Perceived Value and Adoption Intention of Smart Rings

An Empirical Study of the Oura Ring among Gen Z and Millennial Consumers in Germany

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Dissertation written under the supervision of Professor Miguel Fontes Rita

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Abstract

The growing prevalence of wearable health technologies has significantly reshaped how individuals manage their well-being. While wrist-worn wearables, such as smartwatches and fitness trackers, are widely adopted, ring-based wearables represent an emerging and comparatively understudied form factor, particularly within European consumer markets. Building on the Value-Based Adoption Model (VAM), this thesis examines how perceived benefits, perceived sacrifices, and personal factors influence the Perceived Value (PV) of the Oura Ring among Generation Z and Millennial consumers in Germany, and how PV shapes their Adoption Intention.

A sequential mixed-methods design was employed. Twelve semi-structured interviews were conducted to explore context-specific perceptions and inform construct operationalization in the quantitative phase. A structured online survey (N = 117) empirically tested the conceptual model through multiple linear regression analyses. The findings show that Perceived Usefulness and Aesthetic Appeal exert strong positive effects on PV, whereas Financial and Privacy Risks reduce it. In contrast, Performance Risk, Perceived Enjoyment, and Social Image do not significantly contribute to PV in the multivariate context. PV strongly predicts Adoption Intention, confirming its central role in smart ring evaluation. Additionally, Health Consciousness positively influences Perceived Usefulness.

Overall, the study advances theoretical understanding of value formation and adoption behavior in emerging wearable categories and provides practical implications for the design, pricing, and communication of smart ring technologies.

Keywords: Smart Rings, Perceived Value, Adoption Intention, Wearable Health Technologies, Generation Z and Millennials

Título: Valor percebido e intenção de adoção de anéis inteligentes
Um estudo empírico sobre o anel Oura entre consumidores da Geração Z e Millennials na Alemanha

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Resumo

A crescente difusão das tecnologias de saúde vestíveis tem alterado a forma como os indivíduos gerem o seu bem-estar. Enquanto dispositivos vestíveis para o pulso, como smartwatches e monitores de fitness, são amplamente adotados, os anéis inteligentes permanecem um formato emergente e relativamente pouco estudado, sobretudo nos mercados europeus. Com base no Modelo de Adoção Baseado em Valor (VAM), esta tese analisa como os benefícios percebidos, os sacrifícios percebidos e fatores pessoais influenciam o valor percebido (PV) do Oura Ring entre consumidores da Geração Z e Millennials na Alemanha, bem como o impacto do PV na intenção de adoção.

Foi aplicado um desenho sequencial de métodos mistos. Doze entrevistas semiestruturadas serviram para apoiar a definição dos construtos analisados. Em seguida, um inquérito online estruturado (N = 117) testou empiricamente o modelo conceptual através de análises de regressão linear múltipla. Os resultados indicam que a utilidade percebida e o apelo estético exercem efeitos positivos significativos sobre o PV, enquanto os riscos financeiros e de privacidade o reduzem. Em contraste, o risco de desempenho, o prazer percebido e a imagem social não apresentaram efeitos significativos no modelo multivariado. O PV revelou-se um forte preditor da intenção de adoção. Além disso, a consciência sobre a saúde influencia positivamente a utilidade percebida.

De forma geral, o estudo contribui para a compreensão dos processos de formação de valor e adoção em tecnologias vestíveis emergentes e oferece implicações práticas para o design, a definição de preços e a comunicação de anéis inteligentes.

Palavras-chave: Anéis inteligentes, valor percebido, intenção de adoção, tecnologias de saúde vestíveis, Geração Z e Millennials

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TRA	-	Theory of Reasoned Action
TPB	-	Theory of Planned Behavior
TAM	-	Technology Acceptance Model
UTAUT	-	Unified Theory of Acceptance and Use of Technology
UTAUT2	-	Extended Unified Theory of Acceptance and Use of Technology
VAM	-	Value-Based Adoption Model
PV	-	Perceived Value
PU	-	Perceived Usefulness
Gen Z	-	Generation Z
IoT	-	Internet of Things

1 Introduction

Contemporary social megatrends, such as digitalization, self-quantification, and increasing health awareness, are reshaping how individuals perceive and manage their physical and mental health. This has contributed to a culture of data-driven self-optimization, in which individuals utilize digital technologies to monitor and improve their physical and mental states (Lupton, 2016; Sharon, 2017). In the domain of health, mobile applications and wearable sensors are driving a paradigm shift, moving from reactive to proactive, personalized self-care (Agha & Qazi, 2025).

Wearable technologies play a pivotal role by enabling continuous, real-time health monitoring (Kalantari, 2017). While smartwatches and fitness trackers are already widespread, more discreet form factors, such as smart rings, are gaining visibility due to their minimalistic design and advanced sensor capabilities (Browne et al., 2021). Younger consumers of Generation Z (Gen Z) and Y (Millennials), who are particularly receptive to digital health technologies, are key drivers of this development (McKinsey & Company, 2024a).

Using the Oura Ring as a case study, this thesis examines which factors shape users' perceived value of smart rings and how these value perceptions influence adoption intention in Germany.

1.1 Background and Context: From Digital Health to Wearable Technology

Digital health technologies increasingly support personalized, real-time and preventive health management (Agha & Qazi, 2025; Sharon, 2017). Wearable technology, wearable devices, or simply wearables, collect, process and transmit physiological or behavioral data continuously, while being worn on or near the body and often being embedded into accessories or clothing (Wright & Keith, 2014). This makes them central elements of digital health ecosystems and the Internet of Things (Ferreira et al., 2021; Kalantari, 2017).

Wearables are commonly grouped into fitness-oriented consumer wearables, clinically oriented medical wearables, and hybrid health-lifestyle devices (Ferreira et al., 2021; Kalantari, 2017). Smart rings, including the Oura Ring, fall into the hybrid category: compact, discreet devices capable of tracking sleep, recovery and cardiovascular signals through miniaturized sensor technology (Browne et al., 2021; Oura Health Oy, n.d.).

These developments reflect broader socio-technical trends linked to the "Quantified Self", where individuals use digital data to better understand, evaluate, and regulate their bodies and behaviors (Lupton, 2016). Wearables act as mediating technologies that shape how individuals perceive and manage aspects of their health and lifestyle (Ruckenstein & Pantzar, 2017). Advances in sensor accuracy and AI further strengthen their role as personalized health instruments (Kasoju et al., 2023).

In Germany, interest in digital health and proactive well-being management has grown steadily (McKinsey & Company, 2024b). Recent developments show that smart rings are attracting particular attention as discreet alternatives to wrist-worn devices, offering both aesthetic subtlety and accurate physiological sensing (M. Wang et al., 2024; Z. Wang et al., 2025).

1.2 The Wearable Technology Industry

This section outlines market dynamics, growth trends, and competitive structures within the wearable technology industry, with a particular focus on health-oriented devices such as smart rings in Germany.

1.2.1 Market Overview and Growth Trends

The global wearable technology market has grown rapidly over the past decade, reaching approximately USD 84 billion in 2024 and projected to exceed USD 186 billion by 2030, corresponding to a compound annual growth rate (CAGR) of about 13–14% (Grand View Research, 2025c). Within the broader digital health sector, wearables represent a highly dynamic consumer-facing health technology category (Grand View Research, 2025a).

A particularly relevant subsegment is wearable health devices, which enable continuous monitoring of physiological parameters such as sleep, cardiovascular activity, stress, and recovery (Chandrasekaran et al., 2025). This segment was valued at approximately USD 34.5 billion in 2024 and is expected to reach USD 46.7 billion by 2032, driven by increasing interest in preventive health and personalized self-monitoring (Intel Market Research, 2025).

While smartwatches and other wrist-worn fitness trackers currently dominate the category, emerging form factors such as smart rings are gaining traction due to growing demand for unobtrusive yet functionally sophisticated health solutions (McKinsey & Company, 2024b; Statista, 2025). Advances in sensor miniaturization and AI-enabled analytics further support this shift (Kasoju et al., 2023).

Germany represents one of Europe’s leading wearable technology markets, supported by strong digital health readiness and progressive regulatory frameworks (Grand View Research, 2025b). The introduction of the DiGA platform in 2020, a statutory reimbursement system for approved digital health applications under the Digital Care Act, has further strengthened innovation in the digital health sector (Bundesministerium für Gesundheit, 2025; Persistence Market Research, 2025). The German wearable market was valued at USD 7.8 billion in 2024 and is expected to grow to roughly USD 18 billion by 2030 (Grand View Research, 2025b).

Overall, the wearable technology industry is characterized by sustained growth, rapid innovation cycles, and increasing convergence between consumer health technologies and medical-grade applications. Within this environment, smart rings occupy a particularly promising segment focused on discreet, health-oriented self-care.

1.2.2 Key Players and Competitive Landscape

The global wearable technology industry is dominated by large consumer electronics firms, particularly Apple, Samsung, Xiaomi, Huawei and Google. These companies account for the majority of global wearable shipments and shape developments in the smartwatch and fitness tracker segments (Intel Market Research, 2025; Mordor Intelligence, 2024; Statista, 2025). Apple remains the market leader due to its integrated ecosystem and advanced health-tracking features on their Apple Watch (Apple Inc., n.d.; Intel Market Research, 2025; Statista, 2025), while Samsung, Huawei and Xiaomi maintain strong positions through competitive pricing within the Android ecosystem (Huawei Technologies, n.d.; Mordor Intelligence, 2024; Samsung Electronics, n.d.; Xiaomi Corporation, n.d.). Google has expanded its position in digital health through the acquisition of Fitbit and the launch of the Pixel Watch (Google LLC, n.d.).

Beyond these dominant players, niche-oriented companies such as Garmin, Withings and Polar have established strong positions in performance- and health-focused subsegments (Garmin Ltd., n.d.; Polar Electro, n.d.; Withings, n.d.).

Smart Rings: An Emerging Form Factor

While wrist-worn devices continue to dominate, smart rings have emerged as a discreet alternative that combines biometric sensing with minimalist design (Browne et al., 2021). Advances in sensor miniaturization and physiological monitoring (Kasoju et al., 2023) have enabled smart rings to offer many of the same functions as wrist-based devices in a more compact form.

Within this category, *Oura Health Oy*, founded in Finland in 2013, has established itself as the first mover and global market leader, holding approximately 80% of the smart ring market in 2023. More than 5.5 million rings sold and a valuation of USD 5.2 billion underscore the company's influence in shaping this emerging segment (BusinessWire, 2025; Speight, 2025). The Oura Ring integrates key physiological monitoring functions, such as continuous heart-rate and heart-rate variability tracking, temperature trends, sleep staging, and recovery analytics, within a lightweight titanium form factor (Oura Health Oy, n.d.). Its design combines jewelry-like aesthetics with advanced sensing technology, appealing to users who prioritize sleep, stress management, and recovery while preferring an unobtrusive, screenless device (Browne et al., 2021). Oura follows a premium business model, offering hardware priced at approximately 399-549€, complemented by a paid subscription (5.99€/month) that is required for full access to personalized insights, trend analytics, and guidance. Strategic collaborations, most notably the *Gucci x Oura Ring* partnership, strengthen its positioning at the intersection of digital health and lifestyle branding (Gucci S.p.A., n.d.). Illustrative images of the Oura Ring and its mobile application are provided in Appendix A.

A closely related competitor, though not ring-based, is WHOOP, which is a subscription-driven, screenless wrist wearable focused on strain, recovery, and sleep analytics (WHOOP, Inc., n.d.). Like Oura, WHOOP relies exclusively on a smartphone application for data visualization, serving as a relevant benchmark in terms of value proposition and pricing model.

Oura's success has stimulated rapid expansion within the smart ring competitive landscape. Emerging competitors include Ultrahuman, Movano Health, and Circular, which differentiate themselves through features such as metabolism tracking, women's health analytics, and customizable designs (Circular, n.d.; Movano Health Inc, n.d.; Ultrahuman, n.d.).

Major technology companies have also begun to enter the category. Samsung's launch of the Galaxy Ring brings smart rings into a broader mainstream market, supported by deep integration with Samsung Health and the Galaxy ecosystem (Samsung Electronics Co., Ltd., n.d.). Additionally, brands such as Amazfit have introduced lower-priced alternatives like the Helio Ring, which differentiates itself by not requiring a subscription (Zepp Health Corporation, n.d.).

Overall, the competitive landscape is becoming increasingly dynamic. Oura now faces competition both from established wearable brands expanding into new form factors and from niche start-ups focusing on specialized features or subscription-free models. Although smart rings currently represent a small niche within the broader wearable technology market, the segment is experiencing rapid growth. The global smart ring market was valued at approximately USD 349 million in 2024 and is projected to reach around USD 1.1 billion by

2030, corresponding to a CAGR of over 21% (Grand View Research, Inc., 2025). Despite their limited current market share relative to wrist-worn devices, these dynamics underscore the growing strategic relevance of smart rings within the evolving wearable ecosystem. Oura continues to hold a leading position within this smart ring market (Speight, 2025).

1.2.3 Consumer Trends and the Shift Toward Wellness in Wearable Technology

A broader societal shift toward preventive health and holistic well-being increasingly shapes consumer interest in wearable technologies. As individuals seek to monitor activity, manage stress, improve sleep, and proactively detect changes in their physical state, demand for digital health tools has risen (Intel Market Research, 2025). This development aligns with the growing cultural emphasis on wellness, defined as a state of physical and mental well-being that individuals actively aim to maintain or improve (Oxford English Dictionary, 2024).

Younger generations, such as Millennials (born between 1981 and 1996) and Gen Z (born between 1997 and 2012), are driving these developments (Beresford Research, LLC, n.d.). Despite representing just over one-third of the adult population in the United States, they account for more than 40% of annual wellness spending (McKinsey & Company, 2025). Similar patterns are observed internationally: these cohorts treat wellness as a daily priority and adopt digital health technologies at higher rates than older adults. Their digital fluency and strong health orientation make wearables an appealing tool for integrating well-being into everyday routines (Cheung et al., 2021; Intel Market Research, 2025; McKinsey & Company, 2021, 2025).

Modern wearables respond to this wellness-oriented mindset by offering holistic tracking capabilities that extend beyond traditional fitness metrics. Instead of merely counting steps, contemporary devices monitor heart-rate variability, sleep patterns, stress indicators and recovery patterns, thereby meeting consumers' desire for comprehensive and actionable insight into their physiological and mental state (Chandrasekaran et al., 2020; S. Y. Lee & Lee, 2018).

A key driver behind this trend is the broader cultural movement toward digital self-tracking, commonly associated with the "Quantified Self" (Lupton, 2016). By continuously recording physiological and behavioral data, users aim to better understand their bodies, make informed lifestyle decisions, and optimize training and recovery (Kalantari, 2017). A recent study shows that the majority of wearable users rely on their devices primarily for health and wellness (61%) or fitness-related purposes (54%) (El-Gayar & Elnoshokaty, 2023). Devices such as the Oura

Ring align closely with these motivations by providing personalized feedback loops that help users optimize sleep quality, stress resilience, and recovery patterns (Oura Health Oy, n.d.).

As wearables become more integrated into everyday life, consumers increasingly seek devices that combine functional utility with aesthetic appeal. This has contributed to the rise of "fashnology," in which wearables act not only as technological health tools but also as fashion accessories (Chuah et al., 2016; Rauschnabel et al., 2015). Minimalistic form factors such as smart rings cater to this demand by offering continuous monitoring without the visual bulky design typical of wrist-worn devices.

Sleep has become a particularly salient focal point within the wellness landscape. Younger users report prioritizing sleep improvement yet frequently lack tools to understand or manage sleep quality effectively (McKinsey & Company, 2024a). This unmet need has increased interest in discreet devices capable of providing detailed physiological insights during sleep, an area in which smart rings have gained notable traction.

Overall, these consumer trends reflect a growing demand for technologies that support holistic well-being, provide personalized insights, and integrate seamlessly into everyday life. Wearables increasingly function not merely as fitness and activity tools but as lifestyle technologies that assist users in managing stress, sleep, recovery, and emotional health. Smart rings represent a timely and relevant innovation in this regard.

1.3 Problem Statement and Research Questions

Wearable health technologies have become central to how individuals monitor and manage their well-being. Devices such as smartwatches, fitness trackers and, more recently, smart rings, provide real-time physiological feedback and personalized insights to support preventive, data-driven self-care. The Oura Ring, the leading smart ring in the sector, stands out due to its advanced monitoring capabilities, especially for sleep, stress, and recovery, combined with a minimalist, jewelry-like design and subscription-based business model.

As outlined in the previous sections, interest in wearable health technologies is rising; however, the adoption of smart rings remains comparatively limited, particularly within European consumer markets. Germany represents one of Europe's most digitally engaged wearable markets, yet adoption patterns among younger adults remain inconsistent. Millennials and Gen Z consumers are generally characterized as digitally fluent, wellness-oriented, and receptive to self-tracking practices, making them a key target segment for smart ring technologies. Despite their relevance for the diffusion of emerging wearables, consumers' evaluations of smart rings as a distinct form factor compared to established wrist-worn devices remain insufficiently understood. Existing academic literature on wearable technology adoption has predominantly focused on smartwatches and basic fitness trackers, leaving smart rings largely understudied. Prior research consistently demonstrates that perceived value (PV) plays a central role in shaping adoption decisions for wearable technologies (Yang et al., 2016). PV is commonly defined as consumers' overall assessment of a product's utility based on the evaluation of what is received relative to what is sacrificed (Zeithaml, 1988). However, little is known about how younger consumers form PV judgements toward smart rings and how these value perceptions translate into adoption intention. This gap highlights the need to identify which device-related and user-related factors influence PV in the context of smart rings, and how PV contributes to adoption intention.

To address this gap, the present study examines the key benefits, sacrifices and personal factors that shape the PV of the Oura Ring among Gen Z and Millennial consumers in Germany. Furthermore, it investigates the extent to which PV influences their intention to adopt the device.

Accordingly, the following research questions guide this investigation:

RQ1: What factors influence the Perceived Value of the Oura Ring among Generation Z and Millennial consumers in Germany?

RQ2: To what extent does Perceived Value influence Adoption Intention of the Oura Ring among Generation Z and Millennial consumers in Germany?

The objective of this study is to deepen the understanding of value formation and adoption behavior within the emerging smart ring category and to derive practical implications for the design, positioning, and communication of wearable health technologies.

The remainder of this thesis is structured as follows: Chapter 2 reviews the theoretical foundations relevant to this study, including key technology adoption frameworks, value-based perspectives and established determinants of wearable technology acceptance. Chapter 3 introduces the conceptual model developed for this research and outlines the corresponding hypotheses. Chapter 4 describes the research methodology, including the qualitative interview phase as well as the subsequent quantitative survey design, detailing sampling strategy, operationalization of constructs, and analytical procedures. Chapter 5 presents the empirical results of the statistical analyses. Chapter 6 discusses and interprets these findings considering prior research and derives both academic contributions and managerial implications. Chapter 7 acknowledges the study's limitations and outlines future research directions, while Chapter 8 concludes the thesis by summarizing the key insights.

2 Literature Review

This chapter establishes the theoretical foundations and empirical evidence for understanding consumer adoption of wearable health technologies. It reviews established technology adoption models and examines key determinants identified in prior research on wearables. It also provides the conceptual basis for analyzing adoption intentions in the emerging smart ring category.

2.1 Theoretical Foundations of Technology Adoption

Technology adoption has been widely studied across disciplines, resulting in several theoretical models explaining how individuals form intentions to use new technologies. Early intention-based frameworks, such as the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975) and Theory of Planned Behavior (TPB) (Ajzen, 1985, 1991), emphasize the role of behavioral intention as the immediate antecedent of actual behavior. While these models provide valuable conceptual groundwork, more specialized acceptance models have since been developed to better capture the mechanisms underlying the adoption of digital consumer technologies.

In the context of technology adoption research, intention to adopt is grounded in the broader construct of behavioral intention, which describes a person's motivational readiness or conscious plan to perform a behavior (Ajzen, 1991). In technology acceptance models, behavioral intention reflects the extent to which an individual expects or plans to use a technology in the near future (Davis, 1989; Venkatesh et al., 2003). Accordingly, adoption intention refers to an individual's willingness or likelihood to begin using a device based on anticipated benefits, risks and overall value. In this study, adoption intention refers specifically to Millennials' and Gen Z consumers' willingness to acquire and use the Oura Ring.

2.1.1 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), first introduced by Davis in 1986 and further developed in 1989, is one of the most influential frameworks for explaining why individuals accept or reject new technologies (Davis, 1989). Derived from Fishbein and Ajzen's (1975) TRA, TAM adapts this attitudinal logic to technological contexts and has been validated across numerous empirical studies in the field of information systems and consumer technology (Ayeh et al., 2013; King & He, 2006; Venkatesh & Davis, 2000).

TAM posits that technology acceptance is primarily determined by two cognitive evaluations: perceived usefulness (PU) and perceived ease of use (PEOU). PU is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 320), while PEOU refers to "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p. 320). These two constructs shape the user's attitude towards a technology, which subsequently influences behavioral intention. Furthermore, TAM assumes that PEOU has a positive effect on PU; technologies that are perceived as being easy to use are also considered to be more useful (Venkatesh & Davis, 2000).

TAM has been widely applied in the context of wearable technologies (Arvanitis et al., 2011; Chang et al., 2016; Cheng & Mitomo, 2017; Choi & Kim, 2016; Chuah et al., 2016; Hein & Rauschnabel, 2016; Hwang et al., 2016; Jeong et al., 2016; Kalantari & Rauschnabel, 2018; K. J. Kim & Shin, 2015; Kwee-Meier et al., 2016; H. M. Lee, 2009; Nasir & Yurder, 2015; Rauschnabel & Ro, 2016; Spagnolli et al., 2014). In this context, PU is typically reflected in functional outcomes such as physiological monitoring, activity tracking, and overall health management, while PEOU relates to intuitive interactions, automated tracking, and user-friendly apps (Chuah et al., 2016). To enhance the predictive ability of TAM in the field of emerging consumer technologies, numerous studies have incorporated supplementary external factors pertinent to wearables, such as perceived enjoyment, aesthetic appeal, and comfort (Ayeh et al., 2013; Tom Dieck & Jung, 2018). These augmentations acknowledge that acceptance of body-worn technologies extends beyond purely functional evaluations and involves hedonic, experiential and design-related aspects.

2.1.2 Extensions of TAM and UTAUT/UTAUT2

To address the limitations of the TAM and increase its explanatory power in different technological contexts, several theoretical extensions have been proposed. TAM2 introduced additional cognitive and social determinants in order to provide a more comprehensive explanation of perceived usefulness, while acknowledging that technology acceptance is influenced not only by functional evaluations, but also by context-specific factors (Venkatesh & Davis, 2000).

A significant development was the creation of the Unified Theory of Acceptance and Use of Technology (UTAUT), which incorporates essential components of prior acceptance theories, including TAM, TRA, TPB, Innovation Diffusion Theory (IDT), Social Cognitive Theory (SCT), the Motivational Model and the Model of PC Utilization, into a unified, comprehensive framework (Adapa et al., 2018; Kalantari, 2017; Venkatesh et al., 2003). UTAUT identifies four core predictors of behavioral intention and technology use: performance expectancy, effort expectancy, social influence and facilitating conditions. The model has demonstrated strong predictive validity, explaining up to 70% of the variance in behavioral intention to use a technology (Chen et al., 2023; Venkatesh et al., 2003).

As UTAUT was initially developed for organizational environments, Venkatesh et al. (2012) adapted the model for consumer technology adoption, creating UTAUT2 (Kalantari, 2017). This extension retains the original UTAUT constructs and introduces three additional variables central to the consumer setting: hedonic motivation (defined as the enjoyment or pleasure associated with using a technology), price value (reflecting the perceived trade-off between benefits and monetary costs), and habit (the extent to which prior experience drives continued use) (Venkatesh et al., 2012). These additions increase the model's relevance for consumer-facing technologies, such as wearables, which often involve experiential, aesthetic, and financial considerations (Park, 2020; Yang & Lee, 2018). UTAUT2 has frequently been applied in wearable technology research and is considered one of the most influential frameworks in this field (Gao et al., 2015; Gu et al., 2016; Kalantari, 2017; Rubin & Ophoff, 2018). In particular, hedonic motivation and price evaluations have been identified as strong drivers of consumer acceptance, illustrating the importance of emotional engagement and cost-benefit considerations in the adoption of wearable devices (Tamilmani et al., 2021).

2.1.3 Value-Based Adoption Model (VAM)

The Value-Based Adoption Model (VAM), proposed by H.-W. Kim et al. (2007), conceptualizes technology adoption as the result of a cognitive value assessment. Unlike acceptance models, which emphasize individual beliefs such as usefulness or ease of use, the VAM argues that individuals evaluate technology based on a trade-off between its perceived benefits and sacrifices. This evaluation results in Perceived Value (PV), the primary predictor of adoption intention (H.-W. Kim et al., 2007).

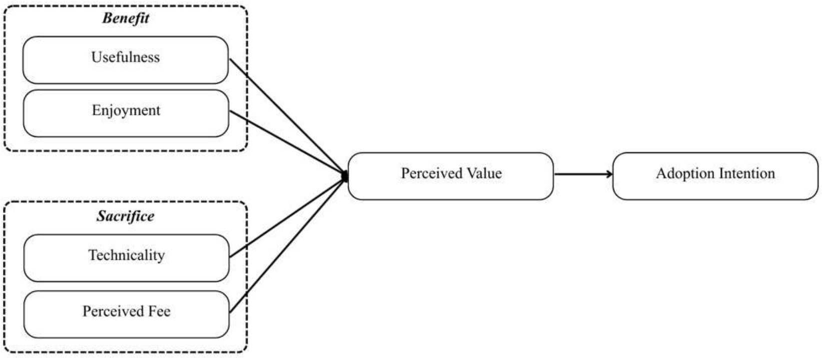


Figure 1. Value-Based Adoption Model (VAM)

Adapted from H.-W. Kim et al. (2007).

In the original VAM framework, perceived benefits comprise utilitarian benefits, such as functional usefulness, as well as hedonic benefits reflecting enjoyment or intrinsic satisfaction derived from use. Perceived sacrifices are conceptualized as both monetary costs and non-monetary sacrifices, most notably technical complexity or effort associated with technology use (H.-W. Kim et al., 2007). Subsequent VAM-based extensions have broadened the notion of perceived sacrifices to include additional non-monetary costs, such as time expenditure, performance-related uncertainty, or other perceived risks (Yang et al., 2016). Adoption intention increases when perceived benefits outweigh perceived sacrifices, resulting in a positive value judgement (H.-W. Kim et al., 2007).

VAM and its extensions have been widely applied in consumer technology research, as the model captures the cognitive trade-off underlying adoption decisions (H.-W. Kim et al., 2007). Recent studies confirm that VAM is well-suited for research on behavioral intentions in wearable and IoT contexts (Liang et al., 2021; Niknejad et al., 2020; Sohn & Kwon, 2020; Yang et al., 2016), explaining consumers' purchase or usage intentions for wearables, as these devices typically involve both functional benefits and financial, performance-related or privacy-related costs (Mathavan et al., 2024). In wearable contexts, consumers often evaluate whether the perceived benefits outweigh potential risks. Consequently, VAM provides a robust theoretical basis for analyzing how users assess value when deciding whether to adopt consumer-facing technologies (H.-W. Kim et al., 2007), including smart wearables.

2.1.4 Perceived Value in Technology Adoption

Building on the VAM framework introduced above, Perceived Value (PV) is a central concept in explaining consumer decision-making for digital products and services. Rooted in Zeithaml's

(1988) foundational definition, PV reflects a user's overall evaluation of a product based on a comparison of its perceived benefits (what is received) and sacrifices (what is given). In technology adoption research, the VAM formalizes this cost-benefit assessment by conceptualizing PV as the primary subjective and context-dependent cognitive mechanism through which users integrate different beliefs into a unified value judgment (H.-W. Kim et al., 2007; Sánchez-Fernández & Iniesta-Bonillo, 2007; Zeithaml, 1988).

Unlike traditional acceptance models that rely on isolated beliefs such as PU or PEOU, value-based approaches adopt a more holistic perspective by integrating functional, emotional, social and financial considerations into an overall evaluation (Holbrook, 1999; H.-W. Kim et al., 2007; Sheth et al., 1991). Studies on digital and mobile services demonstrate that users are significantly more likely to adopt technology when they perceive its overall value to be high (K. J. Kim & Shin, 2015; Yang et al., 2016). Conversely, when sacrifices are perceived as outweighing benefits, adoption intentions tend to decline.

PV has shown particular importance in the context of wearable technologies. Wearables, such as fitness trackers and smartwatches offer multiple layers of perceived benefits, including functional utility, experiential enjoyment, and social signaling value, while simultaneously presenting salient sacrifices, such as purchase costs, ongoing fees, performance uncertainties, and data privacy concerns. Empirical findings demonstrate that consumers evaluate these devices based on a value trade-off: adoption is more likely when the perceived benefits outweigh the perceived costs and risks (Gao et al., 2015; Marakhimov & Joo, 2017). This makes PV a suitable explanatory construct for technologies that collect personal data, require long-term engagement, or impose financial commitments.

Recent studies further highlight the mediating role of PV in wearable technology adoption. Yang et al. (2016) show that functional, emotional, and social perceptions – such as PU, enjoyment, and social image – primarily influence adoption intentions through their positive effect on PV, while financial and performance-related risks can diminish adoption intentions by lowering PV (Yang et al., 2016). A more recent VAM-based study by Mathavan et al. (2024) similarly finds that these perceived benefits significantly increase PV, which in turn strongly predicts intention to use fitness wearables. Together, these findings reinforce the view that PV serves as the integrative mechanism through which users weigh expected benefits against potential sacrifices when deciding whether to adopt wearable technologies.

Overall, the literature positions PV as a key construct for understanding wearable device acceptance, as it synthesizes diverse evaluation criteria into a single overarching judgement.

2.2 Wearable Technology Adoption: Drivers and Barriers

The adoption of wearable technologies is influenced by users' perceptions of the benefits and sacrifices associated with such devices. While theoretical models discussed above (e.g. TAM, UTAUT/UTAUT2, VAM) explain the mechanisms of technology acceptance, empirical research on wearables highlights a consistent set of functional, hedonic, social, risk-related, and personal factors influencing user attitudes and behavioral intentions.

2.2.1 Perceived Benefits

Perceived benefits refer to the positive outcomes users expect from adopting wearable technologies. In wearable contexts, the literature consistently identifies four core benefit-related determinants: functional usefulness, hedonic motivation, aesthetic appeal, and social image.

2.2.1.1 Functional Benefits: Perceived Usefulness and Ease of Use

Functional and technical attributes are among the most influential determinants of wearable acceptance. Perceived usefulness (PU), understood as the extent to which a device supports personal goals such as health tracking or fitness improvement, has repeatedly been identified as a strong predictor of positive attitudes and adoption intentions (Choi & Kim, 2016; Kalantari & Rauschnabel, 2018; K. J. Kim & Shin, 2015; L.-H. Wu et al., 2016). Perceived ease of use (PEOU) further enhances acceptance, both directly and indirectly, through its positive effect on PU (Chuah et al., 2016; Hwang et al., 2016; Kalantari, 2017). Similar relationships are reflected in UTAUT's performance and effort expectancy (Venkatesh et al., 2003). Together, these studies show that users are more likely to adopt wearables when they perceive them as useful and easy to integrate into daily routines.

2.2.1.2 Hedonic Benefits: Perceived Enjoyment

Beyond instrumental value, wearables also provide experiential benefits. In UTAUT2, hedonic motivation is a key driver of technology use (Venkatesh et al., 2012), and perceived enjoyment has been shown to significantly influence behavioral intention in wearable and mobile contexts (Ha et al., 2007; Moon & Kim, 2001; Rheingans et al., 2016). It captures the intrinsic pleasure experiences when interacting with a technology, independent of functional outcomes (Davis et al., 1992). Enjoyment is often enhanced through gamification, real-time feedback, and self-tracking mechanisms, which increase engagement and positive affect (Consolvo et al., 2009; Fritz et al., 2014; Ilhan & Fietkiewicz, 2019). These hedonic elements contribute substantially to users' PV of the device and thus increase adoption intentions (K. J. Kim & Shin, 2015; Shin et al., 2019; Yang et al., 2016).

2.2.1.3 Aesthetic Appeal

Aesthetic appeal refers to the perceived attractiveness of a wearable's physical design, including its materials shape, color, and overall visual appearance (Yang et al., 2016). Since wearables function as both digital tools and fashion accessories ("fashnology") (Rauschnabel et al., 2015), visual design and aesthetics strongly influence desirability, affective responses and perceived social value (Chuah et al., 2016; Rauschnabel et al., 2015). Research shows that aesthetic appeal enhances perceived enjoyment, perceived attractiveness, and intention to use (Cyr et al., 2006; Hsiao, 2013; Jeong et al., 2016; Yang et al., 2016). In value-based adoption research, visually appealing design can further contribute to PV by enhancing both hedonic and social benefits (Yang et al., 2016), underscoring their dual role as functional devices and style-enhancing accessories.

2.2.1.4 Social Image

Wearables also serve expressive and identity-signaling functions. Social image refers to the extent to which using a device conveys status or social approval (Lin & Bhattacherjee, 2010; Moore & Benbasat, 1991). Given that wearables are highly visible and socially embedded accessories, their aesthetic presence and "fashnology" characteristics can amplify this effect by positioning them as lifestyle-oriented items rather than merely functional tools (Chuah et al., 2016; Rauschnabel et al., 2015). Moreover, self-expressiveness, defined as the extent to which a product reflects one's personal characteristics (Choi & Kim, 2016), plays an important role in shaping social image. In this regard, expressive product features and brand-related status cues have been found to strengthen positive attitudes and adoption intentions by enabling users to signal identity and social standing (Choi & Kim, 2016; Hwang et al., 2016; Jeong et al., 2016). Prior research links positive social image to increased perceived benefits and adoption willingness of wearables (Chau et al., 2019; Jeong et al., 2017). In value-based models, social image contributes positively to PV by shaping users' perception of social approval and self-presentational value (Yang et al., 2016).

2.2.2 Perceived Sacrifices

Alongside benefits, users also consider the potential sacrifices associated with wearables. Perceived risk, defined as consumers' uncertainty about whether a purchase may lead to adverse consequences (Blackwell et al., 2001), encompasses financial, performance and privacy-related concerns. These risks may reduce PV and weaken adoption intentions (H.-W. Kim et al., 2007; Yang et al., 2016).

2.2.2.1 Financial Risk

Financial risk refers to the perceived likelihood of monetary loss due to high purchase prices, ongoing costs like maintenance expenses, or potential product replacements (Horton, 1976). In the context of wearable technologies, cost considerations often represent one of the most salient sacrifices within the value trade-off. Potential users commonly evaluate whether the expected benefits justify the financial sacrifices, making financial burden a strong inhibitor of adoption. Empirical studies consistently show that higher perceived cost reduces PV and weakens consumers' willingness to adopt wearables (H.-W. Kim et al., 2007; Venkatesh et al., 2012; Yang et al., 2016). Market evidence supports this: according to PwC (2014), price remains the leading deterrent to purchasing wearable devices across demographics and product types.

2.2.2.2 Performance Risk

Performance risk captures users' concerns that a wearable device may not function reliably or deliver accurate, trustworthy data (Kalantari, 2017). Prior research consistently identifies performance-related uncertainty as a key barrier to wearable adoption (Hwang et al., 2016; Ko et al., 2009; Nasir & Yurder, 2015). Empirical findings indicate that inaccurate sensors, unstable software, or inconsistent measurements undermine user trust and diminish PU, thereby discouraging adoption (El-Gayar & Elnoshokaty, 2023; Gao et al., 2015; Nasir & Yurder, 2015). Although performance risk does not always show a direct effect on PV (Yang et al., 2016), it remains a critical sacrifice dimension, particularly in the pre-adoption phase when uncertainty is highest.

2.2.2.3 Privacy and Data Security Concerns

Privacy and security concerns are among the strongest adoption barriers discussed in technology adoption and use (Niknejad et al., 2020; Phonthanukitithaworn et al., 2016; Vafaei-Zadeh et al., 2018; Wiegard et al., 2019). Since wearable devices collect sensitive personal psychological, behavioral and sometimes medical-adjacent data (J. Wu et al., 2017), (potential) users are often concerned about data storage, transparency, unauthorized access, or misuse by third parties (Firouzi et al., 2018; Kalantari, 2017; Marakhimov & Joo, 2017). Prior research identifies two main pathways through which privacy risk affects adoption. Some studies report a direct negative effect on adoption intention, arguing that privacy concerns undermine trust and discourage individuals from using wearable devices (Gao et al., 2015; Gu et al., 2016;

Spagnolli et al., 2014). However, within value-based adoption models, privacy concerns are conceptualized as part of the perceived sacrifice, reducing users' overall PV of the technology (Niknejad et al., 2020; Wiegard et al., 2019).

2.2.3 Personal Factor in Wearable Adoption: Health Consciousness

Among personal characteristics discussed in prior wearable adoption research, health consciousness has repeatedly emerged as one of the most influential determinants. Health consciousness reflects the extent to which individuals are motivated to engage in health-enhancing behaviors and monitor their physical well-being (K. J. Kim & Shin, 2015). Health-conscious consumers tend to assign greater value to health-monitoring technologies and evaluate their functional utility more positively. Prior research consistently shows that health consciousness increases PU and strengthens adoption intentions for fitness trackers, smartwatches and other health-related wearables (Gao et al., 2015; S. Y. Lee & Lee, 2018).

3 Conceptual Framework and Hypotheses Development

Based on the key determinants of wearable technology adoption identified in the literature review, this thesis proposes a conceptual framework tailored to the Oura Ring and its relevance for Gen Z and Millennial consumers in Germany. The framework integrates central insights from TAM, UTAUT2 (Davis, 1989; Venkatesh et al., 2012), VAM (H.-W. Kim et al., 2007), and empirical findings from wearable technology research (e.g. Yang et al., 2016). Across these approaches, Perceived Value (PV) consistently emerges as a core mechanism through which users translate perceived benefits, perceived sacrifices, and personal characteristics into behavioral intentions.

The conceptual model (Figure 2) illustrates these relationships and forms the basis for the hypotheses developed below.

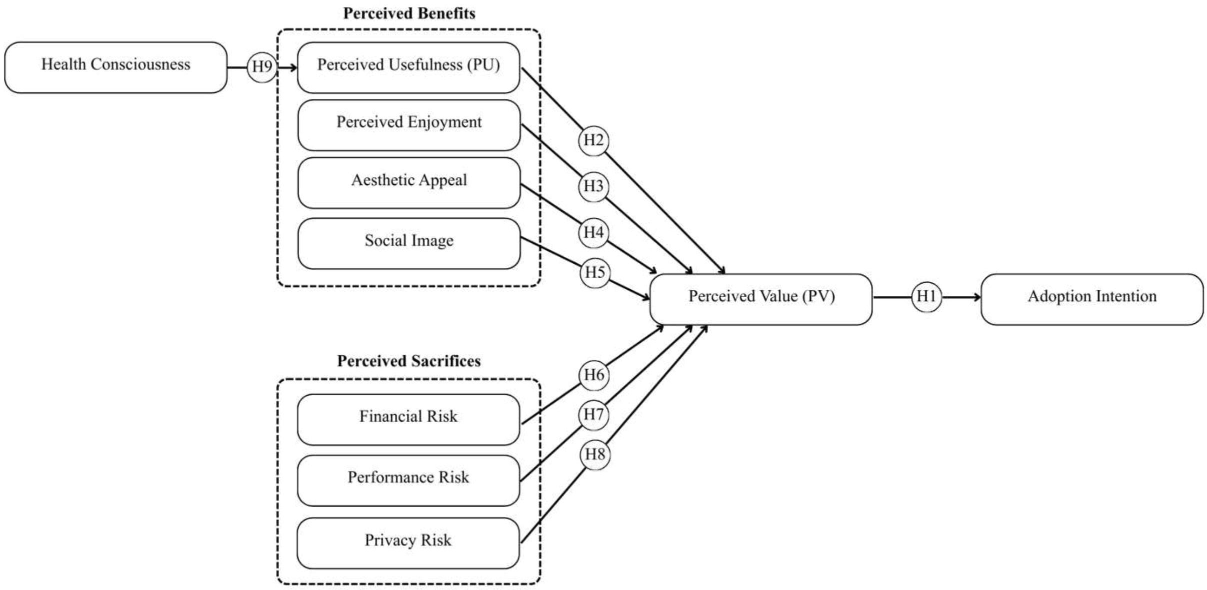


Figure 2. Conceptual research model based on the Value-Based Adoption Model (VAM)

In line with value-based adoption perspectives, this thesis conceptualizes perceived usefulness (PU), perceived enjoyment, aesthetic appeal, and social image as key perceived benefits and financial, performance, and privacy risks as central perceived sacrifices. Together, these factors shape the overall PV of the Oura Ring. PV is therefore treated as the primary evaluative mechanism through which users integrate diverse beliefs into a unified adoption-relevant judgment. Accordingly, the model assumes direct effects of all benefits and sacrifices on PV, and a direct effect of PV on adoption intention. Health consciousness is conceptualized as a personal antecedent influencing PU.

3.1 Perceived Value and Adoption Intention

Perceived Value (PV) represents consumers' overall evaluation of the trade-off between the benefits and sacrifices associated with adopting a wearable device. Prior studies identify PV as one of the strongest predictors of adoption intention in wearable technology contexts (K. J. Kim & Shin, 2015; Yang et al., 2016). When consumers perceive that the benefits of using a wearable outweigh the sacrifices associated with it, their overall PV of the device increases. Higher PV, in turn, increases their intention to adopt the device. Accordingly, the following hypothesis is proposed:

H1*: Perceived Value positively affects the intention of Gen Z and Millennial consumers in Germany to adopt the Oura Ring.*

3.2 Perceived Benefits and Their Influence on Perceived Value

Perceived Usefulness (PU) reflects the extent to which individuals believe that using the Oura Ring will improve their health monitoring, sleep optimization, and overall well-being. Prior research confirms that PU enhances PV in wearable contexts (K. J. Kim & Shin, 2015; Yang et al., 2016). Therefore, this study proposes the following hypothesis:

***H2**: Perceived Usefulness positively affects the Perceived Value of the Oura Ring among Gen Z and Millennial consumers in Germany.*

Beyond functional utility, hedonic aspects also shape value perceptions. Perceived Enjoyment refers to the intrinsic pleasure, motivation and satisfaction derived from using a device and has been shown to increase user engagement and strengthen PV in wearable and mobile health settings (K. J. Kim & Shin, 2015; Yang et al., 2016). Therefore, this study proposes:

***H3**: Perceived Enjoyment positively affects the Perceived Value of the Oura Ring among Gen Z and Millennial consumers in Germany.*

Another dimension of perceived benefits concerns the device's aesthetic qualities. As wearables are visibly worn on the body, visual attractiveness and appealing design can enhance desirability by signaling modernity, style, and personal identity (Kalantari, 2017; Rauschnabel et al., 2015). Based on these findings, the following hypothesis is formulated:

***H4**: Aesthetic Appeal positively affects the Perceived Value of the Oura Ring among Gen Z and Millennial consumers in Germany.*

Finally, wearables often serve social and symbolic functions. Social Image refers to the extent to which using a device communicates status, identity, or social approval, and has been shown to enhance value perceptions and encourage adoption (Chuah et al., 2016; Rauschnabel et al., 2015). In line with this reasoning:

***H5**: Social Image positively affects the Perceived Value of the Oura Ring among Gen Z and Millennial consumers in Germany.*

3.3 Perceived Sacrifices and Their Influence on Perceived Value

In addition to perceived benefits, consumers also consider potential sacrifices when forming an overall value judgment. One such sacrifice is Financial Risk, which reflects concerns about the potential monetary loss associated with purchasing or maintaining a wearable (Yang et al., 2016), including upfront costs and recurring subscription fees. Therefore:

H6*: Financial Risk negatively affects the Perceived Value of the Oura Ring among Gen Z and Millennial consumers in Germany.*

A second relevant sacrifice is Performance Risk, referring to concerns that the Oura Ring may not deliver accurate, reliable, or trustworthy data. Empirical research shows that performance-related uncertainty undermines PU and decreases PV by eroding trust (El-Gayar & Elnoshokaty, 2023; Gao et al., 2015; Nasir & Yurder, 2015). Accordingly, the following hypothesis is proposed:

H7*: Performance Risk negatively affects the Perceived Value of the Oura Ring among Gen Z and Millennial consumers in Germany.*

Privacy Risk represents a third salient sacrifice, capturing concerns about how sensitive health and behavioral data generated by wearable devices may be stored, shared, or potentially misused. Prior research positions privacy concerns as one of the strongest barriers of technology and IoT adoption and as a direct reducer of PV within value-based frameworks (Niknejad et al., 2020; Phonthanukitithaworn et al., 2016; Vafaei-Zadeh et al., 2018; Wiegard et al., 2019). Thus:

H8: *Privacy Risk negatively affects the Perceived Value of the Oura Ring among Gen Z and Millennial consumers Germany.*

3.4 The Influence of Health Consciousness on Perceived Usefulness

Beyond perceived benefits and sacrifices, individual differences also play a role in shaping evaluations of wearable technologies. Health Consciousness reflects the extent to which individuals are motivated to engage in health-promoting behaviors and monitor their physical well-being. Prior research shows that health-conscious consumers evaluate health technologies as more useful, as they see greater relevance for their personal goals (Gao et al., 2015; S. Y. Lee & Lee, 2018). Therefore, this study proposes:

H9: *Health Consciousness positively affects the Perceived Usefulness of the Oura Ring among Gen Z and Millennial consumers in Germany.*

4 Methodology

This chapter outlines the study's methodological design, covering the research approach, the qualitative exploratory phase, the subsequent quantitative survey and the analytical procedures applied.

4.1 Research Approach

This study follows a sequential mixed-methods design, consisting of an exploratory qualitative phase followed by a quantitative survey. This approach is particularly well-suited for research on emerging consumer technologies, such as smart rings, whose benefits, perceived sacrifices, and value judgments may not yet be fully established in the extant literature.

In the initial phase, qualitative interviews were conducted to examine how potential users evaluate smart rings, such as the Oura Ring, and to assess whether the determinants identified in prior wearable technology research adequately capture value perceptions in this emerging product category. In particular, the interviews explored whether additional or context-specific factors beyond those established in existing models should be considered. The insights derived from this exploratory phase informed the refinement and contextualization of the constructs and guided the development and wording of the survey items.

In the second phase, the conceptual model and the associated hypotheses were empirically tested through a structured online survey targeting Gen Z and Millennial consumers living in Germany. This quantitative phase enabled the statistical examination of the relationships between perceived benefits, perceived sacrifices, Health Consciousness, Perceived Value (PV), and Adoption Intention.

The combination of these two phases is essential for ensuring that the research captures both the nuanced, context-dependent perceptions of potential users and the empirical assessment of the theoretical model. This design enables a comprehensive evaluation of the key factors that shape PV and the extent to which PV influences the Adoption Intention of the Oura Ring.

4.2 Qualitative Research: Interviews

Twelve semi-structured interviews were conducted with Gen Z and Millennial participants residing in Germany as part of the qualitative exploratory phase. The sample population comprised seven Millennials and five Gen Z individuals (seven women and five men). A convenience sampling approach was employed, which is suitable for exploratory research aiming to capture diverse perceptions rather than statistical representativeness (Creswell, 2014).

A semi-structured interview design was selected to ensure the comparability of responses across participants while providing sufficient openness for respondents to elaborate on aspects they perceived as personally relevant. In accordance with the study's research questions, the interview guide centered on exploring participants' reflections on which factors would increase or decrease the attractiveness of adopting a smart ring and their general evaluation of such a device. To avoid the imposition of predefined theoretical constructs, the questions were formulated in a broad manner, inviting participants to discuss their thoughts on expected benefits, perceived disadvantages, and the considerations they would weigh when deciding whether a smart ring would be valuable to them. This methodological approach allowed underlying value judgments, i.e., the way in which individuals balance perceived benefits and sacrifices, to emerge naturally without the need for explicit guidance.

All interviews were conducted via Microsoft Teams, recorded with permission, transcribed, anonymized, and subsequently prepared for thematic analysis. The duration of each interview ranged from 8 to 12 minutes. The thematic patterns identified during this phase informed the refinement of the conceptual model and the operationalization of constructs for the quantitative survey. Concise summaries of each interview are provided in Appendix B and serve as the foundation for the insights discussed in chapter 4.3.

4.3 Qualitative Data Analysis: Key Insights

The analysis of the twelve semi-structured interviews reveals clear and recurring themes regarding how Gen Z and Millennial consumers in Germany evaluate the potential adoption of smart rings such as the Oura Ring. Across interviews, participants consistently assessed the technology through a Perceived Value (PV) lens, explicitly weighing expected benefits against potential financial, functional, stylistic, and privacy-related sacrifices. While general familiarity with wearables was common among most participants, smart rings represented a relatively novel and less familiar category for most respondents, thereby increasing the importance of perceived accuracy, design, and value for money.

Aesthetic appeal and discreet design emerged as the most salient drivers of positive initial impressions. Eight out of twelve participants described smart rings as inconspicuous, jewelry-like, and visually more compatible with everyday life than bulkier wrist-worn wearables. For approximately two-thirds of respondents, the aesthetic and hedonic value of smart rings contributed strongly to their perceived appeal compared to smartwatches, particularly due to the absence of a screen and the unobtrusive form factor. However, stylistic fit also acted as a barrier. Five participants, predominantly male, expressed that wearing a ring did not align with their personal style or professional image, thereby reducing both aesthetic and social value.

Functional benefits, including sleep tracking, stress monitoring, activity insights, and broader well-being indicators, were consistently cited as key contributors to perceived usefulness. Nine participants emphasized the importance of receiving meaningful, actionable insights rather than raw physiological data alone. This expectation was particularly pronounced among respondents who already used other wearables, as four participants explicitly viewed smart rings as potentially more comfortable and less intrusive alternatives for continuous monitoring. Additionally, six interviewees highlighted the screenless, passive nature of smart rings as beneficial, noting that it could reduce distraction and support long-term, habitual use.

The most prominent perceived sacrifices related to performance and financial considerations. Concerns about measurement accuracy were raised by ten out of twelve participants, with several stating that unreliable or inconsistent data would fundamentally undermine the device's PV. Financial sacrifices, including the high upfront price and recurring subscription fees, were mentioned by nine participants and frequently described as potential deal-breakers. Many respondents emphasized that adoption would only be considered if the perceived benefits clearly outweighed these financial costs.

Privacy concerns emerged less frequently but were nonetheless salient for a subset of participants. Four interviewees expressed reservations regarding the handling of sensitive health data, particularly in relation to intimate physiological information such as menstrual cycle tracking. While these concerns were not universally shared and were often secondary to accuracy and cost considerations, they noticeably reduced PV for those affected. Additional barriers were context-dependent: three participants mentioned potential incompatibility with professional environments or workplace norms, while two participants expressed uncertainty about how well a ring would integrate into sports routines or physically demanding daily activities. Overall, these factors were perceived as secondary relative to functional reliability and financial value.

Taken together, the qualitative findings support the relevance of the key constructs included in the conceptual model. Across interviews, adoption decisions consistently reflected a value-based evaluation in which willingness to adopt depended on whether perceived benefits were sufficiently strong to justify financial, functional, and stylistic trade-offs. These insights informed the operationalization of constructs and provided empirical grounding for the design of the quantitative survey employed in the second phase of this study.

4.4 Quantitative Research: Survey

In accordance with the insights acquired from the exploratory interviews, the quantitative phase empirically tests the proposed conceptual model and its hypotheses. The aim of this survey-based approach was to examine how Gen Z and Millennial consumers in Germany evaluate the perceived benefits and perceived sacrifices of the Oura Ring, how these evaluations shape their Perceived Value (PV) of the device, and how PV influences their Adoption Intention. The subsequent subsections provide a detailed description of the survey's design, the operationalization of the constructs, and the analytical procedures applied.

4.4.1 Survey Design and Measurement

The structured online survey was administered in German to ensure clarity for all respondents; an English translation is provided in Appendix C. A convenience sampling strategy was employed to reach participants through social media channels, university networks, and personal contacts. Despite its non-probabilistic nature, this sampling approach is widely established in exploratory adoption research and is well-suited for clearly defined demographic groups, such as Gen Z and Millennials.

The survey started with a series of screening questions designed to ensure that only respondents who met the criteria of the target population were included in the study. Individuals were excluded from the study if they did not belong to the specified age groups, did not reside in Germany, or already owned or had previously owned an Oura Ring. This methodological decision was made to ensure that the study captured pre-adoption perceptions, which are central to value-based technology acceptance models. Following the screening, participants were presented with a concise, neutral overview of the Oura Ring, accompanied by product and application imagery, to ensure a uniform level of familiarity with the device prior to responding to the measurement items.

The conceptual model incorporated a range of constructs, which were operationalized using established multi-item scales adapted from prior research in the context of wearable technology adoption and value-based acceptance (e.g., H.-W. Kim et al., 2007; K. J. Kim & Shin, 2015; Yang et al., 2016). The survey assessed a multitude of factors, including Perceived Usefulness, Perceived Enjoyment, Aesthetic Appeal, Social Image, Financial Risks, Performance Risks, Privacy Risks, Health Consciousness, Perceived Value, and Adoption Intention. The measurement of all items was conducted using a 7-point Likert scale, ranging from "strongly disagree" to "strongly agree," thereby ensuring sufficient variation for subsequent statistical analyses. A detailed overview of all items is included in Appendix D.

4.4.2 Data Preparation and Analytical Procedures

Prior to the execution of the statistical analysis, the dataset underwent a systematic data preparation process. All incomplete responses were removed, and all cases failing the screening or attention-check criteria were excluded. To ensure clarity and consistency in the analysis, all item variables were renamed using a standardized naming convention. Individual item labels (e.g., PU1, PU2, PU3) were grouped by construct, and composite mean scores were calculated for each multi-item scale. The utilization of composite variables, including PU_mean, PE_mean, AE_mean, SI_mean, FR_mean, PR_mean, PVRI_mean, HC_mean, PV_mean, and AI_mean, was employed in all subsequent analyses. These variables correspond to the labels presented in the SPSS output, as detailed in Chapter 5. Following the process of data cleaning, the final dataset comprised 117 valid cases.

The statistical analysis was conducted using IBM SPSS Statistics and proceeded in several steps. Initially, the internal consistency of the multi-item constructs was assessed through the implementation of reliability testing (Cronbach's alpha). Subsequently, descriptive statistics were calculated to obtain an overview of means and standard deviations for each variable. Pearson correlation coefficients were computed to examine bivariate associations between the constructs. The hypotheses were tested using a series of linear regression analyses. In the first set, the extent to which Perceived Usefulness (PU), Perceived Enjoyment, Aesthetic Appeal, and Social Image influenced Perceived Value (PV) was investigated. In the second set, the influence of Financial, Performance, and Privacy Risks on PV was assessed. Additionally, a regression was conducted to determine whether Health Consciousness predicted PU. Finally, a separate model examined whether PV significantly influenced Adoption Intention. To complement these analyses, exploratory independent-samples t-tests were conducted to explore potential subgroup differences between Gen Z and Millennial respondents as well as between respondents who currently use any other wearable device and those who do not. These subgroup analyses were not part of the theoretical model and therefore served an exploratory purpose only.

Collectively, these analytical procedures provide a robust foundation for evaluating the proposed relationships within the conceptual model and for assessing the factors that influence PV and Adoption Intention of the Oura Ring among younger consumers in Germany.

5 Results

This chapter presents the empirical findings of the quantitative study examining the determinants of Perceived Value (PV) and their influence on Gen Z and Millennial consumers' Adoption Intention of the Oura Ring in Germany. A total of 142 people participated in the online survey. After applying the defined screening criteria – including year of birth, residence in Germany, non-ownership of the Oura Ring, and successful completion of the attention check – 117 valid cases remained and were included in the analysis.

Prior to the statistical analysis, all multi-item constructs were aggregated into composite mean scores and variable labels were harmonized to ensure consistency in SPSS. All subsequent analyses are therefore based on the final dataset of 117 respondents.

The following sections first present the demographic and behavioral characteristics of the sample, followed by descriptive statistics on the main constructs of the study. Subsequently, the results of the reliability and hypothesis tests are presented.

5.1 Sample Characterization

The final sample consists of 117 respondents from Germany who belong to the targeted age groups of Gen Z and Millennials. Thus, participants were born between 1981 and 2012. The largest proportion falls into *early Gen Z* (born between 1997 and 2003; 45.3%), followed by *late Millennials* (1991 and 1996; 26.5%) and *early Millennials* (1981-1990; 19.7%). *Late Gen Z* respondents (born between 1981 and 1990) account for 8.5%. In total, the sample comprises 54 Millennials and 63 Gen Z consumers. In terms of gender, 58.1% of respondents identify as female, 40.2% as male, and 1.7% as diverse or preferred not to disclose gender. The educational level of the sample is comparatively high: 42.7% hold a master's degree, 35% have a bachelor's degree, and 8.5% a doctoral degree; school and vocational qualifications are less common. Regarding employment, 59.8% of respondents work full- or part-time, 14.5% are students, 12.8% are working students, and 11.1% are self-employed. Only 1.7% reported being unemployed or seeking employment. Monthly gross income is distributed broadly, with most respondents earning between €1,000 and €5,499. Lower incomes (<€1,000; 8.5%) and higher incomes (>€1,000; 17.1%) occur less frequently; 5.1% did not provide income information. Technology-related behavior reflects moderate wearable usage: 27.4% currently use a fitness or health wearable, but in line with the screening criteria, none of these respondents own an Oura Ring; ensuring that the dataset represents pre-adoption perceptions rather than post-purchase evaluations. Familiarity with the Oura Ring varies: 44.4% report a general understanding of its functionality, 26.5% have heard of it but do not know details, and 19.7% are very familiar with the product. The remaining 9.4% had no prior knowledge of it. Detailed frequency tables for all sample characteristics are provided in Appendix E1.

Overall, the sample exhibits a high level of education, a clear professional structure, and sufficient familiarity with wearable technologies. These characteristics provide a robust foundation for analyzing how perceived benefits, perceived sacrifices, and personal factors shape PV and Adoption Intention in the context of smart rings in Germany.

5.2 Reliability Analysis (Cronbach's Alpha)

To evaluate the internal consistency of all multi-item constructs included in the conceptual model, Cronbach's alpha (α) was calculated for each scale (Appendix E2.1). Overall, the results demonstrate excellent measurement reliability across all constructs, indicating that the items consistently capture their intended latent variables. The benefit-related constructs show high reliability, with Cronbach's alpha values of α=.876 for Perceived Usefulness, α=.810 for Perceived Enjoyment, α=.915 for Aesthetic Appeal, and α=.814 for Social Image. Health Consciousness also demonstrates strong internal consistency (α=.840). All values exceed the commonly recommended threshold of $\alpha \geq .70$ for acceptable reliability (Hair et al., 2019), indicating that the items within these constructs coherently represent their respective dimensions.

The perceived sacrifice constructs likewise exhibit a very high reliability. Performance Risk (α=.916), Financial Risk (α=.873), and Privacy Risk (α=.962) show a particularly strong internal consistency, suggesting that participants interpreted the risk-related items in a consistent manner.

Similarly, Perceived Value (PV) (α=.952) and Adoption Intention (α=.965) achieved excellent reliability scores, confirming that the underlying constructs are measured with high precision.

In addition to Cronbach's alpha, corrected item-total correlations (CITC) were examined to assess the contribution of each item to the internal consistency of its scale. For nearly all items, CITC values exceeded the frequently recommended threshold of .50, demonstrating strong item-construct alignment. Only one item – the third item of the Social Image scale – showed a slightly lower value at approximately .473 (Appendix E2.2). Since removing this item would not meaningfully increase the scale's overall reliability and because it reflects a theoretically relevant aspect of social image, it was retained.

Overall, the reliability analysis confirms the strong psychometric quality of all multi-item scales. These results validate the adequacy of the measurement instruments and provide a robust foundation for the subsequent analyses presented in Chapter 5.3 and 5.4.

5.3 Descriptive Statistics

Descriptive statistics were calculated for all composite mean variables to provide an initial overview of the central constructs examined in the study (Appendix E3). Following common conventions in perception and attitude research, mean values (M) above the scale midpoint (4 on a 7-point scale) indicate general agreement with a construct, whereas values below the midpoint suggest lower perceived relevance or disagreement. Standard deviations (SD) reflect the degree of consensus within the sample, with higher SD values indicating greater heterogeneity in responses.

Overall, the results reveal relatively positive evaluations of several adoption-relevant characteristics of the Oura Ring. Perceived Usefulness (*PU_mean*; M=5.25; SD=1.28) represents one of the highest values in the dataset, indicating that respondents clearly recognize the functional benefits of the Oura Ring. Health Consciousness (*HC_mean*; M=5.82; SD=0.90) also shows a very high mean value combined with low dispersion, suggesting that the sample is not only strongly health-oriented but also relatively homogeneous in this respect. Hedonic perceptions follow a similar pattern: Perceived Enjoyment (*ENJ_mean*; M=5.15; SD=1.10) and Aesthetic Appeal (*AE_mean*; M=4.99; SD=1.67), are evaluated positively overall, although the comparatively higher SD for Aesthetic Appeal indicates more varied perceptions regarding the design of the Oura Ring. Social Image (*SI_mean*; M=4.26; SD=1.38) lies slightly above the scale midpoint but remains lower than the functional and hedonic factors, suggesting that symbolic or status-related aspects play a more moderate role for most respondents.

In contrast, the perceived risks tend to cluster around the scale midpoint. Performance Risk (*PR_mean*; M=3.67; SD=1.40) and Privacy Risk (*PVRI_mean*; M=3.58; SD=1.74) fall slightly below the midpoint, indicating that concerns regarding data accuracy or data protection are present but not dominant in the sample. Financial Risk (*FR_mean*; M=4.79; SD=1.44) shows moderately elevated values, reflecting the relevance of cost considerations, which is consistent with the qualitative findings.

Perceived Value (*PV_mean*; M=4.80; SD=1.63) is in the upper mid-range, suggesting that participants generally view the Oura Ring as offering more benefits than sacrifices, although the higher SD points to substantial variation in these evaluations. Adoption Intention (*AI_mean*;

M=4.51; SD=1.80) mirrors this pattern: while average intention is moderate, the large dispersion indicates that respondents differ considerably in their willingness to adopt the device.

Overall, the descriptive results indicate that respondents enter the evaluation of the Oura Ring with a generally positive benefit orientation and high Health Consciousness, while risk perceptions, particularly regarding performance and privacy, remain secondary. Financial concerns are more prominent, indicating a cautious but not dismissive attitude toward adoption. Accordingly, PV and Adoption Intention are moderately positive yet heterogeneous, highlighting the importance of examining how different benefit and sacrifice dimensions translate into adoption-related outcomes.

5.4 Hypotheses Testing

To evaluate the hypothesized relationships in the conceptual model, three separate linear regression analyses were conducted. All significance tests were performed at a conventional two-tailed significance level of α=.05, which is widely recommended in behavioral and social sciences to determine whether an observed effect is unlikely to have occurred by chance (Hair et al., 2019). Thus, p-values below .05 were interpreted as statistically significant evidence against the null hypothesis.

The first regression analysis examined the extent to which functional, hedonic, aesthetic, social, and risk-related factors predict the Perceived Value (PV) of the Oura Ring (Appendix E4.2). The model was highly significant ($F(7,109)=56.360$, $p<.001$), and accounted for 78.4% of the variance in PV ($R^2=.784$), indicating substantial explanatory power. Among the examined benefits, Perceived Usefulness (PU) ($\beta=.409$, $p<.001$) emerged as a strong and significant positive predictor of PV, thereby confirming Hypothesis 2. Aesthetic Appeal also exerted a significant positive influence ($\beta=.281$, $p<.001$), supporting Hypothesis 4. Neither Perceived Enjoyment ($\beta=.073$, $p=.311$) nor Social Image ($\beta=.108$, $p=.136$) demonstrated significant effects in the multivariate context. Although Social Image showed a strong and significant correlation with PV at the zero-order level ($r=.673$, $p<.001$; Appendix E4.1), it did not contribute unique explanatory variance once other predictors were included, and Hypothesis 5 is therefore not supported, just as Hypothesis 3.

Regarding perceived sacrifices, the results showed significant negative effects for both Financial and Privacy Risks. Financial Risk negatively predicted PV ($\beta=-.152$, $p=.006$), confirming Hypothesis 6, and Privacy Risk also had a significant negative effect ($\beta=-.140$,

$p=.015$), confirming Hypothesis 8. Surprisingly, Performance Risk did not significantly affect PV ($\beta=-.063$, $p=.277$), meaning that Hypothesis 7 cannot be supported.

Overall, these findings highlight that PV is shaped primarily by functional and aesthetic evaluations and by specific financial and privacy-related concerns, while hedonic enjoyment, social signaling, and performance-related uncertainty play comparatively lesser roles.

A second regression analysis assessed whether Health Consciousness influences Perceived Usefulness (PU) (Appendix E4.3). This model was also highly significant ($F(1,115)=40.315$, $p<.001$) and explained, with an R^2 of .260, 26% of the variance in PU. Health Consciousness demonstrated a substantial positive effect on Perceived Usefulness ($\beta=.509$, $p<.001$), providing clear support for Hypothesis 9 and indicating that more health-conscious individuals are more likely to evaluate the Oura Ring as functionally beneficial.

The third regression analysis examined the influence of PV on Adoption Intention (Appendix E4.4). The model yielded a very strong result ($F(1,115)=414.164$, $p<.001$), explaining 78.3% of the variance ($R^2=.783$). PV exhibited an exceptionally strong and highly significant positive effect ($\beta=.885$, $p<.001$), which clearly confirms Hypothesis 1 and underscores the central role of PV as the dominant driver of Adoption Intention.

In addition to the hypothesis-driven analyses, exploratory independent-samples t-tests were conducted to determine whether Millennials and Gen Z respondents differ in their evaluations of the key constructs (Appendix E5.1). These analyses revealed no statistically significant differences between the two generational groups (all $p>.05$), indicating a high degree of similarity in how both cohorts perceive the Oura Ring. As a result, all regression models were estimated using the combined sample.

Beyond generational comparisons, additional exploratory independent-samples t-tests examined whether respondents who currently use another fitness or health wearable differ from non-users in their evaluations of the model's core constructs (Appendix E5.2). As with the generational comparison, no statistically significant differences were found for any variable (all $p>.05$). The small mean differences observed, such as slightly lower privacy-risk ratings among current wearable users, were minimal in size and accompanied by very small effect sizes (Cohen's $d<.20$). Given these non-significant and practically negligible differences, as well as the unequal subgroup sizes (32 users vs. 85 non-users), no substantive conclusions can be drawn. Accordingly, these findings were not integrated into the main hypothesis-testing logic but are reported purely for transparency.

Taken together, the findings demonstrate that functional and aesthetic evaluations, as well as financial and privacy-related sacrifices, significantly shape PV, while hedonic enjoyment and performance concerns exert limited influence. Health Consciousness serves as an important personal driver of PU, and PV emerges as a strong influential determinant of Adoption Intention.

6 Discussion and Implications

After presenting the empirical results, this chapter synthesizes the findings and discusses their relevance considering the study's research questions and the existing body of literature. The chapter also derives theoretical and practical implications based on the observed patterns.

6.1 Main Findings & Discussion

The findings of this study provide insight into how Gen Z and Millennial consumers evaluate the Oura Ring and what influences their decision to adopt it. In line with value-based adoption perspectives, the results reinforce the idea that Perceived Value (PV) acts as the central evaluative mechanism through which individuals integrate diverse beliefs, ranging from functional benefits to perceived sacrifices, into an overall adoption-related judgement. The exceptionally strong effect of PV on adoption intention suggests that decisions to adopt smart rings, such as the Oura Ring, are shaped less by isolated impressions and more by consumers' holistic assessment of whether the technology provides meaningful value.

Functional and aesthetic benefits are the most influential contributors to PV. Perceived Usefulness (PU) has the strongest effect, emphasizing the importance of functional evaluations in wearable adoption and reflecting the fundamental principles of the Technology Acceptance Model (TAM). Aesthetic Appeal also exerts a significant positive influence, suggesting that design quality and the ability to seamlessly integrate into daily routines are highly valued by younger users. Together, these results suggest that smart rings are primarily evaluated as health-oriented, design-conscious technologies whose value stems from functional performance and visual appeal.

A notable pattern emerges when comparing the relative influence of benefits and sacrifices. In line with the findings of Yang et al. (2016), the current study shows that perceived benefits have a stronger impact on PV than perceived risks. While Financial and Privacy Risks significantly reduce PV, their standardized regression coefficients are clearly smaller in magnitude than those of the strongest benefit-related predictors. This suggests that the value assessments of younger consumers are more strongly influenced by the potential benefits of the device than its potential drawbacks, although the latter still meaningfully impact the value calculation. In other words, risks matter, but benefits matter more. This reinforces the theoretical claim that value assessments in wearable adoption are predominantly benefit-driven, with sacrifices acting as important yet secondary correctives.

In contrast, despite strong bivariate correlations with PV, Perceived Enjoyment and Social Image do not exert significant effects in the multivariate model. This suggests that, for a discreet and highly personal device such as the Oura Ring, social signaling or entertainment value plays a comparatively minor role once core functional and aesthetic factors are considered. The Oura Ring is evaluated less as a status symbol and more as a health technology focused on the individual.

Risk perceptions yield a differentiated pattern. Financial Risk significantly reduces PV, highlighting the importance of high upfront costs and recurring subscription fees. Privacy Risk also has a significant negative effect, confirming that sensitive health data remains a source of uncertainty, even among digitally fluent consumers. In contrast, despite being frequently mentioned in qualitative interviews, Performance Risk does not significantly influence PV within the multivariate model. One possible explanation is that young adults assume a baseline level of technological reliability for modern wearables, meaning that performance concerns are less relevant once other factors are considered.

The study also shows that Health Consciousness has a strong positive effect on PU. Those who are highly health-conscious more clearly recognize the functional benefits of the Oura Ring, emphasizing the importance of personal dispositions in forming value judgements and indicating that lifestyle factors play a meaningful role in decisions about adoption.

Exploratory subgroup analyses revealed no significant differences between Millennials and Gen Z, or between current wearable users and non-users. These findings suggest that the identified relationships are consistent across younger consumer segments, although future research with more balanced subgroup sizes may reveal nuanced differences.

Overall, the findings indicate that young adults evaluate the Oura Ring through a predominantly value-oriented lens, in which functional and aesthetic benefits play a dominant role, while financial and privacy-related risks act as meaningful but secondary constraints. PV emerges as the central mechanism that integrates these diverse perceptions into a coherent judgement, which in turn strongly shapes the intention to adopt the device. Although factors such as Social Image, Perceived Enjoyment and Performance concerns played a smaller role in the multivariate context, the overall evaluation pattern reflects a predominantly benefit-driven assessment moderated by key perceived sacrifices. Taken together, the results provide a detailed picture of how Millennials and Gen Z form adoption-relevant impressions of smart rings, laying the foundation for the theoretical implications and answers to the research questions presented in the next chapter.

6.2 Academic and Managerial Implications

The findings of this study make several contributions to academic research and managerial practice. Although the empirical analysis focuses on the Oura Ring, many of the observed patterns are likely to be applicable to smart rings in general, given their similar design principles and usage context, particularly regarding the importance of functional and aesthetic benefits as well as financial and privacy-related considerations.

From an academic perspective, this study contributes to the wearable adoption literature by extending value-based adoption models to the emerging smart ring context. Rather than confirming isolated belief effects, the findings show that adoption decisions are best explained through an integrative value assessment that combines perceived benefits and sacrifices. This reinforces key assumptions of value-based adoption models and demonstrates the relevance of TAM-related constructs within a smart ring setting. Conversely, the comparatively weaker influence of perceived enjoyment and social image challenges assumptions from hedonic and socially oriented adoption literature. This suggests that discreet, body-proximate devices may elicit different evaluative patterns to more visible wearables, such as smartwatches. The significant negative influence of Financial and Privacy Risks emphasizes the importance of incorporating sacrifice-related factors more systematically into value-based frameworks, especially for health technologies that process sensitive biometric data. Finally, the strong correlation between Health Consciousness and Perceived Usefulness (PU) underscores the need to explicitly incorporate personal dispositions and lifestyle variables into adoption models for emerging health-oriented wearables.

From a managerial perspective, the results provide actionable insights for product development, communication and pricing strategies. The central role of PU suggests that Oura should continue to emphasize functional accuracy and meaningful health insights. Clear communication of evidence-based metrics, such as sleep phases, readiness scores or stress indicators, and transparent explanations of underlying methodologies, may further strengthen functional credibility. The significant effect of aesthetic appeal highlights the fact that design remains a core differentiator. Offering additional minimalist styles, seasonal color variations, limited editions, refined material options, or collaborations with established jewelry and fashion brands could increase the product's perceived personal fit and broaden its appeal across lifestyle segments.

The strong impact of Financial Risk indicates that the current pricing structure, comprising a comparatively high initial cost combined with ongoing subscription fees, constitutes a major barrier. Greater transparency regarding the cost structure, more flexible subscription models or targeted discounts for specific user groups (e.g. students) may help to reduce the perceived financial burden. Additionally, enhancing the clarity of which functions remain accessible without a subscription could potentially alleviate cost-related concerns and improve perceptions of fairness. Similarly, the influence of Privacy Risk highlights the need for clear, user-friendly data governance. Open communication about data flows, storage practices, encryption standards and user control mechanisms (e.g., privacy dashboards and adjustable sharing settings) could foster trust, particularly among those new to wearable technology.

The finding that highly health-conscious individuals perceive greater usefulness suggests opportunities for targeted segmentation. Partnering with fitness studios, recovery-focused apps, biohacking communities, corporate well-being programs and platforms for booking sports classes could help reach groups that are already receptive to continuous health monitoring. The absence of significant generational or wearable-user differences indicates that a unified communication strategy targeting young adult consumers may be sufficient. However, future research with more balanced subgroups could reveal more nuanced distinctions.

Taken together, these implications directly address the study's research questions and hypotheses and provide a coherent conclusion to the empirical investigation. In particular, the strong influence of Perceived Value (PV) on Adoption Intention (H1) and the central role of functional and aesthetic benefits in shaping PV (H2-H4) highlight that adoption decisions are primarily driven by a rational value assessment rather than by social signaling or hedonic enjoyment. At the same time, the significant negative effects of Financial and Privacy risks (H6 and H8) underscore that perceived sacrifices can substantially constrain adoption, even when benefits are evaluated positively. From a managerial perspective, the findings suggest a clear prioritization of actions. In the short term, measures that enhance functional credibility, improve transparency around pricing and subscriptions, and clearly communicate data privacy practices are likely to yield the most immediate impact on PV. In the longer term, strategic investments in design differentiation, ecosystem partnerships, and targeted segmentation of health-conscious user groups can strengthen brand positioning and sustain competitive advantage in the evolving smart ring market. Overall, the study demonstrates that successful smart ring adoption requires a balanced alignment of performance, aesthetics, and trust-related considerations, thereby offering both theoretical insights and actionable guidance for academics and practitioners alike.

7 Limitations and Future Research

Despite the valuable contributions of this study, several methodological and conceptual limitations should be considered when interpreting the findings. At the same time, these limitations underscore potential avenues for future research in the context of smart ring and wearable technology adoption.

First, although the sample size of 117 valid cases is sufficient for the conducted regression analyses, it limits statistical power for detecting smaller effects. Using convenience sampling through social media, university networks, and personal contacts increases the risk of self-selection bias, especially among individuals interested in digital health or wearable technologies. Consequently, the findings should not be generalized to the broader population of young adults in Germany.

Second, the study focuses exclusively on consumers residing in Germany. Since cultural norms, attitudes toward digital technologies, and perceptions of data privacy vary substantially across countries, the findings are not generalizable to other cultures. Furthermore, the study measures adoption intention rather than actual behavior. Due to the well-documented intention-behavior gap, future research should incorporate longitudinal or behavior-based data to assess how intentions translate into real usage.

Third, all variables were assessed using self-reported survey data and a cross-sectional design. This increases the risk of subjective response bias, social desirability effects, and common method bias while preventing causal inference. Future studies could employ experimental designs, multi-source data, or repeated measurements to overcome these limitations and more accurately capture dynamic shifts in users' perceptions over time.

Fourth, while the measurement scales demonstrated excellent reliability overall, one item of the social image scale exhibited a slightly lower corrected item-total correlation. Although this item was retained for reasons of conceptual completeness, future studies should further refine the measurement of constructs such as social image, which may be expressed differently in the context of smart rings than in smartwatch or smartphone settings.

Fifth, the conceptual model applied in this study is intentionally selective. It incorporates central constructs from TAM, UTAUT2, and VAM, but does not represent all determinants identified in the broader wearable adoption literature. Psychological dispositions, contextual influences, habit formation, and trust-related constructs may also influence adoption decisions, but these factors were beyond the scope of this study. Future research could extend the model to examine how these additional factors jointly influence value assessments and adoption behavior, especially as the smart ring category evolves.

Furthermore, the respondents evaluated the Oura Ring based solely on a brief description and images, without hands-on experience. Perceived benefits, risks, and overall value may differ once users interact with the device in real-world settings. Field studies, usability tests, and post-adoption longitudinal designs would therefore be valuable additions.

Exploratory subgroup analyses showed no statistically significant differences between Millennials and Gen Z or between current wearable users and non-users. However, due to the relatively small and uneven subgroup sizes, these results should be interpreted with caution. Future studies with larger, more balanced samples could explore whether subtle generational or experience-based differences exist in smart ring perceptions. In addition to generational and experience-based differences, future research may also explore whether gender shapes perceptions of smart rings. Although gender effects were not examined in the present study and were outside the conceptual scope of the proposed model, prior wearable research suggests that aesthetic preferences, privacy attitudes, or technology engagement may vary across genders. A more detailed investigation with sufficiently large and balanced subgroups could therefore offer additional insights into whether gender-specific patterns influence perceived benefits, risks, or adoption intentions within the smart ring context.

Finally, although the literature discusses Perceived Value (PV) as a central evaluative mechanism in value-based adoption perspectives, the original VAM framework and prior wearable technology studies (e.g., Yang et al., 2016) typically model its effects through direct relationships rather than formal mediation tests. Consistent with this established practice, the present study examined direct effects to maintain conceptual clarity. Nonetheless, future research could empirically test whether PV functions as a mediating mechanism through which perceived benefits and sacrifices indirectly influence adoption intentions. Additionally, the Financial Risk construct in this study captured general monetary concerns without distinguishing between upfront costs and subscription-related expenses. Future research could analyze these cost dimensions separately to explore how different pricing structures influence users' evaluations.

Overall, future research would benefit from larger and more diverse samples, cross-cultural comparisons, refined measurement models, and the integration of behavioral or longitudinal data. As smart rings continue to emerge as a distinct category within the wearable ecosystem, expanding both the theoretical and methodological scope of adoption research will be essential for advancing our understanding of how users evaluate and adopt this new class of health-oriented technologies.

8 Conclusion

The results of this study provide a clear and coherent picture of how Gen Z and Millennial consumers evaluate the Oura Ring and which factors most strongly shape their willingness to adopt it. With regard to the first research question, the findings demonstrate that functional and design-related benefits dominate other evaluative dimensions. Specifically, Perceived Usefulness and Aesthetic Appeal exert significant positive effects on Perceived Value (PV), emerging as the most influential benefit-related drivers, while Financial Risk and Privacy Risk reduce PV to a lesser extent. Perceived Enjoyment and Social Image, in contrast, do not show significant effects once functional and aesthetic evaluations are considered. This suggests that, in the context of smart rings, experiential and social motivations are secondary to utilitarian and design-oriented considerations. Performance Risk likewise does not emerge as a significant predictor, despite its prominence in the qualitative interviews, indicating that concerns about measurement accuracy may become less salient when more dominant value dimensions are considered. In addition, the findings show that Health Consciousness positively influences

Perceived Usefulness, underscoring the role of individual lifestyle orientations in shaping value perceptions.

With respect to the second research question, the results confirm that PV functions as the central evaluative mechanism through which consumers integrate diverse benefit- and risk-related perceptions into an adoption-relevant judgment. PV exhibited a very strong effect on Adoption Intention, indicating that adoption decisions are best explained through an integrative value assessment rather than through isolated belief constructs.

Taken together, these findings suggest that successful smart ring adoption depends less on maximizing the number of positive features and more on prioritizing those dimensions that contribute most strongly to Perceived Value. Smart rings, exemplified by the Oura Ring, are therefore most likely to be adopted when they deliver clearly perceivable functional benefits and strong aesthetic integration, while effectively addressing financial and privacy-related concerns. By highlighting the relative importance of competing adoption drivers, this study contributes to academic discussions on value-based evaluation processes in wearable technology adoption and provides actionable insights for the design, positioning, and communication of future smart ring technologies.

AI Disclaimer: This document has been reviewed using AI tools for linguistic refinement and clarity.

9 List of References

Adapa, A., Nah, F. F.-H., Hall, R. H., Siau, K., & Smith, S. N. (2018). Factors Influencing the Adoption of Smart Wearable Devices. *International Journal of Human–Computer Interaction*, *34*(5), 399–409. https://doi.org/10.1080/10447318.2017.1357902

Agha, M. A., & Qazi, M. S. (2025). The Rise of Wearable Devices and Consumer-Centric Healthcare Ecosystems: A Narrow Review. *Dinkum Journal of Medical Innovations*, *4*(05).

Ajzen, I. (1985). From Intentions to Actions: A Theory of Planned Behavior. In J. Kuhl & J. Beckmann (Eds.), *Action-Control: From Cognition to Behaviour* (pp. 11–39). Springer.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Apple Inc. (n.d.). *Apple Watch*. Apple. https://www.apple.com/watch/

Arvanitis, T. N., Williams, D. D., Knight, J. F., Baber, C., Gargalakos, M., Sotiriou, S., & Bogner, F. X. (2011). A Human Factors Study of Technology Acceptance of a Prototype Mobile Augmented Reality System for Science Education. *Advanced Science Letters*, *4*(11), 3342–3352. https://doi.org/10.1166/asl.2011.2044

Ayeh, J. K., Au, N., & Law, R. (2013). Towards an Understanding of Online Travellers' Acceptance of Consumer-Generated Media for Travel Planning: Integrating Technology Acceptance and Source Credibility Factors. In L. Cantoni & Z. Xiang (Eds.), *Information and Communication Technologies in Tourism 2013* (pp. 254–267). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-642-36309-2_22

Beresford Research, LLC. (n.d.). *Age Range by Generation*. Beresford Research. Retrieved March 12, 2025, from https://www.beresfordresearch.com/age-range-by-generation/

Blackwell, R. D., Miniard, P. W., & Engel, J. F. (2001). *Consumer Behavior* (9th ed.). South-Western, Thomson Learning.

Browne, J. D., Boland, D. M., Baum, J. T., Ikemiya, K., Harris, Q., Phillips, M., Neufeld, E. V., Gomez, D., Goldman, P., & Dolezal, B. A. (2021). Lifestyle Modification Using a Wearable Biometric Ring and Guided Feedback Improve Sleep and Exercise Behaviors: A 12-Month Randomized, Placebo-Controlled Study. *Frontiers in Physiology*, *12*, 777874. https://doi.org/10.3389/fphys.2021.777874

Bundesministerium für Gesundheit. (2025, March 12). *Digitale Gesundheitsanwendungen (DiGA)*. https://www.bundesgesundheitsministerium.de/themen/krankenversicherung/online-ratgeber-krankenversicherung/arznei-heil-und-hilfsmittel/digitale-gesundheitsanwendungen.html

BusinessWire. (2025, September 25). Ōura surpasses 5.5 million rings sold and doubles revenue for the second year in a row. *BusinessWire*. https://www.businesswire.com/news/home/20250922351288/en/URA-Surpasses-5.5-Million-Rings-Sold-and-Doubles-Revenue-for-the-Second-Year-in-a-Row-Empowering-Millions-to-Live-Better-Longer

Chandrasekaran, R., Katthula, V., & Moustakas, E. (2020). Patterns of Use and Key Predictors for the Use of Wearable Health Care Devices by US Adults: Insights from a National Survey. *Journal of Medical Internet Research*, *22*(10), e22443. https://doi.org/10.2196/22443

Chandrasekaran, R., Sadiq T, M., & Moustakas, E. (2025). Usage Trends and Data Sharing Practices of Healthcare Wearable Devices Among US Adults: Cross-Sectional Study. *Journal of Medical Internet Research*, *27*, e63879. https://doi.org/10.2196/63879

Chang, H. S., Lee, S. C., & Ji, Y. G. (2016). Wearable device adoption model with TAM and TTF. *International Journal of Mobile Communications*, *14*(5), 518. https://doi.org/10.1504/IJMC.2016.078726

Chau, K. Y., Lam, M. H. S., Cheung, M. L., Tso, E. K. H., W. Flint, S., R. Broom, D., Tse, G., & Lee, K. Y. (2019). Smart technology for healthcare: Exploring the antecedents of adoption intention of healthcare wearable technology. *Health Psychology Research*, *7*(1), 1. https://doi.org/10.4081/hpr.2019.8099

Chen, J., Wang, T., Fang, Z., & Wang, H. (2023). Research on elderly users' intentions to accept wearable devices based on the improved UTAUT model. *Frontiers in Public Health*, *10*, 1035398. https://doi.org/10.3389/fpubh.2022.1035398

Cheng, J. W., & Mitomo, H. (2017). The underlying factors of the perceived usefulness of using smart wearable devices for disaster applications. *Telematics and Informatics*, *34*(2), 528–539. https://doi.org/10.1016/j.tele.2016.09.010

Cheung, M. L., Leung, W. K. S., & Chan, H. (2021). Driving healthcare wearable technology adoption for Generation Z consumers in Hong Kong. *Young Consumers*, *22*(1), 10–27. https://doi.org/10.1108/YC-04-2020-1123

Choi, J., & Kim, S. (2016). Is the smartwatch an IT product or a fashion product? A study on factors affecting the intention to use smartwatches. *Computers in Human Behavior*, *63*, 777–786. https://doi.org/10.1016/j.chb.2016.06.007

Chuah, S. H.-W., Rauschnabel, P. A., Krey, N., Nguyen, B., Ramayah, T., & Lade, S. (2016). Wearable technologies: The role of usefulness and visibility in smartwatch adoption. *Computers in Human Behavior*, *65*, 276–284. https://doi.org/10.1016/j.chb.2016.07.047

Circular. (n.d.). *Circular Ring 2: Your Personal Health Companion Smart Ring*. Circular. https://www.circular.xyz/

Consolvo, S., McDonald, D. W., & Landay, J. A. (2009). Theory-driven design strategies for technologies that support behavior change in everyday life. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 405–414. https://doi.org/10.1145/1518701.1518766

Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (4th edition). SAGE Publications.

Cyr, D., Head, M., & Ivanov, A. (2006). Design aesthetics leading to m-loyalty in mobile commerce. *Information & Management*, *43*(8), 950–963. https://doi.org/10.1016/j.im.2006.08.009

Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, *13*(3), 319. https://doi.org/10.2307/249008

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992). Extrinsic and intrinsic motivation to use computers in the workplace. *Journal of Applied Social Psychology*, *22*(14), 1111–1132. https://doi.org/10.1111/j.1559-1816.1992.tb00945.x

El-Gayar, O., & Elnoshokaty, A. (2023). Factors and Design Features Influencing the Continued Use of Wearable Devices. *Journal of Healthcare Informatics Research*, *7*(3), 359–385. https://doi.org/10.1007/s41666-023-00135-4

Ferreira, J. J., Fernandes, C. I., Rammal, H. G., & Veiga, P. M. (2021). Wearable technology and consumer interaction: A systematic review and research agenda. *Computers in Human Behavior*, *118*, 106710. https://doi.org/10.1016/j.chb.2021.106710

Firouzi, F., Farahani, B., Ibrahim, M., & Chakrabarty, K. (2018). Keynote Paper: From EDA to IoT eHealth: Promises, Challenges, and Solutions. *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, *37*(12), 2965–2978. https://doi.org/10.1109/TCAD.2018.2801227

Fishbein, M., & Ajzen, I. (1975). *Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research*. Addison-Wesley.

Fritz, T., Huang, E. M., Murphy, G. C., & Zimmermann, T. (2014). Persuasive technology in the real world: A study of long-term use of activity sensing devices for fitness. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 487–496. https://doi.org/10.1145/2556288.2557383

Gao, Y., Li, H., & Luo, Y. (2015). An empirical study of wearable technology acceptance in healthcare. *Industrial Management & Data Systems*, *115*(9), 1704–1723. https://doi.org/10.1108/IMDS-03-2015-0087

Garmin Ltd. (n.d.). *Wearables*. Garmin. https://www.garmin.com/de-DE/c/wearables-smartwatches/

Google LLC. (n.d.). *Watches*. Google Store. https://store.google.com/de/category/watches?hl=de

Grand View Research. (2025a). *Digital Health Market (2025-2030)*. https://www.grandviewresearch.com/industry-analysis/digital-health-market

Grand View Research. (2025b). *Germany Wearable Technology Market Size & Outlook*. https://www.grandviewresearch.com/horizon/outlook/wearable-technology-market/germany#:~:text=Market%20segmentation%20Wrist,Class%20B%2C%20Fitbit%2C%20Garmin%20Ltd

Grand View Research. (2025c). *Wearable Technology Market Size, Share & Trends Analysis Report* [Industry Report]. Grand View Research. https://www.grandviewresearch.com/industry-analysis/wearable-technology-market

Grand View Research, Inc. (2025). *Smart Rings Market Size And Share: Industry Report 2030* [Market Analysis Report]. Grand View Research, Inc. https://www.grandviewresearch.com/industry-analysis/smart-rings-market-report

Gu, Z., Wei, J., & Xu, F. (2016). An Empirical Study on Factors Influencing Consumers' Initial Trust in Wearable Commerce. *Journal of Computer Information Systems*, *56*(1), 79–85. https://doi.org/10.1080/08874417.2015.11645804

Gucci S.p.A. (n.d.). *Gucci x Ōura*. Gucci. Retrieved February 12, 2025, from https://www.gucci.com/at/de/st/stories/article/gucci-oura?srsltid=AfmBOoqZLRytTTOxpQwimZWrDuevSjNIeIid_AuY5W_6AbQpdYWLkiib

Ha, I., Yoon, Y., & Choi, M. (2007). Determinants of adoption of mobile games under mobile broadband wireless access environment. *Information & Management*, *44*(3), 276–286. https://doi.org/10.1016/j.im.2007.01.001

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (Eighth edition). Cengage.

Hein, D. W. E., & Rauschnabel, P. A. (2016). Augmented Reality Smart Glasses and Knowledge Management: A Conceptual Framework for Enterprise Social Networks. In A. Rossmann, G. Stei, & M. Besch (Eds.), *Enterprise Social Networks* (pp. 83–109). Springer Fachmedien Wiesbaden. https://doi.org/10.1007/978-3-658-12652-0_5

Holbrook, M. B. (1999). Introduction to Consumer Value. In M. B. Holbrook (Ed.), *Consumer Value: A Framework for Analysis and Research* (1st Edition, pp. 1–28). Routledge.

Horton, R. L. (1976). The structure of perceived risk: Some further progress. *Journal of the Academy of Marketing Science*, *4*(4), 694–706. https://doi.org/10.1007/BF02729830

Hsiao, K. (2013). Android smartphone adoption and intention to pay for mobile internet: Perspectives from software, hardware, design, and value. *Library Hi Tech*, *31*(2), 216–235. https://doi.org/10.1108/07378831311329022

Huawei Technologies. (n.d.). *Wearables*. Huawei. https://consumer.huawei.com/en/wearables/

Hwang, C., Chung, T.-L., & Sanders, E. A. (2016). Attitudes and Purchase Intentions for Smart Clothing: Examining U.S. Consumers' Functional, Expressive, and Aesthetic Needs for Solar-Powered Clothing. *Clothing and Textiles Research Journal*, *34*(3), 207–222. https://doi.org/10.1177/0887302X16646447

Ilhan, A., & Fietkiewicz, K. J. (2019). Learning for a Healthier Lifestyle Through Gamification: A Case Study of Fitness Tracker Applications. In I. Buchem, R. Klamma, & F. Wild (Eds.), *Perspectives on Wearable Enhanced Learning (WELL)* (pp. 333–364). Springer International Publishing. https://doi.org/10.1007/978-3-319-64301-4_16

Intel Market Research. (2025). *Wearable Health Devices Market Growth Analysis, Dynamics, Key Players and Innovations, Outlook and Forecast 2025-2032* (p. 122). https://www.intelmarketresearch.com/wearable-health-devices-market-8087

Jeong, S. C., Byun, J. S., & Jeong, Y. J. (2016). The Effect of User Experience and Perceived Similarity of Smartphone on Acceptance Intention for Smartwatch. *ICIC Express Letters*, *10*(7), 1613–1619.

Jeong, S. C., Kim, S.-H., Park, J. Y., & Choi, B. (2017). Domain-specific innovativeness and new product adoption: A case of wearable devices. *Telematics and Informatics*, *34*(5), 399–412. https://doi.org/10.1016/j.tele.2016.09.001

Kalantari, M. (2017). Consumers' adoption of wearable technologies: Literature review, synthesis, and future research agenda. *International Journal of Technology Marketing*, *12*(3), 274. https://doi.org/10.1504/IJTMKT.2017.089665

Kalantari, M., & Rauschnabel, P. (2018). Exploring the Early Adopters of Augmented Reality Smart Glasses: The Case of Microsoft HoloLens. In T. Jung & M. C. Tom Dieck (Eds.), *Augmented Reality and Virtual Reality* (pp. 229–245). Springer International Publishing. https://doi.org/10.1007/978-3-319-64027-3_16

Kasoju, N., Remya, N. S., Sasi, R., Sujesh, S., Soman, B., Kesavadas, C., Muraleedharan, C. V., Varma, P. R. H., & Behari, S. (2023). Digital health: Trends, opportunities and challenges in medical devices, pharma and bio-technology. *CSI Transactions on ICT*, *11*(1), 11–30. https://doi.org/10.1007/s40012-023-00380-3

Kim, H.-W., Chan, H. C., & Gupta, S. (2007). Value-based Adoption of Mobile Internet: An empirical investigation. *Decision Support Systems*, *43*(1), 111–126. https://doi.org/10.1016/j.dss.2005.05.009

Kim, K. J., & Shin, D.-H. (2015). An acceptance model for smart watches: Implications for the adoption of future wearable technology. *Internet Research*, *25*(4), 527–541. https://doi.org/10.1108/IntR-05-2014-0126

King, W. R., & He, J. (2006). A meta-analysis of the technology acceptance model. *Information & Management*, *43*(6), 740–755. https://doi.org/10.1016/j.im.2006.05.003

Ko, E., Sung, H., & Yun, H. (2009). Comparative Analysis of Purchase Intentions Toward Smart Clothing Between Korean and U.S. Consumers. *Clothing and Textiles Research Journal*, *27*(4), 259–273. https://doi.org/10.1177/0887302X08327086

Kwee-Meier, S. Th., Bützler, J. E., & Schlick, C. (2016). Development and validation of a technology acceptance model for safety-enhancing, wearable locating systems. *Behaviour & Information Technology*, *35*(5), 394–409. https://doi.org/10.1080/0144929X.2016.1141986

Lee, H. M. (2009). A study on the acceptance of wearable computers based on the extended technology acceptance model. *The Research Journal of the Costume Culture*, *17*(6), 1155–1172.

Lee, S. Y., & Lee, K. (2018). Factors that influence an individual's intention to adopt a wearable healthcare device: The case of a wearable fitness tracker. *Technological Forecasting and Social Change*, *129*, 154–163. https://doi.org/10.1016/j.techfore.2018.01.002

Liang, T.-P., Lin, Y.-L., & Hou, H.-C. (2021). What drives consumers to adopt a sharing platform: An integrated model of value-based and transaction cost theories. *Information & Management*, *58*(4), 103471. https://doi.org/10.1016/j.im.2021.103471

Lin, C., & Bhattacherjee, A. (2010). Extending technology usage models to interactive hedonic technologies: A theoretical model and empirical test. *Information Systems Journal*, *20*(2), 163–181. https://doi.org/10.1111/j.1365-2575.2007.00265.x

Lupton, D. (2016). The diverse domains of quantified selves: Self-tracking modes and dataveillance. *Economy and Society*, *45*(1), 101–122. https://doi.org/10.1080/03085147.2016.1143726

Marakhimov, A., & Joo, J. (2017). Consumer adaptation and infusion of wearable devices for healthcare. *Computers in Human Behavior*, *76*, 135–148. https://doi.org/10.1016/j.chb.2017.07.016

Mathavan, B., Vafaei-Zadeh, A., Hanifah, H., Ramayah, T., & Kurnia, S. (2024). Understanding the purchase intention of fitness wearables: Using value-based adoption model. *Asia-Pacific Journal of Business Administration*, *16*(1), 101–126. https://doi.org/10.1108/APJBA-04-2022-0166

McKinsey & Company. (2021). *Feeling good: The future of the $1.5 trillion wellness market*. https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/feeling-good-the-future-of-the-1-5-trillion-wellness-market

McKinsey & Company. (2024a). *The trends defining the $1.8 trillion global wellness market in 2024*. https://www.mckinsey.de/~/media/mckinsey/locations/europe%20and%20middle%20east/deutschland/news/presse/2024/2024-02-01%20wellnessreport/the-trends-defining-the-1-point-8-trillion-dollar-global-wellness-market-in-2024-vf.pdf

McKinsey & Company. (2024b). *What is the future of wellness?* https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-the-future-of-wellness

McKinsey & Company. (2025). *The $2 trillion global wellness market gets a millennial and Gen Z glow-up*.

Moon, J.-W., & Kim, Y.-G. (2001). Extending the TAM for a World-Wide-Web context. *Information & Management*, *38*(4), 217–230. https://doi.org/10.1016/S0378-7206(00)00061-6

Moore, G. C., & Benbasat, I. (1991). Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation. *Information Systems Research*, *2*(3), 192–222. https://doi.org/10.1287/isre.2.3.192

Mordor Intelligence. (2024). *Marktgrößen- und Marktanteilsanalyse für tragbare Technologie – Wachstumstrends und -prognosen (2024–2029)*. https://www.mordorintelligence.com/de/industry-reports/wearable-technology-market#:~:text=Wer%20sind%20die%20Hauptakteure%20auf,Markt

Movano Health Inc. (n.d.). *Evie Ring*. EvieRing. https://eviering.com/

Nasir, S., & Yurder, Y. (2015). Consumers' and Physicians' Perceptions about High Tech Wearable Health Products. *Procedia - Social and Behavioral Sciences*, *195*, 1261–1267. https://doi.org/10.1016/j.sbspro.2015.06.279

Niknejad, N., Hussin, A. R. C., Ghani, I., & Ganjouei, F. A. (2020). A confirmatory factor analysis of the behavioral intention to use smart wellness wearables in Malaysia. *Universal Access in the Information Society*, *19*(3), 633–653. https://doi.org/10.1007/s10209-019-00663-0

Oura Health Oy. (n.d.). *So funktioniert Oura*. Oura. Retrieved April 11, 2025, from https://ouraring.com/de/how-it-works

Oxford English Dictionary. (2024). Wellness. In *Oxford English Dictionary* (3rd ed.). Oxford University Press. https://doi.org/10.1093/OED/7317250941

Park, E. (2020). User acceptance of smart wearable devices: An expectation-confirmation model approach. *Telematics and Informatics*, *47*, 101318. https://doi.org/10.1016/j.tele.2019.101318

Persistence Market Research. (2025). *Wearable Electronics Market Trends, Size, Share, and Growth Forecast, 2025—2032*. Persistence Market Research. https://www.persistencemarketresearch.com/market-research/wearable-electronics-market.asp

Phonthanukitithaworn, C., Sellitto, C., & Fong, M. W. L. (2016). An investigation of mobile payment (m-payment) services in Thailand. *Asia-Pacific Journal of Business Administration*, *8*(1), 37–54. https://doi.org/10.1108/APJBA-10-2014-0119

Polar Electro. (n.d.). *Kabellose Herzfrequenz-Messung und Bewegungserfassung*. Polar Germany. https://www.polar.com/de/all-sensors

PwC. (2014). *The Wearable Future* (Consumer Intelligence Series). PwC. https://www.pwc.co.uk/assets/pdf/wearable-tech-design-oct-8th.pdf

Rauschnabel, P. A., Brem, A., & Ro, Y. K. (2015). *Augmented Reality Smart Glasses: Definition, Conceptual Insights, and Managerial Importance*.

Rauschnabel, P. A., & Ro, Y. K. (2016). Augmented reality smart glasses: An investigation of technology acceptance drivers. *International Journal of Technology Marketing*, *11*(2), 123. https://doi.org/10.1504/IJTMKT.2016.075690

Rheingans, F., Cikit, B., & Ernst, C.-P. H. (2016). The Potential Influence of Privacy Risk on Activity Tracker Usage: A Study. In C.-P. H. Ernst (Ed.), *The Drivers of Wearable Device Usage* (pp. 25–35). Springer International Publishing. https://doi.org/10.1007/978-3-319-30376-5_3

Rubin, A., & Ophoff, J. (2018). Investigating Adoption Factors of Wearable Technology in Health and Fitness. *2018 Open Innovations Conference (OI)*, 176–186. https://doi.org/10.1109/OI.2018.8535831

Ruckenstein, M., & Pantzar, M. (2017). Beyond the Quantified Self: Thematic exploration of a dataistic paradigm. *New Media & Society*, *19*(3), 401–418. https://doi.org/10.1177/1461444815609081

Samsung Electronics. (n.d.). *All watches*. Samsung. https://www.samsung.com/de/watches/all-watches/

Samsung Electronics Co., Ltd. (n.d.). *Introducing Samsung Galaxy Ring*. Samsung Germany. https://www.samsung.com/de/mobile-phone-buying-guide/introducing-samsung-galaxy-ring/

Sánchez-Fernández, R., & Iniesta-Bonillo, M. Á. (2007). The concept of perceived value: A systematic review of the research. *Marketing Theory*, *7*(4), 427–451. https://doi.org/10.1177/1470593107083165

Sharon, T. (2017). Self-Tracking for Health and the Quantified Self: Re-Articulating Autonomy, Solidarity, and Authenticity in an Age of Personalized Healthcare. *Philosophy & Technology*, *30*(1), 93–121. https://doi.org/10.1007/s13347-016-0215-5

Sheth, J. N., Newman, B. I., & Gross, B. L. (1991). *Consumption Values and Market Choices: Theory and Applications*. South-Western Publishing Co.

Shin, G., Jarrahi, M. H., Fei, Y., Karami, A., Gafinowitz, N., Byun, A., & Lu, X. (2019). Wearable activity trackers, accuracy, adoption, acceptance and health impact: A systematic literature review. *Journal of Biomedical Informatics*, *93*, 103153. https://doi.org/10.1016/j.jbi.2019.103153

Sohn, K., & Kwon, O. (2020). Technology acceptance theories and factors influencing artificial Intelligence-based intelligent products. *Telematics and Informatics*, *47*, 101324. https://doi.org/10.1016/j.tele.2019.101324

Spagnolli, A., Guardigli, E., Orso, V., Varotto, A., & Gamberini, L. (2014). Measuring User Acceptance of Wearable Symbiotic Devices: Validation Study Across Application Scenarios. In G. Jacucci, L. Gamberini, J. Freeman, & A. Spagnolli (Eds.), *Symbiotic Interaction* (Vol. 8820, pp. 87–98). Springer International Publishing. https://doi.org/10.1007/978-3-319-13500-7_7

Speight, S. (2025, 04). Smart ringleader: Could Ōura's market dominance be under threat? *World IP Review*. https://www.worldipreview.com/patent/smart-ring-leader-could-ouras-market-dominance-be-under-threat

Statista. (2025). *Wearables* (p. 25).

Tamilmani, K., Rana, N. P., Wamba, S. F., & Dwivedi, R. (2021). The extended Unified Theory of Acceptance and Use of Technology (UTAUT2): A systematic literature review and theory evaluation. *International Journal of Information Management*, *57*, 102269. https://doi.org/10.1016/j.ijinfomgt.2020.102269

Tom Dieck, M. C., & Jung, T. (2018). A theoretical model of mobile augmented reality acceptance in urban heritage tourism. *Current Issues in Tourism*, *21*(2), 154–174. https://doi.org/10.1080/13683500.2015.1070801

Ultrahuman. (n.d.). *Ultrahuman Ring Air*. Ultrahuman. https://www.ultrahuman.com/de/ring/buy/de/

Vafaei-Zadeh, A., Ramayah, T., Wong, W. P., & Md Hanifah, H. (2018). Modelling internet security software usage among undergraduate students: A necessity in an increasingly networked world. *VINE Journal of Information and Knowledge Management Systems*, *48*(1), 2–20. https://doi.org/10.1108/VJIKMS-09-2016-0052

Venkatesh, Morris, Davis, & Davis. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*, *27*(3), 425. https://doi.org/10.2307/30036540

Venkatesh, Thong, & Xu. (2012). Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology. *MIS Quarterly*, *36*(1), 157. https://doi.org/10.2307/41410412

Venkatesh, V., & Davis, F. D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*, *46*(2), 186–204. https://doi.org/10.1287/mnsc.46.2.186.11926

Wang, M., Chen, C., Wu, H., Zhang, J., Zhou, S., & Wang, G. (2024). Will Smart Ring be Next Wave of Wearables? *2024 IEEE Biomedical Circuits and Systems Conference (BioCAS)*, 1–5. https://doi.org/10.1109/BioCAS61083.2024.10798374

Wang, Z., Yu, R., Wang, X., Ding, J., Tang, J., Fang, J., He, Z., Li, Z., Röddiger, T., Xu, W., Zhang, X., Gao, H., Gao, N., Yu, C., Shi, Y., & Wang, Y. (2025). Computing with Smart Rings: A Systematic Literature Review. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies*, *9*(3), 1–54. https://doi.org/10.1145/3749480

WHOOP, Inc. (n.d.). *How WHOOP Works*. WHOOP. https://www.whoop.com/de/de/how-it-works/

Wiegard, R., Guhr, N., Krylow, S., & Breitner, M. H. (2019). Analysis of wearable technologies' usage for pay-as-you-live tariffs: Recommendations for insurance companies. *Zeitschrift Für Die Gesamte Versicherungswissenschaft*, *108*(1), 63–88. https://doi.org/10.1007/s12297-019-00431-2

Withings. (n.d.). Withings – Smartwatches & Gesundheitsuhren. https://www.withings.com/de/de/watches?srsltid=AfmBOoplXk-MvaCqM241tSVJtoID8BErBzQ3FVxZcWCzxQTgCdFe9pFR

Wright, R., & Keith, L. (2014). Wearable Technology: If the Tech Fits, Wear It. *Journal of Electronic Resources in Medical Libraries*, *11*(4), 204–216. https://doi.org/10.1080/15424065.2014.969051

Wu, J., Li, H., Lin, Z., & Zheng, H. (2017). Competition in wearable device market: The effect of network externality and product compatibility. *Electronic Commerce Research*, *17*(3), 335–359. https://doi.org/10.1007/s10660-016-9227-6

Wu, L.-H., Wu, L.-C., & Chang, S.-C. (2016). Exploring consumers' intention to accept smartwatch. *Computers in Human Behavior*, *64*, 383–392. https://doi.org/10.1016/j.chb.2016.07.005

Xiaomi Corporation. (n.d.). *Wearables*. Xiaomi. https://www.mi.com/de/wearables/

Yang, H., & Lee, H. (2018). Exploring user acceptance of streaming media devices: An extended perspective of flow theory. *Information Systems and E-Business Management*, *16*(1), 1–27. https://doi.org/10.1007/s10257-017-0339-x

Yang, H., Yu, J., Zo, H., & Choi, M. (2016). User acceptance of wearable devices: An extended perspective of perceived value. *Telematics and Informatics*, *33*(2), 256–269. https://doi.org/10.1016/j.tele.2015.08.007

Zeithaml, V. A. (1988). Consumer Perceptions of Price, Quality, and Value: A Means-End Model and Synthesis of Evidence. *Journal of Marketing*, *52*(3), 2–22. https://doi.org/10.1177/002224298805200302

Zepp Health Corporation. (n.d.). *Amazfit Helio Ring*. Amazfit. https://de.amazfit.com/products/amazfit-helio-ring

10 Appendices

Appendix A: Oura Ring - Illustrative Images

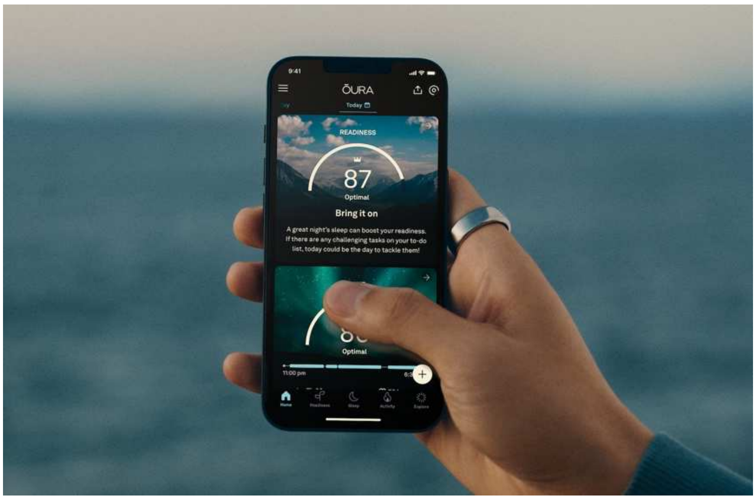
Figure A1. *Oura Ring mobile application interface and smart ring*

Source: Business Insider Deutschland (2023). *Oura Ring: Die Vor- und Nachteile nach vier Jahren.* https://www.businessinsider.de/leben/oura-ring-die-vor-und-nachteile-nach-4-jahren-tragen/

Figure A2. *Oura Ring models*

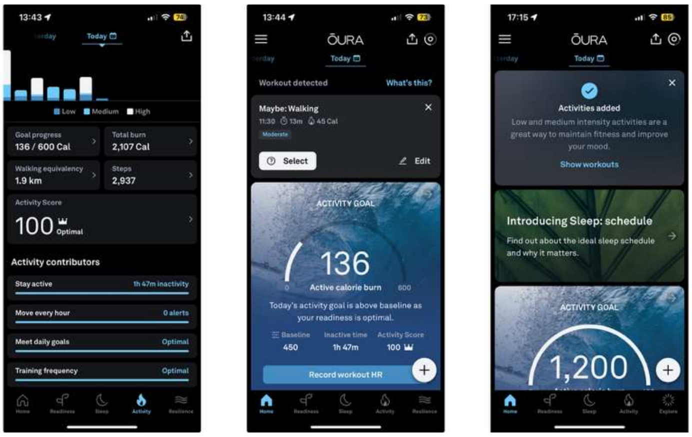
Source: Oura Health Oy (n.d.). *Oura Ring product images.* https://ouraring.com/de/store/rings?srsltid=AfmBOoofANlnpC2s_KVm88WOtRuS4Ag9op8hxmNTfLtt-VW-cKkkrfxT

Figure A3. *Oura Ring mobile application in use*



Source: Sifted (2023). *Oura's smart ring and its super-app ambitions*. https://sifted.eu/articles/smart-ring-oura-superapp-ambitions

Figure A4. *Oura Ring mobile application interface (activity and sleep insights)*



Source: T3 (n.d.). *Oura Ring Gen 3 im Test: Neudefinition der Schlaf-, Aktivitäts- und Resilienzverfolgung*. https://global.t3.com/de-de/tech/oura-ring-gen-3-im-test-neudefinition-der-schlaf-aktivitaets-und-resilienzverfolgung

Appendix B: Summary of Qualitative Interviews

Interview 1: (female, born in 1988 (Millennial), from Germany)

The participant is familiar with wearables and owns one but does not currently use it because she perceives it (and other wearable devices) as visually unappealing or intrusive in daily life. Smart rings, however, appear aesthetically pleasing and discreet to her, which contributes positively to perceived hedonic and aesthetic value. She is particularly interested in features related to sleep, stress, and recovery, and sees value in receiving meaningful recommendations rather than just raw data (perceived usefulness). Concerns focus on measurement accuracy, the financial cost (including subscriptions), and the potential burden of excessive data tracking, which lower perceived value. Adoption would be considered if the smart ring provides reliable, easy-to-interpret insights and a convincing cost–benefit balance.

Interview 2: (male, born in 1994 (Millennial), from Germany)

This participant uses wearables occasionally and is familiar with smart rings. He appreciates the subtle design of smart rings and sees strong value in the continuous monitoring of stress and health indicators (PU). At the same time, doubts about data accuracy and dissatisfaction with subscription fees represent significant sacrifices that reduce perceived value. He would consider adoption only if overall value for money is convincing.

Interview 3: (female, born in 2000 (Gen Z), from Germany):

The participant does not use wearables but finds smart rings modern and visually appealing (aesthetic appeal as a value driver). Sleep analysis is the benefit she values most (PU). However, uncertainty about accuracy and the high price diminish the perceived value. She also raised strong privacy concerns, explaining that she would not feel comfortable sharing certain intimate health data and that excessive transparency could discourage her from using a smart ring. This significantly reduced perceived value for her. Adoption would be likely if the product meets expectations concerning design, privacy and reliability.

Interview 4: (female, born in 1992 (Millennial), from Germany):

This participant actively uses wearables and sees strong functional and aesthetic value in the Oura Ring, particularly regarding sleep, activity and stress monitoring (PU). The high acquisition costs combined with the subscription model significantly lowers perceived value and would likely deter adoption unless the cost-benefit ratio improves.

Interview 5: (female, born in 1998 (Gen Z), from Germany)

Although she was not previously familiar with smart rings, this participant immediately perceived them as practical and less intrusive than smartwatches (hedonic/aesthetic benefit). Sleep and well-being monitoring represent key value-adding features. Price and uncertainty about how the ring fits daily activities reduce perceived value. Overall, she remains open to adoption if the expected benefits outweigh these sacrifices.

Interview 6: (female, born in 1999 (Gen Z), from Germany)

She perceives smart rings as an appealing combination of aesthetics and functionality. She values sleep, stress, and cycle tracking (PU) and places strong emphasis on aesthetic appeal: the device should resemble jewelry, be discreet, and suit personal style. She sees additional value in personalized, actionable recommendations rather than merely seeing numerical data. However, measurement accuracy, high price, and subscription fees reduce perceived value. Because the device would track sensitive physiological information such as menstrual patterns, she also mentioned a general desire for transparent data handling, though this was not a primary concern. Adoption is likely if accuracy, app quality, and cost align with expectations.

Interview 7: (male, born in 1996 (Millennial), from Germany)

While this participant sees usefulness in monitoring performance and sleep data (PU) as well as getting motivated by this continuous monitoring of the data (perceived enjoyment), the smart ring strongly clashes with his personal style (negative aesthetic/social value). Workplace restrictions and doubts about accuracy further reduce perceived value. His adoption likelihood is low unless these sacrifices are outweighed by strong functional benefits.

Interview 8: (female, born in 1997 (Gen Z), from Germany)

This participant has no prior experience with wearables, but she values the discreetness and practicality of smart rings (aesthetic and hedonic appeal). Sleep and energy insights are perceived as valuable benefits. Price and accuracy concerns strongly reduce perceived value. In addition, she expressed clear concerns about data privacy, specifically regarding who would have access to her health information. Uncertainty about data handling practices reduced her perceived value of the device. Adoption would be considered if the ring proves reliable and financially reasonable.

Interview 9: (female, born in 2002 (Gen Z), from Germany)

As someone who rarely wears jewelry, the ring's aesthetic form does not align with the preferences of this participant, reducing perceived value. She sees functional benefits in sleep and cycle tracking (PU). However, price and the subscription model are primary sacrifices. Her adoption intention is relatively low.

Interview 10: (male, born in 1990 (Millennial), from Germany)

The participant uses wearables for sports and sees value in sleep and recovery tracking regarding the Oura Ring but considers smart rings in general incompatible with his professional role and personal style (negative social image); he expressed concerns about how colleagues or clients might perceive the ring, which he felt would not match the expected image of a lawyer. Price and accuracy concerns further reduce perceived value. Given these sacrifices, adoption appears unlikely.

Interview 11: (male, born in 1982 (Millennial), from Germany)

The participant initially perceives smart rings as "feminine," reducing aesthetic and social value for him. He acknowledges general health-monitoring benefits (PU) but considers style misalignment and financial cost as key sacrifices. Adoption intention is low.

Interview 12: (male, born in 1996 (Millennial), from Germany)

The participant uses other wearables and finds smart rings like the Oura Ring appealing in principle, especially for tracking sleep, stress and activity (PU). Yet cost, potential inaccuracy and doubts about how well a ring fits his active lifestyle diminish perceived value. He also mentioned a minor concern regarding long-term data storage and who might access personal health information, though this did not play a major role in his evaluation. Adoption is moderately likely if accuracy and price meet expectations.

Appendix C: Survey Questionnaire (English Translation)

Dear participants,

Thank you for taking the time to complete this survey!

My name is Carlotta Knyphausen and I am conducting this study as part of my master's thesis at the Católica Lisbon School of Business and Economics. The aim of this research is to understand how people perceive the Oura Ring and what factors influence their attitude and intention to use this smart ring. The Oura Ring is a digital health and fitness ring that measures various body and health data (e.g., sleep quality, activity level, or heart rate variability).

Participation takes about 6–8 minutes. There are no right or wrong answers. The only thing that matters is your personal assessment. Participation is voluntary and anonymous, and all information will be treated as strictly confidential and used exclusively for scientific purposes.

If you have any questions or comments, please feel free to contact me at s-cknyphausen@ucp.pt.

Thank you very much for your support!

Q1 Do you own an Oura Ring?

- Yes, I currently own an Oura Ring.
- I used to own an Oura Ring, but I don't use it anymore.
- No, I don't own an Oura Ring.

Q2 What year were you born?

- Before 1981
- 1981 – 1990
- 1991 – 1996
- 1997 – 2003
- 2004 – 2012
- After 2012

Q3 Do you currently live (predominantly) in Germany?

- Yes
- No

Q4 How familiar are you with the Oura Ring?

- I've never heard of the Oura Ring.
- I've heard about it, but I don't know any details.
- I have a rough idea of what the Oura Ring does.
- I am very familiar with the Oura Ring and do not require any further product description.

Q5 What is the Oura Ring?

The Oura Ring is a digital health and fitness ring ("smart ring") that is worn like a normal finger ring. It records various body and health data around the clock, including heart rate, heart rate variability, sleep quality and sleep phases, body temperature, and activity and recovery values. To record this data, the ring uses pulse sensors, temperature sensors, and motion sensors. The data is evaluated in the accompanying smartphone app, which provides daily and long-term analyses of sleep quality, stress, recovery, cycle patterns (e.g., temperature changes), and general well-being. Cost: Depending on the model, the Oura Ring costs between €399 and €549 (sometimes cheaper on sale, e.g., from around €279). A membership is required to use all of the features. This costs €5.99 per month, with the first month free. The Oura Ring is aimed at people who want to monitor their health, sleep, and recovery comprehensively and regularly. For a better illustration, below are some pictures of the Oura Ring and screenshots from the app.

(See Appendix A for the visuals implemented in the survey)

Q6 Are you currently using another fitness or health wearable (e.g., smartwatch, fitness tracker, smart ring)?

- o Yes
- o No

Scale Block:

All Questions Q7 – Q17 contained this heading: **Please indicate to what extent you agree with the following statements. This is your personal assessment of the Oura Ring.**

Q7 Perceived Usefulness

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neutral (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I think the Oura Ring would help me monitor my health better. (1)	○	○	○	○	○	○	○
I believe that the Oura Ring would make my everyday life more efficient (e.g., by providing better insights into sleep, stress, or recovery). (2)	○	○	○	○	○	○	○
Overall, I find the Oura Ring to be a helpful device for improving my well-being. (3)	○	○	○	○	○	○	○

Q8 Perceived Enjoyment

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neutral (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I believe that using the Oura Ring would be enjoyable. (1)	○	○	○	○	○	○	○
I would find using the Oura Ring pleasant and entertaining. (2)	○	○	○	○	○	○	○
I believe that examining the data and evaluations provided by the Oura Ring would be interesting and motivating for me. (3)	○	○	○	○	○	○	○

Q9 Aesthetic Appeal

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neutral (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I find the design of the Oura Ring aesthetically appealing. (1)	○	○	○	○	○	○	○
The Oura Ring looks like a high-quality product to me. (2)	○	○	○	○	○	○	○
The visual design would motivate me to wear the ring. (3)	○	○	○	○	○	○	○

Q10 Social Image

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neutral (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I think the Oura Ring would make a positive impression on others. (1)	○	○	○	○	○	○	○
I think wearing the Oura Ring could improve my personal image. (2)	○	○	○	○	○	○	○
People who wear the Oura Ring strike me as health-conscious and tech-savvy. (3)	○	○	○	○	○	○	○

Q11 Health Consciousness

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neutral (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
My physical health is very important to me. (1)	○	○	○	○	○	○	○
I consciously pay attention to signals from my body. (2)	○	○	○	○	○	○	○
I actively try to improve my health in the long term. (3)	○	○	○	○	○	○	○

Q12 Attention: This is an attention question. Please select the answer option "Somewhat agree."

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neutral (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
Answer:	○	○	○	○	○	○	○

Q13 Performance Risk

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neutral (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I am concerned that the Oura Ring's measurements may be inaccurate. (1)	○	○	○	○	○	○	○
I am unsure whether the Oura Ring would work reliably. (2)	○	○	○	○	○	○	○
I have doubts about whether the Oura Ring's data would be trustworthy. (3)	○	○	○	○	○	○	○

Q14 Financial Risk

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neutral (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I am concerned that the Oura Ring might be too expensive for me. (1)	○	○	○	○	○	○	○
I am unsure whether the Oura Ring would really be worth the price. (2)	○	○	○	○	○	○	○
I am concerned about the additional monthly costs (membership). (3)	○	○	○	○	○	○	○

Q15 Privacy Risk

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neutral (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I am concerned that my personal health data could be misused by the Oura Ring. (1)	○	○	○	○	○	○	○
I am unsure whether my health data collected by the Oura Ring is processed and stored securely. (2)	○	○	○	○	○	○	○
I am concerned that third parties could gain access to my data collected by the Oura Ring. (3)	○	○	○	○	○	○	○

Q16 Perceived Value

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neutral (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
Overall, I think the Oura Ring would be very useful for me. (1)	○	○	○	○	○	○	○
Considering the cost, I think the Oura Ring is valuable. (2)	○	○	○	○	○	○	○
For me, the benefits of the Oura Ring would outweigh the sacrifices. (3)	○	○	○	○	○	○	○

Q17 Adoption Intention

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neutral (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I can well imagine buying the Oura Ring in the future. (1)	○	○	○	○	○	○	○
It is likely that I will use the Oura Ring in the future. (2)	○	○	○	○	○	○	○
I am generally interested in trying out the Oura Ring in the near future. (3)	○	○	○	○	○	○	○

Q18 Which gender do you identify with?

- Female
- Male
- Diverse / Non-binary
- I don't want to specify

Q19 What is your highest level of education?

- No degree
- Secondary school diploma
- High school diploma
- (Technical) high school diploma
- Completed vocational training (e.g., dual training)
- Technical college diploma / Master craftsman / Technician
- Bachelor's degree
- Master's degree
- Doctorate
- I do not wish to specify

Q20 What is your current employment status?

- Student
- Working student
- Employed (full-time/part-time)
- Self-employed
- Unemployed/job seeker
- Retired

Q21 What is your approximate gross monthly income (before taxes)?

- Less than €1,000
- €1,000 - €2,499
- €2,500 - €3,999
- €4,000 - €5,499
- More than €5,500
- I'd rather not say

Appendix D: Overview of Constructs and Items

Construct	Item code	Item wording
Perceived Usefulness (PU)	PU1	I think the Oura Ring would help me monitor my health better.
	PU2	I believe that the Oura Ring would make my everyday life more efficient (e.g., by providing better insights into sleep, stress, or recovery).
	PU3	Overall, I find the Oura Ring to be a helpful device for improving my well-being.
Perceived Enjoyment (ENJ)	ENJ1	I believe that using the Oura Ring would be enjoyable.
	ENJ2	I would find using the Oura Ring pleasant and entertaining.
	ENJ3	I believe that examining the data and evaluations provided by the Oura Ring would be interesting and motivating for me.
Aesthetic Appeal (AE)	AE1	I find the design of the Oura Ring aesthetically appealing.
	AE2	The Oura Ring looks like a high-quality product to me.
	AE3	The visual design would motivate me to wear the ring.
Social Image (SI)	SI1	I think the Oura Ring would make a positive impression on others.
	SI2	I think wearing the Oura Ring could improve my personal image.
	SI3	People who wear the Oura Ring strike me as health-conscious and tech-savvy.
Health Consciousness (HC)	HC1	My physical health is very important to me.
	HC2	I consciously pay attention to signals from my body.
	HC3	I actively try to improve my health in the long term.
Performance Risk (PR)	PR1	I am concerned that the Oura Ring's measurements may be inaccurate.
	PR2	I am unsure whether the Oura Ring would work reliably.
	PR3	I have doubts about whether the Oura Ring's data would be trustworthy.
Financial Risk (FR)	FR1	I am concerned that the Oura Ring might be too expensive for me.
	FR2	I am unsure whether the Oura Ring would really be worth the price.
	FR3	I am concerned about the additional monthly costs (membership).
Privacy Risk (PVRI)	PVRI1	I am concerned that my personal health data could be misused by the Oura Ring.
	PVRI2	I am unsure whether my health data collected by the Oura Ring is processed and stored securely.
	PVRI3	I am concerned that third parties could gain access to my data collected by the Oura Ring.
Perceived Value (PV)	PV1	Overall, I think the Oura Ring would be very useful for me.
	PV2	Considering the cost, I think the Oura Ring is valuable.
	PV3	For me, the benefits of the Oura Ring would outweigh the sacrifices.
Adoption Intention (AI)	AI1	I can well imagine buying the Oura Ring in the future.
	AI2	It is likely that I will use the Oura Ring in the future.
	AI3	I am generally interested in trying out the Oura Ring in the near future.

Note: The items were adapted from established scales in the wearable technology and technology acceptance literature (e.g., H.-W. Kim et al., 2007; K. J. Kim & Shin, 2015; Yang et al., 2016) and adjusted to the context of smart rings. All items were measured on a 7-point Likert scale ranging from 1 = strongly disagree to 7 = strongly agree.

Appendix E: SPSS Output

E1. Sample Characteristics – Frequency Tables

Table E1.1: Gender of respondents

Welchem Geschlecht fühlen Sie sich zugehörig?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Weiblich	68	58.1	58.1	58.1
	Männlich	47	40.2	40.2	98.3
	Divers / Nicht-binär	1	.9	.9	99.1
	Möchte ich nicht angeben	1	.9	.9	100.0
	Total	117	100.0	100.0	

Table E1.2: Education level of respondents

Was ist Ihr höchster Bildungsabschluss?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Realschulabschluss	1	.9	.9	.9
	(Fach-)Abitur	6	5.1	5.1	6.0
	Abgeschlossene Berufsausbildung (z. B. duale Ausbildung)	5	4.3	4.3	10.3
	Fachschulabschluss / Meister / Techniker	4	3.4	3.4	13.7
	Bachelor	41	35.0	35.0	48.7
	Master	50	42.7	42.7	91.5
	Promotion	10	8.5	8.5	100.0
	Total	117	100.0	100.0	

Table E1.3: Employment status of respondents

Was ist Ihr derzeitiger Beschäftigungsstatus?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Student:in	17	14.5	14.5	14.5
	Werkstudent:in	15	12.8	12.8	27.4
	Angestellt (Voll-/Teilzeit)	70	59.8	59.8	87.2
	Selbstständig	13	11.1	11.1	98.3
	Arbeitslos/Arbeitssuchend	2	1.7	1.7	100.0
	Total	117	100.0	100.0	

Table E1.4: Income before taxes of respondents

Wie hoch ist Ihr ungefähres monatliches Bruttoeinkommen (vor Steuern)?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Weniger als 1.000 €	10	8.5	8.5	8.5
	1.0000 € - 2.499 €	33	28.2	28.2	36.8
	2.500 € - 3.999 €	25	21.4	21.4	58.1
	4.000 € - 5.499 €	23	19.7	19.7	77.8
	Mehr als 5.500 €	20	17.1	17.1	94.9
	Möchte ich lieber nicht sagen	6	5.1	5.1	100.0
	Total	117	100.0	100.0	

Table E1.5: Usage of other wearable devices of respondents

Nutzen Sie derzeit ein anderes Fitness- oder Gesundheits-Wearable (z.B. Smartwatch, Fitness-Tracker, Smart Ring)?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ja	32	27.4	27.4	27.4
	Nein	85	72.6	72.6	100.0
	Total	117	100.0	100.0	

Table E1.6: Familiarity with the Oura Ring of respondents

Wie vertraut sind Sie mit dem Oura Ring?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ich habe noch nie vom Oura Ring gehört.	11	9.4	9.4	9.4
	Ich habe schon davon gehört, kenne aber keine Details.	31	26.5	26.5	35.9
	Ich weiß ungefähr, was der Oura Ring macht.	52	44.4	44.4	80.3
	Ich kenne den Oura Ring sehr gut und brauche keine weitere Produktbeschreibung.	23	19.7	19.7	100.0
	Total	117	100.0	100.0	

Table E1.7: Year of birth of respondents

In welchem Jahr sind Sie geboren?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1981-1990	23	19.7	19.7	19.7
	1991-1996	31	26.5	26.5	46.2
	1997-2003	53	45.3	45.3	91.5
	2004-2012	10	8.5	8.5	100.0
	Total	117	100.0	100.0	

Table E1.8: Age group distribution of respondents (Millennial vs. Gen Z)

Age Group (1 = Millennial, 2 = Gen Z)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	54	46.2	46.2	46.2
	2.00	63	53.8	53.8	100.0
	Total	117	100.0	100.0	

E2. Reliability Analysis

Table E2.1: Cronbach's alpha for all constructs

Construct	Number of Items	Cronbach's alpha (α)
Perceived Usefulness (PU)	3	.876
Perceived Enjoyment (ENJ)	3	.810
Aesthetic Appeal (AE)	3	.915
Social Image (SI)	3	.814
Health Consciousness (HC)	3	.840
Performance Risk (PR)	3	.916
Financial Risk (FR)	3	.873
Privacy Risk (PVRI)	3	.962
Perceived Value (PV)	3	.952
Adoption Intention (AI)	3	.965

Table E2.2: Item-Total Statistics for Social Image (SI) items

Item-Total Statistics

		Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
SI1:	Ich denke, dass der Oura Ring einen positiven Eindruck auf andere machen würde.	8.52	7.752	.756	.724	.649
SI2:	Ich denke, dass das Tragen des Oura Rings mein persönliches Image verbessern könnte.	9.09	6.872	.802	.744	.591
SI3:	Menschen, die den Oura Ring tragen, wirken auf mich gesundheitsbewusst und technologieaffin.	7.93	10.409	.473	.237	.918

English translation of the Items SI1-SI3:

SI1: I think the Oura Ring would make a positive impression on others.

SI2: I think wearing the Oura Ring could improve my personal image.

SI3: People who wear the Oura Ring strike me as health-conscious and tech-savy.

E3. Descriptive Statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PU_mean	117	1.67	7.00	5.2507	1.28348
ENJ_mean	117	1.33	7.00	5.1453	1.10327
AE_mean	117	1.00	7.00	4.9943	1.67239
SI_mean	117	1.00	7.00	4.2564	1.38159
HC_mean	117	3.00	7.00	5.8205	.90289
PR_mean	117	1.00	6.33	3.6667	1.39855
FR_mean	117	2.00	7.00	4.7949	1.44228
PVRI_mean	117	1.00	7.00	3.5812	1.73931
PV_mean	117	1.00	7.00	4.7977	1.62886
AI_mean	117	1.00	7.00	4.5100	1.80175
Valid N (listwise)	117				

Note: All variables are composite mean scores based on 7-point Likert scales (1 = strongly disagree, 7 = strongly agree).

E4. Regression Outputs (Hypothesis Testing)

Table E4.1: Pearson correlation matrix of study constructs

Correlations

		PU_mean	ENJ_mean	AE_mean	SI_mean	HC_mean	PR_mean	FR_mean	PVRI_mean	PV_mean	AI_mean
PU_mean	Pearson Correlation	1	.722**	.486**	.511**	.509**	-.193*	-.272**	-.343**	.755**	.655**
	Sig. (2-tailed)		<.001	<.001	<.001	<.001	.037	.003	<.001	<.001	<.001
	N	117	117	117	117	117	117	117	117	117	117
ENJ_mean	Pearson Correlation	.722**	1	.458**	.525**	.524**	-.371**	-.328**	-.380**	.680**	.653**
	Sig. (2-tailed)	<.001		<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
	N	117	117	117	117	117	117	117	117	117	117
AE_mean	Pearson Correlation	.486**	.458**	1	.734**	.483**	.043	-.370**	-.166	.669**	.681**
	Sig. (2-tailed)	<.001	<.001		<.001	<.001	.645	<.001	.073	<.001	<.001
	N	117	117	117	117	117	117	117	117	117	117
SI_mean	Pearson Correlation	.511**	.525**	.734**	1	.433**	-.062	-.450**	-.279**	.673**	.648**
	Sig. (2-tailed)	<.001	<.001	<.001		<.001	.503	<.001	.002	<.001	<.001
	N	117	117	117	117	117	117	117	117	117	117
HC_mean	Pearson Correlation	.509**	.524**	.483**	.433**	1	-.101	-.223*	-.279**	.631**	.561**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001		.279	.015	.002	<.001	<.001
	N	117	117	117	117	117	117	117	117	117	117
PR_mean	Pearson Correlation	-.193*	-.371**	.043	-.062	-.101	1	.333**	.524**	-.288**	-.205*
	Sig. (2-tailed)	.037	<.001	.645	.503	.279		<.001	<.001	.002	.027
	N	117	117	117	117	117	117	117	117	117	117
FR_mean	Pearson Correlation	-.272**	-.328**	-.370**	-.450**	-.223*	.333**	1	.406**	-.518**	-.437**
	Sig. (2-tailed)	.003	<.001	<.001	<.001	.015	<.001		<.001	<.001	<.001
	N	117	117	117	117	117	117	117	117	117	117
PVRI_mean	Pearson Correlation	-.343**	-.380**	-.166	-.279**	-.279**	.524**	.406**	1	-.480**	-.373**
	Sig. (2-tailed)	<.001	<.001	.073	.002	.002	<.001	<.001		<.001	<.001
	N	117	117	117	117	117	117	117	117	117	117
PV_mean	Pearson Correlation	.755**	.680**	.669**	.673**	.631**	-.288**	-.518**	-.480**	1	.885**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001	.002	<.001	<.001		<.001
	N	117	117	117	117	117	117	117	117	117	117
AI_mean	Pearson Correlation	.655**	.653**	.681**	.648**	.561**	-.205*	-.437**	-.373**	.885**	1
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001	.027	<.001	<.001	<.001	
	N	117	117	117	117	117	117	117	117	117	117

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table E4.2: Regression results: perceived benefits and sacrifices predicting Perceived Value

Correlations

		PV_mean	PU_mean	ENJ_mean	AE_mean	SI_mean	PR_mean	FR_mean	PVRI_mean
Pearson Correlation	PV_mean	1.000	.755	.680	.669	.673	-.288	-.518	-.480
	PU_mean	.755	1.000	.722	.486	.511	-.193	-.272	-.343
	ENJ_mean	.680	.722	1.000	.458	.525	-.371	-.328	-.380
	AE_mean	.669	.486	.458	1.000	.734	.043	-.370	-.166
	SI_mean	.673	.511	.525	.734	1.000	-.062	-.450	-.279
	PR_mean	-.288	-.193	-.371	.043	-.062	1.000	.333	.524
	FR_mean	-.518	-.272	-.328	-.370	-.450	.333	1.000	.406
	PVRI_mean	-.480	-.343	-.380	-.166	-.279	.524	.406	1.000
Sig. (1-tailed)	PV_mean	.	<.001	<.001	<.001	<.001	<.001	<.001	<.001
	PU_mean	.000	.	.000	.000	.000	.019	.001	.000
	ENJ_mean	.000	.000	.	.000	.000	.000	.000	.000
	AE_mean	.000	.000	.000	.	.000	.323	.000	.037
	SI_mean	.000	.000	.000	.000	.	.252	.000	.001
	PR_mean	.001	.019	.000	.323	.252	.	.000	.000
	FR_mean	.000	.001	.000	.000	.000	.000	.	.000
	PVRI_mean	.000	.000	.000	.037	.001	.000	.000	.
N	PV_mean	117	117	117	117	117	117	117	117
	PU_mean	117	117	117	117	117	117	117	117
	ENJ_mean	117	117	117	117	117	117	117	117
	AE_mean	117	117	117	117	117	117	117	117
	SI_mean	117	117	117	117	117	117	117	117
	PR_mean	117	117	117	117	117	117	117	117
	FR_mean	117	117	117	117	117	117	117	117
	PVRI_mean	117	117	117	117	117	117	117	117

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.885[a]	.784	.770	.78181	.784	56.360	7	109	<.001	1.759

a. Predictors: (Constant), PVRI_mean, AE_mean, FR_mean, PU_mean, PR_mean, ENJ_mean, SI_mean

b. Dependent Variable: PV_mean

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	241.144	7	34.449	56.360	<.001[b]
	Residual	66.624	109	.611		
	Total	307.768	116			

a. Dependent Variable: PV_mean

b. Predictors: (Constant), PVRI_mean, AE_mean, FR_mean, PU_mean, PR_mean, ENJ_mean, SI_mean

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	1.174	.598		1.965	.052					
	PU_mean	.518	.086	.409	6.042	<.001	.755	.501	.269	.434	2.302
	ENJ_mean	.108	.106	.073	1.017	.311	.680	.097	.045	.384	2.605
	AE_mean	.274	.067	.281	4.090	<.001	.669	.365	.182	.420	2.379
	SI_mean	.127	.085	.108	1.501	.136	.673	.142	.067	.383	2.613
	PR_mean	-.074	.067	-.063	-1.093	.277	-.288	-.104	-.049	.592	1.689
	FR_mean	-.172	.062	-.152	-2.788	.006	-.518	-.258	-.124	.667	1.499
	PVRI_mean	-.131	.053	-.140	-2.482	.015	-.480	-.231	-.111	.621	1.610

a. Dependent Variable: PV_mean

Note: N = 117. Dependent variable: perceived value (PV_mean). PU = perceived usefulness; ENJ = perceived enjoyment; AE = aesthetic appeal; SI = social image; PR = performance risk; FR = financial risk; PVRI = privacy risk.

Table E4.3: Regression results: Health Consciousness predicting Perceived Usefulness

Correlations

		PU_mean	HC_mean
Pearson Correlation	PU_mean	1.000	.509
	HC_mean	.509	1.000
Sig. (1-tailed)	PU_mean	.	<.001
	HC_mean	.000	.
N	PU_mean	117	117
	HC_mean	117	117

Model Summary[b]

					Change Statistics					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.509[a]	.260	.253	1.10921	.260	40.315	1	115	<.001	1.796

a. Predictors: (Constant), HC_mean
b. Dependent Variable: PU_mean

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	49.601	1	49.601	40.315	<.001[b]
	Residual	141.489	115	1.230		
	Total	191.090	116			

a. Dependent Variable: PU_mean
b. Predictors: (Constant), HC_mean

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	1.035	.672		1.541	.126					
	HC_mean	.724	.114	.509	6.349	<.001	.509	.509	.509	1.000	1.000

a. Dependent Variable: PU_mean

Note: N = 117. Dependent variable: perceived usefulness (PU_mean). HC = health consciousness.

Table E4.4: Regression results: Perceived Value predicting Adoption Intention

Correlations

		AI_mean	PV_mean
Pearson Correlation	AI_mean	1.000	.885
	PV_mean	.885	1.000
Sig. (1-tailed)	AI_mean	.	<.001
	PV_mean	.000	.
N	AI_mean	117	117
	PV_mean	117	117

Model Summary[b]

					Change Statistics					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.885[a]	.783	.781	.84358	.783	414.164	1	115	<.001	2.018

a. Predictors: (Constant), PV_mean
b. Dependent Variable: AI_mean

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	294.734	1	294.734	414.164	<.001[b]
	Residual	81.838	115	.712		
	Total	376.572	116			

a. Dependent Variable: AI_mean
b. Predictors: (Constant), PV_mean

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-.185	.244		-.760	.449					
	PV_mean	.979	.048	.885	20.351	<.001	.885	.885	.885	1.000	1.000

a. Dependent Variable: AI_mean

Note: N = 117. Dependent variable: Adoption Intention (AI_mean). PV = perceived value.

E5. Subgroup Analyses (Exploratory)

Table E5.1: Group differences between Millennials and Gen Z (independent samples t-tests)

Group Statistics

	Age Group (1 = Millennial, 2 = Gen Z)	N	Mean	Std. Deviation	Std. Error Mean
PU_mean	1.00	54	5.2160	1.35541	.18445
	2.00	63	5.2804	1.22870	.15480
ENJ_mean	1.00	54	4.9630	1.19690	.16288
	2.00	63	5.3016	.99949	.12592
AE_mean	1.00	54	5.1543	1.54012	.20958
	2.00	63	4.8571	1.77872	.22410
SI_mean	1.00	54	4.3272	1.20009	.16331
	2.00	63	4.1958	1.52710	.19240
HC_mean	1.00	54	5.7469	.94931	.12919
	2.00	63	5.8836	.86376	.10882
PR_mean	1.00	54	3.9012	1.43720	.19558
	2.00	63	3.4656	1.34343	.16926
FR_mean	1.00	54	4.7531	1.45540	.19805
	2.00	63	4.8307	1.44166	.18163
PVRI_mean	1.00	54	3.8642	1.63750	.22284
	2.00	63	3.3386	1.79953	.22672
PV_mean	1.00	54	4.8086	1.62347	.22093
	2.00	63	4.7884	1.64644	.20743
AI_mean	1.00	54	4.4753	1.77403	.24141
	2.00	63	4.5397	1.83888	.23168

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
						Significance				95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
PU_mean	Equal variances assumed	.347	.557	-.269	115	.394	.788	-.06437	.23898	-.53774	.40900
	Equal variances not assumed			-.267	108.108	.395	.790	-.06437	.24080	-.54168	.41293
ENJ_mean	Equal variances assumed	.768	.383	-1.668	115	.049	.098	-.33862	.20305	-.74082	.06358
	Equal variances not assumed			-1.645	103.641	.052	.103	-.33862	.20588	-.74690	.06966
AE_mean	Equal variances assumed	2.773	.099	.958	115	.170	.340	.29718	.31026	-.31738	.91173
	Equal variances not assumed			.969	114.985	.167	.335	.29718	.30683	-.31060	.90495
SI_mean	Equal variances assumed	3.250	.074	.511	115	.305	.610	.13139	.25703	-.37774	.64053
	Equal variances not assumed			.521	114.186	.302	.604	.13139	.25236	-.36853	.63131
HC_mean	Equal variances assumed	.461	.499	-.815	115	.208	.417	-.13668	.16768	-.46883	.19546
	Equal variances not assumed			-.809	108.292	.210	.420	-.13668	.16891	-.47149	.19812
PR_mean	Equal variances assumed	.768	.383	1.693	115	.047	.093	.43563	.25730	-.07403	.94528
	Equal variances not assumed			1.684	109.576	.047	.095	.43563	.25865	-.07697	.94823
FR_mean	Equal variances assumed	.027	.869	-.289	115	.387	.773	-.07760	.26853	-.60951	.45431
	Equal variances not assumed			-.289	111.948	.387	.773	-.07760	.26873	-.61006	.45486
PVRI_mean	Equal variances assumed	.147	.702	1.641	115	.052	.103	.52557	.32022	-.10873	1.15988
	Equal variances not assumed			1.653	114.571	.051	.101	.52557	.31790	-.10414	1.15529
PV_mean	Equal variances assumed	.217	.642	.067	115	.473	.947	.02028	.30338	-.58065	.62121
	Equal variances not assumed			.067	112.738	.473	.947	.02028	.30304	-.58012	.62068
AI_mean	Equal variances assumed	.312	.578	-.192	115	.424	.848	-.06437	.33553	-.72899	.60025
	Equal variances not assumed			-.192	113.373	.424	.848	-.06437	.33460	-.72725	.59850

Note: Age group coded as 1 = Millennials, 2 = Gen Z. All tests are two-tailed.

Table E5.2: Group differences between wearable users and non-users (independent samples t-tests)

Group Statistics

	Nutzen Sie derzeit ein anderes Fitness- oder Gesundheits-Wearable (z.B. Smartwatch, Fitness-Tracker, Smart Ring)?	N	Mean	Std. Deviation	Std. Error Mean
PU_mean	Ja	32	5.3125	1.42416	.25176
	Nein	85	5.2275	1.23465	.13392
ENJ_mean	Ja	32	5.1250	1.32997	.23511
	Nein	85	5.1529	1.01386	.10997
AE_mean	Ja	32	4.6667	1.66559	.29444
	Nein	85	5.1176	1.66802	.18092
SI_mean	Ja	32	4.2500	1.34671	.23807
	Nein	85	4.2588	1.40236	.15211
HC_mean	Ja	32	5.8646	1.03992	.18383
	Nein	85	5.8039	.85185	.09240
PR_mean	Ja	32	3.5208	1.39620	.24682
	Nein	85	3.7216	1.40374	.15226
FR_mean	Ja	32	4.6771	1.50622	.26626
	Nein	85	4.8392	1.42410	.15447
PVRI_mean	Ja	32	3.3229	1.45046	.25641
	Nein	85	3.6784	1.83474	.19901
PV_mean	Ja	32	4.8333	1.57717	.27881
	Nein	85	4.7843	1.65688	.17971
AI_mean	Ja	32	4.1563	1.80399	.31890
	Nein	85	4.6431	1.79342	.19452

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
						Significance				95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
PU_mean	Equal variances assumed	1.976	.162	.318	115	.375	.751	.08505	.26723	-.44429	.61438
	Equal variances not assumed			.298	49.560	.383	.767	.08505	.28516	-.48784	.65793
ENJ_mean	Equal variances assumed	2.528	.115	-.122	115	.452	.903	-.02794	.22980	-.48312	.42724
	Equal variances not assumed			-.108	45.249	.457	.915	-.02794	.25955	-.55063	.49475
AE_mean	Equal variances assumed	.247	.620	-1.304	115	.097	.195	-.45098	.34581	-1.13597	.23401
	Equal variances not assumed			-1.305	55.888	.099	.197	-.45098	.34558	-1.14329	.24133
SI_mean	Equal variances assumed	.001	.973	-.031	115	.488	.976	-.00882	.28778	-.57887	.56122
	Equal variances not assumed			-.031	57.914	.488	.975	-.00882	.28251	-.57435	.55670
HC_mean	Equal variances assumed	1.913	.169	.323	115	.374	.748	.06066	.18799	-.31170	.43303
	Equal variances not assumed			.295	47.521	.385	.769	.06066	.20575	-.35313	.47445
PR_mean	Equal variances assumed	.119	.731	-.690	115	.246	.491	-.20074	.29072	-.77659	.37512
	Equal variances not assumed			-.692	56.086	.246	.492	-.20074	.29000	-.78166	.38019
FR_mean	Equal variances assumed	.417	.520	-.540	115	.295	.590	-.16213	.30005	-.75646	.43220
	Equal variances not assumed			-.527	53.155	.300	.601	-.16213	.30783	-.77951	.45525
PVRI_mean	Equal variances assumed	4.192	.043	-.985	115	.163	.326	-.35551	.36078	-1.07015	.35912
	Equal variances not assumed			-1.095	70.196	.139	.277	-.35551	.32457	-1.00282	.29179
PV_mean	Equal variances assumed	.775	.381	.144	115	.443	.885	.04902	.33926	-.62299	.72103
	Equal variances not assumed			.148	58.392	.442	.883	.04902	.33171	-.61487	.71291
AI_mean	Equal variances assumed	.002	.962	-1.307	115	.097	.194	-.48689	.37255	-1.22483	.25106
	Equal variances not assumed			-1.303	55.524	.099	.198	-.48689	.37355	-1.23534	.26156

Note: Wearable usage refers to the current use of any fitness or health wearable (e.g., smartwatch, fitness tracker, smart ring; not the Oura Ring). All tests are two-tailed.