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Summary of WP Student Team

**Strategic Positioning in Wearable Health Technology: Leveraging Consumer Centric
Analytical Approaches for Market Leadership – Perceptual Map Analysis**

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STRATEGIC POSITIONING IN WEARABLE HEALTH TECHNOLOGY: LEVERAGING
CONSUMER CENTRIC ANALYTICAL APPROACHES FOR MARKET LEADERSHIP

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Abstract

The wearable technology market, led by smartwatches, thrives with consumers' rising demand for health monitoring. However, current devices inadequately serve the growing elderly population with distinct healthcare needs. Through literature review and mixed-methods research - including interviews, perceptual mapping, and conjoint analysis - this study identifies critical attributes for a smartwatch appealing to elderly users. Key findings suggest enhancing usability, integrating advanced health features, ensuring data privacy, and fostering emotional connections to bridge the generational gap. The proposed "Guardian Smartwatch" guides brands, particularly Apple, in designing inclusive wearable technologies that enhance health, independence, and intergenerational care.

Keywords

Smartwatch, Wearable Technology, Consumer Perception, Generational Accessibility, Price Sensitivity, Brand Personality, Technological Integration, AI and Predictive Analytics, Elderly Usability

Group Part

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1. Introduction

"The best way to predict the future is to create it." – Peter Drucker (1964), a pioneering authority in modern management. In wearable health technology, where innovation transforms lives daily, predicting consumer needs is the key to shaping the industry's future. Smartwatches, once mere accessories, are now integral to health monitoring and personal independence. Yet, as brands race to innovate, a critical question arises: How do consumers perceive the attributes that define these devices, and what matters most to them? This thesis dives into these perceptions, revealing insights that not only answer pressing questions about consumer behaviour but also illuminate opportunities for brands to redefine wearable tech for a diverse and evolving audience.

The wearable technology market, led by smartwatches, has become essential in health and fitness tracking. Consumer demand for devices that monitor personal health metrics has driven this growth, supported by brand ecosystems that integrate services and devices, fostering customer loyalty. Wearable technology has transformed how individuals manage their health, offering continuous monitoring and real-time insights into various health metrics (Qu et al. 2021). The heightened focus on health during the COVID-19 pandemic further propelled interest in these devices (Channa et al. 2021). These advancements bridge the gap between fitness and healthcare, with devices such as smartwatches evolving into essential tools for chronic disease management, preventive care, and personalised health tracking (Godfrey et al. 2018).

The global wearable devices market has experienced significant growth, driven by increasing consumer demand for multifunctional health monitoring devices (Lima et al. 2022). Valued at USD 61.30 billion in 2022, the wearable technology market is projected to grow at a compound annual growth rate (CAGR) of 14.6% from 2024 to 2030, showcasing the pivotal

role of wearables in modern healthcare (Grand View Research 2024). North America has emerged as a dominant market, contributing 33.8% of global revenue, followed by Asia-Pacific and Europe, with Europe maintaining steady growth through increasing adoption of wearables. Asia-Pacific exhibits the fastest growth potential due to its rapid technological adoption and accessibility of innovative products.

Europe's shifting demographics underscores the urgency to bridge this gap. As the global population ages, wearable technology is uniquely positioned to address critical healthcare and accessibility challenges. The World Health Organization recently warned in 2024 that the number of individuals aged 65 and older would surpass those under 15 in the European population, reflecting a demographic shift that presents both, challenges and opportunities for the healthcare sector (WHO 2023). Within the European Union alone, elderly individuals accounted for 20.8% of the population in 2021, with this figure projected to rise steadily over the coming decades (Eurostat 2024). Rising healthcare demands compound this trend, as older adults require more frequent medical consultations and are more likely to experience chronic conditions (WHO 2023). For this research, "elderly" is defined as individuals aged 65 years and older, with subcategories of "early elderly" (65–74 years) and "late elderly" (75 years and older), following the framework proposed by Orimo et al. (2006). These demographics face unique challenges related to chronic diseases, mobility limitations, and increased healthcare needs, making wearable health technologies especially relevant.

Wearable technologies, such as smartwatches, fitness trackers, and e-textiles, combine biosensing, microelectronics, and wireless communication to deliver real-time feedback on physical activity, vital signs, and physiological functions (Olsen 2020; Guk et al. 2019). These devices transcend traditional health management by enabling remote monitoring, fostering user independence, and reducing healthcare costs (Talukder et al. 2020). Smartwatches have become a focal point for innovation, integrating advanced features such as electrocardiogram (ECG)

monitoring, blood oxygen tracking, and fall detection (Chandrasekaran et al. 2020). Brands like Apple, Fitbit, and Samsung have spearheaded the industry by creating ecosystems that merge hardware with complementary services like Apple Fitness+ and Samsung Health, fostering user engagement and loyalty (Lima et al. 2022). As the lines between fitness devices and medical technologies blur, wearable health technologies play a crucial role in bridging the gap between preventive care and medical intervention. The integration of artificial intelligence (AI) and machine learning (ML) further enhances their capabilities, enabling early detection of health risks, predictive analytics, and personalised care plans (Jerath et al. 2023; Nahavandi et al. 2022).

Three primary barriers currently hinder the adoption of wearable health technology among elderly users. First, there is a clear lack of user-friendly, real-time health monitoring tools that integrate seamlessly into their daily routines. As one participant noted during an interview: “Older people need something functional but simple, not a device that looks like a medical gadget”. Second, the design of existing devices often emphasises clinical aesthetics or overly complex interfaces, deterring adoption. A respondent from the perceptual map survey highlighted this issue, stating, “The complexity of the device, as I find it complicated sometimes to understand and use” Lastly, caregivers face significant challenges in staying connected with elderly relatives. The conjoint analysis revealed that younger generations prioritise features such as dual connectivity, allowing them to remotely monitor health metrics while empowering elderly users to retain independence. As a market leader in wearable technology, Apple is uniquely positioned to address this gap by leveraging its reputation for seamless ecosystem integration, advanced health monitoring features, and user-centric design. This study introduces the Guardian Smartwatch, a brand-new product concept tailored specifically to the needs of elderly users while appealing to younger buyers—particularly Gen Z and Millennials—who are emerging as key advocates and purchasers for their elderly family members.

The societal relevance of this study lies in its potential to inform the development of wearable technologies that enhance the health and independence of elderly users while strengthening intergenerational connections. By addressing the challenges caregivers face, this research promotes a more inclusive and health-conscious society. The scientific relevance stems from its contribution to the existing body of knowledge on wearable technology by focusing on the intersection of consumer behaviour, health technology, and generational dynamics. The study also advances research on marketing strategies tailored to dual audiences—elderly users as end-users and Gen Z/Millennials as purchasers—offering a novel perspective on the interplay between product design, consumer behaviour, and market demand. The study seeks to answer the following research question:

RQ: *How do consumers perceive the wearable health tech industry, especially the smartwatch product category, and which key attributes do they value the most?*

The thesis begins with a literature review outlining current findings on wearable technology, generational purchasing behaviours, and elderly health monitoring. This is followed by an analysis of the perceptual map and conjoint analysis results, which identify the key attributes shaping consumer preferences. Based on these insights, the Guardian Smartwatch is proposed as a new product concept, accompanied by a detailed marketing strategy. The final section discusses the managerial implications, limitations of the study, and avenues for future research. By addressing the unmet needs of elderly users and the preferences of younger buyers, this study aims to demonstrate how Apple can redefine wearable technology as a tool for health, independence, and intergenerational care.

2. Methodology

The present research employs both qualitative and quantitative methods to address the overall research question (Appendix B.1):

RQ: *How do consumers perceive the wearable health tech industry, especially the smartwatch product category, and which key attributes do they value the most?*

In a preliminary analysis, interviews were conducted with two distinct groups: general consumers and industry experts. The target group consisted of individuals born between 1970 and 2000 who had purchased and used smartwatches for at least six months (Appendix B.6). Considering the researchers' limited accessibility and the specific subject of this study, a convenience sampling method was employed, incorporating data uniquely from a nearby and willingly available group of respondents. As most of the researchers had the best access to the European population, this study exclusively focused on European Gen-Z consumers. The results gathered were used as the foundation to determine relevant attributes for two subsequent quantitative surveys. The first survey was designed to construct a perceptual map and ultimately answer the first three research questions of this dissertation:

RQ1: *What key attributes shape consumers' perceptions of smartwatch brands?*

RQ2: *How do consumers perceive the overall competitive landscape within the smartwatch industry?*

RQ3: *Which main market gaps can be identified from the perception of consumers?*

The following survey was created to collect data to perform a conjoint analysis and address the remaining three research questions:

RQ4: *What key attributes and features do consumers value most when considering purchasing smartwatches?*

***RQ5:** How do smartwatch brand attributes and feature preferences vary by consumer demographics (age, physical activity level, use case, current users vs non-users)?*

***RQ6:** How do consumer preferences for smartwatch attributes and features change when considering a purchase for elderly users?*

2.1.Preliminary Interviews

The preliminary interviews aimed to gather qualitative insights into user preferences, behaviours, and perceptions regarding smartwatches, focusing on the features that drive purchase decisions and influence satisfaction. The following methodology outlines the approach to conducting, recording, and analysing these interviews.

To provide a deeper understanding of the interviews conducted, Appendix B summarises the interview process: B.2 and B.3 outline questions for consumers and experts, B.4 and B.5 present response trends, B.6 highlights users profile, and B.7 presents the detailed transcript of each preliminary interview.

2.1.1. Interview Design

The research employed a mixed-methods approach, utilising face-to-face interviews, phone calls, and virtual Microsoft Teams meetings to conduct a total of seven preliminary interviews, each lasting between 20 and 35 minutes. The participants represented a varied sample of three professionals and four general consumers, providing a broad perspective on how smartwatches are used in daily life and professional settings. This helped identify their attributes, influencing their purchase decisions and the features they prioritise most.

Participants represented a diverse mix of smartwatch users across brands (e.g., Apple, Garmin), demographics, and usage patterns, ensuring a wide range of perspectives on consumer experiences. The sample included various ages, genders, and fitness levels, with casual and intensive users reflecting different needs and satisfaction levels. The utilised questions for the

interview covered six main themes, with the first one being the extraction of the main purchasing motivation. It examines the key features that influence customers purchasing decisions. Additionally, to validate the satisfaction with the specific features of the smartwatch, participants were asked for necessary technical features. While exploring the interviewee's stances on data security and trust, they were asked about privacy concerns and issues related to data security. To assess how important brand loyalty and ecosystem compatibility are to smartwatch users, a theme on brand preferences and device integration was included, while usage frequency and context examined usage scenarios such as workouts and productivity. Lastly, future expectations invited participants to share ideas for future features, capturing insights on emerging trends and desired functionalities (Appendix B.2 and B.3).

2.1.2. Interview Results

Key Attribute	Interview Results
Health Monitoring	Heart rate and sleep tracking were highly valued, with a strong interest in predictive health insights
Battery Life	Essential for all users; casual users prioritized daily longevity, while sports users sought extended battery support
Design and Customization	Participants preferred adaptable designs with customizable options like interchangeable bands and watch faces to suit both function and personal style
Privacy and Data Security	Users expressed a demand for transparency and control over health data, especially regarding third-party access
Brand Loyalty and Ecosystem	Important in purchasing decisions: Apple users valued seamless integration with iPhone devices
Social Connectivity and AI Integration	Appealed to younger users; features like fitness milestone sharing and community challenges were especially attractive
Future Feature Aspirations	Included advanced health monitoring, predictive health alerts, enhanced connectivity, and community-oriented social features, indicating a mix of practical and socially engaging functionalities

Table 1: Preliminary Interview Results

Several key preferences and priorities among smartwatch users were revealed in the consumer and industry experts' interviews (Appendix B.4 and B.5):

Most interviewees identified health monitoring, especially heart rate and sleep monitoring, as the primary reason for buying a smartwatch, with battery life, design, and price

also influencing their choice. Ecosystem integration, particularly within the Apple environment, was valued by over half of the participants for its convenience, though one noted that brand loyalty didn't affect their decision. The most-used features included heart rate monitoring, step counting, and sleep tracking, emphasising the importance of health metrics.

Some users were concerned about privacy, while others were less worried, often citing data anonymisation. Opinions on AI-driven health features varied, with a few seeing them as important but not essential. Different users praised Apple's ecosystem, Garmin's fitness tracking, and Huawei's balance of price and functionality, reflecting varied brand strengths.

Comparative Analysis: Industry Experts vs. Consumers

To validate findings, insights from consumer and industry expert interviews were compared, revealing key alignments and gaps. Both consumers and experts appreciate the health monitoring and predictive capabilities of the smartwatch. Nevertheless, consumers demonstrated a greater interest in the practical, everyday applications of AI, indicating that brands should prioritise this aspect. Consumers were moderately concerned about protecting their privacy, appreciating a clear data policy and basic control of their information. In contrast, Industry Experts place a significant value on user privacy yet recognise that users tend to accept the terms and conditions without delving into their specifics. Battery life was a crucial factor across all users, yet active users requested longer-lasting performance than what the industry standard typically offers.

Regarding device compatibility, both groups preferred a broader, cross-platform integration, allowing them more flexibility outside of a single ecosystem. Design and customisation were also appreciated by both, with consumers preferring adaptable, modular options. However, design always carries an element of personal preference. Finally, social and AI features were valued, with consumers particularly interested in social engagement, pointing to the potential for expanding community-driven functionalities.

The consumer interviews provided valuable insight into smartwatch users' priorities and most important features. Health features, privacy considerations, design preferences, and cross-device compatibility were found to be important attributes. By comparing consumer insights with those of industry experts, conjoint analysis is well-positioned to capture smartwatch users' trade-offs when purchasing a smartwatch. The crystallised attributes provide a valuable framework for analysing consumer preferences and enable brands to meet evolving expectations in the wearable health technology market.

3. Perceptual Map

A perceptual map serves as a valuable tool for marketers to assess and graphically visualise how consumers perceive products or brands in a specific market by analysing relations between multiple attributes (Gigauri 2019). These maps consist of two or more dimensions, representing key factors that consumers consider when making purchasing decisions, such as price, quality, and other product features. By plotting each product or brand on the chart, marketers can gain insights into the most significant attributes for consumers and how they perceive a particular brand in relation to its competitors (Gigauri 2019).

The distance between each dot on the map represents the similarity or dissimilarity of a set of products or brands. On the map, two products that are perceived as highly similar are positioned nearby. In contrast, products that are perceived as very dissimilar are placed farther apart. Consequently, by analysing the distances between products on the map, managers can identify opportunities for product differentiation and develop new marketing strategies that highlight their products' unique qualities or advantages (Sinclar and Stalling 1990)

While two-dimensional perceptual maps are widely used, multidimensional perceptual maps enable marketers to gain an even more detailed understanding of the market and consumers' perceptions, as multiple attributes across various brands can be evaluated and compared simultaneously (Gower et al. 2010). The characteristics of the multidimensional perceptual map make it the optimal approach for efficiently extracting the information needed to address the various research questions of this study.

3.1. Research Design

3.1.1. Choice Attributes

Eleven attributes were chosen to conduct the quantitative analysis of the perceptual map to address the study's first two questions, which aim to answer which attributes shape

consumers' perception of smartwatch brands and how customers perceive the overall competitive landscape of smartwatch companies. Thus, the determined attributes reflect the benefits and qualities that customers value most when purchasing. They were carefully chosen based on insights gathered from the preliminary interviews with consumers and industry experts. In addition, Aaker's five brand personalities were used as individual attributes to assess customers' emotional perception of the brands (Aaker 1997). In summary, a total of 16 attributes were selected for the creation of the perceptual map and for answering the research questions. The individual attributes are explained below.

Health Support

Smartwatches are increasingly valued for their health-supporting capabilities, such as heart rate tracking, calorie counting, and sleep monitoring. These functions empower users to manage their well-being proactively, aligning with findings that wearable devices foster health-conscious behaviours (Cecchinato et al. 2015; Chandrasekaran et al. 2020). Such features drive adoption, particularly among health-oriented consumers.

Trustworthiness

Trustworthiness reflects consumer confidence in smartwatch functionalities' accuracy and ethical management of personal data. Kapoor et al. (2020) highlight that trust is essential for adopting wearable technology, as consumers demand both reliability and transparency, especially when dealing with sensitive health metrics.

Cross-Generational Usability

Usability across age groups ensures that smartwatches cater to diverse user demographics. Intuitive interfaces and usability for older adults and tech-savvy youth alike are critical. Talukder et al. (2020) emphasise the importance of inclusive design to meet the needs of various generations, thereby expanding the market reach of wearable devices.

Integration with Other Products

Smartwatches' ability to seamlessly integrate with smartphones, fitness equipment, and healthcare systems enhances their value. Lima et al. (2022) argue that ecosystem integration boosts convenience and loyalty as users increasingly seek interconnected experiences that simplify their digital and physical lives.

Innovativeness

Innovation in smartwatches is reflected in features like AI-driven insights, advanced health sensors, and seamless software updates. Obianyo et al. (2024) highlight the importance of innovation in sustaining competitive advantage, while Nahavandi et al. (2022) note that cutting-edge technology defines consumer perceptions of value and quality.

Aesthetic Design

Aesthetics play a pivotal role in smartwatch adoption, as consumers view them as both functional tools and fashion statements. Choi and Kim (2016) emphasise that wearable technology must combine style with practicality to appeal to design-conscious users, making aesthetics a core factor in consumer choice.

Value for Money

Consumers are more inclined to purchase a smartwatch when they perceive high value for money in terms of the benefits that it offers (Cecchinato et al. 2015). This attribute is relevant as perceived high price points are identified as a primary barrier to adoption, particularly among older adults and first-time buyers seeking entry-level or mid-range options with essential functionalities (Canhoto and Arp 2017).

Data Privacy Protection

Ensuring data privacy is critical for fostering trust in wearable technology. Kapoor et al. (2020) and Sivakumar et al. (2023) emphasise that users expect transparency and robust

safeguards for their personal information, making this a pivotal factor in consumer perception of smartwatch brands.

Elderly Support

Smartwatches that support elderly users with specific safety features like fall detection, location tracking, large interfaces, and simplified navigation expand market appeal. Chandrasekaran et al. (2020) and Escobar-Linero et al. (2023) highlight that older adult value usability and health-focused functionality, making this demographic a significant growth opportunity.

Reputation

A brand's reputation reflects its market standing, reliability, and product quality. Lima et al. (2022) argue that a strong reputation fosters consumer trust and loyalty, particularly in the competitive wearable technology sector. Gawer and Cusumano (2014) note that trusted brands often dominate through perceived credibility.

Emotional Connection

Emotional engagement strengthens consumer attachment to a brand and fosters loyalty. An emotional connection to the brand fosters advocacy, especially when purchasing a product for a family member, like grandparents. Hsiao (2013) highlights that personalised experiences and relatable marketing create lasting impressions, while Siepmann and Kowalczyk (2021) emphasise the role of emotional resonance in wearable technology adoption.

Brand Personalities

Brand personalities significantly influence how marketers evaluate customers' perceptions of brands, as they reflect consumers' emotional connections with them. In the modern market, where customers encounter countless possibilities for practically any good or service, they base their purchasing decisions not only on functional features. They also take into

consideration how they experience a specific brand when buying a product (Brakus, Schmitt, and Zarantonello 2009).

In 1997, Jennifer Aaker introduced a widely recognized theory on brand personalities. Her framework outlines a comprehensive set of dimensions for understanding and manage brand personalities effectively and to understand how customers experience a brand. Aaker defined each brand's personality with specific personality traits the following way:

Sincerity: Down-to-earth, Honest, Wholesome, Cheerful;

Excitement: Daring, Spirited, Imaginative, Up to Date;

Competence: Reliable, Intelligent, Successful;

Sophistication: Upper Class, Charming;

Ruggedness: Outdoorsy, Tough

The brand personalities can be utilised to differentiate a brand from its competitors, leading to greater brand loyalty and overall higher customer satisfaction. Since the framework is well-established and widely accepted, it serves as a reliable theoretical source for both marketers and researchers. Therefore, the research results can be considered significant and applicable to this study's purposes (Pandey 2009).

3.1.2. Survey Design

The online survey was assembled in Qualtrics and was accessible from the 6th of November 2024 until the 18th of November 2024 for a period of 12 days. It was shared in numerous WhatsApp, Facebook, and Survey Circle groups and pushed to individual LinkedIn and Instagram profiles. As illustrated in Figure 1, the survey was divided into four sections designed to filter participants and gather relevant data on brand perceptions, personality traits, and demographic insights. The whole survey design and specific questions can be viewed in Appendix C.1: Perceptual Map - Survey Design.

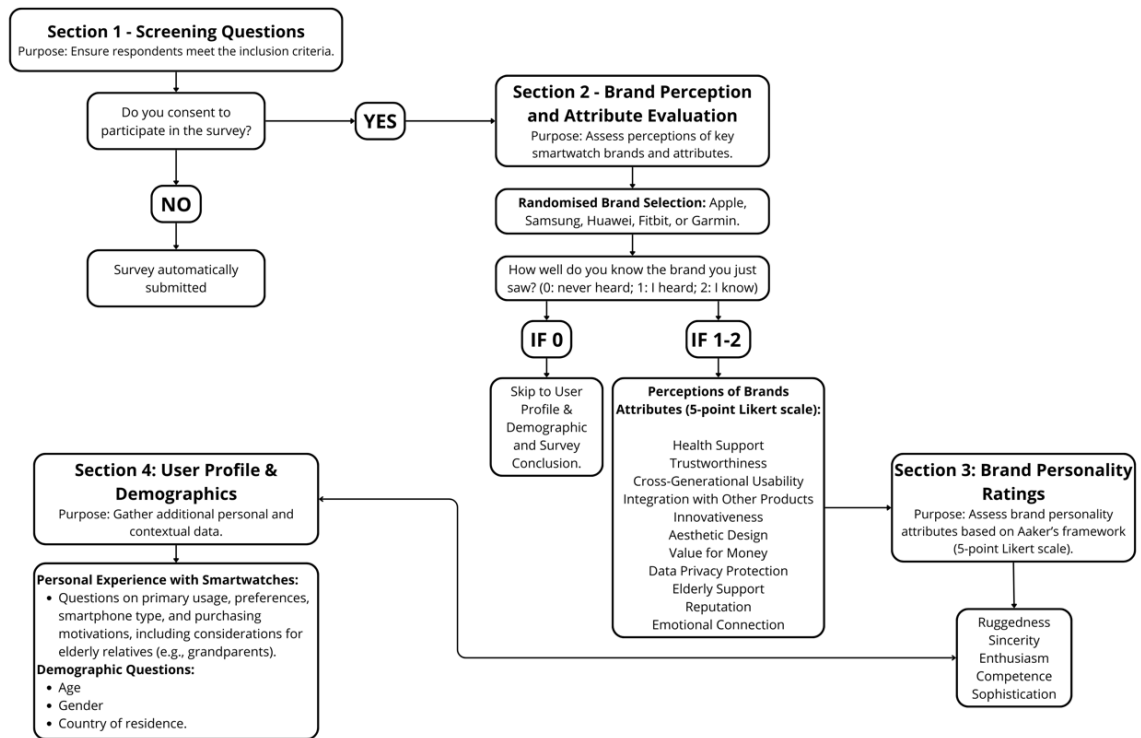


Figure 1: Diagram of the Quantitative Survey Design

The survey's initial section, Section 1, comprised screening questions and acted as a filter. The screening questions asked if respondents consented to participate, directing only those who consented to the second part of the questionnaire while automatically submitting it for everyone else.

In Section 2, consenting participants were shown one of the smartwatch brands—Apple, Samsung, Huawei, Fitbit, or Garmin—using a randomisation method via Qualtrics aimed at equal distribution of the shown items' brands. They were asked to rate the brands based on 11 defined attributes using a 5-point Likert scale. The Likert scale is a point system commonly used in research as it allows individuals to express their opinions and perspectives on a subject (Joshi et al. 2015). Participants evaluated each brand using a 5-point Likert scale, where 1 represented the complete absence of a quality or attribute, and 5 indicated the highest level. To ensure the quality of brand ratings, participants were first asked to indicate their familiarity with the brand they saw (0 = never heard of it, 1 = heard of this brand, 2 = know this brand well). Participants who answered 0, not having heard of the brand at all, skipped this section and

proceeded to Section 4, which is independent of the brand presented. Participants who indicated familiarity with the brand (1 or 2) were asked to rate the previously shown brand based on the 11 defined attributes, derived from qualitative consumer interviews and the literature review, using a 5-point Likert scale: Health Support, Trustworthiness, Cross-Generational Usability, Integration with Other Products, Innovativeness, Aesthetic Design, Value for Money, Data Privacy Protection, Elderly Support, Reputation, and Emotional Connection.

Section 3 explored brand personality ratings, focusing on Aaker's (1997) framework, including Ruggedness, Sincerity, Enthusiasm, Competence, and Sophistication. These were similarly rated using the same 5-point Likert scale.

In the fourth and last part of the survey, Section 4: User Profile & Demographics, participants were asked about their personal experiences with smartwatches. Respondents were asked about their gender, country of residence, and which age group they belonged to, allowing analysis of who belonged to Gen-Z, given that they were between 18 and 27 years old (born between 1996 and 2006), and providing insights into other generations' perceptions of the smartwatch market.

3.1.3. Sample Characteristics

The survey sample consisted of 157 respondents, offering a comprehensive dataset for understanding consumer perceptions of smartwatch brands across Europe (Appendix C.2). One exclusion rule was applied at the beginning of the survey to exclude participants who did not consent. The survey would automatically end if the respondent answered “no”, excluding 7 participants. Gender distribution was predominantly female, with 68.0% identifying as female, 31.3% as male, and 0.7% preferring not to disclose their gender. Generationally, the largest group was Gen Z (18–27 years), accounting for 48.0% of participants, followed by Baby Boomers (44–59 years, 25.3%), Millennials (28–34 years, 11.3%), Gen X (35–43 years, 7.3%), and the Silent Generation (60–78 years, 8.0%).

Geographically, most respondents were located within the European Union (98.0%), with significant representation from Germany (54.7%), France (16.0%), and other countries including Italy, Portugal, Romania and the Netherlands. The overwhelmingly EU-based distribution provides a diverse and balanced perspective on the European smartwatch market. This demographic and geographic diversity ensures the reliability and applicability of the findings to the broader EU market for wearable technology.

3.2. Research Results

3.2.1. Description: Multidimensional Perceptual Map Findings

To map both the mentioned attributes and smartwatch brands into a single multidimensional perceptual map, the statistical tool SPSS was used to rotate factors for optimal results and identify the dimensions that represent the axes of the perceptual map. Each dimension of the perceptual map is formed by an underlying group of smartwatch attributes that correlate to each other and belong together. The group of correlating attributes form one dimension (also called component) that differentiates the brands in consumers' perception. By identifying the most relevant dimensions, the smartwatch brands can be compared and put into relation with each other and with the brand attributes which form the dimensions, providing the answer to the first Research question,

RQ1: What key attributes shape consumers' perceptions of smartwatch brands?

A factor analysis was performed to identify the key attributes grouped into distinct dimensions, allowing a meaningful comparison of the smartwatch competitors. The basic concept of factor analysis is to categorise the attributes of the smartwatch brand described earlier, which have a high degree of correlation, and then to use these factors to explain the relationships between the observed variables (Hair Jr. et al. 1992). Using factor analysis, the dimensions of the attributes were successfully reduced. In this process, the Principal Component Analysis (PCA) method was employed for extraction as it is "used when the

objective is to summarise most of the original information (variance) in a minimum number of factors for prediction purposes” (Hair Jr et al., 1992, 106)

Identification of dimensions of the multidimensional perceptual map

The maximum number of dimensions that can be determined in a factor analysis is one less than the number of attributes (Gursoy, Chen and Kim 2005). Considering this case, there are 16 attributes on which participants ranked the brands (11 brand qualities and 5 brand personalities), resulting in $16-1=15$. However, a dimension will only be recognised if it meets the required quality of score, which is indicated by an Eigenvalue greater than 1. Eigenvalue refers to the quality score for each dimension. As displayed in Table 2 and in the scree plot in Appendix C.3, three dimensions meet these quality criteria by having an Eigenvalue greater than the threshold 1. They can, therefore, be considered for this study. The three dimensions meeting the criteria result in a 3-dimensional (3D) perceptual map model, which is shown in Figure 2 and explained in more detail at a later stage.

As seen in Table 2, the first component's Eigenvalue was found to be 7.104, whereas the second component's Eigenvalue was 1.474, and the third component's Eigenvalue was 1.102. Three components (also called dimensions in the course of this work) explain the variance of the model: the first dimension accounts for 44.403%, the second is 9.212% and the third of which accounts for an additional 6.890%. The conversion of the data into a new coordinate system (3D perceptual map model), was able to explain 60.505% of the overall variation.

Dimension	Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	7.104	44.403	44.403
2	1.474	9.212	53.615
3	1.102	6.890	60.505

Table 2: Variance and Cumulative Variance Explained

Identification of attributes forming the dimensions of the 3D perceptual map

After identifying the number of dimensions of the perceptual map model as well as their contribution to explaining the variance of the model, the underlying attributes of each dimension are identified. This can be done by analysing which attributes are loading on each of the dimensions. The overview of the 16 attributes and their loadings in Appendix C.4 shows that 14 attributes can be assigned to one of the dimensions. Two of the attributes are centrally positioned across the three dimensions: Health support (0.29, 0.58, 0.22) and Innovativeness (0.54, 0.38, 0.26). This indicates their universal importance to consumers, regardless of specific attribute priorities. Table 3 shows each of the three dimensions with their respective attributes.

Dimension	Key Attributes	Loadings	Meaning
1. Emotional Appeal	- Sophisticated - Exciting - Reputation - Integration - Competent - Emotional Connection - Aesthetic Design	0.85 0.80 0.76 0.70 0.64 0.64 0.61	This dimension captures the smartwatch's prestige and how it resonates emotionally with users, evoking sophistication, excitement, and trust in its image.
2. Functional Practicality	- Rugged - Sincere - Trustworthiness - Value for Money - Data Privacy Protection	0.81 0.67 0.63 0.63 0.62	This dimension reflects the smartwatch's reliability, durability, and value-driven features for practical, everyday use.
3. Accessibility across Generations	- Elderly Support - Cross-generational Usability	0.74 0.74	This dimension represents the inclusivity and user-friendliness of the smartwatch, making it suitable for both younger and older generations.

Table 3: Dimensions and their underlying attributes (with loadings), and deduced meaning for each of the dimensions.

Creating the 3D perceptual map by using the coordinates of attributes and brands

To create the perceptual map (**Error! Reference source not found.**), the programming tool Python was used. The three dimensions are illustrated in a 3D scatter graph and rotated to offer a view from different perspectives (Appendix C.6).

Dimension 1 is plotted on the X-axis, Dimension 2 on the Y-axis, and Dimension 3 on the Z-axis. The factor loadings range from -1 to 1, with values close to an end indicating a significant impact of the factor on the variable. Values close to 0, on the other hand, suggest a weak association instead. Additionally, the analysis considers how close the vectors are to each axis, as a closer distance correlates with a higher contribution to interpreting the dimension.

To address the second and third research questions, the positions of the smartwatch brands (marked in red), as well as the attributes, are analysed in the 3D perceptual map, revealing distinct groupings of the highest loading attributes along the dimensions.

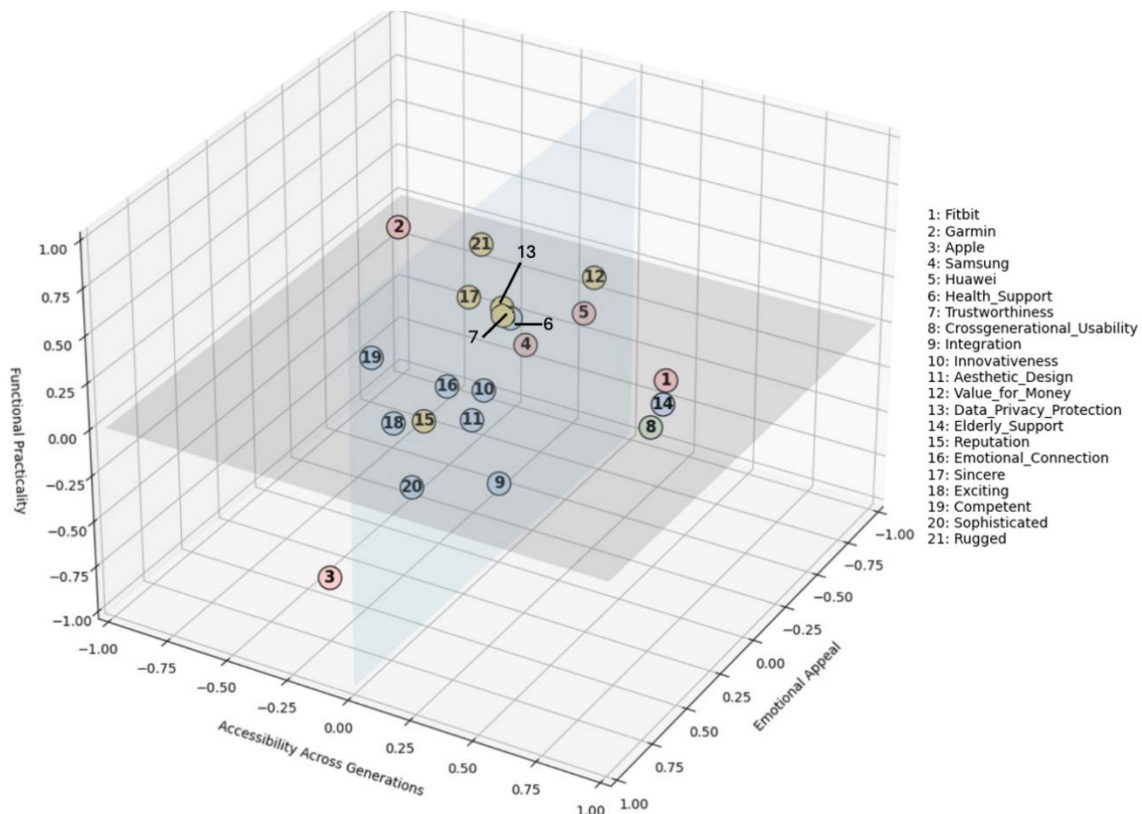


Figure 2: 3D Perceptual Map, showing positions of brands (red) and attributes (grouping attributes in one colour)

To offer a simplified view of brand positions on the three statistically identified dimensions, Figure 3 shows the brands plotted in 2D perceptual maps (Legend as above), and Appendix C.7 shows a 2D version, including the attributes.

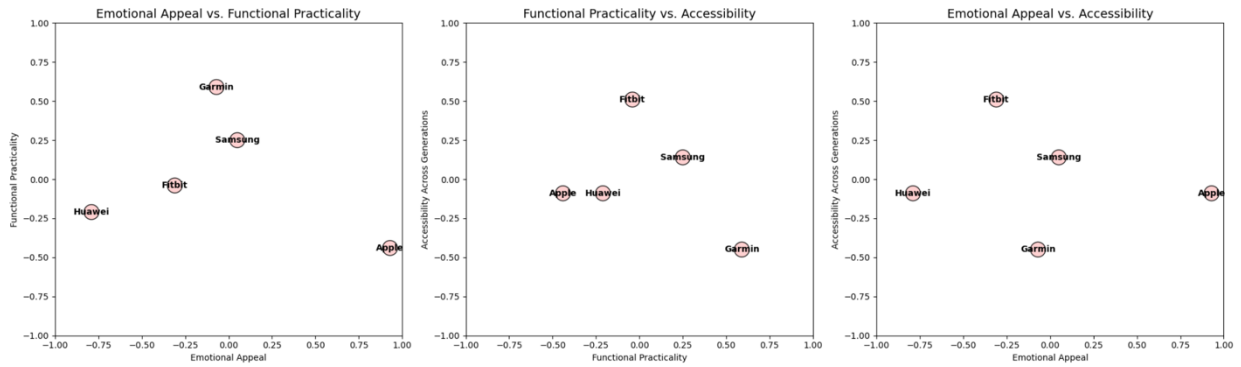


Figure 3: 2D Perceptual Maps

To show different perspectives of the exact positions in the three-dimensional space, the scatterplot was rotated. More perspectives on the model can be seen in Appendix C.6.

Examining the brands' positionings and correlation to key attributes

When examining the 3D perceptual map in Figure 2 and the positioning of the smartwatch brands, it is evident that Apple is strongly associated with the first dimension, Emotional Appeal, as it is positioned prominently on the X-axis at 0.91. In contrast, Garmin exhibits the highest alignment with the second dimension, Functional Practicality, due to its strong position on the Y-axis at 0.59. Fitbit, while relatively balanced, leans slightly towards Accessibility Across Generations, as seen by its Z-axis position at 0.51. Samsung displays a similar balance across all three dimensions but has a slightly stronger presence in Accessibility Across Generations, as indicated by its Z-axis value at 0.14. On the other hand, Huawei is positioned negatively across all dimensions, particularly on Emotional Appeal, where its X-axis value of -0.79 reflects weaker customer associations with this dimension.

When analysing brand proximity on the perceptual map, Garmin and Fitbit appear relatively close, suggesting shared perceptions related to Functional Practicality and moderate usability. Conversely, Apple and Samsung are clearly differentiated from each other and other brands due to their distinct dominance in Emotional Appeal and Accessibility Across

Generations, respectively. Huawei remains an outlier, far from the central clusters, indicating weaker alignment with key customer preferences.

Regarding the attributes, vectors in the 3D scatter plot reveal clear correlations. For example, Sophistication, Excitement, and Reputation align closely on the X-axis, indicating their strong positive relationship within the Emotional Appeal dimension. Similarly, Ruggedness, Value for Money, and Data Privacy Protection cluster on the Y-axis, reflecting their shared contribution to Functional Practicality. On the Z-axis, Elderly Support and Cross-generational Usability show a strong connection, emphasising their alignment with Accessibility Across Generations.

The perceptual map highlights not only the unique positioning of each brand but also the underlying relationships between attributes. This provides a comprehensive understanding of customer perceptions, the competitive landscape, and areas where brands can differentiate or improve their positioning, which will be discussed in the following chapter.

3.2.2. Interpretation: Multidimensional Perceptual Map Findings

The perceptual map analysis reveals critical insights into how customers perceive smartwatch brands across three primary dimensions: 1. Emotional Appeal, 2. Functional Practicality, and 3. Accessibility Across Generations. Each dimension highlights unique drivers of consumer perceptions, reflecting both brand-specific strengths and potential areas for improvement. In this section, we interpret these findings to address the nuances of brand positioning and customer expectations.

Key Attributes shaping Consumers' Perception

To begin, the data findings from the multidimensional perceptual map allow an answer to the first research question:

RQ1: What key attributes shape consumers' perceptions of smartwatch brands?

Consumer perceptions of smartwatch brands are shaped by three key groups of attributes:

1. **Emotional Appeal:** Attributes like sophistication, excitement, and reputation drive how a brand emotionally connects with consumers and conveys prestige.
2. **Functional Practicality:** Attributes such as ruggedness, sincerity, and trustworthiness highlight a smartwatch's reliability, durability, and practicality for everyday use.
3. **Accessibility Across Generations:** Attributes including elderly support and cross-generational usability emphasize inclusivity and ease of use for both younger and older consumers.

These three groups of attributes (dimensions) collectively define the way consumers evaluate and differentiate smartwatch brands, forming the three dimensions of the perceptual map.

These findings suggest that successful smartwatch brands must strike a balance between these dimensions to cater to diverse customer needs, laying the foundation for the chapter 4.2 Managerial Implications. The following paragraphs take a deeper look into the key observations and interpretation for each dimension of the perceptual map:

Dimension 1: Emotional Appeal

Emotional Appeal is the most influential dimension, capturing the emotional resonance and prestige associated with smartwatch brands. This dimension emphasises attributes such as Sophistication, Excitement, Reputation, and Trustworthiness, which collectively shape the aspirational value of a brand. The key observations are as follows: Apple dominates this dimension, underscoring its reputation as a premium brand. Its strong association with Sophistication and Reputation highlights its ability to position itself as an innovative and aspirational choice for consumers. This aligns with Apple's broader marketing strategy, which focuses on creating a seamless blend of technological innovation and emotional connection. In contrast, Huawei exhibits a negative association with Emotional Appeal, reflecting weaker customer perceptions of its prestige and trustworthiness. This may be attributed to Huawei's

positioning as a cost-effective alternative to premium brands, which could dilute its emotional resonance.

Dimension 2: Functional Practicality

The second dimension, Functional Practicality, highlights the practical and performance-oriented aspects of smartwatch brands. This dimension is defined by attributes such as Ruggedness, Trustworthiness, Value for Money, Data Privacy Protection, and Health Support. It reflects how customers perceive the utility and dependability of a brand's products. The key observations are as follows: Garmin leads this dimension, with strong associations with Ruggedness and Value for Money. Garmin's focus on durability and functionality resonates particularly well with customers seeking performance-driven features for active lifestyles, such as athletes and outdoor enthusiasts.

Fitbit also performs moderately well, reflecting its focus on health-centric features like Health Support and practicality. However, its lower association with Ruggedness suggests room for improvement in appealing to customers seeking durability in extreme conditions. Apple scores relatively low on Functional Practicality despite its dominance in Emotional Appeal. This indicates that Apple's products may be perceived as less value-driven or less tailored to practical needs compared to Garmin or Fitbit.

Dimension 3: Accessibility Across Generations

The third dimension, Accessibility Across Generations, reflects the inclusivity and usability of smartwatch brands for diverse demographic groups, particularly older users. Attributes such as Elderly Support and Cross generational Usability define this dimension, emphasising simplicity, intuitiveness, and health-related functionality. The Key Observations are the following: Samsung stands out in this dimension, demonstrating its strong alignment with the needs of both younger and older generations. This could be attributed to features like

user-friendly interfaces, advanced health monitoring, and targeted marketing efforts that emphasise inclusivity. Fitbit also performs well, indicating that its health-centric design resonates across multiple demographic groups. Simplicity and usability remain key strengths for Fitbit, particularly among older users. While scoring high on Emotional Appeal, Apple shows a neutral position in Accessibility Across Generations. This suggests that Apple's offerings may cater primarily to tech-savvy younger audiences, with limited emphasis on features specifically designed for older users.

These insights provide a foundation for understanding the competitive positioning of smartwatch brands and can inform strategic decisions in product design, marketing, and branding. Building on these insights, the analysis now transitions to answering the second research question, offering a deeper exploration of the overall competitive landscape within the smartwatch industry.

Competitive Landscape

RQ2: *How do consumers perceive the overall competitive landscape within the smartwatch industry?*

The interplay of the three dimensions described above shapes customers' perceptions and provides a comprehensive understanding of the competitive landscape in the smartwatch industry. Looking at each of the brands specifically, the following competitive landscape arises: Apple excels in Emotional Appeal, positioning itself as a prestigious and aspirational brand. However, its relatively lower scores in Functional Practicality and Accessibility Across Generations highlight opportunities to expand its appeal to more function-driven and inclusive demographics. Garmin dominates in Functional Practicality, resonating strongly with performance-oriented customers. However, its limited Emotional Appeal may restrict its reach among customers seeking a blend of functionality and prestige. Samsung achieves a balanced performance across Emotional Appeal and Accessibility Across Generations, making it a

versatile brand. Strengthening its association with Functional Practicality could further enhance its competitive position. Fitbit performs well on both Functional Practicality and Accessibility Across Generations but may lack the Emotional Appeal necessary to capture aspirational consumers. Huawei scores poorly on Emotional Appeal and Functional Practicality, signalling a need for strategic efforts to improve its perception as both a practical and prestigious brand.

Market Gaps and Opportunities

RQ3: Which main market gaps can be identified from the perception of consumers?

Building on the competitive landscape, several market gaps can be identified. Looking at Table 4, which shows the overall rating of the brands across dimensions, the rivalry between Samsung and Apple as the leading brands in the smartwatch industry becomes apparent.

Brands & Attributes	1.Emotional Appeal	2.Functional Practicality	3.Cross Generational Accessibility	Total Score
Fitbit	-0.31	-0.04	0.51	0.16
Garmin	-0.07	0.59	-0.45	0.07
Apple	0.91	-0.44	-0.09	0.38
Samsung	0.05	0.25	0.14	0.44
Huawei	-0.79	-0.21	-0.09	-1.09

Table 4 Comparison of Brands Total Ratings across Dimensions (colour-coded)

Notably, Samsung achieves the highest overall rating balance across the three dimensions. It gained an advantage through its better rating in Cross-Generational Accessibility ($Z = 0.14$) compared to its competitor Apple (-0.09), which is in the negative rating for this dimension. This suggests that Samsung is effectively catering to a wider audience, including older consumers, through features that prioritise usability and inclusivity. Apple, despite its clear dominance in Emotional Appeal ($X = 0.91$), lags in addressing Accessibility Across Generations, presenting a clear area for improvement. Given Apple's strong brand equity and its proven ability to evoke Emotional Appeal through aspirational attributes such as

Sophistication and Reputation, it holds significant potential to capture the Cross-Generational Accessibility market. By leveraging its innovative capabilities, Apple can create products that combine its premium design and emotional resonance with inclusive features tailored to older users, such as larger screens, simplified navigation, and integrated health tracking systems. This approach would not only enable Apple to close the gap with Samsung in overall balance but also establish it as a leader in serving the underserved older demographic - a market gap clearly visible in the perceptual map and in the literature review.

Moreover, Fitbit is the only brand to demonstrate a moderate strength in Accessibility Across Generations ($Z = 0.51$), suggesting that this market dimension is not yet dominated and remains open to competition. By entering this space strategically, Apple could differentiate itself by combining its prestige and Emotional Appeal with functional inclusivity, creating a compelling value proposition. This dual approach would allow Apple to maintain its aspirational image while expanding its customer base to include older and health-conscious users.

In conclusion, the perceptual map underscores the opportunity for Apple to leverage its strengths in Emotional Appeal to address its weaker alignment with Accessibility Across Generations. By doing so, it can not only close the competitive gap with Samsung but also tap into a market segment that remains underdeveloped, positioning itself as both prestigious and inclusive in the smartwatch industry.

3.3. Societal Impact and Future Potential of the Guardian Smartwatch

The introduction of the Guardian Smartwatch underscores the transformative potential of wearable health technology in enhancing the quality of life for elderly individuals while fostering intergenerational connections. By addressing the unique needs of elderly users and appealing to the value of Gen Z and Millennial buyers, the Guardian Smartwatch not only bridges the generational divides but also positions itself as a meaningful tool for promoting health, independence, and safety.

The societal implications of such innovations are profound. Enhanced health monitoring can lead to early detection of medical conditions, reducing healthcare costs and improving patient outcomes, especially taking into account the previously addressed demographic shift. Moreover, by fostering collaboration between generations, wearable health technologies strengthen family bonds and encourage shared responsibility for wellbeing for young and old. Looking ahead, the integration of wearable technology into healthcare systems, combined with targeted advocacy of younger generations, holds the promise of creating a more inclusive and health-conscious society. Continuous research in this domain will not only inform product development but also shape policies and practices that empower individuals of all ages to lead healthier, more connected lives. Through sustained innovation and strategic marketing, products like the Guardian Smartwatch can redefine the intersections of technology, health, and human connection in a dynamically changing society.

4. Conclusion

4.1. Discussion

The discussion provides an interpretation of the results of the analyses and a comparison with the literature. This section presents insights into how consumer perceptions and acceptance factors influence the market for wearable health technology. By synthesizing and summarising the key findings from both analysis methods, the discussion aims to highlight the implications for product development and marketing strategies, particularly for targeting different generational groups.

Consumer Perceptions and Usability

The literature shows that younger consumers prefer advanced features such as AI-driven health information, while older users favour features that offer tangible, immediate benefits (Jerath et al. 2023). The conjoint analysis confirms these preferences, demonstrating that older respondents prioritise health features that directly impact their well-being, such as fall detection and emergency alerts. These findings highlight the necessity for developing smartwatches that align with the usability requirements of older users, offering immediate health benefits and a user-friendly interface. The conjoint analysis additionally revealed that Generation Z and Millennials are more inclined towards AI-driven health features. In contrast, Generation X, while still interested in health monitoring, places greater emphasis on ease of use and simpler technologies. It is noteworthy that this indicates that Generation Z may attach greater significance to health monitoring features than older generations, thereby contributing to the apparent complexity of generational preferences. The perceptual map further supports these insights, as Accessibility Across Generations, defined by Elderly Support (loading = 0.74) and Cross-Generational Usability (loading = 0.74), highlight the growing need for intuitive designs that cater to older users without alienating younger consumers. These findings reinforce

prior literature suggesting that effective designs must accommodate usability preferences for diverse demographic groups (Jerath et al. 2023; Talukder et al. 2020).

The Role of Caregivers in Adoption

The role of caregivers is particularly important in enabling older people to adopt wearable health technology. As Talukder et al. (2020) argue, family and social support have a significant impact on older users' willingness to use new technologies. In such cases, caregivers often assist elderly users in navigating the complexities of wearable technology. This emphasises the necessity for brands to develop products that not only address the specific requirements of older users but also ensure straightforward usability and provide the requisite support to family caregivers. The features of emergency alerts, SOS buttons and remote health monitoring are suitable for both the end user and the caregiver, thereby increasing the likelihood of adoption and trust in the devices in question.

Furthermore, the findings of this study reveal that Accessibility Across Generations, encompassing attributes such as supporting elderly users' health and ease of use across diverse age groups, emerges as a critical dimension shaping consumer perceptions of smartwatch brands. Remarkably, this dimension holds comparable importance to more traditionally emphasised factors such as Emotional Appeal—characterised by attributes like Sophistication and Excitement—and Functional Practicality, which includes attributes like value for money and trustworthiness. This significant emphasis on generational accessibility, as a factor equally influential as emotional and rational considerations, represents a novel contribution to existing research. Previous studies have not contextualised the relevance of accessibility within a multidimensional framework as explicitly, nor have they highlighted its role as a determinant of brand perception in the smartwatch industry.

Design and Aesthetics

The aesthetic appeal of wearable technology is a significant factor influencing its adoption. For younger users, the concept of "fashnology" – the fusion of fashion and technology – has become a pivotal factor influencing their choices, with design being a critical consideration (Choi and Kim 2016). These findings are supported by both quantitative studies conducted in this research. The conjoint analysis indicates that Generation Z and Millennials place a premium on stylish and customisable smartwatch options. In the case of Apple, the preferences of Generation Z and Millennials are primarily oriented towards premium accessory aesthetics and design, in contrast to those of Generation X, who tend to favour sport-focused aesthetics. In contrast, minimalistic designs are preferred across all age groups for other brands, with the exception of Apple. The perceptual map findings further validate these observations, as it identifies Emotional Appeal as a key dimension shaping overall perceptions of smartwatch brands. Attributes loading on this dimension such as Sophistication (loading = 0.85) and Excitement (loading = 0.80) underscore the importance of aspirational branding.

For brands like Apple, which score high in this dimension, it captures the aspirational qualities that resonate with younger consumers, aligning with the concept of 'fashnology' highlighted by Choi and Kim (2016). However, as Fang and Chang (2016) note, aesthetic considerations can also mitigate stigma for older users, making balanced designs—such as those incorporating both sporty and premium elements—critical for cross-generational adoption. The elderly frequently encounter stigma when utilising medical wearables (Fang and Chang 2016). The Guardian Smartwatch addresses this challenge through its balanced design, which incorporates both sporty and premium elements. This is consistent with the findings of Hsiao (2013), who demonstrated that aesthetic considerations can reduce stigma and enhance cross-generational appeal.

Health Monitoring and Safety Features

Implementing health monitoring features such as fall detection, heart rate monitoring and emergency alerts was identified as important. This influences the acceptance of wearable technology, especially among older users (Olsen 2020; Lima et al. 2022). The transition from fitness tracking to more comprehensive health monitoring is well documented in the literature (Collier and Randolph 2015; Liu et al. 2021). The perceptual map confirms these findings, demonstrating that health support features is an important attribute across multiple dimensions. Support for Elderly users, including specific health features and safety features like fall detection, has emerged as one of the key attributes belonging to the Accessibility Across Generations dimension, which is significantly influencing consumers' brand perception. The conjoint analysis corresponds with the literature and the perceptual map results, indicating that older users highly value features such as fall detection and emergency alerts for their immediate health benefits. Despite the importance of these health features, the conjoint reveals that price remains the most important factor in purchase decisions across all brands and segments. This is in line with Jung et al. (2016), who note that consumers tend to prefer the functionality of a smartwatch but also consider price to be a determining factor. In the conjoint, while health monitoring features are important, price continues to play the most important role in the purchase decision.

Privacy and Data Security

Previous literature has emphasised that privacy concerns regarding personal health data remain a major barrier to the adoption of wearable health technologies across all age groups, as noted by Chandrasekaran et al. (2020) and Kapoor et al. The conjoint findings of this work add nuance to this as they reveal a generational divide: Gen Z and millennials are more willing to trade privacy for enhanced features, while older users prioritise data security. This discrepancy underlines the shifting attitudes towards data sharing, influenced by generational familiarity

with digital ecosystems. The perceptual map also highlights privacy (load = 0.62) as a key attribute within the functional purpose dimension, supporting the literature's call for transparent data sharing practices to build trust, particularly important among Gen Xers and Millennials. To address these concerns, brands should focus on clear data sharing policies and intuitive privacy settings to build trust and increase adoption, especially among Gen Xers, who are more cautious about data security.

Barriers to Inclusive Adoption

The extant literature identifies economic and design-related barriers that limit the adoption of wearable technology, particularly among low-income and older populations (Lima et al. 2022; Chandrasekaran et al. 2020). The Accessibility Across Generations dimension from the perceptual map highlights the unmet need for user-friendly designs that cater to older users. Attributes like Elderly Support (loading = 0.74) suggest that brands could enhance adoption rates by simplifying interfaces and emphasising inclusivity. These findings support prior literature highlighting the importance of intuitive design and affordability in overcoming adoption barriers for older populations (Lima et al. 2022; Chandrasekaran et al. 2020). This research offers partial support for this, indicating that affordability is a significant factor for Gen Z buyers acting as caregivers. While both Gen Z and Millennials tend to favour lower price points (e.g., €199), they demonstrated a somewhat higher willingness to pay for devices that offer reassurance and enhanced functionality for their family members, particularly for more functional brands such as Garmin and Samsung. However, when considering devices for elderly users, consumers demonstrated a reduced willingness to pay above €499 compared to purchasing for themselves, indicating that a price barrier persists in the elderly use case. This illustrates the complex relationship between price sensitivity and the perceived value of these devices in caregiving contexts, which could be investigated further in future research.

Brand Ecosystems and Integration

Existing literature underscores the importance of brand ecosystems in promoting consumer loyalty and increasing product value (Gawer and Cusumano 2014; Lima et al. 2022). As the perceptual map shows, Apple in particular benefits from its strong ecosystem, which appeals particularly to younger consumers. However, this study's findings highlight a potential disadvantage of closed ecosystems, especially for older users who may struggle with cross-brand compatibility. Interestingly, Gen Z is willing to accept an additional app to facilitate compatibility between Apple and Garmin smartwatches. Especially when purchasing for older family members. This suggests that while Apple's ecosystem is attractive to younger consumers, it may not be as compelling for older users. Further, this underscores the literature's suggestion for improved interconnectivity to increase inclusivity and facilitate wider adoption (Romero-Perales et al. 2023). Although the literature suggests that brand ecosystems facilitate adoption, our conjoint analysis found that the utility of this attribute was generally low across all brands and segments. Once again, this highlights the complexity of consumer preferences.

Generational Differences in Adoption Patterns

As noted by Chandrasekaran et al. (2020), wearable technology adoption varies significantly across generations, with younger users favouring features like fitness tracking and gamification, while older users prioritise health monitoring and safety. Our conjoint analysis confirms these generational preferences and highlights a critical intersection: younger generations often make purchasing decisions for older family members. While the perceptual map does not segment results by age group, its broader findings highlight the importance of Emotional Appeal and Functional Practicality as drivers of consumer perceptions across the smartwatch market. These dimensions suggest that brands must strike a balance between aspirational branding and practical features to appeal to diverse consumer groups. Addressing gaps in Accessibility Across Generations, as shown in attributes like Elderly Support (loading

= 0.74), offers a clear opportunity to align with the priorities of younger caregivers and older users alike. By bridging these needs, the Guardian Smartwatch aligns with generational priorities, addressing the concerns of caregivers and providing utility for elderly users.

4.2. Managerial Implications

The results from the perceptual map analysis and choice-based conjoint analysis provide a comprehensive understanding of how consumers perceive smartwatch brands and the attributes that drive their preferences. By integrating these findings, this chapter offers tailored, data-driven recommendations for each brand. Together, these analyses reveal actionable opportunities for each brand to enhance their competitive positioning and align their strategies with consumer demands. The following sections outline three key managerial implications for each brand, providing a strategic roadmap and actionable recommendations to optimise their product offerings, marketing initiatives, and overall brand perception.

To contextualise these findings, Michael Porter's Generic Strategies framework is employed to clarify managerial implications. This framework delineates three primary strategies for achieving competitive advantage: cost leadership, which focuses on becoming the lowest-cost producer in the industry; differentiation, which involves offering unique products or services that customers value; and focus, which targets a specific market segment, with an emphasis on either cost minimisation or differentiation within that segment. By integrating these strategic perspectives with consumer insights, this chapter offers tailored, data-driven recommendations for each brand. (Ali and Anwar, 2021)

Apple

Currently, Apple is positioned as a premium brand with strong preference scores across all demographic segments and strong Emotional Appeal, leading in attributes such as excitement and sophistication, but it underperforms in cross-generational accessibility and

Functional Practicality. Applying a categorisation across the dimensions of Porter's generic positioning framework, Apple should continue positioning itself within the differentiation strategy. To broaden its market appeal, it is recommended that Apple addresses both emotional and functional consumer needs. Apple can do this by emphasising data privacy and increasing affordability for entry-level smartwatch models while enhancing elder-friendly features.

1. **Market Emotional Appeal:** For premium brands like Apple, the challenge lies in maintaining their innovative appeal without deterring value-conscious consumers, especially Gen Z and new smartwatch users. Reinforce campaigns that emphasise excitement and sophistication through exclusive designs and aspirational messaging, highlight Apple's prestige and innovation to maintain its dominant Emotional Appeal. For Apple, sport-focused and premium accessory designs align with its positioning as a versatile all-rounder, appealing to consumers seeking aesthetics and performance.
2. **Expand Functional Practicality:** To improve the weak perception of consumers towards Apple's Functional Practicality and high demand for privacy and durability, particularly among mid-range buyers, the brand should promote features like data privacy for sensitive health data and durability. Advanced features like AI health monitoring and offering occasional promotions to address entry-level pricing points at 199€ and 299€ can improve Apple's perceived value while preserving the premium brand image. Setting battery life to 4-7 days for satisfying practical and functional needs and placing marketing messages in everyday real-world scenarios, such as multi-day outdoor use or travel, can reinforce an image of a reliable all-rounder lifestyle device to strengthen the preference across all demographics. For GenX in particular, Apple's marketing communication should highlight user-friendly and fully transparent privacy settings with seamless ecosystem integration,
3. **Enhance Accessibility Features:** Despite its appeal as an allrounder watch, Apple's suitability for the growing elderly use cases is less pronounced, and Apple is not perceived

as a cross-generational brand, as the perceptual map results show. To improve the appeal to the growing market of elderly users, tangible health monitoring benefits, such as improved well-being and preventative care, including SOS button and fall detection features for elderly users, could position Apple's smartwatches as indispensable health tools for all generations.

Samsung

Samsung operates in a competitive middle ground, holding a balanced position by performing positively across Emotional Appeal, Functional Practicality, and cross-generational accessibility, appealing to a wide demographic. However, it struggles to establish a strong, differentiated identity against competitors. Following a broad differentiation strategy by emphasising versatility and trustworthiness will reinforce its position as an all-rounder and trustworthy brand that offers a broad portfolio which caters effectively to diverse consumer segments.

1. **Leverage Balanced Positioning:** In the perceptual map, Samsung is the Nr. 1 player with the highest average overall rating across all dimensions. The brand's reputation is consistently in the mediocre positive, with no compromises made and no dimension where it excels. For Samsung to keep its competitive advantage ahead of Apple, it needs to reinforce its positioning as a versatile brand that appeals to a wide demographic. Showcasing compatibility within its broad Android ecosystem particularly features such as cross-device syncing and enhanced productivity tools with seamless functionality, could attract users. Samsung should market its smartwatches as high-value alternatives to premium brands like Apple by highlighting usability and advanced health features, creating inclusive messaging for diverse users.
2. **Strengthen Accessibility Campaigns:** Samsung should strengthen its competitive edge in the underserved elderly segment by promoting features like elderly support and cross-

generational usability through campaigns targeting older audiences, highlighting advanced health monitoring and user-friendly design.

3. **Boost Functional Practicality:** For Samsung, as a trusted and established player, proactively addressing privacy concerns in their marketing through transparency in data handling could act as a conversion driver for non-smartwatch users. They perceive privacy risks as a barrier to entry, and this underlines the relevance of trust-building and emotional campaigns to enhance a premium image with accessible pricing at the higher end. Develop and market rugged designs and reliability-focused features to appeal to active users, reinforcing Samsung's credibility among performance-driven buyers.

Garmin

Garmin is recognised for its Functional Practicality and value for money, primarily appealing to niche markets such as athletes and outdoor enthusiasts. Expanding its focus differentiation strategy to include urban users by highlighting durability and data privacy can attract a new consumer segment seeking practical and reliable smartwatches, thereby broadening its market reach beyond its traditional niche.

1. **Promote Value for Money and Trustworthiness:** Functional and fitness-focused brands like Garmin must reinforce their image of technological innovation at an affordable mid-range price point (499€) to strengthen their cost-effective positioning for performance-driven buyers. To keep Garmin's core user group, high-activity users, loyal, the brand should highlight its core competencies: Advanced AI-enhanced tracking features and a long battery life of more than 7 days. In addition, expanding market share to urban users presents a significant growth opportunity. This involves retaining its fitness-oriented appeal and addressing high-functional lifestyle needs, including privacy and everyday health support. Marketing campaigns should showcase Garmin's long-standing reputation for reliability

and durability in real-world scenarios, such as urban commuting and casual use, to attract a more diverse demographic.

This marketing approach could target younger, price-sensitive segments like Gen Z and first-time smartwatch users by emphasising the device's exceptional value for money, robust performance, and suitability for varied lifestyles. Highlighting Garmin's industry-leading data privacy and health-focused functionalities, which appeal across all demographics, would further establish the brand as the ideal choice for practical, health-conscious individuals.

2. **Expand Beyond Niche Markets:** Garmin's trusted reputation for accuracy in tracking functionalities and exceptional reliability positions the brand to successfully broaden its appeal beyond its traditional focus on athletes and outdoor enthusiasts. By expanding its offerings to target more casual urban users, Garmin can reach new demographics that value versatility and everyday practicality. This can be achieved through marketing campaigns emphasising Garmin's ruggedness and durability in real-world scenarios, such as professional use, urban commuting, and travel. These attributes resonate with a broader audience and demonstrate that Garmin's features extend beyond niche applications to suit modern urban lifestyles.
3. **Leverage Privacy and Data-Sharing Practices:** Highlighting Garmin's superior data protection capabilities - known to be far better than those of its competitors - can appeal to privacy-conscious users, particularly in urban and professional environments. In addition, integrating features such as payment protection into the smartwatch would address consumer preferences for secure, multi-functional devices and strengthen Garmin's relevance in broader markets and general users. By promoting its superior data protection, minimalistic design, and practical functionalities in a way that resonates with casual and

urban users, Garmin can capitalise on its strong foundation to expand into untapped markets.

Fitbit

Fitbit is known for its simplicity. It performs well in Accessibility Across Generations, but it underperforms in Functional Practicality and Emotional Appeal. Enhancing product durability, perceived trustworthiness and crafting emotionally resonant marketing can elevate its aspirational value, supporting its cost leadership strategy by addressing consumer desires for robust and emotionally engaging products.

1. **Leverage Simplicity to Strengthen Accessibility Across Generations:** Fitbit's strength in Accessibility Across Generations aligns with its cost leadership strategy by catering to both younger and older consumers with straightforward and affordable solutions. As conjoint findings confirm demand for intuitive, health-focused features for Fitbit, the brand should continue emphasizing its simple and user-friendly health features, such as fitness tracking and heart rate monitoring, while tailoring campaigns to highlight these benefits for caregivers and elderly users. Targeting users who prioritise simplicity and affordability over luxury by reinforcing Fitbit's value as an accessible yet affordable health device can solidify its position in cost-conscious markets.
2. **Strengthen Cost Leadership as the Entry-Level Smartwatch:** Fitbit's relatively simple interface and affordability make it well-suited for first-time smartwatch buyers or casual users. Fitbit should highlight this accessibility in its messaging, positioning itself as the ideal starting point for individuals new to wearable technology at a lower price point of 199€.
3. **Elevate Emotional Appeal with Resonant Marketing Campaigns:** To address its lower performance in Emotional Appeal, Fitbit should focus on crafting emotionally resonant marketing campaigns that connect with consumers on a personal level. Marketing

campaigns could emphasise how Fitbit removes the noise and complications of modern technology, helping users focus on what truly matters - health, well-being, and peace of mind. A tagline such as "Fitbit: Life Made Simple" or "Fitbit: Simplify Your World" could resonate deeply, reinforcing the idea that Fitbit is a tool for creating a more centred and uncomplicated lifestyle, fostering trust and aspirational value. This approach can complement its cost leadership strategy by demonstrating that affordable products can also deliver meaningful and engaging experiences, enhancing Fitbit's overall brand perception.

Huawei

Huawei positions itself as an affordable, feature-rich smartwatch provider but faces challenges with negative Emotional Appeal and data privacy concerns. To enhance its cost leadership strategy and appeal to value-conscious consumers, Huawei should rebuild its Emotional Appeal and emphasise data privacy to improve consumer trust. Given that price is the primary driver for Huawei's target market, offering competitively priced devices that ensure data security can significantly boost sales. However, investing in advanced features may not yield substantial returns, as consumers do not currently perceive Huawei as a prestigious or highly functional brand. Therefore, maintaining a cost-effective positioning is the most feasible approach

1. **Rebuild Emotional Appeal:** Invest in branding initiatives that enhance Huawei's reputation as a more exciting brand to improve the negative perception of Huawei's Emotional Appeal. For Huawei, an emphasis on innovation and quality that resonates emotionally with consumers significantly influences consumer decisions, as shown by the conjoint analysis.
2. **Focus on Functional Attributes:** Highlight affordability, practicality, and privacy protection in campaigns to resonate with value-conscious consumers. Consumers in this segment are less interested in advanced or AI-driven health monitoring. Instead, they seek

reliable basic features such as heart rate monitoring, step counting, and sleep tracking. The brand should avoid investing heavily in high-end functionalities and instead position itself as a value-driven option, presenting Huawei as the “smart choice” for budget-conscious consumers who want sufficient functionality without overspending

3. **Target Underserved Markets:** Leverage Huawei's cost-effective positioning to dominate emerging markets where affordability is a primary driver. Simultaneously, it gradually builds a perception of being not just a cheap alternative but increasingly a serious quality alternative in more developed regions to expand market reach and competitiveness. This can be achieved by offering region-specific products that cater to local preferences and purchasing power, thereby increasing market penetration and brand loyalty.

4.3.Limitations and Recommendations for Future Research

This chapter will shed light on the limitations of this research, and thereby, it will provide recommendations for future research. It is important to bring attention to the limitations, as they will provide knowledge and guidance for future research regarding the topics discussed. The limitations of this research are centred around sampling methodology, survey design, analytical frameworks, and the broader contextual scope of the smartwatch market. Furthermore, the identification of the limitations within this study will be linked with the recommendations for future research endeavours that can refine its approach by addressing these issues to provide more robust and generalisable insights.

4.3.1. Sample Profile Constraints

The sample profile consists of predominantly younger, tech-savvy individuals (mostly Gen Z and Millennials), with older generations and non-European participants underrepresented. This demographic skew limits the study's applicability to older populations and non-Western markets, where smartwatch adoption behaviours and preferences might differ.

The overrepresentation of younger respondents (e.g., 71.6% aged 18–27 in the conjoint analysis) reflects a demographic that is more familiar with wearable technology and, therefore, does not fully represent the needs and preferences of other key consumer segments, such as Baby Boomers or Generation X.

Additionally, geographic representation was concentrated in Europe, particularly Germany (54.7% in perceptual mapping and 80% in conjoint analysis), with participation mainly from other regions in Europe. Notably, only 2% of perceptual map participants and 1% of conjoint analysis participants were from outside Europe. This regional focus may not capture cultural, regulatory, and market-specific nuances outside Europe. Similarly, the reliance on academic and digital recruitment channels such as personal networks, such as those of students at NOVA School of Business and Economics and the Survey Circle platform, limited socioeconomic diversity, reflecting the preferences of higher-income, educated participants while excluding less tech-savvy or lower-income groups who might prioritize affordability and basic functionality.

Future studies should adopt more inclusive sampling methods. This could involve partnerships with healthcare networks, senior organisations, or community groups to engage older adults and low-income populations. Additionally, recruiting participants from underrepresented regions such as Asia, Africa, and Latin America would allow for a more globally representative understanding of smartwatch adoption. Broaden recruitment channels to include participants from diverse socioeconomic strata, such as outreach through local communities or public organisations. Longitudinal studies that track evolving preferences across diverse demographics would provide deeper insights into behavioural changes over time.

4.3.2. Methodological Constraints

Next to the limitations of the sample profile, methodological constraints should be stated as limitations of this research. The research combined two analytical methods, choice-based

conjoint tasks and perceptual mapping, which were two separate studies, both including demographic questions. Even though the duration of the surveys was aimed to be reduced by splitting the analysis methods into two separate ones, the duration of the two surveys may have introduced cognitive fatigue among participants, especially as they progressed through complex conjoint exercises. This could have impacted the accuracy of responses, particularly for attributes presented later in the survey.

The focus on seven attributes in the conjoint analysis (e.g., price, health tracking, battery life) excluded emerging benefits that gain importance, such as sustainability, as the surveys focused on the main attributes mentioned in the preliminary interviews.

Additionally, the predefined generational categories (e.g., Gen Z, Millennials) assumed homogeneity within groups, potentially oversimplifying nuanced differences driven by factors such as life stage, income, or lifestyle. For instance, Millennials aged 28–43 may exhibit significantly different preferences depending on whether they are career-focused or family-oriented. Future studies should consider using adaptive surveys or streamlined questionnaires to minimise cognitive load while maintaining data richness. Moving beyond predefined generational categories to incorporate psychographic and behavioural traits, such as attitudes toward health, technology readiness, and purchasing motivations, could yield more nuanced insights. Expanding the attribute set in conjoint analysis and perceptual map to include features like environmental sustainability would reflect evolving consumer priorities.

4.3.3. Industry Selection and Scope Constraints

This research specifically examined smartwatches, excluding other wearable devices such as smart rings, fitness trackers, and smart glasses. These alternative devices share overlapping functionalities and target similar consumer segments. However, by limiting the scope to smartwatches, the study does not address how consumers perceive these alternatives

or how they may interact as complementary or competing devices within the broader wearable technology ecosystem.

Due to the preliminary research and deductive approach, the decision was made to focus on a select few of the most prominent brands in the smartwatch industry: Apple, Samsung, Garmin, Fitbit, and Huawei. By prioritising these key players, other emerging or niche brands with potentially disruptive innovations were excluded. This focus introduces a technology maturity bias, as the findings primarily reflect consumer perceptions of well-established technologies. Consequently, the study does not provide a comprehensive view of the entire smartwatch industry or insights into the impact of nascent brands and technologies that may be reshaping market dynamics.

Future research should expand its scope by including a broader range of wearable devices alongside smartwatches to explore whether these alternatives function as substitutes or complements in consumer decision-making. Additionally, incorporating smaller and emerging brands would provide a more nuanced understanding of how early-stage innovations influence consumer perceptions and competitive positioning. Longitudinal studies could further address the static nature of this research by tracking changes in consumer preferences, technological advancements, and market positioning over time. By adopting a more holistic and temporal approach, future studies could better understand the wearable technology ecosystem and its evolving consumer landscape.

4.3.4. Time Constraints

A significant limitation of this study is the time constraint, a common challenge in academic research that influenced the scope and depth of the analysis. The restricted timeframe limited the opportunity for a more extended survey period, which could have increased the sample size and improved the diversity of demographic representation. A larger and more heterogeneous sample, particularly for underrepresented groups such as older generations and

non-European participants, could have provided deeper insights and more robust findings. Additionally, with extended timelines, the study could have included a broader set of variables and attributes, further enriching the analysis and its implications.

The temporal nature of the research reflects its limitation as a static snapshot of consumer preferences at a specific moment in time. Rapid advancements in artificial intelligence and sustainability continue to reshape consumer expectations and market dynamics. The inability to account for these evolving trends constrains the relevance of the findings as market conditions and consumer priorities shift over time.

The reliance on stated preferences through survey methods, rather than observing actual consumer behaviours such as purchase decisions or usage patterns, also introduces a potential limitation. Stated preferences may not fully align with real-world actions, which can impact the applicability of the findings. A relevant example for an usecase that should be investigated further in observational studies is the complex relationship between price sensitivity and the perceived value of smartwatches in caregiving contexts, in order to identify at which price point consumers would buy a device for someone else than themselves.

Another limitation is the perceptual map's lack of differentiation between generational cohorts, as this was performed in detail with the conjoint analysis, and the limited time and page count of this research didn't allow for five perceptual map analyses for each generational group. This prevents a nuanced understanding of how brand perceptions vary across distinct age groups, limiting the ability to draw age-specific insights about brand positioning or attribute importance and only showing the consumers' perception across generations.

Future research should address these constraints by decoupling timelines from academic requirements, allowing for more extended data collection periods to increase sample size and demographic diversity. Longitudinal studies are recommended to capture evolving consumer preferences, market trends, and the impact of technological advancements and sustainability on

consumer behaviour. Combining survey methods with observational or experimental research, such as simulated purchase scenarios or real-world usage tracking, would help validate stated preferences against actual behaviour. Additionally, conducting separate perceptual map analyses for distinct generational cohorts would uncover nuanced differences in brand perception and attribute importance, enhancing the depth and applicability of future findings.

4.3.5. Additional Recommendations for Future Research

This section highlights additional research areas to complement the limitations and recommendations discussed. These include deeper exploration of specific attributes, focus on emerging consumer segments, and usability testing to enhance smartwatch adoption insights.

Deepening Attribute-Specific Research: Future studies should investigate sub-dimensions of attributes such as “style” and “functionality,” exploring how these concepts vary across demographics and use cases. For example, defining what “stylish” means to different age groups or how “functionality” aligns with health-focused features could inform targeted product improvements.

Focus on Emerging Segments and Usability Testing: Ongoing research into the shifting preferences of younger generations like Gen Z is vital, as is expanding into emerging markets to understand regional differences. Real-world usability testing, particularly with elderly users, can identify barriers to accessibility. Co-creating solutions with these users and testing prototypes in realistic settings would offer actionable design insights.

Feasibility of Production and Design: Future research should also assess the feasibility of integrating recommended features while maintaining affordability. Collaboration with technical experts and designers to evaluate production methods, materials, and costs will ensure that proposed innovations are both practical and cost-effective.

In conclusion, this study has significantly contributed to understanding consumer perceptions within the wearable health tech industry, particularly the smartwatch product

category, by identifying key attributes valued by consumers and providing actionable insights for both academia and industry. However, the research is not without limitations, leaving considerable room for future research guided by the recommendations outlined. By addressing the identified limitations and extending the scope of the investigation, future research can provide a more comprehensive understanding of how consumers perceive the wearable health technology industry, particularly the smartwatch product category. This will deepen insights into the key attributes that shape consumer preferences, enabling the industry to better cater to diverse demographic needs and evolving market trends. Such advancements will not only enhance theoretical understanding but also inform strategic decisions for product development and marketing in the wearable tech sector.

Just as Peter Drucker's words remind us that shaping the future lies in our hands, this thesis closes with the hope that its insights into consumer perceptions of wearable health technology will inspire not only the creation of smarter, more inclusive devices but also a future where technology truly empowers lives across generations.

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6. Appendix

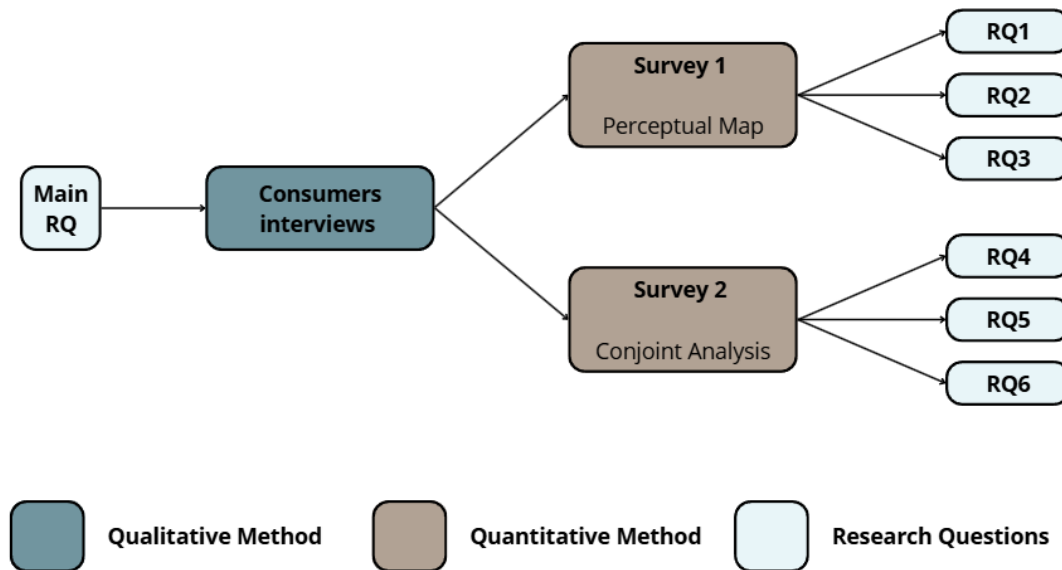
A- Literature Review Appendix

Appendix A.1: Definitions of Smartwatches from Various Studies in the Literature

Authors & Year	Definition
Jung et al. (2016)	"Smartwatches have complicated properties, because they are computing devices that are also regarded as fashion accessories."
Dehghani et al. (2018)	"A smartwatch is a multifunctional wrist -worn device that provides fast, convenient access to information and applications via a wireless/Bluetooth connection."
Chuah et al. (2016)	"A mini device that is worn like a traditional watch and allows for the installation and use of applications."
Wu et al. (2016)	"A wrist-worn device with computational power, that can connect to other devices via short-range wireless connectivity; provides alert notifications; collects personal data through a range of sensors and stores them; and has an integrated clock."
Ha et al. (2017)	"A smartwatch is an effectively wearable computer that can help its users create a more convenient way of keeping track of notifications while integrating health metrics like heart rate and GPS."
Kim & Shin (2015)	"Smartwatches serve mostly as satellite devices for amassing useful data from a paired smartphone via wireless Bluetooth connection, providing more convenient, faster access to information."
Pal et al. (2018)	"A wrist-worn device with advanced computational power, that can connect to other devices via short-range wireless connectivity; provides alert notifications; collects personal data through sensors and has an integrated clock."
Robin Singh Chandel et al. (2022)	"Smartwatch (SW) is a wearable gadget used in everyday life. It is similar to a conventional wristwatch that provides a variety of features comparable to a smartphone. These features include access to the internet, making a call, weather updates, text or video messages, GPS navigation, and physical fitness information."

B- Methodology Appendix

Appendix B.1: Methodology Structure



Appendix B.2: Preliminary Consumer Interviews Question Guidelines

Section	Questions
Choosing a smartwatch and Features	1. What smartwatch do you have? - What motivated you to purchase a smartwatch in general? - Why did you choose this specific model? - What features were important to you when selecting a smartwatch?
Brand Perception of Other Brands	2. Which other smartwatch brands come to mind? - What do you think about these other smartwatch brands? (Consider brand personality, emotional connection, etc.)
Feature Usage	3. What features do you use the most on your smartwatch? - How often do you use these features (daily/weekly)?
Satisfaction and Improvement	4. Are there features you wish your smartwatch had or didn't have? - What could be improved? - Would you consider switching to a different brand for better features?
Influence of Ecosystem and Data Usage	5. Is the connectivity between your smartwatch and other devices important to you? - How important is the brand ecosystem (e.g., Apple, Samsung) in your decision to buy a smartwatch? 6. Is the use of the tracked data relevant to you? Why? 7. Are you aware of who can see your data? - Would you be interested in sharing your data with third parties?
AI Integration	8. How important do you think AI-driven health insights and disease management are to you? (e.g., AI-driven health insights, disease management)
Open Question	9. What did we forget to ask? - Is there anything else we should consider?

Appendix B.3: Preliminary Industry Expert Interviews Question Guidelines

Section	Questions
Introduction	1. What has your role in [ORGANIZATION] been?
Current Market Landscape	2. How would you describe the current competitive landscape of the smartwatch market?
Demographic Preferences	3. Do you observe differences in preferences among various demographics (e.g., age, gender)?
Sales Drivers	4. What are the most common reasons customers purchase smartwatches, in your experience? - What pain points do customers mention? - Top Features: What are the top features or attributes driving consumer purchasing decisions? - Customer Complaints: What features do customers often praise or complain about? How do these affect their purchasing decisions?
Brand and Ecosystem Influence	5. How important is brand loyalty and ecosystem integration (e.g., compatibility with other devices) in influencing a purchase?
Data Usage and Privacy	6. Given the increasing focus on data privacy, especially in health tech, how concerned are consumers about data privacy and security? - How does this impact their purchasing decision? - Are consumers willing to share their data? - Are there any features or guarantees regarding data privacy that are becoming particularly important for consumers?
Future Trends in smartwatch Adoption and AI	7. From your expert view, what trends are shaping the smartwatch market? - What features are gaining traction? - How is AI playing a role in the smartwatch market?
Challenges and Limitations	8. What are the main challenges facing smartwatch adoption, and how might brands overcome them?
Effective Marketing Strategies	9. Which marketing approaches or sales tactics seem most effective in persuading customers to choose certain smartwatches?

Appendix B.4: Consumer Interviews Findings

Question	Attributes/Frequency
What are the most important features to you when choosing a smartwatch?	Health Tracking / 6 Design / 3 Price / 3 Battery Life / 3 Connectivity / 2 Sports Features / 1
How important is the brand ecosystem (e.g., Apple, Samsung) in your decision to buy a smartwatch?	Very Important / 4 Somewhat Important / 2 Not Important / 1
Which features do you use the most in your smartwatch, and how often?	Heart Rate Monitoring / 5 Step Counting / 4 Sleep Tracking / 3 Notifications / 2
Are you concerned about data privacy in relation to your smartwatch usage?	Yes / 3 No / 4
How important are AI-driven health features (e.g., predictive health monitoring) to you?	Very Important / 3 Somewhat Important / 3 Not Important / 1
What do you think of other smartwatch brands in comparison to the one you own?	Apple: Best Ecosystem / 3 Garmin: Best for Fitness / 3 Huawei: Good for Budget / 2

Appendix B.5: Expert Interviews Findings

Question	Attributes/Frequency
What are the top features or attributes that drive consumer purchasing decisions for smartwatches?	Connectivity / 5 Ecosystem Integration / 4 Health Features / 5 Battery Life / 3 Design / 3
How concerned are consumers about data privacy and security in relation to smartwatches?	Very Concerned / 3 Somewhat Concerned / 2 Not Concerned / 2
What trends are shaping the smartwatch market?	AI-driven Health Features / 4 Increased Connectivity / 3 Wearable Tech for Elderly / 2
How important is brand loyalty and ecosystem integration for consumers when choosing a smartwatch?	Very Important / 5 Somewhat Important / 2 Not Important / 1
What marketing approaches seem most effective in persuading consumers to purchase certain smartwatches?	Bundled Promotions / 4 Emphasis on Health Benefits / 4 Loyalty Programs / 2

Appendix B.6: User Profiles

This appendix supplements the main analysis by highlighting specific user needs and experiences and thereby offering insight into the variety of the interviewed smartwatch users.

Consent to use the participants' names was given prior to the interview, except for "Lukas Mustermann" whose name was changed to respect his privacy request.

Éric Bitsch

Role	QHSE & Sustainability Professional and Ultra-Trail Runner
Device	Garmin Enduro
Usage Purpose	Sports performance and health monitoring (heart rate variability, sleep tracking, "Body Battery" function)
Key Quote	"When it's red, I know I'm tired or getting sick."
Privacy Perspective	Comfortable with data sharing for research but wary of commercial exploitation.

Éric, an experienced ultra-trail runner and QHSE professional at SIKA Maroc, shared insights from both his athletic and professional perspectives. He highlighted that his primary motivation for using a smartwatch was to monitor his sports performance and health. Éric noted key features such as heart rate variability, sleep tracking, and the "Body Battery" function as essential in managing his daily energy levels and training loads. His experience with using a Garmin Enduro smartwatch was mainly centred on health metrics like blood oxygen levels, especially after his recovery from a pulmonary embolism in 2023. He emphasised the importance of reliable data, stating, "When it's red, I know I'm tired or getting sick." Éric's professional expertise also gave him a strong understanding of data protection and privacy concerns. He expressed comfort with sharing his data for research purposes but was wary of commercial exploitation without his consent.

Marie Dupont (name changed to respect privacy request)

Role	General Consumer, Apple Watch User
Device	Apple Watch
Usage Purpose	Health tracking, convenience in daily life
Key Quote	Heart rate monitoring, calorie tracking, "Find My Phone" feature
Privacy Perspective	Unaware of data-sharing practices; privacy is a concern.

Marie Dupont, a general consumer, uses her Apple Watch primarily for its health-related features and convenience in daily life. She started using a smartwatch when she returned to sports and found it more practical than carrying her phone during workouts. The design and customisable nature of the watch faces were also instrumental in Marie's decision to make a purchase. Marie primarily values the ability to receive messages, track her heart rate, monitor calories, and follow the duration of her activities. She also expressed concern about data privacy, stating that she was unaware her health data could be shared with third parties. Marie uses her Apple Watch daily, with a special emphasis on its "Find My Phone" feature.

Chiara Schneider

Role	Nurse, Huawei Watch 3 User
Device	Huawei Watch 3
Usage Purpose	Health monitoring during work shifts
Key Quote	Step counting, sleep tracking, oxygen monitoring
Privacy Perspective	Minimal concern due to basic tracking metrics.

Chiara, a nurse, uses her Huawei Watch 3 primarily for work-related tasks such as step counting and tracking her heart rate during long shifts. For her, health monitoring was more important than fitness tracking. Chiara values features like sleep tracking and oxygen monitoring but noted some dissatisfaction with the overloaded app interface on her watch. While she appreciates the ease of connectivity between her watch and her phone, privacy was not a major

concern since her watch only tracks basic metrics like steps and sleep. She also believes that smartwatches are important for elderly users, as they offer continuous health tracking and can replace more expensive and complex devices like ECGs.

Filipa Abrantes

Role	Former Huawei Digital Marketing Manager
Professional Insight	Highlighted the importance of AI in health monitoring and consumer interest in price, battery life, and durability.
Key Quote	"AI-based health analytics could help detect issues like irregular heart rhythms."
Role	Former Huawei Digital Marketing Manager

Filipa provided unique professional insights from her role in launching Huawei smartwatches in Portugal. She emphasized that consumer preferences in Portugal often focused on price, battery life, and durability. Filipa also highlighted the growing importance of AI-driven health monitoring in smartwatches, noting that "AI-based health analytics could help detect issues like irregular heart rhythms." She mentioned that Huawei marketed their smartwatches as both a lifestyle accessory and a health-tracking device, offering features like step counting, heart rate monitoring, and GPS tracking. Furthermore, she highlighted that elderly people are an important market for wearable health technology which should be looked into more in the future. She mentioned that Huawei achieved notable revenues with bundle packages in which wrist bands were sold in a bundle with smartwatches and the wrist bands were given to elderly family members, who seemed to profit from the simple usage.

Lukas Mustermann (name changed to respect privacy request)

Role	Vodafone Marketing Manager
Insight	Highlighted the importance of AI in health monitoring and consumer interest in price, battery life, and durability.
Brand Observation	Garmin remains preferred for athletes to tracking precisions.
Role	Vodafone Marketing Manager

Lukas, a Vodafone Germany marketing professional, discussed how smartwatches with cellular connectivity are becoming increasingly popular. He emphasized that consumers are drawn to smartwatches that can function independently from their smartphones. Apple and Samsung were highlighted as the leading brands due to their strong ecosystem integration, particularly for customers who are already immersed in the Apple ecosystem. Lukas also noted that Garmin watches remain the go-to choice for serious athletes due to their precision in tracking sports metrics.

Elisa Mitteldorf

Role	Student, Garmin Vivoactive 5 User
Device	Fitness tracking, preparing for a half marathon
Key Features	Heart rate monitoring, interval training, music integration via Spotify
Privacy Perspective	Indifferent about data handling but supportive of sharing for health improvement.
Role	Student, Garmin Vivoactive 5 User

Elisa primarily uses her Garmin Vivoactive 5 for fitness tracking. Her motivation for purchasing the watch was to prepare for a half marathon, prioritizing accuracy in fitness tracking, particularly heart rate and interval training. Elisa chose Garmin over Apple because of its superior fitness tracking capabilities, viewing the Apple Watch as more of a lifestyle product. Additionally, she preferred the more affordable option, avoiding the higher price associated with the Apple Watch. She emphasized the importance of price, connectivity with her iPhone,

and fitness tracking accuracy. Bluetooth functionality and integrated music access, particularly through Spotify, were also valuable to her, as they allowed her to work out without carrying her phone. In terms of data usage, Elisa is indifferent about how her data is handled but is open to sharing it with her doctor or for research purposes if it contributes to better health outcomes. She considers AI-driven health insights important and appreciates the ability to track and better understand her health data, seeing it as a valuable feature.

Felix Kreuz

Role	Fitness Trainer and Garmin Fenix 7 Pro Solar User
Device	Garmin Fenix 7 Pro Solar
Usage Purpose	Endurance sports performance tracking, client training management
Key Features	Running, swimming, strength training, sleep, and heart rate monitoring
Privacy Perspective	Generally unconcerned about privacy but opposes personalized advertising based on health data
Role	Fitness Trainer and Garmin Fenix 7 Pro Solar User

Felix, a fitness trainer with a dual degree in fitness economics, uses his Garmin Fenix 7 Pro Solar to monitor endurance metrics, including recovery, sleep, pace, and heart rate. He chose Garmin for its functionality tailored to endurance sports. As a trainer, Felix relies on smartwatch data to make client performance visible, enhancing training outcomes. He highlights that smartwatches are widespread among younger clients, while older clients often underuse their devices. Though generally unconcerned with data privacy, Felix dislikes the idea of personalized advertising based on his health data. He also sees potential in AI, though he acknowledges its risks, and envisions future software solutions for more efficient fitness data aggregation and training management.

Appendix B.7: Preliminary Interviews Transcripts

Interview with anonymous industry expert, Marketing Manager for IoT & Roaming at Vodafone Germany

Interviewer: We are a team of five people focusing on the Wearable Health Market, specifically on smartwatches. We are analysing how consumers evaluate the various functions and features of smartwatches, such as health tracking, privacy, and connectivity. We want to base our research on this interview, particularly focusing on which factors influence the purchase decisions of smartwatches and how the current market is perceived. We are also interested in future trends, and we would love to hear your thoughts and insights. So, for the record, let me start by asking: What has your role been in the company, particularly regarding smartwatches?

Anonymous Interviewee, Vodafone: Yes, exactly. In our company, my role primarily involves selling smartwatches with connectivity. I think it's important to differentiate them from the smartwatches typically seen in the sports sector, like Garmin or Polar. You have to consider whether the manufacturers are also marketing smartphones and then using smartwatches as an additional sales or cross-sell element to draw customers deeper into their own infrastructure. On the other hand, as you mentioned, there are sports-oriented manufacturers like Garmin or Polar, who focus on selling watches designed specifically for sports functions and GPS tracking. Our focus is really on devices that offer standalone connectivity, meaning they can connect to the mobile network independently if a corresponding SIM card is inserted. For most of these sports-oriented manufacturers, these are typically Bluetooth-connectable devices that synchronise via an administration app with the smartphone. That's not where our focus lies because there are no additional services that we can sell with these devices. What I can say about this is that we always offer these connectable watches in combination with mobile services. It's designed so that you don't need a separate contract for the smartwatch itself, and in fact, all mobile providers in Germany handle it this way. If you already have a primary

contract with a mobile provider, you can add a supplementary option for the watch. This allows you to be reachable on the same number even when you don't have your phone with you, and you don't need a separate number for the smartwatch. Another advantage is that the data allowance from your mobile contract can also be used on the smartwatch, which naturally offers these benefits, yes.

Interviewer: Very cool, you've already touched on some important points regarding connectivity from the company's perspective. How have you recently viewed the competitive landscape in the smartwatch market? Which players have you identified as the main competitors, either from your perspective or from the customers' viewpoint, and why?

Anonymous Interviewee, Vodafone: Mhm, so as we've mentioned before, the focus of this conversation is on manufacturers who also sell smartphones. Naturally, you can think of which company we're talking about in September each year—clearly, Apple devices. The Apple Watch, especially for customers who are already immersed in the Apple ecosystem—including MacBooks, iPhones, Apple Watches, AirPods, and AirTags—has become very important. From a business perspective, I believe we have a good success rate placing an Apple Watch with these customers. You can also see that the market is most active during the launch months of new iPhones and Apple Watches. If you compare this to the launch of a new Google Pixel Watch, it's simply not on the same level.

Samsung is the second major player in the market. They tend to release new watches slightly after launching their flagship smartphones. You also see parallel purchases among customers who are used to the Samsung ecosystem and who then want to add a Samsung Watch, like to their Galaxy phone. I can't back this up with statistics, but I'd argue that Apple has a much stronger correlation—customers who already own an iPhone are much more likely to also buy an Apple Watch.

Interviewer: You've just mentioned customer buying motives and features from a marketing perspective. You've already touched on Apple's ecosystem. From your experience, is this ecosystem one of the strongest sales drivers for Apple? Or are there other drivers that influence smartwatch sales in your experience?

Anonymous Interviewee, Vodafone: Yes, I think another strong factor is how easily the device, in this case, the smartwatch, can synchronize with the smartphone. Personally, I use a Garmin Watch, which is more sports-focused, and it works very well with a separate app. With Apple, of course, the seamless iCloud synchronization across devices is a well-known feature, and it's almost flawless. You could even conduct an empirical study, but if you were to ask a hypothetical Apple customer, who already owns an iPhone, to choose a smartwatch, and you presented them with three smartwatches from three different manufacturers, the chances are high that they'd choose the Apple Watch simply because of its synchronization capabilities with the iPhone.

Interviewer: You've already mentioned some features. Are there any features that your customers feel are missing in the watches you offer, or are there any barriers that make it difficult to sell smartwatches?

Anonymous Interviewee, Vodafone: The watches we offer, of course, have the standard sports functionalities. A classic example is tracking your last jogging session or cycling tour. These are complete standard functionalities that are also available in the connectable watches. There's no difference in functionality between the connected and non-connected versions. For instance, an Apple Watch with or without connectivity has the same functions. Therefore, there's no gap in terms of functionality within our product portfolio. When it comes to marketability, these are all state-of-the-art devices, and they are the ones truly in demand. Since this topic isn't the absolute focus of the environment we operate in, we don't try to cover every

single edge case for customer demands. Instead, we aim to meet the needs of the majority and cater to the most requested features.

Interviewer: You were talking about the state-of-the-art portfolio. There's always this difference in perception when it comes to brands like Apple and Samsung, which aren't necessarily as functionally focused as Garmin watches. You've just mentioned that there are no gaps in your portfolio. Is that really the case, or would you say that Garmin watches are better suited for sports and health tracking, while the Apple Watch is more of an all-rounder? What's your view on other brands?

Anonymous Interviewee, Vodafone: Well, that's something I can't empirically prove. Perhaps it's also because we don't have market research or anything similar on that. For example, there's the idea that Apple Watches might not be as precise in tracking as Garmin watches. That's something you might want to explore further in your research. I believe that a company like Garmin, which has grown by building navigation solutions for ships and other similar technologies, probably has the expertise to include a high-quality, precise tracking sensor in such a small device. But that's just my personal conclusion. I think you'd have to take a closer look at what exactly is built into Apple Watches compared to Garmin. If you look at high-performance athletes, they generally wear watches like these. Take Jonas Deichmann, for example. I'm not sure if he tracks his sporting sessions, but he ran 120 triathlons in a row—one every day. If you check his social media posts, you'll see that athletes like him don't rely on lifestyle-oriented watches like the Samsung Watch or Apple Watch. They opt for more specialized brands like Garmin due to factors like battery life and precision.

Interviewer: You're touching on the different use cases here. From a marketing perspective, do you see any differences in preferences within demographic groups, such as between age groups or genders? Are there any different approaches in your marketing strategy that cater to these preferences?

Anonymous Interviewee, Vodafone: I think that's more a question of how the watch portfolio is structured. What we sell, right?

Yes, this decision doesn't fall directly within my area of responsibility, as my focus is more on what services we can market alongside the smartwatch. The core focus of the company where I work isn't necessarily on catering to different buyer groups specifically for smartwatches. Instead, we see smartwatches as an additional vehicle to market more value-added services to mobile customers or households. It's less about covering all the different needs of various smartwatch users and more about supporting the idea of an ecosystem. So, if a customer has a smartphone from a specific manufacturer, we also offer the smartwatch from that manufacturer to reinforce the ecosystem concept. We don't really focus on functionalities offered by other manufacturers outside of that logic. The decision about which functionalities to include is made by the manufacturer itself. The whole question of what consumers need in a smartwatch or what features they want is entirely in the hands of the manufacturer, who decides what to include in their portfolio.

Interviewer: Yes, exactly. I find the topic of smartwatches with standalone mobile connectivity quite interesting. I'm not sure if you have any relevant statistics or information, but how popular is it for smartwatches to function independently of a smartphone, for example, for making calls? What percentage of smartwatches fall under this use case, and is it a popular feature?

Anonymous Interviewee, Vodafone: Unfortunately, I don't have exact percentages at hand that I could share. And honestly, I don't have that information off the top of my head either. I think, in this context, performance data doesn't play a significant role when we're discussing qualitative topics. That's my diplomatic way of putting it.

Interviewer: What is your view on the future development of the smartwatch market, especially when considering mobile connectivity? What trends do you see emerging, or what trends are already starting to take off?

Anonymous Interviewee, Vodafone: From a mobile connectivity perspective, things will get really interesting when there's no longer a distinction between non-connectable and connectable smartwatches. Currently, the market is still very segmented in that way. Of course, pricing is a factor. If you check any website or online shop for the relevant OEMs, the watches that only offer Bluetooth connectivity are always significantly cheaper than the ones that also include mobile connectivity.

But once we reach the point where this price difference disappears and consumers can choose between these options without having to pay more, it will become really exciting for mobile providers. This would open up far more opportunities to market connectivity across a wider range of watches. We're already seeing this with the Apple Watch Ultra, for example. It doesn't come in two variants; it's only available with mobile connectivity. If this trend continues to grow in the market, it will be much more exciting from a mobile provider's perspective and will present many more marketing opportunities.

Interviewer: Speaking of marketing strategies and future trends, I'm not entirely sure if this is relevant for you since you mentioned that you're only the reseller. Do you get any insights into the topic of artificial intelligence in the smartwatch market? Are there any new developments that you're also marketing? Or is that more of a secondary role? Additionally, what are the most effective marketing strategies for you in the smartwatch sector?

Anonymous Interviewee, Vodafone: I think what can generally be observed in the market, and we saw this with the Google Pixel launch and partially with Apple, though only in selected markets, is that these new top smartphones are now bringing observation, but it seems to be happening mostly in areas like photography, where AI supports certain functionalities, such as image optimization or allows for specific photo editing processes.

Of course, photo editing isn't really relevant for smartwatches, but I think when it comes to analyzing the health data that these devices collect, AI-based analysis could be very helpful for

consumers. For example, developments in resting heart rate data could potentially alert users to health issues even earlier—this kind of predictive health status. This might be something for you to look into in your research, perhaps finding studies on why people buy smartwatches. I think in the future, the topic of wanting an overview of one's health data will play an even bigger role. From personal experience since I bought such a device, if you're using it for sports, you start paying much closer attention to performance data. You also need to spend time understanding what it all means. If you weren't wearing such a watch, you wouldn't usually know what your heart rate is when running at a certain pace, or what your resting heart rate or some AI-based functionalities. This is just a personal recovery heart rate means after a workout, and what conclusions you can draw from that.

This data gains much more significance when systematically analyzed by artificial intelligence. As an individual, you're just looking at single data points without drawing broader conclusions. But through the processing of massive amounts of data and the comparison of different datasets from various people through AI, much stronger insights can be drawn.

This could be an interesting point for your Master's thesis—to explore what motivates consumers to buy smartwatches today. I believe that health functionality plays a significant role, especially the topic of predictive health statistics. By tracking certain KPIs, or rather, the key performance indicators of one's body, users can analyze and understand potential health issues far in advance. I think Apple Watches, for example, can detect atrial fibrillation and similar conditions. All these new high-end devices can do that. In combination with AI, I believe this field—AI-enabled functionality—will become very exciting.

Interviewer: Lukas, you're definitely touching on something very interesting here because we will also have a small focus on predictive disease prevention through AI.

Anonymous Interviewee, Vodafone: Have you ever worn a smartwatch while you had a

COVID-19 infection? You can notice, a few days before your COVID test turns positive—of course, you can only observe this in retrospect—that your sleep quality starts to decline.

Anonymous Interviewee, Vodafone: These watches can also measure in which sleep phases you were during the night, how your heart rate changed during sleep, and how quickly it changed. They also monitor your breathing rate, among other parameters, which then contribute to a sleep score the next morning. My sleep score steadily decreased. Another thing that happened: my resting heart rate significantly increased. These watches also indicate your readiness to train, like how prepared you are for a workout today. Normally, you're in phases of "maintaining fitness" or "building fitness," but suddenly it switched to "fatigued." Garmin, for example, has a feature called Body Battery, which measures a charge level from 0 to 100%, giving you a morning rating in combination with your sleep score. It tells you how ready you are for the day and what activities, like sports, you can handle. But my body battery just wasn't recharging properly. I think that's a great example of how smartwatches can detect issues in the body—like an infection, in this case, COVID—well before you fully feel the effects. Even a few days before you test positive, a smartwatch can already give you clues.

Interviewer: Yes, I find that personally very exciting, I must say. For me, the main reason to wear a smartwatch is the potential for even better disease predictions and sports planning. That's really fascinating. Perhaps as a final question: Are there efforts within your company to pursue partnerships with healthcare organizations or similar institutions for marketing? Are there new approaches focused on health, or is the main selling point still price and data? Like the classic approach versus a newer health-oriented approach?

Anonymous Interviewee, Vodafone: I think you'd have to look at this more closely in a study. And maybe it would help if, in your thesis, you examined various smartwatch model generations. It could be quite simple to build, although it would require detailed work. You could look at the top 5 devices in the smartwatch market over the past 10 years. I'm not sure

exactly when the first smartwatch was sold, but roughly speaking, it should be possible. Then you could examine what functionalities they started with and what has been added in recent years. I think you'd quickly see that functionalities like ECG have been added, as newer Apple Watches allow you to take an ECG. Of course, it's always a question of how detailed this is compared to an ECG taken at a doctor's office, and Apple's website states in every footnote that it's just an indication. In case of doubt, you should always consult a doctor. But looking at that could be a good idea, maybe as a small meta-study in your master's thesis—tracking which devices were released each year and, on the y-axis, noting what functionalities they offered. Without empirical data, I'd personally argue that more health-related functionalities have been added in recent years, and there are surely relevant studies across the smartwatch market that confirm this, including purchasing intent and more.

Interviewer: Thank you so much for taking the time!

Interview with anonymous Smartwatch User

Interviewer: Hello Marie. Thank you for agreeing to participate in this interview. To give you some context, we're a team of five master students conducting research on the Wearable Health Market, with a specific focus on smartwatches. We'll discuss your experience with smartwatches, their features, and your daily usage. Please feel free to share as many details as you'd like. To start, can you tell me when you first felt the desire to own a smartwatch and what triggered that interest?

Anonymous Interviewee: Hello, it's a pleasure to contribute to your studies. The trigger? I'd say it was when I started seriously getting back into sports. I thought it would be more convenient to have a watch on my wrist to track my metrics rather than carrying my phone around.

Interviewer: Thanks for sharing. Now that I have some background, could you tell me what kind of smartwatch you have?

Anonymous Interviewee: I have an Apple Watch.

Interviewer: Do you happen to know which version of the Apple Watch you own?

Anonymous Interviewee: Not really. I've had it for a few years now. It was the latest model when I bought it, but I don't keep track of the versions.

Interviewer: I understand. When asked about your motivation to buy a smartwatch, you mentioned sports—was that the only reason?

Anonymous Interviewee: No, it wasn't just for sports. I also liked how it looked and the design of it. You started seeing more and more people wearing them, both men and women. I liked the ability to change the watch faces and the overall aesthetics.

Interviewer: So, we can say that the aesthetic and design of the smartwatch were critical factors in your purchasing decision. Why did you choose this particular model? Did you compare it to other models, or were there specific features that attracted you?

Anonymous Interviewee: Honestly, it was mostly the brand. I saw Apple Watches on so many people's wrists, whether during the day or in the evening. Other smartwatches seemed to be used mostly by athletes during exercise, not as an everyday accessory. That's why I chose this one—it's trendy.

Interviewer: And in terms of features, which ones were the most important to you when you made your decision?

Anonymous Interviewee: The first thing was that it tells the time in large characters—my eyesight is getting worse as I age. I also loved the customisable watch faces. Another important feature was receiving messages from my iPhone directly on the watch. The ability to take calls without being near my phone was a big plus, too. For sports, it's great for tracking my heart rate, calories burned, and activity duration.

Interviewer: That's very insightful. You mentioned how your eyesight is getting worse as you age. Would you say smartwatches currently offer enough features or tools that cater specifically to older users and their health needs?

Anonymous Interviewee: In my opinion, older people need features that are simple to use and can help monitor their health effectively. I think a smartwatch can be a useful tool for that, but it's also important that it's intuitive and not overwhelming. Too many features can sometimes make things more complicated for older users.

Interviewer: That's very insightful! Let's talk about other brands now. When you think of smartwatches, which other brands come to mind?

Anonymous Interviewee: I don't know any other brands. I only know Apple Watches.

Interviewer: Alright, then let's move on to your daily usage. What features do you use most frequently—fitness tracking, message notifications, weather updates, or something else?

Anonymous Interviewee: Besides checking the time, I mostly use the "Find My Phone" feature.

Interviewer: How often do you use these features—every day or occasionally?

Anonymous Interviewee: Every day.

Interviewer: Are there any features you wish your watch had or any you find unnecessary?

Anonymous Interviewee: No, I don't think I need anything extra, and I don't find any features unnecessary.

Interviewer: What improvements, if any, would you suggest for your smartwatch?

Anonymous Interviewee: I can't think of anything specific right now. Maybe the complexity of the device, as I find it complicated sometimes to understand and use. I'm not sure if that's because I'm not really into new technologies or something else. When I think about older people, you know, mmh, a smartwatch could really help them monitor their health. However, the device remains way too complex, I think. Older people need something functional but simple, not a device that looks like a medical gadget.

Interviewer: I completely understand. So, reducing the complexity of the device would be a key area for improvement in your view. Let's move on to how your watch integrates with other devices. You mentioned earlier that connectivity is important to you. Would you say it's essential, or is it more of a secondary consideration?

Anonymous Interviewee: It's very important. That's actually why I bought it. Without the connectivity, a smartwatch wouldn't interest me.

Interviewer: So, owning an Apple iPhone and an Apple computer influenced your decision to buy the Apple Watch?

Anonymous Interviewee: Yes, absolutely.

Interviewer: Regarding the personal data your watch collects, is that something you pay attention to?

Anonymous Interviewee: I didn't realise the data could be shared with third parties. I thought it was private—just for the user.

Interviewer: Would sharing your data with other companies bother you?

Anonymous Interviewee: Yes, it would. It's personal and even medical in nature.

Interviewer: Do you feel well-informed about this? Sometimes, privacy policies appear when using apps, but they're often long and difficult to understand. Do you feel knowledgeable about who can access your data, and would it concern you if it were shared?

Anonymous Interviewee: I generally don't share my data. I only allow access when it's necessary, like for apps that need my location. Otherwise, I refuse.

Interviewer: That makes sense. Recently, AI features have become more integrated into smartwatches, such as detecting heart rate abnormalities, sending fall alerts, or even predicting conditions like heart disease or diabetes. Do you find these AI-driven health features interesting and important when choosing a smartwatch?

Anonymous Interviewee: Yes, I think it's important. I'd use it to monitor my health. It becomes more relevant as you age, and I think these features would especially benefit older people or those with medical conditions.

Interviewer: Thank you for pointing that out. One last question: Is there anything we didn't cover that you think is important to mention?

Anonymous Interviewee: Perhaps more information on whether wearing a smartwatch daily could have long-term health consequences. There isn't much data yet on whether it's safe to wear connected devices all the time.

Interviewer: That's an excellent point and a very interesting topic. We'll see if we can include that in our thesis. Thank you so much, for your time and insights. Can I reach out to you if we have more questions? Your answers will greatly help our research and the future questionnaires we plan to send out.

Anonymous Interviewee: Yes, of course, it will be my pleasure. Thank you.

Interview with Eric Bitsch, Professional Runner and Smartwatch User

Interviewer: First of all, thank you again for agreeing to do this interview with me. This is part of our master's thesis, where we're exploring how users like you perceive and use smartwatches, especially regarding health tracking, connectivity, and future trends like the integration of artificial intelligence. The goal of this interview is to better understand the factors that influence the purchase of a smartwatch and how users analyse their data, such as heart rate or sleep quality.

We'll start by discussing your personal experience as an athlete with smartwatches, their features, and how you use them in your daily life. Please feel free to provide as much detail as you'd like—there are no right or wrong answers. Before we dive into your smartwatch usage, I'd like to learn more about your background as an athlete. How did you start running, how long have you been running, and do you practise any other sports besides running?

Interviewee, Eric Bitsch: Well, I started running... it's been about ten years now. I started running, as you know, thanks to Delphine, and yeah, we started with short distances, which I hated, like many people who run and don't enjoy it at first. We began with short distances, then moved on to a half marathon, then a marathon. Eventually, we started trail running, gradually increasing the distances, which led to where I am now—doing longer and longer trails. Do you need more details?

Interviewer: No, that's perfect. Do you often use technology in your sports practice, aside from your smartwatch?

Interviewee, Eric Bitsch: Well, I have apps on my phone, and I also use web platforms to manage and track my training loads.

Interviewer: Could you give an example?

Interviewee, Eric Bitsch: Yes, there's one that connects with my watch, and then there's another platform developed by some young French people that I use to help with my training loads and planning.

Interviewer: Understood. You're welcome to mention specific brands, of course. Now, let's talk about your smartwatch. What smartwatch do you currently use?

Interviewee, Eric Bitsch: I have a Garmin Enduro.

Interviewer: And what made you decide to buy a smartwatch? Was it mainly for sports, or also for health tracking, given all the data the watch can measure?

Interviewee, Eric Bitsch: Initially, it was mostly for sports. But over time, smartwatches have started providing more and more data related to health. At first, my watch was only for sports—it wasn't even a connected watch. But as time went on, they added more health-related features, so now it's for both sports and health.

Interviewer: Do you remember your first smartwatch model?

Interviewee, Eric Bitsch: It was a TomTom. I can't remember the exact reference, but after that, I had a Garmin 230.

Interviewer: Why did you choose Garmin? Did you compare it with other models?

Interviewee, Eric Bitsch: Yes, I researched online. Initially, I had the TomTom, but it wasn't programmable, which made it hard to plan marathon training. So, I switched to Garmin because it had the best price-to-quality ratio at the time. Now I stick with Garmin because I'm familiar with its system.

Interviewer: That makes sense. What other smartwatch brands come to mind when you think about smartwatches, and what do you think of them?

Interviewee, Eric Bitsch: Well, there's the Apple Watch. Initially, it wasn't really a sports watch; it was more of a daily smartwatch. They've started making more sports-oriented models, but from what I know, they're still not on the same level as Garmin for sports.

Interviewer: I see.

Interviewee, Eric Bitsch: There are also brands like Coros, Suunto, and Decathlon, which make very good watches. But I stick with Garmin because I'm familiar with the system, just like people stick with iPhones or Samsung once they're used to them.

Interviewer: That's a fair point. Let's talk about your daily use of the watch. What are the main features you use? For example, activity tracking, message notifications, or health features like heart rate monitoring?

Interviewee, Eric Bitsch: For me, it's mainly about sports and health. I'm not really into the connectivity part, so I don't receive WhatsApp messages on my watch. That would annoy me—having notifications every five minutes. I primarily use it for sports and health. Sure, when someone calls me, it rings on my watch and I can see who's calling, but that's the only kind of connection I have.

Interviewer: Makes sense.

Interviewee, Eric Bitsch: Beyond that, it's all about health tracking—sleep, heart rate, heart rate variability, oxygen saturation levels, and, of course, every activity I do, whether it's running, swimming, or cycling—it's all recorded.

Interviewer: That's interesting. Are there any features you wish the watch had, or anything you find unnecessary on your current model?

Interviewee, Eric Bitsch: No, nothing in particular. I don't think there's anything I'd want to add. As for unnecessary features, I don't use everything, so I'm sure there are many functions on the watch that I don't even know about. But I chose this model because it fits my needs.

Interviewer: So, there's nothing you would want to improve in the current watch model?

Interviewee, Eric Bitsch: No, my needs are pretty much met.

Interviewer: That's good to hear. Let's move on to another important aspect—connectivity. How does your watch integrate with your other devices? Is this connection essential for you, or

do you find it secondary? For example, Garmin, unlike Apple or Samsung, doesn't have a complete ecosystem with phones or computers. Did Garmin's compatibility with multiple platforms influence your decision in any way?

Interviewee, Eric Bitsch: No, not really. Garmin has its own platform. I use the Garmin app on my phone, and they have a web platform too. Every time I do an activity or regularly throughout the week, I sync my watch with the platform. That's all I need.

Interviewer: Understood.

Interviewee, Eric Bitsch: I use the Garmin platform to track my activities, but I also sync my data with another platform I like for training management. I sync my watch through my phone, and from there, everything goes to the web platform.

Interviewer: That makes sense. But, for instance, if you had a Mac and an iPhone, would the brand's ecosystem influence your choice in any way?

Interviewee, Eric Bitsch: No, not at all.

Interviewer: I see.

Interviewee, Eric Bitsch: Garmin works independently of any system, so they're not tied to anything. That's what's interesting.

Interviewer: That's a good point. Now, let's talk about the data your watch collects. Today, smartwatches gather extensive data, like heart rate, sleep patterns, and location, which is often used to provide statistics or improve user experience. However, this data can potentially be shared or sold to third parties, such as insurance companies, app developers, or marketing firms. Are you concerned about this? Do you feel well-informed about how your data is used, or do you think it's just part of the service?

Interviewee, Eric Bitsch: From what I understand, Garmin keeps the data protected and doesn't share it—at least, that's what they claim. I'm not 100% sure, but I don't worry too

much. If someone knows my heart beats at 50 or my Body Battery is at 90, it doesn't really bother me.

Interviewer: That's understandable.

Interviewee, Eric Bitsch: Of course, if they were profiting from it, that might bother me, as I don't see why they should profit from my health data. But if it's for research studies, I don't mind. In fact, I sometimes voluntarily share my data for health research.

Interviewer: That's an interesting perspective.

Interviewee, Eric Bitsch: Normally, my data is protected with Garmin, and they seem to have good security in place. But a few years ago, they were hacked, so who knows where my data went then...

Interviewer: Right, I see. Thank you for clarifying that. Moving on to another trend: the integration of artificial intelligence (AI) in smartwatches. More and more smartwatches use AI to analyse health data. For example, some watches can detect anomalies in heart rate, alert you about falls, or even predict health risks like heart disease or diabetes. These technologies are increasingly being integrated into the medical field to help prevent diseases based on the data from your watch. Do you find these features interesting or important when choosing a smartwatch? Would you consider using these features to track your health, or is that not a priority for you?

Interviewee, Eric Bitsch: Yes, I'd be interested. For example, my watch already has heart rate variability tracking, and over time, I've noticed that when it goes into the red zone, I'm either really tired or about to get sick. So, these are already useful indicators for me. Garmin has had these features for a few years now. It's the same with the blood oxygen levels—you know, like the pulse oximeters people were using during COVID to check their oxygen levels.

Interviewer: Right, I actually had a question about that, but go ahead.

Interviewee, Eric Bitsch: The watch can do that now, and I check it to make sure everything's OK.

Interviewer: That's great.

Interviewee, Eric Bitsch: I glance at it to see if my oxygen levels are good, especially after COVID.

Interviewer: Speaking of COVID, during an interview with the marketing manager at Vodafone, we learned that some people wearing smartwatches, like Garmin, noticed a drop in their sleep quality or an increase in resting heart rate a few days before testing positive for COVID. I don't know if you ever tested positive for COVID, but have you ever noticed similar changes?

Interviewee, Eric Bitsch: No, not really, because the watch I had during COVID wasn't as advanced. It didn't give as much information. Back then, I only had heart rate tracking.

Interviewer: Understood.

Interviewee, Eric Bitsch: But with heart rate variability, I've noticed that whenever I've had serious health issues, like when I had a pulmonary embolism after my attack last year, the watch recorded me going into the red zone. I didn't pay attention at the time, but later, when I checked, I saw that my watch had detected the problem a day or two before.

Interviewer: Wow, that's fascinating.

Interviewee, Eric Bitsch: Now I pay more attention to those signs because I know they're indicators of a problem.

Interviewer: So now it helps you in your daily life to adapt your training and better understand your health?

Interviewee, Eric Bitsch: Yes, definitely.

Interviewer: That's excellent. One last question before we finish: is there anything we haven't covered that you think is important to mention about smartwatches?

Interviewee, Eric Bitsch: Well, with smartwatches like Garmin, some people say the indicators aren't always accurate. For example, the heart rate monitor might not be spot on.

Interviewer: Yes, I've heard similar feedback.

Interviewee, Eric Bitsch: Or things like that. But I see it as an indicator, not a precise measure. When the watch shows a red zone for heart rate variability, it means I'm tired or not feeling well. Whether the data is accurate down to the millisecond doesn't matter much to me.

Interviewer: That makes sense.

Interviewee, Eric Bitsch: It's the indication that matters. It's the same with heart rate tracking—people say the watch heart rate monitors aren't very reliable. Maybe your heart rate is actually 140 instead of 145, but it's still a helpful guide.

Interviewer: That's a great way to look at it.

Interviewee, Eric Bitsch: So no, nothing particular to add beyond that.

Interviewer: OK, great! Thank you so much, Eric. It's been fantastic to get your perspective as both an athlete and a smartwatch user. Your insights will definitely help deepen our research. You might receive a follow-up questionnaire later as we progress with our analysis. Further, do you consent to being mentioned in our thesis, or would you prefer to remain anonymous?

Interviewee, Eric Bitsch: I'm happy to be mentioned. Feel free to include my name. And let me know the results when you've completed your full study.

Interview with Filipa Abrantes, Marketing Professional at Huawei Portugal

Interviewer: As I told you, our research is based on or focused on the wearable health technology, specifically the smartwatch market. And in this interview, I would like to understand your perspective from your experience in the smartwatch market. So, I have prepared 9 questions, which you can just freely answer. Maybe you could explain what your role at Huawei was.

Interviewee, Filipa Abrantes: So my role there, there were mainly two things. The first one was I was responsible for creating all of the digital strategy. By digital strategy, I mean the website, the content we should put on the website, best practices for the e-commerce retailers that we had in Portugal at that time.

What were the types of keywords that people were searching?
What were the types of marketing activities that we should focus on more in our social media and also PR fields?

And we had several categories. The first one was a smartwatch because at the time when Huawei arrived in Portugal, they just had smartphones—medium range ones, though. Then they turned to premium range, and then they just went into the smartwatch field as well.

So I was responsible for launching a new category. I can describe it better by saying the first one is like I was mentioning: people were going to recognize Huawei not just as a smartphone provider but as a reference for smartwatches. At that time, Apple was super strong. You already had Samsung, and you already had other Chinese brands as well.

They really wanted to differentiate, so I did several things. The first one I would say regarding marketing activities, of course, was some partnerships at that time. With influencers that were like more mass influencers, so with a lot of volume, with a lot of followers because we didn't want to get into a niche. Huawei is not a niche brand. So, we were seeking volume.

Group Part

So we needed partnerships, and we had smartwatch models for women and men, so we needed to find someone that could fit into both of these. In Portugal at that time, we chose Francolina Patricia. That's one of the major influencers in Portugal. She's really into sports. She's already sponsored by other sports brands. So we did something like that and also worked with influencers to use the watch in terms of digital experience. It was really interesting because we needed to do a deep keyword study, so we just hired a company to make that. What people are searching for when they look for a smartwatch is price and quality, a better screen, colors, so we needed to find out all of these.

Interviewer: Yes.

Interviewee, Filipa Abrantes: We did this way of marketing for Portugal, but we have some analysis from the previous countries because Portugal was not the first country in which Huawei launched the smartwatches. We got information that people from France really care about the color, about the quality of the materials, because of the sweating, and because when you're doing sports, there is a lot of sweat.

Also, the girls don't like things super big on their arms because their arms are skinnier. The battery is one of the things that people valued the most at that time.

Interviewer: And when was this? When were you there?

Interviewee, Filipa Abrantes: Yeah, it was in 2019, five years ago. So before COVID, which was really nice because you could do outdoor activities. These were also one of the marketing activities as well as partnerships with gyms and outdoor activities, types of training for which the trainer at that time was using the watch.

There were also a lot of discounts because it was really price-driven as well, while the quality was really good. At that time, we just made a lot of studies in terms of keywords for Google ads to push for those keywords in some branded contents that we had.

Group Part

Also, we did some magazines like *Men's Health* or *Women's Health*. We focused on lifestyle and also urban because it was our target audience we wanted to reach. We also made a partnership with Spotify at the time, because when people do sports, they listen to music. So we did a lot of partnerships with Spotify, even with a range of music experiences to display a certain sport during playlists.

We made a huge pre-launch campaign so we could get a discount if you would pre-order the watch. I think it is a time we tried different bundles, so we had it.

I think it was the watch with the freebies, Freebuds. It's like AirPods, so earphones without wires. And I think it was there. It was like we tried to discount. We tried the Freebuds due to the audio. That's why we made also so, so many partnerships. Also, we invested a lot in YouTube and other channels, but these ones I think it was the most worth it that I remember.

Then we also did another bundle that was different colors from the bracelets because we got it that there's like people who preferred to have bracelets to do sports and another one more colorful for like to hang out during the day. So, we tried both of them as well, but the audio at that time functioned really, really well.

We also joined a fashion contest or something like that in Portugal. We have, like, the Portuguese Fashion Week. They also had the clothes and the sports at that time. I can tell you there was like more than one million investment that we did with all of these small actions.

But it was really worth it because we even had studies regarding the keywords, like what people were seeking the most. And like I told you, it was really regarding the battery, the quality of the materials. Then in terms of features, we started understanding that people, for instance, wanted the steps to be counted and the calories as well.

We had an application, so we just needed to develop the application too. If we had it at that time, it was Huawei Health, and we needed to improve the features and the data it was capturing. We had a lot of good reviews, and it was really good.

Interviewer: Mm hmm.

Interviewee, Filipa Abrantes: I remember a few friends who had Apple Watches and then just changed to Huawei watches. And one of the things, like I told you, was the bracelets. Even for men, we had sporty bracelets, and then we got, for instance, a leather bracelet.

Because if you think about Apple, Apple is like a status thing. Boys being boys wanted to look pretty, and Huawei tried to imitate those types of things. And also, it was a good strategy at that time. Even for the details like the bracelets, I think we didn't have that immediately in Portugal, but it was also to imitate other brands. But since the prices were lower and the preorders were really, really strong, we got really good reviews. I think Huawei is a brand that grew organically, really in an organic way, because people started loving it. And I can tell you, we had like a Huawei community. We paid 0 to these people.

We didn't pay; they really liked the brand, and they became brand ambassadors at that time as well. So, it was interesting to launch. I remember every six months we had like a different model, so it was really interesting.

Interviewer: Hmm. Yes.

Interviewee, Filipa Abrantes: Like I told you, the reviews that we had also in the e-commerce websites. So, we had different bundles for each e-commerce retailer.

But we grew the business. I don't know the exact numbers, but we conquered like 22% to 30% of the market share really quickly. And of course, Portugal is a good market to test, like I told you previously. But we grew. We grew.

Interviewer: Mm hmm.

Interviewee, Filipa Abrantes: And also for us, it was really—I don't know—important for our teams. Like I told you, then Trump made a tweet. Remember I told you that?

So, for instance, we had to stop working with American companies because Huawei was banned from working with American companies due to Trump imposing certain legal restrictions on Huawei at that time.

And, for instance, the smartwatch wasn't as affected as the smartphones because for smartphones, you go to Google. The smartwatch, you don't need Google. You just have the software and application. So, it was really nice because it wasn't such an affected category. Even in terms of risk, it was a lower-risk category. So, we could survive in that space at the time. We pushed a lot, a lot with the watches because, well, of course, we suffered a lot with the smartphones and also with the PCs. We were also starting to sell laptops, but laptops have Intel chips, and Intel is an American company, so we couldn't sell computers anymore.

Interviewer: Yes.

Interviewee, Filipa Abrantes: But the smartwatch was still an area where we could push, and it was really rewarding at that time.

Interviewer: No, it's really interesting, also considering the time you were there with these political circumstances. It's remarkable what you achieved in the smartwatch market.

What would you say was the competitive landscape then, or maybe even now if you're still up to date? What's your impression of the different competitors? What image do they have? And how would you compare them to each other?

Interviewee, Filipa Abrantes: I would say Apple was the best one. Imagine there were certain features like the ECG (electrocardiogram) or cardiac frequency. These features were certified by certain associations. Most of these associations are American, OK?

So, American brands are really privileged when it comes to certifications. I remember that Apple had a lot of features certified by cardio associations worldwide, and they invested heavily in health. Samsung started doing the same, but Apple was really ahead in health at the time.

Even today, Apple smartwatches can detect diseases through a lot of different features. So, I would say that in terms of watches, Apple was the leader. And their ecosystem was impressive. You had AirPods and all the other connected devices.

Interviewee, Filipa Abrantes: But the features were also really nice. The eSIM card was an innovation—they didn't need their phone to be connected by Bluetooth to their smartwatch because they could make direct calls.

And I think that, at that time, Apple was the only brand that had this feature, at least in Portugal. When I was working with Vodafone, Apple was the only brand that had Apple Watches in its portfolio. They were really pioneering in this way. The Chinese brands like Huawei came in and imitated, offering similar features at a lower price. But in terms of positioning, I would say Samsung was also a really interesting brand.

If you notice, it's hard for people to trust a brand that's only made for watches. Only if you go for sports—for instance, Garmin. Garmin is super well-known for sports, right?

Interviewer: Yes, yes.

Interviewee, Filipa Abrantes: But it's not the same audience. A runner would look for a Garmin watch, but someone who values lifestyle and aesthetics might look for Apple, Huawei, or Samsung. For lifestyle, I would say Apple, Huawei, Samsung, and even Xiaomi are strong contenders.

Smartwatches can also do things like payments. For example, Apple Watches are pioneers in payment systems. Here in Portugal, it wasn't very common, but Apple did some really interesting collaborations with banks.

Interviewer: OK.

Interviewee, Filipa Abrantes: For instance, I remember that if you wanted to subscribe to a new account at a Portuguese bank, they would give you an Apple Watch.

Group Part

If a bank is recommending an Apple Watch, it means trust. Banks would not do that with Huawei, for example.

Interviewer: OK. That's interesting.

Interviewee, Filipa Abrantes: One of the things as well.

Interviewer: And so you mentioned already the kind of segments like runners or lifestyle. Do you also notice differences in preferences among various demographics, for example, age, gender, or for what they use it? How did you segment it?

Interviewee, Filipa Abrantes: I would say that, first, you don't see a lot of teenagers using smartwatches right away.

I would say the main segment was people between 20 and 40, maybe up to 50. But between 20 and 40 was the sweet spot—urban people with urban interests.

Because they're looking for lifestyle and sophistication.

Interviewer: OK.

Interviewee, Filipa Abrantes: The type of partnerships and media we used were aimed at this audience—city centers, urbanites. The watches themselves aren't super cheap.

Huawei did have more affordable options like smart bands, which were much cheaper than the smartwatches. So, we could grab some younger customers with bundles. For example, if you bought a smartphone, we would give you a smart band.

One interesting observation in Portugal was that many grandmothers started using smart bands because their children or grandchildren gifted them during promotions like Christmas.

Interviewer: Really?

Interviewee, Filipa Abrantes: Yes. It was interesting. Even though older people weren't the target, it worked because they thought having a band made them healthier.

They felt like wearing one meant they were improving their lifestyle.

If someone sees you wearing a Garmin, they might think, “Wow, you must be a runner.” It becomes part of your personal brand.

Interviewer: Yes, OK.

Interviewee, Filipa Abrantes: It’s really fascinating how these products can project an image, even if you don’t actively use all the features.

Interviewer: And did you see in your experience—the search words that were mostly used—what would you say was the most common reason people purchased a smartwatch?

Interviewee, Filipa Abrantes: Definitely the battery, like I mentioned earlier.

The quality of materials was another key factor, especially for people with allergies or those who sweat a lot during sports. The colors were also very important, particularly for women.

In Portugal, it seemed like people also cared about having lots of features, even if they never used all of them. It made them feel like they were getting something better.

For instance, on my birthday, I received two smartwatches—a Huawei and a Garmin.

Interviewer: Oh, nice.

Interviewee, Filipa Abrantes: I preferred the Huawei one in terms of design because the bracelet was thinner and more elegant. They also had a feature where water would be expelled from the watch through a hole—it was pretty amazing. But at the end of the day, I stuck with the Garmin because I only use watches for running. For me, it’s just about running, so I chose the Garmin.

Interviewer: OK, interesting. And what about the features that made people complain? Were there any common complaints that might have affected purchase decisions?

Interviewee, Filipa Abrantes: Yes, there were a few things.

First, the materials—while they were good, they weren’t extraordinary. Over time, they could deteriorate.

Second, firmware updates were another issue. Sometimes, there were problems with the connectivity between the smartwatch and the application after an update.

Third, the screen. Broken screens were a common complaint. But honestly, I don't think this was because of the quality of the glass; it was more about accidental damage. People would bump their watch against a wall or drop it.

But overall, the materials and connectivity issues were the main complaints.

Interviewer: OK. And in terms of preferred materials, what do you think worked best?

Interviewee, Filipa Abrantes: For men, it was leather straps. Definitely leather.

For women, it was more about the colors. They wanted something softer and more stylish. Pink, gold, silver—those kinds of colors.

If we didn't offer these colors, they would look for another brand.

Interviewer: So, design choices made a big impact?

Interviewee, Filipa Abrantes: Absolutely. People use these devices as lifestyle accessories.

It's not just about functionality. A smartwatch is also a piece of design, a fashion statement.

Interviewer: OK, that's interesting. Another thing you touched on earlier was brand loyalty and ecosystem integration. How important was that for purchase decisions?

Interviewee, Filipa Abrantes: Super important—like, really important.

Take Apple, for example. Apple has a closed ecosystem, which means their devices work seamlessly together.

But Huawei was actually better in some ways because it could integrate with devices from other brands, even iPhones.

We developed applications to make sure Huawei smartwatches could work with Apple devices.

On a scale of 1 to 10, I would say brand loyalty is a solid 9 in terms of importance. Once people have the smartwatch, the FreeBuds, and other accessories, they're locked into that ecosystem.

Interviewer: That's fascinating.

Interviewee, Filipa Abrantes: Yes. That's also why we created so many bundles. For example, if you bought a smartwatch, you might get FreeBuds for free. It was all about building that ecosystem.

Interviewer: Was it possible to use a Huawei smartwatch with an iPhone?

Interviewee, Filipa Abrantes: Yes, exactly. It was possible, and that was a big advantage for us.

Interviewer: OK. Now, moving on to data usage and privacy, which is an important topic for us. Are there any guarantees or features regarding data privacy that are becoming more important for consumers?

Interviewee, Filipa Abrantes: Privacy is mandatory for companies. We had strict privacy policies, and during the setup process, users had to authorize a lot of things.

But the data was always used in bulk, not individually. For example, we wouldn't know that it's *you*, Carla, using the device. Instead, we would know that a woman aged 20 to 30, who likes technology and sports, is using it.

This is how companies gather insights to improve their products.

Interviewer: OK.

Interviewee, Filipa Abrantes: The ecosystem plays a role here as well. Companies use aggregated data to understand how people use their devices.

It's also worth mentioning that there are other big players in the market—like the pharma and health industries—who are interested in this data.

For example, insurance companies might want access to health data. Huawei might know more about your health than your insurance company does.

Interviewer: That's a good point.

Interviewee, Filipa Abrantes: Yes, and it's not just the tech companies. There are many invisible players in this market.

Interviewer: So, how did customers perceive this? Did you have to communicate transparently about data privacy, or did customers just accept it to use the product?

Interviewee, Filipa Abrantes: We had to communicate it, of course. Privacy policies were always included in advertisements and on the website.

But honestly, most people don't read the fine print. When you're setting up a device, you just click "Next, Next, Next."

Interviewer: That's true.

Interviewee, Filipa Abrantes: Exactly. People authorize permissions without even realizing it. They don't think about it until they notice targeted ads or other things that make them wonder.

Interviewer: Was there ever an incident that significantly impacted consumer trust in the smartwatch brand?

Interviewee, Filipa Abrantes: Not specifically in the smartwatch category.

But when Huawei faced political challenges—like being banned from working with American companies—it affected all product categories, not just smartwatches.

For example, if someone stopped buying Huawei smartphones, they might also stop buying Huawei smartwatches and accessories.

It was all interconnected.

Interviewer: That makes sense. Now, looking to the future, what trends do you think are shaping the smartwatch market?

Interviewee, Filipa Abrantes: I think the battery is still a key feature. People want longer battery life.

Software and applications are also becoming more important. Some people buy smartwatches because of the apps, not the watch itself.

For example, I've heard of people choosing certain brands because their sports apps have better graphics and data visualization.

Interviewer: OK, that's really interesting. Do you have any examples of apps that are particularly popular or unique?

Interviewee, Filipa Abrantes: Yes, one that comes to mind is Suunto. I've heard great things about its features for trail running and elevation tracking.

For example, when I run trails, I like to see the exact elevation I've covered. Not all smartwatches offer that.

Garmin is another one that's excellent for runners and trail enthusiasts because of its GPS accuracy and data.

Interviewer: Got it. So, some apps or features really set certain brands apart.

Interviewee, Filipa Abrantes: Exactly. Sometimes it's not just the smartwatch—it's the ecosystem or the app that makes the difference.

Interviewer: What do you see as the main challenges facing smartwatch adoption? And how can brands overcome them?

Interviewee, Filipa Abrantes: The biggest challenge is the sheer competitiveness of the market. If someone isn't loyal to a particular brand, the deciding factor often becomes price. There are so many good brands offering similar features at various price points. That's why brand reputation is so important. For example, Garmin has a strong reputation among runners, and people trust it for sports. But for general lifestyle, people might prefer Apple, Huawei, or Samsung because they integrate better into everyday life.

Interviewer: So, reputation and price are key challenges.

Interviewee, Filipa Abrantes: Yes, and I'd also add control and personalisation as growing trends. People want more control over their health and lifestyle. Features that monitor heart rate, calories, and even provide personalised fitness recommendations are becoming more important. It's about giving users insights that feel tailored to them—like reminding them to

rest if their heart rate is too high or suggesting how many calories they should consume after a workout.

Interviewer: That makes sense. Personalised features seem to be gaining traction.

Interviewee, Filipa Abrantes: Yes, and they make a smartwatch feel like more than just a device. It becomes a personal assistant for your health.

Interviewer: That's a great perspective. One last question: Is there anything we didn't ask that you think we should keep in mind?

Interviewee, Filipa Abrantes: Hmm, let me think.

I don't know what type of people you're interviewing, but I'd suggest including a wide range of demographics. For example, we noticed that during Christmas campaigns, a lot of older people—like grandmothers—started buying smart bands as gifts or even for themselves. It was unexpected, but it showed us that health-conscious branding resonated with them.

Interviewer: That's fascinating.

Interviewee, Filipa Abrantes: Yes, it was. And even younger people, like teenagers, were more likely to buy smart bands than full smartwatches because of the price difference. So, it's worth exploring how different demographics perceive and use these devices.

Interviewer: That's a great point. I'll definitely share that with my group.

Interviewee, Filipa Abrantes: Perfect. I think those insights could add depth to your research.

Interviewer: Thank you so much, Filipa. This has been incredibly insightful, and we really appreciate your time.

Interviewee, Filipa Abrantes: You're very welcome. If you need anything else, feel free to reach out.

Interviewer: Thank you! I'll stop the recording now.

Interviewee, Filipa Abrantes: Great, and good luck with your research!

Interview with Felix Kreuz, Fitness Trainer

Interviewer: Can you tell us about your background as a fitness trainer and how you use or recommend smartwatches in your work?

Felix Kreuz: Yes, of course. So, my background as a fitness trainer: I've worked in the fitness industry for about five years, including completing a dual degree in fitness economics. During my studies and work in the gym, I came into contact with smartwatches and other wearables. These are especially important for training management and monitoring. I've conducted about 500 to 1,000 personal training sessions, and the challenge was always to make the client's performance visible without relying solely on subjective assessments. Smartwatches make it possible to measure calorie consumption, check intensity levels, and provide insights into recovery and sleep. These devices are now widely used in the fitness industry.

Interviewer: Okay, perfect. So, would you say that smartwatches have helped improve the training with your clients?

Felix Kreuz: Definitely. Especially when the client wears a watch that provides qualified data, it makes my job much easier. You can make the client's performance more visible, make training more meaningful, and monitor parameters like stress levels or recovery.

Interviewer: Thanks, that also answers the next question: How widespread are smartwatches in the fitness world today?

Felix Kreuz: Smartwatches are a common tool but not yet widespread everywhere. Many wear an Apple Watch, Samsung Watch, or Google Watch, but they tend to use them more for everyday life. Proper sports watches like Garmin or Polar are more commonly seen among ambitious athletes.

Interviewer: So, would you say that smartwatches are considered more of a "nice to have" rather than a priority training tool?

Felix Kreuz: Yes, I see it that way at the moment. It's becoming more common, but it hasn't completely taken hold yet.

Interviewer: Are there differences in usage depending on demographic groups, for example, between younger and older users?

Felix Kreuz: Yes, it's more common among younger people up to their mid-40s, especially with smartwatches from Apple or Samsung, which are compatible with their smartphones. Older people are increasingly using smartwatches but often not to their full potential.

Interviewer: What are the most common reasons your clients own a smartwatch?

Felix Kreuz: Most of the time, it's the "all-in-one package." They use various features like health monitoring, sports functions, calls, and music, but it's often also a status symbol.

Interviewer: Do your clients share their fitness data with you, and what opportunities do you see in closer collaboration between trainers and smartwatch data?

Felix Kreuz: I see great opportunities. There's a basic trust between trainer and client, so most are happy to share their data. This allows the training to be much more effective. In the future, I see great potential in software solutions that aggregate data and improve training management.

Interviewer: Are your clients informed about the functions of their smartwatches, or do you have to proactively educate them?

Felix Kreuz: Usually proactive. Many know that they can display certain health data, but they often don't understand how this data affects their performance. As a trainer, you can provide a lot of support there.

Interviewer: Which smartwatch do you personally use?

Felix Kreuz: I use the Garmin Fenix 7 Pro Solar.

Interviewer: What motivated you to buy this smartwatch?

Felix Kreuz: I started endurance sports and wanted to make my performance more visible and track it better, especially my recovery, sleep, and GPS data.

Interviewer: Why did you specifically choose Garmin?

Felix Kreuz: I compared many watches, and Garmin offered the best overall package for my needs, especially in endurance sports. An Apple Watch wasn't an option since I don't have an iPhone.

Interviewer: Which other brands did you consider?

Felix Kreuz: Polar, Apple, and Samsung. I also looked at Fitbit, but it was too weak in terms of performance for me.

Interviewer: Which functions do you use the most?

Felix Kreuz: Tracking running, swimming, strength training, and sleep, as well as continuous heart rate monitoring.

Interviewer: Are there any functions you wish the smartwatch had?

Felix Kreuz: An ECG would be nice, but that's only available on more expensive models. Otherwise, I'm very satisfied.

Interviewer: How do you feel about Garmin's use of your data? Does it concern you?

Felix Kreuz: I'm pretty relaxed about it. Garmin probably gets some data, but I'm not too worried about it.

Interviewer: Would it bother you if your data was used for personalized advertising?

Felix Kreuz: Yes, that would be uncomfortable, especially with personal data like health information.

Interviewer: What are your thoughts on the integration of AI in smartwatches?

Felix Kreuz: I see great potential but also certain risks. I think in a few years I might see it more positively.

Interviewer: Is there anything else you'd like to mention?

Group Part

Felix Kreuz: One could perhaps ask whether customers combine their watches with other devices, such as a chest strap, to get more accurate readings. Also, the question of whether the watch is worn all day or only at certain times would be interesting.

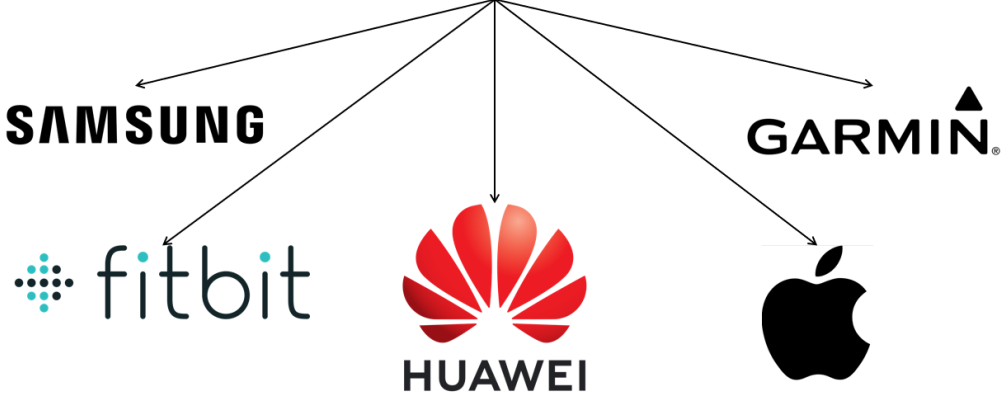
C- Perceptual Map Appendix

Appendix C.1: Perceptual Map - Survey Design

Section 1: Screening questions

Question	Answer Options
Do you consent to participate in this survey?	Yes No (Screening)

Section 2: Smartwatch Brand Image and Perceived Benefits

Automatic Randomization Participants see only one of the logos 	
How well do you know the brand you just saw?	0: never heard of it (forwarding automatically to Section 4) 1: heard of it 2: I know it

Group Part

Attribute	Question/Description	Scale
1) Health-Supporting	How well do you believe this smartwatch brand supports your overall health and wellness?	Scale of 1-5, with 1 being not supportive and 5 being extremely supportive
2) Accuracy and Trust	How accurate and trustworthy do you perceive the data provided by this smartwatch brand to be?	Scale of 1-5, with 1 being inaccurate and untrustworthy, and 5 being highly accurate and reliable
3) Ease of Use for All Ages	How easy is this smartwatch brand to use for both younger and older generations (e.g., Gen Z and elderly family members)?	Scale of 1-5, with 1 being difficult to use and 5 being very easy and intuitive for all age groups
4) Connectivity & Integration	How seamless do you perceive this smartwatch brand's integration with other devices (smartphones, health apps) to be?	Scale of 1-5, with 1 being poorly integrated and 5 being fully and seamlessly integrated
5) Innovation	How innovative do you perceive this brand to be in terms of introducing new technology and features in their smartwatches?	Scale of 1-5, with 1 being not innovative and 5 being highly innovative
6) Aesthetics & Lifestyle Fit	How well does the design of this smartwatch brand fit into your lifestyle and personal aesthetics (fashion, everyday use)?	Scale of 1-5, with 1 being not fitting and 5 being a perfect fit for your lifestyle
7) Value for Money	How do you perceive the value for money of this smartwatch brand in terms of the benefits it offers?	Scale of 1-5, with 1 being poor value and 5 being excellent value for the benefits provided
8) Data Privacy & Protection	How confident are you in the data privacy and security measures of this smartwatch brand?	Scale of 1-5, with 1 being not secure and 5 being highly secure
9) Caring for Elderly Users	How well do you believe this smartwatch brand would cater to elderly users (e.g., health tracking, ease of use, location tracking, safety features)?	Scale of 1-5, with 1 being poorly suited for elderly users and 5 being perfectly suited
10) Brand Reputation	How would you describe the overall reputation of this smartwatch brand in the market?	Scale of 1-5, with 1 being low reputation and 5 being highly reputable
11) Emotional Connection	How emotionally connected do you feel to this smartwatch brand, especially when thinking about purchasing it for a family member (e.g., grandparents)?	Scale of 1-5, with 1 being no emotional connection and 5 being strongly connected

Section 3: Aaker's Brand Personality Traits

Group Part

Brand Personality Trait	Question/Description	Scale
12) Sincerity	How do you perceive this smartwatch brand in terms of sincerity? (Down-to-earth, Honest, Wholesome, Cheerful)	Scale of 1-5, with 1 being not sincere at all and 5 being extremely sincere
13) Excitement	How exciting do you perceive this smartwatch brand to be? (Daring, Spirited, Imaginative, Up to Date)	Scale of 1-5, with 1 being not exciting and 5 being extremely exciting and up to date
14) Competence	How competent do you perceive this smartwatch brand to be? (Reliable, Intelligent, Successful)	Scale of 1-5, with 1 being not competent and 5 being extremely competent
15) Sophistication	How sophisticated do you perceive this smartwatch brand to be? (Upper Class, Charming)	Scale of 1-5, with 1 being not sophisticated and 5 being extremely sophisticated
16) Ruggedness	How rugged or durable do you perceive this smartwatch brand to be, especially for outdoor or sports use? (Outdoorsy, Tough)	Scale of 1-5, with 1 being not rugged at all and 5 being extremely rugged

Section 4: User Profile (Previous Experiences with Smartwatches) and Demographics

Question	Answer Options
Do you currently use a smartwatch?	Yes, No
If yes: Which smartwatch brand, do you use?	Apple, Samsung, Garmin, Huawei, Fitbit, Other (Please specify)
How often do you wear your smartwatch?	Daily Several times a week Once a week Less frequently than a week
What is your primary usage of the smartwatch? (multiple choices possible)	Health monitoring (e.g., heart rate, sleep, ECG) Fitness tracking of workouts (e.g., steps, calories, workout tracking) Communication (for example, calls, messages) GPS/Navigation (for example device location) Watch (to tell time or set a timer) Fashion Accessory (Design and aesthetics) Other (Please specify)
Which smartphone brand do you use?	Apple, Samsung, Google, Huawei, Xiaomi, Oppo, Other
Can you imagine to buy a smartwatch (or a new one if you already own one) for yourself in the future?	Yes No
Would you consider buying a smartwatch for your grandparents or parents if the price wasn't an issue?	Yes No
Why would you not buy a smartwatch for your grandparents or parents? (multiple-choice)	Technologies are too complex, Concerns about data security, Difficulties in using the device, They have physical disabilities, They expressed that they find it uncomfortable,

Group Part

	I don't think they would use it, Other (Please specify)
What would make you more likely to buy a smartwatch for your grandparents or parents? (multiple-choice)	Easier to use, Specific health monitoring features (feel free to specify what feature specifically if you want to), Improved accessibility (e.g., larger buttons, voice control), Better durability Long battery life, Other (Please specify)
What is your age?	18-27, 28-34, 35-43, 44-59, 60-78, 79+
What is your gender?	Male, Female, Other/Prefer not to say
Where do you currently reside?	Germany, Italy, France, Austria, Switzerland, Portugal, Netherlands, Spain, Other inside Europe (please specify), Other outside Europe (please specify)

*Appendix C.2: Sample Description - Perceptual Map Analysis***Gender Distribution**

Gender	Percentage (%)
Female	68.0%
Male	31.3%
Prefer not to disclose	0.7%

Age Groups

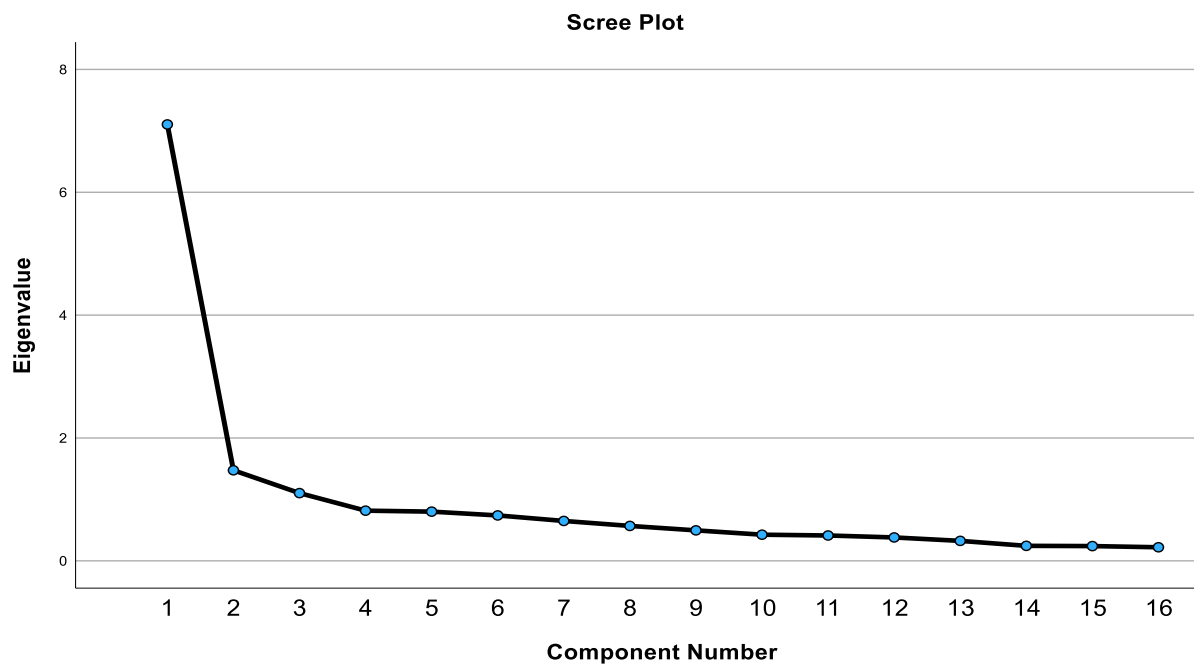
Generation	Age Range	Percentage (%)
Gen Z	12–27	48.0%
Millennials	28–34	11.3%
Gen X	35–43	7.3%
Baby Boomers	44–59	25.3%
Silent Generation	60–78	8.0%

Geographic Representation

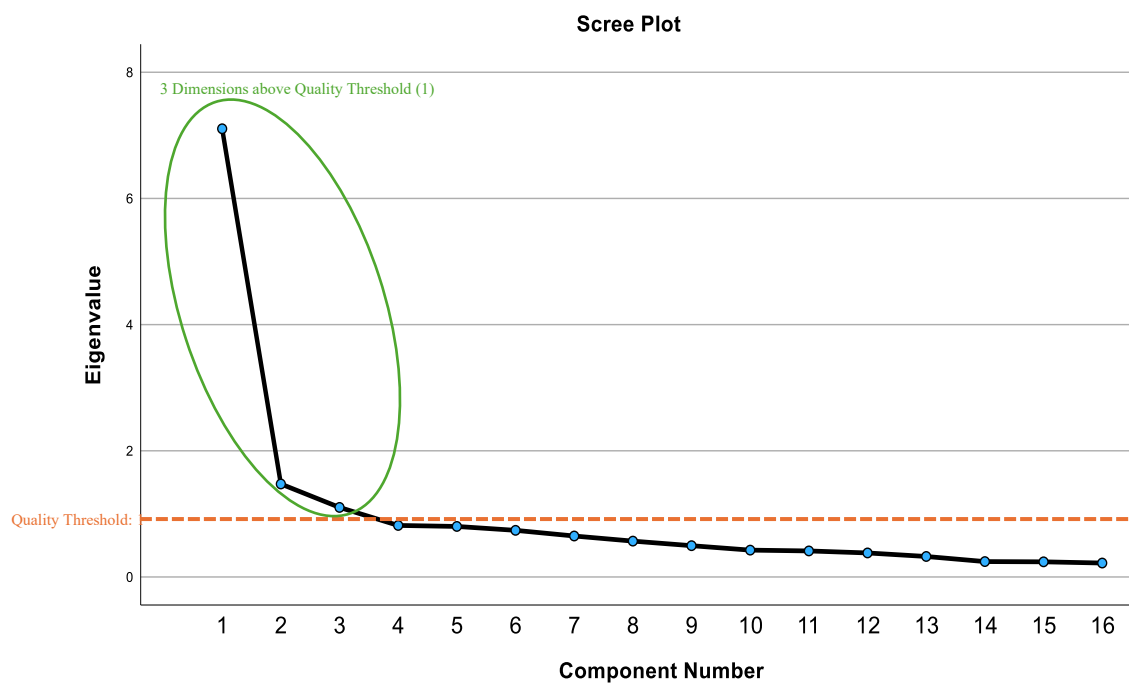
Country	Percentage (%)
Germany	54.7%
France	16.0%
Other EU countries	27.3%
Outside EU	2.0%

Appendix C.3: Scree Plot Cumulative Variance

Scree Plot: Graphical representation of Eigenvalues for component selection.



Marked Scree Plot: Visualization the components selected with Eigenvalues above 1.



Appendix C.4: Perceptual Data

Loadings of Brands and Attributes Across the three Dimensions (identified with PCA).

Loadings are coded by colour: Green indicating high loading and red low loading.

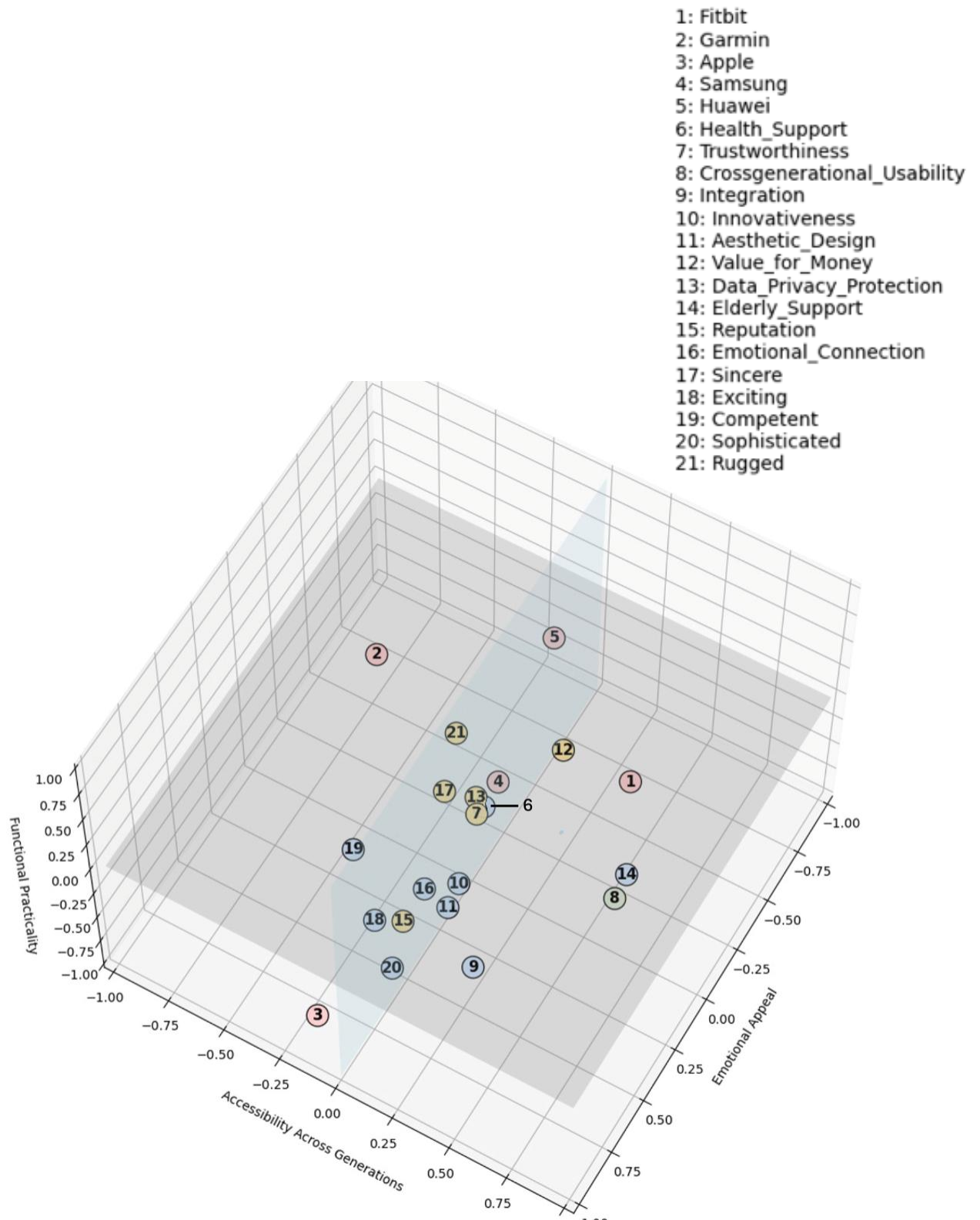
Brands & Attributes	1.Emotional Appeal	2.Functional Practicality	3.Cross Generational Accessibility
Fitbit	-0.31	-0.04	0.51
Garmin	-0.07	0.59	-0.45
Apple	0.91	-0.44	-0.09
Samsung	0.05	0.25	0.14
Huawei	-0.79	-0.21	-0.09
Health_Support	0.29	0.578	0.217
Trustworthiness	0.35	0.633	0.221
Crossgenerational_Usability	0.231	0.162	0.739
Integration	0.704	0.06	0.41
Innovativeness	0.541	0.379	0.256
Aesthetic_Design	0.606	0.262	0.247
Value_for_Money	-0.042	0.632	0.361
Data_Privacy_Protection	0.284	0.615	0.18
Elderly_Support	0.146	0.227	0.74
Reputation	0.757	0.32	0.146
Emotional_Connection	0.642	0.434	0.17
Sincere	0.34	0.67	0.08
Exciting	0.798	0.299	0.05
Competent	0.644	0.471	-0.129
Sophisticated	0.847	0.035	0.15
Rugged	0.161	0.813	0.026

Appendix C.5: Attributes' Coordinates

Rotated Component Matrix ^a			
	Component (Dimension)		
	1	2	3
Health_Support	0.290	0.578	0.217
Trustworthiness	0.350	0.633	0.221
Crossgenerational_Usability	0.231	0.162	0.739
Integration	0.704	0.060	0.410
Innovativeness	0.541	0.379	0.256
Aesthetic_Design	0.606	0.262	0.247
Value_for_Money	-0.042	0.632	0.361
Data_Privacy_Protection	0.284	0.615	0.180
Elderly_Support	0.146	0.227	0.740
Reputation	0.757	0.320	0.146
Emotional_Connection	0.642	0.434	0.170
Sincere	0.340	0.670	0.080
Exciting	0.798	0.299	0.050
Competent	0.644	0.471	-0.129
Sophisticated	0.847	0.035	0.150
Rugged	0.161	0.813	0.026
Extraction Method: Principal Component Analysis.			
Rotation Method: Varimax with Kaiser Normalization.			
a. Rotation converged in 6 iterations.			

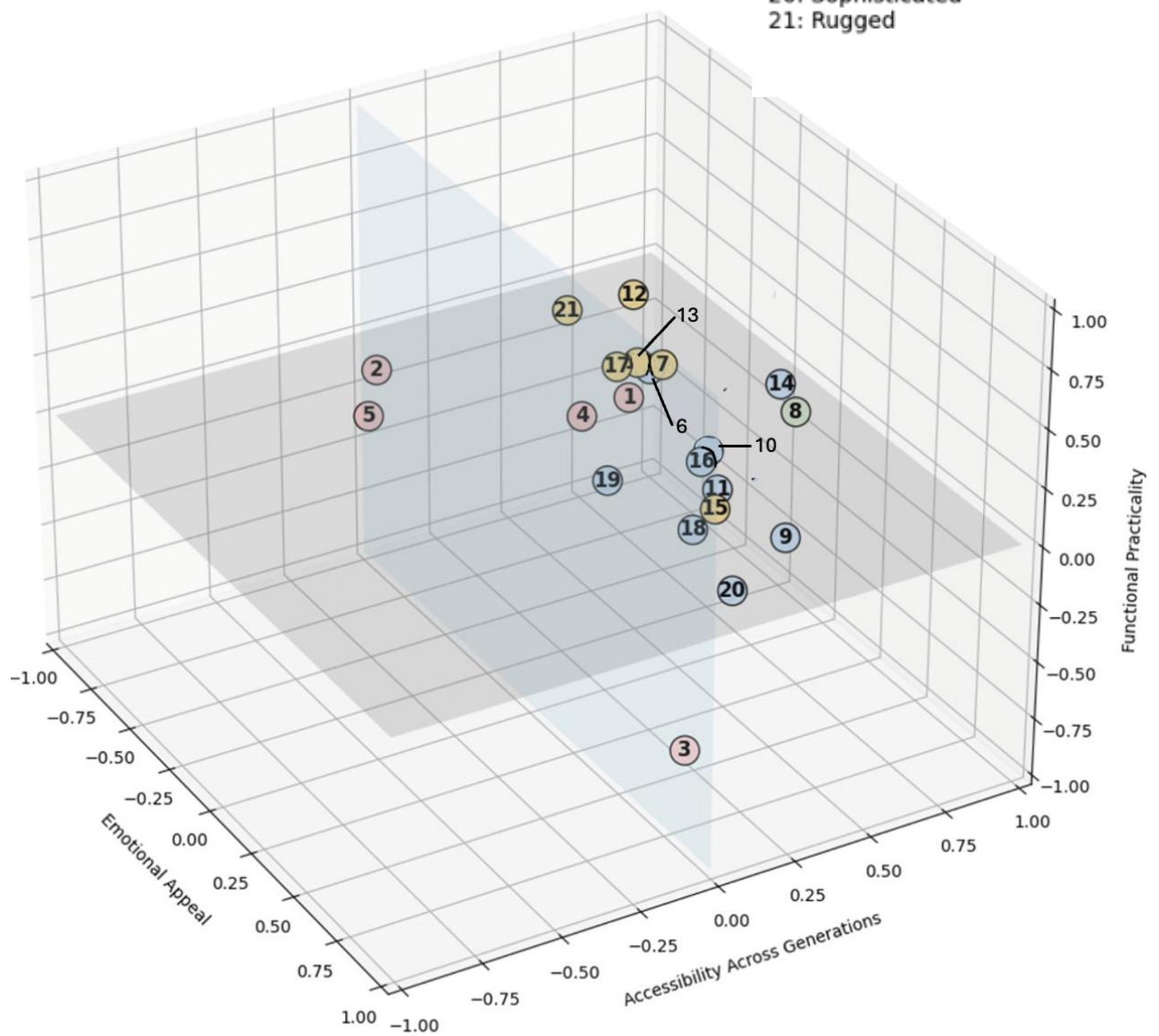
Appendix C.6: Rotated 3D Perceptual Map (Python)

Rotated view of brand positionings and attributes associations across the 3 key dimensions.

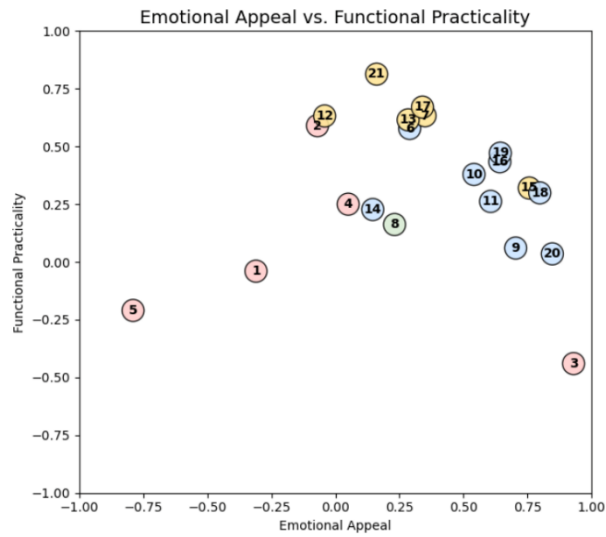


Group Part

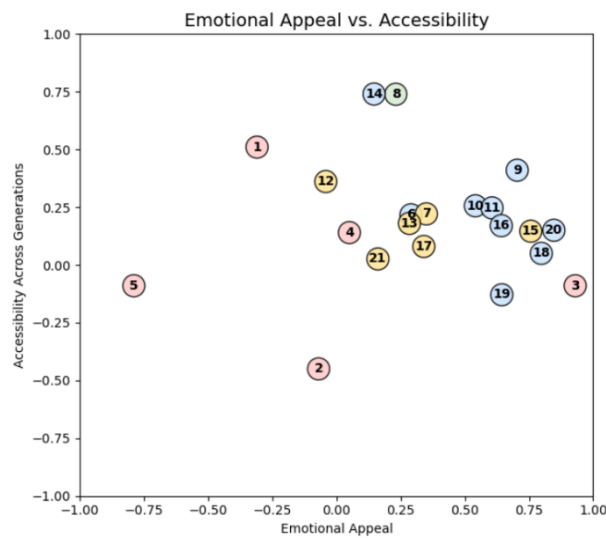
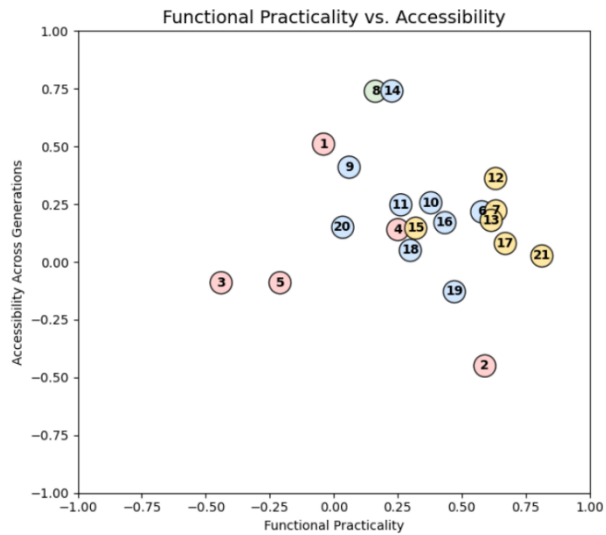
- 1: Fitbit
- 2: Garmin
- 3: Apple
- 4: Samsung
- 5: Huawei
- 6: Health_Support
- 7: Trustworthiness
- 8: Crossgenerational_Usability
- 9: Integration
- 10: Innovativeness
- 11: Aesthetic_Design
- 12: Value_for_Money
- 13: Data_Privacy_Protection
- 14: Elderly_Support
- 15: Reputation
- 16: Emotional_Connection
- 17: Sincere
- 18: Exciting
- 19: Competent
- 20: Sophisticated
- 21: Rugged



Appendix C.7: 2D Perceptual Maps with Attributes and Brands (Python)



- 1: Fitbit
- 2: Garmin
- 3: Apple
- 4: Samsung
- 5: Huawei
- 6: Health_Support
- 7: Trustworthiness
- 8: Crossgenerational_Usability
- 9: Integration
- 10: Innovativeness
- 11: Aesthetic_Design
- 12: Value_for_Money
- 13: Data_Privacy_Protection
- 14: Elderly_Support
- 15: Reputation
- 16: Emotional_Connection
- 17: Sincere
- 18: Exciting
- 19: Competent
- 20: Sophisticated
- 21: Rugged



D- Conjoint Analysis Appendix

Appendix D.1: Attributes and Levels of the Conjoint Analysis

Attributes	Levels
1. Brand	Apple Samsung Garmin Fitbit Huawei
2.. Health Monitoring Features	Basic (Heart Rate, Step Count) Advanced (ECG, Blood Oxygen, Sleep Tracking) Comprehensive (Advanced features + Stress Level, Blood Pressure) AI-Enhanced (Predictive disease management, Generative AI-driven insights)
3. Battery Life	Up to 24 hours 2-3 days 4-7 days More than 7 days
4. Connectivity to Smartphone (Synchronization)	No app required (but limited compatibility with other brands) Additional App required (but full compatibility across brands)
5. Data Sharing and Privacy	Basic Data Collection (Minimal Anonymity and Control) Standard Privacy Settings (Limited Anonymity and Basic Control) Enhanced Privacy with Controlled Third-Party Sharing (Moderate Anonymity and Control) Full Transparency (High Anonymity and Full Control)
6. Design and Aesthetics	Minimalistic (Simple, Sleek, Lightweight) Sport-Focused (Rugged, Durable, Silicone Bands) Premium Accessory (Luxury Options: Leather, Stainless Steel, jewelry oriented) Customizable and Trendy (Interchangeable bands, Color options)
7. Retail Price	199 € 299 € 499 € 799 € 1000€+

Appendix D.2: Screening Questions before Conjoint Block

Question ID	Question	Answer Options
Q1	Do you currently use a smartwatch?	Yes, No (Screening)
Q1.1	If yes, which smartwatch brand do you use?	Apple, Samsung, Huawei, Garmin, Fitbit, Other
Q1.2	If yes, how often do you wear your smartwatch?	Daily, Several times a week, Once a week, Less frequently than once a week
Q2	Would you be interested in buying a new model for yourself or a smartwatch for others?	Yes, No (Screening)
Q2.1	If not, why are you not interested?	Price, Design, Complexity, Lack of Features, Privacy, Annoyance, Other

Appendix D.3: Demographic/Segmentation Questions after Conjoint Block

Question ID	Question	Answer Options
Q3	Rank the following smartwatch use cases in order of importance to you.	Health monitoring (e.g., heart rate, sleep, ECG); Fitness tracking (e.g., steps, calories, workout tracking); Communication (e.g., calls, messages); GPS/Navigation (e.g., for example device location); Watch (to tell time or set a timer); Fashion Accessory (Design and aesthetics)
Q4	Would you consider purchasing a smartwatch for an elderly family member?	Yes, No
Q4.1	Conditional: If you answered yes, would your preferred smartwatch setup and feature priorities change when considering a purchase for an elderly person (e.g. a parent/grandparent)?	Yes, No
Q5	Rank the following features by importance if purchasing a smartwatch for an elderly family member.	Remote Health monitoring (e.g., heart rate, ECG, Blood Pressure); Location tracking (e.g., GPS, geofencing); Emergency alerts (e.g., SOS button, automatic fall detection); Ease of use for elderly (e.g., large buttons, bigger screen, simplified

Group Part

		interface); Battery life; Communication (reminder for medication, call with family members)
Q6	Which smartphone brand do you use?	Apple, Samsung, Google, Huawei, Xiaomi, Oppo, Other
Q7	Where do you currently reside?	Austria, France, Germany, Italy, Netherlands, Portugal, Spain, Switzerland, Other
Q8	What is your age?	18-27, 28-34, 35-43, 44-59, 60-78, 79+
Q9	What is your gender?	Male, Female, Other/Prefer not to say
Q10	How often do you engage in physical activities?	Daily, Several times a week, Once a week, Less frequently than once a week
Q11	Do you currently have or have you had medical conditions?	Yes, No, Prefer not to say
Q12	Do you think a smartwatch can play a role in monitoring your health?	Yes, No

Appendix D.4: Sample Description – Conjoint Analysis

Characteristics	Total Sample Size (N=155)	Sample % Count
Gender		
Male	59	38.10%
Female	95	61.30%
Other/Prefer not to say	1	0.60%
Age Group		
Gen Z (18-27 years)	111	71.60%
Millennials (28-43 years)	35	22.60%
Gen X (44-59 years)	8	5.20%
Baby Boomers (60-78 years)	1	0.60%
Current residency		
Germany	124	80.0%
Austria	10	6.5%
France	7	4.5%
Portugal	5	3.2%
Switzerland	3	1.9%
Netherlands	2	1.3%
Others	4	2.6%
Current Smartwatch Ownership (Screening Question 1)		
Yes	89	57.4%
No	66	42.6%
Smartwatch Purchase Interest (Screening Question 2)		
Yes	137	88.4%
No	18	11.6%
Physical Activity Level		
Daily	16	10.3%
Several times a week	99	63.9%
Once a week	27	17.4%
Less frequently than once a week	13	8.4%
Consider purchasing a smartwatch for an elderly family member		
Yes	115	74.2%
No	40	25.8%

Appendix D.5: Apple Relative Attribute Importance and Part-Worth Utilities

	Attributes	Relative Importance	Part-Worth Utility	Levels
Health Monitoring Features		15.9%	-9.8%	Basic
			3.7%	Advanced
			2.2%	Comprehensive
			4.0%	AI-Enhanced
Battery Life		14.3%	-8.5%	Up to 24 hours
			-2.5%	2-3 days
			7.0%	4-7 days
			4.0%	More than 7 days
Connectivity to Smartphone (Synchronization)		5.4%	-0.8%	No app required
			0.8%	Additional App required
Data Sharing and Privacy		18.2%	-4.8%	Basic Data Collection
			-10.5%	Standard Privacy Settings
			6.3%	Enhanced Privacy
			9.0%	Full Transparency
Design and Aesthetics		11.2%	-2.8%	Minimalistic
			1.6%	Sport-Focused
			2.5%	Premium Accessory
			-1.2%	Customizable and Trendy
Price		35.0%	19.4%	199 €
			17.3%	299 €
			-1.5%	499 €
			-10.4%	799 €
			-24.8%	1000€+

Appendix D.6: Samsung Relative Attribute Importance and Part-Worth Utilities

	Attributes	Relative Importance	Part-Worth Utility	Levels
Health Monitoring Features		12.6%	-6.2%	Basic
			1.1%	Advanced
			0.8%	Comprehensive
			4.2%	AI-Enhanced
Battery Life		15.8%	-9.5%	Up to 24 hours
			4.8%	2-3 days
			-0.4%	4-7 days
			5.1%	More than 7 days
Connectivity to Smartphone (Synchronization)		6.1%	2.3%	No app required
			-2.3%	Additional App required
Data Sharing and Privacy		20.1%	-5.8%	Basic Data Collection
			-10.1%	Standard Privacy Settings
			5.2%	Enhanced Privacy
			10.7%	Full Transparency
Design and Aesthetics		10.5%	3.5%	Minimalistic
			0.3%	Sport-Focused
			-4.6%	Premium Accessory
			0.8%	Customizable and Trendy
Price		35.1%	15.1%	199 €
			17.7%	299 €
			2.7%	499 €
			-11.8%	799 €
			-23.7%	1000€+

Appendix D.7: Garmin Relative Attribute Importance and Part-Worth Utilities

 GARMIN	Attributes	Relative Importance	Part-Worth Utility	Levels
Health Monitoring Features		14.1%	-9.3%	Basic
			0.6%	Advanced
			5.8%	Comprehensive
			2.8%	AI-Enhanced
Battery Life		17.3%	-9.7%	Up to 24 hours
			-6.1%	2-3 days
			7.0%	4-7 days
			8.8%	More than 7 days
Connectivity to Smartphone (Synchronization)		4.6%	-1.1%	No app required
			1.1%	Additional App required
Data Sharing and Privacy		14.8%	-6.3%	Basic Data Collection
			-3.2%	Standard Privacy Settings
			0.4%	Enhanced Privacy
			9.0%	Full Transparency
Design and Aesthetics		13.9%	2.9%	Minimalistic
			-0.6%	Sport-Focused
			-0.6%	Premium Accessory
			-1.6%	Customizable and Trendy
Price		35.3%	21.5%	199 €
			15.8%	299 €
			3.0%	499 €
			-17.5%	799 €
			-22.7%	1000€+

Appendix D.8: Fitbit Relative Attribute Importance and Part-Worth Utilities

	Attributes	Relative Importance	Part-Worth Utility	Levels
Health Monitoring Features		16.4%	-8.0%	Basic
			2.1%	Advanced
			-1.1%	Comprehensive
			7.0%	AI-Enhanced
Battery Life		14.7%	-5.6%	Up to 24 hours
			-3.0%	2-3 days
			-1.1%	4-7 days
			9.7%	More than 7 days
Connectivity to Smartphone (Synchronization)		5.1%	-1.2%	No app required
			1.2%	Additional App required
Data Sharing and Privacy		13.8%	-2.8%	Basic Data Collection
			-5.6%	Standard Privacy Settings
			0.1%	Enhanced Privacy
			8.3%	Full Transparency
Design and Aesthetics		11.8%	-1.1%	Minimalistic
			-0.6%	Sport-Focused
			2.2%	Premium Accessory
			-0.4%	Customizable and Trendy
Price		38.3%	21.8%	199 €
			18.5%	299 €
			7.5%	499 €
			-19.8%	799 €
			-28.1%	1000€+

Appendix D.9: Huawei Relative Attribute Importance and Part-Worth Utilities

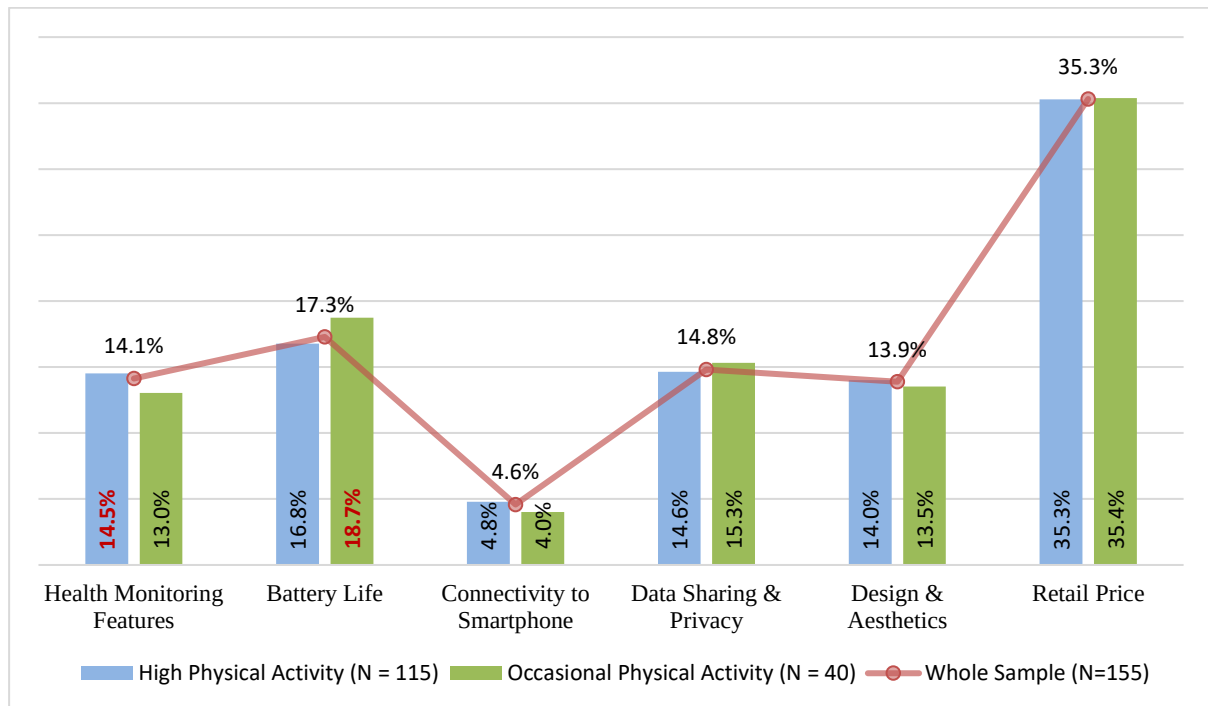
 HUAWEI	Attributes	Relative Importance	Part-Worth Utility	Levels
Health Monitoring Features		15.4%	-11.0%	Basic
			6.0%	Advanced
			5.7%	Comprehensive
			-0.7%	AI-Enhanced
Battery Life		17.1%	-10.6%	Up to 24 hours
			-4.7%	2-3 days
			7.6%	4-7 days
			7.7%	More than 7 days
Connectivity to Smartphone (Synchronization)		7.6%	2.8%	No app required
			-2.8%	Additional App required
Data Sharing and Privacy		15.5%	-3.3%	Basic Data Collection
			-6.6%	Standard Privacy Settings
			1.7%	Enhanced Privacy
			8.2%	Full Transparency
Design and Aesthetics		11.8%	2.6%	Minimalistic
			-2.3%	Sport-Focused
			1.5%	Premium Accessory
			-1.7%	Customizable and Trendy
Price		32.7%	17.2%	199 €
			17.1%	299 €
			0.9%	499 €
			-13.1%	799 €
			-22.1%	1000€+

Appendix D.10: Median Brand Preferences by Age Segments

Brand	Gen Z	Millennials	Gen X
Apple	33.7	28.4	26.8
Samsung	-1.4	2.2	-15.6
Garmin	7	2.2	0.9
Fitbit	-2	-1.2	-0.6
Huawei	-14.9	-20.4	-7.8

Appendix D.11: Median Brand Preferences by Physical Activity Levels

Brand	High Physical Activity	Occasional Physical Activity
Apple	32.9	41.9
Samsung	-5.3	0
Garmin	6.3	0.9
Fitbit	2.5	-3.5
Huawei	-23.9	-15.8

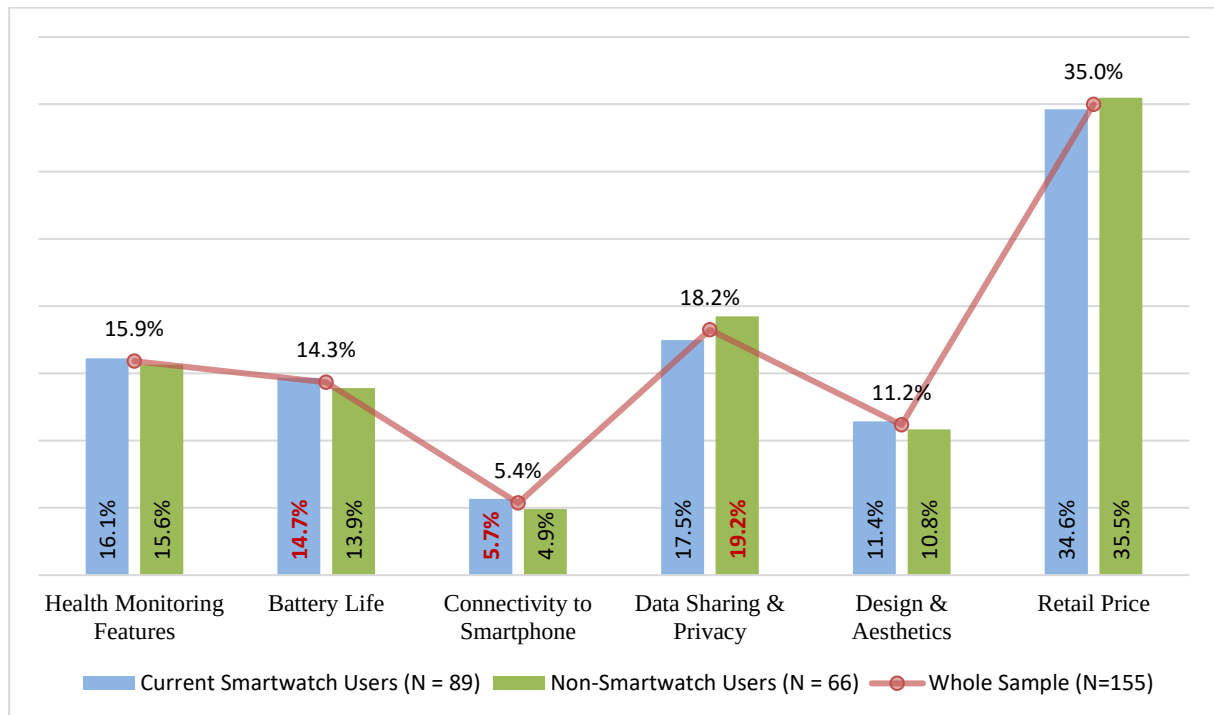
Appendix D.12: Garmin Attribute Importance across Physical Activity Levels

Appendix D.13: Median Brand Preferences by Use Case Preferences

Brand	Health Monitoring	Fashion Accessory
Apple	39.4	47.2
Samsung	-2.4	-7.2
Garmin	3.1	0.9
Fitbit	-13.1	2.6
Huawei	-18.6	-24.7

Appendix D.14: Median Brand Preferences by Current Smartwatch Usage

Brand	Current Smartwatch Users	Non-Smartwatch Users
Apple	33.4	29.5
Samsung	-5.3	0.1
Garmin	5.5	2.5
Fitbit	-4.6	2.4
Huawei	-20.7	-20

Appendix D.15: Apple Attribute Importance Current Smartwatch Users vs. Non-Smartwatch Users

Appendix D.16: Apple Part-Worth Utilities across Age Groups

	Attributes	Gen Z	Millennials	Gen X	Levels
Health Monitoring Features		-10.0%	-9.1%	-9.2%	Basic
		3.7%	3.2%	4.5%	Advanced
		2.8%	0.1%	2.3%	Comprehensive
		3.5%	5.8%	2.3%	AI-Enhanced
Battery Life		-8.8%	-7.4%	-7.1%	Up to 24 hours
		-2.4%	-2.9%	-2.4%	2-3 days
		7.0%	7.4%	6.2%	4-7 days
		4.2%	3.0%	3.3%	More than 7 days
Connectivity to Smartphone (Synchronization)		-1.1%	-0.1%	0.8%	No app required
		1.1%	0.1%	-0.8%	Additional App required
Data Sharing and Privacy		-4.6%	-5.1%	-5.1%	Basic Data Collection
		-10.3%	-10.3%	-13.7%	Standard Privacy Settings
		6.0%	6.8%	8.1%	Enhanced Privacy
		8.9%	8.6%	10.7%	Full Transparency
Design and Aesthetics		-2.6%	-3.5%	-3.4%	Minimalistic
		1.4%	1.9%	3.8%	Sport-Focused
		2.2%	3.8%	0.9%	Premium Accessory
		-1.1%	-2.2%	-1.3%	Customizable and Trendy
Price		19.1%	20.0%	18.3%	199 €
		16.8%	18.3%	18.4%	299 €
		-1.1%	-2.0%	-4.5%	499 €
		-9.6%	-12.4%	-10.9%	799 €
		-25.1%	-23.9%	-21.3%	1000€+

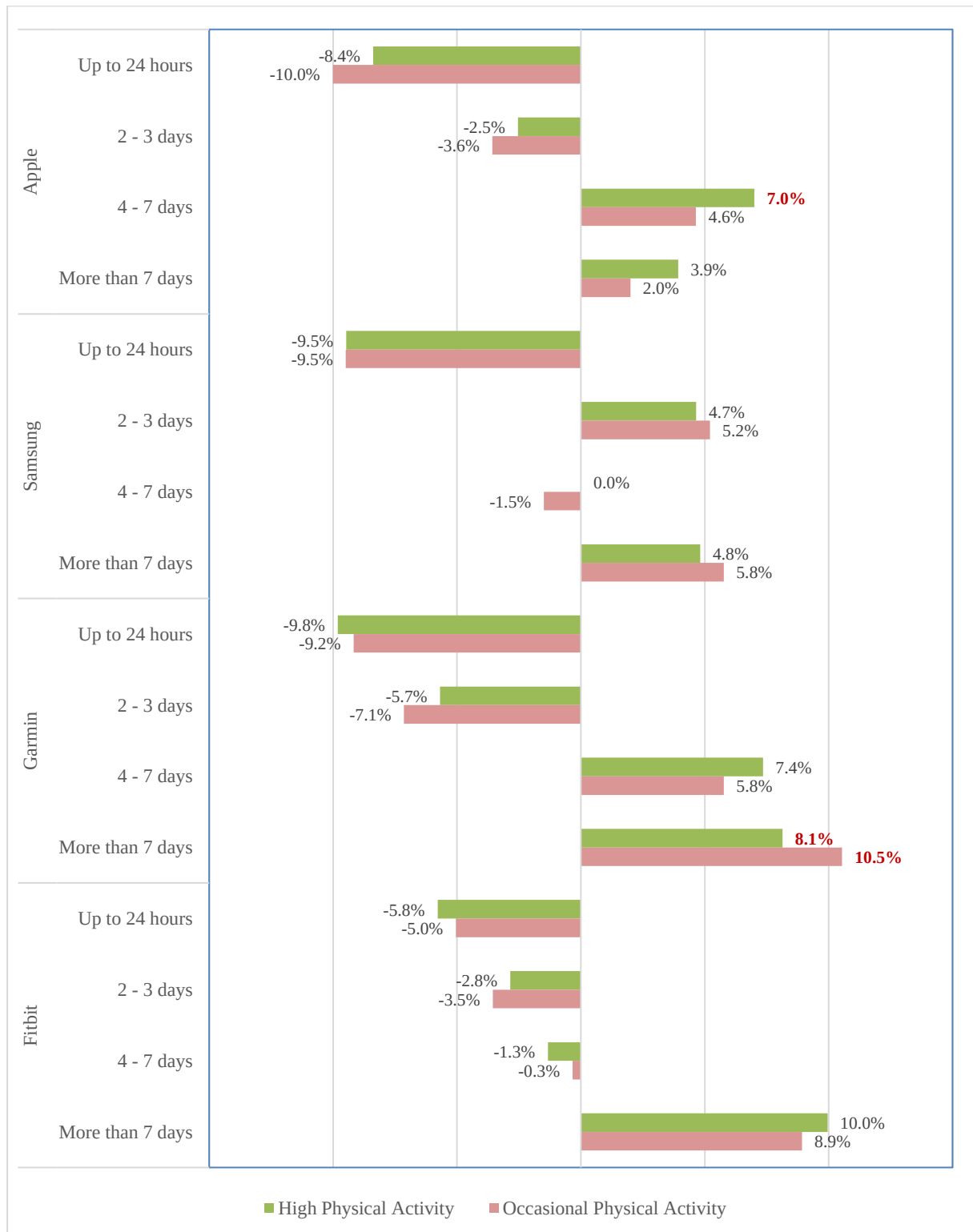
Appendix D.17: Garmin Part-Worth Utilities across Age Groups

 Attributes	Gen Z	Millennials	Gen X	Levels
Health Monitoring Features	-8.8%	-10.7%	-8.0%	Basic
	0.0%	1.8%	2.7%	Advanced
	6.1%	5.4%	3.6%	Comprehensive
	2.8%	3.5%	1.6%	AI-Enhanced
Battery Life	-9.5%	-9.9%	-10.4%	Up to 24 hours
	-6.3%	-5.8%	-2.4%	2-3 days
	6.5%	8.3%	7.4%	4-7 days
	9.3%	7.5%	5.3%	More than 7 days
Connectivity to Smartphone (Synchronization)	-1.4%	-0.3%	-1.5%	No app required
	1.4%	0.3%	1.5%	Additional App required
Data Sharing and Privacy	-6.7%	-5.1%	-4.7%	Basic Data Collection
	-2.9%	-3.5%	-5.8%	Standard Privacy Settings
	0.6%	0.2%	-2.3%	Enhanced Privacy
	8.9%	8.4%	12.9%	Full Transparency
Design and Aesthetics	2.9%	2.7%	4.5%	Minimalistic
	-0.7%	0.0%	-4.9%	Sport-Focused
	-0.9%	-0.1%	-0.1%	Premium Accessory
	-1.3%	-2.6%	0.5%	Customizable and Trendy
Price	21.3%	22.3%	19.7%	199 €
	16.4%	13.6%	17.5%	299 €
	3.0%	3.2%	-0.7%	499 €
	-18.3%	-15.0%	-16.7%	799 €
	-22.3%	-24.1%	-19.9%	1000€+

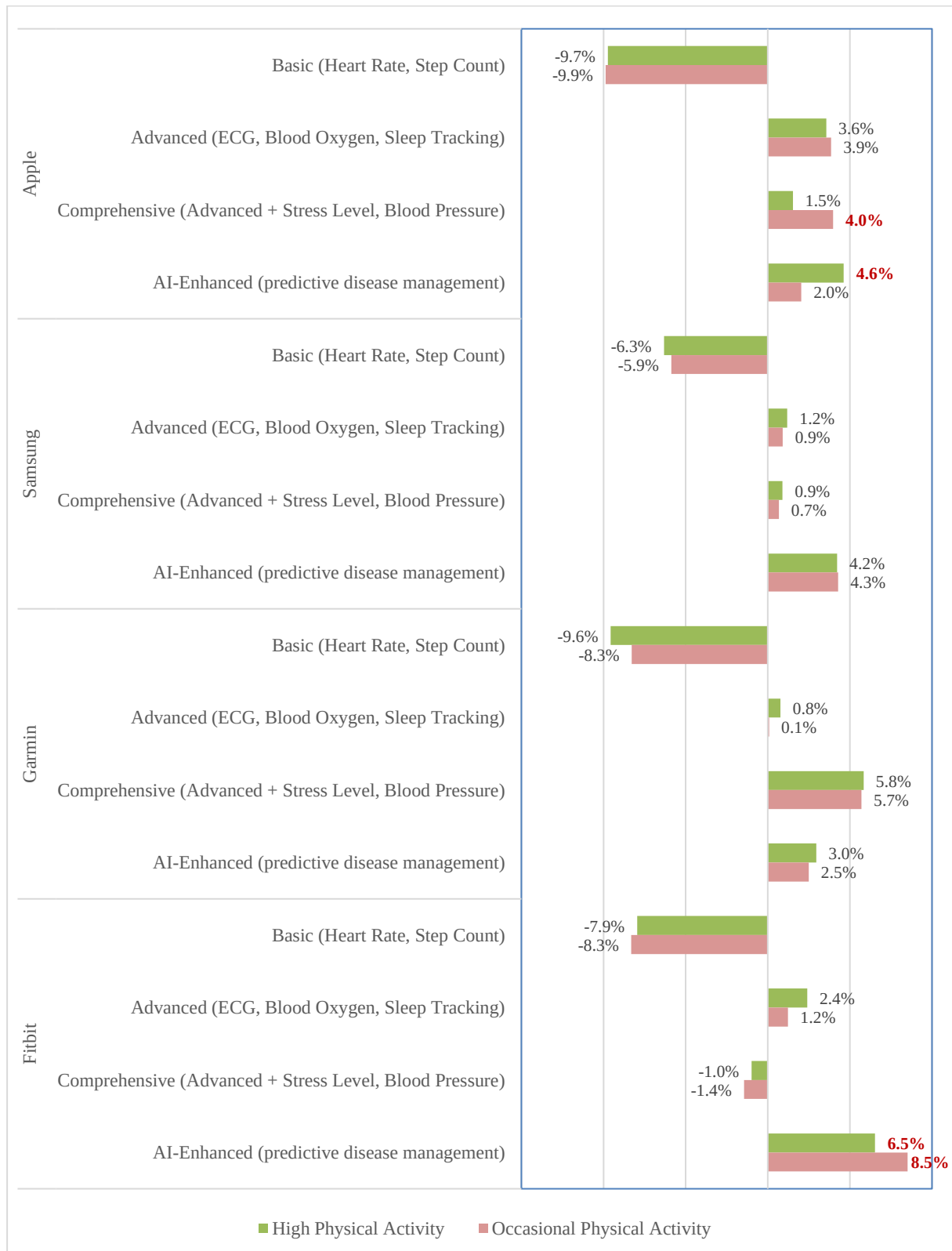
Appendix D.18: Samsung Part-Worth Utilities across Age Groups

 Attributes	Gen Z	Millennials	Gen X	Levels
Health Monitoring Features	-6.1%	-6.6%	-5.6%	Basic
	1.1%	1.6%	0.1%	Advanced
	0.8%	0.6%	1.2%	Comprehensive
	4.2%	4.3%	4.4%	AI-Enhanced
Battery Life	-9.4%	-9.8%	-7.9%	Up to 24 hours
	4.4%	6.0%	4.6%	2-3 days
	-0.4%	0.3%	-2.1%	4-7 days
	5.4%	3.6%	5.4%	More than 7 days
Connectivity to Smartphone (Synchronization)	2.5%	1.8%	4.0%	No app required
	-2.5%	-1.8%	-4.0%	Additional App required
Data Sharing and Privacy	-5.7%	-6.1%	-4.9%	Basic Data Collection
	-9.4%	-12.1%	-9.5%	Standard Privacy Settings
	4.7%	6.6%	2.7%	Enhanced Privacy
	10.3%	11.7%	11.7%	Full Transparency
Design and Aesthetics	3.7%	3.0%	2.8%	Minimalistic
	0.2%	0.2%	0.7%	Sport-Focused
	-4.8%	-3.8%	-5.1%	Premium Accessory
	0.9%	0.6%	1.6%	Customizable and Trendy
Price	15.1%	14.8%	14.7%	199 €
	18.0%	16.2%	18.4%	299 €
	2.9%	2.8%	-1.2%	499 €
	-12.2%	-10.7%	-10.7%	799 €
	-23.8%	-23.1%	-21.2%	1000€+

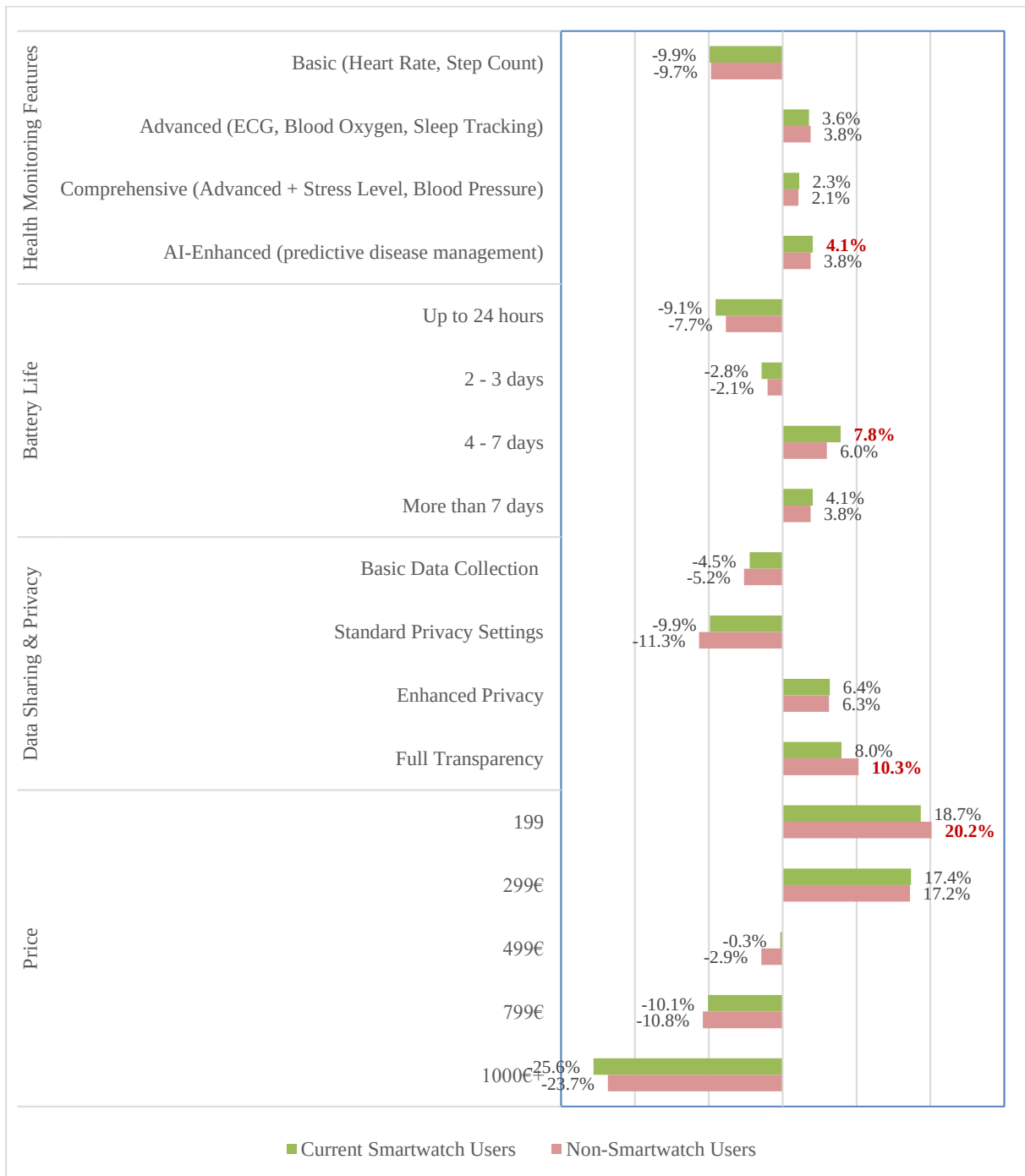
Appendix D.19: Battery Life Part-Worth Utilities: High Physical Activity vs. Occasional Physical Activity across Brands



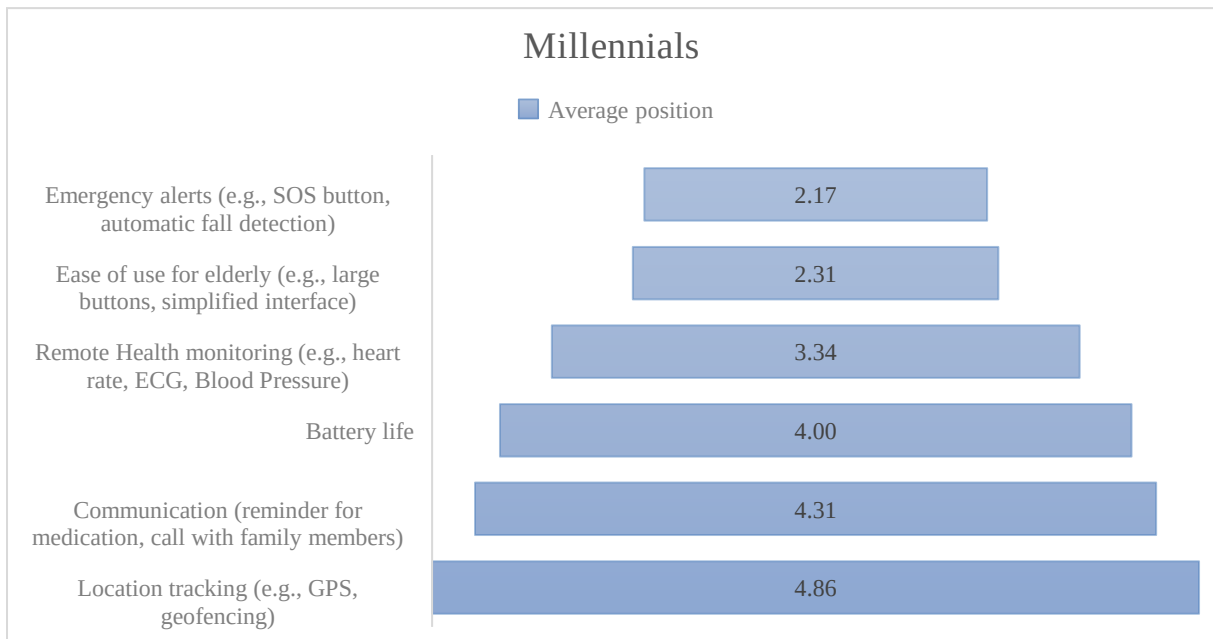
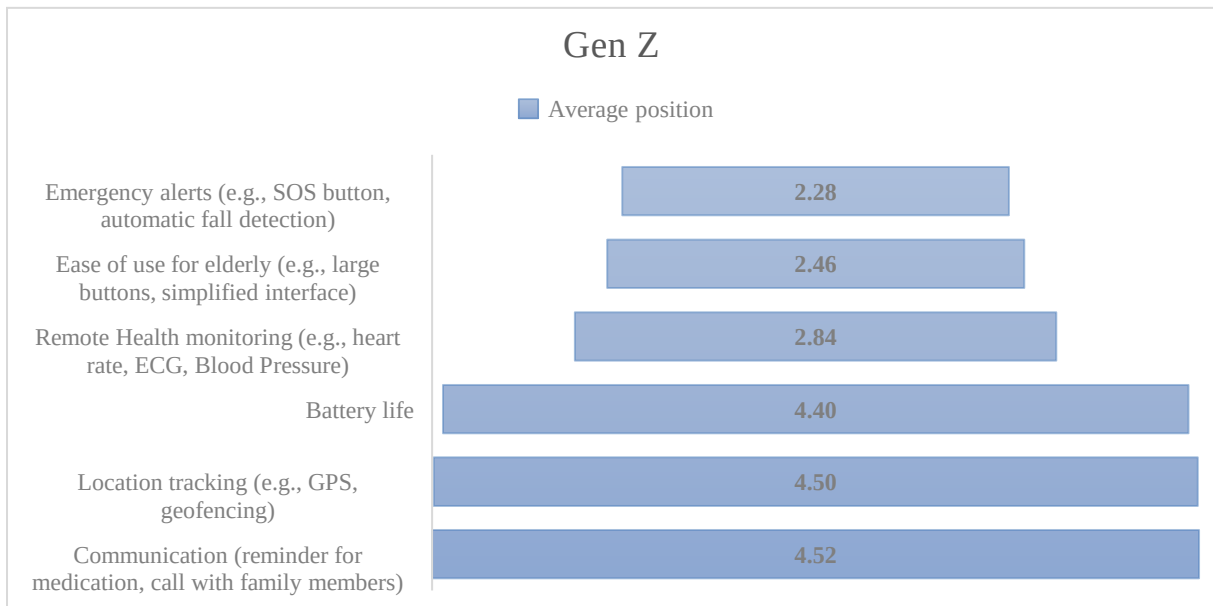
Appendix D.20: Health Monitoring Features Part-Worth Utilities: High Physical Activity vs. Occasional Physical Activity across Brands



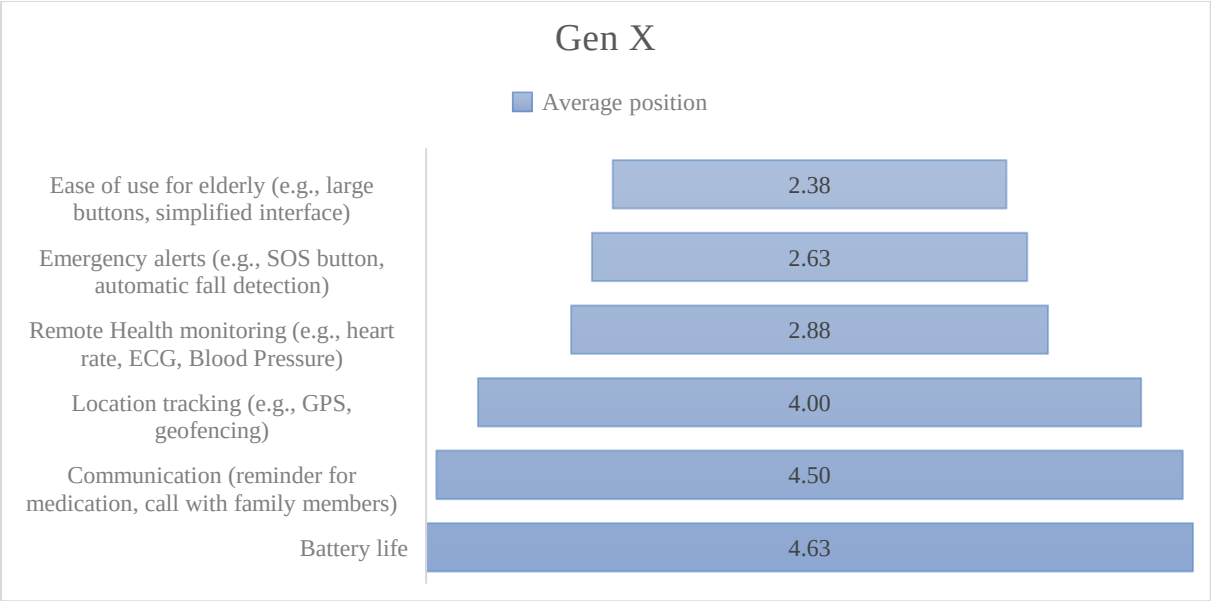
Appendix D.21: Part-Worth Utilities: Current Smartwatch Users vs. Non-Smartwatch Users across Brands



Appendix D.22: Feature Ranking for the Elderly Use Case across Age Groups



Group Part



***Appendix D.23: Apple Part-Worth Utilities by Willingness to change the Smartwatch Setup
for the Elderly Use-Case***

	Attributes	Elderly Change: Yes	Elderly Change: No	Δ Delta	Levels
Health Monitoring Features		-10.1%	-9.8%	0.3%	Basic
		3.2%	3.7%	0.5%	Advanced
		2.7%	2.8%	0.1%	Comprehensive
		4.1%	3.2%	0.9%	AI-Enhanced
Battery Life		-9.1%	-6.9%	2.2%	Up to 24 hours
		-2.6%	-3.2%	0.7%	2-3 days
		7.4%	5.1%	2.3%	4-7 days
		4.2%	5.0%	0.8%	More than 7 days
Connectivity to Smartphone (Synchronization)		-1.0%	-0.5%	0.6%	No app required
		1.0%	0.5%	0.6%	Additional App required
Data Sharing and Privacy		-4.6%	-5.5%	0.9%	Basic Data Collection
		-9.6%	-13.3%	3.7%	Standard Privacy Settings
		6.2%	6.1%	0.1%	Enhanced Privacy
		8.0%	12.7%	4.7%	Full Transparency
Design and Aesthetics		-3.0%	-2.2%	0.8%	Minimalistic
		1.7%	1.6%	0.1%	Sport-Focused
		2.7%	2.1%	0.7%	Premium Accessory
		-1.3%	-1.4%	0.1%	Customizable and Trendy
Price		18.8%	20.8%	1.9%	199 €
		16.4%	19.7%	3.2%	299 €
		-0.7%	-5.4%	4.7%	499 €
		-9.4%	-12.5%	3.1%	799 €
		-25.2%	-22.6%	2.6%	1000€+

E- Bonus Part Appendix

Appendix E.1: Detailed Script Breakdown and Feature Integration

[Opening Scene: Living Room Connection]

Anna, an elegant 80-year-old woman, sits comfortably in her living room, enjoying a warm coffee with her grandson, Max. They share a moment of laughter and connection, showcasing their close bond.

[Scene Transition: Garden Routine]

Anna moves outside into her beautiful garden, where she spends some time watering and trimming her flowers. As she continues, she suddenly feels lightheaded and begins to lose balance, eventually falling to the ground.

[Scene Transition: Grandson Rushing to Help]

Max quickly rushes to Anna's side, kneeling down to help her up. They share a reassuring smile as he assists her, confirming that everything is alright.

[Scene Transition: Gift-Giving Moment]

Later, Max gifts Anna the Guardian Smartwatch in a sleek, beautifully wrapped box. As Anna opens it, her eyes light up in curiosity. Max helps her put the smartwatch on her wrist, and they share a smile, symbolizing the thoughtful care behind the gift.

[Scene Transition: Guardian Smartwatch in Action]

Back in the garden, Anna is wearing her new Guardian Smartwatch. The screen lights up, displaying her heart rate and tracking her steps. It also shows a fun message from Max, making her laugh as she enjoys the connection.

[Scene Transition: Walk in the Neighborhood]

Anna goes for a walk in her neighborhood with her dog, but suddenly feels dizzy and weak. She sits down on a nearby bench, resting for a moment.

[Scene: SOS Activation]

Anna presses the SOS button on her Guardian Smartwatch. The watch speaks to her:

Watch (Voice): "Do you need emergency help from the hospital, or would you like to notify your family?"

Anna (calmly): "Family."

[Scene Transition: Final Message]

The screen fades to black, and the words appear:

Text on Screen: "Because care is the greatest gift of all."

Text on Screen: "The Guardian Smartwatch – Empowering Independence, One Heartbeat at a Time."

Text on Screen: "Available in Apple Stores and online at apple.com/guardian."