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MODELLING PATIENT SATISFACTION IN HEALTHCARE

Abstract: The importance of patient satisfaction derives from the fact that it influences compliance with treatment, the intention to repurchase those healthcare services, to recommend the provider to others as well as the positive word of mouth. Thus, this paper aims to present an econometric model which links the major determining factors of patient satisfaction (perceived quality of healthcare services, their price, personal factors, regarding the patient, and contextual factors) with two behavioural aspects (patients' loyalty towards the healthcare provider and their compliance to treatment) in healthcare. This model is a new one, created by combining elements of existing models, based on relevant aspects of the literature and on the discussions with the managing staff of several clinics and hospitals (part of a previous qualitative research). The data analysis technique used was the structural equation modelling (SEM), using the soft-ware WarpPLS 4.0.
Key words: satisfaction, healthcare services, econometric model, structural equation modelling.

JEL Classification: M31, I10

1. Introduction

Services are present in all aspects of our lives, from the moment we are born, as we grow and even in the last years of our life. In this context, healthcare services are a category of services with which we interact constantly, a life-long. However, there is often a difference between what we would like to receive and the low quality of the provided services.

Also, health is important for the wellbeing of individuals and society, a healthy population being a prerequisite for economic productivity and prosperity (Commission of the European Communities, 2007). Therefore, it should be seen

not as a cost, but as a long term investment. Along these lines, the opportunities for those organizations that can excel in this field have never been greater.

Based on the above mentioned issues and given that healthcare marketing is not sufficiently addressed in the Romanian literature, it was aimed for creating a link between two concepts, extensively discussed in the literature: healthcare quality and patients' satisfaction. Thus, the proposed (and validated) model measures the influence of the major determining factors of patient satisfaction and its effects.

2. Literature review on patient satisfaction

From a conceptual perspective, **satisfaction is** regarded as *an evaluation process of the "expectations-performance" relationship* (Hunt, 1977; Oliver, 1981; Fornell, 1992 in Giese, Cote, 2002, p.1 and Dumitrescu, Apostu, 2009, p.160) or *a response to an evaluation process* (Howard, Sheth, 1969; Westbrook, Reilly, 1983; Tse, Wilton, 1988; Halstead, Hartman, Schmidt, 1994 in Giese, Cote, 2002, p.1 and Dumitrescu, Apostu, 2009, p.160).

From an operational perspective, definitions include a behavioural dimension of satisfaction, being defines as *"the manifested behaviour, respectively an affective response of varying intensity, with a time-specific point of determination and limited duration, directed toward the purchase and/or consumption of a product/service"* (Dumitrescu, Apostu, 2009, p.160).

Concerns about measuring patients' satisfaction are found also in healthcare, patients' satisfaction being defined similarly to consumer satisfaction (in general). Thus, satisfaction can be defined as *the extent of an individual's experience compared with his or her expectations* (Asadi-Lari, Tamburini, Gray, 2004, p.2). Also, satisfaction can be regarded as *patients' emotional reaction to salient aspects of the context, process and a result of their experience* (Pascoe, 1983 in Badri, Attia, Ustadi, 2009, p.385).

In this context, evaluating patients' satisfaction is clinically relevant, as satisfied patients are more likely to comply with treatment, take an active role in their own care and continue to purchase the healthcare services of the same provider. In contrast, unsatisfied patients will attract complaints, even lawsuits and relevant financial loss (Bradea, Delcea, Scarlat, Bolos, 2014).

Moreover, there is a strong link between patients' satisfaction and service quality, which is why, in general, patient satisfaction studies are used to examine service quality also (Lin, Kelly, 1995 in Badri, Attia, Ustadi, 2009, p.386). Hence, *perceived service quality is a component of customer satisfaction* (Zeithaml, Bitner, Gremler, 2012, p.79), or, in other words, *patient satisfaction is s a condition that arises from perceived quality performance* (Țichindelean, 2013, p.78).

As regards its **determining factors**, patient satisfaction can be influenced by service attributes, perceived service quality, price, personal factors (consumer's mood, his/her emotions) and by the situational factors (for example: opinions of family members) Zeithaml, Bitner, Gremler, 2012, p.79). Also, patient satisfaction

may be influenced by their perceptions towards the equity/fairness with which services are provided, as patients use to wonder whether they were treated fairly compared with other patients.

In terms of its **effects**, patients' satisfaction is essential for the organization's success, because satisfied patients are willing to pay higher prices, being more likely to remain loyal to the organization and to recommend it to others (Homburg, Hoyer, Koschate, 2005; Luo, Homburg, 2007). Also, satisfied patients will engage in word of mouth favourable to the provider or its services (Anderson, 1998, p.6).

Assessing patient satisfaction seeks, on the one hand, to understand their expectations and requirements, and on the other hand, to observe how well the providing organization compared to its main competitors does satisfy those expectations and requirements. Thus, it can be evaluated both by means of a qualitative research, as well as a quantitative one.

Regardless of the chosen research type, in order to assess patient satisfaction, it is necessary for the healthcare services providing organization to identify which are attributes critical to patient satisfaction or dissatisfaction. Furthermore, the organization has to measure the initial satisfaction, as it will be used as benchmark for future surveys. Last but not least, satisfaction should be measured broader than at a single transaction level, in order to monitor progress.

3. Methodology

Based on the above mentioned issues, we have conducted a direct, selective marketing research among patients from different regions of Romania (Bucharest and Sibiu and Timiş counties) in order to identify the determinants of their satisfaction. Thus, it was aimed to achieve an econometric model to measure the influence of the major determining factors of patient satisfaction and its effects, based on structural equation modelling (SEM).

An advantage of *estimating the relations between variables through system equations* is the fact that they *take into account the simultaneity of the variables and the estimation problems,* estimating simultaneously the coefficients from the system using its whole information. *Another advantage of using SEM is the important economic background they have* (Ruxanda, Muraru, 2010, p.52).

3.1.1. Problem definition, research purpose, objectives and hypotheses

Along these lines, the identified **decision problem** consists in finding the answer to the following two questions: *What determines patient satisfaction and to what extent?,* respectively *How does it (satisfaction) manifest?* Thus, the **purpose of this research** is to identify the determining factors of patient satisfaction and its effects, in healthcare.

In accordance with the above mentioned purpose, we have set the following **objectives and hypotheses:**

Table 1. Research objectives and hypotheses

Objectives		Hypotheses
O1	Determining the influence of the perceived healthcare quality on patients' satisfaction towards the healthcare provider most often frequented.	**H1** The perceived healthcare quality has a direct, positive influence on patients' satisfaction towards the healthcare provider most often frequented.
		H1' *The interpersonal quality has the greatest influence on patient satisfaction.*
		H1'' *The relationship between the perceived healthcare quality and patient satisfaction is influenced by the demographic variables of this research.*
O2	Determining the influence of services' rates on patients' satisfaction towards the healthcare provider most often frequented.	**H2** Service's rates have a direct, positive influence on patients' satisfaction towards the healthcare provider most often frequented.
		H2' *The relationship between services' rates and patient satisfaction is influenced by the demographic variables of this research.*
O3	Determining the influence of personal factors (knowledge, previous experience, emotions/ mood) on patients' satisfaction towards the healthcare provider most often frequented.	**H3** Personal factors have a direct, positive influence on patients' satisfaction towards the healthcare provider most often frequented.
		H3' *Emotions have the greatest influence on patient satisfaction.*
		H3'' *The relationship between personal factors and patient satisfaction is influenced by the demographic variables of this research.*
O4	Determining the influence of contextual factors (urgency, family members' opinions, influence/ opinions of other patients) on patients' satisfaction towards the healthcare provider most often frequented.	**H4** Contextual factors have a direct, positive influence on patients' satisfaction towards the healthcare provider most often frequented.
		H4' *The opinions of the family members have the greatest influence on patient satisfaction.*
		H4'' *The relationship between contextual factors and patient satisfaction is influenced by the demographic variables of this research.*

Objectives	Hypotheses	
O5 Determining the influence of patient satisfaction on their loyalty towards the healthcare provider most often frequented.	**H5**	Patient satisfaction has a direct, positive influence on their loyalty towards the healthcare provider most often frequented.
	H5'	*Patient satisfaction has a direct, positive influence on their intention to repurchase the healthcare services of that provider.*
	H5"	*Patient satisfaction has a direct, positive influence on their intention to recommend the healthcare services of that provider.*
	H5"'	*Patient satisfaction has a direct, positive influence on the positive word of mouth about that provider.*
	H5""	*The relationship between patient satisfaction and their loyalty is influenced by the demographic variables of this research.*
O6 Determining the influence of patient satisfaction on their compliance with treatment.	**H6**	Patient satisfaction has a direct, positive influence on their compliance with treatment.
	H6'	*The relationship between patient satisfaction and their compliance with treatment is influenced by the demographic variables of this research.*
O7' Measuring patient satisfaction towards the healthcare provider most often frequented.	*H7'*	*Most patients are satisfied with the healthcare provider most often frequented.*

3.1.2. The proposed conceptual model: *Model of patient satisfaction determinants in healthcare*

The proposed model (Fig. 1.) is a new one, created by combining elements of existing models (Zeithaml, Bitner, Gremler, 2012; Dagger, Sweeney, Johnson, 2007), based on relevant aspects of the literature (Donabedian, 2003; Ransom, Joshi, Nash, Ransom, 2008) and on the discussions with the managing staff of several clinics and hospitals (part of a previous qualitative research).

Given the concerns in the literature about the importance of studying emotions in healthcare (Bagozzi, Gopinath, Nyer, 1999; Krampf, Ueltschy, d'Amico, 2003), we have added two items regarding patient's *emotions and mood* during the healthcare service provision, as a component of the latent variable *contextual factors*.

Furthermore, as regards the effects of patient satisfaction, besides patients' *loyalty* towards the healthcare provider, we have added the variable *compliance with treatment* (based on the discussions with the managing staff of several clinics and hospitals, who participated in the qualitative research, and on the article written by Nordmann, Denis, Vigneux, Trudeau, Guillemin and Berdeaux, 2007).

Thus, this model shows which are the determining factors of patient satisfaction and its effects.

3.1.3. Questionnaire design

The questionnaire contained 23 questions, of which 22 closed questions (dichotomous and multichotomous) and 1 open question. Also, research variables were measured using nominal, ordinal and interval scales. The questionnaire included a filter question; the main selection criterion was the request of healthcare services in the last year.

3.1.4. Sample size and structure

Sample size was calculated using the formula:

$$n = \frac{t^2 * p(1-p)}{\Delta\omega^2}$$, where:

n – sample size;
t – confidence interval;
p – proportion of components with the attribute present;
Δω – margin of error.

Thus, given a probability of ensuring research results of 95% (a 0.05 confidence interval) and a margin of error of ± 5%, the sample size is a least 385 respondents.

Data collection (between 29 May and 03 August 2014) resulted in a total of 589 questionnaires. However, after checking the created database, 38 questionnaires were rejected (because they were incomplete). Also, 158 questionnaires did not meet the main selection criterion (patients did not receive healthcare in the last year), so that the final number of questionnaires analyzed was 393.

As regards the sampling technique, we used the non-probability, snowball sampling (Cătoiu, 2009, p.525).
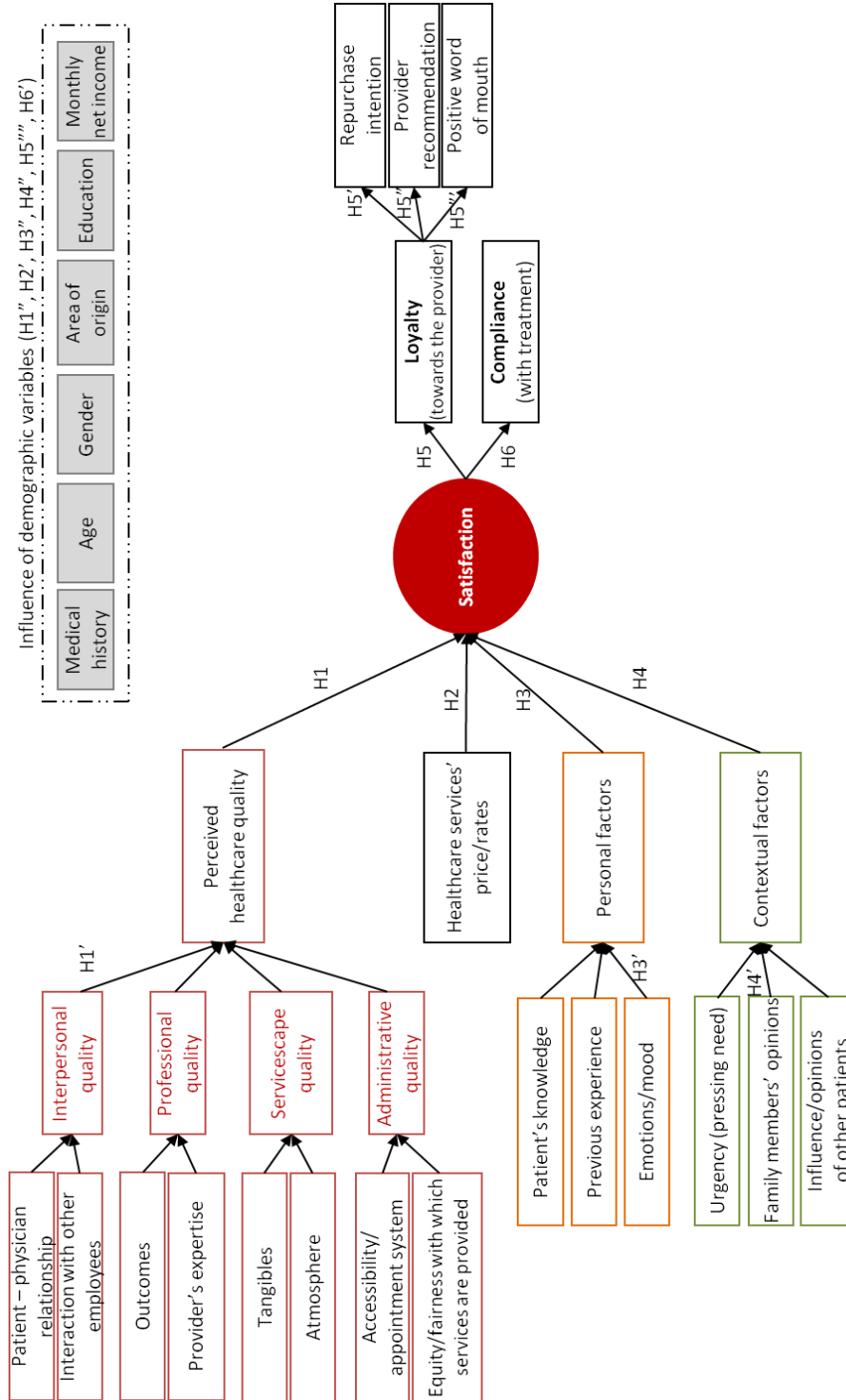
Figure 1 – The proposed model, of patient satisfaction determinants in healthcare

3.1.5. Data collection

The respondents were patients of healthcare units from Bucharest and Sibiu and Timiş counties who received healthcare in the last year. The unit of observation coincided with the unit of analysis.

The information sources used were primary, external, and cross-sectional. Data was collected through an online survey (available on the www.isondaje.ro platform, on the link www.isondaje.ro/sondaj/334986001/), between 29 May and 03 August 2014. The link was distributed by email, on social networks and by several physicians (who sent the link to their patients). Thus, each respondent was asked to redistribute the link to at least one person.

4. Results

The data analysis technique used was the structural equation modelling (SEM), using the soft-ware WarpPLS 4.0. Thus, to determine the influence of the **perceived healthcare quality** on patients' satisfaction towards the healthcare provider most often frequented (fig. 2) a number of statements were formulated. All of them were related to the following four components of healthcare quality:

- interpersonal quality (measured by the variables: (1) patient – physician relationship, described by the attitude/behaviour of the physician and communication, and (2) the interaction with other employees: nurses, frontline employees, etc.);
- professional quality (measured by the variables: (1) outcomes achieved and (2) provider's expertise: knowledge, qualifications, or skills);
- servicescape quality (measured by the variables: (1) tangibles: design, medical equipment, furniture and (2) atmosphere);
- administrative quality (measured by the variables: (1) accessibility / appointment system and (2) the equity/fairness with which services are provided).

Data analyses confirmed the hypothesis according to which the perceived healthcare quality influences in a direct, positive manner patients' satisfaction towards the healthcare provider most often frequented (the path coefficient's value (β) = 0.37, significant at (P) <.01).

Similar to quality, the **rates of the provided healthcare services** (fig. 2) influence in a direct, positive manner patients' satisfaction (β = 0.26; P<.01).

The influence of **personal factors** on patients' satisfaction (fig. 2) was measured by the variables: (1) patient's knowledge, (2) previous experience, and (3) emotions/mood. Along these lines, data analyses confirmed the direct, positive influence of the latent variable personal factors on patients' satisfaction. At the same time, it was found that the previous experiences have the greatest influence on patients' satisfaction (β = 0.18; P<.01), although, according to the literature, it was expected that emotions would have the greatest influence (since these are central to the actions of consumers, both influencing and being influenced by the external events, attitudes and actions of other individuals involved (Bagozzi,
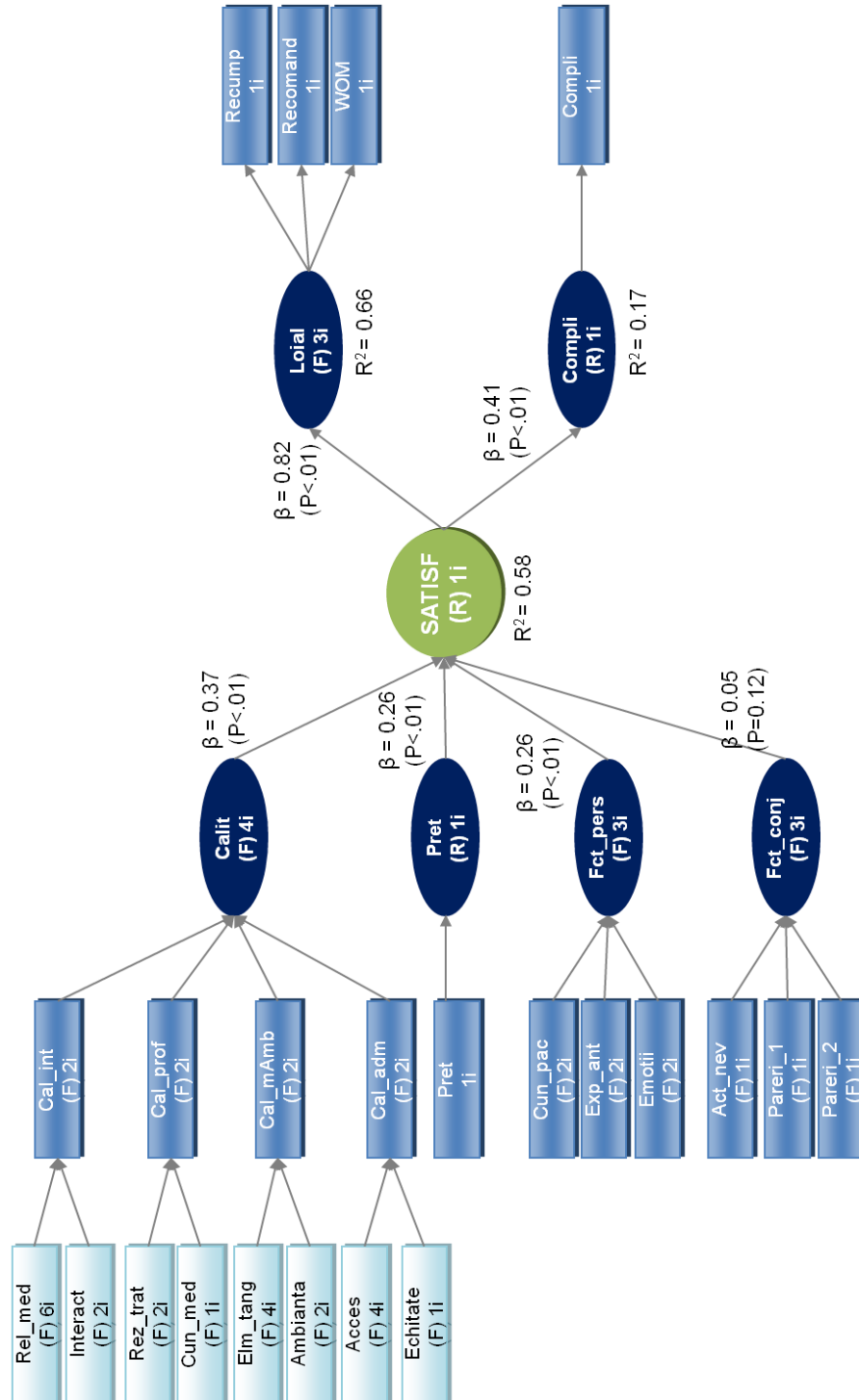
Figure 2 – Model of patient satisfaction determinants in healthcare (analysed by variance-based SEM, using the soft-ware WarpPLS 4.0)

Gopinath, Nyer, 1999, p.184; Ellsworth, 1994 in Krampf, Ueltschy, d'Amico, 2003, p.35).

The last factor analysed was the latent variable ***contextual factors*** (fig. 2), measured by the variables: (1) urgency (pressing need), (2) family members' opinions, and (3) influence/opinions of other patients. In this regard, the variable urgency seems so have the greatest influence on patients' satisfaction ($\beta = 0.16$; P<.01), although the latent variable contextual factors, as a whole, is not statistically significant (P is greater than 0.05 and the β coefficient less than 0.1). Thus, this latent variable could be improved by refining the items included or by including other items.

Patients' satisfaction (towards the healthcare provider most often frequented) was measured using a five point semantic differential. Most questioned patients (62.6%) affirmed they are satisfied with their healthcare provider (fact confirmed by the overall score of 3.98).

In addition to identifying the determinants of patient satisfaction, previously mentioned, the research sought to identify the satisfaction responses as well, based on research findings from the literature. Consequently, a first satisfaction response is ***patients' loyalty*** (fig. 2), measured by the variables: (1) repurchase intention, (2) provider recommendation and (3) positive word of mouth. The hypothesis regarding this variable have been also confirmed ($\beta = 0.82$; P<.01). Hence, patients' satisfaction has a direct, positive influence on their loyalty towards the service provider, respectively their intention to repurchase the services provided and to recommend those services, as well as their opinions about the healthcare provider.

Another satisfaction response is patients' ***compliance with treatment*** (fig. 2), the results of the research confirming the direct, positive influence of patients' satisfaction on this variable ($\beta = 0.41$; P<.01).

The accuracy of the measurements and the internal consistency of the latent variables of the model are good (according to the values of the Cronbach's Alpha and Raykov's reliability rho coefficients - tab. 2). Also, the items are loading on the variables they belong to, resulting a good convergent and discriminant validity, as well as a good predictive power of the dependent latent variables (according to the values of the Q squared coefficients - tab. 3).

Table 2. Cronbach's Alpha and Raykov's reliability rho coefficients' value

Latent variable name	Cronbach's Alpha	Raykov's reliability rho	Number of items
First level factors			
Patient - physician relationship	0.934	0.948	6
Interaction with other employees	0.869	0.938	2

Latent variable name	Cronbach's Alpha	Raykov's reliability rho	Number of items
First level factors			
Outcomes achieved	0.858	0.934	2
Tangibles	0.917	0.942	4
Atmosphere	0.894	0.950	2
Accessibility / appointment system	0.834	0.890	4
Patient's knowledge	0.449[1]	0.784	2
Emotions / mood	0.579	0.826	2
Second level factors			
Interpersonal quality	0.762	0.894	8
Professional quality	0.831	0.922	3
Servicescape quality	0.924	0.963	6
Administrative quality	0.846	0.929	5
Personal factors	0.765	0.865	5
Contextual factors	0.812	0.889	3
Loyalty (towards the provider)	0.894	0.934	3
Third level factors			
Perceived healthcare quality	0.875	0.915	22

Table 3. Q squared coefficients' value

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0.554	0.664	0.171

After analyzing the direct effects (by calculating the path coefficients β and the R-squared coefficients of determination) the purpose of the research was achieved, the determinants of patient satisfaction and its responses, in healthcare, being identified. Hence, *the **perceived quality of the provided healthcare services**, those **services' rates** and the **personal factors influence up to 58% patients' satisfaction***. Also, ***patients' satisfaction influences up to 66% patients' loyalty*** (towards the healthcare provider most often frequented) ***and up to 17% their compliance with treatment***.

Also, because the model fit and quality indices have very good values, the proposed model is validated.

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[1] As Cronbach's Alpha coefficient's value increases with the number of items used, some authors (Peter, 1997, p.180; Zinnbauer, Eberl, 2004, p.6) consider that, for latent variables measured by only two or three items, the minimum accepted value of this coefficient is 0.4.

5. Conclusions

In terms of ***managerial implications***, managers should be concerned with monitoring the attributes critical to patient satisfaction that can be controlled by the organization, given the fact that a patient's willingness to recommend the organization/service to a friend results from how well he/she was treated by the employees with whom he/she interacted directly (Reichheld, 2003). Therefore, special attention should be paid to the processes of recruitment, selection, training and motivation of employees, because employees can be a competitive advantage.

Since the perceived healthcare quality has the greatest influence on patient satisfaction ($\beta = 0.37$; P<.01), respectively the professional quality, as stated previously, managers should pay particular attention to the recruitment, training and motivation of employees. Patients analyze the physician's professionalism, his/hers knowledge and skills in terms of the relationship with him/her and depending on what they were able to understand, being interested foremost in the achieved outcomes.

Furthermore, patient satisfaction is influenced by the waiting time and the equity with which services are provided. Therefore, healthcare providers must develop efficient appointment systems, trying to minimize the waiting time or to make the waiting as pleasant as possible when it cannot be avoided.

Last but not least, managers should assess the organization's performance (as regards the attributes critical to patient satisfaction) comparing with their main competitors, in order to identify points of difference or of parity with competitors. Thus, depending on the results, it can be set certain priorities or corrective actions (if needed). Also, the research should be longitudinal, in order to monitor progress.

In conclusion, knowing patients' satisfaction and the causes which generated their satisfaction or dissatisfaction enable the organization to take better decisions about its activity and/or services offered.

As regards the ***limitations*** *and the* ***future directions of research***, a shortcoming of this study lies in the sampling method chosen (the non-probability, snowball sampling), which does not allow the generalization of the research results to the entire population. For this reason, a further research could analyze these aspects using a probability sampling technique (for example: quota sampling).

Also, given the fact that satisfaction is a dynamic phenomenon that changes over time with consumption/usage and other situational factors (Peter, Olson, 2010, p.388; Zeithaml, Bitner, Gremler, 2012, p.80), this study could be carried out longitudinal, in order to study the evolution of patient satisfaction.

Last but not least, because the influence if the latent variable *contextual factors* (measured by the variables: urgency (pressing need), family members' opinions, and influence/opinions of other patients) is not statistically significant, this latent variable could be improved by refining the items included or by including other items. In addition, another future direction of research may conduct a series of semi-structured interviews, for a better understanding of the determinants of the Romanian patients' satisfaction, since those identified using

the proposed model explain only 58% of it. Thus, applying this model using a different methodology (for example: another sampling technique, conducting a longitudinal study, etc.) or in combination with other new variables, may constitute a starting point for further research and may lead to new findings and as a consequence enrich the existing literature.

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