

A STUDY ON CUSTOMER INCLINATION TOWARDS SMARTWATCHES

Submitted in partial fulfillment of the requirements for the award of

MASTER OF BUSINESS ADMINISTRATION

By

LESLIE RYAN ROZARIO F

REGISTER NO: 42410174



**DEPARTMENT OF BUSINESS ADMINISTRATION
SCHOOL OF MANAGEMENT STUDIES**

SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)**

Accredited with Grade “A++” by NAAC | 12B Status by UGC |

CATEGORY- 1 UNIVERSITY BY UGC | Approved By AICTE

JEPPIAAR NAGAR, RAJIV GANDHI SALAI CHENNAI - 600 119

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BONAFIDE CERTIFICATE

This is to certify that this project is the bonafide work of **LESLIE RYAN ROZARIO F (42410174)** who carried out the project entitled **“A STUDY ON CUSTOMER INCLINATION TOWARDS SMARTWATCHES”** under my supervision from October 2023 to December 2023.

(DR. S. UMAMAHESWARI)

Internal Guide

External Guide

**Dr. BHUVANESWARI. G MBA., Ph.D.
Dean – School of Management Studies**

Submitted for Viva voce Examination held on **21.12.2023.**

Internal Examiner

External Examiner

DECLARATION

I **LESLIE RYAN ROZARIO F** hereby declare that the Project Report entitled **A Study on Customer Inclination towards Smartwatches** by me under the guidance of **Dr. S.**

UMAMAHESWARI is submitted in partial fulfillment of the requirements for the award of degree in Masters in Business Administration.

DATE:

PLACE:

SIGNATURE OF THE CANDIDATE

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ABSTRACT

Due to the constant development of transformative technologies, the Fourth Industrial Revolution, also known as Industry 4.0, has made it more difficult for businesses and society as a whole to distinguish between the physical and digital worlds. In order to enable faster and more seamless human-computer coordination and communication, this new era of Industry 4.0 has the potential to produce hybrid products that successfully incorporate machines, software, sensors, processors, and other ICTs (Information and Communication Technologies). These digital technologies provide their users with many advantages both locally and globally, including: prompt and effective services; increased convenience; real-time feedback; improved decision-making support; efficient resource allocation; and, most significantly, the ability to monitor and regulate one's own behavior.

Wearable technology is one such recent innovation. It has developed into the most interactive, personalized, and pervasive devices that fit into users' lives naturally and offer endless benefits for their health and well-being. Wearable devices are electronic computers that can be carried, worn, or attached to the body, according to Buenaflor and Kim (2013). Wearable smartwatches are the subject of this thesis because they serve as consumers' personal assistants by enabling activity tracking and health monitoring. A smartwatch is a gadget that can communicate with smartphones to obtain a variety of data, including schedules, text messages, GPS information, and the time.

By offering a novel and much-needed perspective on gender and career, such a qualitative investigation into the concept of wearable technology would greatly contribute to (a) exploring trends, applications, and implications of wearable technology in the near future and (b) highlighting the crucial role of women in the technology sector. All things considered, this study's conclusions have broad implications for both theory and practice, as well as recommendations for future researchers, consumers, wearable technology developers and marketers, the tech sector, venture capitalists, and policy makers.

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CHAPTER 1

INTRODUCTION

1.1. INTRODUCTION:

“The Fourth Industrial Revolution is still in its nascent state. But with the swift pace of change and disruption to business and society, the time to join in is now.” - Gary Coleman (Deloitte Consulting) With the advent of 21st century, the Fourth Industrial Revolution (commonly referred as Industry 4.0) has made it difficult to differentiate between the physical and the digital worlds for businesses as well as society through the incessant development of transformative technologies. This new era of Industry 4.0 has the potential to create hybrid products that successfully incorporate machines, software, sensors, processors, and other ICTs (Information and Communication Technologies) in order to facilitate meaningful interface between the real (physical) and computing world. These technologies have leveraged the advantages of smart and automotive machinery towards delivering a personalized consumer experience by connecting consumers with the industry from the initial phase of product design and engineering to the last stage of product delivery and feedback via social networks, real-time interactions and data analytics. The product developers are focusing on the optimization of these connected and intelligent devices in order to offer high-quality services to the consumers. Boston Consulting Group (2020) has defined following nine transforming technologies that comprise Industry 4.0: Simulation Techniques, Horizontal System and Vertical System Integration, the IoT (Internet of Things), Cyber-security, Autonomous Robotics, Cloud Computing, 3D Printing and Additive Manufacturing, Big Data Analytics, and Augmented/ Virtual Reality (AR/VR). These digital technologies provide networked and sensor data enabling swifter and smoother human-computer communication and co-ordination.

Among these, IoT (Internet of Things) encompass a huge array of opportunities for the advancement of commercial sector. Kevin Ashton, a researcher at Massachusetts Institute of Technology (MIT), had introduced the term IoT during his presentation in 1999 by visualizing the world of fantasy wherein internet-

connected objects would provide real-time data and upgrade the quality of life by using sensors and actuators (Ashton, 2009). IoT includes all those electronic and/or digital devices which can be connected to the internet for the purpose of collecting and sharing data (Ranger, 2018). In simple words, any physical device can be converted into an IoT device by embedding sensors and connecting to wireless networks and internet.

For instance, an air conditioner or a television or a basic thermostat that can be controlled via smartphone is an IoT device on an individual consumer level, whereas smart cities projects incorporating sensors in the entire regions in order to control the environment are also a part of IoT ecosystem on a large scale commercial level. IoT revolution can be classified into three categories on the basis of the scale of deployment: (a) Industrial IoT (i.e. solutions that target agriculture, manufacturing and other industrial and service sectors in order to radically increase their productivity and efficiency by installing smart and expensive technologies e.g. robotics in warehousing and data logging and processing softwares, e.g. big data analytics for mass-user customization.), (b) Commercial IoT (i.e. applications that focus on providing better experience and infrastructure of the day-to-day basic environment of the individuals outside their home in office buildings and supermarkets, hotels and entertainment venues, healthcare and other related facilities for monitoring variables pertaining to environmental conditions, building access and control schedule, asset tracking, connected lighting etc.), and (c) Consumer IoT (i.e. devices that aim to improve standard of living of individuals by performing tasks and services for them through the use of smart home applications, and other personal monitoring devices e.g., voice smart assistants including Google's Home, and wearables including fitness trackers, smart eye wear, etc.) (Hernández, 2019).

Consumer IoTs can offer tremendous benefits to their users around the world as well as around the clock including: responsive and efficient services; enhanced convenience, real-time feedbacks, better support in decision making, optimal allocation of resources and most importantly, monitoring and controlling of self-behavior (Consumers International., 2017). Gartner predicted that there will be more than 25 billion IoT devices worldwide by 2023, out of which 63 percent of the share would be comprised of consumer IoT (Petrov, 2019).

1.2. JOURNEY OF WEARABLE DEVICES:

A brief history the scope of wearable technology is quite broader and surprisingly, it has been around much longer than we probably realize. Its journey can be traced back from early 13th century, when eyeglasses were evolved. More specifically, they were designed in 1286 for enabling Roman Emperors and gladiators to treat their short-sightedness by looking through an emerald while fighting.

Further, Nuremberg eggs- the portable and wearable clocks were invented in Europe in the 16th century which could be worn around the neck until the introduction of pocket watches and wristwatches. Later, during the 17th century, an abacus ring was also developed in China (Desjardins, 2015). Timeline of Wearable Devices Source: Compiled by Author However, the initial artifact of Professor Edward Thorp for the purpose of enabling cheating at roulette in bars and casinos. Gamblers used to fit a micro-computer (basically a timing device) into their shoe which helped in 44 percent better prediction of place where the ball would land on a roulette table, thereby improving their odds of winning (Morris, 2015).

Consequently, a series of innovation took place over a couple of decades including first calculator wristwatch, Sony Walkman hearing aids by 1980s. But it actually achieved mainstream popularity with the mass commercialization of Bluetooth headset in 2002. Thereafter, forefront devices including Nike+, Fitbit and Google Glass were released till the year 2013.

Finally, Year of Wearable Technology” with the introduction of activity trackers and smartwatches (Grace College, 2016). Other wearables innovation including smart clothing and digital jewellery are continuously working towards expansi wearable devices. This new era of Industry 4.0 has the potential to create hybrid products that successfully incorporate machines, software, sensors, processors, and other ICTs (Information and Communication Technologies) in order to facilitate meaningful interface between the real (physical) and computing world.

1.3. PROBLEMS IN STUDY:

Despite rosy predictions and huge potential benefits being offered by smartwatches, the acceptance and user penetration of these devices is quite low (Dehghani et al., 2018; Adapa et al., 2017), particularly in the context of developing economies like India where their commercialization still stands at the nascent stage of diffusion. The consumers seem less determined towards acceptance of smartwatches because they are unable to reap the promised benefits, demotivating them to framing a positive intent towards adoption of these devices (Talukder et al., 2019; Marakhimov & Joo, 2017). The aspect of technology adoption has been covered extensively by the information systems (IS) literature. However, the nature of technology examined by the existing frameworks is quite different from the sophisticated and complex IoT technology products (Pal et al., 2020). It has become inevitable for researchers, academicians and business practitioners to understand the issues and challenges pertaining to smartwatch acceptance more deeply for the future of smartwatches and related wearables industry.

Drawing from the seminal technology acceptance theories including TRA (Theory of Reasoned Action), TAM (Technology Acceptance Model) and UTAUT (The Unified Theory of Acceptance and Use of Technology) model, this study relies on "Behavioral Intention to Use" as its main dependent variable. In the context of wearable devices, previous researches (e.g., Wang, 2015; Chen & Shih, 2014) have explained that when the product category for the research (smartwatches in this case) have not been widely disseminated in the defined geographical region, it becomes hard for the researcher to identify and recruit the required sample of respondents that actually use the product. Those who are actually using it would belong to a particular subset of the population that can be categorized as 'early adopters', whom individual and distinctive characteristics could not be compared to the normal people for the purpose of generalizability of results (Cecchinato et al., 2015). Behavioral intention has been defined as the individual's inclination towards performing a particular behavior (Ajzen, 1991). For this study, it reflects user's mental attitude towards adoption of smartwatches in near future. However, it is important to note that behavioral intention predicts only those influential antecedents of behavior.

1.4. SIGNIFICANCE OF THE STUDY:

In the backdrop of current digital transformation characterized by the advent of these wearable devices, the significance of this study can be elucidated through its efforts to divulge commendable contribution to academia, industry and society. From academic perspective, the increasing influence of any specific technology on businesses, individuals and society has fuelled up the importance of studying modern consumer behavior over recent years and across disciplines. The development of modern wireless and mobile technologies (wearable devices in this case) has driven a new host of consumer behaviors and trends.

Therefore, this study: firstly, provide an extensive and systematic review of literature by synthesizing the fragmented studies on evolution, design, architecture, and consumer adoption of wearable devices. Secondly, this study has developed and validated a comprehensive, digital-centric framework of customer behavior that predicts the influential factors contributing to acceptance of smartwatches among potential users in India. This model is not restricted to basic factors from renowned technology acceptance theories like performance expectancy, effort expectancy etc. only but it also includes contemporary factors like aesthetic appeal, healthology, conspicuous consumption etc. which deemed fit to the smartwatch scenario in the country.

Thirdly, recently, seminal studies have highlighted that the conventional survey research design and multi-variate statistical techniques (e.g. SEM and regression) could examine linear relations among variables only. This study overcomes this drawback by employing a hybrid approach of quantitative survey research, artificial neural network analyses (ANN) and qualitative-thematic analyses. While ANN is capable of modeling the complex non-linear relationships by providing for the relative importance of significant variables, thematic analysis helps in exploring and drawing insights from real-life working experts in wearables landscape across the world. From industry perspective, the wearables industry is attempting to redefine itself across different markets in order to boost substantial growth in the near future by understanding consumers' beliefs, interests and preferences. By gaining a better understanding of smartwatches and their acceptance, firstly, this study provides

insights to the professionals in recognizing new dimensions of consumer behavior by reducing their insufficiencies and crossing the chasm for the mainstream market of smartwatches. Secondly, this study can serve as a reference guide for companies in terms of modifying their products and establishing marketing campaigns for effective promotion and deeper penetration through mass commercialization. Thirdly, since this research explores and comprehends the mindset of the largest millennial population of the world, it could help the product developers of other consumer wearables and related IoTs in designing their new technologies attributable to Indian tastes, skin tones and choices to attract and influence the iterative process of the modern customer's decision process more swiftly.

From societal perspective, increase in the working population demands hectic schedules, higher level of stress and lesser time for self-care, leading to several health problems including overweight, diabetes, heart diseases and undernourishment. Therefore, the young and economically empowered consumers of India are cognizant, motivated and concerned about their fitness and food-habits; thereby, translate themselves into a value-driven conscious demand. Healthcare innovations (smartwatches in this case) allow self-quantification and control over routine regime and fitness choices characterized by high level of personalization. This study would inspire the youth to invest in such digital products which would assist them in indulging into different healthcare preventive activities. Further, it will analyze the potential consequences of wearable devices for the society and the reasons for existence of gender disparities in wearable technology industry. In simple words, this study offers stimulating and intriguing implications for both theory and practice.

1.5. OBJECTIVES FOR THE STUDY:

1. To Understand the factors influencing consumer preferences for smartwatches, including design, features, and price.
2. To analyse trends and changes in buyer inclination over time.
3. To Evaluate the awareness and perception of different smartwatch brands among potential buyers.

1.6. NEED FOR STUDY:

1. The study is needed to provide insights into the complex decision-making process of consumers when choosing a smartwatch, with a focus on the key factors of design, features, and price that drive their preferences.
2. Understanding consumer preferences is crucial for smartwatch manufacturers to stay competitive in the market by aligning their product offerings with the evolving needs and desires of potential buyers.
3. The study is essential to guide manufacturers in designing and innovating smartwatches that resonate with consumer preferences, thereby influencing purchasing decisions and fostering market growth.

1.7. SCOPE OF THE STUDY:

1. To comprehensively analyze the design elements that influence consumer preferences for smartwatches.
2. To investigate how specific features, such as health tracking, connectivity options, and app compatibility, impact consumer choices in selecting smartwatches.
3. To examine the role of price as a determining factor in consumer decision-making when choosing a smartwatch.

CHAPTER 2

REVIEW OF LITERATURE

2.REVIEW OF LITERATURE

1.Smartwatches: the good, the bad and the ugly? - Marta E Cecchinato – 2015

Wearable computers, particularly smartwatches, are the next big trend, but their success is a topic of debate. This paper reviews existing literature, expands the smartwatch concept, and presents initial findings from interviews with early adopters, shedding light on their real-life usage, perceived benefits, and barriers to mass adoption.

2.A survey of smartwatches in remote health monitoring - Christine E King – 2018

This systematic review categorizes healthcare applications of smartwatches in the literature and summarizes factors contributing to viable systems. The study screened 1119 articles, selecting 27 directly related to healthcare, primarily focusing on feasibility studies for chronic disease self-management, highlighting the potential of smartwatches in healthcare but stressing the need for larger-scale research to assess their effectiveness and acceptance.

3.Wearables: has the age of smartwatches finally arrived? - Marian Petre – 2014

Time will tell if smartwatches will find their niche.

4.Exploring the motivational factors on continuous usage intention of smartwatches among actual users – Milad Dehghani-2018

Smart wearable tech is expanding across various sectors, with smartwatches leading the way. This study explores consumers' motivation to keep using smartwatches, revealing eight key determinants, including some not found in previous adoption models, underscoring the need to update such models in the realm of wearable technology usage intention.

5.Consumer valuation of the wearables: The case of smartwatches - Yoonhyuk Jung, Seongcheol Kim, Boreum Choi – 2016

Wearable devices combine mobile computing and fashion, with growing consumer interest in smartwatches. However, slower sales raise questions, prompting a study to explore consumer preferences. The research found that display shape and standalone communication are key factors, with a curved display shape being the most preferred option.

6.A study on factors affecting the intention to use smartwatches - Jaewon Choi, Seongcheol Kim – 2016

Smartwatches serve as both technology and fashion items, prompting an investigation into how fashion-related factors impact their usage intention. This study expanded the technology acceptance model, finding that smartwatches' fashion attributes, particularly the desire for uniqueness, significantly influence usage intention, suggesting they are not yet considered luxury items.

7. Wearable technology: What explains continuance intention in smartwatches? - Bruno Nascimento, Tiago Oliveira, Carlos Tam – 2018

Smartwatches represent a recent advancement in wearables, and this study examines their continued usage through a combination of models. Analyzing data from 574 individuals in the USA, it highlights the significance of factors like confirmation, satisfaction, perceived usability, and habit, with habit being the most crucial for explaining smartwatch continuance intention. The study concludes by discussing limitations and implications.

8.At the Crossroads! Time to Start Taking Smartwatches Seriously - Fabio V Lima, Vishnu Kadiyala – 2022

Wearable devices like smartwatches offer potential for cardiovascular monitoring but face trust and workflow integration issues. Collaboration with tech companies is key to their successful adoption in healthcare.

9.Recognizing detailed human context in the wild from smartphones and smartwatches -Yonatan Vaizman – 2017

Automatic recognition of behavioral context has broad applications, including health monitoring and aging care. To validate it effectively, authors collected real-life data from 60 subjects using their personal phones, emphasizing the importance of multimodal sensor fusion for accurate recognition.

10.Glanceable visualization: Studies of data comparison performance on smartwatches - Tanja Blascheck – 2018

We conducted two perception studies to explore the time it takes for people to perform data comparisons on smartwatches, aiming to understand design constraints. Results suggest that for rapid data comparisons, bar and donut charts are preferable due to quicker average task times, typically under 300 ms for bar charts and under 220 ms for donut charts.

11.Exploring the determinants of users' continuance intention in smartwatches - Mehmet Cem Bölen - 2020

This study investigates factors influencing continued smartwatch usage, using a modified expectation confirmation model. Analyzing 348 smartwatch users, it finds that aesthetics, satisfaction, mobility, and habit impact continued usage, while perceived usefulness does not directly influence it.

12.TapSkin: Recognizing on-skin input for smartwatches - Cheng Zhang – 2016

TapSkin is introduced as a technique enabling a smartwatch to recognize 11 different tap gestures on the skin, enhancing input options beyond the limited touchscreen, with an accuracy range of 90.69% to 97.32%.

13.TriTap: identifying finger touches on smartwatches - Hyunjae Gil – 2017

Smartwatches' limited screen space can benefit from finger identification techniques, utilizing distinctive touch and angle profiles between fingers, achieving up to 93% and 98% accuracy in two studies, supporting various interaction tasks.

14.Preliminary analysis of the use of smartwatches for longitudinal health monitoring - Emil Jovanov – 2015

We present preliminary findings from a 4-month study using the Basis Peak smartwatch for longitudinal health monitoring, validating physiological measurements during sleep and demonstrating that current smartwatches offer sufficient performance for health monitoring and trend analysis.

15.Exploring current practices for battery use and management of smartwatches - Chulhong Min – 2015

Despite the widespread use of smartwatches, there's a lack of systematic research on their battery life, user behaviors, and charging patterns; this study combines an online survey and data analysis to address these gaps.

16.Factors contributing to intention to keep using smart wearable technology - Milad Dehghani, Ki Joon Kim – 2018

This study creates and validates a new model to explore factors influencing the continued use of wearable technology among smartwatch users, offering practical insights for manufacturers and policymakers in optimizing strategies and enhancing device adoption.

17.Robust activity recognition on smartwatches using deep learning - Sourav Bhattacharya, Nicholas D Lane – 2016

This study explores the use of Restricted Boltzmann Machines (RBMs) for activity recognition in smartwatches, finding that RBMs outperform other models and have acceptable resource usage on commercial smartwatch hardware, advocating for wider adoption of deep learning in smartwatch design.

18.What can a dumb watch teach a smartwatch? Informing the design of smartwatches - Kent Lyons – 2015

While there's been considerable research on smartwatch technical aspects, this study delves into the user-centered values and habits of traditional watch wearers, offering insights into potential smartwatch applications and implications.

19. WearWrite: Crowd-assisted writing from smartwatches - Michael Nebeling – 2016

This paper introduces WearWrite, a system enabling smartwatch users to compose documents with crowd assistance, offering a novel way to be productive on wearable devices.

20.Can smartwatches replace smartphones for posture tracking? - Bobak Mortazavi – 2015

This paper presents a proof-of-concept human posture tracking system for smartwatches, demonstrating their potential in remote health monitoring, with accurate posture identification at reduced sampling rates.

21.Examining the roles of students' beliefs and security concerns for using smartwatches in higher education - Mostafa Al-Emran – 2021

This study addresses the lack of understanding regarding why certain students adopt smartwatches for educational purposes and how security factors influence their adoption, proposing a theoretical model combining TAM and PMT.

22. A novel approach for predicting the adoption of smartwatches using machine learning algorithms - Ibrahim Arpacı – 2021

This research combines TAM with smartwatch features to explore individuals' adoption intention, utilizing machine learning classifiers and finding that SimpleLogistic and LMT performed best in prediction, marking a novel contribution to IS literature.

23.Exploring non-touchscreen gestures for smartwatches - Shaikh Shawon Arefin Shimon – 2016

This study explores non-touchscreen gestures for smartwatches to expand their limited input space, using participant consensus to define a user-defined gesture set and provide insights for smartwatch gesture design.

24.Exploring non-touchscreen gestures for smartwatches - Shaikh Shawon Arefin Shimon – 2016

This study aims to enhance smartwatch input by exploring non-touchscreen gestures, establishing a consensus-based user-defined gesture set and offering insights for gesture design on smartwatches.

25.Sensing fine-grained hand activity with smartwatches - Gierad Laput – 2019

This study delves into detecting fine-grained hand activities using smartwatches, inspired by Immanuel Kant's idea that "the hand is the visible part of the brain," achieving 95.2% accuracy in classifying 25 hand activities.

26.Are we so over smartwatches? Or can technology, fashion, and psychographic attributes sustain smartwatch usage? - Norazlyn Kamal Basha, Eugene Cheng-Xi Aw, Stephanie Hui-Wen Chuah – 2022

This study explores factors influencing continued smartwatch usage, identifying features like interactivity, aesthetics, and congruence as key drivers of value perception and intention to continue using smartwatches, with gender differences considered.

27.Gait analysis using smartwatches - N Seyma Erdem, Cem Ersoy, Can Tunca – 2019

This study introduces a non-invasive smartwatch-based system for gait analysis, extracting key parameters like step length, swing time, and stance time, with results compared to clinical data.

28.Smartwatches Locking Methods: A Comparative Study. - Toan Nguyen, Nasir D Memon – 2017

As smartwatches become the next-gen personal devices, this study evaluates various locking methods for these devices, addressing challenges in securing user information with potential implications for future authentication methods.

29. It's About Time: Smartwatches as public displays - Jennifer Pearson – 2015

This study explores the potential for smartwatches to serve as public displays, examining aspects like social acceptability and visibility to others, and presents a design space for wrist-worn wearables in public contexts.

30. Continuance intention to use smartwatches: An empirical study - Ahmad Rabaai – 2022

This study explores the factors influencing smartwatch continuous usage, finding that performance, satisfaction, healthology, aesthetics, and habit play significant roles, with limited impact from social influence, explaining 65.7% of user intention.

31. The effects of design, size, and uniqueness of smartwatches: perspectives from current versus potential users - Milad Dehghani, Ki Joon Kim – 2019

This study explores the impact of design, uniqueness, and screen size on smartwatch user behavior and purchase intentions, highlighting design aesthetics as crucial and gender and brand as moderating factors.

32. Using smartwatches to detect face touching - Chen Bai, Yu-Peng Chen, Adam Wolach, Lisa Anthony, Mamoun T Mardini – 2021

This study developed a smartwatch application using machine learning to accurately detect facial touches, with potential implications for reducing disease transmission during outbreaks.

33. Supporting elderly homecare with smartwatches: advantages and drawbacks - Frederic Ehrler – 2014

This paper explores the potential of smartwatches as a platform to support the elderly at home, highlighting advantages like continuous medical surveillance and versatility, while addressing challenges related to screen size, connectors, and power autonomy.

34.What makes you feel attached to smartwatches? The stimulus–organism–response (S–O–R) perspectives - Woo-Chul Cho – 2019

This paper aims to determine if smartwatches will establish a niche in the consumer electronics market by examining the influence of technological and fashion-related factors on user attachment and satisfaction using the S-O-R framework.

35.Older people and smartwatches, initial experiences - Andrea Rosales Climent – 2017

This study explores how older individuals adopt and use smartwatches, finding that prior ICT experience, positive attitudes toward technology, and aligning with expectations and habits are key factors, while smartwatches also impact social status and fashion perceptions.

36.G-sparks: Glanceable sparklines on smartwatches - Ali Neshati – 2019

We propose GSparks, a compact visual representation for smartwatches to optimize the display of line charts, finding that compressing graphs along the x-axis improves accuracy in height estimations and enhances glanceable tasks without compromising legibility.

37.The opportunity and obstacles for smartwatches and wearable sensors - Kenneth R Foster, John Torous – 2019

The FDA unveiled the Digital Health Software Precertification Program, revolutionizing medical device regulation for consumer health tech, with potential benefits and privacy-related challenges.

38.Expanding the input expressivity of smartwatches with mechanical pan, twist, tilt and click - Robert Xiao – 2014

This work introduces a novel input method for smartwatches using the watch face for multi-degree-of-freedom interactions, offering potential for more versatile applications on these compact devices.

39. Energy-efficient integration of continuous context sensing and prediction into smartwatches - Reza Rawassizadeh, Martin Tomitsch, Manouchehr Nourizadeh, Elaheh Momeni - 2015

This paper presents an energy-efficient framework for continuous context sensing and prediction on smartwatches, addressing the challenges of their small form factor and extending its applicability to other wearable devices.

40. Robust Human Activity Recognition using smartwatches and smartphones - Rubén San-Segundo, Henrik Blunck, José Moreno-Pimentel – 2018

This study explores techniques to enhance the reliability of Human Activity Recognition (HAR) systems using accelerometer data from various smartwatches and smartphones, addressing challenges related to device diversity and unique characteristics of smartwatches.

41. Apneadetector: Detecting sleep apnea with smartwatches - Xianda Chen – 2021

A smartwatch-based system called ApneaDetector is designed to detect sleep apnea by utilizing built-in sensors, addressing the limitations of traditional polysomnography tests.

42. Disidentity and nonconsumption of smartwatches - Natalie Gerhart – 2022

This research explores factors influencing disidentification with smartwatches and its impact on nonconsumption, shedding light on the role of intrusiveness, dissimilarity, disrepute, and indistinctiveness in consumer interactions with ubiquitous technologies.

43. Shimmering smartwatches: Exploring the smartwatch design space - Cheng Xu – 2015

This paper delves into the design possibilities for smartwatches, including non-graphical displays, showcasing two prototypes that use LED arrays to enhance functionality and suggesting further exploration of smartwatch design options.

44.Using smartwatches for fitness and health monitoring: the UTAUT2 combined with threat appraisal as moderators - Phaik Khee Beh – 2021

This study combines UTAUT2 with perceived vulnerability and severity to analyze the factors influencing smartwatch usage for health monitoring, revealing the impact of various factors and offering insights for developers and marketers.

45.Wellbeat: A framework for tracking daily well-being using smartwatches - Sungkyu Park, Marios Constantinides, Luca Maria Aiello, Daniele Quercia, Paul Van Gent – 2020

This study introduces a framework for collecting and analyzing physiological data from smartwatches, revealing that changes in heart rate and variability are predictive of daily well-being, challenging the notion of momentary well-being prediction.

46.Determining the single best axis for exercise repetition recognition and counting on smartwatches - Bobak Jack Mortazavi - 2014

This study explores the use of smartwatches, specifically the Samsung Galaxy Gear, to accurately count repetitions of exercises, finding that a combination of accelerometer and gyroscope sensors provides strong classification results, but single-axis features can be sufficient for personal training routines.

47.Diagnostic accuracy of smartwatches for the detection of cardiac arrhythmia: systematic review and meta-analysis - Scarlet Nazarian – 2021

This review highlights the promising potential of smartwatch technology for accurately detecting cardiac arrhythmias, emphasizing the importance of developing evidence and regulatory standards for its widespread use in healthcare.

48.Using fitness trackers and smartwatches to measure physical activity in research: analysis of consumer wrist-worn wearables - André Henriksen – 2018

The dynamic wearable landscape sees new devices and brands emerge yearly, creating research opportunities, but only a handful of established brands are commonly utilized, and even fewer are rigorously validated.

49. User experience of smartwatches and their role within multi-device ecologies - Marta E Cecchinato – 2017

This qualitative study explores the user experience and impact of smartwatches on constant connectivity, finding benefits in managing availability expectations, variations in response rates across devices, and suggesting design improvements.

50. Towards high quality text entry on smartwatches - Mark D Dunlop – 2014

This study introduces text entry requirements, an optimized layout, and a prototype for smartwatch text input, with initial user feedback suggesting the potential for reasonable quality and speed in such interactions.

CHAPTER 3

RESEARCH METHODOLOGY

3.1. METHODOLOGY:

An investigation would be categorized as a “Scientific Research” when it follows an objective approach wherein its methods are based on the solid rationale and justification rather than following a subjective approach which is based on researcher’s intuition and experience (Sekaran, 2006). Such scientific and objective research applies a systematic and logical step-by step clearly defined methodology from identification of research problem to collection and analyses of the data. Therefore, the purpose of this chapter is to provide a detailed overview of research design in terms of research methodology, instrument, sampling design and statistical techniques that has been applied to investigate and analyze the research framework.

3.2. RESEARCH DESIGN:

Descriptive Research Design

Descriptive research is a study designed to depict the participants in an accurate way. More simply put, descriptive research is all about describing people who take part in the study.

3.3. SAMPLING TECHNIQUE:

Convenience sampling method

A convenience sample is one of the main types of non-probability sampling methods. A convenience sample is made up of people who are easy to reach.

3.4. SOURCES OF DATA:

In this research, internal and external source of data are used. Collected raw materials through facts and figure of researcher’s works. Collecting data from company records and document, these are all internal data and other data are external. In data collection, there are 2 types

Primary Data

It is a source of collecting data by first-hand information through observation, direct communication or personal interviews of respondent's customers. In this, questionnaire is used for conducting personal interviews and for collecting the data.

Secondary Data

It is collected from standard books, internal sources, magazines and newspapers and also collecting data from external and internal sources from the company annual reports, company additional profile and company internal website.

3.5. SAMPLE SIZE:

The sample size for this research project is 100

SAMPLE DESIGN:

It is a particular definite plan formulation before collecting the data from population. The research should select a particular sample. In sampling, there are 2 types probability sampling and non-probability sampling. In this research, only nonprobability sampling is used.

SAMPLING

- **SAMPLING DESIGN:** Non-probability sampling
- **SAMPLING TECHNIQUE:** Convenience sampling
- **SAMPLE UNIT:** Smartwatch users
- **SAMPLE SIZE:** 100 respondents

3.6. PERIOD OF STUDY:

The period of the study is to determine that research process is carried out for 3 months.

3.7. AREA OF THE STUDY:

The targeted people are Smartwatch Users.

3.8. TOOLS FOR ANALYSIS:

Questionnaire was created in order to receive the necessary response required from the sample to achieve the research objective. The tools used for this are

3.9. PERCENTAGE ANALYSIS:

Research questions are always answered with a descriptive statistic: generally, either percentage or mean. Percentage is appropriate when it is important to know how many of the participants gave a particular answer. Generally, percentage is reported when the responses have discrete categories.

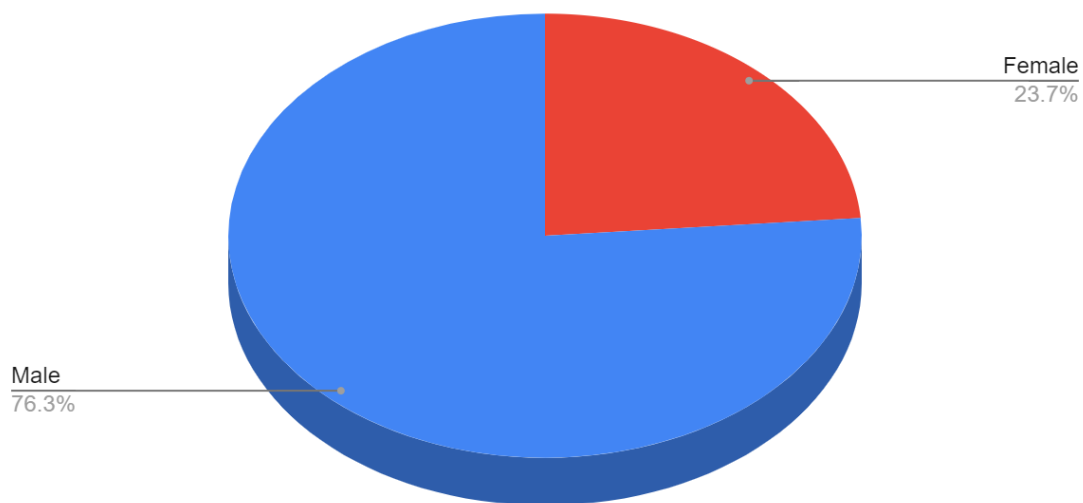
CHAPTER 4

DATA ANALYSIS AND INTERPRETATION

4.1. PERCENTAGE ANALYSIS

4.1.1 TABLE INDICATING THE GENDER OF RESPONDENTS

S.NO	GENDER	NO OF RESPONDENTS	PERCENTAGE ANALYSIS
1	Male	76	76.3%
2	Female	24	23.7%
TOTAL		100	100%



INTERPRETATION

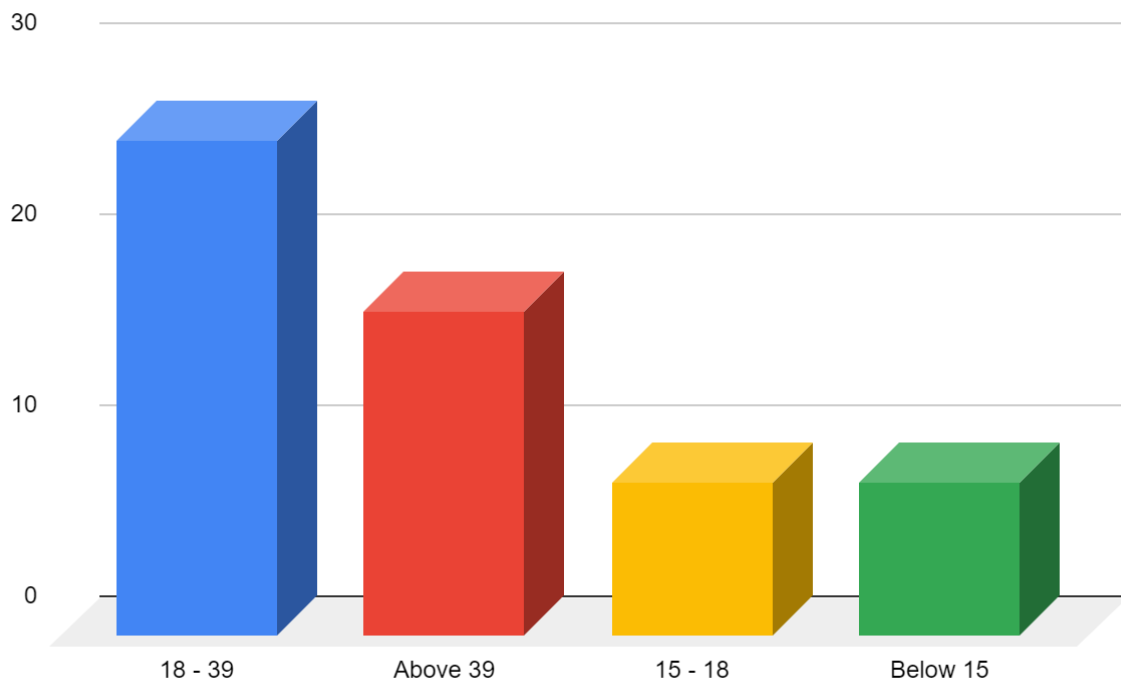
It is found from table no. 4.1.1 76.3% of respondents are male and other 23.7% of respondents are female.

INFERENCE

Majority 76.3% of the respondents are male.

4.1.2 TABLE INDICATING THE AGE OF RESPONDENTS

S.NO	AGE	NO OF RESPONDENTS	PERCENTAGE ANALYSIS
1	Below 15	14	13.6%
2	15 - 18	14	13.6%
3	18 - 39	44	44.1%
4	Above 39	29	28.6%
TOTAL		100	100%



INTERPRETATION

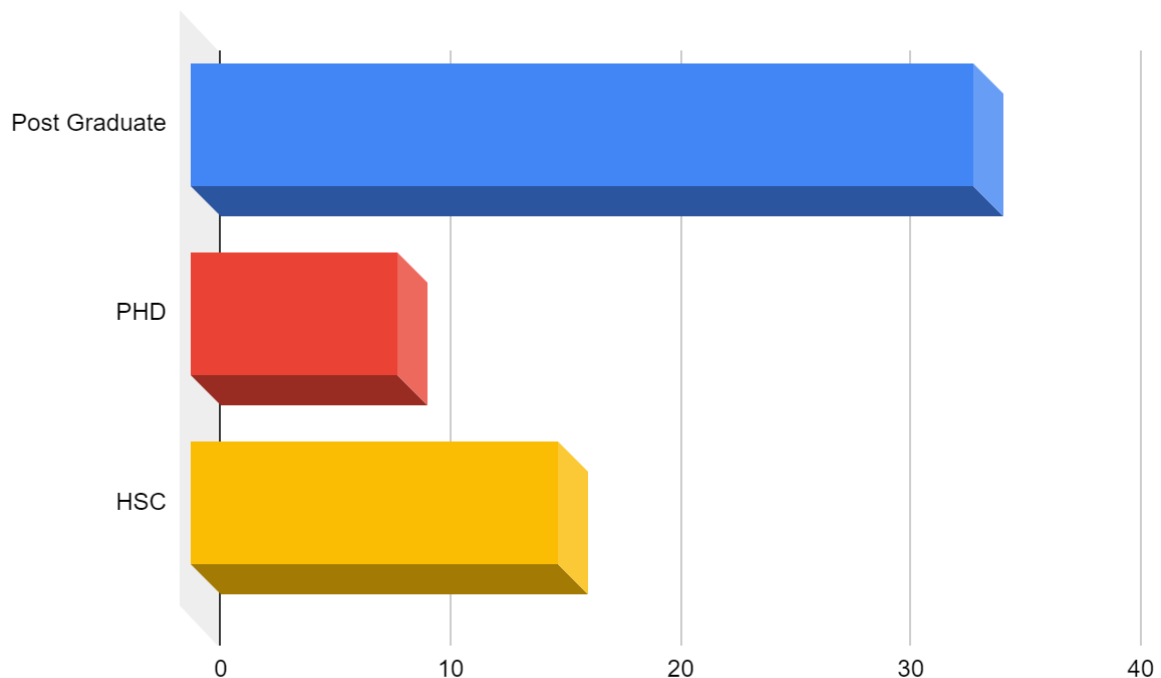
It is found from table no. 4.1.2 44.1% of respondents are 18 – 39, 13.6% of respondents are Below 15, 13.6% of respondents are 15 - 18 and other 28.6% of respondents are Above 39.

INFERENCE

Majority 44.1% of the respondents are 18 – 39.

4.1.3 TABLE INDICATING THE EDUCATION QUALIFICATION

S.NO	EDUCATION QUALIFICATION	NO OF RESPONDENTS	PERCENTAGE ANALYSIS
1	HSC	27	27.1%
2	Graduate	58	57.6%
3	PHD	15	15.3%
TOTAL		100	100%



INTERPRETATION

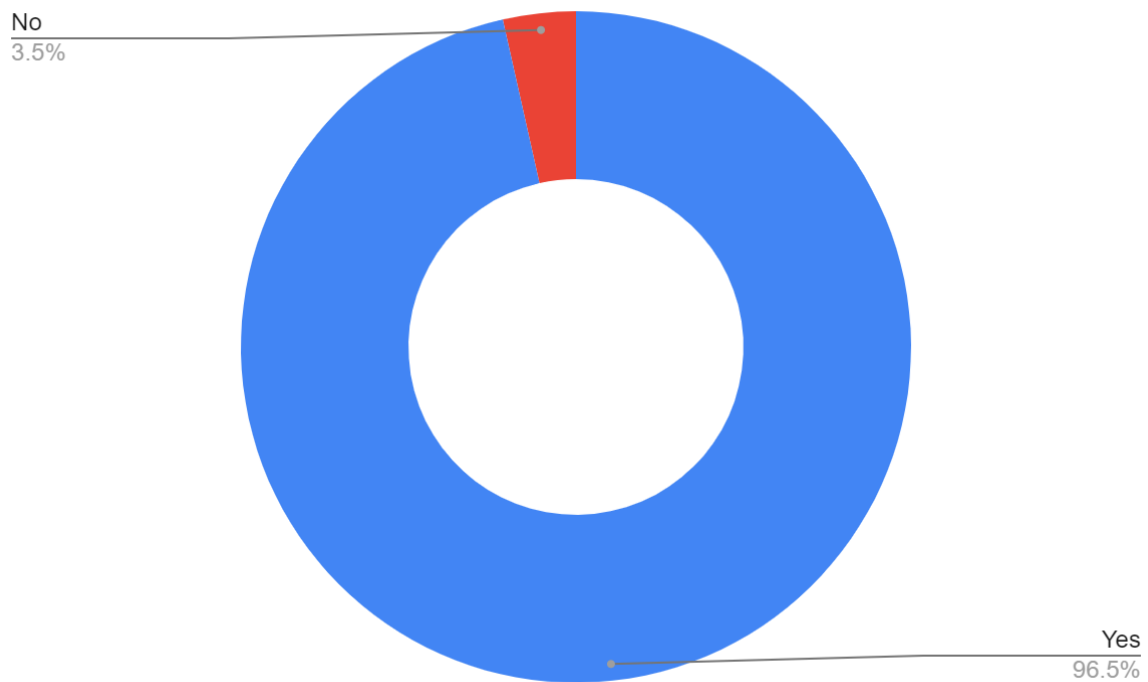
It is found from table no. 4.1.3 57.6% of respondents are Graduates, 27.1% of respondents are HSC and other 15.3% of respondents are Phd.

INFERENCE

Majority 57.6% of the respondents are Graduates.

4.1.4 TABLE INDICATING WHETHER THEY HAVE USED SMARTWATCHES

S.NO	SMARTWATCH USERS	NO OF RESPONDENTS	PERCENTAGE ANALYSIS
1	YES	96	96%
2	NO	4	4%
TOTAL		100	100%



INTERPRETATION

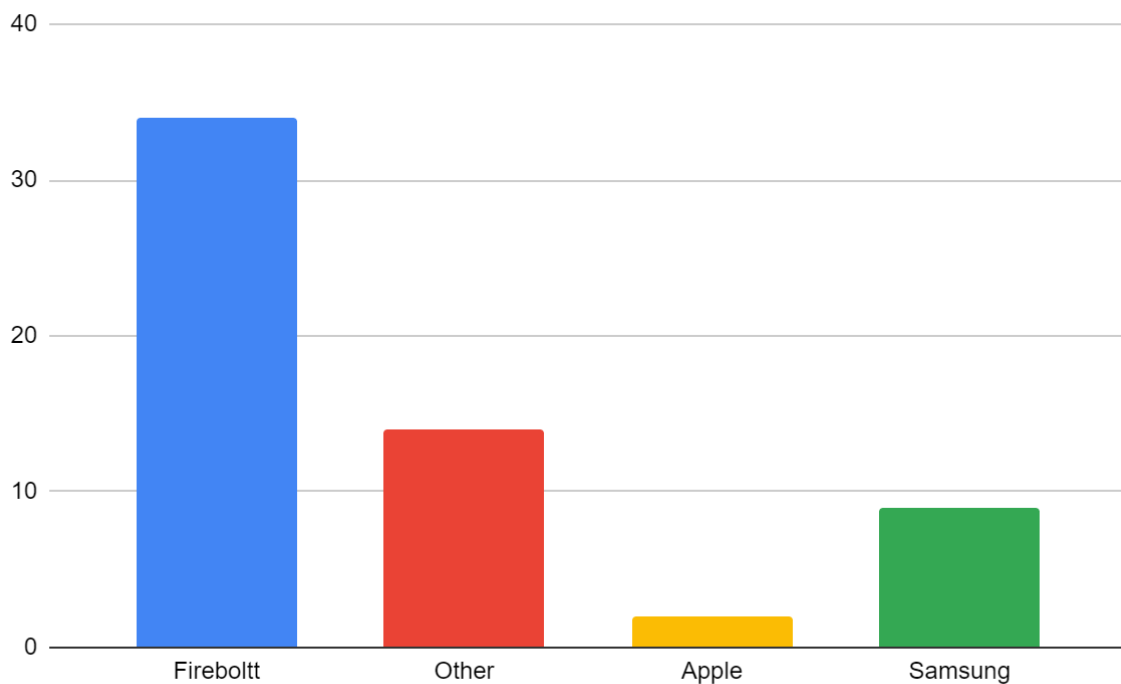
It is found from table no. 4.1.4 96.5% of respondents are smartwatch users and other 3.5% of respondents are not smartwatch users.

INFERENCE

Majority 96.5% of the respondents are smartwatch users.

4.1.5 TABLE INDICATING WHAT BRAND SMARTWATCH HAVE YOU USED

S.NO	WHAT BRAND SMARTWATCH HAVE YOU USED	NO OF RESPONDENTS	PERCENTAGE ANALYSIS
1	Apple	3	3.4%
2	Samsung	15	15.3%
3	Fireboltt	58	57.6%
4	Other	24	23.7%
TOTAL		100	100%



INTERPRETATION

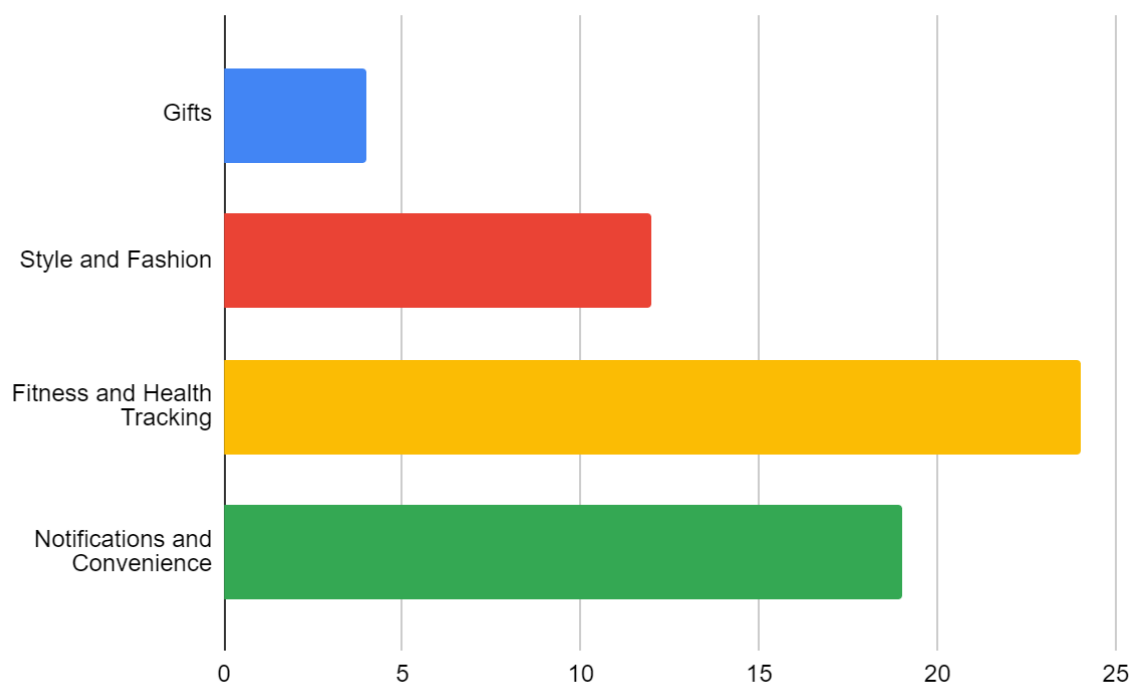
It is found from table no. 4.1.5 57.6% of respondents are Fireboltt users, 23.7% of respondents are Other users, 15.3 of respondents are Samsung users and other 3.4% of respondents are Apple users.

INFERENCE

Majority 57.6% of the respondents are Fireboltt users.

4.1.6 TABLE INDICATING WHAT MOTIVATED YOU TO PURCHASE A SMARTWATCH

S.NO	WHAT MOTIVATED YOU TO PURCHASE A SMARTWATCH	NO OF RESPONDENTS	PERCENTAGE ANALYSIS
1	Fitness and Health Tracking	41	40.7%
2	Style and Fashion	20	20.3%
3	Notifications and Convenience	32	32.2%
4	Gifts	7	6.8%
TOTAL		100	100%



INTERPRETATION

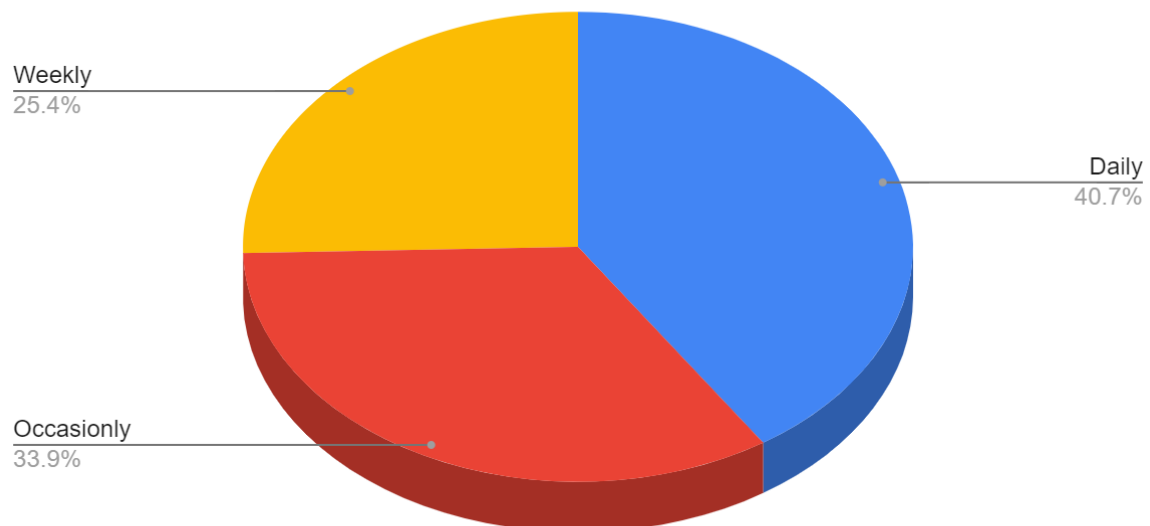
It is found from table no. 4.1.6 40.7% of respondents are motivated to purchase a smartwatch for Fitness and Health Tracking, 32.2% of respondents are motivated to purchase a smartwatch for Notifications and Convenience, 20.3% of respondents are motivated to purchase a smartwatch for Style and Fashion and other 6.8% of respondents are motivated to purchase a smartwatch by gifts.

INFERENCE

Majority 40.7% of the respondents are motivated to purchase a smartwatch for Fitness and Health Tracking.

4.1.7 TABLE INDICATING How often do you wear your smartwatch?

S.NO	HOW OFTEN DO YOU WEAR YOUR SMARTWATCH?	NO OF RESPONDENTS	PERCENTAGE ANALYSIS
1	Daily	41	40.7%
2	Weekly	25	25.4%
3	Occasionally	34	33.9%
TOTAL		100	100%



INTERPRETATION

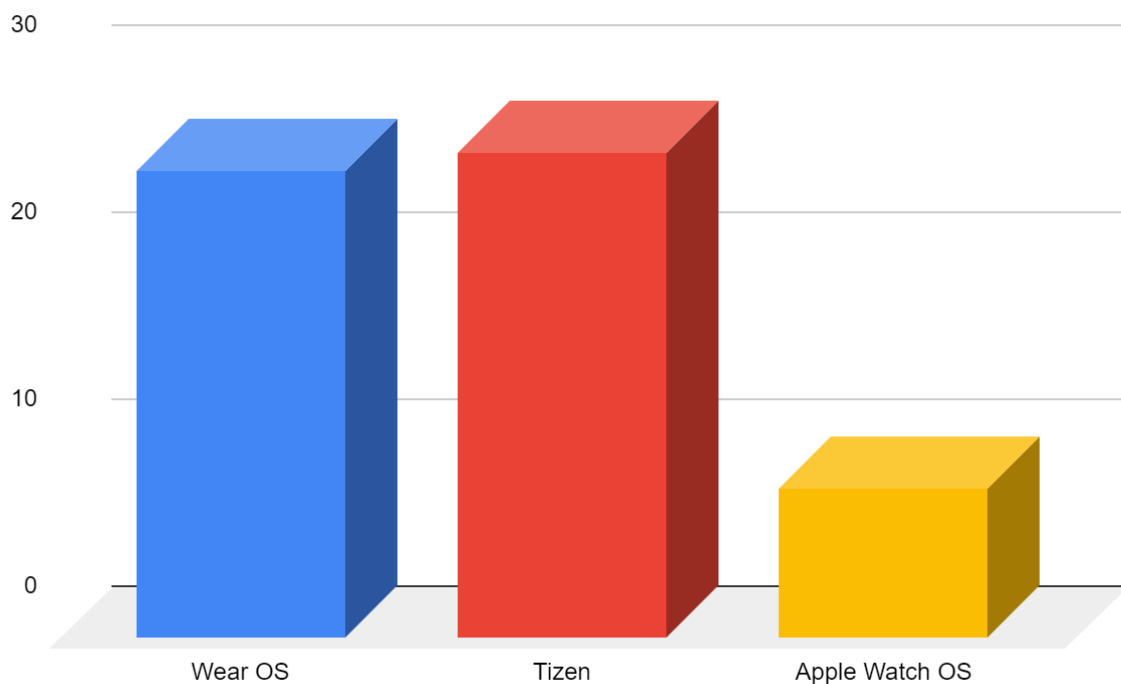
It is found from table no. 4.1.7 40.7% of respondents uses smartwatches daily, 33.9% of respondents uses smartwatches Occasionally and other 25.4% of respondents uses Weekly.

INFERENCE

Majority 40.7% of respondents uses smartwatches daily.

4.1.8 TABLE INDICATING HOW OFTEN DO YOU WEAR YOUR SMARTWATCH?

S.NO	HOW OFTEN DO YOU WEAR YOUR SMARTWATCH?	NO OF RESPONDENTS	PERCENTAGE ANALYSIS
1	Apple Watch OS	14	13.6%
2	Wear OS	42	42.4%
3	Tizen	44	44.1%
TOTAL		100	100%



INTERPRETATION

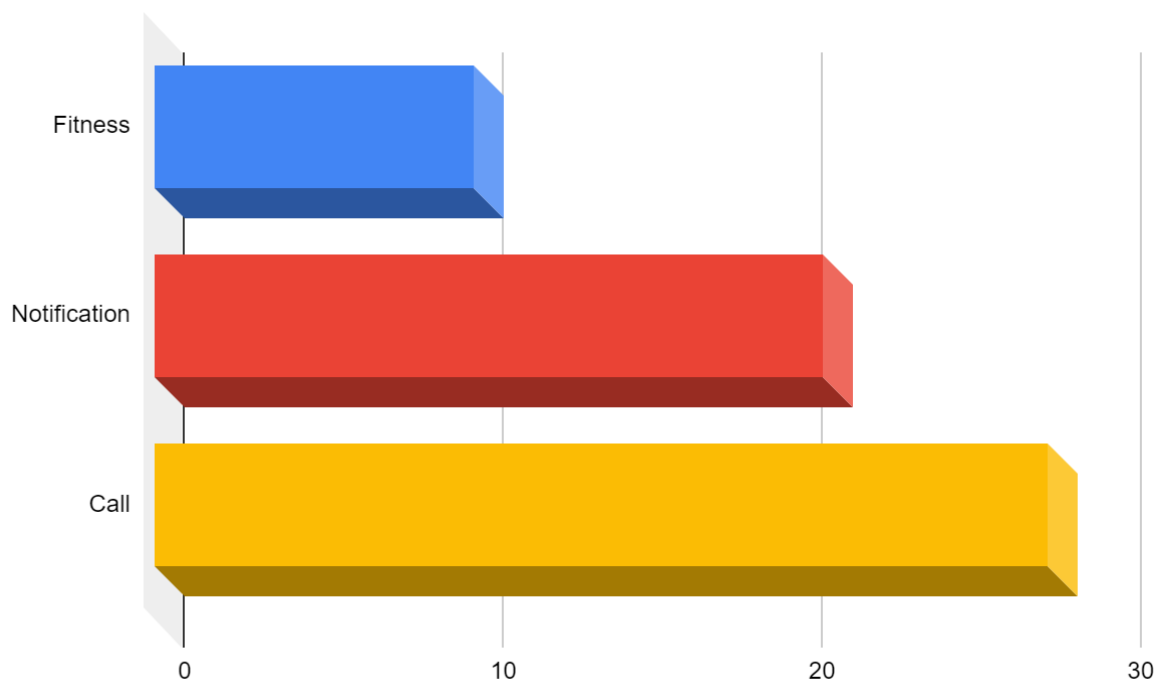
It is found from table no. 4.1.1 44.1% of respondents uses TizenOS, 42.4% of respondents uses WearOS and other 13.6% of respondents uses WatchOS.

INFERENCE

Majority 44.1% of respondents uses TizenOS.

4.1.9 TABLE INDICATING WHAT FEATURES DO YOU USE MOST, ON YOUR SMARTWATCH?

S.NO	WHAT FEATURES DO YOU USE MOST, ON YOUR SMARTWATCH?	NO OF RESPONDENTS	PERCENTAGE ANALYSIS
1	Fitness	17	16.9%
2	Call	48	47.5%
3	Notification	36	35.6%
TOTAL		100	100%



INTERPRETATION

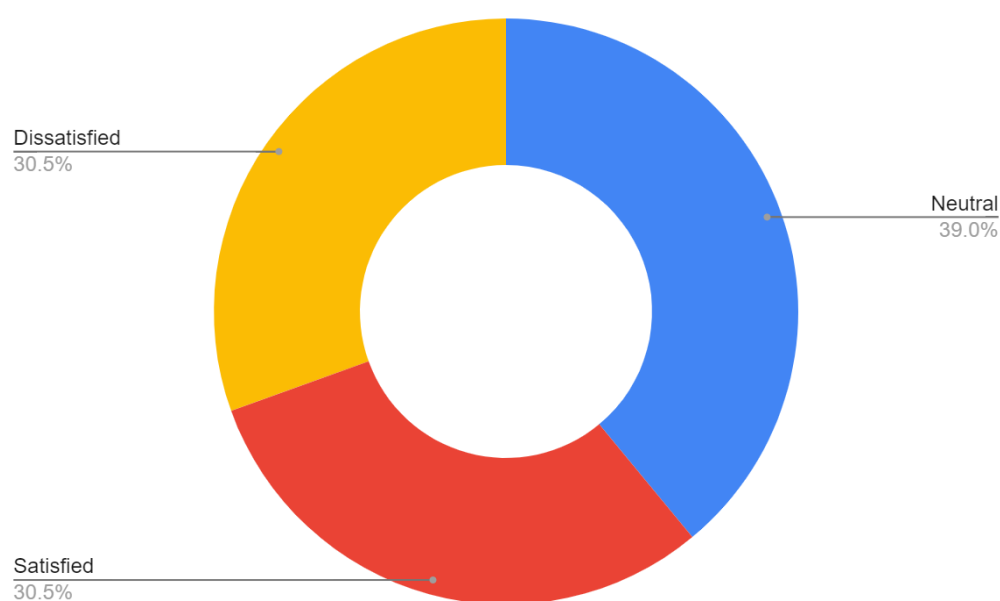
It is found from table no. 4.1.9 47.5% of respondents most used smartwatches for Call, 35.6% of respondents most used smartwatches for Notification and other 23.7% of respondents most used smartwatches for Fitness.

INFERENCE

Majority 47.5% of respondents most used smartwatches for Call.

4.1.10 TABLE INDICATING HOW SATISFIED ARE YOU WITH THE BATTERY LIFE OF YOUR SMARTWATCH?

S.NO	HOW SATISFIED ARE YOU WITH THE BATTERY LIFE OF YOUR SMARTWATCH?	NO OF RESPONDENTS	PERCENTAGE ANALYSIS
1	Satisfied	31	30.5%
2	Neutral	39	39%
3	Dissatisfied	30	30.5%
TOTAL		100	100%



INTERPRETATION

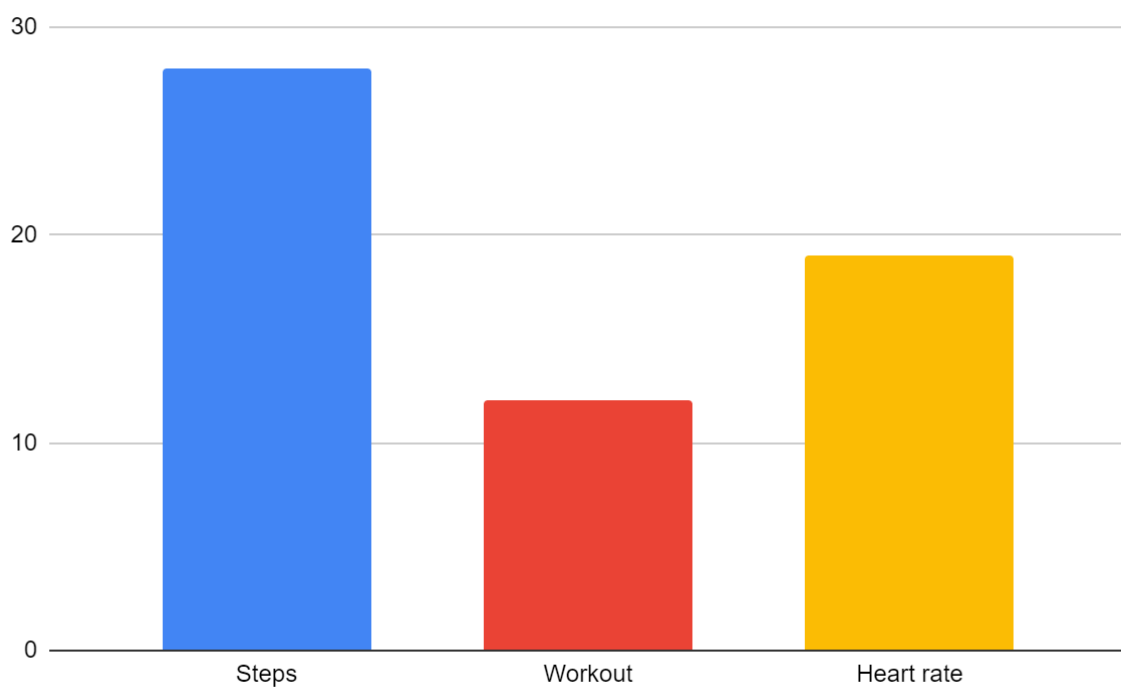
It is found from table no. 4.1.10 39% of respondents are Neutral about their Battery life, and 30.5% of respondents are Satisfied and Dis-satisfied about their Battery life.

INFERENCE

Majority 39% of respondents are Neutral about their Battery life.

4.1.11 TABLE INDICATING WHAT ACTIVITY DO YOU TRACK IN YOUR SMARTWATCH?

S.NO	WHAT ACTIVITY DO YOU TRACK IN YOUR SMARTWATCH?	NO OF RESPONDENTS	PERCENTAGE ANALYSIS
1	Steps	48	47.5%
2	Heart rate	32	32.2%
3	Workout	20	20.3%
TOTAL		100	100%



INTERPRETATION

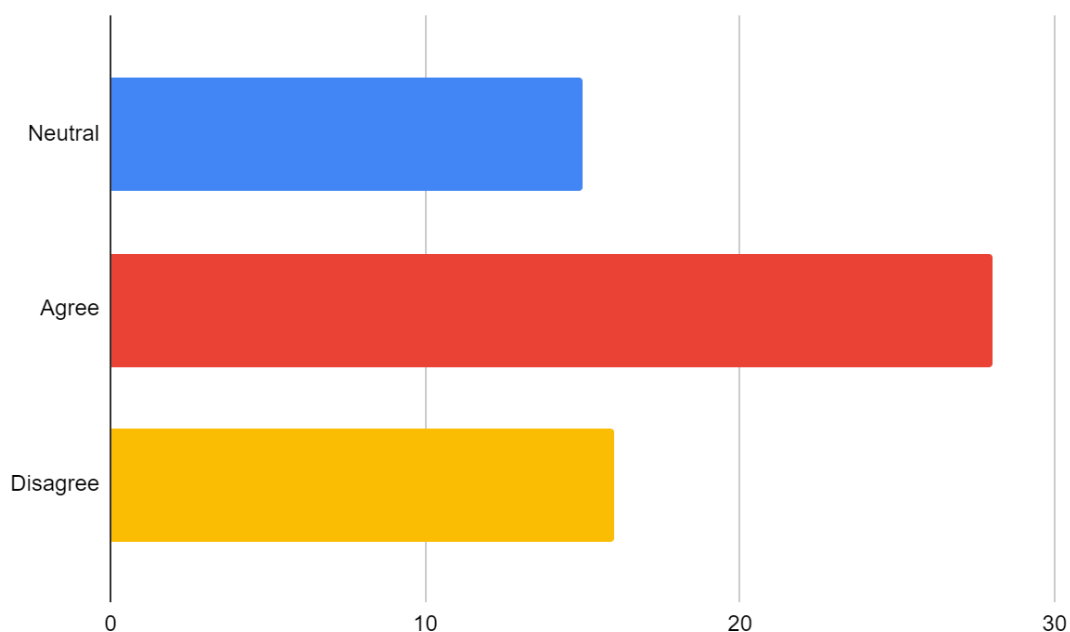
It is found from table no. 4.1.11 47.5% of respondents tracks there Steps, 32.2% of respondents tracks there Heart Rate and other 20.3% of respondents tracks there Workout.

INFERENCE

Majority 47.5% of respondents tracks there Steps.

4.1.12 TABLE INDICATING DO YOU LIKE TO USE YOUR SMARTWATCH FOR PAYMENTS?

S.NO	DO YOU LIKE TO USE YOUR SMARTWATCH FOR PAYMENTS?	NO OF RESPONDENTS	PERCENTAGE ANALYSIS
1	Agree	47	47.5%
2	Neutral	25	25.4%
3	Disagree	27	27.1%
TOTAL		100	100%



INTERPRETATION

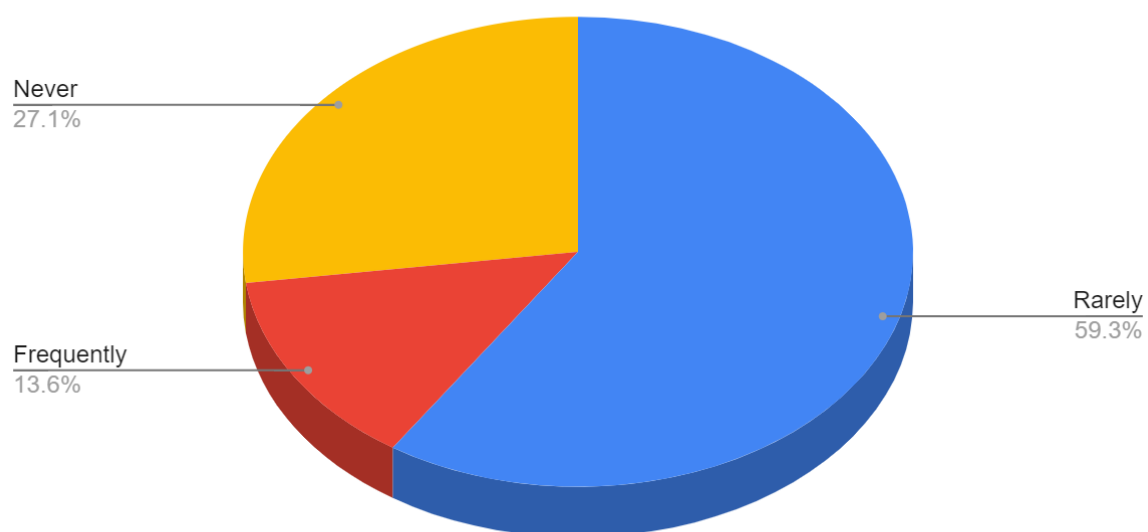
It is found from table no. 4.1.12 47.5% of respondents are Agree about payment, 27.1% of respondents are Disagree about payment and other 25.4% of respondents are Neutral about payment.

INFERENCE

Majority 47.5% of respondents are Agree about payment.

4.1.13 TABLE INDICATING DO YOU USE YOUR SMARTWATCH FOR RECEIVING AND MAKING CALLS OR MESSAGES?

S.NO	DO YOU USE YOUR SMARTWATCH FOR RECEIVING AND MAKING CALLS OR MESSAGES?	NO OF RESPONDENTS	PERCENTAGE ANALYSIS
1	Rarely	59	59.3%
2	Frequently	27	27.1%
3	Never	14	13.6%
TOTAL		100	100%



INTERPRETATION

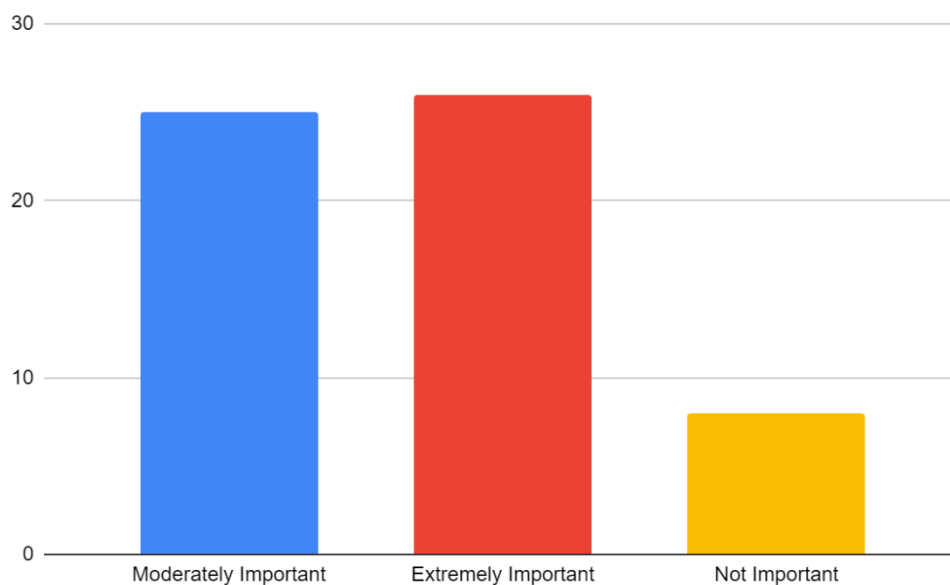
It is found from table no. 4.1.13 59.3% of respondents Rarely receives and making calls or messages, 27.1% of respondents Never receives and making calls or messages and other 13.6% of respondents Frequently receives and making calls or messages.

INFERENCE

Majority 59.3% of respondents Rarely receives and making calls or messages.

4.1.14 TABLE INDICATING HOW IMPORTANT IS THE DESIGN AND AESTHETICS OF A SMARTWATCH TO YOU?

S.NO	HOW IMPORTANT IS THE DESIGN AND AESTHETICS OF A SMARTWATCH TO YOU?	NO OF RESPONDENTS	PERCENTAGE ANALYSIS
1	Extremely Important	44	44%
2	Moderately Important	42	42.4%
3	Not Important	14	13.6%
TOTAL		100	100%



INTERPRETATION

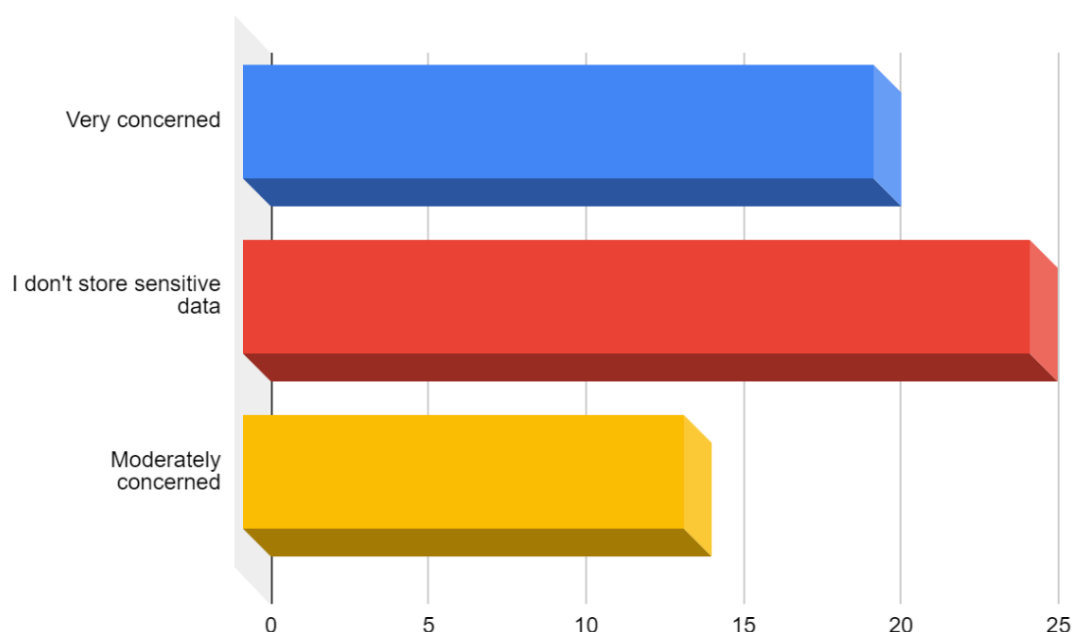
It is found from table no. 4.1.14 44% of respondents fell Extremely Important about the design and aesthetics, 42.4% of respondents fell Moderately Important about the design and aesthetics and other 13.6% of respondents fell Not Important about the design and aesthetics.

INFERENCE

Majority 44% of respondents fell Extremely Important about the design and aesthetics.

4.1.15 TABLE INDICATING ARE YOU CONCERNED ABOUT THE PRIVACY AND SECURITY OF YOUR SMARTWATCH DATA?

S.NO	ARE YOU CONCERNED ABOUT THE PRIVACY AND SECURITY OF YOUR SMARTWATCH DATA?	NO OF RESPONDENTS	PERCENTAGE ANALYSIS
1	Very concerned	34	33.9%
2	Moderately concerned	24	23.7%
3	I don't store sensitive data	42	42.4%
TOTAL		100	100%



INTERPRETATION

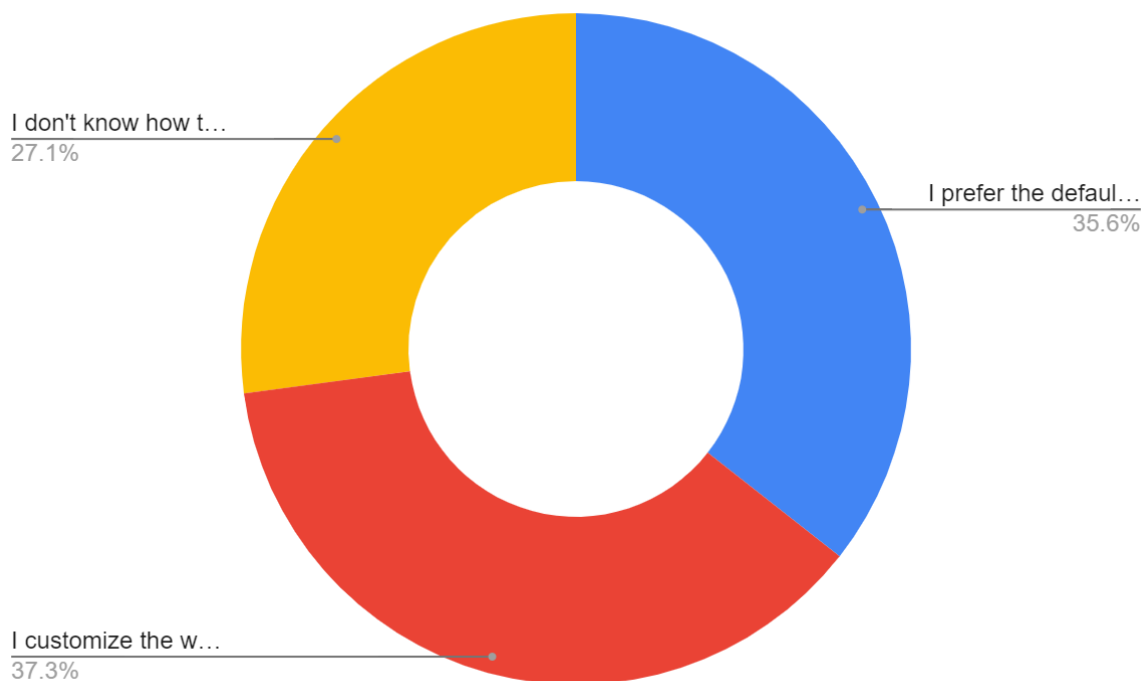
It is found from table no. 4.1.15 42.4% of respondents I don't store sensitive data, 33.9% of respondents are Very concerned about the privacy and security and other 23.7% of respondents are Moderately concerned about the privacy and security.

INFERENCE

Majority 42.4% of respondents I don't store sensitive data.

4.1.16 TABLE INDICATING DO YOU CUSTOMIZE WATCH FACES AND BANDS ON YOUR SMARTWATCH?

S.NO	DO YOU CUSTOMIZE WATCH FACES AND BANDS ON YOUR SMARTWATCH?	NO OF RESPONDENTS	PERCENTAGE ANALYSIS
1	I customize the watch face	37	37.3%
2	I prefer the default settings	36	35.6
3	I don't know how to customize	27	27.1%
TOTAL		100	100%



INTERPRETATION

It is found from table no. 4.1.16 37.3% of respondents customize the watch face, 35.6% of respondents prefer the default settings and other 27.1% of respondents don't know how to customize.

INFERENCE

Majority 37.3% of respondents customize the watch face.

CHAPTER 5

FINDINGS, SUGGESTIONS AND CONCLUSION

5.1 FINDINGS:

- Majority 76.3% of the respondents are male.
- Majority 44.1% of the respondents are Age of 18 – 39.
- Majority 57.6% of the respondents are Graduates.
- Majority 96.5% of the respondents are smartwatch users.
- Majority 57.6% of the respondents are Fireboltt users.
- Majority 40.7% of the respondents are motivated to purchase a smartwatch for Fitness and Health Tracking.
- Majority 40.7% of respondents uses smartwatches daily.
- Majority 44.1% of respondents uses TizenOS.
- Majority 47.5% of respondents most used smartwatches for Call.
- Majority 39% of respondents are Neutral about there Battery life.
- Majority 47.5% of respondents tracks there Steps.
- Majority 47.5% of respondents are Agree about payment.
- Majority 59.3% of respondents Rarely receives and making calls or messages.
- Majority 44% of respondents fell Extremely Important about the design and aesthetics.
- Majority 42.4% of respondents I don't store sensitive data.
- Majority 37.3% of respondents customize the watch face.

SUGGESTIONS:

1. CUSTOMIZED PROMOTION:

- Since 44.1% of respondents were between the ages of 18 and 39 and 76.3% of respondents were men, you might want to modify your marketing tactics to target this group by emphasizing characteristics that appeal to younger men.

2. INSTRUCTIONAL MATERIALS:

- Considering that 57.6% of respondents are graduates, think about developing instructional elements or content with an emphasis on advanced functionality or technology components that will appeal to a more sophisticated audience.

3. HEALTH AND FITNESS FOCUS:

Given that 40.7% of consumers are driven by fitness and health tracking, emphasize the smartwatch's health-related capabilities in your marketing efforts and consider adding additional features that will pique their interest.

4. PROMOTION FOR DAILY USE:

- Since 40.7% of people use smartwatches every day, highlight the watches' everyday usefulness by highlighting their potential applications outside of fitness, such as as fashion items or productivity tools.

5. BRANDING BY FIREBOLTT:

- Since 57.6% of respondents said they use Fireboltt, take advantage of this brand loyalty by strengthening Fireboltt's marketing and highlighting its unique selling points relative to other smartwatch brands.

6. OPTIMIZATION OF BATTERY LIFE:

- Optimize battery performance and give clear information about the smartwatch's battery capacities in order to address the 39% of respondents who are unsure about battery life.

7. FEATURES SPECIFIC TO CALLS:

- Since calls on smartwatches are made by 47.5% of respondents, it could be a good idea to improve call-related features including hands-free.

8. OPTIONS FOR CUSTOMIZATION:

-As 44% of respondents think that aesthetics and design are very essential, offer a range of interchangeable bands and watch faces so that customers may customize their smartwatches to suit their tastes.

9. PAYMENT CONSOLIDATION:

- Given that 47.5% of respondents were in favor of smartwatch payments, maintain and improve these functionalities while maybe looking into joint ventures with well-known payment networks.

10. BUILDING COMMUNITIES:

-As 37.3% of respondents said they customized their watch face, encourage the creation of a community where users can exchange and find customizations. One example of this would be an app or web platform where people can share ideas and designs.

CONCLUSION:

As a whole, the poll results show that the community of smartwatch users is a dynamic one.

The bulk of responders, who are primarily men and range in age from 18 to 39, make up an ideal target market for focused marketing initiatives. There is an obvious need for smartwatches that excel in health-related features, since fitness and health tracking are highly valued.

Users of Fireboltt appear to be loyal, which presents a chance for the company to capitalize on this devotion with special offers or perks. The necessity for smartwatches to give a personalized and aesthetically pleasing experience while effortlessly integrating into daily life is underscored by daily usage patterns, customisation preferences, and the importance put on design aesthetics.

To further increase user pleasure and engagement, issues including battery life optimization, data privacy assurance, and improving payment and call services should be addressed.

In summary, by matching product development and marketing tactics with the identified consumer patterns, the smartwatch market is positioned for expansion.

Smartwatch manufacturers may achieve brand loyalty, community engagement, and innovation in areas like customisation and health tracking by catering to the different needs of their user base.

This approach keeps them at the forefront of this rapidly changing sector.

REFERENCES

- Adapa, A., Nah, F. F. H., Hall, R. H., Siau, K., & Smith, S. N. (2018). Factors influencing the adoption of smart wearable devices. *International Journal of Human–Computer Interaction*, 34(5), 399-409.
- Almeida, T., Chen, K. L., Comber, R., & Balaam, M. (2019). Dismantling Feminist Biology through the Design of eTextiles. In *Research through Design 2019*.
- Arnault, L. (2018). The only thing that buyers want from Wearable Technology Fashion. Wtvox.com. Retrieved from <https://wtvox.com/fashion/wearable-technology-fashion/>.
- Aroganam, G., Manivannan, N., & Harrison, D. (2019). Review on wearable technology sensors used in consumer sport applications. *Sensors*, 19(9), 1983.
- Duarte, J. L., Crawford, J. T., Stern, C., Haidt, J., Jussim, L., & Tetlock, P. E. (2015). Political Diversity Will Improve Social Psychological Science. *Behavioral and Brain Sciences*, 38, 1–13.
- Edmunds, L., Ovseiko, P., Shepperd, S., Greenhalgh, T., Frith, P., Roberts, N., Pololi, L., & Buchan, A. (2016). Why do women choose or reject careers in academic medicine? A narrative review of empirical evidence. *The Lancet*, 388, 2948-58.
- Fell, J. (2017). What women want from wearable technology. Retrieved from <https://eandt.theiet.org/content/articles/2017/06/what-women-want-from-wearabletechnology/>
- Ferreira, P. C., Ataide, V. N., Chagas, C. L. S., Angnes, L., Coltro, W. K. T., Paixão, T. R. L. C., & de Araujo, W. R. (2019). Wearable electrochemical sensors for forensic and clinical applications. *TrAC Trends in Analytical Chemistry*, 119, 115622.
- Friedman, H. H., Friedman, L. W., & Leverton, C. (2016). Increase Diversity to Boost Creativity and Enhance Problem Solving. *Psychosociological Issues in Human*

Resource Management, 4(2), 7–33.

Gamble, R. and Hale, M. (2019). Software Development for Self-Adaptation in Services, Wearables, and IoT Devices. Proceedings of the 52nd Hawaii International Conference on System Sciences.

Hardey, M. (2020). Gender and technology culture: points of contact in tech cities. Sociological Research Online, 25(1), 101-118.

Tally, K. (2018). Women's representation in technology fields decreases as seniority increases, research shows. Fierceceo.com. Retrieved from <https://www.fierceceo.com/technology/women-not-well-represented-technology-field-research-says>.

Talukder, M. S., Chiong, R., Bao, Y., & Malik, B. H. (2019). Acceptance and use predictors of fitness wearable technology and intention to recommend. Industrial Management & Data Systems.

Thompson, D. (2015). The Secret to Smarter Groups: It's Women. Atlantic.com. Retrieved from <http://www.theatlantic.com/business/archive/2015/01/the-secret-to-smart-groups-isntsmart-people/384625/>

ANNEXURE – QUESTIONNAIRE

A STUDY ON CUSTOMER INCLINATION TOWARDS SMARTWATCHES

Email: _____

1) Age

- a) Below 15
- b) 15 – 18
- c) 18 – 39
- d) Above 39

2) Gender

- a) Male
- b) Female

3) Education

- a) Student
- b) PG
- c) PHD

4) Do you used a smartwatch?

- a) yes
- b) no

5)What brand smartwatch you have used?

- a) Apple
- b) Samsung
- c) Fireboltt

6)What motivated you to purchase a smartwatch?

- a) Fitness and Health Tracking
- b) Style and Fashion
- c) Notifications and Convenience
- d) Gifts

7)How often do you wear your smartwatch?

- a) Daily
- b) weekly
- c) Occasionally

8)Which operating system does your smartwatch use

- a) Apple Watch OS
- b) Wear OS
- c) Tizen

9)What features do you use most on your smartwatch?

- a) Fitness
- b) Call
- c) Notification

10)How satisfied are you with the battery life of your smartwatch?

- a) Satisfied
- b) Neutral
- c) Dissatisfied

11)What activity do you track in your smartwatch?

- a) Steps
- b) heart rate
- c) Workout

12) Do you like to use your smartwatch for payments?

- a) Agree
- b) Neutral
- c) Disagree

13)Do you use your smartwatch for receiving and making calls or messages?

- a) Rarely
- b) Frequently
- c) Never

14)How important is the design and aesthetics of a smartwatch to you?

- a) Extremely Important
- b) Moderately Important
- c) Not Important.

15) Are you concerned about the privacy and security of your smartwatch data?

- a) very concerned
- b) moderately concerned
- c) I don't store sensitive data

16)Do you customize watch faces and bands on your smartwatch?

- a) I customize the watch face
- b) I prefer the default settings
- c) I don't know how to customize

ANNEXURE 2- RESEARCH ARTICLE

A STUDY ON CUSTOMER INCLINATION TOWARDS SMARTWATCHES

Dr. S. UMAMAHESWARI,

Associate Professor

School of management studies,

Sathyabama institute of Science & Technology, Chennai

Mr. F. LESLIE RYAN ROZARIO,

Student

School of management studies,

Sathyabama Institute of Science & Technology, Chennai

leslieryanfernando@gmail.com

ABSTRACT

Wearable technology is one such recent innovation. It has developed into the most interactive, personalized, and pervasive devices that fit into users' lives naturally and offer endless benefits for their health and well-being. Wearable devices are electronic computers that can be carried, worn, or attached to the body, according to Buenaflor and Kim (2013). Wearable smartwatches are the subject of this thesis because they serve as consumers' personal assistants by enabling activity tracking and health monitoring. A smartwatch is a gadget that can communicate with smartphones to obtain a variety of data, including schedules, text messages, GPS information, and the time.

INTRODUCTION

“The Fourth Industrial Revolution is still in its nascent state. But with the swift pace of change and disruption to business and society, the time to join in is now.” - Gary Coleman (Deloitte Consulting) With the advent of 21st century, the Fourth Industrial Revolution (commonly referred as Industry 4.0) has made it difficult to differentiate between the physical and the digital worlds for businesses as well as society through the incessant development of transformative technologies. This new era of Industry 4.0 has the potential to create hybrid products that successfully incorporate machines, software, sensors, processors, and other ICTs (Information and Communication Technologies) in order to facilitate meaningful interface between the real (physical) and computing world. These technologies have leveraged the advantages of smart and automotive machinery towards delivering a personalized consumer experience by connecting consumers with the industry from the initial phase of product design and engineering to the last stage of product delivery and feedback via social networks, real-time interactions and data analytics. The product developers are focusing on the optimization of these connected and intelligent devices in order to offer high-quality services to the consumers. Boston Consulting Group (2020) has defined following nine transforming technologies that comprise Industry 4.0: Simulation Techniques, Horizontal System and Vertical System Integration, the IoT (Internet of Things), Cyber-security, Autonomous Robotics, Cloud Computing, 3D Printing .

OBJECTIVES FOR THE STUDY:

1. To Understand the factors influencing consumer preferences for smartwatches, including design, features, and price.
2. To analyse trends and changes in buyer inclination over time.
3. To Evaluate the awareness and perception of different smartwatch brands among potential buyers.

NEED FOR STUDY:

1. The study is needed to provide insights into the complex decision-making process of consumers when choosing a smartwatch, with a focus on the key factors of design, features, and price that drive their preferences.
2. Understanding consumer preferences is crucial for smartwatch manufacturers to stay competitive in the market by aligning their product offerings with the evolving needs and desires of potential buyers.

SCOPE OF THE STUDY:

- 1.To comprehensively analyze the design elements that influence consumer preferences for smartwatches.
- 2.To investigate how specific features, such as health tracking, connectivity options, and app compatibility, impact consumer choices in selecting smartwatches.
- 3.To examine the role of price as a determining factor in consumer decision making when choosing a smartwatch.

REVIEW OF LITERATURE

1.Smartwatches: the good, the bad and the ugly? - Marta E Cecchinato – 2015

Wearable computers, particularly smartwatches, are the next big trend, but their success is a topic of debate. This paper reviews existing literature, expands the smartwatch concept, and presents initial findings from interviews with early adopters, shedding light on their real-life usage, perceived benefits, and barriers to mass adoption.

2.A survey of smartwatches in remote health monitoring - Christine E King – 2018

This systematic review categorizes healthcare applications of smartwatches in the literature and summarizes factors contributing to viable systems. The study screened 1119 articles, selecting 27 directly related to healthcare, primarily focusing on feasibility studies for chronic disease self-management, highlighting the potential of smartwatches in healthcare but stressing the need for larger-scale research to assess their effectiveness and acceptance.

3.Wearables: has the age of smartwatches finally arrived? - Marian Petre – 2014

Time will tell if smartwatches will find their niche.

4.Exploring the motivational factors on continuous usage intention of smartwatches among actual users – Milad Dehghani-2018

Smart wearable tech is expanding across various sectors, with smartwatches leading the way. This study explores consumers' motivation to keep using smartwatches, revealing eight key determinants, including some not found in previous adoption models, underscoring the need to update such models in the realm of wearable technology usage intention.

5.Consumer valuation of the wearables: The case of smartwatches - Yoonhyuk Jung, Seongcheol Kim, Boreum Choi – 2016

Wearable devices combine mobile computing and fashion, with growing consumer interest in smartwatches. However, slower sales raise questions, prompting a study to explore consumer preferences.

6. A study on factors affecting the intention to use smartwatches - Jaewon Choi, Seongcheol Kim – 2016

Smartwatches serve as both technology and fashion items, prompting an investigation into how fashion-related factors impact their usage intention. This study expanded the technology acceptance model, finding that smartwatches' fashion attributes, particularly the desire for uniqueness, significantly influence usage intention, suggesting they are not yet considered luxury items.

7. Wearable technology: What explains continuance intention in smartwatches? - Bruno Nascimento, Tiago Oliveira, Carlos Tam – 2018

Smartwatches represent a recent advancement in wearables, and this study examines their continued usage through a combination of models. Analyzing data from 574 individuals in the USA, it highlights the significance of factors like confirmation, satisfaction, perceived usability, and habit, with habit being the most crucial for explaining smartwatch continuance intention. The study concludes by discussing limitations and implications.

8. At the Crossroads! Time to Start Taking Smartwatches Seriously - Fabio V Lima, Vishnu Kadiyala – 2022

Wearable devices like smartwatches offer potential for cardiovascular monitoring but face trust and workflow integration issues. Collaboration with tech companies is key to their successful adoption in healthcare.

9. Recognizing detailed human context in the wild from smartphones and smartwatches - Yonatan Vaizman – 2017

Automatic recognition of behavioral context has broad applications, including health monitoring and aging care. To validate it effectively, authors collected real-life data from 60 subjects using their personal phones, emphasizing the importance of multimodal sensor fusion for accurate recognition.

10.Glanceable visualization: Studies of data comparison performance on smartwatches - Tanja Blascheck – 2018

We conducted two perception studies to explore the time it takes for people to perform data comparisons on smartwatches, aiming to understand design constraints. Results suggest that for rapid data comparisons, bar and donut charts are preferable due to quicker average task times, typically under 300 ms for bar charts and under 220 ms for donut charts.

RESEARCH DESIGN:

Descriptive Research Design Descriptive research is a study designed to depict the participants in an accurate way. More simply put, descriptive research is all about describing people who take part in the study.

SOURCES OF DATA:

In this research, internal and external source of data are used. Collected raw materials through facts and figure of researcher's works. Collecting data from company records and document, these are all internal data and other data are external. In data collection, there are 2 types

Primary Data.

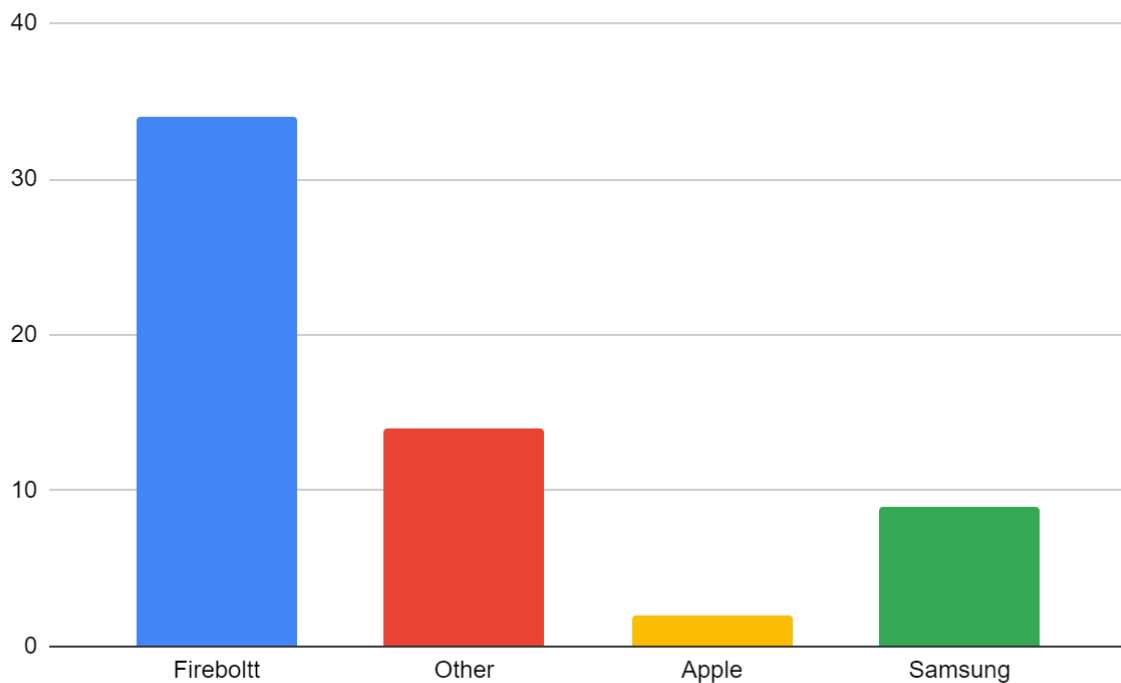
Secondary Data.

PERCENTAGE ANALYSIS:

Research questions are always answered with a descriptive statistic: generally, either percentage or mean. Percentage is appropriate when it is important to know how many of the participants gave a particular answer. Generally, percentage is reported when the responses have discrete categories.

BRAND SMARTWATCH USED

S.NO	BRAND SMARTWATCH USED	NO OF RESPONDENTS	PERCENTAGE ANALYSIS
1	Apple	3	3.4%
2	Samsung	15	15.3%
3	Fireboltt	58	57.6%
4	Other	24	23.7%
TOTAL		100	100%



INTERPRETATION

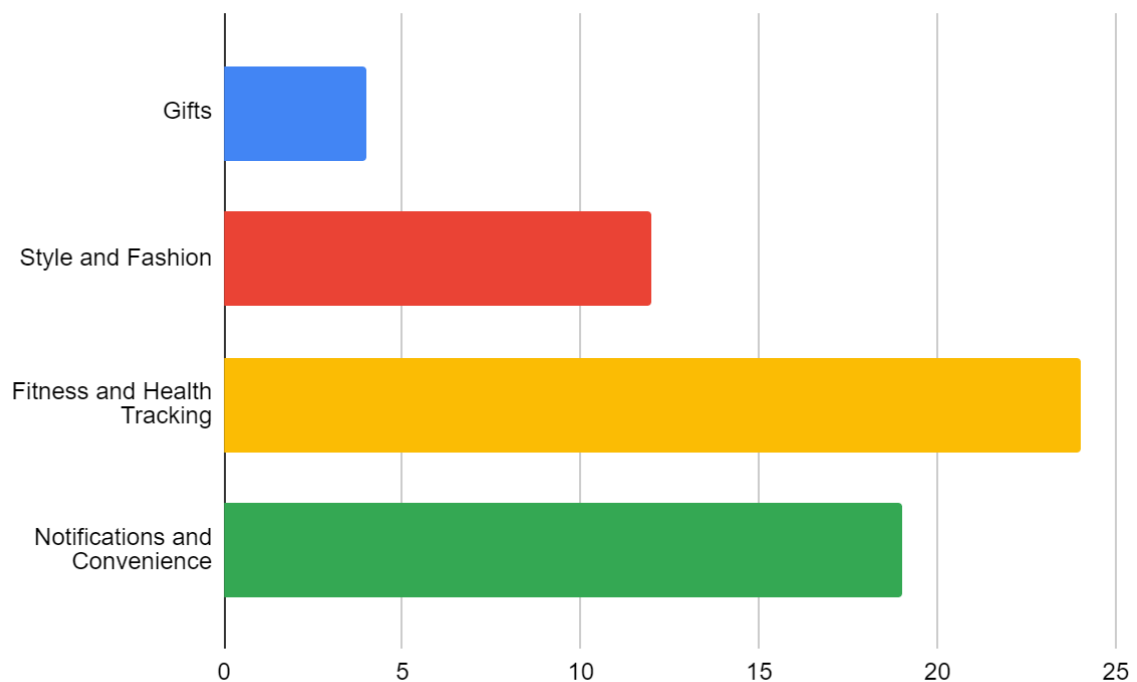
It is found from table no. 4.1.5 57.6% of respondents are Fireboltt users, 23.7% of respondents are Other users, 15.3 of respondents are Samsung users and other 3.4% of respondents are Apple users.

INFERENCE

Majority 57.6% of the respondents are Fireboltt users.

WHAT MOTIVATED YOU TO PURCHASE A SMARTWATCH

S.NO	WHAT MOTIVATED YOU TO PURCHASE A SMARTWATCH	NO OF RESPONDENTS	PERCENTAGE ANALYSIS
1	Fitness and Health Tracking	41	40.7%
2	Style and Fashion	20	20.3%
3	Notifications and Convenience	32	32.2%
4	Gifts	7	6.8%
TOTAL		100	100%



INTERPRETATION

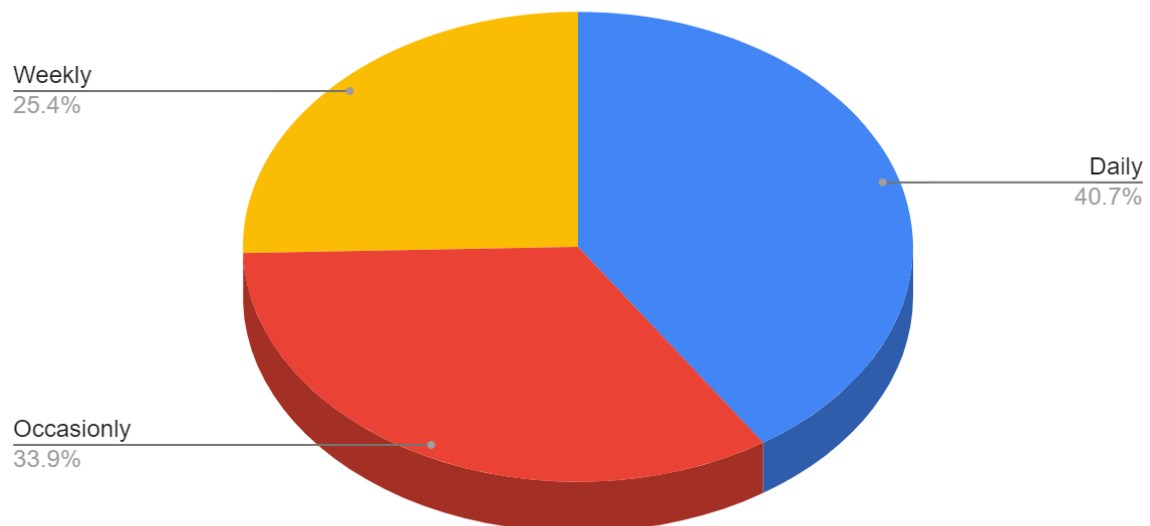
It is found from table no. 4.1.6 40.7% of respondents are motivated to purchase a smartwatch for Fitness and Health Tracking, 32.2% of respondents are motivated to purchase a smartwatch for Notifications and Convenience, 20.3% of respondents are motivated to purchase a smartwatch for Style and Fashion and other 6.8% of respondents are motivated to purchase a smartwatch by gifts.

INFERENCE

Majority 40.7% of the respondents are motivated to purchase a smartwatch for Fitness and Health Tracking.

HOW OFTEN DO YOU WEAR YOUR SMARTWATCH?

S.NO	HOW OFTEN DO YOU WEAR YOUR SMARTWATCH?	NO OF RESPONDENTS	PERCENTAGE ANALYSIS
1	Daily	41	40.7%
2	Weekly	25	25.4%
3	Occasionally	34	33.9%
TOTAL		100	100%



INTERPRETATION

It is found from table no. 4.1.7 40.7% of respondents uses smartwatches daily, 33.9% of respondents uses smartwatches Occasionally and other 25.4% of respondents uses Weekly.

INFERENCE

Majority 40.7% of respondents uses smartwatches daily.

FINDINGS:

- Majority 76.3% of the respondents are male.
- Majority 44.1% of the respondents are Age of 18 – 39.
- Majority 57.6% of the respondents are Graduates.
- Majority 96.5% of the respondents are smartwatch users.
- Majority 57.6% of the respondents are Fireboltt users.
- Majority 40.7% of the respondents are motivated to purchase a smartwatch for Fitness and Health Tracking.
- Majority 40.7% of respondents uses smartwatches daily.
- Majority 44.1% of respondents uses TizenOS.
- Majority 47.5% of respondents most used smartwatches for Call.
- Majority 39% of respondents are Neutral about there Battery life.
- Majority 47.5% of respondents tracks there Steps.
- Majority 47.5% of respondents are Agree about payment.
- Majority 59.3% of respondents Rarely receives and making calls or messages.
- Majority 44% of respondents fell Extremely Important about the design and aesthetics.
- Majority 42.4% of respondents I don't store sensitive data.
- Majority 37.3% of respondents customize the watch face.

SUGGESTIONS:

1. CUSTOMIZED PROMOTION:

- Since 44.1% of respondents were between the ages of 18 and 39 and 76.3% of respondents were men, you might want to modify your marketing tactics to target this group by emphasizing characteristics that appeal to younger men.

2. INSTRUCTIONAL MATERIALS:

- Considering that 57.6% of respondents are graduates, think about developing instructional elements or content with an emphasis on advanced functionality or technology components that will appeal to a more sophisticated audience.

3. HEALTH AND FITNESS FOCUS:

Given that 40.7% of consumers are driven by fitness and health tracking, emphasize the smartwatch's health-related capabilities in your marketing efforts and consider adding additional features that will pique their interest.

4. PROMOTION FOR DAILY USE:

- Since 40.7% of people use smartwatches every day, highlight the watches' everyday usefulness by highlighting their potential applications outside of fitness, such as as fashion items or productivity tools.

5. BRANDING BY FIREBOLTT:

- Since 57.6% of respondents said they use Fireboltt, take advantage of this brand loyalty by strengthening Fireboltt's marketing and highlighting its unique selling points relative to other smartwatch brands.

LIMITATION OF THE STUDY:

1. The acceptance and user penetration of these devices is quite low particularly in the context of developing economies like India where their commercialization still stands at the nascent stage of diffusion.
2. The consumers seem less determined towards acceptance of smartwatches because they are unable to reap the promised benefits, demotivating them to framing a positive intent towards adoption of these devices.
3. The aspect of technology adoption has been covered extensively by the information systems literature.

CONCLUSION:

- As a whole, the poll results show that the community of smartwatch users is a dynamic one.
- The bulk of responders, who are primarily men and range in age from 18 to 39, make up an ideal target market for focused marketing initiatives. There is an obvious need for smartwatches that excel in health-related features, since fitness and health tracking are highly valued.

REFERENCES

- Adapa, A., Nah, F. F. H., Hall, R. H., Siau, K., & Smith, S. N. (2018). Factors influencing the adoption of smart wearable devices. *International Journal of Human–Computer Interaction*, 34(5), 399-409.

- Almeida, T., Chen, K. L., Comber, R., & Balaam, M. (2019). Dismantling Feminist Biology through the Design of eTextiles. In Research through Design 2019.
- Arnault, L. (2018). The only thing that buyers want from Wearable Technology Fashion. Wtvox.com. Retrieved from <https://wtvox.com/fashion/wearable-technology-fashion/>.
- Aroganam, G., Manivannan, N., & Harrison, D. (2019). Review on wearable technology sensors used in consumer sport applications. Sensors, 19(9), 1983.
- Duarte, J. L., Crawford, J. T., Stern, C., Haidt, J., Jussim, L., & Tetlock, P. E. (2015). Political Diversity Will Improve Social Psychological Science. Behavioral and Brain Sciences, 38, 1–13.
- Edmunds, L., Ovseiko, P., Shepperd, S., Greenhalgh, T., Frith, P., Roberts, N., Pololi, L., & Buchan, A. (2016). Why do women choose or reject careers in academic medicine? A narrative review of empirical evidence.