



Categorization of Effective Factors on Customer Satisfaction of FAVA Offices Based on Kano Model in Southern Khorasan County

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Abstract— every company and organization nowadays knows that market stability is based on attracting customer's satisfaction. Therefore; periodical research of customer's opinions and assessing their satisfaction level are considered organization policies. In addition to customer satisfaction assessment, evaluating the effective factors on their satisfaction and classifying these factors are important. So it is attempted in this paper to categorize effective factors on customer's satisfaction of FAVA offices based on Kano model in southern Khorasan County in Iran. The results can be used by senior directors for investment and adopting macro policies.

Keywords—customer satisfaction, Kano analysis model, FAVA, satisfaction index, importance index, Kano conventional model

I. INTRODUCTION

In this competitive world, it is essential to discover needs and requirements of customers and satisfying them for company stability. Customers are always seeking for services and high quality goods. Therefore organizations should always scrutinize customer's satisfaction level, remove their shortcomings and try to achieve unique goals in rendering services. As Juran says, the customer's satisfaction is the situation in which the customer feels that the qualities of the product are according to his/her ideas. Dissatisfaction is the case that in which the product shortcomings causes customer's complaint [1].

Ralph defines customer's satisfaction as an individual perspective and based on perpetual comparison of organization performance and the function which the customer expects. Toepfer believes that is not dependent upon the kind of organization activity or its position in the market but it is related to supplying the expected quality among the customers. As it can be seen, there are different definitions for this issue and this shows the importance of this issue. In fact, the companies are successful which are not solely seeking for high sell extent, but focus on attracting customer's satisfaction. So the organizations should adopt a model for customer's satisfaction [1].

Many models have been presented by management science scholars that are classified into two groups [2]:

Objective methods: in these methods the customer's satisfaction are measured indirectly and the indexes of this process are correlated with customer's satisfaction.

Theoretical or conceptual methods: in these methods, customer's opinions are treated directly and for this reason it is more valid than objective methods.

Many different measuring methods have been proposed that the Kano model is the prominent one and comprises many research studies. This model is conceptual and uses directly the opinions of the customers. This model was proposed by Dr. Noriaki Kano in the late of 20th century. Some of the advantages of this method are better relationship with customer, understanding customers and their needs and final satisfaction of customers [2].

SERVQUAL Model in the early 1800s was proposed by Parasuraman. In this model customers' satisfaction with services is measured. In this model five different aspects of services are considered and totally 22 criteria are assessed. The dimensions of SERVQUAL Model are: tangibles, assurance, warranty and sympathy. This model does not pay attention to details and measures the satisfaction totally. There are many different models and indexes which are used in the process of customers' satisfaction that we cannot discuss all of them in this paper.

In this paper with regard to the importance of customers' satisfaction, factors affecting customers' satisfaction of Fava offices have been assessed and classified. The aim of this classification is making right decisions about investment in any area. In other words, regarding restricted nature of investment in companies and organizations, like Fava offices, we cannot offer all of the factors effectively although in some cases we may not need this. So classifying the factors affecting customers' satisfaction is important. In section 2, the theoretical framework of the research has been proposed. In section 3 the results and in section 4 conclusions have been proposed.

II. The Theoretical Framework of the Research

Kano model was proposed for the first time in 1979 by Noriaki Kano in Rika University in Japan [3]. This model is one of the suitable tools for implementing customers' requirements and the effect of these requirements on customers' satisfaction. In this model, quality elements are divided into 5 parts according to relations between product quality and customers' satisfaction which can be seen in figure1 [2-7]. This figure illustrates the vertical axis of customers' satisfaction level and the horizontal axis shows the expected quality by customers. The highest point in the vertical axis indicates the apex of customers' satisfaction and the lowest point shows the customers' dissatisfaction. The right part of horizontal axis indicates complete supply of expected quality and the left part of the axis shows the unexpected product qualities or the quality requirements have not been fulfilled. The quality requirements in Kano model are:

Basic requirements (Must-be quality element): preliminary characteristics of product or services and these requirements are not fulfilled, this causes customers' dissatisfaction. Also if these requirements are not fulfilled by organizations, the customers' satisfaction won't increase. From customers' perspective, these characteristics are taken for granted. The main point here is that the insufficient provision of these requirements won't increase the customers' satisfaction and causes ineffective investment. Fulfilling these requirements in product or special services blocks customers' dissatisfaction.

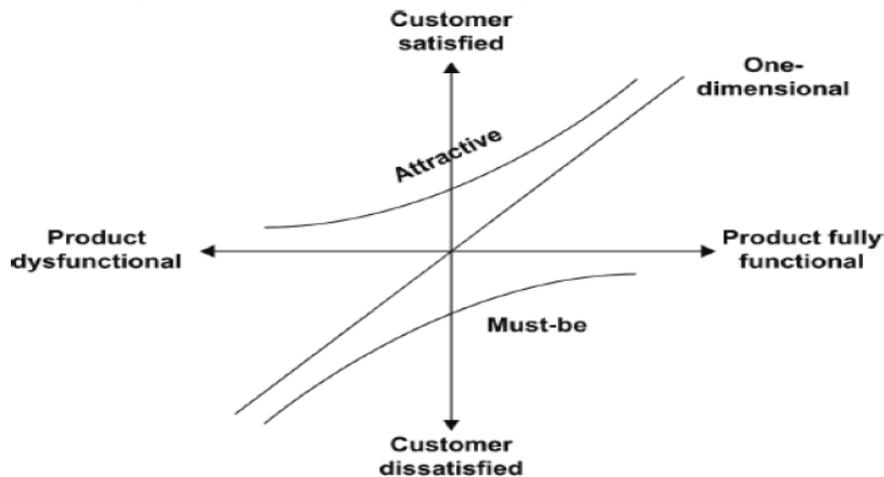


Fig 1: Kano Model Diagram

Performance requirements (One-dimensional Quality Element): the customers' satisfaction in relation to these characteristics is correlated with supply level. The higher supply level of these characteristics in services or products causes increase in customers' satisfaction and lower supply level brings about decreasing customers' satisfaction. The performance requirements are the least attempts that cause preserving commercial position and market stability. If these requirements are offered on free, they cause increase in customers' satisfaction.

Attractive quality element (Attractive Quality Element): these characteristics have the most effect on customers' satisfaction with special product or service. Active quality elements are not expected by customers and the customers doesn't mentions them, if these elements are fulfilled, the customers' satisfaction increases a lot and if not so, customers' satisfaction with decrease. Although the customers don't express these elements, but if they are considered in product, bring about a suitable situation for organization and the product or service is replaced by competitors in market immediately.

In-different Quality Element: supplying or non-supplying of this element has not affected on customers' satisfaction level with product and services.

Reverse Quality Element: These characteristics if are supplied, cause customers' dissatisfaction and if they are not fulfilled, cause customers' satisfaction. Indifferent and inverse quality elements are minor requirements of Kano model.

From the early years of introducing Kano model by professor Kano because of its acceptability among scholars [1], different extensions of this model have been proposed. For example reinforced Kano model was proposed by Mr. Yang [6]. Yang in 2005 in which some elements have been added besides conventional elements. Also A-Kano model [5] was proposed in 2009. In this model, for every characteristic, an index is made based on customer's ideas that Kano characteristic classification is based on these indexes. This has been used with fewer changes in other studies [4]. Mr. Meng proposed a different model in 2011 based on this model and classification changes in [4].

2.1 Calculating Kano analysis index

In this paper Kano analytical model [4] has been used for assessing customers' satisfaction with services of Fava office in southern Khorasan County. 13 factors were selected for assessing customers' satisfaction after consulting with experts and library studies as follows:

Table 1: Effective Factor on Customers' Satisfaction in Fava Offices.

Rank	Factor	Rank	Factor
1	Rural Location of Fava	8	Agents behavior with Fava customers
2	Appearance and decoration of Fava office	9	Answering to Fava customers
3	Appearance of Fava office agent	10	Crowded Fava offices

4	Range of Fava offices	11	Reliability of Fava office personnel.
5	Using developed and new equipment in Fava offices	12	Service giving organization is Fava offices
6	Welfare facilities in Fava offices	13	Lottery in Fava offices
7	Education level of Fava offices' agents		

For each of the mentioned factors two questions are asked from customers. The first question is related to supply element and the second question is related to non-supplying that element. Customers in these two questions should express their satisfaction level and the characteristics are classified based on these expressions. For all of the 13 mentioned factors, a correlation is considered that is the importance level of customers' satisfaction. Table 2 shows the design of questions in questionnaire.

Table 2: Designing of Kano Questions for 13 Factors Affecting Customers' Satisfaction of Fava Offices.

Kano question	Answer to Kano question
What is your opinion about fulfilling this element in Fava office?	a-I like this. b- It should be this. c-No idea d-The is no problem without this element e-I don't like this.
What is your opinion about not fulfilling this element in Fava office?	a-I like this. b- It should be this. c-No idea d-The is no problem without this element e-I don't like this.

For quantifying customer's answers to above mentioned questions, each choice has been assigned a number which is observed in table 3. These correlations are not designed in proportion with each other. For example the first choice has been allotted by 1 and the last choice hasn't been allotted -1. This is for the reason that customers have stable opinions in positive answers than negative choices. This style of scoring has been done in many papers of [4, 5].

Table 3 allotted correlations for the questions of Kano analytical models.

	a	b	c	d	e
Element supplied	1	-0.25	0	0.5	1
Element not supplied	-0.5	0.5	0	-0.25	-0.5

For each characteristic the questions like table 4 have been considered that expresses the importance level of them according to customer's opinion.

Table 4: Allotted Correlations for the Questions of Kano Analytical Models

	Extremely important	Very important	Important	To some extent important	Unimportant
Element importance	1	0.8	0.6	0.4	0.2

The Kano index is prepared after collecting answers to questions. Kano index is obtained by these relations X_{ij} in which the correlation is related to common answer j to element question i .

Y_{ij} is also like x_{ij} with this difference that x_{ij} is related to non-provision questions and y_{ij} is related to provision questions of i th feature.

n is total number of customers who answered the questions.

W_{ij} is also importance coefficient of i th feature that j th customer has detected this.

$$\bar{X}_i = \frac{1}{n} \sum_{j=1}^n x_{ij} W_{ij} \quad \text{Relation 1}$$

$$\bar{Y}_i = \frac{1}{n} \sum_{j=1}^n y_{ij} W_{ij} \quad \text{Relation 2}$$

$$k_i = (\bar{X}_i, \bar{Y}_i) \quad \text{Relation 3}$$

Relation 3 shows the Kano index for each characteristic. Kano index for each characteristic is a point in Kano space which has been rendered in Cartesian system. If these points are shown polar system, we have relation 4:

$$k_i = \rho_i e^{j\theta_i}$$

$$\rho_i = \sqrt{\bar{X}_i^2 + \bar{Y}_i^2}$$

$$\theta_i = \tan^{-1} \frac{\bar{Y}_i}{\bar{X}_i}$$

Relation 4

In this relation ρ_i is the distance of corresponding point with Kano index to origin of coordination and θ_i is the angle between connection line of index point to origin and right side of x-axis. . . and right side of the x axis.

J in this relation is a Imaginary number which is satisfied in relation 5.

$$j^2 = -1$$

Relation 5

2.2 Classifying Factors

In this stage and after calculating Kano index, the affecting factors are classified according to this index. For classifying factors into basic, performance, attractive and indifferent, we use Kano index in Decartes' form. Judgment is made based on the following table.

Table 5: Classifying Factors Affecting on Customer's Satisfaction in Fava Offices

	Attractive	Basic	Performance	Indifferent
Condition				

In table 5 the parameter of ρ_i is the average weight of ith factor by n customers and it is obtained by relation 6. Decisions of table 5 are based on this index. For example if in examining affective factor on customers' satisfaction, \bar{X}_i is less than mean importance index ρ_i , and \bar{Y}_i is more than that index, it means that this factor should be considered as an attractive element. \bar{X}_i Is the mean answer of customers to non-supply of element and if it is low, it means that customers are satisfied. Or vice versa, \bar{Y}_i is the mean answer of customers' to the question of element supply and if is high, it means that customers' satisfaction has been increased. These descriptions are proportional to attractive elements in conventional Kano model.

$$\rho_i = \frac{1}{n} \sum_{j=1}^n w_{ij}$$

Relation 6

Table 6 has been proposed for better understanding of classifying criteria of table 5. In this table the concept of each of the coordination dimensions of Kano index points and customers' dissatisfaction have been proposed (in this table the effect of decreasing and increasing of each Kano index on satisfaction or dissatisfaction of customer has been indicated. On the basis of this table, if a factor has large first dimension and small second dimension, is placed in basic elements because it hasn't increased customers' satisfaction and it has not explained the high dissatisfaction level in situations of non provision of features.

Table6: the concept of each of the coordination dimensions of Kano

Concept	value	Dimension
High level of customers' dissatisfaction	high	
Low level of customers' dissatisfaction	Low	
High level of customers' satisfaction	high	
Low level of customers' satisfaction	Low	

2.2 Ranking Factors

To this stage, the effective factors on customers' satisfaction are classified according to traditional model of Kano .But the story does not end here and organizations cannot provide all of the factors for attracting customers' satisfaction that is because of restricted budget. Therefore classifying the factors is necessary for managers to decide properly on investment on these factors. This classification is performed by polarized Kano index. This classifying is parsed into four sections:

1. Care-free area: in this area both satisfaction index (ρ_i) and importance index (θ_i) are weak and have not created strong feel in customer. This area is known as first area and in this index satisfaction and importance is less than average.
2. Surplus area: in this area satisfaction index is large and importance index is low. The elements settled in this area can be ignored in critical finance of organizations.
3. Excellent area: in this area both satisfaction and importance indexes are large numbers and financial importance of organizations toward settled characteristics in this area is important.
4. To-be improved area: in this area satisfaction index is weak and importance index is strong. Organizations should improve the properties of this area and managers should pay attention to them and chief managers should focus on them.

III. Findings and Results of the Research

It is attempted in this paper to classify effective factors on customer's satisfaction of FAVA offices based on Kano model in southern Khorasan County in Iran. 13 factors were selected after library studies and consulting with communication experts. Calculations for each of the Kano index factors are observable in table 7. The average coefficient importance of each characteristic has been proposed in this table. On the basis of the importance coefficients and Kano index these factors are divided into 4 classes. This classification has been proposed in table 7.

Table 7: Customer's Satisfaction of FAVA Offices Based on Kano Model in Southern Khorasan County

Rank	Element	\bar{X}_i	\bar{Y}_i	P_i	Classification in Kano model
1	Rural Location of Fava	0.76	0.4	0.45	Basic
2	Appearance and decoration of Fava office	0.42	0.68	0.55	Attractive
3	Appearance of Fava office agent	0.49	0.63	0.52	Attractive
4	Range band of Fava offices	0.78	0.34	0.62	Basic
5	Using developed and new equipment in Fava offices	0.71	0.66	0.51	Functional
6	Welfare facilities in Fava offices	0.45	0.71	0.56	Attractive
7	Education level of Fava offices' agents	0.71	0.63	0.53	Basic
8	Agents behavior with Fava customers	0.6	0.54	0.5	Functional
9	Answering to Fava customers	0.76	0.64	0.61	Functional
10	Crowded Fava offices	0.49	0.51	0.52	Indifferent
11	Reliability of Fava office personnel.	0.45	0.32	0.49	Indifferent
12	Service giving organization is Fava offices	0.43	0.62	0.51	Attractive
13	Lottery in Fava offices	0.34	0.78	0.67	Attractive

Figure 2 shows the characteristics based on importance and satisfaction indexes for this paper.

We can divide the area into four parts based on this figure: importance-free, surplus, excellent and to be improved. In this figure the detected points indicate effective factors on customers' satisfaction. The horizontal axis is the customers' satisfaction index and the vertical axis is the importance index. The Kano satisfaction index has been obtained in average number 45.39 degrees and Kano importance index 0.83.

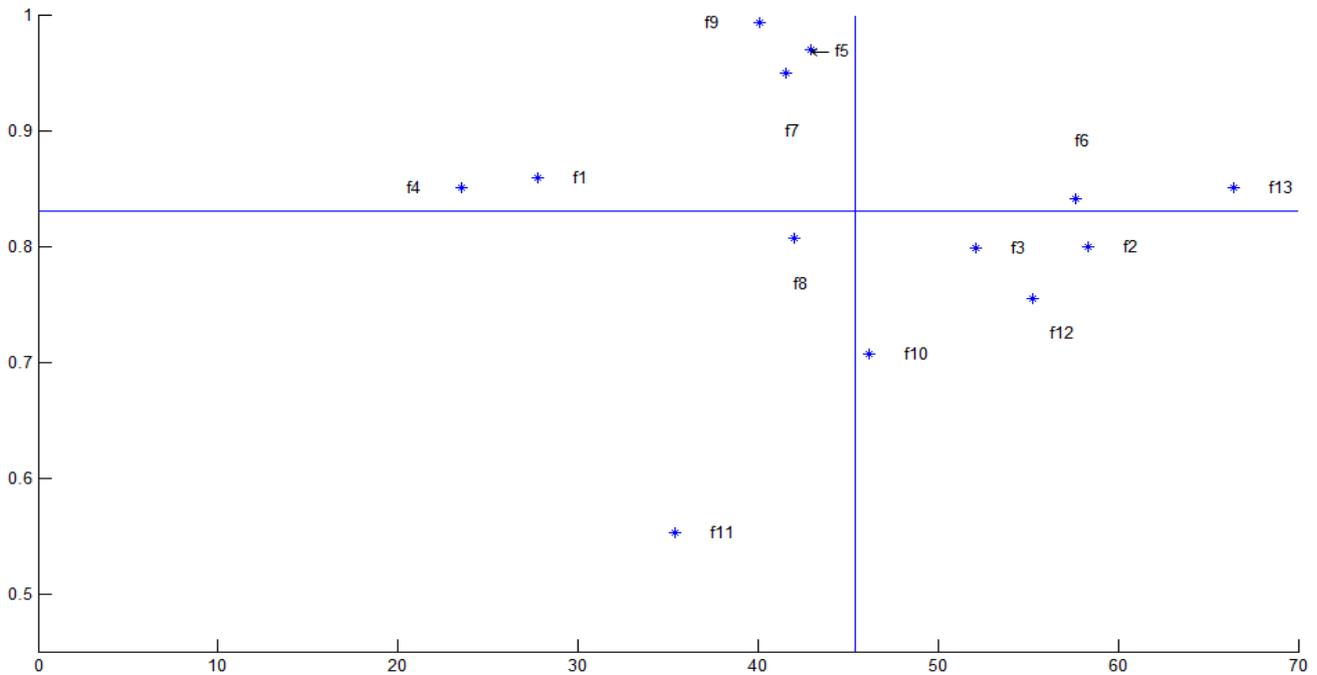


Fig 2: Classifying Factors into Four Parts

It is observed that factors 1, 4, 5, 7, 9 are in improved area and the managers in Southern Khorasan should plan for them seriously. Of course among these factors 5 and 9 are functional and 1, 4, 7 are basic. Factors 8 and 11 are in less important area and there is no need for investment in these parts. These two factors are functional and indifferent respectively. Factors 2, 3, 10 and 12 are placed in surplus area. If the county officials need to lower the costs can delete

these factors from their services without decreasing customers' satisfaction level. Most of these factors are attractive. Finally factors 13 and 6 are placed in excellent area. These factors should be preserved alongside services for keeping customers. Both of these factors are attractive.

IV. Conclusion

In this paper, effective factors on customer's satisfaction of FAVA offices based on Kano model in southern Khorasan County were classified. These factors were classified into 4 groups of basic, attractive, indifferent and functional and from policy perspectives have been divided into four groups: excellent, free importance, surplus and to be improved. The results show that from 13 factors examined in this study, 2 factors are in free importance area and 5 factors in to be improved. Factors which are present in to be improved area are superior in supply. Factors in excellent area should be preserved for keeping customers. Factors in surplus area can be deleted from services if there is budget restriction.

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