

The Application of Kano Model in the Study of Client' Needs in Speech Therapy and Occupational Therapy Clinics

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ARTICLE INFORMATION	ABSTRACT
<p><i>Article Chronology:</i> Received: 20.02.2016 Revised: 20.04.2016 Accepted: 02.05.2016</p>	<p>Introduction: Supplying the requirements and consequently the customer's satisfaction has been one of the fundamental issues since the last decade. In active organizations in the section of health and treatment, individual's satisfaction will be considered as their feelings toward realizing their expectations. Therefore, the aim of study was to investigate the client needs in the speech therapy and occupational therapy clinics using the Kano model.</p> <p>Material and Methods: The current research has a descriptive-analytical nature that was conducted among 150 clients referred to the speech therapy and occupational therapy clinics in Kerman who have been randomly selected between the fall and winter 2014. The data were collected by Kano questionnaire that its validity had been approved by the content validity method (due to the standard questions) and its reliability by the testing and retesting method and calculating the Cronbach's alpha coefficient. The data then were analyzed using MS Excel and SPSS software and through the data frequency distribution in the adjusted table of Kano and calculating the satisfaction and dissatisfaction coefficients.</p> <p>Results: In this study, 32 needs were identified that 13 of them were must-be needs, 12 of them were one-dimensional ones, 5 of them were attractive ones, and 2 of them were categorized as indifferent needs. The highest satisfaction coefficient for the appropriate appearance of therapist was determined (0.66), and the highest dissatisfaction coefficient for having excellent communicative skills and good attitude of therapist was determined (-0.96).</p> <p>Conclusion: Managers and therapists of speech therapy and occupational therapy clinics can design their short-term and long-term plans, depending on the type of need and its satisfaction and dissatisfaction coefficient and based on the priorities that there are for needs in Kano model and consequently they can manage their resources and time efficiently.</p> <p>Keywords: Client needs; Kano model; Speech therapy; Occupational therapy; Rehabilitation</p>

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Introduction

Today, it is more important to determine and meet the customer requirements than to produce the products. Namely, if a company wants to be successful and survive in business life by adapting to the rapidly changing external environmental conditions, it should definitely determine the customer's demands and requirements in its target market and develop the

marketing plans and programs to satisfy them. It follows from this that marketing does involve dealing with the stages of a product from production to sale and the actions performed. Marketing starts with the investigation of the requirement of consumers who are expected users of that product before (1) attracting a new customer costs five times more to retain a customer (2).

The good service quality leads to the retention of existing customers and the attraction of new ones, reduced costs, an enhanced corporate image, positive word-of-mouth recommendation, and, ultimately, enhanced profitability (3). Since the customers know the quality of a product or service is equivalent to several factors, being aware of these factors and providing them can lead to increase the satisfaction and improve the quality of service from their perspective and the organizations can benefit from its results (4). In today's world, the priority has been given to the customer not only in the industry but also in the service organizations even the public service organizations or social welfare organizations. This trend is consistent with the view of one of the quality experts called "Jooran," who considers the quality as the success of product to cover the purpose of the product's user (5). The health care industry is also one of the service sectors in the world that is quickly growing. The customer satisfaction and providing the services based on the patient's view have become one of the most important issues which play an important role in creating the robust strategies (6).

The satisfaction measurement is important for three fundamental reasons: first, high levels of patient satisfaction with healthcare services lower the cost associated with new client acquisition. Second, satisfied patients are more easily retained, and the value of an existing client usually increases with tenure. As a result, patient satisfaction is a leading indicator of future financial performance. Third, the quality of customer care can only be enhanced when care providers are aware of how well they perform on key patient criteria (3).

Further, in the field of rehabilitation as one of the important areas of health service delivery, the attention to the needs of clients is very important. Because the rehabilitation programs are often long-term and are offered during the regular meetings, the clients' satisfaction or dissatisfaction will be effective on their behavior in the continuity and dynamism of therapy sessions and thus the effectiveness of the treatment (7). On the other hand, the attention to the needs helps the therapists and clinic managers to learn about their strengths and weaknesses and to consider the views of clients as the basis for their future planning. The patient satisfaction is an inner feeling; however, if it can be turned into the quantitative data and the aspects that lead to the patient satisfaction are converted into the measurable parameters associated with the different aspects of service, it can be realized to the needs and satisfaction of people (5). In fact, the importance of this research is on the same subject that what affects the people's satisfaction are turned to the cases that can be investigated using the Kano model so that all the managers and therapists of rehabilitation area can evaluate the extent to which the needs are supplied.

What distinguishes this study from the similar cases is that it is evaluated and classified the needs of clients in this area using a valid model, in which the needs are prioritized using a scientific model and the results have been also reported in both qualitative and quantitative form.

The Kano model was first developed by Dr. Noriaki Kano and his colleagues in 1984 (Kano et al., 1984) to categorize the attributes of a product or service, based on how well they are able to satisfy customers' needs; inspired by Herzberg's Motivator-Hygiene Theory in behavioral science (8). The Kano model has emerged into one of the most popular quality models nowadays (9).

The major difference in contrast to other widespread quality models is that Kano's model is based on the assumption of existence of nonlinear and asymmetric relationships between attribute-level performance of products/services and overall customer satisfaction. One of the major assumptions of the Kano model is that certain product/service attributes (quality elements) primarily have an impact on creating satisfaction, while others primarily have an impact on creating dissatisfaction. Correspondingly, in the model product/service, attributes are classified into five different categories of quality elements, depending on their character of impact on overall customer satisfaction. Based on the information from Kano questionnaire, it provides a quantitative approach to observe and follow the change over time (10).

Three types of non-functional requirements of a product or service that effects on the customer satisfaction in the different ways and shows a certain type of customer's needs are identified in the Kano model. They are as follows:

Must-be needs

These needs are in connection with the characteristics that must be present in a product or service, and if they are not satisfied, the customer will be dissatisfied to a large extent. However, their supply will not increase the customer satisfaction. The must-be needs are the principal characteristics of a product, and ultimately, completing them leads to the phrase "not dissatisfied" and the client accepts them as the must-be requirements of the product so is indirectly requesting them. The must-be needs are considered as the decisive competitive factors in each product, and if they are not completely satisfied, the customer will not be interested in the product in any way. In other words, these characteristics are essential for the entry of company to the market (11).

One-dimensional needs

It refers to those needs that provide the customer satisfaction based on their supply level. It means that if needs are completed to a greater extent, the customer satisfaction will be higher and vice versa. The one-dimensional needs are often explicitly requested by the

customer. These characteristics make the survival of the companies in the market (11).

Attractive needs

They are those product attributes that have a greater impact on the customer satisfaction and increase it surprisingly. The attractive needs are never explicitly stated by the customer or cannot be expected by the customer. If the customer does not get them, he/she will not feel dissatisfaction. However, the complete satisfaction of these needs will increase the customer satisfaction. Observing these characteristics turns the company into market leader (11).

Two other features may also be specified in the Kano model. These features include indifferent features and reverse features. The indifferent or neutral features are creating neither satisfaction nor dissatisfaction, and the absence of reverse features creates greater satisfaction than when they exist in the product or service (9). All the three types of service/product requirements can be seen in figure 1.

So far, the Kano model has been used in many researches in the areas of service and manufacturing. For example, the Kano model has been used by Ghandehari et al. (12) to identify and categorize the needs of visitors to the dental clinics, by Safi et al. (13) to identify and categorize the needs of faculty members, by Chen et al. (14) to examine the relationship between the facilities of services and the satisfaction of giving birth at home (the consent of the home delivery), by Srivastava and Parul (15) to improve the quality of health care in India, and by Bilgili et al. (1) to develop new products in the jewelry industry. In this study, we tried to identify, categorize, and prioritize the needs of clients to the speech therapy and occupational therapy clinics using the Kano model to further improve the quality of rehabilitation services and to satisfy the needs of clients in this area.

Materials and methods

This is a descriptive-analytic study that has an applied purpose and its study population comprised the patients referred to the private and public rehabilitation speech therapy and occupational therapy clinics in Kerman in the autumn and winter 2014. The sample was calculated using the formula $(N = Z^2 (1 - \alpha/2).s^2/d^2)$ according to Pailot's study and available researches and due to the number of referrals to these clinics in the same period as the previous year and by considering the criteria for receiving at least five treatment sessions. In this study, it was considered to be $Z = 1.96$, $s = 4.5$ (according to the source 9), and $d = 0.75$. According to our calculations, the sample size was approximately 139 people that in this study, 150 patients were considered. The research was conducted through interviewing with a number of clients to the speech therapy and occupational therapy clinics (in this study, 17 patients) who had used the services of these centers for at least five sessions as well as interviewing with the experts (experts who offer rehabilitation services) to identify the needs and demands of the clients. Then, each of the needs identified was asked in the form of a question in both favorable (positive) and unfavorable (negative) form and was provided for a number of clients who had been identified in the calculation of sample size and were selected by the random sampling through the questionnaire. In fact, the number of questions in the questionnaire was equal to the number of needs identified in the interview that both forms, if there is the desirable feature in the service provided (favorable) and if not (unfavorable), were followed by the clients' feeling. Each of the clients who received the Kano questionnaire must select one of five options specified in front of both forms of the question. To confirm the validity of the questionnaires, the formal validity method was used and five elites and experts in the field of rehabilitation had to approve them.

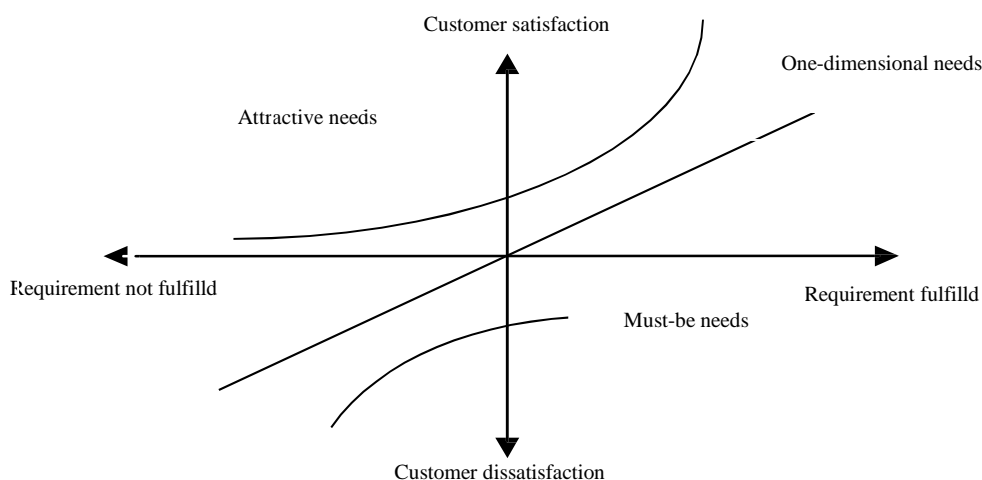


Figure 1. Kano model (1)

Table 1. The general form of questions in Kano questionnaire (5)

If ⁱ th feature of product or service x is good, how do you feel? (Favorable form of question)	1. I like this feature 2. This feature must be present 3. I do not care for it (no different for me) 4. The feature is tolerable for me and I can deal with it 5. I prefer not to exist this feature
If ⁱ th feature of product or service x is poor, how do you feel? (Unfavorable form of question)	1. I like this feature 2. This feature must be present 3. I do not care for it 4. The feature is tolerable for me and I can deal with it 5. I prefer this feature does not exist

To ensure the reliability, the initial reliability questionnaire was taken in the test-retest method. The final reliability was obtained 0.92 by the Cronbach's alpha, indicating very high internal consistency of the items. Table 1 shows the general form of the Kano model questionnaire.

To analyze the data from the Kano questionnaire, it was used the table of determination of Kano needs (Table 2) that convert two parts of each question to an answer. After extracting the answer to every question from Kano evaluation table, they were transferred to the results matrix. In the results matrix, according to this fact that highest frequency is awarded to which classes of Kano categories after analyzing all questionnaires, that special need was categorized in the same class. The SPSS (SPSS, Inc., Chicago, IL, USA) and Excel software and the data frequency distribution were used to do this.

Due to the frequency of each feature for each need, the satisfaction coefficient and dissatisfaction coefficient were calculated through the following formulas (1).

$$\text{Satisfaction coefficient} = \frac{A + O}{A + O + M + I}$$

$$\text{Dissatisfaction coefficient} = \frac{O + M}{(A + O + M + I)(-1)}$$

The customer satisfaction coefficient shows to what extent providing a specific need may effect on the

client satisfaction or failure to meet the needs effect on the client dissatisfaction. Minus one (-1) in the denominator of dissatisfaction coefficient focuses on its negative impact on the client satisfaction if it is not provided. The positive coefficient for customer satisfaction is variable between zero and one, and whatever the value is closer to 1, it has a greater impact on the customer satisfaction, and if this value is close to zero, it indicates that this factor has less impact on the customer satisfaction. Similarly, in the negative coefficient for customer satisfaction, whatever the values are closer to -1, its impact will be more on the customer dissatisfaction if the feature is not provided. Moreover, the value of zero indicates that the failure to provide that feature will not cause the customer dissatisfaction.

Results

Overall, 32 needs were identified in this study which were classified into 13 must-be needs, 12 one-dimensional needs, 5 attractive needs, and 2 needs as indifferent needs. The highest satisfaction coefficient was given to the need related to the appearance of therapist (with the satisfaction coefficient 66.0), and the highest dissatisfaction coefficient (-0.96) was also determined for the need to have the good communication skills and appropriate attitude of therapist. Table 3 shows the overall results of this study.

Table 2. Identification type of needs in Kano questionnaire (1)

Customer satisfaction (CR)	Dysfunctional				
	I like this feature	This feature must be present	I do not care for it (no different for me)	The feature is tolerable for me and I can deal with it	I prefer this feature to not exist
Functional					
I like this feature	Q	A	A	A	O
This feature must be present	R	I	I	I	M
I do not care (no different for me)	R	I	I	I	M
The feature is tolerable for me and I can deal with it	R	I	I	I	M
I prefer this feature to not exist	R	R	R	R	Q

A: Attractive, O: One-dimensional, M: Must-be, R: Reverse, I: Indifferent, Q: Questionable

Table 3. Clients' needs

Needs	Type of need	Satisfaction coefficient	Dissatisfaction coefficient
1. Having good communication skills and appropriate behavior of therapist	Must-be	0.41	-0.96
2. Strong personality traits of therapist (sympathy, amiability, patience and being promising)	One-dimensional	0.62	-0.89
3. Having high professional competence and being aware of science in therapist	Must-be	0.46	-0.95
4. Insisting the therapist on performing the exercises correctly at home by patients	One-dimensional	0.61	-0.78
5. Providing the information about the problem to the family and client in an understandable and simple language	One-dimensional	0.64	-0.87
6. Timely and accurate reference of information to other specialists by the therapist	Must-be	0.46	-0.84
7. Providing information on the duration of treatment to achieve the best results and the progress and abilities arisen after completing the treatment in the clients	One-dimensional	0.60	-0.83
8. Appearance of therapist (being neat and justified)	Attractive	0.66	-0.45
9. Listening the therapist to the speech of clients and considering their needs and wishes to select the method and treatment priorities	One-dimensional	0.64	-0.84
10. Therapist's awareness of the sciences related to his/her specialized subjects (such as other fields of rehabilitation)	Must-be	0.34	-0.91
11. The effectiveness of the treatment process	One-dimensional	0.61	-0.95
12. Spending enough time for each session	Must-be	0.42	-0.94
13. The accuracy of therapist in the initial assessments and selecting the appropriate treatment method	Must-be	0.46	-0.93
14. Celebrity of therapist	One-dimensional	0.45	-0.33
15. Being punctual and do not waste the clients' time	Must-be	0.51	-0.82
16. The short waiting time for the start of treatment course	One-dimensional	0.54	-0.72
17. The presence of a secretary at the clinic	One-dimensional	0.18	-0.28
18. The confidentiality of client information and details (clients' profile)	Must-be	0.29	-0.81
19. The appropriateness of the cost of treatment sessions	One-dimensional	0.59	-0.81
20. Existing the modern sufficient equipment and technologies for rehabilitation and training	One-dimensional	0.46	-0.65
21. The presence of a counselor and psychologist in the rehabilitation clinics	Attractive	0.63	-0.49
22. The existence of a variety of rehabilitation services centralized in one place	Attractive	0.61	-0.46
23. Responding to the client complaints by the clinic managers	Must-be	0.41	-0.78
24. The suitability of the location of the clinic in terms of ease of access and car parking	One-dimensional	0.58	-0.55
25. The observance of cleanliness in the clinics (hygiene in the clinic)	Must-be	0.36	-0.84
26. Establishing the clinic on the ground floor equipped with a ramp or a lift	Must-be	0.39	-0.49
27. Physical facilities in clinics (such as lighting, air conditioning, comfortable seats, soft flooring and drinking water)	One-dimensional	0.48	-0.70
28. Separating the waiting room from the treatment room	Must-be	0.47	-0.58
29. Clinic quiet environment	One-dimensional	0.60	-0.57
30. Being present the educational posters and photos in the clinic and related scientific brochures and magazines in the waiting room	Attractive	0.64	-0.27
31. Clinics building location and its attractive interior (such as a vase, using the bright colors in the design of the clinic, putting the TV in the waiting room and identifying the different rooms)	Attractive	0.66	-0.28
32. The existence of proper and clean W.C. in the clinic	Must-be	0.28	-0.82

Discussion

Due to the competitiveness of market and the rapid developments in today's world, the attention to the needs of customers in the industry and service organizations, particularly in the health services that have direct contact with the people, and planning based on their expectations are very important. In this study, we tried to identify and classify the needs of visitors to the speech and occupational therapy clinics using the Kano model. The results of studies in the area of measurement of satisfaction show the overall similarity

of needs in the studies in this area and current study.

The aim of study of Razavi Alhashem et al. (16) was to assess the satisfaction level of rehabilitation services at a rehabilitation center in Tehran's Red Crescent Organization. The results showed that the rate of participation in the treatment process, efficiency of rehabilitation, rehabilitation service quality, and personal behavior has a significant relationship with the client satisfaction.

Alrubaiee and Alkaa'ida (3) also examined the role of patient satisfaction in improving the quality and their confidence in the health service in their study and

presented a 16-item instrument for measuring the key aspects of satisfaction, including amount of access, interpersonal aspects of care, physical environment, technical aspects of the care, and outcomes of care.

In the Kano model, according to the scope in which the study is carried out, the needs are different in the various sectors of industry and services; however, since the field of rehabilitation and therapy are interconnected, the needs of people at the presentation level of health services have many similarities with each other. In this study, the attributes such as good communication skills and high professional competence and knowledge of modern science in the therapist were classified as the must-be needs. In Ghandehari et al.'s study (12) that was conducted among the patients referred to the dental clinics, two factors of professional competence and attitude of the dentist have been also considered as the must-be needs of patients. In the study of Dwi (8) who used the Kano and SERVQUAL models to improve the quality of health care, good communication between the doctor and hospital staff with the patients has been considered as a must-be need and the qualification as a one-dimensional need. Lim et al. (17) stated that the quality of health services has both technical and interpersonal aspects of care. Due to this fact that the patients often do not understand the technical capabilities, so what has more impact on them is the interpersonal aspect of care. Chang (2007) (18) also announced that the doctors often take care of their specialized skills while the patients usually pay attention to the interpersonal aspects of care. The satisfaction and dissatisfaction coefficients also suggest that the demands which have the greatest impact on the satisfaction and dissatisfaction are associated with the therapist and interpersonal relationships of care, indicating the great importance of the need for the clients.

In this research, providing the information about the problem to the family in an understandable and simple language is a one-dimensional need while this is a must-be need in the study of Dwi (8). The reason for this difference in the field of medicine and rehabilitation may be this fact that most of the clients in the field of rehabilitation have referred to the doctors before going to the therapists in the field of rehabilitation and have received the general information about their problem from the doctors. However, the attention of therapists to this fact causes the clients to be satisfied and lack of attention to it causes their dissatisfaction.

Being punctual and keeping the confidential information of clients are considered as the must-be needs of patients referred to the speech therapy and occupational therapy clinics, while in the study done in the dental field (12), the punctuality had been one of the one-dimensional needs, and in a study that was done in a hospital, the confidentiality of client

information was a one-dimensional need (19). The clients in the field of rehabilitation often refer to the clinics on long-term timescales, so the punctuality of therapist is more important to them, and on the other hand, due to the communication of many people's problems in the area of rehabilitation with the culture and the attention of society to the clients, the confidentiality of client information is considered as the must-be requirements of people in the field of rehabilitation that its absence leads to severe dissatisfaction among individuals who consider it as a necessary condition to provide the services.

In the comparison of this study with the Tsu-Ming's study (19), it can be concluded that the need for appropriate and modern equipment and technologies in the rehabilitation is a one-dimensional need, but in the area of treatment, it is a must-be need.

The ease of access and affordable cost are considered as the one-dimensional needs in this study and the study conducted in the dental field (12). The physical facilities and quiet environment considered as the one-dimensional needs are the same type as the needs in the Dwi's study (8). Moreover, the needs related to the attractive interior and esthetic environment in this study and the study of Dwi (8) and the educational posters and photographs in this study and the study of Tsu-Ming (19) done in a hospital are considered as the attractive needs, indicating the same needs of people in these cases in both areas of treatment and rehabilitation because these needs are not related to the nature of services, but they are related to the environment.

The needs such as timely and accurate transmission of information to other specialists, knowledge of sciences related to their specialized area, establishment of clinic on the ground floor or equipped with a ramp and a lift, separate waiting room from the treatment room, presence of a counselor or psychologist in the clinic, a variety of rehabilitation services concentrated in one place, and presence of a receptionist in the clinic were among needs that have been raised by individuals only in the field of rehabilitation due to the nature of rehabilitation services and the type of problems of patients referred to this area that suggests although the areas of treatment and rehabilitation have a close relationship with each other, the visitors to these areas can have very different needs in some areas, indicating the necessity of special and specialized attention of managers and practitioners in this area to the needs of people.

The needs that have been determined as the must-be needs in this study have the average satisfaction coefficient 39.0 (close to zero) and the average dissatisfaction coefficient -82.0 (close to one) (high distance between the satisfaction and dissatisfaction coefficient), but the satisfaction coefficients of one-dimensional needs with the average (0.58) and the dissatisfaction coefficients of these needs with the

average (-0.76) (low distance between the satisfaction and dissatisfaction coefficient) have been obtained. The needs that have been identified as the attractive needs have the average satisfaction coefficient 0.64 (values close to 1) and the average dissatisfaction coefficient -0.39 (values close to zero). The needs that have been determined as the different needs have, respectively, the average coefficients of satisfaction and dissatisfaction 0.31 and -0.30 (both values close to zero). In all cases, the results obtained are consistent with the definitions provided from needs in the various sources as well as the definition of satisfaction and dissatisfaction coefficients, and a comparison between the definitions and the average coefficients of satisfaction and dissatisfaction obtained shows that the managers need to satisfy the must-be, one-dimensional, and attractive needs. These results are similar to the findings of Ghandehari et al. (12) who showed that the must-be, one-dimensional and attractive aspects have more importance based on the fuzzy analytic hierarchy process from the perspective of clients referred to dental clinics. In addition, in the study of Tontini et al. (20) entitled, "How does the interaction between the characteristics of the Kano model effects on the customer satisfaction? A review based on the psychological principles," it was found that if it is not provided the must-be features, the impact of one-dimensional and interactive features on the customer satisfaction will be reduced from 70% to 30%.

Conclusion

According to the findings, 13 needs were among the must-be needs that should be satisfied in the first step to prevent the people dissatisfaction, and the main and necessary features of rehabilitation services should be also provided in the view of clients, because even if other needs are supplied but the must-be needs are not considered, there will be still widespread discontent among the people. Twelve cases of needs are one-dimensional that should be supplied in the second step to prevent the dissatisfaction and create the greater satisfaction of clients, managers, and therapists in the clinics. Five needs were introduced as the attractive needs. Since the supply of attractive features can make possible many distinctions between the competitors and create a sense of loyalty to the clients, it should be paid special attention to them to attract more clients and keep them there. Of course, satisfying the attractive needs leads to create the immense satisfaction if the must-be and one-dimensional needs are satisfied by the managers before it.

In today's competitive world that is rapidly changing, the managers are often limited in terms of time and cost and must make some decisions in a short time. The managers and therapists in the speech therapy and occupational therapy clinics can use the results of this study based on the type of needs in their

short- and long-term strategic planning and the prioritization for the financial investments in the various areas as a qualitative and quantitative guide and manage the time and resources greatly. They can pay attention to the needs that have been identified as the must-be and one-dimensional needs in the short term and to the needs that have been identified as the attractive needs in the long term and invest on the needs that have more satisfaction and dissatisfaction coefficient for more detailed financial investments.

It is suggested that due to the dynamics of the Kano model and the possibility of transforming the one-dimensional and attractive needs to the must-be needs in the coming years, and also changes in the views and characteristics of the clients, this study should be repeated at short intervals to identify the needs of clients at any time and plan properly for their supply. Furthermore, this study should be conducted in other areas of rehabilitation, and the Kano model is combined with the models of assessment of service quality, such as SERVQUAL and Quality Function Deployment, to increase the accuracy of results and more accurate planning.

Conflict of Interests

Authors have no conflict of interests.

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