Samanjasya सामंजस्य **Volume 02, Number 02, December 2025**
ISSN: 3049-3269 (Online) **Page Number: 1 - 21**

ADOPTION OF WEARABLE HEALTHCARE DEVICES BY THE USERS - A THEMATIC ANALYSIS

RUCHI[1,2], NUDRAT MOINI RAHMAN[3*], JAWED AHMED[4], §

Abstract. This paper aims to identify the factors influencing users' decisions to adopt WHDs, specifically fitness trackers and smart watches with the help of qualitative approach. The paper made an effort to identify the motivations behind consumers' intentions to adopt smartwatches and fitness trackers. The qualitative approach-text mining and thematic analysis were used on the basis of an in-depth analysis on interview transcripts. Five major themes were identified namely health monitoring, convenience and connectivity, social influence and aesthetics, accuracy, privacy and security and finally the fun, entertainment and enjoyment. The thematic analysis in the paper highlights that an aware consumer focus on functionality, health monitoring, security, and personalization. The research findings are helpful in explaining a more integrated view of the benefits and shortcomings associated with these devices, and contribute to the existing literature on wearable technology and inform future innovations and marketing strategies in the smartwatch industry.

JEL Classification: I12.

Keywords: Wearable healthcare devices, thematic analysis, adoption factors, qualitative analysis.

* Corresponding author.
[1] Research Scholar, School of Management and Business Studies, Jamia Hamdard, Delhi - 110062.
[2] Department of Commerce, Satyawati College (Evening), Delhi University, Delhi - 110052, India.
e-mail: ruchi.commerce@satyawatie.du.ac.in
[3] School of Management and Business Studies, Jamia Hamdard, Delhi - 110062, India.
e-mail: nudratmoini@jamiahamdard.ac.in
[4] School of Engineering Sciences and Technology, Jamia Hamdard, Delhi - 110062, India.
e-mail: jawed2047@gmail.com
§ Manuscript received: 20-09-2025; accepted: 25-10-2025.

1. **Introduction**

The health of human beings is related to the physical activities performed, and the emerging wearable health devices with developed technologies support the users to remain active (1). The fitness tracker devices have the benefits of keeping track of physical activities and motivating users to maintain healthy behaviour (2). Users can take control of their well-being and improve their health straight from their wrists (3). They are gaining popularity because of their ease of integration with other devices and services in our everyday lives. Smartwatches are no longer just for showing time; they now serve several functions such as communication, navigation, and fitness monitoring (4). A smartwatch is a networked computer that functions as a mobile phone extension, monitoring physical activity and health-related parameters like heart rate, blood oxygen level, calories burned, and sleep quality to provide quick notifications to the users (5). Also, smartwatches offer a promising solution for healthcare self-management and remote medical management, enabling continuous monitoring of health parameters and detecting health deterioration in free-living conditions round the clock (6).

Non-communicable diseases (NCDs) or lifestyle disorders, such as diabetes, obesity, heart disease, stroke, and many forms of cancer, are becoming more prevalent in the world. The prevalence of overweight and obesity is also increasing rapidly. Physical inactivity is a major problem, and half of the population is not meeting the recommended levels of physical activity (7). Smartwatches offer continuous health monitoring without the need for extra devices. It enables continuous health tracking, allowing for early diagnosis of various health concerns (8). Smartwatches have evolved beyond their primary function of timekeeping, becoming an integral part of modern life, capable of communication, navigation, and fitness tracking (9). Due to the multi-functional nature of this device, it is being adopted by different age groups for different purposes. Smartwatches with features like GPS tracking and parental controls are commonly utilized for safety purposes, especially for younger users (10). Young adults prefer smartwatches with GPS, integrated smartphone connections, and enhanced health monitoring for smooth communication and productivity. Heart rate monitoring, sleep tracking, and reminders for meetings or tasks are particularly useful for middle-aged people (11). These devices can also help older people in emergency situations with SOS features and fall detection. Smartwatches have evolved as IoT (Internet of Things) and exchange real-time data with cloud-based applications, making them more effective and useful. But sharing data with a third-party app causes serious concern for privacy and security, resulting in discontinuity or hesitation in adoption (12).

Conventional watches are being replaced by smartwatches, and now they are becoming fashion accessories also. Price and aesthetic design are playing major roles in its adoption (13). Though WHD is becoming popular among individuals for health monitoring, on the other hand, it is being used for remote health management (14). No study has yet provided a thorough, integrated summary of the key elements influencing WHD adoption. Innovation in terms of technology and aesthetics revolutionized the smartwatch markets; therefore, it needs a holistic study that unfolds many unexplored dimensions. The fast-growing smartwatch market needs deeper understanding of consumer adoption to sustain the growth by continuously improving the device in terms of technology and aesthetics.

This paper aims to identify the factors influencing users' decisions to adopt WHDs, specifically fitness trackers and smart watches, with the help of a qualitative approach. The thematic analysis was performed on the interview transcripts with 24 users using the WHD to understand the reasons for adopting the WHDs and the benefits and deficiencies associated with these devices. This paper contributes an in-depth analysis of the determinants influencing users' intentions to adopt WHDs. The study identifies five major themes identified using thematic analysis and a qualitative approach, namely health monitoring, convenience and connectivity, social influence and aesthetics, accuracy, privacy and security, and finally the fun, entertainment, and enjoyment. The research findings are helpful in explaining a more integrated view of the benefits and shortcomings associated with these devices, contribute to the existing literature on wearable technology, and inform future innovations and marketing strategies in the smartwatch industry.

The study identified the five themes influencing users' intention to adopt wearable health care devices (WHD), particularly fitness trackers and smart watches. This aids researchers in understanding the complex interplay of factors affecting user adoption intention. The research identifies and categorizes 16 subthemes related to five main user determinants, namely health monitoring, convenience and connectivity, social influence and aesthetics, accuracy, privacy and security, and finally fun, entertainment, and enjoyment. This classification enhances the understanding of what drives or hinders the intention to adopt wearable health care devices (WHDs). The findings offer practical guidance for designers and marketers of WHDs, enabling them to better meet user expectations and address potential barriers to adoption, thereby enhancing product development and user satisfaction.

This paper is divided into five sections. Section 2 presents a review of the literature. Section 3 discusses the methodology adopted in this study. The section 4 discusses the

results of the qualitative approach adopted for the analysis and finally, Section 5 discussed the conclusions and implications of this study.

2. **Literature Review**

Kamal Basha et al. (15) discussed the limitations of the Technology Acceptance Model (TAM) in explaining the specific technological and design attributes of smartwatches; however, they emphasized the stimulus-organization-Response (S-O-R) model and self-congruity theory. Wang et al. (16) explained that the application of the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Task-Technology Fit (TTF) model is limited in the case of WHDs. Task and technology characteristics significantly influence the adoption of wearable devices, with connectivity and healthcare aspects having a significant impact on the task-technology fit (TTF) constructs (17). Chang et al. (18) integrated TAM and TTF to understand the key variables task and technology characteristics, wearable device characteristics, social influence, and user characteristics influencing wearable device usage behaviour. Task- Technology Fit (TTF) plays a significant role in influencing both PU and PEOU, emphasizing the need for wearable devices to align with user tasks effectively. Bölen (19) investigated factors influencing traditional wristwatch users' intentions to switch to smartwatches by integrating diffusion of innovation theory (DIT) and the concept of switching costs. Sivathanu (20) employed Behavioural Reasoning Theory (BRT) to assess the factors responsible for the inadequate understanding of IoT-based healthcare wearable devices among older adults in developing countries.

Wearable health devices have numerous benefits, including real-time health monitoring, fitness tracking, personalized advice, motivation, sleep quality pattern, chronic disease management, emergency alarms, integration with health application, better communication with healthcare providers, and improved quality of life. The integrated UTAUT and TTF model significantly explained behavioural intention, validating its effectiveness in understanding healthcare wearable devices (HWDs) acceptance (16). WHDs track vital health metrics, encourage active lifestyles, and provide personalized feedback. WHDs detect falls or irregular heart rhythms, sending alerts to emergency contacts or healthcare providers. Data accuracy, device engagement, and user efficacy influence performance expectancy and effort expectancy, ultimately affecting the actual usage of fitness tracking devices (21). Perceived usefulness, consumer innovativeness, and reference group influence are significant antecedents, positively impact consumers' adoption intention for wearable healthcare technology (22). WHDs offer motivation and accountability, helping users identify issues and make adjustments. Fashionability significantly affects behaviou-

ral intention to adopt wearable devices, signifying aesthetic appeal plays a role in technology acceptance (17). Consumers' perceptions of health information accuracy and health beliefs significantly influence their adoption intentions of wearable healthcare technology (22). M. Paul et al. (23) identified various security and privacy threats and proposed appropriate solutions to enhance data security and protect patient privacy. Task-technology fit, perceived usefulness, user characteristics, and social influence are significant in understanding the adoption of wearable devices (24). Wearable health devices, like Fitbits, can motivate young people to increase physical activity through peer-based competitions. These devices can positively influence health behaviours, leading to changes in physical activity and food habits. They also offer real-time response, helping young people track progress and set personal health objectives. These benefits make wearable health devices valuable tools for managing and improving health-related behaviours (25). The intention to continue using fitness tracking devices is influenced by perceived health benefits, autonomy and social benefits, and hedonic benefits (26). Kekade et al. (27) focused on evaluating the factors influencing the intention to use wearable devices among elderly populations. For successful adoption of HWDs, developers should focus on improving technology characteristics to better fit health management tasks and consider users' limitations, social environment and facilitating conditions (16).

Wang et al. (16) explained the application of UTAUT and the TTF model and showed its limitations in the case of healthcare wearable devices (HWDs). Mishra et al., (2023) targeted to understand both the inhibitors and facilitators of wearable technology usage and identify privacy concerns, social influence, data accuracy, device engagement, and user efficacy affecting the actual usage of wearable fitness devices. Negative views on privacy can limit device usage, while social influence can increase intention to use the wearable fitness devices. Puri et al. (26) investigated the limited understanding of the adoption and continued usage of wearable fitness tracking (WFT) devices in developing countries. Continued usage of wearable fitness tracking (WFT) devices requires a multidimensional approach considering health, consumer, and technological factors. Misra et al. (17) proposed a theoretical framework based on the task-technology fit (TTF) model and the technology acceptance model (TAM) to explore the relationships between healthcare, fashionability, ease of use, and connectivity influencing users' intentions to utilize smart wearables. Despite the integration of health and technology attributes in these devices, there is insufficient exploration of how consumers' health beliefs, concerns, and the influence of reference groups affect their intention to adopt such technologies (22). M. Paul et al. (23) highlighted the risks associated with data breaches and cyber-attacks

threatening patient data and the overall application of digital technology in healthcare. Fashionability is not a significant predictor of behavioural intention at the initial phase of wearable device adoption but could gain importance as the market develops. Task-Technology Fit (TTF) plays a significant role in influencing both perceived usefulness (PU) and perceived ease of use (PEOU), emphasizing the need for wearable devices to align with user tasks effectively (24). Kekade et al. (27) apprehend how factors such as intention to use, security concerns, and willingness to pay impact the current and future adoption of wearable technologies by older adults. There is significant interest among elderly individuals in using wearable devices to improve physical and mental activities, but few of them use wearable devices for monitoring their health parameters.

User perceptions, such as performance expectancy, effort expectancy, social influence, and facilitating conditions, significantly influence acceptance of WHDs. The integrated model of UTAUT and TTF highlight the importance of both user perceptions and the fit between technology and task in predicting WHDs acceptance (16). Data accuracy, device engagement, and user efficacy, influence performance expectancy and effort expectancy and at the end affecting actual usage of fitness tracking devices. Addressing privacy concerns, enhancing social influence, ensuring data accuracy, encouraging device engagement, and developing user efficacy are crucial for increasing user adoption and continued usage of health devices (21). Puri et al. (26) used technology acceptance theories and health promotion models to examine factors influencing wearable fitness tracking (WFT) device usage intention from technological, health, and consumer perspectives. Privacy concerns did not significantly impact behavioural intention, suggesting users may prioritize other factors over privacy when considering wearable technology (21). Cheung et al. (22) aimed to empirically test a theoretical model to analyse the impact of consumers' health beliefs, health information accuracy, and privacy protection on perceived usefulness of WHDs, as well as the influence of perceived usefulness, consumer innovativeness, and reference group on the adoption intention of WHDs. Kekade et al. (28) emphasized the need for increased awareness regarding the benefits of wearable devices among the elderly population. Strengthening authentication schemes, improving data aggregation methods, and standardizing communication protocols are required to address privacy issues.

Device developers should focus on the features and design elements enhancing user experience and confidence (21). Wearable fitness tracking (WFT) devices can provide both consumers and public policymakers with a cost-effective and efficient preventive solution to health issues, particularly in developing countries (26). Healthcare management, connectivity, and fashionability aspects should be considered by manufacturers and marketers

in developing WHDs. To effectively promote wearable healthcare technology, marketers should highlight its benefits and accuracy, influence consumer innovation, and promote reference group influence through social media (8). Users give importance to wearability over fashionability due to the comfort and functionality of wearable devices (Chang et al., 2016).

3. **Research Methodology**

3.1. **Aim of the Research.** This paper aims to identify the factors influencing users' decisions to adopt WHDs, specifically fitness trackers and smart watches with the help of qualitative approach. The study made an effort to identify the motivations behind consumers' intentions to adopt smartwatches. This paper contributes an in-depth analysis of the factors influencing users' intention to adopt WHDs. The research findings are helpful in explaining a more integrated view of the benefits and shortcomings associated with these devices, and contribute to the existing literature on wearable technology and inform future innovations and marketing strategies in the smartwatch industry.

3.2. **Data Collection.** This paper adopted the qualitative approach to identify the factors influencing users' decisions to adopt WHDs, specifically fitness trackers and smartwatches. The semi-structured interviews were conducted with the 24 users of WHDs, where the initial questions were to know the demographic and sociographic profile of the users and rest of the questions were open ended and related to find out the possible motivations behind the adoption of WHDs, the benefits and challenges and the intention to continue with the devices. Despite the different factors provided by the existing models such as TAM and UTAUT2 etc, the efforts were made to identify the possible factors on the basis of user's perception and experience.

3.3. **Sampling Design.** The judgemental sampling method was used to select the WHD users in the sample for taking semi-structured interviews. The users of WHDs were selected on the basis of two criteria's namely, the users must have three years of experience of using WHDs and were aware of maximum functions of WHDs. The WHD's users were found at different platforms on social media. The request was sent to the social media platforms and 24 users of WHD were provided their consent to participate in the interview. The interviews were conducted on both online and offline mode, where the responses were recorded telephonically and online meetings. The interviews were converted into transcripts for the analysis purpose. Although the sample size is relatively small but it is consistent with qualitative research standards. It emphasizes data richness and thematic

saturation over statistical representativeness. The in-depth interviews provided deeper insights into users' health awareness, trust in technology, and behavioural intentions that might not be captured through large-scale surveys.

3.4. **Qualitative Methods.** The text mining and thematic analysis were applied on the transcripts with the help of NVivo qualitative data analysis software. The text mining helps in identifying the most frequent words used by the participants. We went through all transcripts in details and figure out the keywords and sentences used by the participants in the interview. The identified keywords and sentences were used to develop different themes and coded in the software. The thematic analysis helps in quantifying the weight of the themes and to generate the output. The theoretical framework was developed and discussed in the next section of the paper.

4. Analysis and Discussion

This section discusses the result of text mining and thematic analysis done on the interview transcripts developed as a result of personal interviews conducted with twenty-four users of WHD. The analysis starts with developing the word cloud of the most frequent words in terms of occurrence in the interview transcripts. The word cloud of the most frequent words is shown in figure and the list of top twenty-five words in terms of frequency is reported in Table 1.

Figure 1. Wordcloud of most frequent words in interview transcripts (Source: Authors own work)

Table 1. **Top 25 most frequent words**

Word	Length	Count	Weighted Percentage (%)
fitness	7	22	4.50
health	6	20	4.09
data	4	11	2.25
device	6	9	1.84
monitoring	10	8	1.64
influence	9	7	1.43
entertainment	13	6	1.23
fun	3	6	1.23
integration	11	6	1.23
social	6	6	1.23
sub	3	6	1.23
daily	5	5	1.02
devices	7	5	1.02
enjoyment	9	5	1.02
accuracy	8	4	0.82
activity	8	4	0.82
lines	5	4	0.82
media	5	4	0.82
phone	5	4	0.82
protection	10	4	0.82
security	8	4	0.82
smart	5	4	0.82
tracking	8	4	0.82
user	4	4	0.82
users	5	4	0.82

(Source: Author's own work)

4.1. **Thematic Analysis.** The qualitative thematic approach is adopted in the paper in order to identify the factors influencing users' decisions to adopt WHDs, specifically fitness trackers and smart watches. The thematic analysis is performed on the interview transcripts developed on the basis of semi structured interviews, conducted with the 24 users of WHDs. The personal interviews include the detailed discussions about the possible motivations behind the adoption of WHDs, the benefits and challenges and the intention to continue with the devices. The efforts were made in the personal interviews to identify the possible factors on the basis of user's perception and experience. The thematic analysis includes six steps. The step one includes the detailed reading of the transcripts number of times. Step two includes the identification of important keywords and sentences in all the transcripts. Step three includes the classification of the identified keywords into themes and subthemes. Step four includes the validation of the themes, subthemes and keywords on the basis of industry experts. Step five includes the usage of NVivo software to develop the themes and associating the themes with the keywords. Finally, step six generates the

themes and subthemes along with the frequency and relative weight of the different keywords. The list of identified themes from the adopted qualitative approach is reported in Table 2:

Table 2. **Themes and sub-themes explaining adoption of wearable healthcare devices**

Theme 1: Health Monitoring • Monitoring daily activity • Monitoring health parameter • Health and Fitness Goal	**Theme 2: Convenience and Connectivity** • Notification management • Health and Fitness Tracking • Device Integration • Data Syncing with Fitness Apps
Theme 3: Social Influence and Aesthetics • Peer pressure and family influence • Design and Aesthetic • Social media influence	**Theme 4: Accuracy, Privacy and Security** • Accuracy of health and fitness data • Data Handling and Protection • Protection Against Threats
Theme 5: Fun, Entertainment and Enjoyment (Hedonic motivation) • Fun • Entertainment • Enjoyment	

(Source: Author's own work)

The different identified themes, subthemes and keywords are discussed below:

Theme 1: Health Monitoring. The first theme explains the different applications of WHD for health monitoring. The theme discusses the technological advancement of the WHD, which makes the user's life easier and more comfortable and saves time and energy in performing health monitoring. The restricted lifestyle of the users due to the current scenario restricts their movements and activities, leading to health risks such as obesity, diabetes, heart diseases, stress, hypertension, etc. Believing in 'prevention is better than cure', the people adopted good health monitoring practices by adopting the WHD. Smartwatches and fitness bands are the most popular, convenient, and affordable wearable health devices. Smartwatches have revolutionized personal health management by combining wearable technology with features that help users monitor daily activities, track health parameters, and pursue fitness goals. These devices, which integrate sensors and software, have transformed the way people engage with their health data, providing both convenience and motivation. Advanced health tracking features include heart rate monitoring, oxygen saturation levels in blood and stress level assessment. These parameters provide awareness about overall health and help users to identify any uncommon patterns

that might require medical help. Continuous monitoring of sleep patterns is another advantage, enabling users to improve their sleep quality, essential for overall well-being. Smartwatches enable setting personal health goals and exercise routines and monitor progress over time. Users can set goals, such as distance covered per day or calories burned, and receive real-time advice as they work toward them. Some brands (models) include built-in exercise routines, allowing users to follow planned workouts directly from their wrist. These tools make it easy to track progress and adjust routines as per individual goals, promoting consistency and motivation in daily fitness efforts. Smartwatches empower users to make well-informed decisions regarding fitness routines and lifestyle modifications. Real-time data on activity, sleep, and vital health parameters supports inclusive approach to health management and empowers users to lead healthier lives. Finally, smartwatches empower users to take charge of their health by providing actionable insights into their daily activities, health parameters, and personal fitness goals, making them a versatile tool for a healthier lifestyle.

Table 3. **Theme 1- Health Monitoring**

Sub Themes	**Keywords**	**Reference**	**Relative weight**
Monitoring daily activity	Monitor daily activity levels,	24	6.72%
	Counting Steps,	23	5.91%
	Calories burned,	23	5.64%
	Exercise routines,	18	5.35%
	Healthier lives	17	5.27%
	Monitoring daily activities	22	5.92%
	Decisions about fitness routines	20	5.65%
Monitoring health parameter	Heart rate monitoring,	22	6.31%
	Sleep tracking,	19	5.89%
	Blood oxygen levels,	16	5.34%
	Stress level,	15	5.20%
	Insights of overall health	15	5.17%
Health and Fitness Goal	Track progress,	24	6.4%
	Set targets,	23	6.11%
	Real-time feedback,	18	5.67%
	Fitness enthusiasts	12	4.32%

(Source: Author's own work)

Theme 2: Convenience and Connectivity. Convenience has a wider framework, which includes time, place, use, and execution. Smartwatch is a convenient WHD that has transformed health and lifestyle management with advanced features. These features include notification management, health and fitness tracking, device integration, push notifications and vibration alert that help users manage daily activities. Smartwatch user can receive app notifications, reminders, and smart replies directly on the wrist. Smartwatches specialized in health and fitness tracking, provide tools for heart rate monitoring, sleep pattern tracking, and calorie burn. Advanced features include blood oxygen monitoring, ECG, stress monitoring, and menstrual cycle tracking. This health data gives users a well-rounded view of their wellness, allowing them to make informed decisions. Activity tracking, combined with fitness goals and step counters, encourages regular movement, while hydration and sedentary reminders promote healthy habits. The GPS and route data syncing are ideal for tracking outdoor workouts, making it easy for users to analyse their exercise routines and stay motivated. Smartwatches seamlessly integrate with smartphones and fitness apps, enabling real-time data transfer. Through Bluetooth connectivity, users can sync health data across a variety of apps, creating a personalized fitness app ecosystem. Multi-app syncing and data sharing with friends keep users motivated, while smart home system compatibility and voice assistants add convenience to daily life. With multimedia control features, smartwatches can manage music or calls, enhancing user interaction without reaching for a smartphone.

Table 4: **Theme 2- Convenience and Connectivity**

Sub Themes	**Keywords**	**Reference**	**Relative weight**
Notification management	Push notifications	15	5.22%
	Vibration alerts	19	5.48%
	App notifications	20	5.64%
	Do not disturb	17	5.33%
	Silent notifications	20	5.59%
	Smart replies	18	5.42%

Health and Fitness Tracking	Heart rate monitoring	23	6.25%
	Sleep tracking	22	6.12%
	Calorie tracking	20	5.90%
	Blood oxygen (SpO2) monitoring	17	5.45%
	Stress monitoring	18	5.63%
	ECG (Electrocardiogram)	16	5.55%
	Menstrual cycle tracking	15	5.12%
	Activity tracking	23	6.50%
	Fitness goals	22	6.42%
	Hydration reminders	20	5.89%
	Step counter	23	5.54%
	Sedentary reminders	23	5.23%
Device Integration	Smart home systems	18	4.92%
	Voice assistants	19	5.32%
	Bluetooth connectivity	22	5.55%
	Multimedia control	20	4.87%
	Data syncing	18	4.24%
	Smartphone integration	23	5.89%
Data Syncing with Fitness Apps	Real time data transfer	19	4.87%
	Fitness app ecosystem	18	4.32%
	Multi-app syncing	17	4.20%
	Third-party app	15	4.12%
	Personalized data syncing	18	4.37%
	Data sharing with friends	20	5.25%
	GPS and route data syncing	19	4.94%

(Source: Author's own work)

Theme 3: Fun, Entertainment and Enjoyment. Smartwatches bring an element of fun and enjoyment to health and wellness, making it easier to stay engaged with fitness goals and mental well-being. With interactive applications and a range of entertainment features, smartwatches encourage users by blending functionality with enjoyment. Smartwatches

come with different games and interactive applications that users can enjoy in their idle time. Customizable watch faces add a personal touch, with options for animated or interactive notifications. Birthdays or some important notifications and colourful light displays create a pleasing experience, rewarding users with visual feedback for meeting health and fitness goals. Multimedia smartwatches offer music streaming, control over playlists, and quick access to podcasts or audiobooks. Users can enjoy their preferred tracks during workouts or even listen to relaxation audio while relaxing, creating a medium of entertainment and wellness. With photo display and customization options, users can personalize their experience further, adding a sense of joy to daily use. Fitness gamification is a powerful way that smartwatches encourage consistent exercise. Through fitness challenges, users can contest with friends or join group activities, adding a social and competitive element to stay motivated and active. Interactive workouts with virtual pets and other gaming elements make tracking progress feel like a game. Guided meditation or breathing exercises through an online app help users manage their stress levels and mental well-being. These tools create a holistic approach, helping users balance physical activity with mental relaxation.

Theme 4: Social Influence and Aesthetics. Smartwatches blend style with functionality and becoming essential in personal health and wellness. But peer influence and family support play an important role in the adoption process. Customizable options available with these devices motivate users to engage with family and friends to achieve health and fitness goals. Smartwatches encourage a community-based approach to health, with features that encourage peer competition and group recognition. Integrating smartwatches with social media platforms and private WhatsApp groups, users can participate in fitness challenges with family, friends and community and can support one another, turning health goals into a collective effort. Virtual workouts with family or friends allow users to exercise together regardless of location, increasing motivation and accountability. Family health monitoring features also empower users to track the wellness of loved ones specially elders. It adds a layer of care and encouragement that keeps everyone engaged in healthier habits. A conventional wristwatch is being replaced by a smartwatch and being used as accessories also. So, aesthetics of a smartwatch makes it easy to integrate into any lifestyle. Options for a sporty look, modern tech appeal, and sleek design allow users to choose a style that suits their personality. Interchangeable bands made of premium materials enable users to switch up their look in different settings. Gender-specific designs tailored to individual tastes, making the device both personal and stylish. A combination of design and social influence makes a smartwatch more than a fitness tracker.

Table 5. **Theme 3-Fun, Entertainment and Enjoyment**

Sub Themes	Keywords	Reference	Relative weight
Fun	Games or interactive applications	21	5.89%
	Watch face customization	18	4.85%
	Animated or interactive notifications	17	4.65%
	Fitness gamification	19	4.92%
	Photo display and customization	22	6.1%
	Colourful light displays	16	4.42%
Entertainment	Podcasts	18	4.35%
	Audiobooks	19	4.84%
	Music streaming and control	20	5.23%
Enjoyment	Fitness challenges	23	5.90%
	Mindfulness and relaxation Apps	19	5.67%
	Interactive workouts	18	5.45%
	Virtual pets	15	4.34%
	Celebration notifications	20	5.80%

(Source: Author's own work)

The customizable features, combined with peer and family engagement tools, help users stay connected to their health goals. Group challenges, inspiration, and the ability to track shared progress make health monitoring fun and encouraging. This collective experience, combined with a device that suits individual tastes, ensures that users stay consistent in their journey toward a healthier lifestyle, supported by both loved ones and a personalized wearable that they're proud to use daily.

Table 6: **Theme 4-Fun, Entertainment and Enjoyment**

Sub Themes	Keywords	Reference	Relative weight
Peer pressure and family influence	Peer competition	22	5.90%
	Group recognition	19	5.67%
	Fitness nudges	18	4.92%
	Group messaging and encouragement	20	5.84%

	Family influence	22	5.92%
	Family health monitoring	23	6.25%
	Virtual workouts with family/friends	21	5.87%
Design and Aesthetic	Always-on display	23	5.93%
	Curved display	19	4.23%
	Customization options	18	4.12%
	Sporty look,	15	3.89%
	Modern tech look	17	4.21%
	Sleek design	20	5.34%
	Interchangeable bands	19	5.12%
	Premium materials	15	4.35%
	Gender-specific designs	18	4.89%
Social media influence	Brand reputation and identity	22	5.23%
	Endorsement by influencers and celebrities	20	5.14%
	Watch community hashtags	17	4.85%
	Everyday lifestyle posts	19	4.92%
	Customer reviews	18	4.72%

(Source: Author's own work)

Theme 5: Accuracy, Privacy and Security. Smartwatches have become important for health and fitness, not only for their tracking abilities but also for their strong focus on data accuracy, privacy, and security. These devices provide trustworthy health insights through enhanced fitness tracking that integrates effortlessly into daily life, offering users trust in technology that is essential for long-term use. One of the core benefits of a smartwatch is its ability to provide reliable health data. From heart rate monitoring to sleep tracking and calorie measurement, advanced sensors offer accurate and dependable insights. This accuracy is essential for users seeking to improve their lifestyle through trustworthy data, making it easier to monitor progress and make informed health choices. Such enhanced fitness tracking allows users to better understand their health parameters, helping them achieve personalized health goals with greater confidence. Smartwatches prioritize the privacy of users through a the secure data handling protocol to proect sensitive health data of users. This is being done by encrypted data transmission; ensuring information is securely transferred to paired devices or cloud storage. In order to restrict what information is shared and with whom, users can modify data sharing and disclosure with third-party

apps using data control settings. Many smartwatches also enable encrypted cloud backups, which provide safe data storage and retrieval while reducing the danger of data breaches. Smartwatches have many security layers to protect against data breaches and other cyber threats. These devices protect user data by including explicit privacy policies, secure login, remote lockout, and customizable sharing options. Automatic security upgrades and clearance methods for app marketplaces help to protect smartwatches against vulnerabilities. Smartwatches, with their combination of reliability, privacy, and protection, can help users achieve their wellness goals by providing accurate health insights and strong security measures. This allows them to live healthier lives with the assurance that their personal information is safe and secure.

Table 7: **Theme 5-Accuracy, Privacy and Security**

Sub Themes	**Keywords**	**Reference**	**Relative weight**
Accuracy of health and fitness data	Reliability and trust	22	5.59%
	Reliable health insights	21	5.32%
	Enhanced fitness tracking	19	4.89%
	Better lifestyle integration	20	5.57%
	Trust in technology	18	5.23%
Data Handling and Protection	Sensitive health data	21	6.1%
	Protect privacy of user	22	5.97%
	Secure data transmission	20	5.8%
	Data control settings	19	5.67%
	Remote locking	18	5.54%
	Clear privacy policies	16	5.37%
	Data breach protection	18	5.48%
	User-friendly privacy policy	19	5.63%

Protection Against Threats	Encryption	21	5.88%
	Authentication	20	5.45%
	Automatic security updates	19	5.32%
	Customizable data sharing	20	5.21%
	Third-party sharing disclosure	17	4.89%
	Encrypted cloud backup	18	5.12%
	Approved app marketplace	17	5.02%

(Source: Author's own work)

5. **Conclusion and Discussion**

The paper used a qualitative approach, including text mining and thematic analysis of interview transcripts. Five major themes were identified: namely, health monitoring, convenience and connectivity, social influence and aesthetics, accuracy, and privacy and security, along with fun, entertainment, and enjoyment. The thematic analysis shows that aware consumers focus on functionality, health monitoring, security, and personalization. Health monitoring is a key reason for using these devices. Participants reported using smartwatches to track daily activities and health metrics, like heart rate, oxygen levels, and sleep quality. Many found these devices helpful for reaching personal health and fitness goals. There's a clear link between regular monitoring and perceived health improvements. Customers felt more aware of their physical activity, motivating them to set realistic fitness goals and track their progress. This theme stands out as the main function of smartwatches and fitness trackers. Smartwatches have become essential in modern lifestyles for active health management, boosting user satisfaction and motivation. Users often mentioned convenience and connectivity. They appreciated features like notification management and smooth device integration. The ability to sync real-time health data with fitness apps lets users get feedback, track progress, and access data on multiple devices. This connectivity boosts user engagement by fitting seamlessly into daily routines without effort. However, some users noted occasional connectivity issues. These insights show that reliable connectivity and device interoperability are crucial for enhancing user engagement and retention.

Users think about key themes like data security, social influence, accuracy, privacy, and threat protection, along with health features. The accuracy of health data from smartwatch

sensors is vital. It affects the reliability of health feedback. Consumers want secure handling of health data. They stress the need for accurate data and strong privacy protections to manage sensitive information safely. Biometric security, encryption, and controlled app permissions build trust in data handling, especially in health apps. Social influence and design also matter. Users want devices that match their style while providing health benefits. Smartwatches that blend fashionable design with functionality appeal strongly to users. This shows the growing link between personal expression and technology. Brands that offer health-monitoring features, strong security, and attractive design are well-placed to meet consumer needs in this competitive market. As health and wellness gain importance, future smartwatch innovations will likely include advanced health features, better privacy protections, and more customization to fit changing lifestyle needs.

5.1. **Suggestions and Implications.** For wearable healthcare devices (WHDs) to achieve widespread use, developers must concentrate on key factors that influence usability and consumer perception. Wang et al. (16) emphasize that WHD technology should align with health management tasks. Developers should think about users' social settings. This means designing devices to meet various health management needs, keeping different lifestyles and expectations in mind. An improved user experience and trust in device effectiveness are essential goals. Developers should focus on these aspects in both features and design (21). WHDs can aid in remote health management, helping to lower medical costs. Wearable fitness tracking (WFT) devices are especially beneficial in developing countries, offering a preventive and cost-effective approach to health issues on a larger scale (26). This affordability and accessibility can boost public health in areas with limited healthcare access. Manufacturers need to consider local challenges and opportunities. Design for wearable health devices (WHDs) must include healthcare management, connectivity, and aesthetics (29). While style can enhance device appeal, many users focus on comfort and wearability. They often choose function over fashion in their decisions (18). Developers should focus on creating devices that are easy to wear, provide comfort during extended use, and integrate smoothly into daily life. Marketers are key in shaping how people view wearable technology. To promote these devices, they should emphasize benefits such as the accuracy of health monitoring and support for proactive health management. Social media can be a powerful tool to inspire consumer innovation and peer endorsement, increasing WHD appeal among groups. Wearable healthcare devices need standardized testing to fit many users, especially the elderly. Better testing can improve reliability and usability, addressing concerns about accuracy and ease of use among older users (27). This study relies on qualitative interviews conducted with 24 participants.

Since the sample was small and context-specific, the findings may not apply to all groups. Future research could broaden this work by including more diverse participants.

References

[1] Sullivan AN, Lachman ME. Behavior change with fitness technology in sedentary adults: A review of the evidence for increasing physical activity. Front Public Heal. 2017;4(JAN).

[2] Huarng KH, Yu THK, Lee C fang. Adoption model of healthcare wearable devices. Technol Forecast Soc Change [Internet]. 2022;174(October 2021):121286. Available from: https://doi.org/10.1016/j.techfore.2021.121286

[3] Bölen MC. Exploring the determinants of users' continuance intention in smartwatches. Technol Soc. 2020;60(March 2019).

[4] Khan IA, Mishra S, Dwivedi P. The Evolving Role of Smart Watches in Health Tracking. Indian Pract [Internet]. 2024;77(4):26–9. Available from: https://search.ebscohost.com/login.aspxdirect=true&db=rzh&N=177241414&site=ehost-live

[5] King CE, Sarrafzadeh M. A Survey of Smartwatches in Remote Health Monitoring. J Healthc Informatics Res. 2018;2(1–2):1–24.

[6] Triantafyllidis A, Kondylakis H, Katehakis D, Kouroubali A, Alexiadis A, Segkouli S, et al. Smartwatch interventions in healthcare: A systematic review of the literature. Int J Med Inform [Internet]. 2024;190(February):105560. https://doi.org/10.1016/j.ijmedinf.2024.105560

[7] Mital M, Chang V, Choudhary P, Papa A, Pani AK. Adoption of Internet of Things in India: A test of competing models using a structured equation modeling approach. Technol Forecast Soc Change [Internet]. 2018;136:339–46. https://doi.org/10.1016/j.techfore.2017.03.001

[8] Cheung ML, Chau KY, Sum Lam MH, Tse G, Ho KY, Flint SW, et al. Examining consumers' adoption of wearable healthcare technology: The role of health attributes. Int J Environ Res Public Health. 2019;16(13).

[9] Liverani M, Ir P, Perel P, Khan M, Balabanova D, Wiseman V. Assessing the potential of wearable health monitors for health system strengthening in low- and middle-income countries: a prospective study of technology adoption in Cambodia. 2022;(March):943–51.

[10] Indrayana INE, Sutawinaya P, Pratiwi NMWD, Prihatini PM, Asri SA. Android-Based Child Monitoring Application Using A Smartwatch and Geofence Service. J Phys Conf Ser. 2021;1803(1).

[11] Masoumian Hosseini M, Masoumian Hosseini ST, Qayumi K, Hosseinzadeh S, Sajadi Tabar SS. Smartwatches in healthcare medicine: assistance and monitoring; a scoping review. BMC Med Inform Decis Mak [Internet]. 2023;23(1):1–26. https://doi.org/10.1186/s12911-023-02350-w

[12] Choi JR, Kim S. Predicting individuals' privacy protection and self-tracking behaviors in the context of smart health. Telemat Informatics [Internet]. 2024;86(November 2023):102069. https://doi.org/10.1016/j.tele.2023.102069

[13] Blazquez M, Alexander B, Fung K. Exploring Millennial's perceptions towards luxury fashion wearable technology. J Fash Mark Manag. 2020;24(3):343–59.

[14] Liu X, Fan J, Guo Y, Dai H, Xu J, Wang L, et al. Wearable Smartwatch Facilitated Remote Health Management for Patients Undergoing Transcatheter Aortic Valve Replacement. J Am Heart Assoc. 2022;11(7).

[15] Kamal Basha N, Aw ECX, Chuah SHW. Are we so over smartwatches? Or can technology, fashion, and psychographic attributes sustain smartwatch usage? Technol Soc [Internet]. 2022;69(February):101952. https://doi.org/10.1016/j.techsoc.2022.101952

[16] Wang H, Tao D, Yu N, Qu X. Understanding consumer acceptance of healthcare wearable devices: An integrated model of UTAUT and TTF. Int J Med Inform. 2020;139(April).

[17] Misra S, Adtani R, Singh Y, Singh S, Thakkar D. Exploring the factors affecting behavioral intention to adopt wearable devices. Clin Epidemiol Glob Heal [Internet]. 2023;24(September):101428. https://doi.org/10.1016/j.cegh.2023.101428

[18] Wu LH, Wu LC, Chang SC. Exploring consumers' intention to accept smartwatch. Comput Human Behav [Internet]. 2016;64:383–92. Available from: http://dx.doi.org/10.1016/j.chb.2016.07.005

[19] Bölen MC. From traditional wristwatch to smartwatch: Understanding the relationship between innovation attributes, switching costs and consumers' switching intention. Technol Soc. 2020;63(May).
[20] Sivathanu B. Adoption of internet of things (IOT) based wearables for healthcare of older adults – a behavioural reasoning theory (BRT) approach. J Enabling Technol. 2018;12(4):169–85.
[21] Mishra A, Baker-Eveleth L, Gala P, Stachofsky J. Factors influencing actual usage of fitness tracking devices: Empirical evidence from the UTAUT model. Health Mark Q [Internet]. 2023;40(1):19–38. https://doi.org/10.1080/07359683.2021.1994170
[22] Chau KY, Lam MHS, Cheung ML, Tso EKH, Flint SW, Broom DR, et al. Smart technology for healthcare: Exploring the antecedents of adoption intention of healthcare wearable technology. Heal Psychol Res. 2019;7(1):33–9.
[23] Paul M, Maglaras L, Ferrag MA, Almomani I. Digitization of healthcare sector: A study on privacy and security concerns. ICT Express [Internet]. 2023;9(4):571–88. Available from: https://doi.org/10.1016/j.icte.2023.02.007
[24] Chang HS, Lee SC, Ji YG. Wearable device adoption model with TAM and TTF. Int J Mob Commun. 2016;14(5):518–37.
[25] Goodyear VA, Kerner C, Quennerstedt M. Young people's uses of wearable healthy lifestyle technologies; surveillance, self-surveillance and resistance. Sport Educ Soc [Internet]. 2019;24(3):212–25. https://doi.org/10.1080/13573322.2017.1375907
[26] Puri S, Pandey S, Chawla D. Impact of technology, health and consumer-related factors on continued usage intention of wearable fitness tracking (WFT) devices. Benchmarking. 2023;30(9):3444–64.
[27] Kekade S, Hseieh CH, Islam MM, Atique S, Mohammed Khalfan A, Li YC, et al. The usefulness and actual use of wearable devices among the elderly population. Comput Methods Programs Biomed [Internet]. 2018;153:137–59. https://doi.org/10.1016/j.cmpb.2017.10.008
[28] Martínez AL, Pérez MG, Ruiz-Martínez A. A Comprehensive Review of the State-of-the-Art on Security and Privacy Issues in Healthcare. ACM Comput Surv. 2023;55(12).
[29] Misra S, Adtani R, Singh Y, Singh S, Thakkar D. Exploring the factors affecting behavioral intention to adopt wearable devices. Clin Epidemiol Glob Heal [Internet]. 2023;24(October):101428. https://doi.org/10.1016/j.cegh.2023.101428