Journal of Tourism & Hospitality

Research Article **Open Access**

Expectations of Russian Medical Tourists on German Health Care Services: A Kano Model-Based Analysis

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Abstract

Introduction: Medical tourism is a steadily growing market in Germany and has a great value of economic interest. Although the majority of patients come from Russia, little information on the needs and expectations of this patient group exists.

Methods: Based on the Kano model which is an established research tool for assessing customer's expectations in industry and healthcare, an online questionnaire was constructed. Based on literature review and an interview with a leading medical tourist agency 15 relevant service requirements were identified. Participant recruitment was accomplished via social media platforms and email invitation of Russian patients who have already received care in Germany. A typical stepwise analysis was performed after the Kano categories were derived for each requirement. As a supplementary aspect an analysis of the relative importance and satisfaction levels was performed.

Results: 152 participants without (pn) and 38 with (pw) previous experiences in the German healthcare system completed the questionnaire. 9 requirements were categorized as a one-dimensional, 4 as an attractive and one each as a must-be and an indifferent attribute by pn-subjects. Almost all requirements which were classified as one-dimensional by pn-subjects were classified as must-be attributes by pw-subjects.

Conclusion: Typical one-dimensional attributes were related to services associated with the planning and travel process, typical attractive requirements were associated with additional support during hospital stay as a sophisticated room equipment and Russian-speaking staff. To maintain satisfaction must-be and attractive attributes have to be well controlled mainly by facilitating the travel process. Disproportional gains in satisfaction can be achieved by special offers during hospital stay.

Keywords: Medical tourism; Expectation of patients; Kano model; Patient satisfaction

Introduction

Medical tourism is a small but steadily growing market in Germany. In 2013 about 1.2 billion Euros were generated from treatment of 241.000 foreign patients within the German health system. The number of patients rose by 7.2% compared to 2012. From a hospital's perspective, medical tourism has a great value of economic interest. Earnings from foreign patients do not underlie annual budget constraints and may provide an advantage within a highly competitive hospital market. From a patient' perspective Germany offers a technologically advanced health care system with highly trained doctors, first class medical faculties and costs much below the same procedures in the US [1-5].

The majority of foreign patients seeking medical treatment in Germany come from Russia. Within ten years a nine fold increase in Russian inpatients from 1181 to 11.000 in 2013 was observed [1-5]. Medical treatment in Germany has always been seen as a special privilege and dates back to the famous Russian writers Turgenev and Dostojewski who searched for cure in Baden-Baden and Travemünde [6]. Despite the growing number of patients and the long tradition of medical tourism from Russia the expectations and preferences among this patient group have hardly been investigated. Understanding and improving customer's expectations is considered a prerequisite for delivering superior services and finally for a successful enterprise development [7]. Based on the Kano model, which is an established research toolkit for assessing customer expectations in industry and health care, our study sought to analyze and better understand the needs of Russian consumers within the German health system [8].

Methods and patient recruitment

The Kano model is based on the two-factor motivation theory introduced by Herzberg et al [9]. According to his theory an individual's perception of satisfaction or dissatisfaction relates to various intrinsic and extrinsic factors. Each attribute can influence a person's satisfaction or dissatisfaction but not both. Based on the level of impact of each attribute on overall customer satisfaction Kano et al. distinguished five categories: attractive (A), one dimensional (O), must-be (M), indifferent (I) and reverse (R) [10].

Attractive attributes are usually unexpected by the customers and can result in great satisfaction if they are available. One dimensional attributes are those for which better fulfillment leads to a direct, linear increment of customer satisfaction. Must-be attributes correspond to the basic requirements of a quality of a product. They lead to extreme customer dissatisfaction if they are absent or their performance is poor. Indifferent attributes do not affect customer's satisfaction or

dissatisfaction. Reverse attributes are rare, but particularly important. If provided, these service attributes will lead to dissatisfaction.

Data collection was accomplished using a standardized, self-administered Internet-based questionnaire. The preliminary version of the questionnaire was constructed based on a review of requirements of Russian customer's by Juszczak et al. [11,12]. Furthermore, the requirements were discussed and revised by Mikhail Khaitine, the manager of the recruitment agency Med Cologne GmbH & Co. KG. Table 1 gives an overview of the identified requirements (Table 1).

For the design of the questionnaire the Internet based software tool "thesis tools" was used. The final questionnaire consisted of three different sections: a personal data form, the original Kano-questionnaire and a customers' satisfaction survey. Personal data included information on: age, sex, home country, pre-existing inpatient treatments in Germany and how the contact to the hospital was created. In the Kano-approach each question has two versions. The functional question asks how the customer feels if an attribute is present and the dysfunctional question asks how the customer feels if an attribute is absent. An example of the Kano-questionnaire is shown in Table 2. The third part of the questionnaire served to validate the Kano-approach. Therefore, the importance that customers place on certain attributes and customers satisfaction were directly measured on a 5 point scale, from 5-very important to 1-completely unimportant or 5-completely satisfied to 1-completely dissatisfied [13] (Table 2).

Participant's recruitment for the Internet based questionnaire was accomplished in two ways:

(a) a hyperlink to the online questionnaire placed on the webpages of the Social Media "odnoklassniki.ru" and "facebook.com" and the internet portal "germany.ru" (84% of all participants)

(b) direct email invitation of Russian patients who have already been treated in one of the following German Hospitals (University Hospital Duesseldorf, Asklepios Hospital St. Augustin, Johanniter-Hospital Duisburg-Rheinhausen) or used the service of Med Cologne GmbH & Co. KG. as a medical service organizer (16%). Access to the survey was provided via a hyperlink inserted in the email text.

All participants were encouraged to gain further participants among friends and relatives.

Data analysis

The analysis of the Kano questionnaire uses several approaches. From the results obtained from each Kano question, consumers'

1	Native language support
2	Document preparation
3	Support in travel organization
4	Airport transfer
5	Treatment by the head of the department
6	Superior room equipment
7	Hospital translation service
8	Round the clock service by the agency
9	Russian speaking medical staff
10	Support in leisure time activities
11	Flexibility of the agent
12	Follow-up visits by the agent during in-hospital stay
13	Detailed invoice
14	Support in invoice preparation
15	Follow up assistance after return

Table 1: Example set of functional and dysfunctional questions.

Functional question: If communication with your agent is done in Russian, how would you feel?	1) I like it that way 2) It must be that way 3) I am neutral 4) I can live with it that way 5) I dislike it that way
Dysfunctional question: If communication with your agent is not done in Russian, how would you feel?	1) I like it that way 2) It must be that way 3) I am neutral 4) I can live with it that way 5) I dislike it that way

Table 2: Example set of functional and dysfunctional questions.

		Dysfunctional				
		like	acceptable	no feeling	must-be	do not like
Functional	like	Q	A	A	A	O
	acceptable	R	I	I	I	M
	no feeling	R	I	I	I	M
	must-be	R	I	I	I	M
	do not like	R	R	R	R	Q
A: attractive **I**: indifferent		**M**: must-be **O**: one-dimensional		**Q**: questionable **R**: reverse		

Table 3: Kano classification table for responses to functional and dysfunctional questions.

requirements can be classified into one of the five categories based on the highest frequency of responses. The dominant consumer view is represented by the most repeated response (Table 3).

Typically, consumer requirements cannot be unambiguously assigned to one distinct category. In these cases the application of evaluation rules is useful. $M > O > A > I$ identifies a hierarchy among the requirements the service must fulfill. Primarily those features have to be taken into consideration, which have the greatest influence on customers' satisfaction. Must be attributes gain the largest weights whereas indifferent attributes have little or no importance to the customer.

Category strength values (Cat) were introduced to measure how close a service requirement is assigned to a Kano category. A Cat value ≥ 6% is considered to reflect an unambiguous allocation to a category. According to Lee and Newcomb factors with category strengths < 6% are considered to belong to a mixed category [14]. For further classification of mixed category factors the total strength (Tot) value was defined. It reflects the total percentage of attractive, one-dimensional, and must-be responses for a service requirement. The higher the value of the total strength, the higher the proportion of consumers to whom the requirements are of importance, independent from the category.

To improve the quality of information gathered, the interpretation of the Kano responses was further supplemented by a statistical test introduced by Fong et al. The Fong test indicates whether an assignment of requirements to individual Kano-categories is statistically significant or not.

$$|a-b| < 1.65 \times \sqrt{\frac{(a+b) \times (2 \times n - a - b)}{2 \times n}}$$

The customer satisfaction (dissatisfaction) coefficient is a quantitative measure of the extent to which satisfaction (dissatisfaction) increases if a service requirement is met (not met). It is useful to evaluate the average impact of a distinct service requirement on consumers' satisfaction

customer satisfaction coefficient (CS+) $\frac{A+O}{A+O+M+I}[0;1]$

customer dissatisfaction coefficient (CS+), [0;-1]

$$\frac{O+M}{(A+O+M+I)\times(-1)}[-1;0]$$

Values above 0.5 or below -0.5 indicate a relevant degree of satisfaction or dissatisfaction.

The Kano method does not reveal the relative importance or satisfaction of various attributes in the customer's overall evaluation. To overcome this major limitation an evaluation of the relative importance of quality attributes and the relative satisfaction level were analyzed in parallel with the Kano approach as suggested by Richter et al. [13].

Results

Characteristics of the sample population

During the recruitment period of February 2, 2015 through March 14, 2015 190 participants completed the questionnaire. General characteristics of the sample population are displayed in Table 4. For further analysis the sample population was divided in participants with previous experience (pw; n = 38) and with no previous experience in the German Health System (pn; n = 152). The majority of pw participants got access to the German Health System with support of health provider dependent or independent agencies (n = 22). The remaining participants dealt with the problem of travel organization and hospital contact on their own. One patient did not answer the question on travel and hospital organization (Table 4).

Analysis of service attributes (Kano classification or evaluation of the questionnaire)

After having combined the answers to the functional and dysfunctional question the results of each requirement criteria are listed in a frequency analysis. Table 5 and 6 summarize the overall distribution of requirement categories for pn- and pw-participants. In a first step, the category selected most can be considered as an approximate Kano classification result. For a more detailed weighting process the evaluation rule M > O > A > I, the strength values and the results of Fong's test were provided. To evaluate how strong requirement criteria may influence satisfaction or, in case of "non-

fulfillment" customer's dissatisfaction, the Kano-evaluation was supplemented by a CS-coefficient analysis (Tables 5 and 6).

From the perspective of a pn-customer most service criteria were classified as one-dimensional attributes. They contribute to both satisfaction and dissatisfaction. For example, customer's level of satisfaction will increase if there is a high level of native language support or the agent provides much flexibility. On the contrary, an unreliable travel organization or a badly organized airport transfer may provoke dissatisfaction. Room equipment, offers for leisure activities and round the clock service by the agency were categorized as attractive attributes which means that these services provide satisfaction when present and can thus be used to attract customers. During in-hospital stay follow-up visits by the agent are considered to be an indifferent requirement which implies that whether this service is present or not, there is neither satisfaction nor dissatisfaction.

The CS-coefficient matrix for pn-customers reveals that most requirements are allocated to upper or lower right quadrants (Figure 1). As expected from their one-dimensional character quadrant 1 attributes have a basic potential to create satisfaction if fulfilled. However, their impact on satisfaction is rather small as indicated by CS-coefficients close to 0.5. In contrast, nonfulfillment of these requirements has a high potential to create dissatisfaction (Figure 1).

The perspective of pw-participants differs from the picture gained in pn-participants (Figure 2). It is interesting to note that most service elements were classified as must-be attributes by participants with former experiences in the German health system. These service elements are typically taken for granted and are not explicitly demanded. Only follow-up assistance and a round the clock service were categorized as one-dimensional factors. Similar to pn-participants the attribute "follow-up visits during in-hospital stay" was considered as an indifferent requirement. The CS-coefficient matrix demonstrates a relatively balanced distribution across all 4 quadrants. In concordance with the high prevalence of must-be attributes several requirements as "native language support", "document preparation" and the "flexibility

		Total	Russia	Kazakhstan	Ukraine	Other countries*
Sex	Female	131	73	39	12	7
	Male	59	31	14	11	3
Age	<18	3	0	0	3	0
	18-25	5	2	2	1	0
	26-35	31	18	5	3	5
	36-45	59	31	23	3	2
	46-55	27	20	3	4	0
	56-65	36	16	11	7	2
	66-75	27	16	9	1	1
	>75	2	1	0	1	0
Experience in GHS**	Yes	38	24	5	9	0
	No	152	80	48	14	10
former access to GHS	Agencies	16	13	0	3	0
	Hospital	6	3	0	3	0
	Independently	15	8	5	2	0
future access to GHS	Agencies	30	16	5	8	1
	Hospital	139	81	39	12	7
	Independently / do not know	21	7	9	3	2
* Usbekistan, Belarus, Kirgistan, Moldau, Israel, Amerika						
** GHS = German Healthcare System						

Table 4: General characteristics of the entire group of survey participants.
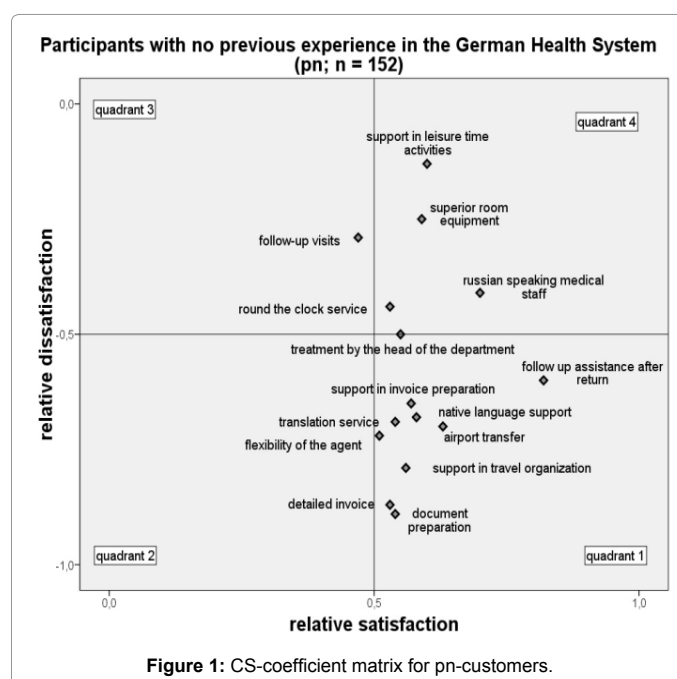
Figure 1: CS-coefficient matrix for pn-customers.

Requirements	A	O	M	I	R	Q	category	Tot	Cat	Fong test
1. native language support	26	**58**	42	20	0	6	**O**	82.9	10.6	sig
2. document preparation	10	**71**	63	7	0	1	**O**	94.7	5.3	n.sig
3. support in travel organization	15	**68**	49	16	2	2	**O**	86.8	12.5	sig
4. airport transfer	25	**70**	36	20	0	1	**O**	86.2	22.4	sig
5. treatment by the head of the department	41	**42**	33	34	0	2	**O**	76.3	0.6	n.sig
6. superior room equipment	**65**	25	13	49	0	0	**A**	67.8	10.6	sig
7. hospital translation service	29	**52**	52	17	1	1	**M**	87.5	0	n.sig
8. round the clock service by the agency	**48**	32	34	36	2	0	**A**	75.1	7.9	sig
9. Russian speaking medical staff	**61**	44	17	28	0	2	**A**	80.2	11.2	sig
10. support in leisure time activities	**74**	17	2	59	0	0	**A**	61.2	9.9	sig
11. flexibility of the agent	15	**62**	46	27	0	2	**O**	81	10.5	sig
12. follow-up visits by the agent during in hospital stay	45	24	19	**60**	4	0	**I**	54.9	12.9	sig
13. detailed invoice	8	**69**	57	11	2	5	**O**	88.2	7.9	n.sig
14. support in invoice preparation	21	**64**	34	31	1	1	**O**	78.3	19.7	sig
15. follow up assistance after return	48	**75**	15	12	0	2	**O**	90.8	17.7	sig

Table 5: Evaluation according to the frequencies of answers (pn-participants; n=152).

Requirements	A	O	M	I	R	Q	category	Tot	Cat	Fong test
1. native language support	26	**58**	42	20	0	6	**O**	82.9	10.6	sig
2. document preparation	10	**71**	63	7	0	1	**O**	94.7	5.3	n.sig
3. support in travel organization	15	**68**	49	16	2	2	**O**	86.8	12.5	sig
4. airport transfer	25	**70**	36	20	0	1	**O**	86.2	22.4	sig
5. treatment by the head of the department	41	**42**	33	34	0	2	**O**	76.3	0.6	n.sig
6. superior room equipment	**65**	25	13	49	0	0	**A**	67.8	10.6	sig
7. hospital translation service	29	**52**	52	17	1	1	**M**	87.5	0	n.sig
8. round the clock service by the agency	**48**	32	34	36	2	0	**A**	75.1	7.9	sig
9. Russian speaking medical staff	**61**	44	17	28	0	2	**A**	80.2	11.2	sig
10. support in leisure time activities	**74**	17	2	59	0	0	**A**	61.2	9.9	sig
11. flexibility of the agent	15	**62**	46	27	0	2	**O**	81	10.5	sig
12. follow-up visits by the agent during in hospital stay	45	24	19	**60**	4	0	**I**	54.9	12.9	sig
13. detailed invoice	8	**69**	57	11	2	5	**O**	88.2	7.9	n.sig
14. support in invoice preparation	21	**64**	34	31	1	1	**O**	78.3	19.7	sig
15. follow up assistance after return	48	**75**	15	12	0	2	**O**	90.8	17.7	sig

Table 6: Evaluation according to the frequencies of answers (pw-participants; n = 38).

of the agent" were allocated to quadrant 2. If these features are not met, a strong dissatisfaction occurs (Figure 2).

The relative importance and satisfaction portfolio gives an overview of the ranking of service attributes for the service provider (Figure 3). Service attributes located at the left (right) side of the quadrant matrix indicate a below (above) average satisfaction of the customer. The upper (lower) quadrants represent attributes which are of major (minor) importance for the customer. From the viewpoint of the service provider it is important to improve critical factors to accomplish a further gain in customer satisfaction and to keep the quality of start factors (Figure 3).

Discussion

Understanding customer's needs and knowing customer's expectations is a crucial element of business success and concerns all types of business organizations. A high level of customer satisfaction leads to a high level of customer loyalty and creates a sustainable competitive advantage within a saturated market [15]. To ensure that newly developed products meet the customer's needs, scientific evaluation tools as the Kano model have frequently been applied in different industrial branches [16-18].

The Kano model has also been adopted to analyze and enhance customer's satisfaction with health care services [19]. Medical tourism
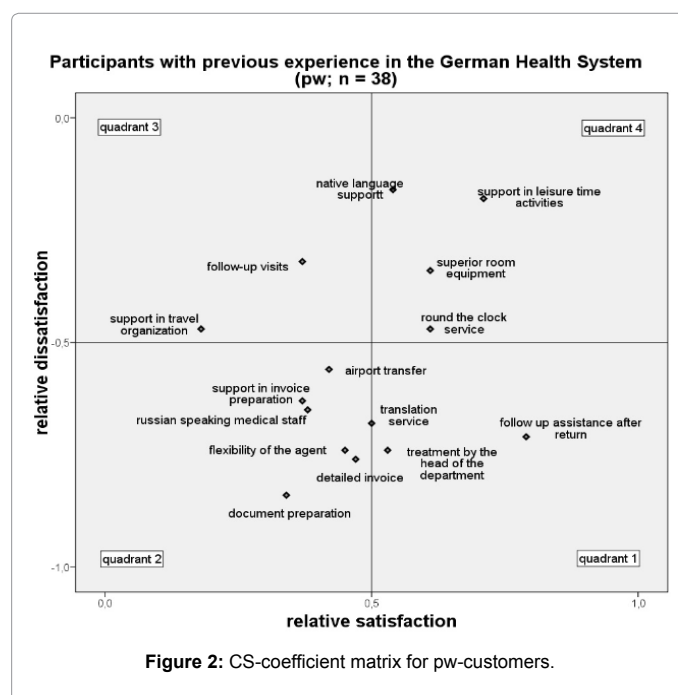

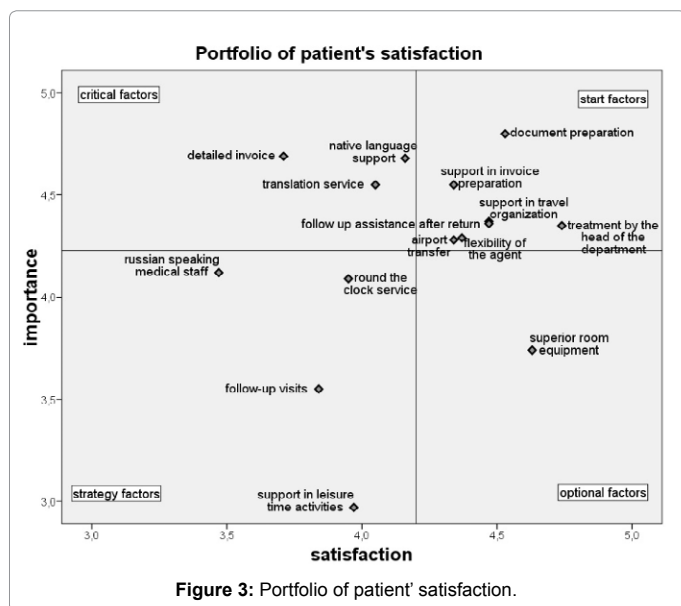**Figure 2:** CS-coefficient matrix for pw-customers.

Figure 3: Portfolio of patient' satisfaction.

is a steadily growing and economically attractive segment within the highly competitive German health care market. Analyzing the service requirements of foreign patients may help to better understand weaknesses and strengths of established health care structures and enhance the ability of health care providers to attract patients. Research-based analysis in the context of medical tourism is vital for decision-makers to formulate informed decisions and develop goals and strategies. However, this issue has received little research attention in the past [20].

Using the Kano model this paper reports the results of a survey on the expectations of Russian customers in the German health care system and medical tourist agencies. Service quality is a multi-dimensional construct consisting of several attributes [21]. According to Kano these attributes can be classified into one of five categories. Our study revealed that the requirements of customers without previous experience in the Germany health system can be mainly characterized as one-dimensional attributes. In these cases a linear relationship between customer's satisfaction and the extent to which the service attribute is present can be assumed. Typical requirements identified in this customer group were: native language support, airport transfer and travel organization. What these features have in common, is the fact, that they are closely related to the medical purpose of the journey. Customers will be satisfied if the handling of custom formalities and transportation to the hospital is well organized. This view is understandable, since logistic problems during travel may cause unpunctuality which in turn may interfere with the treatment schedule or provoke extra costs. Furthermore, the wish to avoid trouble may become important in face of illness or expected medical care.

An interesting finding resulted from the comparison of expectations between survey participants with and without previous experiences in the German health system. Almost all attributes which were characterized as one-dimensional by patients without experiences were found to be must-be attributes in patients with former experiences. From the customer's viewpoint this category shift may suggest that the inconveniences of the travel and registration process are more important than previously expected. In case of a follow up visit the customer is not willing to make compromises in these aspects and considers these attributes as basic requirements. Another possible explanation is that

current expectations may be shaped by previous experiences. The dynamic nature of customer's expectations has previously been noticed and has been attributed to an individual familiarization process with service attributes as well as influences from the service process itself [22]. Kano's theory presumes that requirements and their importance for the customer may change over time which means that attractive attributes become one-dimensional and one-dimensional attributes become must-be attributes [23,24]. Keeping the dynamic nature of customer expectations in mind may help healthcare providers to better understand customer behavior and to adopt their service strategies. Management experiences from industrial enterprises taught us, that it is important to anticipate changes in customer's needs to maintain satisfaction and motivate customers to renew their service interest. Business customers explicitly want providers to proactively address their future needs as part of an ongoing value creating process [25].

Investigations on consumer habits of Russian people during vacation periods point out that high class service and luxury are expected and there is a high willingness to pay high prices for additional service [26,27]. This attitude probably reflects a must-be requirement when allocated to Kano categories. Our findings differ from this view. Add-on services or convenience attributes as room equipment, round a clock care or leisure time activities received little relative importance levels and were classified as attractive attributes. Although such offers may contribute to overall satisfaction their absence will not lead to dissatisfaction. This apparent difference in consumer requirements of the same cultural group reflects an important characteristic of costumer's needs: their goal dependence. Thus, what we interpret as a typical cultural behavior in one situation may not be simply transferred to other circumstances.

The present findings may not only contribute to an increased understanding of service expectations of Russian customers but provide a valuable basis for resource allocation decisions. We noted that services attributes associated with the planning and travel process were mainly categorized as one-dimensional attributes by customers without previous experiences in the German health system. Improvements in the "tourism" aspect of medical tourism are expected to increase satisfaction in these patients. On the other hand in patients with former experiences it is simply important to keep the status quo. In case of must-be attributes additional efforts will not provoke a gain of satisfaction. Providing that must-be attributes and one-dimensional attributes are under control the introduction of attractive attributes may lead to a disproportional increase in satisfaction. Features as room equipment or Russian speaking staff are requirements that may cause much enthusiasm although not explicitly expected. These requirements may at first side appear to be difficult to accomplish. However, among the hospital staff native speakers can frequently been identified by broadcast calls or pre-prepared lists of employees with special language skills may help to seek support for scheduled visits. Finally, indifferent attributes as a round a clock agent service should be avoided. Their presence neither results in satisfaction nor dissatisfaction.

Limitations

Self-selection bias is an inherent problem of Web based surveys since responders are allowed to entirely decide for themselves if they participate in the study. Since pw-subjects were directly contacted this study group should be affected to a minor extent.

Our study provides no information on customer's expectations in the quality of medical care. Although these expectations are central from the customer's perspective the effectiveness of interaction with

health care providers was shown to be at least equally important. The change of expectations observed between pn- and pw- customers cannot be attributed to a follow up of individual customers but only to groups by their expectations with the provider.

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