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Customer's Perception About The Attributes Of Smartwatch Brands And Their Effect On Customer Satisfaction Using Kano Analysis

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Abstract

The Research paper aims to study the Customer's perception about the attributes of smartwatch brands and their effect on customer satisfaction using Kano Analysis. It uses the KANO Model to find out the product attribute of a smartwatch that attains a high level of customer satisfaction. The study aims to find out whether there is any difference in customer satisfaction towards Noise, Boat and Fire-Boltt smartwatch brands.

The paper opted for an exploratory and descriptive study. The primary data were collected through two questionnaires. The first questionnaire was used to find out the level of satisfaction of customers for different features of smart watches.The data were collected from 150 respondents.The first part of the questionnaire comprises questions pertaining to demographic characteristics of customers and the second part of the questionnaire consists of questions in pairs related to Kano Model. The second questionnaire was used for studying the difference in customer satisfaction towards the three brands of smartwatches (Noise, Boat, Fire-Boltt).

The paper provides insight into the customer satisfaction for different attributes of smartwatches. Attributes such as Water resistance, Magnetic charging, Battery life, Screen size, Voice controller facility, and Heart rate monitor make up the "Attractive category". The presence of this will increase the level of satisfaction and its absence will lead to an increase in the level of dissatisfaction.

In order to have a competitive edge the marketers need to give importance to customers preference and their level of satisfaction.The research paper provides some insights as to how the customers' satisfaction can be measured and the preferred choice of customer can be identified. The above two aspects are important in product designing, so that the R&D can come with attributes that are interesting to customers.The level of satisfaction depends on the various product attributes.The present paper provides a deep understanding to the marketers about customer delight and customer dissatisfaction.

The research has been conducted to study the consumer's perception about the attributes of smartwatch brands and their effect on customer satisfaction. The Kano model has been used to find out the right desirable and necessary features in a Smartwatch. Additionally, the kano model has not been used for understanding the growing Indian smartwatch market.

Keywords: ANOVA Analysis, Kano Analysis, smart watches, customer preference.

Introduction

Smartwatches1 are wearable computers designed in the shape of watches that can provide features in addition to timekeeping. It can do many of the functions of a smartphone like make and receive calls, send and receive notifications, play music and navigation. Smartwatches can connect to your smartphone via bluetooth. Apart from notifying the user of incoming calls, sms, e-mail messages it also helps in browsing the internet and provides health/fitness information to the user. Smartwatches are not only functional but are also a style statement. With the help of interchangeable bands it is easy to change the look of the watch instantly.

The concept of smart watches started in 1980 when Casio came out with calculator watches. Smartwatches are a reinvention of wrist watches itself. As the sales of wrist watches have declined noticeably, the manufacturers have come with new features in 2012 which includes bluetooth and network connectivities and operating system. These watches are called smart as they are able to run apps just like smartphones. They run on operating systems like watch OS for Apple watch, Tizen OS for Samsung watches and Google Wear OS for other brands.

There are two types of smartwatches in the market one which run on an OS and the other which rely solely on bluetooth and app connectivity. The smartwatches which run on an OS are much more expensive and offer a lot more features over the bluetooth only counterparts. By avoiding the integration of OS, companies like Boat and Noise have been able to dethrone the tech giant Apple in terms of sales of smartwatches.While an entry level model from Apple (Apple watch SE) costs around Rs. 30,000 the most expensive offering from Boat (Boat watch Iris) is priced at Rs. 4,500.

A bluetooth smartwatch's selling point is not only its price, but also its battery life. Typical smartwatch powered by an OS can give a battery life of 1-2 days whereas the bluetooth only smartwatch gives you about 7-15 days of battery life. These smart watches have preloaded apps for address book, alarm, appointments, compass, FB, gallery etc. The watch has to be paired with a smartphone by connecting the device over bluetooth and turning the Wi Fi hotspot to pair the watch.

Smartwatches were considered a luxury till the recent years but due to domestic players entering into the market with their aggressive prices the smartwatch penetration has increased by 274% in 2021. The pandemic has also played a key role in increasing the sales figures of smartwatches. The fitness and health features offered by a smartwatch have attracted millions of Indians to give priority to their health. Features like heart rate monitor, SpO2 monitors, Stress monitor, Sleep monitor, Step tracker, Calorie counter etc. are loved by the health conscious customers. This has

1 Smartwach is a computing device that resembles a wristwatch and is attached to a band worn around the wrist allowed millions of people to focus on their physical and mental health. Though these do not replace the traditional medical equipment but give the customer a rough estimate on their health stats and gives motivation for them to lead a healthier lifestyle.

In simple words smartwatch is an ultimate wearable device which the customers can use for music, fitness,wellness,finance and directions. New features and applications will only generate more revenue from the smartwatch Industry in the coming years. Apple is coming with new watch models with added health features, such as body temperatures and blood sugar sensors. Smart phone manufacturer OPPO powered by Google Wear OS2 has also entered the wearable segment with advanced features such as heart rate monitoring and health tracking. Apple watch series 4 and 5 devices add ECG3 feature which allow to detect whether a user might suffer from atrial fibrillation (AFib)4. This feature can save countless lives

Smartwatches in India:

Smart watches are wearables which are becoming the most sought after IoT5 tool by the users. Apple smart watches are the most popular in the world. North America and China are the leading markets for smart watches. The global market for smartwatches is projected to reach shipments of 776.23 million units by 2026. In 2020, despite the pandemic, 266.5 million units of smart watches were shipped to customers. Factors which have contributed to the boom in the smartwatch market include internet

connectivity,data-driven analytics,technology integration, and changing lifestyles.

Indian Startups have disrupted the smartwatch industry with more features being added in their wearables segment. Indian tech startups like Noise and Boat have been able to capture the entire budget segment with their affordable and featured packed models. By keeping the prices below Rs. 5000/- they are not just appealing to the millennials but also to other age groups widening their customer base. Tech giants like Samsung and Apple can never be able to deliver any products in the budget segment failing to acquire a majority in the smartwatch market.

2 Wear OS (also known simply as Wear and formerly Android Wear) is a version of Google's Android operating system designed for smartwatches and other wearables.

3 ECG- ECG stands for electrocardiograph. It gives a graphical representation of the electrical activity of the heart during a cardiac cycle which helps to further detect the abnormalities and help us to measure the functioning of the heart.

4 Atrial fibrillation (A-fib) is an irregular and often very rapid heart rhythm (arrhythmia) that can lead to blood clots in the heart. A-fib increases the risk of stroke, heart failure and other heart-related complications.

5 IoT - IoT stands for Internet of Things, which means accessing and controlling daily usable equipment and devices using the Internet.

The smartwatch sales skyrocketed in the year 2021 by 274% annual growth. Domestic brands like Noise and Boat were able to capture 75% of the market share jumping from 38% in the previous year. It's the biggest contribution made by domestic tech companies.

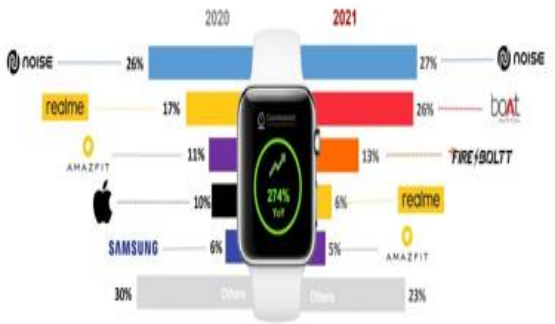


Image Source: Counterpoint

According to Allied Market Research, the global smartphone market was valued at$20.64 billion in 2019, and it is estimated to reach $96.31 billion by 2027. India grew at the fastest rate among the top markets for smartwatches in the second quarter of 2021, according to Counterpoint Research. Until recently, India accounted for only 2 percent of the total market, but the share has since increased to 6 percent. Homegrown brands such as Noise and boAT lead the market in India. In the second quarter, the two brands had 28.6 percent and 26.9 percent market share in India, respectively, according to International Data Corporation's IDC.

Literature review

Ying-Feng Kuo, Jing-Yu Chen & Wei-Jaw Deng (2012) study proposes the IPA–Kano model as a new tool for categorising and diagnosing service quality attributes and providing specific strategies for attributes in each category. The IPA–Kano model avoids the limitation of the Kano model in neglecting the attribute performance and importance and eliminates the weakness of the IPA model in considering only one-dimensional qualities. The proposed model can enable managers to easily grasp accurate user perceptions of a quality attribute and corresponding coping strategies. The effectiveness of this model implementation is later presented with an example of mobile value-added service quality. By applying the proposed IPA–Kano model, the appropriate action strategy for each service quality attribute can be acquired in any service encounters and thus enables service industry managers to improve service quality and to achieve a competitive advantage.

Gimpel, H., Manner-Romberg, T., Schmied, F. et al. (2021) studied how mobile health (mHealth) apps play an increasingly important role in digitalized health care, little is known regarding the effects of specific mHealth app features on user satisfaction across different healthcare system contexts. Using personal health record (PHR) apps as an example, this study identifies how potential users in Germany and Denmark evaluate a set of 26 app features, and whether evaluation differences can be explained by the differences in four pertinent user characteristics, namely privacy concerns, mHealth literacy, mHealth self-efficacy, and

adult playfulness. Based on survey data from both countries,the researcher employed the Kano method to evaluate PHR features and applied a quartile-based sample-split approach to understand the underlying relationships between user characteristics and their perceptions of features. Results not only reveal significant differences in 14 of the features between Germans and Danes, they also demonstrate which of the user characteristics best explain each of these differences.

Jean Ashby and William A. Sadera and Scot W. McNary (2011) has studied that Community colleges are increasing their enrollment faster than four-year universities and have also had the highest growth rate in online learning enrollments in higher education. This increase in community college enrollment and specifically in online and developmental courses, leads to a need for research with this population; sadly, very little research focuses on online students in community colleges. The purpose of this paper is to present a research study which compared student success in a Developmental Math course offered in three different learning environments (online, blended, and face-to-face). Results of a one way ANOVA showed that there were significant differences between learning environments with the students in the blended courses having the least success.

Objectives of the study

1) To find out the product attribute of a smartwatch that attains a high level of customer satisfaction.

2) To find out whether there is any difference in customer satisfaction towards Noise, Boat and Fire-Boltt smartwatch brands.

Scope of study

The study was conducted in the Hyderabad district of Telangana region using a questionnaire to find the level of satisfaction with respect to three brands of smartwatches.(Noise, Boat, Fire-Boltt).The data was collected from the population of both male and females.Respondents of different age, profession and income levels were included in the study.

Hypothesis of Study

The first objective to find the product attribute that attains a high level of customer satisfaction is achieved by using Kano Model. The second objective to find the difference in customer satisfaction towards the three brands (Noise, Boat, Fire-Boltt) is achieved by conducting ANOVA.

Ho: There is no significant difference in customers satisfaction towards Noise, Boat and Fire-Boltt Smartwatch brands

H1: There is a significant difference in customer satisfaction towards Noise, Boat and Fire-Boltt smartwatch brands.

Research Methodology Data collection

The primary data were collected through two questionnaires. The first questionnaire was used to find out the level of satisfaction of customers for different features of smart watches.The data were collected from 150 respondents. But only 115 valid responses were considered for analysis.The first part of the questionnaire comprises questions pertaining to demographic characteristics of customers and the second part of the questionnaire consists of questions in pairs related to Kano Model.

The second questionnaire was used for studying the difference in customer satisfaction towards the three brands of smartwatches (Noise, Boat, Fire-Boltt). The questionnaire was administered among 120 respondents but only 105 valid responses were considered for analysis.

The secondary data were collected from journals and websites.

Data Analysis

1) The data were analyzed using the kano model to determine the level of satisfaction of customers for different features of smart watches.

2) One way ANOVA is used to examine differences in customer satisfaction towards Noise, Boat and Fire-Boltt smart watches.

KANO MODEL

This model was proposed by professor Noriaiki Kano.It is a two-dimensional way to measure the customer perception based on Product attributes.The Model identifies Customer

delight (when attribute is present)and customer dissatisfaction (when attribute is absent).The Kano model has following categories.

1) Attractive (A): Under this, the functional presence of these attributes will be appreciated by customers and its absence will cause damage to satisfaction.These attributes are true delighters.

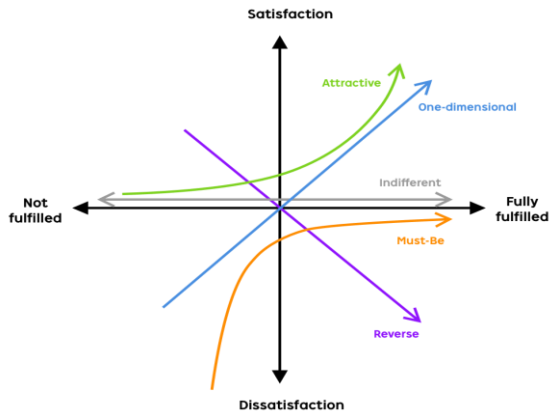
2) Must be (M): This category consists of product attributes which if not provided will make customers extremely unhappy.Moreover the presence of this attribute may not increase the level of satisfaction

3) One- Dimensional(o):This category consists of product attributes, the presence of which will increase the level of satisfaction and its absence lead to increase in dissatisfaction level.

4) Indifferent (I):- This category consists of product attributes which contribute neither to satisfaction nor to the dissatisfaction of customers.

5) Reverse(R):-This category consists of attributes which must be removed from the product as its presence is harmful to the customer satisfaction, and its absence is appreciated by the customers

6) Questionable (Q):-This category consists of items that indicate that either the question is wrong or the response is irrational.



Kano questionnaire

The questionnaire is constructed in pairs considering the requirements of customers.Each question is divided into two parts

1) How do you feel if the attribute is present(functional form of Question)

2) How do you feel if the attribute is absent(dysfunctional form of question)

The Respondents have to select one of the five alternatives provided. The alternatives are

a) I like it

b) It must be there

c) Neutral

d) I can live with it

e) I dislike it

Functional vs Dysfunctional Matrix is shown in

Table I

Customer requirements	DYSFUNCTIONAL					
FUNCTIONAL		Like	Must be	Neutral	Live	Dislike
	Like	Q	A	A	A	O
	Must be	R	I	I	I	M
	Neutral	R	I	I	I	M
	Live	R	I	I	I	M
	Dislike	R	R	R	R	Q

FUNCTIONAL Vs DYSFUNCTIONAL MATRIX

Results

The kano questionnaire was used to collect the data to find out the attributes of smart watches that attain high customer satisfaction.The responses received from the survey against each attribute is furnished in Table II under six dimensions.(A,O,M,I,R,Q)

TABLE II RESULTS OF KANO SURVEY
(Source: Kano Questionnaire)

S.No	Attributes	A	O	M	I	R	Q	Total	Category
1	Water resistance	51	22	18	20	4	0	115	A
2	Magnetic Charging	68	20	0	19	8	0	115	A
3	Battery Life	42	30	22	21	0	0	115	A
4	Screen Size	40	32	20	19	4	0	115	A
5	Color options	28	20	14	45	8	0	115	I

6	Pedometer	31	16	40	23	5	0	115	M
7	Blood PressureMonitor	34	47	14	9	6	5	115	O
8	Cellular Data	27	28	18	34	8	0	115	I
9	Voice controller facility	65	21	5	24	0	4	115	A
10	Sensors	32	52	5	21	0	5	115	O
11	Heart rate Monitor	65	19	5	25	0	1	115	A
12	Price Level	20	41	11	25	13	5	115	O
13	Android & iOS compatibility	23	26	37	23	6	0	115	M
14	Water Tracking	28	11	5	55	15	1	115	I
15	Interchangeable Bands	27	11	7	55	10	5	115	I
16	Bluetooth	17	27	35	24	12	0	115	M

Customer satisfaction coefficient

It indicates the extent to which satisfaction increases,if a customer's requirement is met or the extent to which satisfaction decreases , if a customer's requirement is not met.

Customer satisfaction coefficient is calculated using the following formula

Customer satisfaction coefficient (CS) (A+O)/ (A+M+O+I)

Customer dissatisfaction coefficient (CD) = (O+ M)/ (-1) (A+O+M+I)

A positive customer satisfaction (CS) ranges in value from 0 to 1.When the CS value is closer to 1, it indicates higher influence on customer satisfaction.The negative customer satisfaction also operates in a similar manner. A 0 value indicates that the attribute does not cause any dissatisfaction, if it is not met.

CS and CD coefficient values are furnished in Table III

Table III CS and CD coefficients (Source:self computation from data collected using the above formula

S.No	*Attributes*	*Category*	*Customer satisfaction coefficient*	*Customer dissatisfaction coefficient*
1	Water resistance	**A**	**0.657657**	**-0.36036**
2	Magnetic Charging	**A**	**0.822420**	**-0.17391**
3	Battery Life	**A**	**0.626086**	**-0.45217**
4	Screen Size	**A**	**0.648648**	**- 0.46846**
5	Color options	**I**	**0.448598**	**-0.317757**
6	Pedometer	**M**	**0.778899**	**-0.509090**
7	Blood PressureMonitor	**O**	**0.778846**	**-0.586538**
8	Cellular Data	**I**	**0.514018**	**-0.42990**
9	Voice controllerfacility	**A**	**0.747826**	**-0.22608**
10	Sensors	**O**	**0.763636**	**-0.51818**
11	Heart rate Monitor	**A**	**0.736842**	**-0.21052**
12	Price Level	**O**	**0.628865**	**-0.53608**
13	Android & iOS compatibility	**M**	**0.393939**	**-0.57798**
14	Water Tracking	**I**	**0.449541**	**-0.16161**
15	InterchangeableBands	**I**	**0.380000**	**-0.1800**
16	Bluetooth	**M**	**0.427184**	**-0.60194**

In this research it has been found that six attributes such as Water resistance, Magnetic charging,

Battery life, Screen size, Voice controller facility and Heart rate monitor6 come under "Attractive category". The Color options, Cellular Data, Water tracking and Interchangeable bands come under "Indifferent category" as these attributes contribute neither to satisfaction nor to dissatisfaction of customers. The three " Must be attributes" are Pedometer, Android & iOS compatibility and Bluetooth. The customers will be extremely unhappy if it is not provided. The "One Dimensional Attributes" in this study are Blood Pressure Monitor, Sensors (Gyroscope, ambient light sensor, Accelerometer) and Price level.The presence of this will increase the level of satisfaction and its absence will lead to an increase in level of dissatisfaction.

Testing of Hypothesis

To examine differences in customer satisfaction towards Noise, Boat and Fire-Boltt smart watches,the following Hypothesis was tested

Ho: There is no significant difference in customers satisfaction towards Noise, Boat and Fire-Boltt smartwatch brands

H1: There is a significant difference in customer satisfaction towards Noise, Boat and Fire-Boltt smartwatch brands.

The Reliability of the Questionnaire is verified by calculating Cronbach's Alpha Value. The Questionnaire seemed to be highly reliable as the Cronbach's alpha value is more than 0.7. (Table IV)

TABLE IV

Reliability statistics

Croach's Alpha	N of Items
0.823	13

6Heart rate monitor (HRM) is a personal monitoring device that allows one to measure/display heart rate in real time or record the heart rate for later study. It is largely used to gather heart rate data while performing various types of physical exercise.

ANOVA Analysis is done using SPSS software and the results of the Test is shown in Table V

TABLE V RESULTS OF ANOVA

Customer satisfaction					
	Sum ofsquares	df	Mean square	F	Sig
Betweengroups	535.158	2	254.784	11.303	.000
Withingroups	2325.422	102	24.432		
Total	2860.58	104			

To examine differences in customer satisfaction towards Noise, Boat and Fire-Boltt smart watches, one way ANOVA has been applied. The results clearly showed a significant estimate (F= 11.303, sig value =0.000 which is < 0.05) for customer satisfaction with respect to Noise, Boat and Fire-Boltt smartwatch brands.

This leads to acceptance of Null Hypothesis (Ho) and rejection of Alternative hypothesis (H1). Hence we can conclude that there is statistically significant difference in customer satisfaction with respect to Noise, Boat and Fire-Boltt smart watches.

Conclusion

The customer satisfaction for different attributes of smart watches was found by using the Kano Model which categorizes four types of attributes such as Water resistance, Magnetic charging, Battery life, Screen size, Voice controller facility and Heart rate monitor which come under “Attractive category”.The Color options, Cellular Data, Water tracking and Interchangeable bands come under “Indifferent category” as these attributes contribute neither to satisfaction nor to dissatisfaction of customers. The three “Must be attributes” are Pedometer, Android & iOS compatibility and Bluetooth. The customers will be extremely unhappy if it is not provided. The “One Dimensional Attributes” in this study are Blood Pressure Monitor, Sensors (Gyroscope, ambient light sensor, Accelerometer) and Price level. The presence of this will increase the level of satisfaction and its absence will lead to an increase in level of dissatisfaction.

Anova Analysis is used to examine differences in customer satisfaction towards Noise, Boat and Fire-Boltt smart watches.The result of the Testing of Hypothesis reveals that there is a significant difference in customer satisfaction towards Noise, Boat and Fire-Boltt brands of smart watches.

Managerial Implications

In order to have a competitive edge the marketers need to give importance to customers preference and their level of satisfaction. The company can capture a good market share when the product attributes meet customers' choice. The research paper provides some insights as to how the customers’ satisfaction can be measured and the preferred choice of customer can be identified. The above two aspects are important in product designing, so that the R&D can come with attributes that are interesting to customers.The level of satisfaction depends on the various product attributes.The present paper provides a deep understanding to the marketers about customer delight and customer dissatisfaction.Moreover repurchase and customer loyalty depends on customer satisfaction.The study also has given the insights on customer satisfaction towards different smartwatch brands.

References

[1] Ahttps://www.britannica.com/technology/smartwatch

[2] Business Today.in December 04, 2021 Will smartwatches ever go mainstream?https://www.businesstoday.in/magazine/living-tech/story/smartwatch-burg-ph one-watch-42104-2013-04-02

[3] TheEconomic Times, December 04, 2021,In the world of smart watches, India’s Second largest Manufacturer is winning the race against time. https://economictimes.indiatimes.com/small-biz/sme-sector/in-a-world-of-smartwatches-ind ias-second-largest-clock-manufacturer-is-winning-the-race-against-time/articleshow/8

[4] Techwire Asia, july 01, 2021, Are smart watches the future of wearable devices https://techwireasia.com/2021/07/are-smartwatches-the-future-of-wearable-devices/

[5] Business Standard,Jun 15,2021Apple planning faster watch, temperature and glucose sensors:Report

[6] https://www.business-standard.com/article/international/apple-planning-faster-watch-temperature
[7] -and-glucose-sensors-report-121061500054_1.html
[8] Business Standard, October 23, 2020, OPPO Watch: A decent 'WearOS' experience with premium feel
[9] https://www.business-standard.com/article/technology/oppo-watch-a-decent-wearos-experience- with-premium-feel-120102300518_1.html
[10] Business Standard September 8, 2020, ECG feature in Apple Watch Series 4 and 5 receives final approval in Japan
[11] https://www.business-standard.com/article/technology/ecg-feature-in-apple-watch-series-4-and-5
[12] -receives-final-approval-in-japan-120090800309_1.html
[13] Business Standard , July 9, 2020,Samsung to make Smart Watches locally, unveils 1st 'made in India' device
[14] https://www.business-standard.com/article/companies/samsung-to-make-smart-watches-locally-u nveils-1st-made-in-india-device-120070900875_1.html
[15] Business Standard ,February 22, 2018In an era of 'smart', sometimes dumb is better https://www.business-standard.com/article/current-affairs/in-an-era-of-smart-sometimes-dumb-is
[16] -better-118022201243_1.html
[17] Business Standard June 20, 2019, Smart watches can reveal more about a person than you can guess
[18] https://www.business-standard.com/multimedia/video-gallery/general/smart-watches-can-reveal-more-about-a-person-than-you-can-guess-83909.html
[19] Allied Market Research 2021,
[20] https://www.alliedmarketresearch.com/smartwatch-market#:~:text=The%20global%20smartwatc
h%20market%20was,19.6%25%20from%202020%20to%202027.&text=According%20to%20s
martwatch%20market%20trends,are%20operating%20in%20this%20segment
[21] Hindustan Times, 4 December 2021, India becomes fastest growing market for smartwatches worldwide
[22] https://www.livemint.com/news/india/india-becomes-fastest-growing-market-for-smartwatches- worldwide-11630046011785.html
[23] Mandy Ryan, Shelley Farrar, (Published 03 June 2000)
[24] Using conjoint analysis to elicit preferences for health careBMJ 2000; 320 doi: https://doi.org/10.1136/bmj.320.7248.1530 (Published 03 June 2000)
[25] William L. Moore,Jordan J. Louviere,Rohit Verma,12 August 2004 ,Using Conjoint Analysis to Help Design Product Platform, Journal of Product innovation Management
[26] https://doi.org/10.1111/1540-5885.1610027
[27] Mandy Ryan,Jenny Hughes,4 December 1998 Using Conjoint Analysis to Assess Women's Preferences for Miscarriage Management,Health Economics
[28] Jamous, R.M., Sweileh, W.M., Abu-Taha, A.S. et al. Adherence and satisfaction with oral hypoglycemic medications: a pilot study in Palestine. Int J Clin Pharm 33, 942–948 (2011). https://doi.org/10.1007/s11096-011-9561-7
[29] Ying-Feng Kuo, Jing-Yu Chen & Wei-Jaw Deng (2012) IPA–Kano model: A new tool for categorising and diagnosing service quality attributes, Total Quality Management & Business Excellence, 23:7-8, 731-748, DOI: 10.1080/14783363.2011.637811
[30] Gimpel, H., Manner-Romberg, T., Schmied, F. et al. Understanding the evaluation of mHealth app features based on a cross-country Kano analysis. Electron Markets (2021). https://doi.org/10.1007/s12525-020-00455-y
[31] Jean Ashby and William A. Sadera and Scot W. McNary ,Journal of Interactive Online Learning, Volume 10, Number 3, Winter 2011 ISSN: 1541-4914, Comparing student success between developmental math courses offered online, blended, and face-to face
[32] https://www.statista.com/statistics/524830/global-smartwatch-vendors-market-share/
[33] https://www.cnbctv18.com/technology/smartwatch-sales-rise-274-in-india-domestic-brands-capt ure-75-market-share-in-2021-12438992.htm