

A Study on the Customer Awareness of Wearable Technology (with a special reference to Delhi/ NCR)

Shweta Nanda

Sr. Assistant Prof., Department of Management, IIMT, GGSIPU, India

Accepted 15 March 2017, Available online 24 March 2017, Vol.5 (March/April 2017 issue)

Abstract

As the need to continuously monitor the health related parameters exist, with ease of technology through internet of things, their lies tremendous scope to use many low-power sensors on the human body to monitor things like electrocardiograph (ECG), temperature and all of the other required physiological parameters. Wearable systems are totally nonobtrusive devices that allow not only the physicians to overcome the limitations of ambulatory technology but also provide the fitness vitals to be tracked by sportsperson or a fitness freak. Wearable sensors and systems have evolved to the point that they can be considered ready for clinical application (Bonato, 2003). The large number of companies has recently started investing aggressively in the development of wearable products for clinical applications. Stable trends showing a growth in the use of this technology suggest that soon wearable systems will be part of routine clinical evaluations. This conceptual paper mainly focuses on the three important variables of consumer awareness and acceptance of Wearable Device with respect to various industry verticals and customer base. 1) number of cases where when physicians want to monitor individuals whose chronic condition includes risk of sudden acute events or individuals for whom interventions need to be assessed in the home and outdoor environment 2) Affordability status of such device 3) Consumer awareness and knowledge about its function.

Keywords: Wearable sensors, Consumer Awareness, Affordability, Clinical Application, Internet of Things.

1. Introduction

Customer awareness is a part of a company's marketing & communications plan. It is a process that helps an entrepreneur educates **customers** about his/her company, its performances and the products or services his/her company delivers.

Wearable technology is a term used to describe many different forms of body mounted technology, including wearable computers, smart clothing, and functional clothing" (Dunne, 2004).

Encompassing the fields of science and engineering, analytics, business, healthcare, government and various marketing strategies, this report explores the promise that wearable biosensors, hold not only for the fitness freak consumers but also for improving the quality of patients care in India. In a nation like India, the health care cost is associated mainly with management of chronic diseases, heart diseases, asthma and diabetes. Wearable Tech in medical Industry is an untapped potential market in India where the onus of its size largely depends on the marketing and communication plan of the Industry in collaboration with doctors and Insurance advisors.

In the field of athletics, fitness and increased productivity and connectivity, there has been explosion of wearable sensors in the market. However significant barrier exists for their adoption in health care in India. The challenge lies on the medical Innovation Industry and respective marketers to reduce the innovation cost and increase the awareness of prospective customers in the wake to transform research by collecting big data on pre-symptomatic patients to understand disease etiology and develop earlier inventions.

In a country like India where patient to doctor ratio is too high, the doctors have tremendous opportunity to assimilate the database from customers wearable biosensors along with integrated mobile app which can be researched to improve the quality of patients care and clinical outcomes.

2. Review of Literature

Ian Ferguson (2016) in his address in " Mobile health: the power of wearable's, sensors and app to transform clinical trials" reviewed that according to International Diabetes Federation estimates in Nov 2013, the number of diabetes sufferers will increase 50% with a cost to the health care industry estimated to be \$630 billion.

Ferguson further stated that Smartphone initially used to simply make and receive phone calls, is expected to become a gateway that channels a rich set of personal information to and fro from a cloud structure such as server.

Topol, E.J. 2010, in the “Consumer movement in Health care” and Kish, L.J. & E.J Topol (2015) in “Unpatients-why patients should own their medical data” explained that many owners of smartphones and wearable sensors are using their devices to automatically track measure their own health, including sleep, vitals, and exercise but soon most routine lab test will likely be obtainable by consumers with smartphone kits, this will shift the data ownership from healthcare providers to patients.

Seram, N. & Dhramakeerthi, C.(2016) in “Wearable Technology Products: Awareness in Sri Lankan Market” explained the knowledge gap between the customers and Wearable Technology Market where their reduced awareness is dependent on the factors like lack of product experience, low trust level, minimal market influence, Low customer motivation and insufficient influence from marketers are also the reasons.

Kotler, P., & Armstrong ,G.(2005) in his book “Marketing: an Introduction” explained the Innovation Adoption Model. However, steps in Innovation Adoption model state that pushing the customers from “Awareness” to “Evaluation” can be achieved through the use of marketing tools and strategies devised by the marketers.

X.-F. Teng, Y.T. Zhang, C.C. Y. Poon & P. Bonato (2008) in “Wearable medical system for p-health”, explained that in Medical WT, all the measured physiological data are collected by a microcontroller based on the processed data the central controller may either generate a warning message to the caregiver or help detect an early disease.

James A. L. (2016) “The Baetylus Theorem—The Central Disconnect Driving Consumer Behavior and Investment Returns in Wearable Technologies” explains that there is a fundamental disconnect in how consumers view wearable sensors and how companies market them; this is called The Baetylus Theorem where people believe (falsely) that by buying a wearable sensor they will receive health benefit; data suggest that this is not the case. This idea is grounded social constructs, psychological theories and marketing approaches. A marketing proposal that fails to recognize The Baetylus Theorem and how it can be integrated into a business offering has not optimized its competitive advantage.

L.-B. Chen et al (2016) in “Wrist Eye: Wrist-Wearable Devices and a System for Supporting Elderly Computer Learners” told that Wearable devices, such as wristbands, smart watches, are gaining in popularity. Into such devices can be embedded a variety of sensors which can give birth to a number of diverse functions. Our team wanted to develop an assisted learning system incorporating a wearable device that would be able

monitor _rst-time learners' use of mouse and keyboard and provide their instructors with useable feedback.

3. Statement of the Problem

GAP in the field of Wearable Technology

WT products can be worked as independent processing units. These products are worn on the user's body for a period of time to enhance the performance of the wearer, or it can monitor and indicate the bio-information about the wearer.

Some of the examples are Wearable sensors, Wearable Solar powered Garments, Eye tracking garment, Wearable perfume, Smart Watches, Socks, Wearable assisted learning wristbands and Wearable health Devices.

This report mainly focus on the Gap in developed and developing countries with respect to WT, Need variation in the Developing Countries, awareness of the consumer for the wearable medical devices, adaptability of WT Medical Devices, prospective target customers, their perception and buying behavior, affordability status, marketing tools and strategies, Role of Insurance Providers and other substantial factors to innovate a suitable marketing Offering.

Gap Analysis

It is expected that the usage of wearable devices will increase exponentially in the near future. The revenue from the global wearable electronics market is expected to cross \$11.6 billion market by 2020, growing at a CGAR of 25 %.(Donald, L. 2014)

Technology advancements in WT Medical, increased acceptance and real time rich customer information sharing for innovation and presymptomatic based research has led to significant WT advancements in Developed countries. Also, according to the challenges addressed by NSF Nanosystems Engineering Research Center (NERC) for Advanced Self-powered systems of Integrated Sensors and Technologies (ASSIST) by building wearable's, wireless, and comfortable systems that are self powered by the human body and consists of multimodal health and environment sensors. These systems can provide medically validated information to users and inform lifestyle decisions, enable correlation of personal health and personal environment and lead to rapid and effective management of health conditions (Misra,V. et.al, 2016).

Where the Developed countries are working upon the self powered, environment responsive wearable sensors, the developing nations lack a modern but high-cost medical infrastructure. Smart phones are ubiquitous, with 1.5 billion being sold in 2015 alone.

Mobile health, which relies on smart phones to collect, process, store, and transmit data, could bring affordable, high-quality telehealth applications including

medicine, disease surveillance, diagnostic, imaging, and pathology.

The major players of Indian wearable market are Mi, Samsung, Motorola, Fitbit, sports merchandize marketers. Other garment manufacturers are slowly inclining towards this and very soon it will be available for all in near future. Right now all the fitness geeks are rewriting their priorities through this technology.

According to a press release by IDC, the wearable sales figure has crossed 400K units during the first quarter of 2016 and is likely to elevate further. Moto 360,

Samsung Gear S2, Asus Zen watch 2, LGUrbane and the Apple Watch-all these are inventions of wearable technology which have just become a catalyst & key drivers to healthier lifestyles of Indian consumers who are slowly getting health conscious.

Chronic diseases like Diabetes and Cholesterol are thus compelling Indian citizens to keep healthier habits which can just be facilitated by these wearable technologies. MRO, gaming, VR, LeChal Shoes, Huggies’sensor embedded diapers, AIQ’s smart shirts, safe necklace. All are now available in your hands. So the whole world inside the cups of your palm. So from Adnan Sami to Anant Ambani everyone has become a jabra fan to this technology in India. Wearable technology is connected to any e- merchandise that is created to be worn by a male or female. According to a research by Ditched analysts , the market will be worth over \$30bn in 2016, and growing in three different phases: 10% annually to over \$40bn in 2018, but then accelerating to 23% through to over \$100bn by 2023, before slowing to 11% to reach over \$150bn by 2026(Source: Report Linker.com)

In this Report we want to study the share of Delhi, NCR based respondents who are interested in WT devices that transmit medical, sports or safety data. Also, as per the present data, aware and WT accessible customers are those who buy it for fitness consciousness instead of need.

Maximum Need of WT among the Following Budding WT Categories in Delhi/NCR

- Medical WT: increasing obesity, cholesterol and diabetes influence/genetic diseases
- Security WT: women safety
- Sports/fitness WT: Delhi as a hub of various sports training centers /fitness prone urban class.
- Industry WT: Industrial Applications
- Insurance WT: better risk management in life insurance

Constructs and measurement items of Medical WT

Perceived usefulness

- Wearing Medical WT will help pre diagnose my wellness trajectory
- Wearing Medical WT will help monitor post rehabilitation data and share it with doctors
- Overall, I find Medical WT Useful.

Perceived ease of use

- The use of medical WT is clear and understandable.
- Overall, linking the monitored data with Smartphone application is easy. Using medical WT would not require a lot of mental effort.

Perceived performance risk

- How confident are you that the WT medical will perform as described? How certain are you that the WT medical will work satisfactorily?
- Do you feel that the medical WT will perform the functions that were described in the information page?

Perceived precision & security

- This product would provide security with respect to data transmission on cloud and to physicians.
- This product would provide with the accurate data of wellness.
- This product would be appropriate for my personal data security and privacy.

Attitude

- Purchasing medical WT would provide/would not provide value for money. Purchasing medical WT is totally based/not based on doctor’s recommendation.

Purchase Intention

- I intend to try this type of product.
- It is likely that I will buy this product when it becomes available. I would purchase this product.

4. Objectives of the study

The study has been undertaken with the following principal objectives

- To study the awareness level of the customers in various WT categories
- To study the share of Delhi, NCR based respondents who are interested in WT devices that transmit medical data.
- To analyze the relationship between marketing Tools and a suitable market offering for WT in Delhi/NCR.
- To analyze the relationship between educational qualification, prior experience of WT, affordability status and adaptability to Medical WT Device.
- To study the differences between Gen Y and Gen X on their perceptions and attitudes towards medical WT purchasing.

Methodology

An in-depth literature review was carried out on wearable devices. The study was carried out in two phases.

Phase I

The focus of the first phase of the study was to collect an appropriate target sample to carry further in depth research on awareness of medical WT. Random Sampling was adopted for the first phase. Different areas like medical, sports, fitness, fashion and Industry were selected to get the effective result from the survey. Feedback was received from 100 Respondents. The analysis of the result obtained was done and the relevant customer segment was identified. On the basis of these result the main questionnaire of phase II were designed based on the various occupations and health priority for present users or prospective users.

It was evident from PHASE I survey that the occupation and interest also had an influence on the awareness of WT. A large percentage of people who belong to the categories of Sports, Medical and Fitness have high awareness of WT.

Phase II

An appropriate target customer group who have a high awareness level of WT was identified in the age of 19-34 from PHASE I. The questionnaire in PHASE II was so designed to measure the perception and attitude of the focus group segment who have high awareness of medical WT.

Data Analysis

A comparative analysis was done of the generic WT aware customers who are further aware of medical WT. However, with a further analysis in accordance with various profession and health priorities, a focus group was identified whose age group is 35-48 and have a high awareness about Medical WT. The large awareness of that age group justifies that why it has been selected as the target group of customers for further survey purpose.

Application in Different Fields

It was evident that awareness of WT also depends on the field of interest. A large percentage of people who belong to the below categories have a high awareness of WT products. Further research and interviews would be conducted in these three categories of people. With this random sample evaluation it was evident that only 54% people were aware about WT.

It was also identified that people who are in Medical field are well aware of the product. They majorly belong to the age group of 35-49. They have stated in Phase II questionnaire that they are majorly using heart rate monitors and other Medical WT.

Others who are aware but are not in medical field got the word of mouth from physicians or chemist.

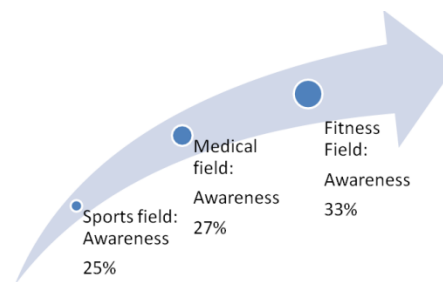


Fig 1: Level of Awareness with respect to field of Application

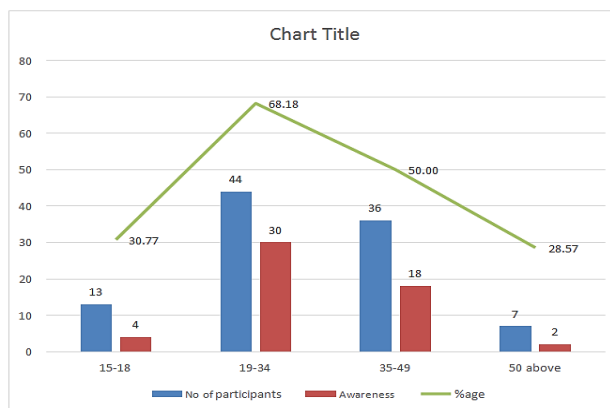


Fig 2: Level of Awareness with respect to the age group

People who are engaged in sports activities are also aware of these products. 23% of participants in this category also have experience in using WT products. Many of them have installed some applications in their smart phones which are used as WT devices.

The people connected to the fitness industry have a high awareness as compared to the other field. A further questionnaire implicitly defines that they have been influenced by the instructors and peers at gym. Also, this category majorly belongs to the age group of 19-34.

Phase II

The data analysis of phase 2 is based on the result of the questionnaire which was further given to the age wise, most WT aware category to find out their awareness to medical WT. Around 50 % of the total participants were the target audience for the phase II questionnaire.

It was evident with the further results that out of 18 participants in the age group of 35-49, 12 people do not belong to the Medical field. When considering the gender of the participants in the survey it was found that more male has participated in the survey who have different buying behavior and attitude as that of females. However, during the first survey the each gender category was equal. Thus, it can be deduced that if the number of participants in second category were equal more accurate results could be obtained.

It is therefore concluded that male customers are more aware with medical WT than females and “ Generation Y” category is more reactive to the new product diffusion of Medical WT in Delhi.

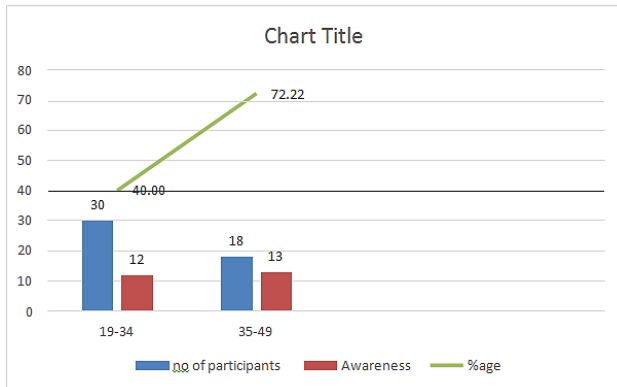


Fig 3: Level of Medical WT awareness among the target audience

Delhi/NCR Consumer’s Awareness of Medical Wearable technology

It was found out that 54 % of the total people participated in phase I were aware of WT product out of which 50 % of them have used WT products whereas out of 48 participators in phase 2 only 12% of them have experienced medical WT product.

Different means of acquiring awareness

Among the aware participants of the survey, nearly half of them got to know about it through internet. It was noted that willingness to buy medical WT products for people engaged in medical and sports was 100%. The reason identified for not buying medical WT was non affordability, lack of ease of use and security concerns in descending order.

It was evident that 46% of total participants have never seen WT product in Delhi or unable to recognize it. Out of 54% , 26% have seen it on internet/online media, 14% on Sports goods showroom, 10% on Electronic showroom and 4 % on pharmacy.

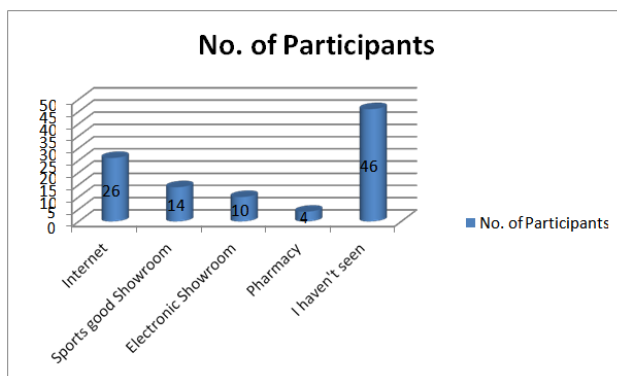


Fig 4: Awareness about Delhi/ NCR Wearable Technology Market

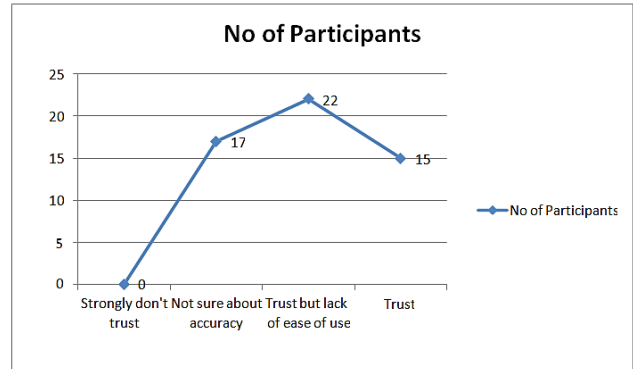


Fig 5: Trust Level towards WT among the WT Aware Audience

Attitude and general trust level were studied for Medical WT Products. Only 15% belong to the fully trust category and 17% doubt on its accuracy and security of data. It was also evident that many of them believed the regular medical visits to be far effective and easy as compare to adaptation to new technology.

Drift to buy Medical WT Products in Delhi/NCR

It was Evident from questionnaire that there was a willingness for the Medical WT Product in Delhi but a suitable market offering propels consumer’s buying decision. When asked in the questionnaire, it was evident that lack of trial and display on pharmacy, play a role in adaptation to new technology. A total 85% of customers were willing to buy medical WT from all the categories. However, 100% of customers who belong to Medical and sports category and are willing to buy health and medical WT products.

Attract Customer Attention through Theoretical base

Customers behave rationally many a times. However, consumers’ Personal, Cultural, Social and Psychological factors skew their decision making to some extent (Armstrong & Kotler, 2005). Insight into decision making process is crucial in drawing the attention of Delhi consumers’ towards Medical WT. Positive attitude towards these products also needs to be worked upon.

The company’s that adopt The Innovation adoption model (Armstrong & Kotler, 2005) provide the theoretical explanation to understand the way customers think and act while making purchase decision about medical WT. At the “Awareness” stage customers become aware of the new product but have no information about it. At the “Interest “stage customers seek information. It was clearly evident through research that out of 54% aware customers in phase I , 20% of participants belong to the above stage.

Only 50% out of these 20% were able to reach at the “Evaluation” stage. These are the people who go for trial approach at the “Trial Stage”. Only after satisfying oneself at this stage consumer tend to move to the “Adoption” Stage.

Conclusions

Not only customers' personal attributes as age, gender, occupation but also factors as lack of product experience, minimal market influence, health awareness, low trust level and high usage of smart phones affect their level of awareness. Customers' motivation is highly affected by the type of medical WT value proposition offered. Imbibing consumer awareness with respect to medical utility is essential to motivate early adapters.

Basis of market offering of medical WT

- Consumers always get confused about its usability.
- It's only available online; modern o2o format is yet to adopt it.
- The wearable products are bit expensive and are not that multi-faceted.
- It's evident through questionnaire that the consumers stop using this product after initial usage. This is because they find it bit problematic to use and of course there is no massive awareness amongst the Indians.
- No Indian experts are available in this field to safeguard your privacy concerns. For this again we - the people are not feeling that comfortable to buy.

The study also indicates that while targeting Generation Y is optimal to push Medical WT products. Also, the health conscious age segment (35-49) is also found the one which can afford and adapt to new technology.

Further studies would help analyze the market opportunities including the areas of decision making process, consumer buying behavior, consumer attitude and marketing mix elements. It is also hoped that this study will serve as the base for the producers who want to exploit the opportunities in this untapped area.

References

- [1]. Ferguson, I. et al. (2016), Mobile health: the power of wearable's, sensors and app to transform clinical trials. Ann. N.Y. Acad. Sci.1375, ISSN 0077-8923, pp. 3-18.
- [2]. Topol, E.J. (2010), Consumer movement in Health care. Pharos Alpha Omega Alpha Honor Med. Soc. 73:34-35.
- [3]. Kish, L.J. & E.J Topol (2015), Unpatients-why patients should own their medical data. Nat. Biotechnol. 33: 921-924
- [4]. Kotler, P., & Armstrong, G. (2005) "Marketing: an Introduction". Pearson Education
- [5]. Seram, N. & Dhramakeerthi, C. (2016), Wearable Technology Products: Awareness in SriLankan Market, IJSMRD, Vol.6, Issue 3, pp. 49-58, June 2016.
- [6]. X.-F. Teng, Y.T. Zhang, C.C. Y. Poon & P. Bonato (2008) , Wearable medical system for p-health.IEEE Rev. Biomed. Eng., vol. 1. no. 1, pp. 62-74, Dec. 2008.
- [7]. Ferguson, I. et al. (2016), Mobile health: the power of wearables, sensors and app to transform clinical trials. Ann. N.Y. Acad. Sci.1375, ISSN 0077-8923, pp. 3-18.
- [8]. James A. L. (2016), The Baetylus Theorem—The Central Disconnect Driving Consumer Behavior and Investment Returns in Wearable Technologies.
- [9]. Technology and Investment, 2016, 7, 59-65 .SciRes. <http://www.scirp.org/journal/ti>, <http://dx.doi.org/10.4236/ti.2016.73008>.
- [10].L.-B. Chen et al (2016) in "WristEye: Wrist-Wearable Devices and a System for Supporting Elderly Computer Learners, IEEE Access, vol 4, pp.1454-1463, Digital Object Identifier 10.1109/ACCESS.2016.2553838
- [11].Misra, V. et al. (2016), Mobile health: the power of wearable's, sensors and app to transform clinical trials. Ann. N.Y. Acad. Sci.1375, ISSN 0077-8923, pp. 3-18.
- [12]. Donald, L. (2014), The Internet of Things and Life & Health Insurance, Celent accessed at November 2016 at <http://www.celent.com/reports/internet-things-and-life-health-insurance>.
- [13].Hwang, Chanmi, "Consumers' acceptance of wearable technology: Examining solar-powered clothing" (2014). Graduate Theses and Dissertations. Paper 13950.
- [14].Armstrong ,G. & Kotler,P. (2005).Marketing; An Introduction. Pearson Education.