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Analysis of the Multi-Item Dimensionality of Patients' Perceived Value in Hospital Services

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Abstract The purpose of this research is to analyse the multi-item dimensionality of patients' perceived value in hospital service. A total of 564 patients administered to Gulhane Military Medical Academy were surveyed. Sample population was specified through convenience sampling procedure. A face to face survey was conducted by three interviewers in August 2008. Confirmatory Data Analysis was carried out to reach the final data analysis. A scale of overall perceived value in health service was developed, which was composed of three dimensions and represented by 21 items. These dimensions were: Functional value, emotional value, and social value. The results indicated that perceived value was a multidimensional construct that affects the whole process of service purchasing. If the hospitals managers give importance to the sub-dimensions of the patient value inclined to their own hospitals and they regularly examine the situation of these dimensions, they can move one step ahead in achieving patient satisfaction and loyalty.

Keywords Perceived value · Health care management · Second-order confirmatory factor analysis · Patient satisfaction

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Introduction

When patients make evaluations about the hospital service, they take into account not only the benefits they were presented but also the sacrifices they have made for the service they have got. Because of this fact, while presenting benefit package to the patients that goes beyond their expectation, the sacrifices that the patients have made to get the service should be taken into account. In this framework, perceived value is called the result of the evaluation of the received benefits and the sacrifices made by the customer [1].

Although perceived value concept has been put forward after the customer satisfaction and the loyalty concepts, it still conveys an unclear meaning. Perceived value must be dealt in not after the purchasing but throughout the purchasing process and multidimensionally. Although there are some researches [2–10] that analyse perceived value multidimensionally, it is a new phenomenon to be examined in health service yet.

Even if the "value" concept exists among the theories of the marketing science, it has been directly dealt with in the

last 15 years. "The value process" research that was done by Hunt can be considered as among the first studies on value concept [10].

Value concept in marketing area was accepted by some researchers as the value perceived by the customers. According to Zeithaml [11], perceived value is the analysis of general benefit and cost based on the perception of "what is get" from the product and the service by the consumer and "what is given". In other words, Zeithaml [11] stated that value is formed if "what is get" is higher than "what is given". Furthermore, Zeithaml [11] stated that perceived value may have four different explanations; low price, anything expected from product or service, perceived quality comparatively paid cost, and perceived gain in response to given. According to Flint et al. [12], perceived value is the evaluation of the benefits and the sacrifices by the customer. In other words, it is the feeling about the product used or the consumed service in comparison with the sacrifice spent to obtain these and the process of assessment of this feeling. Some researchers such as Cravens et al. [13] and Monroe [14] have suggested that perceived value is the ratio or trade-off between quality and price. In other words, these researchers considered value as a monetary concept. According to Zeithaml [11], there is no balance between these two components of perceived value. For some consumers low price, for some of them high quality and for the others the balance between price and quality generate the value. However; other authors such as Schechter, [15] Bolton and Drew, [16] Porter, [17] Holbrook [6] ve Sweeney ve Soutar [7] have suggested that viewing value as only a trade-off between quality and price or the relationship between "get" and "given" is not true. According to these authors value concept implicates more general meaning and it also includes different aspects of the product and after-sale service. These researchers have indicated that value is multidimensional; so when other researchers are speaking of value they actually mention just one dimension of value, and because of this fact they have developed subdimensions for the value.

In this study, perceived value concept is dealt with in a multi dimensional way and its sub-dimensions are tried to be determined. In this way, perceived value concept which has a ambiguous meaning and signified as a brief concept is expressed in detail and rendered functional. In addition, the fact that the perceived value in health sector has not previously been examined as multidimentionally has increased the importance of this research.

Methods

In this article, the questionnaire in which was used had two parts. The first part of the questionnaire consisted of 21 items that intended to measure customer value (patient value is used in this article). The other part included nine questions aimed to assess demographical characteristics of the patients who participated in this research. Respondents were asked to rate how much they agreed with each item on the scale in the first part. The respondents graded their level of agreement or disagreement with the items on the Likert scale of five points. All of the patterns were evaluated by using already formed and confirmed scales: installations part of the functional value was evaluated through six items [9], professionalism part of the functional value was evaluated through four items [9], quality part of the functional value was measured by four items [7, 9, 10], emotional value was evaluated via four items [9, 18, 19] and social value was evaluated through three items [7, 9, 10] (Appendix).

This research was applied on the patients of the GMMA (Gülhane Military Medical Academy) training hospital in Ankara, Turkey. Gulhane Military Medical Academy is a commandership that has an academical autonomy, the highest advisory body of Turkish Armed Forces (TAF) in health sciences, which gives training and education in the levels of associate degree, bachelor's degree and postgraduate, and carries out scientific researches and publications besides training doctor and other military personnel in health sciences field when necessary.

The convenient sampling procedure was used. The questionnaire was carried out in August 2008. Six hundred face to face interviews were made by three interviewers. After that, questionnaires were analyzed. They were considered invalid if data were missing for more than three of the 21 items. By these criteria, 564 of the 600 questionnaires were valid. The ratio of sample size to number of items (approximately 27:1) significantly exceeded the minimum 10:1 ratio for factor analysis recommended by Kerlinger [20]. So 564 valid interviews were acceptable size. SPSS and AMOS 7 were handled in data analysis.

Results

Demographic Findings

As seen in the Table 1, the numbers of male (48.0%) and female (52.0%) were relative to one another. Most of the respondents were married (50.0%) and had high school graduate degree (46.1%). In terms of their ages, 31–40 (27.7%) and 18–30 (26.1%) age groups' numbers were more than the others'. When identified the family in terms of monthly income, the number of the family's earning 1001–1500 (31.7%) and 501–1000 (24.1%) Turkish Liras (TL) per month were more than the others'. When looking at the patients' professions, most of them were officer families.

Table 1 Demographical features

	Number of respondents	Percentage of respondents
Gender		
Male	271	48.0
Female	293	52.0
Age		
18–30 years	147	26.1
31–40 years	156	27.7
41–50 years	136	24.1
51 years or more	125	22.2
Marital Status		
Single	193	34.2
Married	282	50.0
Divorced	40	7.1
Widowed	49	8.7
Education		
Illiterate	23	4.1
Primary School	10	1.7
Secondary School	12	2.1
High School	260	46.1
University	226	40.1
Post Graduate	33	5.9
Income (per month) (TL)		
0–500 TL	114	20.2
501–1000 TL	136	24.1
1001–1500 TL	179	31.7
1501–2000 TL	113	20.0
2001 TL and more	22	3.9
Profession		
Military Officer	78	13.8
Noncommissioned Officer	89	15.8
Officer Family	135	23.9
Unmilitary Officer	123	21.8
Retired	34	6.0
Wounded veteran	23	4.1
Civilian	35	6.3
Others	47	8.3

Measurement Model

It was decided to follow the sequential approach (two-step methodology) recommended by Anderson and Gerbing [21] for data analysis. The measurement model was considered before the analysis of the Confirmatory Factor Analysis. In order to verify uni-dimensionality and convergent validity, 21 items which were used to measure five latent constructs were exposed to CFA (Confirmatory Factor Analysis) using AMOS 7. The method used was the maximum likelihood estimation procedure as it is sturdy

to trustable to normality. It was figured out that the assigned measurement model was suitable for the data sufficiently, even though the chi-square goodness-of fit index was statistically significant ($\chi2$=420.43, p<.05). It is commonly agreed that the chi-square statistic will refuse valid models in large samples and some other circumstances [22], therefore, we counted on the goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), the comparative fit index (CFI), the normed fit index (NFI), relative fit index (RFI), incremental fit index (IFI) and the root mean square residual (RMR). All of these indexes met or exceeded the critical values (GFI=.94, AGFI=.89, CFI=.98, NFI=.97, RFI=.96, IFI=.98, RMR=.01) (Table 2).

Second-Order Confirmatory Factor Analysis

With reliance built in the offered measurement model of this study, an experimental Second-Order Confirmatory Factor Analysis was built up and tested to figure out if the hypothesized theoretical model was coherent with the gathered data. Theoretical model was examined through five exogenous constructs (functional value (installation), functional value (professionalism), functional value (service

Table 2 Measurement model result

	M.L.E	S.E.	C.R.	A.V.E.	Com.R.
FI1←FI	0.99	0.03	43.73	0.79	0.95
FI2←FI	0.91	0.03	34.35		
FI3←FI	0.84	0.03	28.47		
FI4←FI	0.85	0.03	28.85		
FI5←FI	0.86	0.03	29.4		
FI6←FI	0.88	–	–		
FP1←FP	0.91	0.03	31.62	0.80	0.94
FP2←FP	0.87	0.03	28.61		
FP3←FP	0.92	0.03	32.45		
FP4←FP	0.88	–	–		
FQ1←FQ	0.99	0.03	44.15	0.83	0.95
FQ2←FQ	0.86	0.03	30.05		
FQ3←FQ	0.91	0.03	33.92		
FQ4←FQ	0.88	–	–		
E1←E	0.99	0.03	37.90	0.83	0.95
E2←E	0.91	0.03	30.73		
E3←E	0.88	0.04	29.03		
E4←E	0.85	–	–		
S1←S	0.99	0.03	41.32	0.86	0.86
S2←S	0.88	0.03	32.39		
S3←S	0.89	–	–		

M.L.E. Maximum Likelihood Estimation, *S.E.* Standart Error, *C.R.* Critical Ratio, *A.V.E.* Avarage Variance Extracted, *Com.R.* Composite Reliability

X^2 =420.43, df: 130, CMIN/df: 3.23, GFI: 0.94, AGFI: 0.89, CFI: 0.98, NFI: 0.97, RFI: 0.96, IFI: 0.98, RMR: 0.01

quality), emotional value, social value and one endogenous construct (perceived value). As the chi-square is excessively affected by the sample size [23], other goodness-of-fit indices are recommended to assist the model evaluation [24]. Investigation of the theoretical model signified that the t-values of all entirely standardized coefficients were statistically considerable at.05% level. The chi-square value of the theoretical model was X^2=403.23, p=.00, CMIN/df= 3.23 and other fit indices were GFI=.94, AGFI=.90, CFI=.98, NFI=.97, RFI=.96, IFI=.98, RMR=.02. Therefore, theoretical model indicated an excellent level of overall fit.

Furthermore, the revision of the squared multiple correlation clarified 92% of the variance in the perceived value. As the expressed variance in the endogenous construct is over 40%, the structural model was given credence to have appropriate reliability [25]. Eventually, theoretical model was accepted as a good model fit.

In this paper, we affiliated the overall perceived value into the model as the dependent variable. Through this, we clarified that the perceived value is specified significantly by the five dimensions acquired in the analysis above. In the order of significancy of the path coefficient, functional value (installation) (r=.39, t=15.14), functional value (professionalism) (r=.63, t=29.97), functional value (quality) (r=.45, t=19.78), emotional value (r=.33, r=16.56), social value (r=.61, t=23.86) (Table 3) (Fig. 1).

Discussion

Value concept is an ambiguous concept that is used in the fields such as economy, psychology, sociology, product management, information systems, management science and marketing. The reason of value concept's being ambiguous is that it is a multi-dimensional and an obscure concept. Consequently; the definition and the explanation of the value concept offer difference according to the studied field and also the researchers studying on it.

Since several authors such as Cronin and Taylor [26], Bolton and Drew [16] recognised that perceived value concept was at the very heart of consumers' service assessment in the early nineties, there have been three waves of conceptual developments in the marketing literature: service quality, customer satisfaction and then customer value. However, it has not been reached an agreement yet about which of these three concepts is more privileged and their position in the relation between reason and result (Gallarza and Saura, 2006) [10].

In this research, the hedonic and utilitarian aspects of perceived value have been dealt with and they have been tested in a five multi dimensional model. The overall result has indicated that patient value can be represented in five dimensions in a better way.

Table 3 The estimated path coefficient of second order confirmatory factor analysis

From		To	Estimated value (t-value)
Perceived value	→	Installations	.39 (15.14)
Perceived value	→	Professionalism	.63 (29.97)
Perceived value	→	Quality	.45 (19.78)
Perceived value	→	Emotional value	.33 (16.56)
Perceived value	→	Social value	.61 (23.86)
Installations	→	FI1	.998 (14.13)
Installations	→	FI2	.912 (17.51)
Installations	→	FI3	.851 (9.63)
Installations	→	FI4	.851 (13.48)
Installations	→	FI5	.858 (13.98)
Installations	→	FI6	.872 (17.31)
Professionalism	→	FP1	.908 (16.38)
Professionalism	→	FP2	.875 (14.23)
Professionalism	→	FP3	.910 (11.64)
Professionalism	→	FP4	.886 (10.44)
Quality	→	FQ1	.988 (23.21)
Quality	→	FQ2	.881 (14.96)
Quality	→	FQ3	.925 (18.37)
Quality	→	FQ4	.888 (10.01)
Emotional value	→	E1	.997 (21.65)
Emotional value	→	E2	.909 (19.92)
Emotional value	→	E3	.892 (9.18)
Emotional value	→	E4	.851 (14.21)
Emotional value	→	S1	.978 (7.17)
Emotional value	→	S2	.881 (9.76)
Emotional value	→	S3	.896 (6.42)

There have been some previous studies about the perceived value but these researches were generally post purchase assessments and it is new to discuss perceived value as an attitude obtained throughout the whole process. In this study, perceived value concept has been analysed as to measure the attitudes.

The authors such as Sheth et al. [2] who support the multidimensionality of value concept has stated that perceived value has five dimensions: social, emotional, functional, epistemic and conditional values; and in different situations, these dimensions specify the perceived value in different levels. According to Sheth et al. [2], functional value component has the significant role in customer's product and service choice and other components contribute to the functional value according to the situation. In addition to this, Groth [3] examined the perceived value in four groups; cognitive: perceived utility, psychological, internal and external value. Gronroos [4] assumed that value is composed of two subcomponents: cognitive ve emotional value. However; Sweeney et al. [5]

Fig. 1 Second-order confirmatory factor analysis
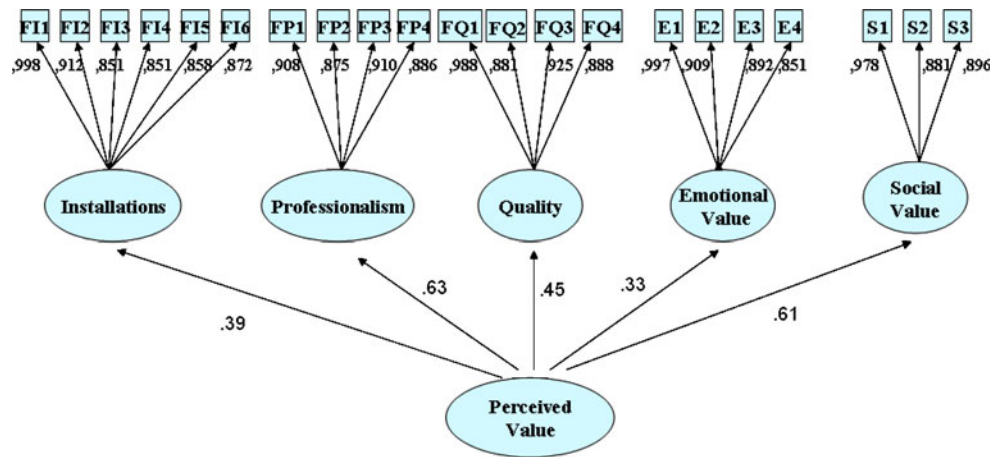
have identified five-dimensions of perceived value: social, emotional, functional (price/value for money), functional value (performance/quality), functional value (versatility). Holbrook [6] argued for eight value components composed in the view of perceived value by himself; efficiency, excellence, play, aesthetics, politics, morality, esteem and spirituality. Holbrook [6] discussed these eight value components in three main groups; extrinsic/intrinsic, self-orientation/other-orientation and active/reactive values.

An initial scale of 85 items was constructed and grouped into 32 functional items (17 for perceived quality and 15 for price), 29 social items and 22 emotional items by Sweeney and Soutar [7]. After that process, they carried out a refinement process and found out a scale including 19 items divided into four dimensions: emotional value, social value, quality/performance and price/value for money. The scale indicates that consumers evaluates the products not only in functional terms of expected performance, value for money and versatility but also in terms of the fun or pleasure rooted in the product (emotional value) and the social outcome of what the product means for others (social value). Moreover, according to a post purchase situation and also prepurchase situation, the scale was figured out to be reliable and valid.

Petrick [8] constructed a measuring scale of perceived value for restaurants through specifying five dimensions: quality, emotional response, monetary price, behavioural price and reputation. This scale seems to enhance the evaluation of the perceived value as it is based on a definite process of arrangement of a scale and also this scale makes it easy to carry out the experimental testing of the multidimensionality of the construct. Notwithstanding, it must be expanded as it includes only the post-purchase assessment of a product instead of perceived overall value of a purchase.

Sanchez et al. [9] built up a perceived value concept in a tourism field through contructing a scale of measurement of the overall perceived value of a purchase. They attached

great importance to specify the cognitive and affective dimensions. Through multi dimensional procedure, they built up a scale of measurement of the perceived overall value of a purchase by using 24 items grouped into six dimensions: (1) functional value of the travel agency (installations); (2) functional value of the contact personnel of the travel agency (professionalism); (3) functional value of the tourism package purchased (quality); (4) functional value price; (5) emotional value; and (6) social value. According to Sanchez et al., the most important variable that determines the perceived value is social value ($r=.25$), the least effective factor is emotional value ($r=.15$). Moreover, other four factors have close influences on each other.

Gallarza and Saura [10] examined the dimensionality of consumer value in a context related with travel (students' travel behaviour), and figured out that perceived value is composed of service quality ($r=.11$), social value ($r=.25$), play ($r=.48$), aesthetics ($r=.12$), time and effort spent ($r=-.22$). According to Gallarza and Saura, "play" is the most important component of perceived value, and "time" and "effort spent" components have negative effects.

In our study, five dimensions of the perceived value were examined. The most important one of these dimensions is functional value (professionalism) ($r=.63$, $t=29.97$). Hospital employees' being professional in their field, their following the developments in their field daily, their carrying out their job willingly, the acceptance of the advices they gave as valuable are the sub-variables of this dimension.

In our study, it was found out that another important dimension of perceived value is social value ($r=.61$, $t=23.86$). In general, the hospital's being preferred by other people, getting health service from the hospital being regarded as a prestige by individuals and the service that the hospital offers being accepted as valuable by other people are the sub-variables of the social value dimension.

Another dimension of perceived value is functional value (quality) ($r=.45$, $t=19.78$). The sub-variables of this dimension are that hospital services should be well organized, high quality service should be offered, the offered service should be better than the services offered by other hospitals and the results of hospital services should be in an acceptable level.

Functional value (installation) ($r=.39$, $t=15.14$) is other dimension of perceived value. Cleanliness of the hospital, modern structure of the building, getting and finding the hospital easily, easy transportation, the well design of the hospital to make the mechanism in the hospital smooth are the sub-variables of this dimension.

The last dimension of the perceived value is emotional value ($r=.33$, $r=16.56$). Satisfying service, positive opinions, the employees giving their all, and leaving the hospital with contentment are the sub-variables of this dimension. If the patient gets satisfied with the offered health service and if she/he believes that the employees of the hospital have done their best for him/her and leaves the hospital in contentment, this situation may result in a emotional connection between the hospital and the patient. Satisfied customer is an advert without charge for the hospital.

This research was applied on patients of a military hospital and to ensure the generality it must be tested in other hospitals' (private and state) context. Moreover; to obtain more realistic results, the value can be measured in terms of hospital employees and compared with patient's perceived value. Testing the pre-tested perceived value model in other cultures will increase the generalizability level.

Appendix

Scales and literature sources used in the questionnaire construction

Functional Value (Installations) (Sanchez et al. [9])

FI1-Well operation
FI2-Well organised
FI3-Modern establishment
FI4-Cleanless
FI5-Easily found from other places
FI6-Attain easily with vehicle

Functional Value (Professionalism) (Sanchez et al. [9])

FP1-Good professional (employees)
FP2-Up-to-date about new items and trends (employees)
FP3-Knowing job well (employees)
FP4-Advice is valuable (from employees)

Functional Value (Quality)(Sweeney and Soutar [7]; Sanchez et al. [9]; Gallarza and Saura [10])

FQ1-Well organized service
FQ2-High quality service
FQ3-Better service than others
FQ4-Acceptable results

Social Value (Sweeney and Soutar [7]; Sanchez et al. [9]; Gallarza and Saura [10])

S1-Preffering hospital (others)
S2-Obtaining prestige (for patient)
S3-Valuable service (with the view of others)

Emotional Value (Sanchez et al. [9]; Otto [18]; Otto and Ritchie [19])

E1-Satisfactory service
E2-Favourable opinion (with the view of patient)
E3-Humping employees
E4-Leaving with inner calm

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