

## Identification of Customers' Satisfaction Attributes in Offset Printing Industry

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### Abstract

The purpose of this research is to identify, classify and rank the customer satisfaction attributes including must-be, performance and attractive ones in offset print-houses. The statistical population consists of all offset print-houses in Iran. The research tool splits into two questionnaires. The first one was open identifying the satisfaction attributes and the second one was designed based on Kano's standard questionnaire. Stratified sampling used to collect data from respondents. Friedman and Kroskal-Wallis test used to rank attributes and compare the several independent groups applying SPSS package. Results showed that, out of 35 attributes, 14 were must-be, 6 performance and 12 attractive. The other 3 ones were indifferent from customers' attitudes.

**Keywords:** Customer satisfaction, Print-house, offset printing, Kano model, Iran

### 1. Introduction

There is only one valuable goal for every firm which is customer retention. Today, customer orientation is one of the important concepts involving the managers' time and efforts (Ghasemi, 2003). In addition, in the current era in which most of the markets have matured and attracting a new customer is a difficult work, companies requires customers retention and their loyalty so that it is said that a new customer attraction costs are six to nine times more than retaining current customers (Peppers and Rogers, 2004). One way to create more loyalty in customers is their maximum satisfaction. Price elasticity decreases the business expenses, failure costs and new customer attraction charges. The customer satisfaction is also considered as a determinant in repurchase, word of mouth and customer loyalty. Satisfied customers return and buy more than before and share their experiences with others (Fornell et al, 1996). Therefore, companies ought to listen to their customers and satisfy them. Many researches have shown that long term success of a firm has a close relationship with its ability to adapt with customer's changing needs and wants (Turkylmaz and Ozkan, 2007).

## 2. Problem statement

Printing industry is one of those which has received particular importance due to the boost in literacy index and development of consumer goods and services markets leading to the increase in demands for written information and advertisements. Increasing demand for business, consumer and daily journals has helped the industry boom and has attracted more attentions for investment due to good profitability. Offset printing has a notable contribution in Middle East because of needs for better speed and quality. Today, printing has transformed into a media which is a part of the communication technology. If we believe in printing as a media in the locus of this technology, we will correct our attitudes toward it as a marketing tool. Those who even know a little about modern methods of marketing are rarely using one type of message or advertisement for all customers. Offset printing had been the lonely way to print high quality colored written papers till now. Wholly, it is the most lucrative and abundant printing.

This industry faces two kinds of customers. The first one is the organizational customers including publishers, business printing and packaging companies which are suppliers and producers themselves. Those we focus on them in this research. In fact, printing industry help these customers to make their products more tangible. The second type of customers is final consumers to whom printed products are supplied. Among these two, the first type of customers is more important than the second because the survival of this industry is indebted to the existence of goods and services. However, all printing artisans not only try to attract customers but also set the ground for continuance of their relationship and make them loyal. It is obvious that one factor which can effectively lead to this loyalty is customer satisfaction from printed products. Moreover, printing is a profitable industry in the current era which is vulnerable to be targeted and matured by investors leading to reduction in its profitability and survival. One of the methods which are used in marketing theory to overcome these situations is product differentiation and customer orientation. The focus of the customer orientation is also satisfying customers to be more loyal. So, it is required to identify and categorize the attributes influencing the customer satisfaction in this industry and fill the existing gap in the scientific literature of printing industry. We attempt to fulfill this task in the current research by applying Kano's satisfaction model. The research objectives are as follows:

- Identification of must-be attributes in customer's satisfaction of offset printing products
- Identification of one-dimensional attributes in customer's satisfaction of offset printing products
- Identification of attractive attributes in customer's satisfaction of offset printing products
- Ranking the identified triple attributes

## 3. Customer satisfaction

Satisfaction is a positive feeling in an individual after experiencing a product or service which is caused when customer expectations meet supplier's performance. The balance between these expectations and the received products or services makes the customer satisfied. The higher or lower levels of quality supplied by the products and services against the expectations contribute to excitement or dissatisfaction.

### 3.1. Kano's model of customer satisfaction

"In his model, Kano distinguishes between three types of product requirements which influence customer satisfaction in different ways when met:

**Must-be requirements:** If these requirements are not fulfilled, the customer will be extremely dissatisfied. On the other hand, as the customer takes these requirements for granted, their fulfillment will not increase his satisfaction. The must-be requirements are basic criteria of a product. Fulfilling the must-be requirements will only lead to a state of "not dissatisfied". The customer regards the must-be requirements as prerequisites, he takes them for granted and therefore does not explicitly demand them. Must-be requirements are in any case a decisive competitive factor, and if they are not fulfilled, the customer will not be interested in the product at all.

**One-dimensional requirements:** With regard to these requirements, customer satisfaction is proportional to the level of fulfillment - the higher the level of fulfillment, the higher the customer's satisfaction and vice versa. One-dimensional requirements are usually explicitly demanded by the customer.

Attractive requirements: These requirements are the product criteria which have the greatest influence on how satisfied a customer will be with a given product. Attractive requirements are neither explicitly expressed nor expected by the customer. Fulfilling these requirements leads to more than proportional satisfaction. If they are not met, however, there is no feeling of dissatisfaction” (Saurwein et al, 1996: 1).

### 3.2. Research questions

#### 3.2.1. Main question:

Which attributes in offset printing products can contribute to customer satisfaction?

#### 3.2.2. Sub-questions:

- Which attributes are must-be for customer satisfaction in offset printing products?
- Which attributes are one-dimensional for customer satisfaction in offset printing products?
- Which attributes are attractive for customer satisfaction in offset printing products?
- What are the ranks of the must-be attributes?
- What are the ranks of the one-dimensional attributes?
- What are the ranks of the attractive attributes?

## 4. Research methods

The current research is an applied, descriptive, and survey research. The research tool involves two questionnaires. The first one is an unstructured open questionnaire in order to identify customer satisfaction attributes from respondents' views. They were asked to state their opinion about the features which can result in their satisfaction. The satisfaction attributes were investigated through seven dimensions as follows:

- Physical and qualitative features in the offset printing products
- Physical evidences in the offset print-houses' environment
- Machineries features in the offset print-houses
- Personnel' individual characteristics of the offset print-houses
- The process of product order and delivery
- The specific services delivered before, during and after the printing
- Terms of sale in the offset print-houses

After collection of questionnaires from respondents and filtering the responses, 35 attributes affecting the customer satisfaction were identified and then classified in two parts (functional and dysfunctional) based on Kano's model in the second questionnaire.

By using Kano's questionnaire, it is possible to classify the attributes of products in must-be, one-dimensional, attractive or even indifferent classes. Two types of questions are considered for each attribute which can be answered in five ways, as shown in table 1. The first question is about the customers' feelings when the attributes are available in the product (functional question) and the second question is about the customers' feeling when the attributes are not available in the product (dysfunctional question). By combining these two questions in the evaluation table (table 2), it is possible to classify the products attributes (Kano, 1984).

For example, if a customer selects the answer of “I like it” to the functional question and “I am neutral” to the dysfunctional question it means that the specified feature is an attractive attribute. The (I) group denotes that customer is indifferent to the feature and he is not willing to pay more for it. (Q) also shows that there is an ambiguity about the question and customer has not understood the concept. The (R) indicates that the attribute not only is not demanded by customer but also has affected his view reversely.

To validate the questionnaire we used face validity by probing the academics and experts' views in printing industry. The reliability of the research tool was measured by Cronbach alpha coefficient for both parts of the questionnaire. Table 3.shows that the coefficients are larger than the threshold of 0.70.

#### 4.1. Population and sampling

The research population consists of all print-houses in Iran which are classified in to three classes based on number and volume of activities. The first class is city of Tehran with more than 1000 print-houses. The second one involves the cities of Mashhad, Esfahan, and Tabriz all with more than 100 print-houses and the third class consists of all other print-houses in the remaining cities in Iran. The total volume of population is 2217 offset print-houses in Iran.

According to three classes in the population, non-homogeneity of print-houses and audiences' technical knowledge and direct relationship between the number of customers and their expectation from print-houses, stratified sampling was used to collect data from respondents. The Cochran's formula was used also to determine the sample size which was 69 in the first class, 24 in the second one and 45 in the third one and 138 in total.

### 5. Data analysis

To analyze the data we used descriptive statistics and non-parametric test like Friedman to rank the identified attributes, and Kruskal-Wallis to compare the independent multiple groups.

#### 5.1. Research findings

The demographic factors of the research respondents are as follows: 86.7 percent of respondents were male and 12.7 percent of them were female. About 70 percent have academic education with 36.7 percent in bachelor degree. 80 percent of respondents were married and about 60 percent of them were between 20 to 40 years old. The highest work experience in printing industry belongs to 5 to 10 years with 28.3 percent and the lowest belongs to 15 to 20 years.

The findings of the first and the second questionnaires have shown in table 4. According to this table and the kano analysis all the identified attributes are falling into different groups based on the highest frequency.

#### 5.2. Ranking the must-be, one-dimensional and attractive attributes

Table 5, 6 and 7 show the ranks of the satisfaction attributes using Friedman test.

As table 5 shows 14 attributes were ranked in the group of must-be attributes. According to the findings keeping the customers' order information confidential has the highest rank among the must-be attributes. Delivering the product with a customized packaging has also the lowest rank. So, considering these attributes in delivering of products does not contribute to the increase in the customer's satisfaction but it prevents from dissatisfaction.

According to table 6, "Cleanness of the print-house environment" is at the top of the one-dimensional attributes and "Delivering the product in the customer location" is at the bottom of the list. Hence, if print-houses consider these customers' attributes in designing their product and services, it will increase the customers' satisfaction and if they do not consider them, it will result in their dissatisfaction.

Based on table 7, "Employees' uniform clothing" has the highest rank in the attractive attributes and "Giving useful advices to reduce the costs" has the lowest rank. The others stand between these two. Thus, according to the attractiveness of these attributes, if print-houses consider them in their products and services, it will lead to a high excitement and satisfaction in customers and making them more loyal more than before. Ignoring these attributes does not also contribute to dissatisfaction.

#### 5.3. Customer satisfaction coefficient

Customer satisfaction coefficient implies that enhancement in one of the product attributes increases the customer satisfaction or it merely prevents from the dissatisfaction. Different parts of market have generally their own needs and expectations. So, it is not certain that whether a specific attribute can be applied in other parts. The other determinant is the calculation of an attribute effect mean on customers' total mean. This coefficient shows the extent to which an attribute is effective in customer's satisfaction attraction or to what extent lack of that attribute leads to his dissatisfaction. Customer satisfaction coefficient varies between zero and one. The more nearer it is to one

means that it is more effective on customer satisfaction and vice versa. Likewise, a negative customer satisfaction coefficient indicates that its effect on customer dissatisfaction will be larger. The value of zero in this coefficient shows that lack of that attribute will not cause dissatisfaction. As shown in table 8, 17 attributes out of 35 had a satisfaction coefficient over 0.50 showing their high effectiveness on customer satisfaction.

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**Annexure**

Functional form of the question: How do u feel if the colors are registered exactly on each other?	I like it that way It must be that way I am neutral I can live with it that way I dislike it that way
Dysfunctional form of the question: How do u feel if the colors are not registered exactly on each other?	I like it that way It must be that way I am neutral I can live with it that way I dislike it that way

Table 1. Functional and dysfunctional questions in the Kano questionnaire

Customer attributes		Dysfunctional Question				
		I like it	It must be	I am neutral	I can live with it	I dislike it
Functional Question	I like it	Q	A	A	A	O
	It must be	R	I	I	I	M
	I am neutral	R	I	I	I	M
	I can live with it	R	I	I	I	M
	I dislike it	R	R	R	R	Q

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

Table 2. Kano Evaluation table

Question Type	No. of items	Chronbach alpha
Functional	35	0.71
Dysfunctional	35	0.91
Total	70	0.78

Table 3.: Reliability of research tool

Customer Satisfaction Attributes	One-dimensional	Must-be	Indifference	Reverse	Attractive	Questionable	Type
Consistency and prompt register of colors on each other	49(29.5)	88(53)	14(4.8)	2(1.2)	995.4)	4 (2.4)	M
Uniformity of colors and trams in the whole printing circulation	40(24.1)	97(58.4)	18(10.8)	1(0.6)	10(6)	0	M
Printing with good quality ink	59(35.5)	77(46.4)	15(9)	0	12(7.2)	3(1.8)	M
Popularity of ink brand	32(19.3)	25(15.1)	42(30.25)	3(1.8)	61(36.7)	3(1.8)	A
Printing with good quality paper	67(40.4)	81(48.8)	7(4.2)	1(0.6)	10(6)	0	M
Popularity of paper brand	29(17.5)	25(15.1)	48(28.9)	39(1.8)	59(35.5)	2(1.2)	A
Compatibility of trams with original design of order after print	41(24.7)	102(61.4)	14(8.4)	0	7(4.2)	2(1.2)	M
Cleanness of the print-house environment	55(33.1)	50(30.1)	35(21.1)	1(6.0)	24(14.5)	1(0.6)	O
Proper coloring of spaces in the print-house	37(22.3)	20(12)	53(31.9)	0	56(33.7)	0	A
Applying printing machines with popular brand	34(20.5)	30(18.1)	53(31.9)	0	46(7.27)	3(1.8)	I
Applying modern printing machines	43(25.9)	31(18.7)	39(23.5)	1(6.0)	51(7.30)	1(0.6)	A
Using printing machines with auxiliary facilities	56(33.7)	31(18.7)	27(16.3)	0	51(7.30)	1(0.6)	O
Equipment of print-house with full automatic binding machineries	42(25.3)	32(19.3)	36(21.7)	0	55(33.1)	1(0.6)	A
Equipment of the print-house with complimentary machineries such as Cellophane, UV, Die Cut, etc.	42(25.3)	31(18.7)	33(19.9)	0	57(34.3)	3(1.8)	A
Concentration of all printing and binding lithography processes in one place	41(24.7)	35(21.1)	33(19.9)	1(0.6)	52(31.3)	4(2.4)	A
Fixing defective file by lithography	50(30.1)	68(41)	10(6)	1(0.6)	30(18.1)	7(4.2)	M
Supply of customer's paper by the print-house	34(20.5)	35(21.1)	34(20.5)	1(0.6)	62(37.3)	0	A
Delivering the product with a customized packaging	63(38)	77(46.4)	8(4.8)	1(0.6)	17(10.2)	0	M
Delivering the product in the customer location	55(33.1)	33(19.9)	22(13.3)	1(0.6)	55(33.1)	0	O
Delivering product in the promised time	38(29.9)	108(65.1)	10(6)	1(0.6)	8(4.8)	1(0.6)	M
Equality of number of circulation with the ordered circulation in the time of delivery	10(6)	24(14.5)	102(61.4)	5(3)	25(15.1)	0	I
Internet-based ordering	33(19.9)	18(10.8)	45(27.1)	1(0.6)	65(39.2)	4(2.4)	A
Possibility of direct contact with operators	87(52.4)	55(31.1)	9(5.4)	1(0.6)	11(6.6)	3(1.8)	O
Keeping the customers' order information confidential	33(19.9)	116(69.9)	8(4.8)	1(0.6)	8(8.4)	0	M
Operators' credit and experience	54(32.5)	54(32.5)	22(13.3)	1(0.6)	33(19.9)	2(1.2)	O
Educated operators and employees	16(9.6)	19(11.4)	41(6)	1(0.6)	61(36.7)	0	I
Employees' polished and neat appearance	45(27.1)	33(19.9)	36(7.21)	0	52(31.3)	0	A
Employees' uniform clothing	11(6.6)	20(12)	61(36.7)	1(0.6)	72(34.4)	1(0.6)	A
Employees' curtsey and companionship	52(31.3)	84(50.6)	10(6)	1(0.6)	19(11.4)	0	M
trustworthy of employees in the print-house	46(27.7)	105(63.3)	9(5.4)	0	6(3.6)	0	M
Good reputation of manager of the print-house	58(34.9)	75(45.2)	12(7.2)	0	21(12.7)	0	M
Popularity of the print-house and conveying a positive image	67(40.4)	65(39.2)	14(8.4)	1(0.6)	19(11.4)	0	O
Reliability in proper performance of print-house	61(36.7)	86(51.8)	9(5.4)	0	10(6)	0	M
Giving useful advices to reduce the costs	49(29.5)	38(22.9)	25(15.1)	2(1.2)	52(31.3)	0	A
Prompt and fast complaint handling	55(33.1)	91(54.8)	7(4.2)	0	12(7.2)	1(0.6)	M

Table 4. Distribution of questions by Kano attributes

No.	Satisfaction attributes	Mean of ranks
1	Keeping the customers' order information confidential	8.40
2	Compatibility of trams with original design of order after print	8.31
3	Delivering product in the promised time	8.14
4	Uniformity of colors and trams in the whole printing circulation	8.10
5	trustworthy of employees in the print-house	7.93
6	Consistency and prompt register of colors on each other	7.69
7	Prompt and fast complaint handling	7.41
8	Employees' curtsey and companionship	7.19
9	Reliability in proper performance of print-house	7.16
10	Printing with good quality ink	7.08
11	Printing with good quality paper	7.01
12	Fixing defective file by lithography	6.90
13	Good reputation of manager of the print-house	6.88
14	Delivering the product with a customized packaging	6.81

Table 5. Ranks of must-be attributes

No.	Satisfaction attributes	Mean of ranks
1	Cleanness of the print-house environment	3.81
2	Popularity of the print-house and conveying a positive image	3.59
3	Operators' credit and experience	3.58
4	Possibility of direct contact with operators	3.55
5	Using printing machines with auxiliary facilities	3.29
6	Delivering the product in the customer location	3.19

Table 6. Ranks of one-dimensional attributes

No.	Satisfaction attributes	Mean of ranks
1	Employees' uniform clothing	7.09
2	Popularity of paper brand	6.82
3	Popularity of ink brand	6.72
4	Proper coloring of spaces in the print-house	6.67
5	Applying modern printing machines	6.52
6	Internet-based ordering	6.42
7	Supply of customer's paper by the print-house	6.41
8	Concentration of all printing and binding lithography processes in one place	6.39
9	Equipment of print-house with full automatic binding machineries	6.39
10	Employees' polished and neat appearance	6.36
11	Equipment of the print-house with complimentary machineries such as Cellophane, UV, Die Cut, etc.	6.17
12	Giving useful advices to reduce the costs	6.03

Table 7. Ranks of attractive attributes

Customer Satisfaction Attributes	One-dimensional	Must-be	Indifference	Attractive	$\frac{O + A}{(O + A + M + I)}$	$\frac{O + M}{(O + A + M + I)(-1)}$
Consistency and prompt register of colors on each other	49(29.5)	88(53)	14(4.8)	9(5.4)	0.363	-0.856
Uniformity of colors and trams in the whole printing circulation	40(24.1)	97(58.4)	18(10.8)	10(6)	0.303	-0.830
Printing with good quality ink	59(35.5)	77(46.4)	15(9)	12(7.2)	0.436	-0.834
Popularity of ink brand	32(19.3)	25(15.1)	42(25.3)	61(36.7)	0.581	-0.354
Printing with good quality paper	67(40.4)	81(48.8)	7(4.2)	10(6)	0.467	-0.898
Popularity of paper brand	29(17.5)	25(15.1)	48(28.9)	59(35.5)	0.547	-0.335
Compatibility of trams with original design of order after print	41(24.7)	102(6.4)	14(8.4)	7(4.2)	0.293	-0.872
Cleanness of the print-house environment	55(33.1)	50(30.1)	35(21.1)	24(14.5)	0.482	-0.640
Proper coloring of spaces in the print-house	37(22.3)	20(12)	53(31.9)	56(37.7)	0.560	-0.343
Applying printing machines with popular brand	34(20.5)	30(18.1)	53(31.9)	46(27.7)	0.491	-0.393
Applying modern printing machines	43(25.9)	31(18.7)	39(23.5)	51(30.7)	0.573	-0.451
Using printing machines with auxiliary facilities	56(33.7)	31(18.7)	27(16.3)	51(30.7)	0.648	-0.527
Equipment of print-house with full automatic binding machineries	42(25.3)	32(19.3)	36(21.7)	55(33.1)	0.588	-0.448
Equipment of the print-house with complimentary machineries such as Cellophane, UV, Die Cut, etc.	42(25.3)	31(18.7)	33(19.9)	57(34.3)	0.607	-0.448
Concentration of all printing and binding lithography processes in one place	41(24.7)	35(21.1)	33(19.9)	52(31.3)	0.578	-0.472
Fixing defective file by lithography	50(30.1)	68(41)	10(6)	30(18.1)	0.506	-0.747
Supply of customer's paper by the print-house	34(20.5)	35(21.1)	34(20.5)	62(37.3)	0.582	-0.418
Delivering the product with a customized packaging	63(38)	77(46.4)	8(4.8)	17(10.2)	0.485	-0.848
Delivering the product in the customer location	55(33.1)	33(19.9)	22(33.3)	55(33.1)	0.667	-0.533
Delivering product in the promised time	38(22.9)	108(65.1)	10(6)	8(4.8)	0.280	-0.890
Equality of number of circulation with the ordered circulation in the time of delivery	10(6)	24(14.5)	102(61.4)	25(15.1)	0.217	-0.211
Internet-based ordering	33(19.9)	18(10.8)	45(27.1)	65(2.39)	0.609	-0.317
Possibility of direct contact with operators	87(52.4)	55(33.1)	9(5.4)	11(6.6)	0.605	-0.877
Keeping the customers' order information confidential	33(19.9)	116(69.9)	8(4.8)	8(4.8)	0.248	-0.907
Operators' credit and experience	54(32.5)	54(32.5)	22(13.3)	33(19.9)	0.534	-0.663
Educated operators and employees	16(9.6)	19(11.4)	(41.6)	61(36.7)	0.467	-0.212
Employees' polished and neat appearance	45(27.1)	33(19.9)	36(21.7)	52(31.3)	0.584	-0.470
Employees' uniform clothing	11(6.6)	20(12)	61(36.7)	72(34.4)	0.506	-0.189
Employees' curtsey and companionship	52(31.3)	84(50.6)	10(6)	19(11.4)	0.430	-0.824
trustworthy of employees in the print-house	46(27.7)	105(63.3)	9(5.4)	6(3.6)	0.313	-0.910
Good reputation of manager of the print-house	58(34.9)	75(45.2)	12(7.2)	21(12.7)	0.476	-0.801
Popularity of the print-house and conveying a positive image	67(40.4)	65(39.2)	14(8.4)	19(11.4)	0.521	-0.800
Reliability in proper performance of print-house	61(36.7)	86(51.8)	9(5.4)	10(6)	0.428	-0.886
Giving useful advices to reduce the costs	49(29.5)	38(22.9)	25(15.1)	52(31.3)	0.616	-0.530
Prompt and fast complaint handling	55(33.1)	91(54.8)	7(4.2)	12(7.2)	0.406	-0.885

Table 8.: Customer satisfaction and dissatisfaction coefficient for all attributes