*p<.05, **p<.01, ***p<.001

first factor consisting of 6 items was named 'professional expertise' (Cronbach's Alpha = .823). The second factor was named 'hospitable attractiveness'and it consisted of 5 items (Cronbach's Alpha = .809). The third factor, in turn, consisted of 3 items and was called 'external characteristics' (Cronbach's Alpha = .735).

5.5 Effect of Factors of Doctor Attributes on Perceived Risk

A multiple regression analysis was performed to identify what factors of doctor attributes are considered in selecting tertiary medical institutions. The result of the analysis is illustrated in Table 5. It was found that the professional expertise of medical doctors had a negative effect on perceived risk, which indicates that lower level of expertise or reliability leads to higher perceived risk.

5.6. Effect of Factors of Doctor Attributes on use Intention of General Hospitals

As shown in Table 6, it was found that hospitable attractiveness of doctors had a positive effect on use

Table 4. Factors of doctor attributes

Items	Factors			
	Factor 1	*Factor 2*	*Factor 3*	*communality*
Reliability of doctor	.747			.580
Professional experience of doctor	.745			.638
Professional skills of doctor	.730			.593
Expertise of doctor	.685			.526
Integrity of doctor	.648			.492
Explanation ability of doctor	.639			.519
Knowledgeable ability of doctor	.555			.379
Dignity of doctor	.450			.456
Favorableness of doctor		.818		.675
Familiarity of doctor		.799		.650
Intimacy of doctor		.720		.539
Attractiveness of doctor		.661		.569
Kindness of doctor		.554		.555
Image of doctor		.481		.458
Education of doctor			.710	.578
Age of doctor			.709	.608
Gender of doctor			.529	.516
Eigen value	5.348	2.356	1.428	
Variance(%)	31.457	13.858	8.400	
Accumulated Variance(%)	31.457	45.315	53.715	

Kaiser-Meyer-Olkin = .834, Bartlettsphericity test
χ^2 = 1348.888(df = 136, Sig = .000)

intention. Such a result indicates that greater favorability and attractiveness of medical doctors lead to greater use intention of general hospitals.

5.7 Effect of Factors of Hospital and Doctor Attributes onuse Intention

Which of the two, hospital attributes or doctor attributes, would have greater influence on medical consumers' use intention? As illustrated in Table 7, it was found that the public trust exerted the greatest influence, followed by doctors' hospitable attractiveness and hospitals'externalities. It might be interpreted that expertise, reliability and reputation of a hospital would have a positive effect on consumers' selection of a general hospital or a university hospital.

Table 5. Effect of factors of doctor attributes on perceived risk

Factors	Unstandardized Coefficients		Standardized Coefficients	T
	B	*Standard Error*	*Beta*	
Professional expertise	–.263	.106	–.191	–2.486*
Favorable attractiveness	.116	.081	.110	1.432
External characteristics	.071	.074	.072	.962

F = 2.510, p<.05 *p<.05, **p<.01, ***p<.001

Table 6. Effect of factors of doctor attributes on use intention

Factors	Unstandardized Coefficients		Standardized Coefficients	t
	B	*Standard Error*	*Beta*	
Professional expertise	.100	.105	.072	.956
Favorable attractiveness	.203	.081	.188	2.520*
External characteristics	.105	.073	.104	1.436

F = 6.520, p<.001 *p<.05, **p<.01, ***p<.001

Table 7. Effect of factors of hospital and doctor attributes on use intention

Factors	Unstandardized Coefficients		Standardized Coefficients	t
	B	Standard Error	Beta	
Convenience of hospitals	–.017	.076	–.017	–.218
Reputation of hospitals	.087	.078	.088	1.104
Public trust of hospitals	.256	.121	.172	2.124*
Externalities of hospitals	.155	.077	.149	2.007*
Professional expertise of doctors	.192	.126	.137	1.524
Favorable attractiveness of doctors	.173	.084	.160	2.065*
External characteristics of doctors	.041	.079	.041	.521

F = 4.438, p<.001 *p<.05, **p<.01, ***p<.001

6. Conclusion and Discussion

The current research aimed to identify what factors of hospital and doctor attributes affect medical consumers' selection of general hospitals. Also was investigation was the question of how these factors influence a variety of perceived risk - mental, physical, social, and economic risk - and their use intention. Finally, it aimed to find which of the two, hospital or doctor attributes, exerted more influence on customers' selection of general hospitals. The results of the research can be summarized as follows.

First, a set of four factors of hospital attributes were extracted that influence their selection: convenience, reputation, public trust and externalities of hospitals.

Second, from the set of hospital factors, waiting hours, consulting hours and convenience facilities were found leading to high perceived risk. What it means is that the lower importance of waiting and treatment hours gets, the lower the perceived risk gets. It might be interpreted in such a way that medical consumers might feel uncomfortable about long waiting and treatment hours but can tolerate it.

Third, it was found that the reputation of hospitals exerted greatest influence on customers' use intention: awareness, word-of-mouth and popularity. Also, the

size and luxury of hospital facilities were found having a positive effect.

Fourth, the professional expertise, favorable attributes and external characteristics were extracted for the factors of doctor attributes that affect customers' selection.

Fifth, it was found that the factor of doctors' professional expertise had an impact on customers' perceived risk: mental, physical, social and economic risk. In other words, greater professional experience, expertise, reliability, professional skills and knowledgeable ability were found leading to lesser perceived risk.

Sixth, it was found that the greater attractiveness, favorability, kindness and intimacy would be more likely to lead to medical customers' use intention.

And finally, of the factors of hospital and doctor attributes, the factor of public trust, which consists of expertise, reliability and medical equipment, was found exerting the greatest influence on medical consumers' selection of general hospitals. Next in rank was favorable attractiveness of doctors that included familiarity and kind explanation of doctors. And it was also found that the factor of externalities of hospitals that include the luxury, size and medical equipment was an important factor for their use intention.

It should be admitted that the current research has some limitations. First, medical consumers' perceived risk might depend on the personal characteristics of individuals. Thus, they may be categorized into high perceivers and low perceivers. However, the present analysis did not consider these personal characteristics and take them as exogenous variables at all. Second, it did not also take it into consideration that different types of diseases might affect consumers' selection of tertiary medical institutions. Therefore, further researches might be in order that consider these two additional variables as variables. Also, it should be worthwhile to address the question of whether any different factors are considered when choosing a primary medical institution and a general hospital.

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