The Role of Customer Satisfaction in Product Planning

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Abstract: Investigation and providing of customer satisfaction and addressing customers' demands and requirements in long term design and manufacture of products can lead to increase of loyalty and success of companies. In this research therefore, identification and understanding of customer satisfaction concept through inclusion of customers' requirements and needs in the design of products manufactured by Sansuan Company is considered as the main goal of research. By setting forth 7 hypotheses in this research, the relationship of product performance (basic needs, performance needs, excitement needs) and the value provided for the customer (expected and unexpected values) and customer satisfaction and loyalty has been investigated. Using cluster sampling descriptive-surveying research plan, necessary data was collected from 100 people through the use of an authentic and dynamic questionnaire. Regression analysis tests, correlation coefficient, path analysis, etc. have been used to test the hypotheses and were analyzed by using SPSS and LISREL. The obtained results show that:

- There is a direct significant relationship between the design of product and expected value.
- There is a direct relationship between expected value and customer satisfaction.
- There is a direct relationship between unexpected value and customer satisfaction.
- There is a direct relationship between the expected value and customer loyalty.

Key words: Customer Satisfaction · Customer Loyalty · Expected Value · Unexpected Value

INTRODUCTION

Until some decades before, products and services provided by organizations were considered as the result of creative minds of designing engineers other than to comply with customer needs and wants. In other words, customer's role in most cases was limited only to a contented consumer and it was the engineers of organization who played customer's role in the process of product design.

Competitiveness of markets, collapse of business borders, economic globalization and finally the increase of customers' level of expectations and needs increased the attention and importance towards customers' needs and wants [1].

Considering specific economic conditions in which companies get involved, addressing customers' needs and wants and providing a tool for improving the quality of products.

Customer satisfaction will have a considerable effect on the present and future life of an organization. A satisfied customer acts as advertising loudspeaker of company and attracts everybody towards products or services of company [2].

Competition increase, access to abundant information, availability of similar products and services, etc. reduce competitive capability of organizations. The only way for them to survive is to supply products and services with higher values and qualities and this requires innovation and development in the field of products, services and exploration and evaluation of customers' needs and wants [3].

Investigation and providing of customer satisfaction through addressing customers' needs and wants in the design and production of products in long term can lead to increase of loyalty, an element which is considered a vital key and relief cause for organizations in today's agitated economic and

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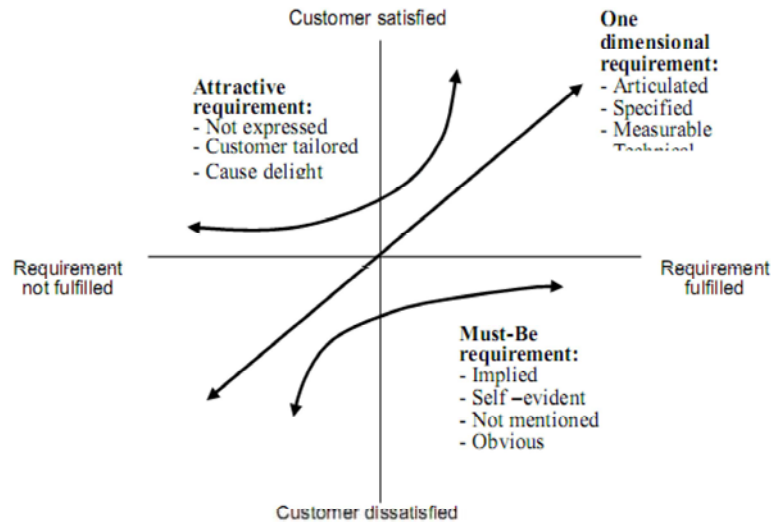Tel: (++98) 551-6621901-10, Fax: (++98) 0551-6615472, E-mail: tooraj_sadeghi@yahoo.com.

Fig. 1: Investigation of Customers' Needs in Product Design [5]

competitive conditions which can in turn have a considerable role in increasing the contribution and profitability of organizations [4].

Existence of different economic problems, lack of sufficient attention to customer orientation culture, non-investigation of effective factors in customer satisfaction, low quality of products and existence of competitive foreign products have decreased public welcome for the products produced inside the country and have also decreased their competitive capability and presence in global markets.

Efforts have been made in this research to investigate the concept of customer satisfaction through accurate identification of fundamental, performance and motivational demands by considering the importance of customers' satisfaction in domestic productions as well as necessity of identification of customers' needs in Iran. In other words, how does identification and consideration of such needs and wants form customer satisfaction and increase of loyalty in designing the product in a production system?

Kano Model: Kano model is a 2D diagram used in order to display 3 groups of qualitative wants and needs of customers. These three groups include basic needs, performance needs and motivational needs [5].

Most of the times, identification of customers' ideas regarding quality are confusing. In case most of customers' wants and needs are identified and divided into several groups, such ideas may be observed clearly, as needs and wants have been classified in the following:

Horizontal axis of Kano model includes performance manner of some fields of products and services. Vertical axis shows how customers become satisfied with receiving products and services [6].

Basic needs curve of Kano model shows that if customers expect more satisfaction with receiving products and services, it cannot satisfy customers. In other words, inclusion of basic needs in the product will not cause customer's satisfaction and only prevents from his dissatisfaction.

Excitement needs curve shows that whenever the product has a higher performance, customers receive more satisfaction, but lower performance will not cause customers' dissatisfaction.

Performance requirements curve indicates the fact that non-fulfillment of performance requirements in the product will cause dissatisfaction, but complete and suitable fulfillment of them will be followed by customers' satisfaction [7]. According to Kano, people expect the produced products to meet three types of their basic needs, namely basic needs, performance needs and motivational needs. Kano *et al.* proposed that companies should identify customers' performance and forms of demands in the products in planning the design of a product. They should then improve the produced product by the performances which provide the highest level of value for customer [6].

Value Provided for Customers: A customer has a certain goal in using a specific type of a product. He/she expects a certain performance from the selected product. When the product has such performance, the customer achieves

his/her expected goal (customer satisfaction). If all performances of a product don't provide customer's certain goal, the customer will become dissatisfied (customer dissatisfaction). Motivational characteristics will be caused once they are concentrated on unexpected values [8].

Expected value means the value we should provide for customers at the time of delivery of products and services. By value, it is meant the relation in which customer finds a benefit, i.e., the benefits obtained from providing products and services to customer exceed the payable costs for obtaining that service. From marketing viewpoint, this relation is a relation in which advantages obtained as the result of providing a service or product to customer are more than its monetary revenues in addition to financial profitability during the time [9].

Unexpected value is called to procurement of a service or product for which the customer has no idea or cost and organizations provide that in order to increase level of satisfaction and repurchase from the concerned organization [10].

The Relationship Between the Value Provided for Customer and Customer Satisfaction: As it was said before, customers follow certain expectations in using the products. In fact, each product is a series of values and customer compares such values provided in the product with his/her own expectations. In case the values conform to their expectations, they will be satisfied. Customer satisfaction can be defined as follows:

"Satisfaction is defined as the process of customer's understanding and assessment of experiencing product consumption or use of other services" [11].

Customer experiences satisfaction from different aspects including basic characteristics of products, superior performance characteristics of products and manner of contacting and interaction with customer.

Based on the researches made in 1994 by Jouran Institute, almost 90% of senior managers of more than 200 American companies believe that improvement of customer satisfaction will result in improvement of profitability and increase of market level. Customers' satisfaction which is the result of fulfillment of wants and expectations by addressing the provided value is considered as one of the initial elements for determining the repetition of repurchase and customers' purchasing behavior.

For the role of customer satisfaction, researchers focus on expectations, perceptual performance and satisfaction that have become a dominant pattern in most researches [12].

Customer Loyalty: Smart companies have defined the type of customers they look for. These customers obtain the most advantages from company's offers and remain loyal to company. Loyal customers pay their debts to company by establishing a long term flow of funds and by presenting new customers [13]. Generally, there are two basic aspects for customer loyalty: Behavioral Loyalty and Attitude Loyalty [2].

Behavioral aspect of customer loyalty goes back to customers' behaviors in repeating purchase which encompasses the preference of trade mark or receipt of services during the time [6]. Attitude aspect of customer loyalty is related to customers' intentions to repurchase and to order products or services (Getty & Thompson, 1994). In other words, customers who intend to repurchase and their orders remain in the organization for a long time, are considered loyal customers [14].

Dick & Basu, 1994, believed that loyalty would be determined by the consolidation available in our relationships between customers' views and customer repurchase in both of which the elements of attitude and customers' behaviors are seen.

One of the popular views presented by these two researchers regarding loyalty includes 4 basic classifications for customer loyalty including loyalty, latent loyalty, spurious loyalty and no loyalty [15].

The Relationship Between the Value Provided to Customer and Loyalty: Providing customers' satisfaction is the main condition for customer maintain. In the recent years, the concepts relevant to customer loyalty have been highly addressed. Loyal customers not only increase business value, but also allow business to keep its costs low proportional to omission of new customers [16].

Loyalty occurs when customers feel that organization can best meet their concerned needs in the manner that its rivals are set aside from customers' considerations and customers exclusively purchase from the organization [11].

Increase of customer existence periods is caused as the result of customer satisfaction increase and this is called to period or number of buying cycles in which customer only refers to organization to supply his/her needs before referring to other suppliers [3].

Richherd & Sasser (1990) investigated the effect of confrontation with losing customers and specified the value of customer maintain for different industries. These researchers showed that confrontation with losing only 5% of customers will have 25% to 85% (depending on the type of different industries) increase of annual income for supplying organization [12].

Quality Function Deployment (QFD) Model: Identification and understanding of customers' wants, expectations and needs is among the most important steps of QFD performance. Use of analysis obtained from customers' calls provides inputs in QFD for better achievement of customers' needs. QFD creates a tool that allows us to compare customers' needs to characteristics and processes of producing a new product and to do that throughout the whole product manufacturing process to achieve high quality [17].

As one of the modern methods of quality engineering, QFD begins from market study and identification of product customers. In its investigation and analysis process, it not only identifies customers' needs and wants, but also tries to include then in all design and production phases. In other words, the main philosophy of using QFD is to exercise and include qualitative wants of customer in different steps of product creation.

Research Methodology: In this research, the relationship of product performance (basic, performance and motivational requirements) and the value provided for customer (expected and unexpected values) and customer satisfaction and loyalty has been investigated. Research statistical society consists of all consumers of manufactured products of Sansuan factory in Mashhad. This research addresses those individuals who have used one of the products of Sansuan factory. A number of 100 purchasers of company products have been selected by using random cluster sampling method. People in cluster sampling are not considered as measurement unit, but it's a group of people who have gathered naturally and have established the group. Cluster sampling is used when the selection of a group of people is easier and more possible than selection of people in a defined society.

And this situation occurs when we can not prepare and codify the list of individuals or members of society. The main advantage of this type of sampling is to prevent from waste of time and to save in financial resources [11].

In this research, the researcher first selected all service centers of Sansuan factory in Mashhad. Then he considered as target society a number of customers of these centers who use factory products. Finally, questionnaires were provided to the concerned customers for gathering research data. Data collection of the concerned research was done through a standard questionnaire used in the researches of Dr. Kano, Danavan and Hugat (2001) and Taora (2004).

Characteristics of the contents of this tool (questions), method of its design and codification and the results of investigation of different reliabilities were investigated by using explanatory factor analysis and confirmatory factor analysis methods and reliability coefficients. Exploratory factor analysis was performed through Kruit bartlait test and the obtained results indicate a correlation between the questions explaining each variable. LISREL Plan was used in order to confirm the obtained factor structure and to test power and significance of contribution of each of the variables in measuring the structure, basic, performance and motivational requirements as well as expected and unexpected values. Indexes including excellence, suitability and confirmatory factor analysis were confirmed.

The questionnaire of this research includes 24 questions planned based on a five point Likert-type scale. Each part of the questions is for measuring one of the characteristics (research variables). Research method is descriptive-surveying method and the relationship between the variables is of correlation type. Before exercising on the final sample group, the questionnaire was conducted on a small group and its validity and reliability were investigated.

Validity: Considering the main text and some partial changes in some of the expressions, apparent form of expressions, their relation with the factor under measurement, fluency and capability of total expressions in measuring the variables, the questionnaire was confirmed.

Reliability: The whole questionnaire is reliable with 0.82 Cronbach Alpha using retest method. Alpha coefficients of partial tests for basic needs, performance needs, motivational needs, expected value, unexpected value, customer satisfaction and customer reliability include 0.84, 0.73, 0.89, 0.87, 0.85, 0.79 and 0.72 which shows the reliability of measuring tool.
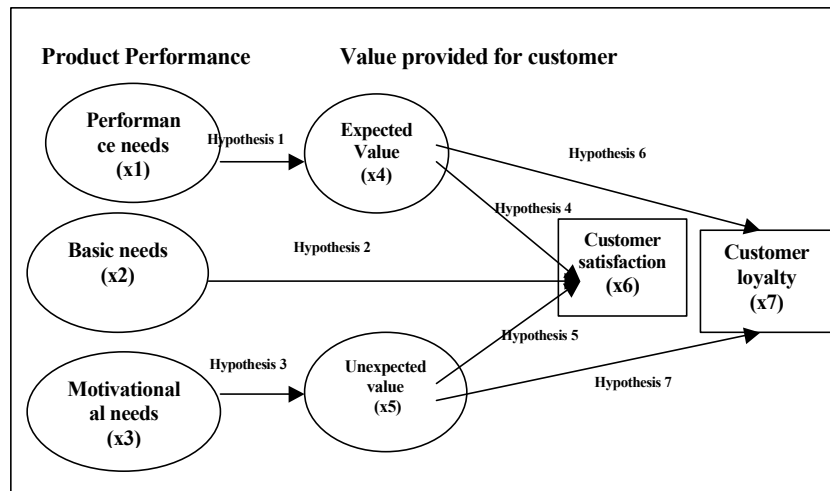
Fig. 2: Concptual Model

In this research 7 variables including basic, performance and motivational needs as well as expected and unexpected values and customer satisfaction and loyalty were studied. Theoretical framework of research was designed by considering the studies made regarding Kano model and QFD and based on analytical model and research hypotheses.

According to Kano model, each product can have a series of 3 classes of needs (basic, performance and motivational) which indicates product performance. In fact, it shows the needs and wants of customers and their complete fulfillment in the product can lead to increase of customers.

Customers have certain expectations from each product whose fulfillment by the product will cause expected value in them (conformity of product to customers' needs) and in case a product's performance exceeds beyond customers' wants and meets their need in a higher level, it will result in unexpected value (customer happiness) and will be followed by more satisfaction than the previous condition.

In QFD model, customers' implicit needs and wants are practically considered in design and production of product so that in this way the provided value for customer is increased. And finally, fulfillment of customers' expectations in product performance and increase of provided value can lead to satisfaction in higher levels and increase of loyalty.

Findings and Results: To analyze data, the descriptive data related to the sample has first been provided. Subsequently, correlations between Latent variables (endogenous and exogenous) have been provided in the

form of two separate tables followed by data related to the model. Data analysis begins by using model test or research given model. Research hypotheses are then investigated by dividing the aforesaid model. In testing each hypothesis, the parameters of measurement pattern of Latent variables (X, Y), Gama path coefficient, Beta and Goodness of Fit Index which test the conformity of obtained pattern with available data have been investigated in addition to presentation of the diagram of obtained path. After investigation of research hypotheses, the final research model was tested with the presence of all variables that had shown convergence. In the final model obtained from this study, parameters of variables measuring model, coefficient of the route between latent variables, coefficients of direct, indirect and total parameters on each other and finally Goodness of Fit Index of model have been provided and all tests have been analyzed by using SPSS and LISREL software packages.

Data Analysis: The base of analysis in LISREL program is based on covariance matrix or the correlation between Latent and Evident variables. Table (1) is the covariance matrix and correlation between Latent variables.

Data related to matrix diameter and its above shows covariance and sub-diameter and the correlation matrix between Latent variables (endogenous and exogenous). Common dispersion values between Latent variables (covariance) are significant considering Table 1.1. Moreover, the information obtained from correlation matrix (matrix sub-diameter data) shows that all the relationships between endogenous and exogenous Latent variables are significant and positive.

Table 1: Correlation Matrix and covariance of Latent variables

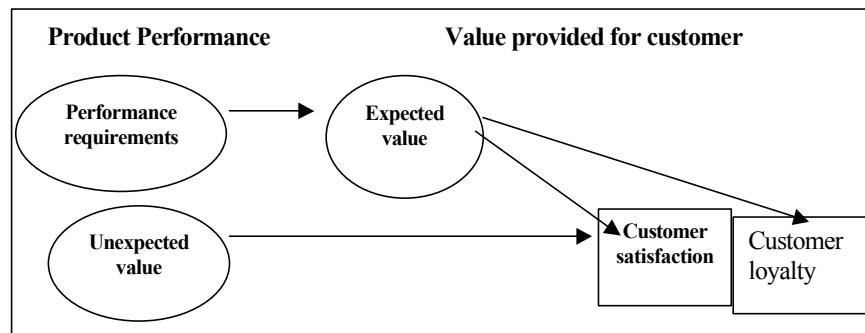| Latent variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Performance needs	4/71	3/18	3/49	1/49	4/90	2/69	3/56
Basic needs	0/539**	7/39	4/83	1/90	5/56	3/23	3/56
Motivational needs	0/590**	0/670**	6/88	2/13	5/44	3/08	3/94
Unexpected value	0/239**	0/293**	0/344**	5/50	2/35	2/68	1/85
Expected value	0/617**	0/578**	0/567**	0/284**	12/64	5/50	6/98
Customer satisfaction	0/402**	0/385**	0/357**	0/354**	0/504**	9/46	24/6
Customer loyalty	0/495**	0/407**	0/459**	0/254**	0/623**	0/642**	10/04

Fig. 3: Analytical Model

Analytical Model: Product performance in analytical model included basic, performance and motivational requirements and performance requirements were expected to have a role in the increase of expected value. This was proved by acceptance of hypothesis 1, but they were not confirmed in relation to the relationship of basic needs with satisfaction increase as well as the relationship of motivational requirements with unexpected value (Hypotheses 2 & 3). Following that, the relationship of expected value in the increase of satisfaction in hypothesis 4 was confirmed but this hypothesis was rejected regarding unexpected value and increase of satisfaction in hypothesis 5. And finally, the relationship of expected value and loyalty value was accepted in hypotheses 6, but hypothesis 7 indicating the relationship of unexpected value and increase of loyalty was not accepted which can be observed in the following figure considering the obtained results of final model. Considering the results and analyses selected in the sample Sansuan factory products, the above model can be presented for future researches in the future and in the above service industry as well. Therefore, the following model can be presented:

Finding and Result: Based on the researches made, what that can be considered as findings beyond the concerned findings of this research and its hypotheses includes the followings:

Based on designed hypotheses of this research, direct and indirect effects of concerned components and finally their total effect (total direct and indirect effects) on each other were analyzed and tested and the results are as follows:

- Total direct effect of the exogenous variable Performance Needs on the endogenous variable Expected Value in the customers of Sansuan factory was considered as positive and significant.
- Total direct effect of the exogenous variable Basic Needs on the endogenous variable Customer Satisfaction in Sansuan factory was negative and insignificance.
- Total direct effect of the exogenous variable Motivational Needs on the endogenous variable Unexpected Value in Sansuan factory was considered negative and insignificance.
- Indirect effect of endogenous hidden variable Expected Value on the variable Customer Satisfaction and Customer Loyalty in Sansuan factory was considered positive and significance.
- Indirect effect of the endogenous Latent variable Unexpected Value on customer satisfaction was considered positive and significant, but indirect effect of endogenous Latent variable Unexpected Value on customer loyalty was considered negative and insignificance.

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