International Journal of Production Management and Engineering

https://doi.org/10.4995/ijpme.2021.13683
Received: 2020-05-13 Accepted: 2020-12-27

Identifying and classifying attributes of packaging for customer satisfaction - A Kano Model approach

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Abstract: The packaging industry in India is predicted to grow at 18% annually. In recent years Packaging becomes a potential marketing tool. The marketer should design the packaging of high quality from customer perspective. As the research in the area of packaging is very few, study of quality attributes of Packaging is the need of the hour and inevitable. An empirical research was conducted by applying Kano Model. The researcher is interested to find out the perception of the customers on 22 quality attributes of packaging. 500 respondents which were selected randomly were asked about their experience of packing on everyday commodities through a well-structured questionnaire. The classification of attribute as must-be quality, one-dimensional quality, attractive quality, indifferent quality and reverse quality was done by three methods. Marketer should make a note of it and prioritise the attributes for customer satisfaction.

Key words: Attributes, Classification, Kano Model, Packaging, Satisfaction.

1. Introduction

The packaging industry in India is predicted to grow at 18% annually, with flexible packaging growing at 25% and rigid packaging at 15%. Packaging is the fifth largest sector in India's economy and is one of the highest growth sectors in the country. According to the Packaging Industry Association of India (PIAI), the sector is growing at 22% to 25% per annum. A study by trade and commerce trade association ASSOCHAM and global consulting firm EY revealed that the packaging industry in India is anticipated to reach $73.6bn by the 2020 financial year (FY2020), due to India's growing population and income levels. In recent years Packaging becomes a potential marketing tool. It's considered as one of the important P of marketing mix. It's considered as "Silent Salesman" and "Five Second Commercial". The marketer should design the packaging of high quality from customer perspective. As the research in the area of packaging is very few, study of quality attributes of Packaging is the need of the hour and inevitable. An empirical research was conducted by applying Kano Model. The researcher is interested to find out the perception of the customers on 22 quality attributes of packaging. 500 respondents which were selected randomly were asked about their experience of packing on everyday commodities through a well-structured questionnaire. Three approaches to Kano model are used to categorize the quality attributes as must-be quality, one-dimensional quality, attractive quality, indifferent quality and reverse quality. Marketer could classify and prioritise the attributes into 8 must-be, 6 one-dimensional, 5 attractive, 2 indifferent and 1 reverse quality.Marketer should make a note of it and prioritise the attributes for customer satisfaction

To cite this article: Dash. S.K. (2021). Identifying and classifying attributes of packaging for customer satisfaction - A Kano Model approach. *International Journal of Production Management and Engineering, 9*(1), 57-64. https://doi.org/10.4995/ijpme.2021.13683

2. Packaging – A Glimpse

Packaging is considered to be one of the important element of Marketing. Now its gaining lot of importance whereas during 1950s it saw considered as indifferent. In this present era it gains lot of importance as it is providing different dimensions like functional, technical, informative and visual. Customers want solutions to their problem. So, packaging should not be considered as a mere container rather it should be considered as one of the important "P" in the marketing mix. As per the research, purchase decision is generally taken by the customers within seconds. So it acts like a "Silent Salesman". Generally the product quality is ascertained by packaging. So packaging should be good from functional, technical, informative and visual.

3. Theory of Kano Model

Kano Model was developed by Prof Noriaki Kano in 1984 which classify the attributes of a product or service into five categories. The categories are as shown in Figure 1.

3.1. Must-Be Quality (M):

These are all essential attributes of a product. If these attributes are there, they may not influence the customer to go for the product, but if it's not there, definitely the customers will be dissatisfied which ultimately results into rejection of the offer.

3.2. One-Dimensional Quality (O):

These are the attributes responsible for lot of satisfaction because of its availability and creates lots of dissatisfaction because of its non-availability or when it is not fulfilled by the marketer.

3.3. Attractive Quality (A):

These are the attributes generally delights the customers. Availability of these attributes creates lot of satisfaction but non availability of these attributes do not create any dissatisfaction. These are the attributes used to differentiate the products from the competitors and creates a competitive advantage for the marketer.

3.4. Indifferent Quality (I):

Availability or non-availability of these attributes are not going to have any impact on customer satisfaction and dissatisfaction. Customers are indifferent to these attributes. Marketers should avoid these attributes.

3.5. Reverse Quality (R):

Lower the fulfilment of these attributes higher the satisfaction and vice versa.

4. Methodology

Empirical investigation was undertaken to assess the quality attributes of packaging. 500 respondents were selected through random sampling. Questionnaire was administered to find out the importance of different quality attributes as well as their category as per the Kano Model.

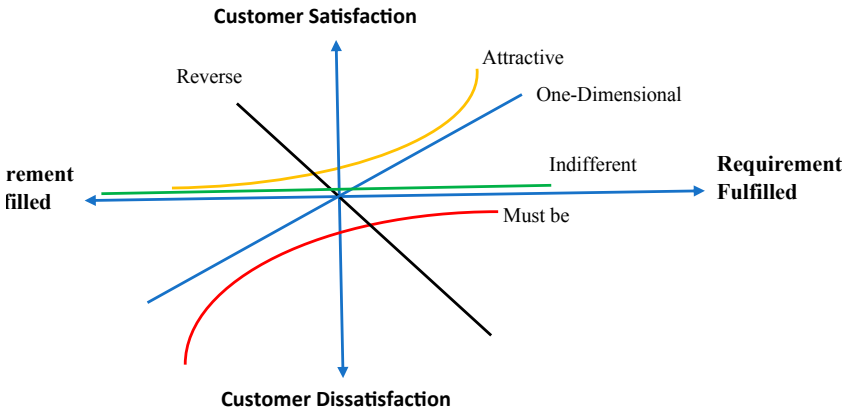

Figure 1. Kano Model.

4.1. Dimensions of Attributes in Packaging

The author tries to study the Packaging from four Dimension. The dimensions are Functional, Technical, Informative and visual.

A. Functional: It contains all the attributes pertaining to the functional aspects of Packaging. 8 out of 22 attributes such as Easy to Grip, Easy to Open, Easy to Empty Completely, Easy to throw in the Waste, Fit in Storage Spaces, User- Friendly, Weight and Additional Functions were studied under this dimension.

B. Technical: It contains all the attribute pertaining to technical aspect of Packaging. 5 out of 22 attributes such as Hygienic, Leakage Proof, Protection, Recyclable Material and Resealability were studied under this dimension.

C. Informative: It contains all the attribute pertaining to communication aspects of Packaging. 5 out of 22 attributes such as Date of Manufacturing, Declaration of Contents, Instructions, URL and Customer Care Number were studied under this dimension.

D. Visual: It contains all the attributes pertaining to visual and branding aspects of Packaging. 4 out of 22 attributes such as Aesthetically Appealing, Appearance, Brand Name and Symbols were studied under this dimension.

Kano Model is used to assess the attributes that influence customer's purchase decision and classify customer requirements to enhance performance of the product/service. Following steps were undertaken to administer the Kano Model for assessing and classifying the attributes of Packaging.

Step-I

It is vital to identify and classify the key attributes of Packaging. Lots of attributes of packing which are crucial from customer satisfaction point of view were identified from different literature and reviewed. These are reflected in the questionnaire.

Step-II

Surveying were done by administering questionnaire to 500 respondents in Pune City, India. The respondents were finalised by random sampling method. The questionnaire contains 3 parts namely Part "A", Part "B" and Part "C". Part "A" contains all demographic information. Part "B" contains Kano Model questionnaire and Part "C" contains attribute rating scale where respondents were asked to rate the importance of attribute on a scale of 1 to 10,1 being least important and 10 being most important. Kano Model questionnaire is unique in nature and contains a pair of questions namely functional and dysfunctional for each attribute to ascertain its category. Functional questions were designed in a positive way and dysfunctional questions were designed in a negative way. Both functional and dysfunctional question has five options namely (a) Like, (b) Must be, (c) Neutral, (d) Live with and (e) Dislike. The respondents were asked to choose one option each from functional and dysfunctional question. In this research we have taken a total of 22 questions pertaining to 4 dimensions of the Packaging. A sample of both functional and dysfunctional question which are used in the questionnaire is illustrated below in Table 1.

Table 1. Example of Functional and Dysfunctional Question.

Functional Question	Response
1 a. Packaging offers additional functions	1. Like 2. Must be 3. Neutral 4. Live with 5. Dislike
Dysfunctional Question	**Response**
1b. Packaging does not offer additional functions	1. Like 2. Must be 3. Neutral 4. Live with 5. Dislike

Step-III

A test run of questionnaire was done to avoid the confusion of respondents. When we found some confusion, the questions were revised and tested again.

We have used Kano Evaluation Table (Table 2) to categories the response of individual respondent into different category. An attribute is classified as "Must be (M)", if the response is "Must be" or "Neutral" or "Live with" for a functional question and "Dislike" for a dysfunctional question. An attribute is classified as "One -Dimensional (O)", If the response is "Like it" for a functional question and "Dislike" for a dysfunctional question. An attribute is classified as "Attractive (A)", if the response is

Table 2. Kano Evaluation Table.

Customer Response ⇩ / ⇨		Functional				
		Like	Must be	Neutral	Live With	Dislike
Dysfunctional	Like	Question (Q)	Reverse (R)	Reverse (R)	Reverse (R)	Reverse (R)
	Must be	Attractive (A)	Indifferent (I)	Indifferent (I)	Indifferent (I)	Reverse (R)
	Neutral	Attractive (A)	Indifferent (I)	Indifferent (I)	Indifferent (I)	Reverse (R)
	Live With	Attractive (A)	Indifferent (I)	Indifferent (I)	Indifferent (I)	Reverse (R)
	Dislike	One-Dimensional (O)	Must be (M)	Must be (M)	Must be (M)	Question (Q)

"Like" for a functional question and "Must be" or "Neutral" or "Live with" for a dysfunctional question. An attribute is classified as "Indifferent (I)", if the responses is "Must be" or "Neutral" or "Live with" for a functional question and "Must be" or "Neutral" or "Live with" for a dysfunctional question, An attribute is classified as "Reverse (R)", if the response is "Dislike" for a functional question and "Like" or "Must be" or "Neutral" or "Live with" for a dysfunctional question. An attribute also classified as "Reverse (R)", if the response is "Must be" or "Neutral" or "Live with" for a functional question and "Like" for a dysfunctional question. An attribute is classified as "Questionable (Q)", if the response is "Like" for both functional question as well as dysfunctional question. An attribute is also classified as "Questionable (Q)", if the response is "Dislike" for both functional question as well as dysfunctional question.

Step-IV

Based on the response given by the respondents, the classification of attributes were done by following methods

(1) Frequency-Based Attributes Classification Method: This method of classification is based on the frequency of response. Classification of a particular attribute is based on the maximum frequency of response (M, O, A, I, R, Q).

(2) Comparison-Based Attribute Classification Method: This method of classification suggests that for an attribute if summation of the frequency of M, O, A is greater than the summation of the frequency of I, R, Q, then the attribute is classified among M, O, A which is having highest frequency amongst them. If summation of the frequency of I, R, Q is greater than the summation of the frequency of M, O, A then the attribute is classified among I,R,Q which is having highest frequency amongst them. If summation of M, O, A and summation of I, R, Q are same, then the attribute is classified based on the priority order defined by Matzler et al. (1996) i:e M > O > A > I.

(3) Index-Based Attribute Classification Method: This method suggests two indices namely Satisfaction Index and Dissatisfaction Index. Satisfaction Index (SI) = (A+O)/ (A+O+M+I) which varies from 0 to 1 and Dissatisfaction Index (DI) = (M+O) / (A+O+M+I)*(-1) which varies from -1 to 0. The Satisfaction Index and Dissatisfaction Index of 22 attributes are plotted in a diagram to get an overview.

Different attributes were classified based on Satisfaction and Dissatisfaction Index as described in Table 3.

Table 3. Index Based Attribute Classification.

Satisfaction Index (SI)	Dissatisfaction Index(DI)	Classification
< 0.5	≥ 0.5	Must-be
≥ 0.5	≥ 0.5	One-dimensional
≥ 0.5	< 0.5	Attractive
< 0.5	< 0.5	Indifferent

Step-V

Category Strength (CS) and Total Strength (TS) are the two measurements of attributes introduced by Lee and Newcomb in 1997.

CS is the difference of the percentage of response between highest category and next highest category.

Example: Suppose for an attribute "O" is the highest category having 45.5% and "A" is the next highest category having 25.5%. Then CS=45.5%-25.5%=20.

TS is the total percentage of response in the three category like Must-be (M), One-dimensional (O) and Attractive (A).

Example: Suppose for an attribute "M" is 25%, "O" is 35% and "A" is 10%. Then

TS=25%+35%+10%=70.

5. Analysis of Result

Twenty Two Packaging attributes were identified by summarizing relevant literatures and by taking reality into consideration which contributes towards customer satisfaction. They broadly have 4 dimensions namely Functional which contains 8 attributes, Technical which contains 5 attributes, Informative which contains 5 attributes and Visual which contains 4 attributes. Four dimensions with 22 attributes shown in Table 4.

Based on the response mentioned in Table 4, Category, Satisfaction Index (SI), Dissatisfaction Index (DI), Category Strength (CS) and Total Strength (TS) are estimated and presented in Table 5. The category of attributes were estimated by Frequency, Comparison and Index based method and overall category of 22 attributes were decided for 22 attributes. All the attributes were found to be in the same category in all the three methods except weight which is falling in reverse category in Frequency and Comparison based method but falls in indifferent category in index based method. As out of three it falls in reverse category in two methods, so overall category will be reverse only. Out of 22, 8 attributes like Easy to Open, Hygienic, Leakage Proof, Protection, Date of Manufacturing, Declaration of Contents, Instructions, Appearance are in Must be, 6 attributes like Easy to Grip, Easy to Empty Completely, Easy to throw in the Waste, User-Friendly, Communicates Quality, Symbols are in One dimensional, 5 attributes like Fit in Storage Spaces, Recyclable Material, Resealability, Customer Care Number, Aesthetically Appealing are in Attractive, 2 attributes like Additional Functions and URL are in Indifferent and 1 attribute like weight is in Reverse category. Attribute strength of all 22 attributes were

Table 4. Dimensions and Attributes of Packaging.

Dimension	Assessed Attributes	A	O	M	I	R	Q	TOTAL
Functional	Easy to Grip	91	260	121	28	0	0	500
	Easy to Open	26	222	230	22	0	0	500
	Easy to Empty Completely	42	245	172	41	0	0	500
	Easy to throw in the Waste	115	289	54	42	0	0	500
	Fit in Storage Spaces	212	205	14	69	0	0	500
	User-Friendly	46	271	162	21	0	0	500
	Weight	17	23	41	79	340	0	500
	Additional Functions	240	2	5	253	0	0	500
Technical	Hygienic	34	182	261	23	0	0	500
	Leakage Proof	28	123	332	17	0	0	500
	Protection	25	145	251	79	0	0	500
	Recyclable Material	205	148	55	92	0	0	500
	Resealability	298	137	22	43	0	0	500
Informative	Customer Care Number	287	142	25	46	0	0	500
	Date of Manufacturing	17	193	269	21	0	0	500
	Declaration of Contents	11	140	300	49	0	0	500
	Instructions	57	174	210	59	0	0	500
	URL	231	7	3	259	0	0	500
Visual	Aesthetically Appealing	228	44	9	219	0	0	500
	Appearance	57	145	231	67	0	0	500
	Communicates Quality	137	158	103	102	0	0	500
	Symbols	49	221	176	54	0	0	500

Table 5. Estimation of Category, SC, DC, CS, TS and Attibute Strength of Attibutes of Packaging.

Dimension	Assessed Attributes	Category				SI	DI	CS	TS	Attribute Strength
		Frequency-Based	Comparision-Based	Index-Based	Overall					
Functional	Easy to Grip	O	O	O	O	0.702	-0.762	27.8	94.4	8.59
	Easy to Open	M	M	M	M	0.496	-0.904	1.6	95.6	9.01
	Easy to Empty Completely	O	O	O	O	0.574	-0.834	14.6	91.8	8.71
	Easy to throw in the Waste	O	O	O	O	0.808	-0.686	34.8	91.6	8.02
	Fit in Storage Spaces	A	A	A	A	0.834	-0.438	1.4	86.2	7.09
	User-Friendly	O	O	O	O	0.634	-0.866	21.8	95.8	8.91
	Weight	R	R	I	R	0.25	-0.4	52.2	16.2	1.81
	Additional Functions	I	I	I	I	0.484	-0.014	2.6	49.4	5.25
Technical	Hygienic	M	M	M	M	0.432	-0.886	15.8	95.4	9.11
	Leakage Proof	M	M	M	M	0.302	-0.91	41.8	96.6	9.74
	Protection	M	M	M	M	0.34	-0.792	21.2	84.2	9.56
	Recyclable Material	A	A	A	A	0.706	-0.406	11.4	81.6	7.63
	Resealability	A	A	A	A	0.87	-0.318	32.2	91.4	7.44
Informative	Customer Care Number	A	A	A	A	0.858	-0.334	29	90.8	7.05
	Date of Manufacturing	M	M	M	M	0.42	-0.924	15.2	95.8	9.64
	Declaration of Contents	M	M	M	M	0.302	-0.88	32	90.2	9.41
	Instructions	M	M	M	M	0.462	-0.768	7.2	88.2	8.74
	URL	I	I	I	I	0.476	-0.02	5.6	48.2	5.09
Visual	Aesthetically Appealing	A	A	A	A	0.544	-0.106	1.8	56.2	6.02
	Appearance	M	M	M	M	0.404	-0.752	17.2	86.6	8.61
	Communicates Quality	O	O	O	O	0.59	-0.522	4.2	79.6	7.29
	Symbols	O	O	O	O	0.54	-0.794	9	89.2	8.26

calculated by summating all the response(in a scale of 0 to 10) of 500 respondents and dividing 500 are also presented in Table 5. Attributes like Leakage Proof (9.74) and Date of Manufacturing (9.64) are most important in must be category. Attributes like User Friendly (8/91) and Easy to Grip (8.59) are most important in one-dimensional category. Attributes like Recyclable Material (7.63) and Resealability (7.44) are most important in attractive category. Both the attributes of indifferent category like Additional Functions (5.25) and URL (5.09) are having low strength. Attribute Weight (1.81) is having the lowest strength which falls in reverse category.

6. Conclusion

Packaging plays a vital role in marketing. It creates the first impression in the retail outlet. It also affects the customer's perception about the quality of the product after purchase. Here the attributes are classified using Kano Model. Broadly, Packaging attributes are divided into 4 dimensions i.e. Functional, Technical, Informative and Visual. Functional dimension contains 8 attributes predominantly one dimensional which indicates that if it will be complied, the satisfaction will increase and if not satisfaction will go down. Technical dimension contains 5 attributes predominantly of must be category which indicates that it has to be fulfilled otherwise customer will defect the product and go to competitor products. Informative dimension contains 5 attributes, majority of which are of must be category which has to be fulfilled at first priority otherwise it will hamper the sales of the product. Visual dimension contains 4 attributes predominantly of one dimensional category presence of which enhance customer satisfaction and absence will lead to customer dissatisfaction. As priority order defined by Matzler et al. (1996) i.e. M > O > A > I., I will be A and A will be O and O will be M subsequently over the product life cycle as reported by Kano (2001). By using this model, marketer can prioritise the attributes and try to fulfil all must be quality attributes specifically

Easy to Open, Hygienic, Leakage Proof, Protection, Date of Manufacturing and Declaration of Contents. Packing attributes should be competitive enough in one dimensional category such as Easy to Grip, Easy to Empty Completely and User- Friendly. Attractive Category like Recyclable Material and Resealability should be given importance in packaging to delight the customers. Marketer should not invest in additional functions as it's found to be indifferent. Weight found to be reverse category, so marketer should try to minimise the weight as much as possible. So its concluded that Packaging plays a vital element in the marketing mix and the attributes should be considered judiciously based on the priority.

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