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## *An Empirical Study on Customer Satisfaction for Smartwatches in NCR*

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*Abstract: Watches in the present times not only represent a portable timepiece, rather it is viewed as a symbol of fashion, success, glamour and a person's taste and identity. Due to constant developments in the field of technology, wearables have become the most worked upon technological product. Although, smartwatch is continuously expanding its market but customers' satisfaction is the term that still remains immeasurable. An effort is made here to measure the level of satisfaction of users of smartwatches with relation to its features. Here in this research paper, we have tried to know whether the buyers and users are satisfied with the features of smartwatches or not. So, a well-designed and structured questionnaire is presented before 255 users from NCR and a valid response of 230 smartwatch users is then retained to draw the meaningful conclusions. The questionnaire included the demographic variables like age, gender, occupation, monthly income etc. of respondents along with the eight features of smartwatches. MS- Excel and SPSS software are used to apply tools like Descriptive Statistics, Weighted Average Score and ANOVA. Hypotheses are developed to know the significant differences between demographic variables and satisfaction level with features of smartwatches. The findings state that majority of the respondents i.e. 87.8 percent are satisfied with the feature of "comfortable to wear". 84 percent participants are satisfied with the feature "ease to use" and 81.3 percent users are satisfied with "responsiveness" feature whereas 11.7 percent are dissatisfied.*

**Keywords:** Smartwatch, Customer Satisfaction, Customer's expectations.

### I. INTRODUCTION

Smartwatch is a highly acknowledged wearable device that is commercially proving itself as a boon to the technological industry. It is a combination of traditional watch and a smartphone. So, it can be said that it is only a wrist watch with improved functionality performance. Wearable computers, as described by Starner (2014), are "any-body-worn computer that is designed to provide useful services while the user is performing other tasks" (Cecchinato, et al., 2015). It is also defined as a mobile device with a touchscreen display which is designed to be worn on the wrist. It keeps us updated everytime with respect to phone calls, text messages, weather reports, e-mails, health informatics etc. Smartwatches typically integrate with a user's smartphone. Some of the examples includes the use of smartwatches for Health & well-being (e.g., posture, fertility, or pain), Fitness (e.g., heart rate or step count in sport activities), Lifestyle & management (e.g., providing a map, notifying about incoming call or email) as well as Safety reasons (e.g., by sending a SOS alert automatically) (Pradthana & Jonna, 2019). Though, it is accepted by the society at large be it any age group persons, or in any occupation or with any amount of family income etc. A number of brands have entered into this market and made their products easily available to all the strata of the

society like Apple, Samsung, Fitbit, Noise, Fastrack etc. But it is always questioned whether this new technology has proved itself worthy? Whether the users of smartwatch are satisfied with the features that these devices provide? Which category of buyers are satisfied with which attributes and which features are least used by them. Although, a large number of researches have already been done in this respect but still gaps are needed to be filled. One of those gaps is “Users’ satisfaction”.

Customer Satisfaction may be defined as a measurement that determines how happy a customer is with a company’s product or service or capabilities. Satisfaction is a dynamic, moving target that may evolve overtime, influenced a by a variety of factors. Particularly, when the product usage or the service experience takes place over time, satisfaction may be highly variable depending on which point in the usage or experience cycle one is focusing (Lovelock, C & Wright, L. 2007, 86-87). Customer Satisfaction is influenced by specific product or service features and perceptions of quality. Satisfaction is also influenced by customer’s emotional responses, their attribution and their perception of equity (Zeithal & Bitner, 2003, 87-89). Customer Satisfaction surveys help companies to determine how to best improve or change its product or offerings. And at the same time, it lends your brand credibility, popularity and helps to acquire new and retain old customers.

So, these two terms i.e. smartwatch and customer satisfaction have forced to link the concept and to find out whether the users of smartwatch are satisfied with respect to its features or not. This research study would help the smartwatch industry to gain insights into the concept that needs to be worked upon for further improvement in their technological product. Here, it is also attempted to know which features are mostly used by the users and with which features, they are a bit dissatisfied. Efforts are also made to know the significant difference between various features of smartwatches and demographic variables of respondents.

## II. REVIEW OF LITERATURE

Name of the Author (Year, Location)	Title of the Paper	Sample Size	Findings
Dr. M.P. Kumaran and Ms. G. Sandhiya (2014, India)	A study on Customer Preference towards Purchase of Smartwatches in Coimbatore City	152 smartwatch users	It is highlighted here in this paper that 50 percent of the respondents get influenced by the features of smartwatches. The brand “Samsung” is ranked one by the respondents followed by “Apple” and “Noise” at the second and third rank respectively.
Nina Anggraini, Emil R. Kaburuan, Gunawan Wang and Riyanto Jayadi (2019, Indonesia)	Usability Study and Users’ Perception of Smartwatch: Study on Indonesian Customer	116 Smartwatch Users	This research paper highlights that usage of smartwatches is less significant while brands and prices strongly influence customer’s perception. It is also stated here that the buyers chose the smartwatch brand based on its smartphone brand and Xiaomi smartwatches are more affordable in comparison to other brands.
C.W. Lin, C.C. Yang, W.Y. Sia and K.Y. Tang (2019, Taiwan)	Examining the success factors of Smartwatch: A Behavioural Perspective on Consumers	327 respondents	It is analysed that Apple watch users are mostly men and Apple watches still lacks in function and performance so the

			customers are not fully satisfied. So, it is suggested that R&D of Apple must emphasize on functional development in order to work on its flaws.
Md Uzir Hossain Uzir, Hussam Al Halbusi et. al (2021, Malaysia)	Applied Artificial Intelligence and User Satisfaction: Smartwatch Usage for Healthcare in Bangladesh during COVID-19	486 users	It is found here that the predictors like “product quality”, “service quality”, “perceived convenience” and “perceived ease of use” significantly affect user experience and trust. It is also seen that the demographic variables like gender and age moderated the relationship of experience and trust with customer satisfaction.
Dr. V Paramasivam and G V Sowmiya (2023, India)	A Study on Customer Satisfaction towards Fastrack Smartwatch with reference to Namakkal	80 participants	It is found that it is the social media that urges the buyers to purchase the fastrack smartwatches the most but at the same time, this brand needs to improve its product quality and service quality in order to retain its market share.

### III. PURPOSE OF THE STUDY

Although we have seen that in the recent years, a lot of technological developments have taken place not only in the developed countries but also in the developing countries. Wearable technology in specific is one of them. We have seen that smartwatches market is expanded like anything and people have gained benefits from it, be it in their health or fitness or enjoyment etc. This research study is done to find out the post-purchase behaviour of the users of smartwatches, whether they have gained satisfaction with its usage or not. It would help the marketers to know the level of satisfaction of the users of smartwatches and at the same time, this analysis would aid them to incorporate certain other features into their product so as to make it more socially acceptable.

### IV. RESEARCH OBJECTIVES

The following are the research objectives of this study:

1. To measure the level of satisfaction of users of smartwatches with respect to its various features in NCR.
2. To know whether there exists a significant difference in the level of satisfaction of users of smartwatches across demographic variables or not.

### V. RESEARCH METHODOLOGY

#### Research Design

#### Universe/Population

The term "Universe" comprises of all the elements that qualify to be included in the study of research. It includes all such sampling units from which a sample is to be drawn.

Here, in this research study, a researcher has no clear idea of the universe for the analysis that is infinite. Infinite population here consists of all those residents of NCR who are using smartwatches for more than six months. Users of smartwatches in NCR are targeted for this study.

#### **Participants and Instrument Development:**

Smartwatch users in NCR were our target population. Therefore, smartwatch users were approached randomly and with the help of one or the other respondents and invited to fill the well-designed and structured questionnaire. In this study, the sampling unit was the users of different brands of smartwatches located in NCR. About 255 responses were collected, of which 230 were retained for analysis after data cleaning. Participants were given a brief introduction to the purpose of the research so that they know how their input would be used. Particular attention was taken to keep this introduction neutral to avoid any influence that could lead to common method bias. The questionnaire clearly stated that participation was optional with the possibility to withdraw at any time and that all the questions were multiple choice type.

#### **Sampling Technique Used**

In this research study, Random and Convenience sampling technique was used to gather the information related to the satisfaction of the users of smartwatches.

#### **Data Collection:**

The primary data was collected through questionnaire. The survey was created online as well as offline. Participants were given a brief introduction to why the research is being undertaken so they know how their input would be used. The first part of the questionnaire comprises questions pertaining to demographic variables of customers and second part of the questionnaire consists of questions related to satisfaction of users regarding different features of smartwatches. The secondary data were collected from journals, newspapers, magazines, internet and websites.

### **VI. RESEARCH HYPOTHESIS**

In pursuance of the above objectives, the following hypotheses were formulated for testing:

**H<sub>01</sub>:** There is no significant difference in the users' level of satisfaction for different features of smartwatches based on respondents' gender.

**H<sub>02</sub>:** There is no significant difference in the users' level of satisfaction for different features of smartwatches based on respondents' age group.

**H<sub>03</sub>:** There is no significant difference in the users' level of satisfaction for different features of smartwatches based on respondents' education level.

**H<sub>04</sub>:** There is no significant difference in the users' level of satisfaction for different features of smartwatches based on respondents' income level

**H<sub>05</sub>:** There is no significant difference in the users' level of satisfaction for different features of smartwatches based on respondents' occupation.

### **VII. DATA ANALYSIS AND INTERPRETATION**

Analysis and interpretation are the pivotal steps of the research process. The aim of the analysis is to organize, classify and summarize the collected data so that they can be better comprehended and interpreted to give answers to the questions that

triggered the research. Interpretation is the search for the broader meaning of findings. Analysis is not fulfilled without interpretation; and interpretation cannot proceed without analysis. So, both are inter dependent.

Here, in this study MS- EXCEL and SPSS softwares are used and tools like Descriptive statistics, Percentage, Weighted Average Score and ANOVA are made use of to analyse the data so as to derive the meaningful and relevant interpretation.

**Table 1: Demographic Profile of Respondents**

Demographic Variables	Characteristics	Frequency	Percentage
Gender	Male	111	48.3
	Female	119	51.7
	Total	230	100
Age	Under 18 Years	11	4.8
	19 to 30 Years	92	40.0
	31 to 45 Years	86	37.4
	46 to 60 Years	34	14.8
	More than 60 years	7	3.0
	Total	230	100
Education	Upto 12 <sup>th</sup> Class	16	7.0
	Graduate	58	25.2
	Post Graduate	98	42.6
	Ph.D. & Higher	58	25.2
	Total	230	100
Occupation	Student	72	31.3
	Job	89	38.7
	Business	26	11.3
	Professional	13	10.0
	Homemaker	12	5.2
	Retired	8	3.5
	Total	230	100
Family Income Per Month	Less than 50000 ₹	55	23.9
	50000 ₹ to 100000 ₹	60	26.1
	100000 ₹ to 150000 ₹	31	13.5
	More than 150000 ₹	84	36.5
	Total	230	100

Source: Primary Data

Table 1 shows the demographic profile of the users of smartwatches in NCR. It reveals that out of the total respondents 48.3 per cent are males and 51.7 per cent are female respondents. This shows the least composition of male respondents in consumer's satisfaction level towards smart watches in NCR. The category of demographic variable "age" shows that a maximum of 40.0 percent respondents are from the category of 19 to 30 years. The second largest group lies in the category between 31 to 45 years with 37.4 per cent of the total responses. Approximately 14.8 per cent are aged between 46 to 60 years and 7 per cent are aged under 18 years. The lowest percentage comes from the respondents aged above 60 years with merely 3 per cent to the total data collected. It is therefore can be concluded from the above information that the product is mostly purchased and used by young people.

The variable of "educational qualification" shows that majority of the respondents (42.6 per cent) are Post Graduates while 25.2 per cent are Ph.D. or of higher educational qualification, 25.2 per cent participants are graduates and 7.0 per cent are having up to class 12th as their educational qualification. Thus, it is found here that majority of the respondents (43 per cent) who are a part of our research study as a sampling unit have completed Post graduation as their educational qualification.

The “occupation” of the respondents selected shows that 38.7 per cent participants are in job while 31.3 per cent are students, 10.0 per cent are professionals and only 8.7 per cent are in the other category of homemaker /retired, unemployed etc. The variable of “monthly income distribution” indicates that 36.5 per cent respondents are earning income more than ₹ 150,000 whereas 26.1 per cent respondents are earning income between ₹50,000 to ₹ 100,000, 23.9 per cent are earning income upto ₹50,000 and merely 13.5 per cent of the respondents are earning income between ₹ 1,00,000 to 1,50,000. This shows that a good number of users of smartwatches are distributed across all categories of income and in fact users belonging to higher income group also responded positively.

### VIII. USER’S SATISFACTION LEVEL TOWARDS FEATURES OF SMART WATCHES

Users’ or Consumers’ satisfaction is a measure of how happy the consumer is with the product or service offering of a business. Users could be Very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied, or very dissatisfied. A marketer fails to increase the market share if it is not offering good quality products at reasonable prices. Here in this research study, factors like price, ease of use, design and appearance, comfortable to wear, responsiveness, quality of case material, water resistance, battery life of a smart watch are the independent variables. Respondents here were asked to mark their level of satisfaction for these above said features of smartwatches on a 5- point likert scale where Very Satisfied=5, Satisfied=4, Neither Satisfied nor Dissatisfied=3, Dissatisfied=2, Very Dissatisfied=1.

**Table 2: Respondents’ Satisfaction Level with Smart Watch Features**

Features	Very Satisfied	Satisfied	NSND	Dissatisfied	Very dissatisfied	Total Score	WAS	Rank
<b>1. Price</b>	44 (19.1%)	139 (60.4%)	18 (7.8%)	14 (6.1%)	15 (6.5%)	873	3.80	6
<b>2.Ease of Use</b>	85 (37.0%)	108 (47.0%)	9 (3.9%)	19 (8.3%)	9 (3.9%)	931	4.05	2
<b>3.Design and appearance</b>	88 (38.3%)	88 (38.3%)	15 (6.5%)	24 (10.4%)	15 (6.5%)	900	3.91	4
<b>4.Comfortable to wear</b>	99 (43.0%)	103 (44.8%)	16 (7.0%)	8 (3.5%)	4 (1.7%)	975	4.24	1
<b>5. Responsiveness</b>	66 (28.7%)	121 (52.6%)	16 (7.0%)	16 (7.0%)	11 (4.8%)	905	3.93	3
<b>6. Quality of Case Material</b>	65 (28.3%)	104 (45.2%)	23 (10.0%)	22 (9.6%)	16 (7.0%)	870	3.78	7
<b>7. Water Resistance</b>	80 (34.8%)	88 (38.3%)	23 (10.0%)	25 (10.9%)	14 (6.1%)	885	3.85	5
<b>8. Battery Life</b>	51 (22.2%)	108 (47.0%)	16 (7.0%)	30 (13.0%)	25 (10.9%)	820	3.57	8

Overall Average Weighted Score: 3.89

Source: Primary data

\*Data in parentheses indicate percentage of respondents.

Table 2 highlights the level of satisfaction of users for smartwatches. It clearly indicates that majority of the respondents i.e. 87.8 percent are satisfied with the stated feature of “**comfortable to wear**” whereas only 5.2 percent are dissatisfied with it. Similarly, 84 percent participants are satisfied with “**ease to use**” feature whereas only 12.2 respondents deny that they do not find smartwatches easy to use. Approximately, 81.3 percent users are satisfied with “**responsiveness**” feature whereas 11.8 percent are dissatisfied.



Table 2 also depicts the overall weighted average score is 3.89 which says that smartwatch will prove a good product for Indian consumers. The feature “**Comfortable to wear**” has got the highest mean score of 4.24 followed by “**ease of use**” which got a mean score of 4.05. Responsiveness and design & appearance stood at 3<sup>rd</sup> and 4<sup>th</sup> rank respectively with a mean score of 3.93 & 3.91. But here, it is seen that users are dissatisfied with some features of smart watches like battery life has the lowest mean score **3.57**. About 30% respondents are not satisfied with the life of battery of smart watches

All the above stated features of smartwatches secured mean score of more than 3.0 on an average which shows that the overall satisfaction of users towards smart watches is satisfactory.

**Table 3: One-Way ANOVA for Consumer Satisfaction Level with Various Features Of Smart Watches Across Demographic Variables**

S.no.	Features	Gender		Age		Education		Occupation		Income	
		T Value	Sig.	F Value	Sig.	F Value	Sig.	F Value	Sig.	F Value	Sig.
1	<b>Price</b>	18.864	<b>.000</b>	23.427	<b>.000</b>	24.976	<b>.000</b>	11.883	<b>.000</b>	.394	.758
2	<b>Ease of Use</b>	.295	.588	34.980	<b>.000</b>	2.177	.091	12.886	<b>.000</b>	4.406	<b>.005</b>
3	<b>Design and appearance</b>	25.294	<b>0.000</b>	1.139	.339	9.796	<b>.000</b>	1.481	.197	17.749	<b>.000</b>
4	<b>Comfortable to wear</b>	.979	.324	.402	.807	2.010	.113	.637	.672	3.300	<b>.021</b>
5	<b>Responsiveness</b>	.541	.463	5.364	<b>.000</b>	2.694	<b>.047</b>	39.118	<b>.000</b>	.948	.418
6	<b>Quality of Case Material</b>	27.721	<b>.000</b>	14.205	<b>.000</b>	.799	.496	5.043	<b>.000</b>	.490	.689
7	<b>Water Resistance</b>	12.338	<b>.001</b>	14.226	<b>.000</b>	15.736	<b>.000</b>	1.667	.144	.574	.633
8	<b>Battery Life</b>	26.901	<b>.000</b>	4.508	<b>.002</b>	9.906	<b>.000</b>	16.017	<b>.000</b>	4.397	<b>.005</b>

Source: Primary Data

Table 3 exhibits the ANOVA results of level of users’ satisfaction with features of smart watch on the basis of demographic variables. We have compared the p-value with 0.05 level of significance. If the value is lower than 0.05, it states that there is a significant difference in the satisfaction level of users with respect to features of smartwatches on the basis of that demographic variable.

The first hypothesis was aimed at assessing the satisfaction level of users for smartwatches’ features across the categories of **gender**. According to the sig/p-values shown in Table 3, we fail to accept the  $H_{01}$  (Null hypothesis) and therefore, we conclude that there are significant differences in level of satisfaction for features of smartwatches on the basis of gender **except** for the features like “**ease of use**”, “**comfortable to wear**” and “**repositiveness**”.

The second hypothesis was aimed at assessing the satisfaction level of users for smartwatches’ features across the five categories of **age**. According to the sig/p-values shown in Table 3, we fail to accept the  $H_{02}$  (Null hypothesis) and therefore,

we conclude that there are significant differences in the level of satisfaction on the basis of age except for the features like “**design & appearance**” and “**comfortable to wear**”.

The third hypothesis was aimed at assessing the satisfaction level of users for smartwatches’ features across the four categories of **education**. According to the sig/p-values shown in Table 3, we fail to accept the  $H_{03}$  (Null hypothesis) and therefore, we conclude that there are significant differences in the level of satisfaction on the basis of education except “**ease of use**”, “**comfortable to wear**” and “**quality of case material**”.

The fourth hypothesis was aimed at assessing the satisfaction level of users for smartwatches’ features across the six categories of **occupation**. According to the sig/p-values shown in Table 3, we fail to accept the  $H_{04}$  (Null hypothesis) and therefore, we conclude that there are significant differences in the level of satisfaction on the basis of occupation except for the features like “**design & appearance**”, “**comfortable to wear**” and “**water resistance**”.

The fifth hypothesis was aimed at assessing the satisfaction level of users for smartwatches’ features across the four categories of **Income**. According to the sig/p-values shown in Table 3, we fail to accept the  $H_{05}$  (Null hypothesis) and therefore, we conclude that there are significant differences in the level of satisfaction on the basis of income except for the features like “**price**”, “**responsiveness**”, “**quality of case material**” and “**water resistance**”.

## IX. FINDINGS

1. Majority of the respondents i.e. 87.8 percent are satisfied with the stated feature of “**comfortable to wear**”.
2. 84 percent participants are satisfied with the feature “**ease to use**” & 81.3 percent users are satisfied with “**responsiveness**” feature.
3. 30% respondents are not satisfied with the life of battery of smart watches.
4. The feature “**Comfortable to wear**” has got the highest mean score of 4.24 followed by “**ease of use**” which got a mean score of 4.05. Responsiveness and design & appearance stood at 3<sup>rd</sup> and 4<sup>th</sup> rank respectively with a mean score of 3.93 & 3.91.
5. There are no significant differences on satisfaction level of smartwatch users on the basis of **gender** for the features “**ease of use**”, “**comfortable to wear**” and “**reposiveness**”.
6. There are no significant differences on satisfaction level of smartwatch users on the basis of **age** for the features “**design & appearance**” and “**comfortable to wear**”.
7. There are no significant differences on satisfaction level of smartwatch users on the basis of **education** for the features “**ease of use**”, “**comfortable to wear**” and “**quality of case material**”.
8. There are no significant differences on satisfaction level of smartwatch users on the basis of **occupation** for the features “**design & appearance**”, “**comfortable to wear**” and “**water resistance**”.
9. There are no differences on satisfaction level of smartwatch users on the basis of **income** for the features like “**price**”, “**responsiveness**”, “**quality of case material**” and “**water resistance**”.

## X. SUGGESTIONS

1. Marketeers should work upon the battery life of the product so that calls with enhanced timings can be taken with ease.
2. Along with the functional performance, the design and look of the smartwatch must also be paid attention so that it matches with the females’ taste and glamour also.



3. There is an exception to the Law of Demand i.e. “Articles of Distinction” which says that the prices of the product should not be too low that people may develop a perception that is an inferior good. Rather, prices of the product should be kept reasonably high along with improvement in quality and more of features so that it may act as a status symbol for an upper section of the society.
4. “Quality of case material” must also be emphasized further so as to satisfy the buyers for the quality of the product.

### XI. LIMITATIONS

Although every effort is made to undertake a representative study, the following limitations may have occurred in the study:

1. There may be **Drop error** i.e. the respondents that are willing as well as are able to provide vital information may not be contacted or included in the sample.
2. There may be **Go error** i.e. the respondents that are unable or unwilling to provide the information may be included in the sample.
3. There may be chances of different perceptions or the wordings of the questionnaire or scale. Since, this research is based on the primary data collected through online survey using Google forms, where direct interaction between researcher and respondents was not possible.
4. The sample size of 230 respondents from NCR may not be suitable to represent the true population.
5. This study also suffers from the shortage of time and resources.

### XII. FEATURE SCOPE OF THE STUDY

1. This research topic may be expanded and undertaken in Pan-India for the generalisation of the results.
2. Research on the satisfaction level of users for different brands of Smartwatches can be undertaken and hence, comparison can be done.

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