DEMYSTIFYING THE IMPORTANCE OF ATTRIBUTES OF SMARTPHONE AMONG GEN Z APPLYING KANO MODEL AND CONJOINT ANALYSIS

Sanjit Kumar Dash, Balaji Institute of Technology & Management, Sri Balaji University, Pune
Rashmi Mahajan, Balaji Institute of International Business, Sri Balaji University, Pune

ABSTRACT

India's smartphone shipments grew 23% YoY to reach over 38 million units in Q1 2021. New product launches, promotions and financial schemes, as well as pent-up demand coming from 2020, drove the smartphone market in Q1 2021. India happens to be the world's second-largest telecommunications market. The total telephone subscriber are 1189.15 million in September 2021. The total mobile phone or wireless subscriber has increased from 1148.58 million in September 2020 to 1166.02 million in September 2021. Gross revenue of the telecom sector in India reached $ 8.74 billion in the first quarter of FY22. The smart phone happens to be instrumental in the growth of business operation. This research work was carried out in Pune among respondents to find out the importance of attributes and the combination of different features of Smartphone are best preferred by the Gen Z. Conjoint Analysis and Kano Model identified important attributes considered by the Gen Z for purchasing smartphone. Sixteen attributes were analyzed using Kano Model. It has been found that , 5 are Must -Be (M), 2 are One-Dimensional(O), 6 are Attractive(A), 2 are Indifferent(I) and 1 is Reverse (R) quality. Conjoint Analysis was undertaken for five attributes found as Must -Be quality in Kano Analysis. It has been establish from the analysis, that 12 MP Camera, 8GB RAM, 128 GB Storage, 6.7 Inch Display and 5000mAh Battery is the most preferred combination for smartphone among Gen Z.

Key Words: Attributes, Conjoint Analysis, Gen Z, Kano Model, Smartphone.

INTRODUCTION

Smartphones plays a very vital role in individual's life. Sometimes I feel smartphones are a part of basic needs as stated by Maslow's need hierarchy, as it is difficult to survive without it. As the disposable income increases, the internet cost decreases, and the individuals want to stay connected are reason for market growth of Smartphones in India. However, the penetration rate of Smartphones are low as compared to the other market across the globe. Now people wants to switch to Smartphone from feature phone. Counterpoint Research reported that revenue in India's Smartphone market surged 27 % to $38 billion in 2021. It also forecast the revenue of Smartphone to grow to $44 billion in 2022. Shipment of Smartphones grew 11% to 169 million in 2021. India with a subscriber base of 1.16 billion occupies the second position in the world with respect to telecommunication market. According to a report prepared by GSM Association (GSMA) in collaboration with Boston Consulting Group (BCG), Indian mobile economy is contributing significantly to India's Gross Domestic Product (GDP).

Citation Information: Dash, S.K., & Mahajan, R. (2024). Demystifying the importance of attributes of smartphone among gen z applying kano model and conjoint analysis. *Academy of Marketing Studies Journal, 28*(5), 1-13.

As Smartphone users increasing every year in India, Samsung has decided to double the production capacity in India. Apple has started assembling phones in India. Customers in India are getting many brands to select and many options to buy a Smartphone. Attributes are the key deciders for Smartphone. Kim et al., 2013 reported rapid growth of Smartphones, which attracts lots of attention towards consumer buying behavior. Gelenbe et al., 2013 reported the importance of Smartphone in mobile communication scenario and there will be strong growth in market share through out next five years. Therefore, in the present study researcher wants to find out the importance of attributes by classifying then using Kano Model and trying to find out the utility of attributes at different level and the best combination of attributes preferred by the Gen Z applying Conjoint Analysis.

REVIEW OF LITERATURE

Customer is the king in perfect market competition. It is a challenge for marketers to entice the customers and win over the completion. Product development are customer centric. Therefore, it is imperative to understand and measure the customer satisfaction. Lots of researcher applied different methods for estimation of customer satisfaction. Motivation theory of Hertzberg et al., 1959 inspired Kano (1984) to develop the model. Customer Satisfaction (CS) and Customer Dissatisfaction (CD) measured meticulously by the model. The presence and absence of attributes decides the quantum of satisfaction and dissatisfaction based on the category of attribute. Mckay et al., 2001 studied the requirements management and reported that the requirements can be converted to physical element by advanced computer aided design. Matzler et al., 2004 used Kano Model to estimate employee satisfaction in pharmaceutical industry. Song, 2016 studied about Kano's wording and it's implication on classification of attribute for smartphones in Korea. A new way of asking using better–worse (B–W) questions was proposed. Qingliang & Jing, 2018 studied on future direction and visual analysis of Kano Model and found that it is an effective tool for customer need analysis to improve customer satisfaction.

Kano Model is helpful in classifying the attributes in to different category, which helps the marketer in understanding customer's perception. Lots of research are conducted to estimate the impact of product attribute on customer satisfaction, but minimal research are undertaken for quantitatively estimating the odds of customer satisfaction for the Kano classification, fitting a nonlinear relationship between performance of attribute and customer satisfaction. Considering customer psychology, Lin et al., 2017 determined the odds of customer satisfaction to identify the classification of quality attributes. It helps in prioritizing the allocation of resources.

Researchers have integrated Kano Model with other models for understanding customer satisfaction. Basfirinci & Mitra, 2014 integrated Kano Model with Servqual Model for understanding the airlines service quality. Yeh & Chen, 2014 integrated refined Kano Model, Quality Function Deployment (QFD), and Grey Relational Analysis (GRA) to estimate the Service Quality of Nursing Homes. Lo et al., 2016 used Kano model and QFD to study integrated approach to project management. Chen et al., 2018 integrated Refined Kano Model and QFD for evaluation and improvement of Service Quality in Fast-Food Chain Restaurants.

Many companies and industries monitor customer satisfaction on a continuous basis, but Sweden is the first country to establish a Customer Satisfaction Barometer (CSB) at national level. Fornell, 1992 proposed CSB to measures customer satisfaction in more than 30 industries for more than 100 corporations. Fornell et al., 1996 proposed American Customer Satisfaction

Citation Information: Dash, S.K., & Mahajan, R. (2024). Demystifying the importance of attributes of smartphone among gen z applying kano model and conjoint analysis. *Academy of Marketing Studies Journal, 28*(5), 1-13.

Index (ACSI), which is a novel type of market-based performance measure. Andreassen & Lindestad, 1998 proposed the Norwegian Customer Satisfaction Index.

Grigoroudis & Siskos, 2002 proposed the MUlti-criteria Satisfaction Analysis (MUSA) method for measurement of customer satisfaction and analysis. MUSA method fully considers the qualitative form of customers' preference and judgement. It's integrated methodology estimates the satisfaction level of individuals based on their expressed preferences and values. Grigoroudis & Siskos, 2002 and Clemes et al., 2010 reported that Probit and Logit models are widely used in different fields of marketing to understand customer satisfaction and buying behavior.

Data Envelopment Analysis (DEA) approach being used by Bayraktar et al., 2012 to analyze and compare customer satisfaction and loyalty(CSL) efficiency in Turkey for mobile phone brands. DEA is a linear programming based model where inputs are attributes of customer satisfaction and outputs are behavior exhibited by customer.

Vriens, 1994 reported that Conjoint Analysis has become a popular research technique for finding out customer's preference among marketing managers. After in-depth review, lots of researchers like Green & Srinivasan, 1978, Timmermans, 1984, Louviere, 1988 and Green & Srinivasan, 1990 made use of this technique . Bibin & Ramanathan, 2018 applied conjoint analysis among professional students to estimate best mobile combo tariff plan.

Usually, in choice based conjoint analysis, profiles are randomly organized but Plackett-Burman experimental design proposed by Huertas-Garcia et al., 2016 to rearrange profiles in blocks. Plackett-Burman happens to be an effective design if the researcher consider a trade-off between number of choice sets used in the assessment process and the number of stimuli in each choice set. It has been described by an empirical application where preference for shocking warning message on packages of cigarette described in 11 pictures are measured and the distribution of theses on tobacco products were estimated to optimize impact on teenagers.

It has been observed that, when conjoint analysis is applied to study complex decision making having lots of attributes, sometimes results in problems weakening the validity . Kim, 2017 suggested Integrated Hierarchical Survey Design (IHSD), which has to be used with Kano model for large conjoint analysis to reduce the impact of these potential problems. Kim, 2018 studied on willingness to pay for mobile phone features in multiple regions like six Middle East and African countries, five Asia-Pacific countries and three European countries. Shtudiner et al., 2017 studied student's preferences regarding various attributes that influence their decision process while choosing a higher education by applying conjoint analysis and clustering. Choudhury & Gulati, 2020 applied both Kano model and Conjoint Analysis on mobile brands attributes and its impact on customer satisfaction.

RESEARCH GAP

The preset study covers two objectives.

a. Classification of attributes of Smart Phone in to different category.
b. Most preferred combination and utility of attributes of Smart Phone.

The present study addresses the most important Gap that is which attributes of Smart Phones gives more satisfaction and absence gives more dissatisfaction to Gen Z. It also gives an idea to Smart Phone manufactures about the best combination and utility of Smart Phone attributes.

Citation Information: Dash, S.K., & Mahajan, R. (2024). Demystifying the importance of attributes of smartphone among gen z applying kano model and conjoint analysis. *Academy of Marketing Studies Journal, 28*(5), 1-13.

Objectives of the Study

a. To classify the attributes of Smart Phone in to different category
b. To find out the utility and most preferred combination of attributes of Smartphone

Scope of Study

The Kano questionnaire was floated among Gen Z (individuals born between 1997 and 2012) in Pune, India . Same respondents were asked to give their response to analyze the most preferred combination and utility of attributes of Smart Phone.

RESEARCH METHODOLOGY

Data Collection

Primary data were collected using two different questionnaires. Kano questionnaire is used to classify the attributes of Smart Phones. The questionnaire was administered to 100 respondents. 16 attributes were studied under Kano Model. 5 attributes of Smart Phone who are found Must -Be quality in Kano Model analysis were taken for Conjoint Analysis. From orthogonal design, 22 cards (18 Design and 4 Holdout) which are combination of different features are generated through SPSSS. Questionnaire was administered to 100 respondents to know their intension of purchase for all these 22 combinations.

Kano Model

Kano model is developed by Professor Noriaki Kano (Kano et al.,1984). It uses two dimensional way to categories the attributes. It identifies the Customer Satisfaction and dissatisfaction when the attribute is present or absent. X-Axis represents the requirement of the feature and Y-Axis represents the customer satisfaction in the Figure 1. There are six categories of Kano Model as follows:

(i) Must-Be (M): The attributes falling under this category are enormously vital as the presence of these attributes may not enhance the satisfaction but absence of these attributes creates lots of dissatisfaction among customers.
(ii) One-Dimensional (O): The attributes fall under this category gives lots of satisfaction when present and gives lots of dissatisfaction when absent to the customers.
(iii) Attractive (A): The attributes fall under this category gives lots of satisfaction when present but absence of the attributes hardly affects the satisfaction.
(iv) Indifferent (I): The attributes fall under this category creates neither satisfaction when present nor dissatisfaction when absent.
(v) Reverse (R): The attributes fall under this category gives lots of satisfaction when absent and dissatisfaction when present.
(vi) Question (Q): The attributes fall under this category indicates that the response is illogical.

Citation Information: Dash, S.K., & Mahajan, R. (2024). Demystifying the importance of attributes of smartphone among gen z applying kano model and conjoint analysis. *Academy of Marketing Studies Journal, 28*(5), 1-13.

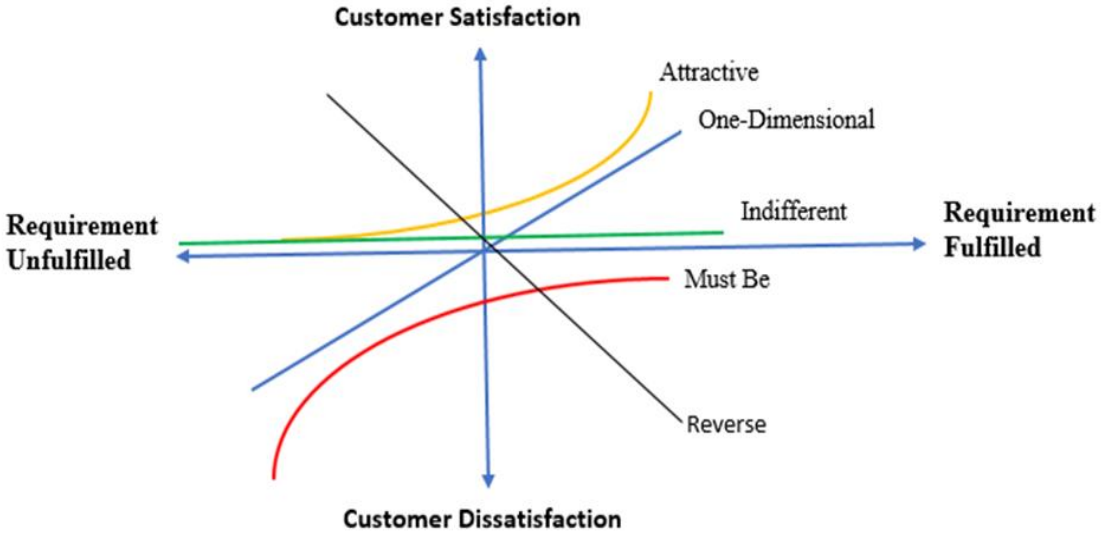

FIGURE I
KANO MODEL

(Kano et al., 1984).

Kano Questionnaire

Kano questionnaire consist of a pair of questions, such as "Functional" and "Dysfunctional" question for each attribute. Functional Question presents customer's feeling when the attribute is present whereas Dysfunctional Question presents the customer's feeling when the attribute is absent. Five alternatives are there in each question.

Table 1
EXAMPLE OF FUNCTIONAL AND DYSFUNCTIONAL QUESTION

Functional Question	**Response**
1a. Battery is available	1. Like
	2. Must be
	3. Neutral
	4. Live with
	5. Dislike
Dysfunctional Question	**Response**
1b. Battery is not available	1. Like
	2. Must be
	3. Neutral
	4. Live with
	5. Dislike

Citation Information: Dash, S.K., & Mahajan, R. (2024). Demystifying the importance of attributes of smartphone among gen z applying kano model and conjoint analysis. *Academy of Marketing Studies Journal, 28*(5), 1-13.

Table 2
KANO EVALUATION TABLE

Customer Response→ ↓		Functional				
		Like	Must be	Neutral	Live with	Dislike
Dysfunctional	Like	Q	R	R	R	R
	Must be	A	I	I	I	R
	Neutral	A	I	I	I	R
	Live with	A	I	I	I	R
	Dislike	O	M	M	M	Q

In Kano Evaluation Table (Table 2), the response of the respondents decides the category of attribute like M-Must Be, O-One-Dimensional, A-Attractive, I-Indifferent, R-Reverse, Q-Question. For example, the response for a particular attribute is "Like" for functional and "Dislike" for dysfunctional question, the attribute will be categorized as O i.e One-Dimensional. Attributes were classified based on response given by the respondents, by following three methods

I. "Frequency-Based" Attributes Classification Method classify particular attribute based on the maximum frequency of response among M, O, A, I, R, Q.

II. "Comparison-Based" Attribute Classification Method classify the attribute and take the summated frequency of M,O, A and I,R,Q . If the summated frequency of M,O ,A is more than I, R, Q, then the attribute is classified as M or O or A which is having highest frequency. If summated frequency of I, R, Q is greater than the summated frequency of M,O,A then the attribute is classified as I or R or Q which is having highest frequency. If summated frequency of (M, O, A) and summated frequency of (I, R, Q) are equal, then the attribute will be classified based on the priority order M > O > A > I.

III. "Coefficient–Based" Attribute Classification Method suggests two coefficients, namely "Satisfaction Coefficient" (SC) and "Dissatisfaction Coefficient" (DC).
Satisfaction Coefficient (SC) = (A+O)/ (A+O+M+I) (ranges from 0 to 1).
.Dissatisfaction Coefficient (DC) = (M+O) / (A+O+M+I)*(-1) (ranges from -1 to 0). Overall Satisfaction Coefficient (OSC) = SC+DC= (A-O)/ (A+O+M+I) (ranges from -1 to +1). Attributes were classified based on SC and DC described in Table 3.

Table 3
COEFFICIENT-BASED ATTRIBUTE CLASSIFICATION

Satisfaction Coefficient(SC)	Dissatisfaction Coefficient(DC)	Category
<0.5	≥0.5	Must -Be
≥0.5	≥0.5	One- Dimensional
≥0.5	<0.5	Attractive
<0.5	<0.5	Indifferent

Lee and Newcomb (1997) introduced two measurements i.e. "Category Strength" (CS) and "Total Strength" (TS). CS is the difference of the percentage of response between highest category and next highest category. TS is the total percentage of response in the three category like Must- Be (M), One-Dimensional (O) and Attractive (A).

Citation Information: Dash, S.K., & Mahajan, R. (2024). Demystifying the importance of attributes of smartphone among gen z applying kano model and conjoint analysis. *Academy of Marketing Studies Journal, 28*(5), 1-13.

Conjoint Analysis

As per AMA "Conjoint analysis is a statistical technique in which respondents' utilities or valuations of attributes are inferred from the preferences they express for various combinations of these attributes. It is based on the principal of identifying different attributes and different levels.

Step-I

5 attributes were found Must-Be quality from Kono Analysis. These were Camera, RAM, Storage, Display and Battery. Table 4 is showing the features at different levels of Smartphone

Table 4
FEATURE AND LEVEL OF SMARTPHONE

CAMERA	RAM	STORAGE	DISPLAY	BATTERY
12MP	6GB	64GB	6.3inch	3000mAh
18MP	8GB	128 GB	6.7inch	4000mAh
24MP	12GB			5000mAh

From Table 4 its evident that there are 108 (3x3x2x2x3) number of combinations of smartphone can be developed. It's very difficult to collect the response for 108 combinations.

Step-II

To overcome the difficulty, SPSS supports "Orthogonal Design" that will generate some combinations which will be an excellent representation of 108 combinations.

Table 5 is displaying the SPSS output of orthogonal design where out of 22 combinations, 18 are having design status and 4 are having holdout status. Holdout cases will not be taken in to consideration for manufacturing.

Table 5
ATTRIBUTES COMBINATION FOR SMARTPHONE RESULTED FROM ORTHOGONAL DESIGN (SOURCE: SPSS OUTPUT OF ORTHOGONAL DESIGN)

	Card ID	CAMERA	RAM	STORAGE	DISPLAY	BATTERY
1	1	12MP	8GB	128GB	6.7inch	5000mAh
2	2	18 MP	6GB	64GB	6.3inch	5000mAh
3	3	18 MP	8GB	128GB	6.3inch	4000mAh
4	4	24MP	8GB	64GB	6.3inch	5000mAh
5	5	24MP	12GB	128GB	6.3inch	3000mAh
6	6	12MP	12GB	128GB	6.3inch	5000mAh
7	7	18 MP	12GB	64GB	6.7inch	3000mAh
8	8	12MP	6GB	64GB	6.3inch	4000mAh
9	9	24MP	6GB	128GB	6.3inch	3000mAh
10	10	24MP	8GB	64GB	6.3inch	4000mAh
11	11	24MP	6GB	64GB	6.7inch	5000mAh
12	12	18 MP	8GB	64GB	6.3inch	3000mAh
13	13	24MP	12GB	64GB	6.7inch	4000mAh
14	14	12MP	8GB	64GB	6.7inch	3000mAh
15	15	18 MP	6GB	128GB	6.7inch	4000mAh
16	16	12MP	6GB	64GB	6.3inch	3000mAh
17	17	12MP	12GB	64GB	6.3inch	4000mAh
18	18	18 MP	12GB	64GB	6.3inch	5000mAh
19[a]	19	12MP	12GB	128GB	6.7inch	3000mAh
20[a]	20	24MP	6GB	64GB	6.7inch	3000mAh

Citation Information: Dash, S.K., & Mahajan, R. (2024). Demystifying the importance of attributes of smartphone among gen z applying kano model and conjoint analysis. *Academy of Marketing Studies Journal, 28*(5), 1-13.

21[a]	21	12MP	8GB	128GB	6.3inch	4000mAh
22[a]	22	12MP	12GB	64GB	6.3inch	3000mAh

Step III

All the 100 respondents were asked to rate the above 22 cards in a 7 point Semantic Differential Scale where 1 is not likely to buy and 7 is certainly buy.

Step IV

The conjoint analysis was used to find out the utility score of each attributes and attributes combination of Smartphone. The attribute combination having highest utility score will be considered as the best Smartphone design.

RESULTS AND DISCUSSION

(a) Kano Analysis

First objective of this research is to classify the attributes of Smart Phone in to different category. The data were collected using Kano questionnaire from 100 respondents. The Category, "Satisfaction Coefficient" (SC), "Dissatisfaction Coefficient" (DC), Category Strength (CS), Overall Satisfaction Coefficient (OSC) and Total Strength (TS) of attributes of Smartphone are presented in Table 6.

Table 6
ESTIMATION OF CATEGORY, SC,DC,CS,OSC AND TS OF ATTRIBUTES OF SMARTPHONE

Sl.No.	Attributes	A	O	M	I	R	Q	TOTAL	Category	SC	DC	CS	OSC	TS
1	Battery(mAh)	11	19	**65**	5	0	0	100	M	0.30	-0.84	46	-0.08	95.00
2	Bluetooth	15	9	11	**65**	0	0	100	I	0.24	-0.20	50	0.06	35.00
3	Camera(MP)	10	25	**62**	7	0	0	104	M	0.34	-0.84	37	-0.14	93.27
4	Colour	**48**	13	14	25	0	0	100	A	0.61	-0.27	23	0.35	75.00
5	Display(In)	13	19	**59**	9	0	0	100	M	0.32	-0.78	40	-0.06	91.00
6	FM Radio	12	9	2	**77**	0	0	100	I	0.21	-0.11	65	0.03	23.00
7	Face Recognition	**46**	22	9	23	0	0	100	A	0.68	-0.31	23	0.24	77.00
8	Fingerprint Sensor	**45**	18	13	24	0	0	100	A	0.63	-0.31	21	0.27	76.00
9	GPS	24	**50**	14	12	0	0	100	O	0.74	-0.64	26	-0.26	88.00
10	Price Range	1	2	2	16	**79**	0	100	R	0.14	-0.19	63	-0.05	5.00
11	RAM(GB)	5	19	**74**	2	0	0	100	M	0.24	-0.93	55	-0.14	98.00
12	Sensors	2	**52**	30	16	0	0	100	O	0.54	-0.82	22	-0.50	84.00
13	Storage(GB)	13	22	**55**	10	0	0	100	M	0.35	-0.77	33	-0.09	90.00
14	Voice Control	**55**	19	5	21	0	0	100	A	0.74	-0.24	36	0.36	79.00

Citation Information: Dash, S.K., & Mahajan, R. (2024). Demystifying the importance of attributes of smartphone among gen z applying kano model and conjoint analysis. *Academy of Marketing Studies Journal, 28*(5), 1-13.

15	Water Resistance	**43**	18	17	22	0		100	A	0.61	-0.35	21	0.25	78.00
16	Wireless Charging	**57**	13	7	23	0	0	100	A	0.70	-0.20	34	0.44	77.00

"Satisfaction Coefficient" (SC), "Dissatisfaction Coefficient" (DC) of 16 attributes are plotted and presented in Figure 2. It is divided into 4 quadrants like Must-Be (5), One-Dimensional (2), Attractive (6), Indifferent (2) and Reverse (1) also falls in Indifferent quadrant.

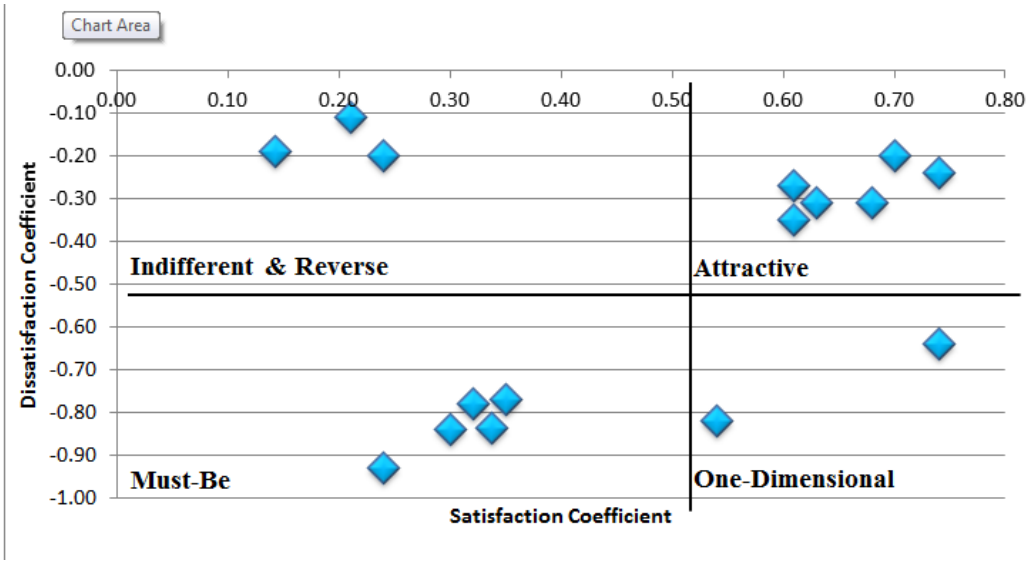

FIGURE 2
CUSTOMER SC & DC

It has been found that 5 attributes like Battery, Camera, Display, RAM and Storage falls under "Must-Be" category.. 2 attributes like GPS and Sensors falls under "One-Dimensional" category. 6 attributes such as Colour, Face Recognition ,Fingerprint Sensor, Voice Control, Water Resistance and Wireless Charging falls under "Attractive" category. 2 attributes such as Bluetooth and FM Radio falls under "Indifferent" category. 1 attribute i.e Price Range falls under "Reverse" category.

(b) Conjoint Analysis

Second objective of this research is to measure and identify the utility of attributes and most preferred combination of attributes of Smartphone. Conjoint analysis was administered to find out the desired combination of attributes of Smartphone, which are preferred by Gen Z. Two files, namely (i) Orthogonal Design and (ii) Customer's preference were used to run Conjoint Analysis in SPSS. The SPSS output is shown in Tables 7-10.

Table 7 represents the model description.

Citation Information: Dash, S.K., & Mahajan, R. (2024). Demystifying the importance of attributes of smartphone among gen z applying kano model and conjoint analysis. *Academy of Marketing Studies Journal, 28*(5), 1-13.

Table 7
MODEL DESCRIPTION

	N of Levels	Relation to Ranks or Scores
CAMERA	3	Discrete
RAM	3	Discrete
STORAGE	2	Discrete
DISPLAY	2	Discrete
BATTERY	3	Discrete

Table 8 exhibits Pearson's R and Kendall's tau, which display measures of the correlations between observed and estimated preferences. It also provides Kendall's tau for holdouts. Four holdout profiles (Refer Table V) were not used for estimating utilities. In the present study, Pearson's R correlation found to be 88.5 %.

Table 8
CORRELATIONS

	Value	Sig.
Pearson's R	0.885	0.000
Kendall's tau	0.721	0.000
Kendall's tau for Holdouts	0.000	0.500

Table 9 and Figure 3 indicate the importance of attributes of Smartphones. RAM scores the highest importance (39.276 %) followed by Battery (22.318%) and Camera (18.048 %). The other attributes like Display and Storage scores 10.284 % and 10.075 % respectively.

Table 9
IMPORTANCE VALUES

CAMERA	18.048
RAM	39.276
STORAGE	10.075
DISPLAY	10.284
BATTERY	22.318
Averaged Importance Score	

Citation Information: Dash, S.K., & Mahajan, R. (2024). Demystifying the importance of attributes of smartphone among gen z applying kano model and conjoint analysis. *Academy of Marketing Studies Journal, 28*(5), 1-13.

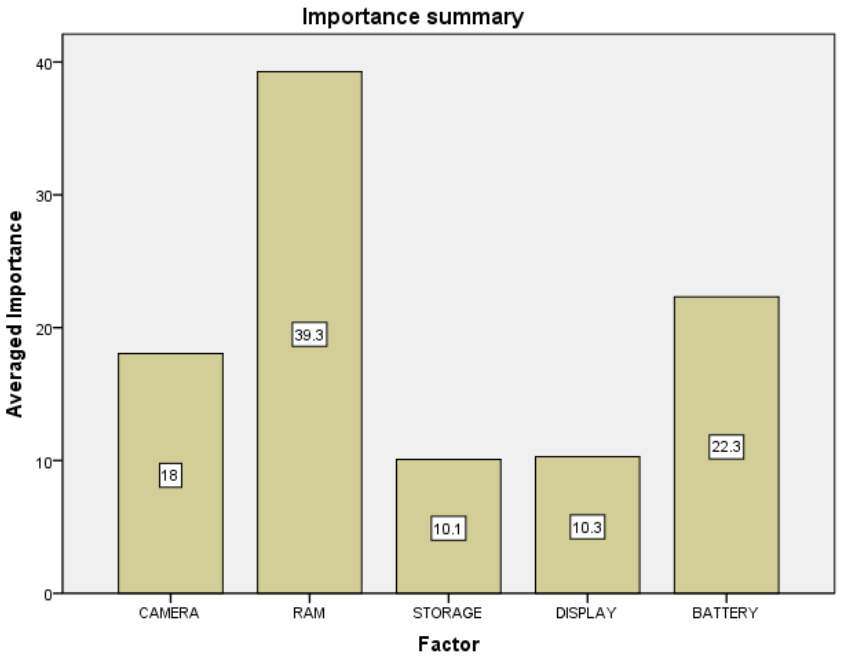

FIGURE 3
IMPORTANCE VALUE

Table 10 shows the utility score and their standard error (SE) for each attribute level. The utility of different attributes for different level of Smartphone are expressed in common unit. So, the total utility of combination of attributes can be measures by adding the utility of each attribute. This way the best combination of Smartphone is estimated.

Table 10
UTILITIES

		Utility Estimate	Std. Error
CAMERA	12MP	0.102	0.249
	18MP	0.201	0.249
	24MP	-.0303	0.249
RAM	6GB	.701	0.249
	8GB	.524	0.249
	12GB	-1.224	0.249
STORAGE	64GB	-.142	0.187
	128GB	0.142	0.187
DISPLAY	6.3inch	-.224	0.187
	6.7inch	0.224	0.187
BATTERY	3000mAh	-.488	0.249
	4000mAh	0.076	0.249
	5000mAh	0.412	0.249
(Constant)		3.995	0.197

Based on the utility estimates of each Smartphone attributes given in Table 10 and attribute combination in Table 5, value of each combination is estimated. The value of Card _1 is calculated as 1.404 (0.102+0.524+0.142+0.224+0.412=1.404) which is the highest score

Citation Information: Dash, S.K., & Mahajan, R. (2024). Demystifying the importance of attributes of smartphone among gen z applying kano model and conjoint analysis. *Academy of Marketing Studies Journal, 28*(5), 1-13.

among all the existing combinations. So the most preferred combination is12 MP Camera, 8 GB RAM, 128 GB Storage, 6.7inch Display and 5000mAh Battery.

CONCLUSION

16 attributes of Smartphone were classified by applying Kano Model. It has been found that 5 attributes like Battery, Camera, Display, RAM and Storage falls under "Must-Be" category.. 2 attributes like GPS and Sensors falls under "One-Dimensional" category. 6 attributes such as Color, Face Recognition, Fingerprint Sensor, Voice Control, Water Resistance and Wireless Charging falls under "Attractive" category. 2 attributes such as Bluetooth and FM Radio falls under "Indifferent" category. 1 attribute i.e Price Range falls under "Reverse" category.

Conjoint analysis was done for 5 attributes which got classified as "Must-Be" quality in Kano analysis, to find out the utility of attributes at different levels and best combination of attributes for Smartphone. Out of 22 Combinations generated by orthogonal design, 18 are having design status and 4 are having holdout status. .The most preferred combination found to be 12 MP Camera, 8 GB RAM, 128 GB Storage, 6.7inch Display and 5000mAh Battery for Gen Z.

REFERENCES

Andreassen, T. W., & Lindestad, B. (1998). The Effect of Corporate Image in the Formation of Customer Loyalty. *Journal of Service Research*, *1*(1), 82–92.

Basfirinci, C., & Mitra, A. (2014). A cross cultural investigation of airlines service quality through integration of Servqual and the Kano model. *Journal of Air Transport Management*, 1–10.

Bayraktar, E., Tatoglu, E., Turkyilmaz, A., Delen, D., & Zaim, S. (2012). Measuring the efficiency of customer satisfaction and loyalty for mobile phone brands with DEA. *Expert Systems with Applications*, *39*, 99–106.

Bibin, P. B., & Ramanathan, H. N. (2018). Identifying the Best Mobile Combo Tariff Plan for Professional Students : An Application of Conjoint Analysis Identifying the Best Mobile Combo Tariff Plan for Professional Students : An Application of Conjoint Analysis. *International Journal of Business Analytics and Intelligence*, *6*(2), 36–45.

Chen, K., Yeh, T., Pai, F.-Y., & Chen, D.-F. (2018). Integrating Refined Kano Model and QFD for Service Quality Improvement in Healthy Fast-Food Chain Restaurants. *International Journal of Environmental Research and Public Health*, *15*(7), 1–16.

Choudhury, D.K., & Gulati, U. (2020). Product attributes based on customer ' s perception and their effect on customer satisfaction : the Kano analysis of mobile brands. *DECISION*.

Clemes, M. D., Gan, C., & Zhang, D. (2010). Customer switching behaviour in the Chinese retail banking industry developing overseas networks, *International Journal of Bank Marketing*, *28*(7), 519–546.

Fornell, C. (1992). A National Customer Satisfaction Barometer : The Swedish Experience. *Journal of Marketing*, *56*(1), 6–21.

Fornell, C., Johnson, M. D., Anderson, E. W., Cha, J., Fornell, C., Johnson, M. D., Anderson, E. W., Cha, J., & Bryant, B. E. (1996). The American Customer Satisfaction Index : Nature , Purpose , and Findings. *Journal of Marketing*, *60*(4), 7–18.

Gelenbe, E., Tzovaras, D., & Garcia, D. (2013). *NEMESYS : Enhanced Network Security for Seamless Service Provisioning in the Smart Mobile Ecosystem*.

Green, P. E., & Srinivasan, V. (1978). Conjoint analysis in consumer research:issues and outlooks. *Journal of Consumer Research*, *5*, 103–123.

Green, P. E., & Srinivasan, V. (1990). Conjoint Analysis in Marketing : New Developments with Implications for Research and Practice. *Journal of Marketing*, *54*(4), 3–19.

Grigoroudis, E., & Siskos, Y. (2002). Preference disaggregation for measuring and analysing customer satisfaction : The MUSA method. *European Journal of Operational Research*, *143*, 148–170.

Huertas-Garcia, R., Guitart-Tarrés, L., & Núñez-Carballosa, A. (2016). Plackett-Burman Design in Choice-based

Citation Information: Dash, S.K., & Mahajan, R. (2024). Demystifying the importance of attributes of smartphone among gen z applying kano model and conjoint analysis. *Academy of Marketing Studies Journal, 28*(5), 1-13.

Conjoint Analysis: A case of estimating warning message distribution on tobacco packages. *International Journal of Market Research*, *58*(4), 569–594.

Kano, N., Seraku, N., Takahashi, F. and Tsuji, S. (1984). Attractive Quality and Must-Be Quality. *Journal of Japanese Society for Quality Control*, 14(2), 147-156.

Kim, E., Lin, J., & Sung, Y. (2013). To App or Not to App : Engaging Consumers via Branded Mobile Apps. *Journal of Interactive Advertising*, *13*(1), 53–65.

Kim, J. S. (2017). Empirical analysis of consumer willingness to pay for smart phone attributes in multi-countries. *International Journal of Innovation Management*, *21*(2), 1–37.

Kim, J. S. (2018). Measuring willingness-to-pay for mobile phone features : a multi-region study. *Journal of Research in Marketing and Entrepreneurship*.

Lee, M. C., & Newcomb, J. F. (1997). Applying the Kano Methodology to Meet Customer Requirements: NASA's Microgravity Science Program. *Quality Management Journal*, *4*(3), 95–106.

Lin, F., Tsai, S., Lee, Y., Hsiao, C., & Zhou, J. (2017). Empirical research on Kano ' s model and customer satisfaction. *PLOS ONE*, *12*(9), 1–22.

Lo, S. M., Shen, H., & Chen, J. C. (2016). An integrated approach to project management using the Kano model and QFD : an empirical case study. *Total Quality Management & Business Excellence*.

Louviere, J. J. (1988). Conjoint analysis modelling of stated preferences : a review of theory , methods , recent developments and external validity. *Journal of Transport Economics and Policy*, *22*(1), 93–119.

Matzler, K., Fuchs, M., & Schubert, A. (2004). Employee Satisfaction : Does Kano's Model Apply ? *Total Quality Management*, *15*(9), 1179–1198.

Mckay, A., Pennington, A. De, & Baxter, J. (2001). Requirements management : a representation scheme for product specifcations. *Computer-Aided Design*, *33*, 511–520.

Qingliang, M., & Jing, D. (2018). Future Direction and Visual Analysis of Kano Model : A Literature Review. *Journal of Service Science and Management*, *11*, 399–413.

Shtudiner, Z., Zwilling, M., & Kantor, J. (2017). Field of study choice : using conjoint analysis and clustering. *International Journal of Educational Management*, *31*(2), 179–188.

Song, H. (2016). A critical review of Kano ' s wording and its impact on attribute classification : a case study of smartphone in Korea. *Total Quality Management & Business Excellence*.

Timmermans, H. (1984). Decompositional multiattribute preference models in spatial choice analysis : a review of some recent developments. *Progress in Human Geography*, *8*(2), 189–221.

Vriens, M. (1994). Solving Marketing Problems With Conjoint Analysis. *Journal of Marketing Management*, *10*(1–3), 37–55.

Yeh, T., & Chen, S. (2014). Integrating Refined Kano Model , Quality Function Deployment , and Grey Relational Analysis to Improve Service Quality of Nursing Homes. *Human Factors and Ergonomics in Manufacturing & Service Industries*, *24*(2), 172–191.

Received: 16-Feb-2024, Manuscript No. AMSJ-24-14509; **Editor assigned:** 17-Feb-2024, PreQC No. AMSJ-24-14509(PQ); **Reviewed:** 30-Mar-2024, QC No. AMSJ-24-14509; **Revised:** 28-Jun-2024, Manuscript No. AMSJ-24-14509(R); **Published:** 07-Jul-2024

Citation Information: Dash, S.K., & Mahajan, R. (2024). Demystifying the importance of attributes of smartphone among gen z applying kano model and conjoint analysis. *Academy of Marketing Studies Journal, 28*(5), 1-13.