Beyond the Hardware: How Actionable Insights and Subscription Value Drive Retention in Fitness Wearable Ecosystems

An Empirical Study of WHOOP

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ABSTRACT

Title: *Beyond the Hardware: How Actionable Insights and Subscription Value Drive Retention in Fitness Wearable Ecosystems / An Empirical Study of WHOOP*

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The wearable technology market is shifting towards subscription models, making long-term customer retention crucial for profitability. This study investigates the factors driving post-adoption retention among existing WHOOP subscribers, focusing on the roles of actionable software insights, subscription value, and the moderating effect of privacy concerns. A quantitative research approach was adopted, utilizing an online survey of 100 active WHOOP users. Data was analyzed in SPSS to test the relationships between perceived usefulness, perceived value, user satisfaction, privacy concerns, and retention intention.

The results revealed that both perceived usefulness and perceived value significantly and positively influence user satisfaction, which in turn strongly drives long-term retention intention. However, contrary to theoretical expectations, privacy concerns did not significantly moderate the relationships between these perceived benefits and retention.

In conclusion, satisfaction-based value perceptions are the primary predictors of continued wearable use, effectively overshadowing privacy fears in what demonstrates a pronounced "Privacy Paradox". For managerial practice, companies must prioritize research and development in AI-driven actionable insights and continuously communicate subscription value to sustain engagement and prevent customer churn.

Keywords

WHOOP, fitness wearables, retention intention, perceived usefulness, perceived value, user satisfaction, privacy concerns, subscription value

SUMÁRIO

Título: *Para Além do Hardware: Como Insights Acionáveis e o Valor da Subscrição Impulsionam a Retenção nos Ecossistemas de Wearables de Fitness | Um Estudo Empírico da WHOOP*

O mercado de tecnologia wearable está a transitar para modelos de subscrição, tornando a retenção de clientes a longo prazo crucial para a rentabilidade. Este estudo investiga os fatores que impulsionam a retenção pós-adoção entre os atuais subscritores do WHOOP, focando-se no papel dos insights de software acionáveis, no valor da subscrição e no efeito moderador das preocupações com a privacidade. Foi adotada uma abordagem de investigação quantitativa, utilizando um questionário online a 100 utilizadores ativos do WHOOP. Os dados foram analisados com recurso a uma análise de mediação moderada (Modelo 7) no SPSS para testar as relações entre a utilidade percebida, o valor percebido, a satisfação do utilizador, as preocupações com a privacidade e a intenção de retenção.

Os resultados revelaram que tanto a utilidade percebida como o valor percebido influenciam de forma significativa e positiva a satisfação do utilizador, o que, por sua vez, impulsiona fortemente a intenção de retenção a longo prazo. No entanto, contrariando as expectativas teóricas, as preocupações com a privacidade não moderaram significativamente as relações entre estes benefícios percebidos e a retenção.

Em conclusão, as perceções de valor baseadas na satisfação são os principais preditores da continuidade do uso de wearables, ofuscando os receios em relação à privacidade, no que demonstra um pronunciado "Paradoxo da Privacidade". A nível de implicações de gestão, as empresas devem dar prioridade à investigação e desenvolvimento de insights acionáveis baseados em IA e comunicar continuamente o valor da subscrição para sustentar o envolvimento e evitar a perda de clientes.

Keywords
WHOOP, wearables de fitness, intenção de retenção, utilidade percebida, valor percebido, satisfação do utilizador, preocupações com a privacidade, valor da subscrição

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GLOSSARY

Actionable Insights: Personalized, prescriptive, and easily understandable guidance derived from raw physiological data that empowers users to optimize their health and performance.

AI: Artificial Intelligence.

AVE: Average Variance Extracted; a statistical measure used to assess convergent validity in construct evaluation.

CAGR: Compound Annual Growth Rate.

CFIP: Concern for Information Privacy; a theoretical model measuring individuals' concerns regarding data collection and control.

Device-as-a-Service / Hardware-as-a-Service: A business model where the hardware is effectively free or subsidized, but its utility is entirely contingent upon the user paying a recurring software subscription fee.

ECM: Expectation-Confirmation Model; a framework explaining user satisfaction and continuance intention based on confirmed expectations.

HRV: Heart Rate Variability.

IUIPC: Internet Users' Information Privacy Concerns; a framework identifying dimensions of privacy concerns.

PC: Privacy Concerns.

PMT: Protection Motivation Theory; a framework describing privacy concern as a threat appraisal that triggers coping mechanisms.

PU: Perceived Usefulness.

PV: Perceived Value.

RI: Retention Intention; the user's behavioral intention to continue using and paying for a service long-term.

SAT / US: User Satisfaction.

TAM: Technology Acceptance Model; a foundational theory explaining technology adoption based on perceived usefulness and ease of use.

UTAUT: Unified Theory of Acceptance and Use of Technology.

VAM: Value-Based Adoption Model; a framework emphasizing the cognitive trade-off between perceived benefits and sacrifices in predicting continuance.

CHAPTER 1: INTRODUCTION

1.1 Background

The global personal health technology landscape has experienced a seismic shift over the last ten years. What was once a niche market for wearables has now become the dominant force in the consumer electronics industry. In 2024, the global wearable technology market was valued at a staggering 78.39 billion USD. It is estimated to reach 88.97 billion USD in 2025, growing at a Compound Annual Growth Rate (CAGR) of 13.5% (Straits Research, 2024). This is no longer a market based on innovation in technology alone, but a complete paradigm shift in the way users engage with their health data. Today's user has moved beyond the basic step-tracking capabilities of earlier technology to require sophisticated, holistic measurement of biometrics such as heart rate variability, sleep stages, and recovery (Zion Market Research, 2025).

Parallel to the evolution of technology is the evolution of business models. The digital economy is moving towards the "Subscription Economy", which reached USD 565.6 billion in 2025 (Dimension Market Research, 2025). In this economy, businesses are moving away from hardware sales to the subscription model. This has brought a shift in the focus of businesses. The main reason for the profitability of the business is no longer the adoption of the product but the length of the relationship with the customer. WHOOP, the subject of the empirical study, is using the convergence of technology to its advantage. Unlike other traditional competitors like Garmin or Apple, who sell hardware, WHOOP is a pure subscription model, also referred to as "Device-as-a-Service" (Circuly, 2026; BrandVM, 2025). The hardware is free if the user is a member, but the usability of the hardware is completely dependent on the payment of the subscription fee for the software analytics. If the subscription is terminated, the hardware becomes useless.

This specific environment creates a kind of psychological state for the user. The "Privacy Paradox" is perhaps most salient in this case, where the user is forced to upload extremely sensitive physiological data to the cloud to derive value from the service. While the use of such technology has been well-documented through various frameworks such as the Technology Acceptance Model, the specific determinants of a user's decision to continue paying for a service they already own, month after month, has not been well-researched.

1.2 Problem Statement

The basic problem that is being addressed in the dissertation is customer retention in a subscription-based wearable technology ecosystem. For a company such as WHOOP, customer retention is not a concern but a requirement for survival. Research points out that the cost of acquiring a new customer is between five to twenty-five times higher than retaining an existing customer. Moreover, a 5% improvement in customer retention can result in a 25% to 95% improvement in profitability (Gallo, 2014). Nevertheless, the subscription model also brings about the problem of "subscription fatigue" whereby customers are constantly evaluating the "Net Value" of the subscription service. If the costs outweigh the benefits, customers are likely to switch to a competitor's product.

Most of the existing academic research on wearable technology is centered on customer adoption and the reasons why a customer buys a wearable technology product in the first place. There is a big gap in the research on customer behavior after adoption and how the software insights and their actionability, as well as the subscription value and its impact on customer satisfaction and retention, interact and how the customer's perception of privacy affects the relationship between software insights and subscription value.

To address this problem, this dissertation aims to identify the drivers of user satisfaction and retention intention among existing WHOOP subscribers. This goal is broken down into the following specific research questions:

- **RQ1:** How does the perceived usefulness of WHOOP's actionable software insights influence user satisfaction?
- **RQ2:** How does the perceived value of WHOOP's subscription model influence user satisfaction?
- **RQ3:** To what extent does user satisfaction influence the long-term retention intention of existing WHOOP users?
- **RQ4:** How do privacy concerns moderate the relationship between perceived benefits (usefulness and value) and retention intention?

1.3 Relevance

This research is also of great importance to both academic and managerial practice.

Academic Relevance

Theoretically, the current research builds on existing models such as the Technology Acceptance Model (TAM), Expectation-Confirmation Model (ECM), and the Value-Based Adoption Model (VAM), expanding them to include a subscription model for hardware products. Although TAM and VAM have been used to investigate mobile apps, their use for a hardware product subscription is limited. Moreover, through the use of Privacy Calculus Theory as a moderator, the current dissertation responds to the need to investigate the role of privacy threats in the relationship between benefits and loyalty in the health tech sector (Kang & Jung, 2025).

Managerial Relevance

The current research is also important to practitioners and managers in the health tech sector since it provides valuable intelligence on how to prevent customer churn in a subscription economy that is becoming increasingly competitive. As such, the current research is important since:

- If the findings of RQ1 reveal that "actionable insights" is the major driver of customer satisfaction, managers and practitioners in the health tech sector can use the findings to direct investments in R&D into AI-powered coaching services as opposed to hardware design.
- If the findings of RQ2 reveal that subscription value is a major driver of customer churn, managers and practitioners in the health tech sector can use the findings to adjust their pricing strategy.
- The findings of RQ4 on the role of privacy in customer loyalty can be used to understand whether a company can use its data security as a competitive advantage to build stronger customer relationships.

Generally, the current research helps to move from a "sales" focus to a "sustaining value" focus since this is the only way to achieve profitability in a subscription economy (Circuly, 2026).

1.4 Dissertation Outline

The dissertation consists of five chapters. The chapters are structured to take the reader through the theoretical underpinnings to the results, and finally to the conclusion.

- Chapter 1: Introduction (Current Chapter) sets the stage for the dissertation. The purpose of the dissertation, the problem statement, the research questions, and the significance of the study are presented.
- Chapter 2: Literature Review and Conceptual Framework provides the theoretical underpinnings of the study. In this chapter, the literature on Perceived Usefulness, Subscription Value, User Satisfaction, and Privacy Concerns is synthesized. The chapter concludes with the presentation of the conceptual model and the formulation of the hypotheses (H1 to H4b).
- Chapter 3: Methodology describes the research method. The process of data collection through an online survey of existing WHOOP wearable users is presented. The constructs of the study are also operationalized.
- Chapter 4: Results and Discussion showcase the empirical findings. The results of the study are presented. Descriptive statistics of the sample, reliability, and validity of the scales are presented. The structural model is tested using statistical analysis.
- Chapter 5: Conclusions and Limitations is the last chapter. The significance of the study, the limitations of the study, and the future research direction are presented.

CHAPTER 2: LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

The purpose of this chapter is to lay down the theoretical basis to explore the various determinants that influence the satisfaction and retention intention of existing WHOOP technology subscribers. In achieving this purpose, it will critically discuss and integrate literature that centers on post-adoption behavior, going beyond the primary decision to adopt and use the technology. This is because it is understood that the determinants of post-adoption behavior are inherently different from primary technology acceptance behavior.

In order to effectively conceptualize this complex relationship between the technology and its user, several theoretical frameworks will be integrated to address various dimensions of post-adoption behavior, including cognitive, affective, and risk considerations of service usage. These theories will be used to explain how a technology user continuously evaluates the functional, monetary, and psychological costs associated with the ongoing monetary commitment required to be a WHOOP technology subscriber. These theories will be used to lay down the theoretical basis to support the proposed research questions that focus on software usefulness, monetary value, satisfaction, and privacy concerns.

2.1 Perceived Usefulness of Actionable Software Insights and User Satisfaction

2.1.1 Conceptual Foundations of Perceived Usefulness

In the specific case of technology continuance, the Perceived Usefulness (PU) concept continues to be a foundational concept, defined by the level of perceived enhancement of the user's performance or life. The concept of Perceived Usefulness was originally developed within the Technology Acceptance Model (TAM), which aimed to explain the adoption of technology by highlighting the role of the perceived usefulness of the technology to the user (Davis, 1989). Although the original TAM model was developed to explain the adoption of technology, the concept of Perceived Usefulness has since been applied to the post-adoption context, where it continues to play an important role. In the specific case of the use of the WHOOP wearable technology, the concept of Perceived Usefulness is particularly relevant, as it is critical to the concept of Perceived Information Quality. Although the two concepts are generally seen as separate constructs within the field of information systems, the specific case of the WHOOP wearable technology means that the two concepts overlap to a considerable

degree. In other words, the usefulness of the technology is dependent on the perceived quality of the information generated by the technology (Davis, 1989).

The specific case of the WHOOP wearable technology is supported by a considerable body of literature that suggests the key to the satisfaction of users with the technology is the actionability of the information generated by the technology. Therefore, the satisfaction of the user is dependent on the actionability of the information generated by the technology, rather than the availability of the data. For example, Mercer et al. (2016) highlight the importance of the actionability of the information generated by the technology to the satisfaction of the user. Hicks et al. (2019) similarly highlight the importance of the actionability of the information to the satisfaction of the user.

Moreover, actionable insights are also linked to basic psychological needs that are the foundation of technology adoption and continuance. As Mercer et al. (2016) demonstrated, personalized recommendations are linked to perceptions of competence and control because they allow individuals to better regulate their own behaviors. This is in line with the larger argument in digital health research that individuals must see clear progress towards their goals in order to derive value from a system (Gao, Li, & Luo, 2015; Carman et al., 2013). In this sense, perceived usefulness is not merely an instrumental feature but rather a psychological process that validates the relevance to an individual's health goals.

2.1.2 The Role of Information Quality and Actionability in Shaping User Satisfaction

One of the biggest challenges facing wearables today is that of data fatigue – a condition wherein users become disengaged because they are bombarded with raw data that makes little sense to them or has no significant implications (Hicks et al., 2019). The solution to this is that high-performance wearables need to offer more than simple data to users; they need to offer intelligent guidance.

Such a differentiation can be explained through a comparison to Herzberg's two-factor theory of motivation. Just as Herzberg's theory of motivation (Herzberg, Mausner, & Snyderman, 1959) differentiates between hygiene and motivator factors in a work environment, wearable technology can be viewed in a similar manner. Functional basics such as app stability, synchronization speed, and battery reliability function as a form of a 'hygiene factor', which, if

not present, will lead to dissatisfaction, but their presence alone will not lead to satisfaction. On the other hand, actionable insights such as personalized sleep coaching and recovery scores associated with behavioral recommendations function as a 'motivator', which will lead to satisfaction since it will allow a user to accomplish a specific outcome and validate their expected value. Herzberg's theory of motivation can therefore be used as a basis to understand the concept of wearable technology.

However, the importance of actionability can be further understood if the role of perceived usefulness in the maintenance of system usage is examined. When the system does not provide personally relevant action points, the link between the raw data and the behavior change becomes disconnected. In such instances, the system loses its perceived usefulness and its ability to provide satisfaction very quickly. Conversely, the system can provide the user with a narrative that allows them to make sense of the sensor data and the progress toward their goal.

In the end, perceived usefulness acts as the functional purpose for the user's continued interaction with the service. While accurate hardware provides the base, it is the software's ability to provide useful insights that allows the user to perceive value. When these insights allow the user to optimize their health outcomes, not only do they meet expectations but also provide a sense of positive post-consumption judgment, defined as satisfaction (Mercer et al., 2016; Popat & Sharma, 2013).

Consistent with this reasoning, it follows that:

- **H1:** Perceived usefulness of WHOOP's actionable software insights positively influences user satisfaction.

2.2 Perceived Value of the Subscription Model and User Satisfaction

2.2.1 Conceptual Foundations of Subscription Value

WHOOP's exclusive subscription service changes the dynamic of the consumer relationship because it is not a one-time expenditure, but a monetary commitment. In contrast to other one-time purchases, WHOOP's service requires that the customer is constantly reassessing whether or not the service is providing value to them relative to its monetary costs. This creates

tremendous pressure on the service provider to ensure that it is providing value to its consumers because, if it is not, consumers will abandon it if the benefits do not outweigh the costs (Chen, Bhardwaj, & Balasubramanian, 2014; Dhivya et al., 2025).

The Expectation-Confirmation Model (ECM) captures this process by locating the role of satisfaction as the result of the user's confirmation that the service or product meets their expectations over time (Bhattacherjee, 2001). This is particularly the case for subscription-based services, where the confirmation process is a recurring one with each billing period, reinforcing the role of satisfaction in the subscription context. This is consistent with the Value-Based Adoption Model (VAM), which offers the most comprehensive model through which subscription value can be understood. According to the model, continuance intention is a result of the cognitive calculation of the user's Net Value, where benefits (such as information gained, pleasure, personalization) are weighed against sacrifices (such as costs, complexity, effort) (Kim, Chan, & Gupta, 2007; Lin et al., 2012).

Most importantly, the sacrifices go beyond the monetary cost. Studies have found that non-monetary sacrifices, such as time, effort, and mental processing, affect satisfaction and continuance (Limayem et al., 2007). In the case of WHOOP, the user is expected to make non-monetary sacrifices by not only paying the fee but also interpreting the results and implementing the recommendations. According to Xu et al. (2009), financial and non-monetary sacrifices affect loyalty if the benefits received are insufficient.

Therefore, the WHOOP model can be seen as a psychological contract, where the user continually asks himself/herself if the service is providing enough benefits to warrant the associated cost and effort (Sun, 2010). This is a tenuous retention, one that relies on the continued delivery of valuable insights.

2.2.2 VAM versus Traditional Cost Constructs

In the traditional models of adoption, such as the Unified Theory of Acceptance and Use of Technology (UTAUT), price value is included as a factor influencing adoption (Venkatesh, Thong, & Xu, 2012). Yet, these models are mainly concerned with the affordability dimension at the initial access point, whereas the VAM model is more concerned with the subscription

relationship, where the trade-off between benefits and sacrifices must always be a positive one (Kim et al., 2007).

It should be noted that this distinction is of critical importance in the context of WHOOP's subscription model because, unlike the traditional product purchase model where value assessment occurs once, the subscription model ensures that users engage in more rigorous value assessment at more frequent intervals. This has been validated in various studies as well; for example, Sun (2010) has noted that users of paid services tend to engage in more rigorous value assessment compared to users of free services and hence have higher churn risks if the value provided is low. In the context of WHOOP, this means that the subscription model needs to continuously validate its value and importance for the user.

Finally, it is clear that the relationship between subscription value and satisfaction is a straightforward cascade, wherein if the user's net calculation is positive, then a positive cognitive evaluation results in a positive affective state, which is experienced as satisfaction. If, however, sacrifices outweigh benefits, then dissatisfaction is experienced, which increases the probability of termination. This process can then be linked to ECM, wherein satisfaction is seen as a key driver of perceived value in a subscription context (Xu et al., 2009).

Accordingly, the following hypothesis is proposed:

- **H2:** Perceived value of WHOOP's subscription model positively influences user satisfaction.

2.3 User Satisfaction and Long-Term Retention Intention

2.3.1 Theoretical Foundations of Satisfaction in Continuance

User satisfaction is widely accepted as the major factor in technology continuance and adoption in post-adoption studies. In the framework of the Expectation-Confirmation Model (ECM), satisfaction is a measure of affect that is experienced when users' expectations about a technology's performance are confirmed through direct experience (Bhattacherjee, 2001). After users confirm that a technology is performing to their expectations or better, satisfaction becomes the major motivator for continued use of the technology. Satisfaction is therefore seen

as the most direct antecedent to technology continuance intentions, even more important than other cognitive factors such as perceived usefulness and perceived value (Liu and Arnett, 2000; Limayem et al., 2007).

Satisfaction, in the case of WHOOP, is not just about the pleasure derived from the service. It is a cumulative measure of the overall psychological assessment of the support provided to the users' health and performance objectives. As the service is based on a subscription model, the satisfaction level becomes a logical and emotional justification to continue the subscription. When the level of satisfaction is high, the chances of subscription renewal are high. When the level of satisfaction is low, even a low level of dissatisfaction may influence the users' decision to continue the subscription.

2.3.2 Satisfaction as the Foundation of Retention

Retention is not just a behavior but also a psychological construct of continued involvement. A satisfied customer builds a level of trust, involvement, and defensiveness toward a service, and all of these factors lower their awareness of external alternatives (Bhattacherjee, 2001; Chen et al., 2014). In a subscription service, satisfaction is the emotional motivator that drives continued retention through continuous financial evaluation. Sun (2010) points out that in a paid digital service, customers are willing to absorb ongoing costs only when their satisfaction is a convincing internal motivator for doing so.

This process is comparable to the confirmation-commitment loop, whereby constant confirmation of expected value leads to increased satisfaction, which further increases commitment to continue using the service (Bhattacherjee, 2001). According to Chen et al. (2014), the importance of satisfaction to retention is more significant in markets with high switching costs, such as health/performance wearables, because satisfied users are less likely to look for alternatives. At such times, satisfaction shifts from being an emotional state to a state that retains loyalty.

Besides that, satisfaction is also related to psychological ownership and self-continuity. If users develop a habit of linking their progress, fitness goals, and/or self-identity to WHOOP's services, their satisfaction transforms into an affective relationship. Mercer et al. (2016) observe that receiving personal feedback from wearable technology further reinforces the relationship

between the user and the technology. This is because quitting becomes a personal loss to them instead of a simple choice.

2.3.3 Dynamics of Satisfaction and Retention in Wearables

Although it is vital to the retention of customers, it is a fluid construct. Jing, Xiaojian, and Feng (2024) describe the "descent effect" in digital health continuance, where the level of satisfaction diminishes over time as the novelty wears off. In the case of wearables such as WHOOP, re-satisfaction is vital to the retention of customers. Hicks et al. (2019) note that long-term engagement is a result of the ability of the service to refresh the perceived usefulness of the service.

The dynamic nature of satisfaction is a strategic issue for wearables that offer a subscription service because every renewal period is a psychological checkpoint. The user is evaluating if the insights, interface, and experience continue to offer significant value. According to research by Zheng & Yu (2020), personalized recommendations and feedback loops enhance satisfaction because they sustain user engagement over time. This feedback prevents satisfaction from plateauing because users continue to experience improvements, novelty, and personal benefits.

Additionally, Limayem et al. (2007) demonstrate how habit may play a role in sustaining use to some degree, yet satisfaction is the key driver of positive retention. In the case of WHOOP, the distinction between the two is critical to the long-term sustainability of the relationship.

Thus, synthesizing the various perspectives, satisfaction is the emotional underpinning of user retention within a subscription-based digital health system. As users recognize the consistency of WHOOP's performance to meet their needs and assist with their goals, satisfaction provides the basis for rational belief in the value of the service, as well as an emotional commitment to the brand. The combination of the two provides a self-perpetuating cycle of satisfaction leading to retention, which results in satisfaction through the renewed confirmation of the service.

On the other hand, if satisfaction declines due to various reasons such as unmet expectations, stagnation, and lack of personalization, subscribers are prone to churn, regardless of their initial investment. Hence, maintaining customer satisfaction is a critical element of engagement strategies in subscription business models (Chen et al., 2014; Sun, 2010).

Accordingly, the following hypothesis is proposed:

- **H3:** User satisfaction positively influences the long-term retention intention of existing WHOOP users.

2.4 Privacy Concerns as a Moderator between Perceived Benefits and Retention Intention

2.4.1 Theoretical Foundations of Privacy Concerns in Technology Continuance

The aspect of privacy has emerged as a key aspect of digital health and wearable technology ecosystems, where the constant collection and analysis of personal biometric data form an integral part of the value creation process. In the case of WHOOP, users are required to provide large amounts of personal data to obtain valuable insights. In this regard, the aspect of privacy acts as a psychological filter to the perceived legitimacy of the exchange. The Privacy Calculus Theory, as proposed by Dinev & Hart (2006) and Culnan & Armstrong (1999), forms the basis of the theoretical framework to understand the phenomenon of privacy concerns. The theory suggests that users perform a rational calculus of the perceived benefits and risks of providing personal data. If the perceived benefits outweigh the perceived privacy risks, the user is willing to perform the action. In other words, the aspect of privacy concerns acts as a *risk amplifier*, reducing the overall effect of perceived benefits on the continuance intention.

The Concern for Information Privacy (CFIP) model (Smith et al., 1996), and its updated version, Internet Users' Information Privacy Concerns (IUIPC) framework (Malhotra et al., 2004), build on the calculus by specifically defining the particular aspects of privacy concern: collection, control, and awareness. This is important because it helps to understand why a particular technological aspect might produce different reactions from different users. For example, sharing data between cloud servers and platforms by WHOOP might amplify the concern about data collection and thereby affect the level of trust and the strength of motivation to stay subscribed to the service. In both models, the concern about privacy is not only a precursor to perceived risk but also a moderating factor through which the perceived benefits are filtered.

Another theoretical perspective that would support this moderation logic is the Protection Motivation Theory (PMT), which was advanced by both Rogers (1983) and Liang and Xue (2009). In PMT, privacy concerns are viewed as a form of threat assessment. When individuals experience a threat because of how their data is used, they will employ coping strategies to combat it. In a wearable technology context, these coping strategies would directly offset the retention motivations because individuals would limit their usage of the app, turn off permissions to send data, and terminate their subscriptions to a service that is beneficial to them.

2.4.2 Privacy Concerns as a Moderator between Perceived Benefits and Retention

Following the theoretical arguments provided, the issue of privacy concerns in the WHOOP system can be seen as a boundary condition influencing the strength of the relationship between the benefits and retention. In line with the Privacy Calculus Theory, high levels of privacy concern lead to a decrease in the cognitive weight of the perceived risks, thus reducing the motivational influence of the perceived usefulness and value (Dinev & Hart, 2006). In other words, users with low levels of privacy concerns perceive the same level of benefits as more credible, thus unencumbered by the potential harm. Empirical studies have supported the role of privacy concerns as an attenuator of the relationship between perceived usefulness and continuance intentions. Xu, Teo, and Tan (2005), Keith et al. (2013), have all established that privacy concerns reduce the effect of perceived usefulness on continuance intentions on various digital platforms.

In the setting of digital health and wearable technology, where the importance of data privacy is extremely high, this moderating process stands out as particularly relevant. The high degree of surveillance that such devices as WHOOP provide can make the normally positive benefits of such personalization act as sources of discomfort that can motivate avoidance behaviors (Zhang, Chen, Lee, Lee, & Ong, 2025). The degree to which such surveillance can make the user consider the value of self-optimization against the need for self-autonomy can be seen as leading users to consider the benefits of the product in relation to the need for self-autonomy as a function of the individual user's level of privacy concern (Liang & Xue, 2009).

In summary, it can be noted that while concerns over privacy do not eliminate the benefits of WHOOP's service, they do influence how these benefits translate to future usage. When

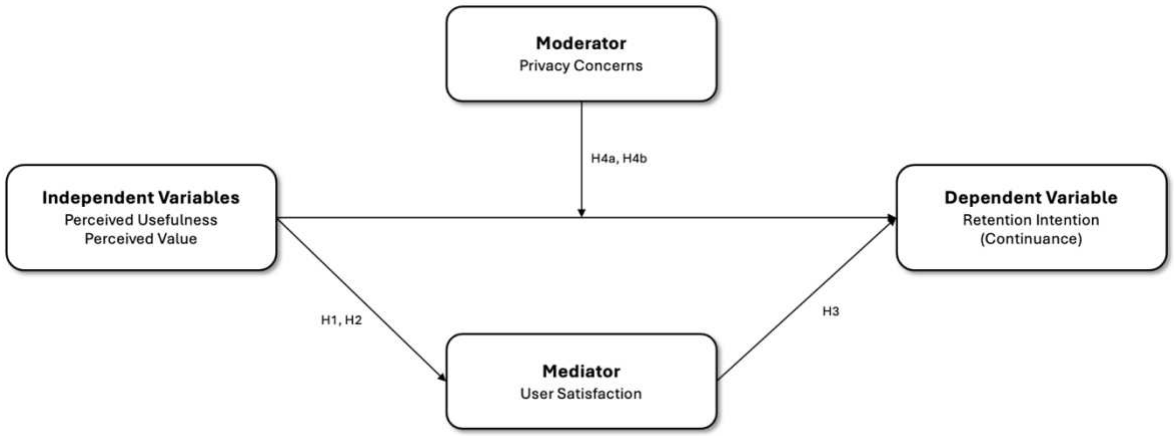
concerns over privacy are high, individuals will not derive as much value and utility from the benefits offered, as they will be viewed through a prism of potential exposure.

This theoretical reasoning supports the following hypotheses:

- H4a: Privacy concerns negatively moderate the relationship between perceived usefulness and retention intention.
- H4b: Privacy concerns negatively moderate the relationship between perceived value and retention intention.

2.4 Conceptual Framework

Figure 1. Conceptual Framework



CHAPTER 3: METHODOLOGY

This chapter presents the research methodology that has been utilized in the study of the various factors that affect user satisfaction and retention intentions among the existing WHOOP subscriber base. The study aims to build upon the theoretical constructs that were discussed in the previous chapter and test the relationships between the various constructs such as perceived usefulness in the form of actionable insights, the value of the subscription model, privacy concerns, and continuance intentions.

The following sections discuss the research methodology that has been utilized in this study, the data collection process, and the sampling strategy that has been employed in the study. A quantitative research design was selected to provide a structured statistical analysis of the hypotheses proposed in Chapter 2, ensuring the findings are reliable and generalizable to the wider population of digital health wearable users.

3.1 Research Approach

The research methodology employed in the proposed study is quantitative, based on a deductive research approach. The primary aim is to empirically verify the relationships proposed by the theoretical model, rather than developing a theory grounded in the data. As described in the literature review, the proposed model draws on the Technology Acceptance Model, the Expectation-Confirmation Model, the Value-Based Adoption Model, Privacy Calculus Theory, and other related approaches. Collectively, the theories imply that the perceived value of the results obtained from the service and the perceived subscription value drive user satisfaction, which in turn drives long-term retention intention, while the effect of privacy on the relationship between the perceived value of the results and continuance is negative.

In light of the research objectives, the proposed research design is a survey research based on the explanatory research methodology, which would allow the quantification of the users' perceptions and the estimation of the relationships between the constructs through multivariate data analysis.

3.2 Primary Data

Primary data for this study were collected through an online self-administered questionnaire targeting existing WHOOP subscribers. This focus on current users is essential because the study examines post-adoption behavior, specifically satisfaction and continuance intentions, rather than initial adoption.

3.2.1 Target Population and Sampling

The population of interest is adult WHOOP users who are current paying subscribers and use both the WHOOP strap and the mobile app. To ensure that the respondent is familiar enough with the product to provide adequate judgments on its use, the questionnaire also contains some screening questions to elicit from the respondent: (1) Are you a current WHOOP user? And (2) How many months have you been a paying subscriber? Only those who are current users are asked the main questionnaire.

Since there is no accessible sampling frame of all WHOOP subscribers, a non-probability convenience and snowball sampling method was used. The survey link was shared through personal networks, communication groups, social media, and online communities where the target population is active. The participants were also encouraged to share the survey with other WHOOP users within their network. This method is acceptable in digital health studies, especially when the target population is scattered geographically.

The study aims to achieve a sample size that is sufficiently large enough to run all necessary analyses, while also recognizing that the final sample size is contingent upon actual response rates. The challenge of obtaining a substantially larger sample size is a significant challenge, especially because WHOOP currently sits in a highly specialized, premium niche within the larger wearables market. This means that the potential population of active, paying subscribers is smaller compared to mainstream commercial smartwatches.

3.2.2 Ethical Considerations

The research participation is completely voluntary, and the responses are anonymous. In the introductory section of the questionnaire, the academic purpose of the research is clearly stated.

The respondents are informed that no personal identifiable information is collected, only aggregate data. By proceeding with the questionnaire, the respondents are deemed to have given their informed consent.

The research is also in compliance with the ethical considerations of the host institution. Considering the nature of the research as minimal risk and anonymous responses, no harm is anticipated to the participants.

3.3 Data Collection

3.3.1 Questionnaire Design and Pre-Test

The questionnaire was created using Qualtrics. The questions are grouped into a number of logical blocks, which relate to the constructs of the conceptual model. The order of the questions is to first ask the behavioral questions of subscription length and the frequency of app use, then the Likert-scale questions of perceived usefulness, perceived value, privacy concerns, satisfaction, and intention to retain, and finally the demographic questions.

In order to ensure that the questionnaire is clear, valid, and of an appropriate length, a pre-test was carried out on a small group of business students who were familiar with digital health technologies. The pre-test respondents were asked to provide their comments on the wording of the questions, the flow of the questionnaire, and the time required to complete the questionnaire. The final questionnaire takes approximately 5 minutes to complete, thereby reducing the respondent's fatigue and the likelihood of careless responses.

3.3.2 Main Survey Administration

After the pre-test stage, the main survey was implemented online and was available for approximately six weeks. The URL was shared through personal networks, WhatsApp groups, and social media posts targeting the WHOOP audience (Reddit). In the posts, we reminded people that the focus is on current WHOOP subscribers and that their honest opinions about the software and their perceptions of privacy are crucial to understanding the long-term wearable usage patterns.

To enhance response quality, the survey design incorporates several basic quality controls:

- Progress bar and page breaks to avoid overwhelming respondents with long matrices;
- Mandatory responses for core measurement items, with the option to skip sensitive demographic questions such as income;
- Logical skip pattern terminating the survey for non-users after the screening question.

After the data collection period, the dataset was exported for cleaning and statistical analysis.

3.4 Measurement and Indicators

The constructs of the conceptual model are operationalized by multi-item scales developed from existing scales of technology continuance, value perception, and privacy studies.

The scales of the psychometric measures are all based on a five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree. The entire list of the survey items is included in Appendix 1.

3.4.1 Behavioural and Screening Indicators

- Active user status: A single dichotomous item: "Are you currently an active WHOOP user?" (Yes/No). Only the 'Yes' respondents will be asked further questions.
- Subscription duration: Slider question for the number of months the respondent has been a paying WHOOP subscriber (0-36 months).
- Usage frequency: Slider question for the number of days in the week the respondent interacts with the WHOOP mobile app (0-7 days).

These items will be used for descriptive purposes as well as for control purposes.

3.4.2 Perceived Usefulness of Actionable Software Insights

Perceived usefulness is the measure of the degree to which the respondent believes the software-generated insights and data visualizations by WHOOP are useful to their management of health. The concept is derived from TAM and extended to include the actionability of the information, as supported by the literature review.

It is measured through several items such as:

- “The recovery insights provided by WHOOP are highly useful for optimizing my training and health.”
- “I believe that using WHOOP’s software insights helps me achieve my personal performance goals.”

Respondents indicate their agreement on the five-point Likert scale. A composite Perceived Usefulness (PU) score will be computed as the mean of these items after reliability checks.

3.4.3 Perceived Value of the Subscription Model

Perceived value is a measure of respondents' assessment of the overall worthwhileness and cost-effectiveness of WHOOP’s subscription service, consistent with the Value-Based Adoption Model and other literature that discusses the concept of net value in a subscription service.

The construct is measured using items such as:

- “The continuous stream of health-tracking data justifies the ongoing expense of the subscription.”
- “The WHOOP subscription model provides better overall value than most alternatives I am aware of.”

Responses on the five-point Likert scale are averaged to form a Perceived Value (PV) index.

3.4.4 Privacy Concerns

Concerns over privacy measure the level of concern and discomfort that respondents experience in relation to their physiological and personal information collected and stored by WHOOP. The items are based on dimensions used in CFIP and IUIPC, which include collection, control, and awareness. They are also consistent with Privacy Calculus and Protection Motivation Theory that focus on risk evaluation.

Illustrative items include:

- “I am worried about my personal WHOOP data being shared with or accessed by third-party companies.”

- “I am not confident that WHOOP effectively protects my sensitive health data.”
- “Even though WHOOP provides useful insights, I sometimes hesitate to share my health data due to privacy risks.”

These items are averaged to create a Privacy Concerns (PC) score, which will be used both as an independent predictor and as a moderator in the hypothesis tests.

3.4.5 User Satisfaction

User satisfaction is defined as the overall affective evaluation of the WHOOP service based on cumulative experience, consistent with ECM and continuance research.

It is measured with items such as:

- “I am very satisfied with my decision to use the WHOOP service.”
- “My experiences with WHOOP have met or exceeded my initial expectations.”
- “I have a strong positive feeling about my relationship with WHOOP as a service provider.”

The mean of these items constitutes the Satisfaction (SAT) scale.

3.4.6 Retention Intention (Continuance)

Retention intention reflects the respondent’s future-oriented intention to keep using and paying for WHOOP, operationalized in line with continuance intention measures used in ECM and related subscription studies.

It is captured via items such as:

- “I intend to renew my WHOOP subscription over the next year or more.”
- “I am unlikely to switch to another wearable service in the near future.”

Responses are averaged into a Retention Intention (RI) index, which serves as the main dependent variable in several hypotheses.

3.4.7 Demographic Variables

Demographic information is collected at the end of the questionnaire and includes:

- Age (open-ended numeric field).
- Gender (Male, Female, Non-binary / third gender, Prefer not to say).
- Nationality (open-ended field)
- Monthly household income (categorical ranges plus "Prefer not to say").

These variables will be used to describe the sample and may act as control variables to account for potential confounding effects.

3.5 Data Analysis

3.5.1. Data Overview

This section gives the analytical processes that will be used to analyze the survey data and answer the research questions. IBM SPSS Statistics was used to process and analyze the obtained data. The analysis structure was aimed at studying the connections between the main constructs of the study:

- **Independent Variables**: Perceived Usefulness (PU) and Perceived Value (PV)
- **Mediating Variable**: User Satisfaction (US)
- **Moderating Variable**: Privacy Concern (PC)
- **Dependent Variable**: Retention Intention (RI)

The relationships were examined through a moderated-mediation setup and evaluated both the direct and the conditional impacts of the relationships among WHOOP users.

3.5.2 Composite Variable Creation

Each core construct was operationalized into composite variable so that robust statistical testing can be done, and measurement error can be reduced.

- **Perceived Usefulness**: The mean score of the items measuring perceived usefulness of WHOOP's actionable software insights.

- **Perceived Value (PV)**: The mean score of the items assessing perceived value of the WHOOP subscription model.
- **User Satisfaction (US)**: The mean score of items reflecting overall user experience.
- **Privacy Concern (PC)**: The mean score of items representing users' concerns regarding data privacy and personal information security.
- **Retention Intention (RI)**: The mean score of items indicating users' intention to continue using WHOOP long-term.

In this aspect, both Cronbach's alpha value above 0.60 and AVE value above 0.50 were taken into account in order to ensure internal consistency and accuracy of the constructs.

3.5.3 Statistical Tests

The following statistical tests were performed in this study:

Table 1. Statistical Tests Conducted in the Study

Statistical Tests	Purpose	Application
Descriptive Statistics	Observing the central tendency, standard deviation, and normality of the data by using skewness and kurtosis	Providing overall PU, PV, US, PC, and RI levels of the sample
Reliability Test (Cronbach's alpha)	Assessing the internal consistency of the data	Confirming reliability of each constructs
Validity Test (AVE)	Assessing convergent validity	Ensuring construct items represent intended latent variables
Moderated-Mediation Analysis (Process macro, model 7)	Testing the mediating and moderating effect at the same time	Determining whether user satisfaction mediates and perceived concern moderates the relationship between perceived usefulness and retention intention, and perceived value and behavioral intention

3.5.4 Statistical Software and Interpretation

The data was coded and analyzed with appropriate statistical analysis using SPSS version 29.0.1. To calculate the AVE, MS Excel 365 was used to measure the average of the squared root values of the items of each construct. Finally, model 7 in process macro by Hayes 2022 was used to compute moderated-mediation analysis.

The results were interpreted at 5% level of significance, indicating that the p-value less than 0.05 will reject the null hypothesis. To achieve more robust outcome for mediation path, a non-parametric percentile bootstrapping method with 5000 samples was deployed to test the indirect effects.

3.5.5 Relevance to Research Questions

Table 2. Overview of Research Questions, Analysis Methods, Purpose, and Key Variables

Research Question	Analysis Method	Purpose	Key Variables
RQ1. How does the perceived usefulness of WHOOP's actionable software insights influence user satisfaction?	Regression (model 7 path a)	Assessing the direct effect of PU on US	Perceived Usefulness and User Satisfaction
RQ2. How does the perceived value of WHOOP's subscription model influence user satisfaction?	Regression (model 7 path a)	Assessing the direct effect of PV on US	Perceived Value and User Satisfaction
RQ3. To what extent does user satisfaction influence the long-term retention of existing WHOOP users?	Regression (model 7 path b)	Assessing the effect of US on RI	User Satisfaction and Retention Intention

RQ4. How do privacy concerns influence perceptions of WHOOP and user satisfaction?	Moderation (model 7 interaction term)	Assessing whether PC moderates the effects of PU and PV on US, and conditional indirect effects on RI	Perceived Usefulness, Perceived Value, User Satisfaction, and Retention Intention

CHAPTER 4: RESULTS AND DISCUSSIONS

4.1 Data Collection

The data has been collected from 130 respondents using a primary source. Upon collection, a total of 30 responses were found who did not complete or partially completed the survey (as they were not WHOOP users or did not complete the survey). Therefore, those responses were removed from the dataset. As a result, the analysis was conducted based on 100 responses. The statistical tests performed in this study include the frequency analysis, reliability analysis, validity analysis, descriptive statistics, and moderated-mediation analysis (model 7) using process macro by Hayes 2022.

4.2 Formulating Hypotheses

H_1: Perceived usefulness of WHOOP's actionable software insights positively influences user satisfaction.
H_2: Perceived value of WHOOP's subscription model positively influences user satisfaction.
H_3: User satisfaction positively influences long-term retention intention of existing WHOOP users.
H_{4a}: Privacy concerns negatively moderate the relationship between perceived usefulness and retention intention.
H_{4b}: Privacy concerns negatively moderate the relationship between perceived value and retention intention.

4.3 Demographic Analysis

As illustrated in table 3, more than half of the respondents (54.0%) belong to the age group of 25-34, followed by 24.0% in the age group of 18-24, 12.0% in the age group of 35-44, 5.0% in the age group of 45-54, 4.0% in the age group of 55 years and above, and only one respondent is below 18 years. There is a majority of male's responses (83.0%) over female's (16.0%). Finally, an almost similar number of responses were found in the monthly household income group of €1,000- €2,999 (23.0%) and €3,000 - €4,999 (25.0%). 17.0% respondents had monthly income of above €8000, 13.0% responded their monthly income in the range of €5,000 - €7,999,

while only 3 respondents had monthly income below €1,000. In this regard, almost one-fifth of respondents (19.0%) did not answer the question.

Table 3. Demographic Characteristics of the Sample

Demographic Characteristics	Frequency	Percentage
Age		
Below 18 years	1	1.0
18-24 years	24	24.0
25-34 years	54	54.0
35-44 years	12	12.0
45-54 years	5	5.0
55 years and above	4	4.0
Gender		
Male	83	83.0
Female	16	16.0
Non-binary / third gender	1	1.0
Monthly household income before tax		
< €1,000	3	3.0
€1,000- €2,999	23	23.0
€3,000 - €4,999	25	25.0
€5,000 - €7,999	13	13.0
> €8000	17	17.0
Prefer not to say	19	19.0

4.4 Reliability Analysis

A common method for examining the reliability of individual constructs in a research is called Cronbach's alpha (George, 2011). The larger Cronbach's α value ensured the internal consistency among the constructs (Nunnally, 1978).

As can be seen in the table 4, all the values are in the range of 0.80 and 0.92, which is the acceptable range (>0.60) (Hair et al., 2019). This means the constructs used in this are reliable for conducting further analysis.

Table 4. Cronbach's Alpha Values

Constructs	Cronbach's Alpha
Perceived Usefulness	.812
Perceived Value	.840
Privacy Concern	.801
User Satisfaction	.912
Retention Intention	.884

4.5 Measuring Validity

The sum of squared values from unrotated factors has been divided by the number of items to calculate the average variance extracted (AVE). Here, all the constructs have the AVE score above 0.50, which is the acceptable range (Fornell and Larcker, 1981). Hence, the data is validated enough for conducting further analysis.

Table 5. Average Variance Extracted (AVE) Values

Constructs	AVE
Perceived Usefulness	.582
Perceived Value	.679
Privacy Concern	.559
User Satisfaction	.744
Retention Intention	.819

4.6 Descriptive Statistics

All the variables were primarily analyzed using the scores of mean and standard deviations. The center of a distribution is indicated by the mean or central tendency (Malhotra, 2010). In addition, the standard deviation is used to see how the data has deviated from the mean (Malhotra, 2010).

As depicted in table 6, perceived usefulness generated the highest mean score (M = 4.05, SD = 0.63) while privacy concern generated the lowest (M = 2.41, SD = 0.76). User satisfaction (M = 3.81, SD = 0.81) and retention intention (M = 3.66, SD = 1.07) generated a moderate mean

score. Apart from that, perceived value (M = 3.29, SD = 0.80) showcased a comparatively lower mean score.

Finally, the skewness values of the all the variables are in the range of ±1.00 threshold except for perceived usefulness, indicating a normal distribution for most of the data while perceived usefulness showcased a negatively skewed data.

Table 6. Descriptive Statistics

Variable	Mean	SD	Skewness	Kurtosis
Perceived Usefulness	4.0460	.62530	-1.090	1.857
Perceived Value	3.2850	.80090	-.333	.419
Privacy Concern	2.4060	.75930	.558	-.016
User Satisfaction	3.8100	.80823	-.749	.749
Retention Intention	3.6600	1.07307	-.643	-.104

4.7 Moderation Analysis

4.7.1 Moderated Mediation Analysis (Model 7) – IV: Perceived Usefulness (H_1, H_3, and H_{4a})

As depicted in table 7, both perceived usefulness and user satisfaction positively and significantly influenced retention intention (β = 0.896, and β = 0.670, respectively) at $p<0.01$. On the other hand, privacy concerns negatively yet significantly impacted user satisfaction (β = -0.205) at $p<0.01$. However, the interaction term between perceived usefulness and privacy concern was insignificant ($p>0.05$), indicating that different levels of privacy concern did not change the effect of perceived usefulness on user satisfaction.

Table 7. Model Coefficients for the Moderated Mediation of Perceived Usefulness on Retention Intention

Variable	β	t	p	LLCI	ULCI
Outcome: User Satisfaction (M)					
Constant (β_0)	3.832	75.522	.000	3.731	3.932
Perceived Usefulness	.896	10.046	.000	.719	1.073
Privacy Concerns	-.205	-2.981	.004	-.341	-.068

Interaction Term (PU × PC)	.116	1.181	.241	-.079	.310
Outcome: Retention Intention (Y)					
Constant (β_0)	1.107	2.050	.043	.035	2.179
Perceived Usefulness	.534	2.939	.004	.173	.895
User Satisfaction	.670	4.765	.000	.391	.949

Table 8 revealed that the indirect effect of perceived usefulness on retention intention through user satisfaction was statistically significant in all levels of privacy concern. Nevertheless, the index of moderated mediation result was not significant (Index = 0.077, 95% CI [-0.024, 0.220]), indicating that privacy concerns did not moderate the mediation process.

Table 8. Conditional Indirect Effects of Perceived Usefulness on Retention Intention

Privacy Concern	Effect	Boot SE	Boot LLCI	Boot ULCI
Low (-1 SD)	.541	.160	.273	.889
Mean	.600	.157	.335	.936
High (+1 SD)	.659	.166	.379	1.025
Index	.077	.060	-.024	.220

4.7.2 Moderated Mediation Analysis (Model 7) – IV: Perceived Value (H_2, H_3, and H_{4b})

As depicted in table 9, only perceived value and user satisfaction positively and significantly influenced retention intention ($\beta = 0.582$, and $\beta = 0.554$, respectively) at $p<0.01$. In contrast, privacy concerns did not significantly influence user satisfaction ($p>0.05$). Furthermore, the interaction term between perceived value and privacy concern was insignificant ($p>0.05$), indicating that different levels of privacy concern did not change the effect of perceived value on user satisfaction.

Table 9. Model Coefficients for the Moderated Mediation of Perceived Value on Retention Intention

Variable	β	t	p	LLCI	ULCI
Outcome: User Satisfaction (M)					
Constant (β_0)	3.830	68.197	.000	3.718	3.941
Perceived Value	.693	8.718	.000	.535	.850

Privacy Concerns	-.140	-1.761	.081	-.297	.018
Interaction Term (PV × PC)	.066	0.866	.389	-.085	.217
Outcome: Retention Intention (Y)					
Constant (β_0)	1.548	3.188	.002	.584	2.512
Perceived Value	.582	4.570	.000	.330	.835
User Satisfaction	.554	4.389	.000	.304	.845

Table 10 revealed that the index of moderated mediation result was not significant (Index = 0.036, 95% CI [-0.047, 0.151]), indicating that privacy concerns did not moderate the mediation process.

Table 10. Conditional Indirect Effects of Perceived Value on Retention Intention

Privacy Concern	Effect	Boot SE	Boot LLCI	Boot ULCI
Low (-1 SD)	.356	.119	.125	.598
Mean	.384	.119	.144	.614
High (+1 SD)	.412	.129	.158	.661
Index	.036	.049	-.047	.151

4.8 Overall Results of the Study

This section presents all the statistical analysis results and decisions regarding the formulated hypothesis in a single table. Overall, three hypotheses (H_1, H_2, and H_3) were supported in this research. On the other hand, one hypothesis (H_4) was rejected.

Table 11. Study Results Summary

Research Hypothesis	Findings	Decision
H_1: Perceived usefulness of WHOOP's actionable software insights positively influences user satisfaction.	$\beta = 0.896$, $t = 10.046$, $p<0.01$	Supported
H_2: Perceived value of WHOOP's subscription model positively influences user satisfaction.	$\beta = 0.693$, $t = 8.178$, $p<0.01$	Supported

H_3: User satisfaction positively influences long-term retention intention of existing WHOOP users.	$\beta = 0.670$, $t = 4.765$, $p<0.01$ (PU model); $\beta = 0.554$, $t = 4.389$, $p<0.01$ (PV model)	Supported
H_{4a}: Privacy concerns negatively moderate the relationship between perceived usefulness and retention intention.	Index = 0.077, 95% CI [-0.024, 0.220])	Not Supported
H_{4b}: Privacy concerns negatively moderate the relationship between perceived value and retention intention.	Index = 0.036, 95% CI [-0.047, 0.151])	Not Supported

4.9 Discussions

The results revealed that the perceived usefulness and perceived value play a significant role in improving user satisfaction among the WHOOP users which in turn intensively results in high retention intention in the long term. They are also linked with retention intention mediated by user satisfaction. Nevertheless, privacy concern does not line them off ultimately and determines that privacy-related fears do not undermine the impact of perceived usefulness or perceived value to satisfaction or retention.

All in all, the findings validate that the perceptions of satisfaction-based values are the strongest predictors of the continuation of WHOOP use, and privacy issues do not serve as a deterrent in this aspect.

4.9.1 Relationship to Research Objectives

Research Question 1: *How does the perceived usefulness of WHOOP's actionable software insights influence user satisfaction?*

Supported by direct effects of PU on US ($p<0.01$ in model 7)

It was evident that perceived usefulness had a significant direct and positive effect on user satisfaction ($\beta = 0.896$, $t = 10.046$, $p<0.01$). This supports H_1 and proves that users who feel

WHOOP actionable insights to be valuable and performance-related are more satisfied. The outcome supports the assumption that data-driven coaching and customized metrics at WHOOP are the key value propositions and directly determine the quality of the user experience.

Research Question 2: *How does the perceived value of WHOOP's subscription model influence user satisfaction?*

Supported by direct effects of PV on US ($p<0.01$ in model 7)

Perceived value had a significant direct and positive effect on user satisfaction ($\beta = 0.896$, $t = 10.046$, $p<0.01$). This supports H_2 and proves that users who feel WHOOP actionable insights to be valuable and performance-related are more satisfied. The result indicates that WHOOP has the potential to succeed in its pricing model because the platform can offer valuable physiological insights and health optimization advantages to customers.

Research Question 3: *To what extent does user satisfaction influence the long-term retention of existing WHOOP users?*

Supported by direct effects of US on RI ($p<0.01$ in model 7)

User satisfaction positively and significantly impacts retention intention in both moderated-mediation models ($\beta = 0.670$, $t = 4.765$, $p<0.01$[PU model]; $\beta = 0.554$, $t = 4.389$, $p<0.01$ [PV model]), thereby supporting H_3. This proves that contented WHOOP clients are more likely to ratain their subscriptions and keep using the hardware and service. The outcome reveals that satisfaction is the key process that connects the perceived product benefits with long term retention of the WHOOP users.

Research Question 4: *How do privacy concerns influence perceptions of WHOOP and user satisfaction?*

Not Supported by interaction term ($p<0.01$ in model 7)

The interaction term on both models were not statistically significant, Index = 0.077, 95% CI [-0.024, 0.220]) in PU model; Index = 0.036, 95% CI [-0.047, 0.151]) in the PV model, thereby

unable to support the H_{4a} and H_{4b}. The interaction effects were not significant, even though the effects of privacy concerns were found to have a direct negative impact on the perceived usefulness model. This means that there is no difference in the extent of privacy concerns in regard to the fact that the usefulness or value perceptions can be transformed into satisfaction or retention. The lack of moderation allows to conclude that privacy concerns are not a significant impediment to satisfaction or future use in the WHOOP scenario, which may be because of confidence in the way the platform handles data or a sense of dominance in the perceived benefits.

4.9.2 Connection to Literature

The empirical results of this study offer robust support to the theoretical frameworks presented in Chapter 2, particularly in relation to the determinants of post-adoption behavior in relation to subscription-based wearables. However, it also challenges existing beliefs and assumptions in relation to the role of privacy concerns, providing a more complex understanding of the 'Privacy Paradox' in relation to digital health.

The Primacy of Actionable Insights

The most significant impact observed is that of Perceived Usefulness on User Satisfaction, which is positive ($\beta = 0.896$, $p < 0.01$). This is a powerful validation of the extension of Technology Acceptance Model to post-adoption. With regard to WHOOP, usefulness is closely tied to perceptions of information quality. The data supports the contentions made by Mercer et al. (2016) and Hicks et al. (2019) that raw biometric data is not sufficient to maintain engagement; however, actionable information based on this data is seen to be the key driver of User Satisfaction. With regard to Herzberg's two-factor theory, as discussed in the literature review, actionable information such as tailored recovery scores is seen to be a key motivator for User Satisfaction, driving a deep level of satisfaction.

Subscription Value as a Cognitive Baseline

The findings also lend strong support to the validity of the Value-Based Adoption Model (VBM). Perceived Value was found to have a significant positive effect on User Satisfaction ($\beta = 0.693$, $p < 0.01$). As a result of the pure subscription model used by WHOOP, users are locked into a continuous cognitive calculation to weigh the ongoing financial sacrifice against the benefits derived. The findings support those of Sun (2010) and Dhivya et al. (2025), which

confirmed that as the "Net Value" is maintained as a positive figure, it creates a favorable affective state (satisfaction) to justify the recurring expense. This also supports the idea that price is not just an entry barrier (as is suggested by UTAUT), but a recurring figure that must be continually offset by the quality of software features.

Satisfaction as the Retention Anchor

Consistent with the Expectation-Confirmation Model (ECM) (Bhattacherjee, 2001), User Satisfaction was found to be the critical mediator between perceived benefits and Retention Intention. The significant positive impact of satisfaction on retention ($\beta = 0.670$ for the PU model and $\beta = 0.554$ for the PV model) reinforces the point that continued subscription to the hardware is fundamentally an emotional and psychological decision, not just a behavioral habit. As Chen et al. (2014) theorized, satisfied users develop a loyalty that insulates them from alternative choices and subscription fatigue, effectively shielding the provider from losing them.

Re-evaluating the Privacy Calculus

The most unexpected result was found regarding Privacy Concerns (H4a and H4b). Based on the Privacy Calculus Theory (Dinev & Hart, 2006) and Protection Motivation Theory (Liang & Xue, 2009), we had hypothesized that privacy concerns would moderate the relationship between benefits and retention as a risk amplifier. However, the results of the moderated-mediation analysis (Model 7) showed that the interaction terms between privacy concerns and benefits were not significant. This suggests that in the context of the WHOOP system, benefits dominate the user's cognitive processing to such an extent that the factor of privacy concerns is not a limiting condition. The users demonstrate a clear "Privacy Paradox": although users might be concerned about sharing data in general (this is confirmed by the direct negative effect of privacy on satisfaction in the PU model), they do not demonstrate such a behavioral intention when it comes to terminating their paid subscription.

4.9.3 Theoretical Implications

The present dissertation makes a number of vital contributions to the academic body of research on Information Systems and digital marketing, especially regarding modern subscriptions.
Firstly, it is a significant success to apply classical adoption theories (TAM, ECM, VAM) to a very specific, yet little researched area of "Hardware-as-a-Service" or "Device-as-a-Service"

business models. Most research has focused on software subscriptions like Spotify or Netflix, or hardware purchases like traditional smartwatches. By proving how both perceived usefulness and value shape satisfaction for a hybrid model, where hardware is essentially useless without software, we have a validated model to study modern wearables.

Secondly, the study advances the conceptual understanding of the construct of Perceived Usefulness in the age of big data. It changes the academic discourse from "data collection capabilities" to "data actionability". The study demonstrates that in the age of mature technological markets, the construct of "usefulness" is completely contingent upon the ability of the software to interpret complex physiological metrics and provide prescriptive and personalized guidance.

Finally, the study proposes critical boundaries to the privacy calculus theory and protection motivation theory in the premium health-tech niches. The absence of a significant moderation effect implies that perhaps the traditional privacy calculus does not linearly generalize to very dedicated users who are focused on performance optimization. It speaks to a theoretical saturation point, whereby once the digital service is very much integrated in the user's life and provides exceptional and personalized utility in their health routines, the privacy risk is not very salient in the continuance decision-making process.

4.9.4 Practical Implications

For practitioners, marketing managers, and product developers in the digital health wearable market, the findings offer highly actionable intelligence for combating churn and maximizing customer lifetime value.

Prioritize R&D in AI and Coaching over Hardware Aesthetics

The overwhelming direct effect of perceived usefulness on satisfaction implies that companies need to focus on software development. As users perceive the value of the product based on the insights provided, the focus should be on developing advanced algorithms, artificial intelligence-based health coaching, and personalization of behavior change recommendations. The hardware, such as sensors and straps, is just a carrier, while the real product, which keeps the subscription going, is the intelligence of the software.

Continuous Value Demonstration

To survive the "subscription fatigue" associated with the market, it is important to communicate the Net Value of the service to the users. Since the value of the service is frequently re-assessed, it is important to use marketing techniques like push notifications, weekly reports, and milestone summaries to remind the users of the value they are creating.

Reframing the Privacy Strategy

Although the factor of privacy did not affect the cancellation of the subscription, it was still found to have a significant direct impact on the overall level of satisfaction, according to the model of usefulness, where the value was $\beta = -0.205$. This is a factor that managers should not overlook, even if it does not have the power to immediately affect the cancellation of a subscription, as it can have a long-term impact on brand loyalty through the gradual building of dissatisfaction. As such, it is recommended that the companies that produce wearables have clear policies regarding the data governance of their users, allowing them finer control over the sharing of their information, such as through anonymized cloud storage solutions, so that the overall level of satisfaction is improved.

CHAPTER 5: CONCLUSIONS AND LIMITATIONS

The final chapter of the dissertation is a synthesis of the empirical results and an evaluation of the findings in accordance with the research goals and objectives outlined in Chapter 1. The basic purpose of this dissertation was to explore the determinants of user satisfaction and retention intention among existing WHOOP subscribers, particularly with respect to the importance of software insights, subscription value, and the moderating effect of privacy concerns. Using the quantitative findings outlined in Chapter 4 of the dissertation, the current chapter briefly discusses the findings, their managerial and theoretical implications, and the limitations of the research to suggest opportunities for further research.

5.1 Main Findings & Conclusions

The empirical study provided several critical insights into the phenomenon of post-adoption behavior within the subscription-based wearables market, largely validating the proposed conceptual model, but revealing unexpected dynamics concerning the importance of user privacy.

Firstly, the empirical study conclusively proves that the perceived usefulness of the provided software insights is the most important determinant of user satisfaction, validating Hypothesis 1, but underscoring the fact that, for premium digital health wearables, raw biometric data is not enough to drive user engagement, but the ability of the device to convert such data into personalized, prescriptive, and easily digestible information, such as recovery scores, is the key driver of high user satisfaction.

Secondly, the evaluation of the WHOOP subscription model showed the direct positive influence of perceived value on user satisfaction, thus verifying Hypothesis 2. Since the "Device-as-a-Service" model would be useless without an active subscription, the users are compelled to constantly evaluate the "Net Value" of the service. The results showed that as long as the platform is providing top-notch physiological insights, the financial sacrifice is deemed worthwhile, creating a positive affective state.

Thirdly, as proposed by the Expectation-Confirmation Model (ECM), user satisfaction was revealed to be a key mediating factor between perceived benefits and long-term retention. The

study has successfully validated Hypothesis 3, which demonstrated a significant positive relationship between user satisfaction and retention intention for both perceived usefulness and perceived value models. This clearly illustrates that retention of a hardware subscription service is an emotional and psychological decision.

Lastly, the study explored the moderating impact of privacy concerns (Hypotheses 4a & b). The results were unexpected. Despite the sensitive physiological data WHOOP gathers, the moderating impact of privacy concerns was not significant for the relationship between benefits and retention intention. Though the direct impact of privacy concerns was seen for baseline user satisfaction, it was not seen as a moderating factor for continued usage, revealing a "Privacy Paradox," where although users are concerned about sharing information, the overall benefits of WHOOP's information are more important than the actual cognitive process, leading to a lack of direct impact on subscription cancellation.

5.2 Managerial and Academic Implications

The findings underscore the importance of software intelligence and continued value demonstration from a managerial perspective. As the digital health space continues to move further into the subscription economy, marketers and product developers must be aware that hardware design is not as important as data actionability. The overwhelming impact of perceived usefulness on customer satisfaction necessitates that companies invest heavily in advanced algorithmic development and artificial intelligence-powered health coaching and recommendations. Moreover, to combat "subscription fatigue," companies must be sure to remind customers of the continued value through strategic push notifications and reporting. Although privacy is not a direct contributor to customer churn, its downstream effect on initial customer satisfaction necessitates that companies not be complacent about data reporting and must continue to prioritize data privacy as a component of continued brand equity.

From the academic perspective, this study contributes to the Information Systems and consumer behavior literature streams by offering support for the extension of traditional technology adoption frameworks (i.e., TAM, ECM, and VAM) in the "Hardware as a Service" niche segment and successfully shifting the attention of the technology continuance debate from "data collection capabilities" to "data actionability." Additionally, the study offers evidence against the cross-niche applicability of the Privacy Calculus Theory in the premium health-tech niche

segment, suggesting the presence of the theoretical saturation point where the exceptional utility outweighs the risks of data exposure.

Table 12. Managerial and Academic Implications

Focus	Managerial Implications	Academic Implications
Software Actionability	Prioritize R&D investments in AI-driven coaching and personalized behavioral insights over hardware iterations to maximize user satisfaction.	Redefine "Perceived Usefulness" in modern digital health literature to strictly reflect the actionability and prescriptive nature of data rather than simple data collection.
Subscription Value	Implement continuous communication strategies to consistently reaffirm the service's value and combat subscription fatigue.	Expand the Value-Based Adoption Model (VAM) to account for continuous, cyclical cognitive evaluations inherent in "Device-as-a-Service" frameworks.
Privacy Strategy	Proactively implement transparent data governance policies and provide granular data controls to mitigate background dissatisfaction, even if immediate churn risks are low.	Re-evaluate the boundaries of established privacy related theories, investigating the thresholds at which extreme service utility neutralizes privacy risks.
Retention Anchoring	Shift marketing KPIs from solely tracking user acquisition to measuring deep user satisfaction and emotional brand attachment to ensure long-term profitability.	Further integrate the Expectation-Confirmation Model (ECM) into high-switching-cost scenarios to understand emotional dependencies in wearable tech.

5.3 Limitations and Further Research

As is the case with any study, there are certain limitations associated with the results of the study, although it must be acknowledged that the results obtained are a direct reflection of the data provided by the sample under consideration. Firstly, the sample size of the study was a major limiting factor, where the study was conducted after cleaning the data to a total sample size of 100 participants. Moreover, the sample was largely composed of a specific demographic group, where the majority, i.e., 83.0%, were identified as male, while a further 78.0% were identified as being between the ages of 18-34 years old. This is largely due to the fact that WHOOP is a premium, niche-based brand, thereby limiting the sample size of the study, which might affect the ability of the study to draw a more generalized conclusion, especially given the fact that the sample was largely composed of a specific demographic group.

Research opportunities for the future directly stem from these constraints. The addition of more diverse demographics, such as consumer groups of an older age or female-dominated user bases, would allow researchers to ascertain if these traits of a strong emphasis on actionable insights and a willingness to sacrifice privacy are inherent among all consumers or if they are unique to a younger, predominantly male-dominated fitness-enthusiast demographic. Longitudinal research is highly recommended to measure user satisfaction levels over various periods of a subscription service, such as month 1 or month 12. This would allow for a more precise measurement of when users are most susceptible to churn. Moreover, the surprising absence of privacy-related moderation also warrants further research. Researchers should seek to ascertain if WHOOP users have an unusually high inherent level of trust within institutions or if modern consumers have become desensitized to constant surveillance of their biometric data in exchange for optimization.

Table 13. Future research avenues

Focus	**Description**
Expanded Demographics	Include broader consumer cohorts (e.g., Gen X, female demographics) to explore whether the drivers of retention and tolerance for privacy risks vary across diverse groups.

Focus	Description
Longitudinal Approaches	Track user cohorts over extended periods (e.g., 6, 12, and 24 months) to investigate the "descent effect" of satisfaction and identify the exact timeline when perceived subscription value begins to stagnate.
Qualitative Investigations	Conduct in-depth interviews or focus groups to explore the psychological nuances of the "Privacy Paradox," determining if lack of churn is driven by brand trust, apathy, or perceived dominance of health benefits.
Cross-Platform Comparisons	Compare the post-adoption behaviors of pure subscription models (like WHOOP) against hybrid or one-time purchase models (like Apple Watch or Garmin) to isolate the exact impact of recurring payment structures on user expectations.

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Appendices

Appendix 1 – Qualtrics Survey

Start of Block: Section 1: Introduction and Screening

Dear Participant,

Thank you for agreeing to participate in this research study, which is part of my thesis investigating consumer behavior in the digital health wearable market. This survey focuses specifically on existing WHOOP subscribers and aims to analyze the factors that drive user satisfaction and long-term retention intention.

Your honest responses will provide critical information for this research, which seeks to understand how digital health wearables sustain value beyond initial adoption. All responses are completely anonymous and confidential, and the data will be used exclusively for academic statistical analysis. Your participation is greatly appreciated.

Thank you!

Maxime Auguin

1.1 Are you currently an active WHOOP user?

- ○ Yes (1)
- ○ No (2)

Skip To: End of Survey If Are you currently an active WHOOP user? = No

1.2 How many months have you been a paying WHOOP subscriber?

1.3 On average, on how many days per week do you interact with the WHOOP mobile application?

End of Block: Section 1: Introduction and Screening

Start of Block: Section 2: Perceived Usefulness

The following questions refer to your personal experience as an existing WHOOP subscriber. Please answer honestly based on your regular use of the WHOOP strap and mobile app.

This section focuses on how useful you find WHOOP's software insights and data for improving your performance and overall well-being. Please rate your level of agreement with the following statements regarding your WHOOP experience.

2.1 The recovery insights provided by WHOOP are highly useful for optimizing my training and health.

- ○ Strongly Disagree (1)
- ○ Somewhat Disagree (2)
- ○ Neutral (3)
- ○ Somewhat Agree (4)
- ○ Strongly Agree (5)

2.2 The WHOOP insights meaningfully influence my daily decisions regarding training, recovery, and lifestyle.

- ○ Strongly Disagree (1)
- ○ Somewhat Disagree (2)
- ○ Neutral (3)
- ○ Somewhat Agree (4)
- ○ Strongly Agree (5)

2.3 I believe that using WHOOP's software insights helps me achieve my personal performance goals.

- ○ Strongly Disagree (1)
- ○ Somewhat Disagree (2)
- ○ Neutral (3)
- ○ Somewhat Agree (4)
- ○ Strongly Agree (5)

2.4 The software presents complex physiological data in clear and easy-to-understand format.

- ○ Strongly Disagree (1)
- ○ Somewhat Disagree (2)
- ○ Neutral (3)
- ○ Somewhat Agree (4)
- ○ Strongly Agree (5)

2.5 Overall, I find WHOOP's insights to be essential in tracking and improving my performance.

- ○ Strongly Disagree (1)
- ○ Somewhat Disagree (2)
- ○ Neutral (3)
- ○ Somewhat Agree (4)
- ○ Strongly Agree (5)

End of Block: Section 2: Perceived Usefulness

Start of Block: Section 3: Perceived Value

The next questions concern your perception of the overall value of WHOOP's subscription model - how worthwhile and cost-effective the service feels to you. Please rate your level of agreement with the following statements regarding your WHOOP experience.

3.1 The monthly WHOOP subscription fee provides excellent value for the cost.

- ○ Strongly Disagree (1)
- ○ Somewhat Disagree (2)
- ○ Neutral (3)
- ○ Somewhat Agree (4)
- ○ Strongly Agree (5)

3.2 The continuous stream of health tracking data justifies the ongoing expense of the subscription.

- ○ Strongly Disagree (1)
- ○ Somewhat Disagree (2)

○ Neutral (3)

○ Somewhat Agree (4)

○ Strongly Agree (5)

3.3 The WHOOP subscription model provides better overall value than most alternatives I'm aware of.

○ Strongly Disagree (1)

○ Somewhat Disagree (2)

○ Neutral (3)

○ Somewhat Agree (4)

○ Strongly Agree (5)

3.4 The feeling of confidence and control over my health provided by WHOOP is priceless.

○ Strongly Disagree (1)

○ Somewhat Disagree (2)

○ Neutral (3)

○ Somewhat Agree (4)

○ Strongly Agree (5)

End of Block: Section 3: Perceived Value

Start of Block: Section 4: Privacy Concerns

This section addresses how you feel about the privacy and security of your personal data collected and processed by WHOOP. Please rate your level of agreement with the following statements regarding your WHOOP experience.

4.1 I am worried about my personal WHOOP data being shared with or accessed by third-party companies.

○ Strongly Disagree (1)

○ Somewhat Disagree (2)

○ Neutral (3)

○ Somewhat Agree (4)

○ Strongly Agree (5)

4.2 I believe the physiological metrics collected by WHOOP (e.g., HRV, Sleep Stages) are too sensitive to be continuously monitored by a commercial entity.

- ○ Strongly Disagree (1)
- ○ Somewhat Disagree (2)
- ○ Neutral (3)
- ○ Somewhat Agree (4)
- ○ Strongly Agree (5)

4.3 I feel confident that WHOOP effectively protects my sensitive health data.

- ○ Strongly Disagree (1)
- ○ Somewhat Disagree (2)
- ○ Neutral (3)
- ○ Somewhat Agree (4)
- ○ Strongly Agree (5)

4.4 I am worried about data collected by WHOOP being used for purposes other than optimizing my health/performance.

- ○ Strongly Disagree (1)
- ○ Somewhat Disagree (2)
- ○ Neutral (3)
- ○ Somewhat Agree (4)
- ○ Strongly Agree (5)

4.5 Even though WHOOP provides useful insights, I sometimes hesitate to share my health data due to privacy risks.

- ○ Strongly Disagree (1)
- ○ Somewhat Disagree (2)
- ○ Neutral (3)
- ○ Somewhat Agree (4)
- ○ Strongly Agree (5)

End of Block: Section 4: Privacy Concerns

Start of Block: Section 5: User Satisfaction

The following items focus on your overall satisfaction with WHOOP as a service, including your general experience and expectations. Please rate your level of agreement with the following statements regarding your WHOOP experience.

5.1 I am very satisfied with my decision to use the WHOOP service.

- ○ Strongly Disagree (1)
- ○ Somewhat Disagree (2)
- ○ Neutral (3)
- ○ Somewhat Agree (4)
- ○ Strongly Agree (5)

5.2 My experiences with WHOOP have met or exceeded my initial expectations.

- ○ Strongly Disagree (1)
- ○ Somewhat Disagree (2)
- ○ Neutral (3)
- ○ Somewhat Agree (4)
- ○ Strongly Agree (5)

5.3 I find the overall quality of the WHOOP service (device + software) to be excellent.

- ○ Strongly Disagree (1)
- ○ Somewhat Disagree (2)
- ○ Neutral (3)
- ○ Somewhat Agree (4)
- ○ Strongly Agree (5)

5.4 I have a strong positive feeling about my relationship with WHOOP as a service provider.

- ○ Strongly Disagree (1)
- ○ Somewhat Disagree (2)
- ○ Neutral (3)
- ○ Somewhat Agree (4)
- ○ Strongly Agree (5)

5.5 My experience with WHOOP is better than I initially expected.

- ○ Strongly Disagree (1)
- ○ Somewhat Disagree (2)
- ○ Neutral (3)
- ○ Somewhat Agree (4)
- ○ Strongly Agree (5)

End of Block: Section 5: User Satisfaction

Start of Block: Section 6: Continuance

This section asks about your intentions to keep using and subscribing to WHOOP in the future. Please rate your level of agreement with the following statements regarding your WHOOP experience.

6.1 I intend to renew my WHOOP subscription when my current term expires.

- ○ Strongly Disagree (1)
- ○ Somewhat Disagree (2)
- ○ Neutral (3)
- ○ Somewhat Agree (4)
- ○ Strongly Agree (5)

6.2 I plan to continue using the WHOOP service for the next year or more.

- ○ Strongly Disagree (1)
- ○ Somewhat Disagree (2)
- ○ Neutral (3)
- ○ Somewhat Agree (4)
- ○ Strongly Agree (5)

6.3 I am unlikely to switch to another wearable service in the near future.

- ○ Strongly Disagree (1)
- ○ Somewhat Disagree (2)
- ○ Neutral (3)
- ○ Somewhat Agree (4)

○ Strongly Agree (5)

End of Block: Section 6: Continuance

Start of Block: Section 7: Demographics

7.1 How old are you?

7.2 What is your gender?

○ Male (1)

○ Female (2)

○ Non-binary/third gender (3)

○ Prefer not to say (4)

7.3 What is your monthly household income?

○ < 1,000 € (1)

○ 1,000 - 2,999 € (2)

○ 3,000 - 4,999 € (3)

○ 5,000 - 7,999 € (4)

○ > 8,000 € (5)

○ Prefer not to say (6)

7.4 What is your current country of residence?

End of Block: Section 7: Demographics

End of Survey

Appendix 2 – SPSS Output

Frequencies

Statistics

		How old are you?	What is your gender?	What is your monthly household income?
N	Valid	100	100	100
	Missing	0	0	0

How old are you?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below 18 years	1	1.0	1.0	1.0
	18-24 years	24	24.0	24.0	25.0
	25-34 years	54	54.0	54.0	79.0
	35-44 years	12	12.0	12.0	91.0
	45-54 years	5	5.0	5.0	96.0
	55 years and above	4	4.0	4.0	100.0
	Total	100	100.0	100.0	

What is your gender?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	83	83.0	83.0	83.0
	Female	16	16.0	16.0	99.0
	Non-binary / third gender	1	1.0	1.0	100.0
	Total	100	100.0	100.0	

What is your monthly household income?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< 1.000 €	3	3.0	3.0	3.0
	1.000-2.999 €	23	23.0	23.0	26.0
	3.000-4.999 €	25	25.0	25.0	51.0
	5.000-7.999 €	13	13.0	13.0	64.0

	> 8.000 €	17	17.0	17.0	81.0
	Prefer not to say	19	19.0	19.0	100.0
	Total	100	100.0	100.0	

Reliability – Perceived Usefulness

Case Processing Summary

		N	%
Cases	Valid	100	100.0
	Excluded[a]	0	.0
	Total	100	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.812	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - The recovery insights provided by WHOOP are highly useful for optimizing my training and health.	16.19	6.640	.616	.771
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - The WHOOP insights meaningfully influence my daily decisions regarding training, recovery, and lifestyle.	16.36	6.435	.516	.806

Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I believe that using WHOOP's software insights helps me achieve my personal performance goals.	16.31	5.953	.733	.732
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - The software presents complex physiological data in a clear and easy-to-understand format.	15.84	7.954	.354	.836
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - Overall, I find WHOOP's insights to be essential in tracking and improving my performance.	16.22	5.769	.808	.707

Reliability – Perceived Value

Case Processing Summary

		N	%
Cases	Valid	100	100.0
	Excluded[a]	0	.0
	Total	100	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.840	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - The monthly WHOOP subscription fee provides excellent value for the cost.	10.02	5.939	.757	.761
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - The continuous stream of health tracking data justifies the ongoing expense of the subscription.	9.64	6.011	.686	.792
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - The WHOOP subscription model provides better overall value than most alternatives I'm aware of.	9.98	6.303	.587	.835

Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - The feeling of confidence and control over my health provided by WHOOP is priceless.	9.78	6.072	.669	.799

Reliability – Privacy Concerns

Case Processing Summary

		N	%
Cases	Valid	100	100.0
	Excluded[a]	0	.0
	Total	100	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.608	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I am worried about my personal WHOOP data being shared with or accessed by third-party companies.	11.18	5.624	.577	.418

Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I believe the physiological metrics collected by WHOOP (e.g., HRV, Sleep Stages) are too sensitive to be continuously monitored by a commercial entity.	11.22	6.194	.559	.443
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I feel confident that WHOOP effectively protects my sensitive health data.	9.80	11.515	-.376	.818
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I am worried about data collected by WHOOP being used for purposes other than optimizing my health/performance.	10.84	6.277	.517	.466
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - Even though WHOOP provides useful insights, I sometimes hesitate to share my health data due to privacy risks.	11.24	5.760	.683	.370

Reliability – User Satisfaction

Case Processing Summary

		N	%
Cases	Valid	100	100.0
	Excluded[a]	0	.0
	Total	100	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.912	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I am very satisfied with my decision to use the WHOOP service.	15.02	11.030	.747	.899
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - My experiences with WHOOP have met or exceeded my initial expectations.	15.34	10.792	.825	.884

Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I find the overall quality of the WHOOP service (device + software) to be excellent.	15.24	9.780	.818	.885
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I have a strong positive feeling about my relationship with WHOOP as a service provider.	15.21	10.875	.726	.903
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - My experience with WHOOP is better than I initially expected.	15.39	10.927	.784	.892

Reliability – Continuance

Case Processing Summary

		N	%
Cases	Valid	100	100.0
	Excluded[a]	0	.0
	Total	100	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.884	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I intend to renew my WHOOP subscription when my current term expires.	7.28	4.547	.853	.762
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I plan to continue using the WHOOP service for the next year or more.	7.10	5.202	.805	.816
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I am unlikely to switch to another wearable service in the near future.	7.58	4.872	.683	.924

Factor Analysis – Perceived Usefulness

Communalities

	Initial	Extraction
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - The recovery insights provided by WHOOP are highly useful for optimizing my training and health.	1.000	.608

Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - The WHOOP insights meaningfully influence my daily decisions regarding training, recovery, and lifestyle.	1.000	.469
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I believe that using WHOOP's software insights helps me achieve my personal performance goals.	1.000	.757
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - The software presents complex physiological data in a clear and easy-to-understand format.	1.000	.258
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - Overall, I find WHOOP’s insights to be essential in tracking and improving my performance.	1.000	.817

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.909	58.174	58.174	2.909	58.174	58.174
2	.837	16.733	74.907			
3	.670	13.391	88.298			
4	.386	7.723	96.021			
5	.199	3.979	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component 1
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - The recovery insights provided by WHOOP are highly useful for optimizing my training and health.	.780
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - The WHOOP insights meaningfully influence my daily decisions regarding training, recovery, and lifestyle.	.684
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I believe that using WHOOP's software insights helps me achieve my personal performance goals.	.870

Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - The software presents complex physiological data in a clear and easy-to-understand format.	.508
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - Overall, I find WHOOP's insights to be essential in tracking and improving my performance.	.904

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Factor Analysis – Perceived Value

Communalities

	Initial	Extraction
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - The monthly WHOOP subscription fee provides excellent value for the cost.	1.000	.770
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - The continuous stream of health tracking data justifies the ongoing expense of the subscription.	1.000	.699
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - The WHOOP subscription model provides better overall value than most alternatives I'm aware of.	1.000	.573
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - The feeling of confidence and control over my health provided by WHOOP is priceless.	1.000	.672

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.715	67.885	67.885	2.715	67.885	67.885
2	.589	14.726	82.612			
3	.414	10.346	92.958			
4	.282	7.042	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component 1
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - The monthly WHOOP subscription fee provides excellent value for the cost.	.878
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - The continuous stream of health tracking data justifies the ongoing expense of the subscription.	.836
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - The WHOOP subscription model provides better overall value than most alternatives I'm aware of.	.757
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - The feeling of confidence and control over my health provided by WHOOP is priceless.	.820

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Factor Analysis – Privacy Concerns

Communalities

	Initial	Extraction
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I am worried about my personal WHOOP data being shared with or accessed by third-party companies.	1.000	.710
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I believe the physiological metrics collected by WHOOP (e.g., HRV, Sleep Stages) are too sensitive to be continuously monitored by a commercial entity.	1.000	.570
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I feel confident that WHOOP effectively protects my sensitive health data.	1.000	.283
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I am worried about data collected by WHOOP being used for purposes other than optimizing my health/performance.	1.000	.612

Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - Even though WHOOP provides useful insights, I sometimes hesitate to share my health data due to privacy risks.	1.000	.620

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.794	55.889	55.889	2.794	55.889	55.889
2	.900	18.002	73.891			
3	.593	11.851	85.742			
4	.384	7.679	93.421			
5	.329	6.579	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component 1
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I am worried about my personal WHOOP data being shared with or accessed by third-party companies.	.843
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I believe the physiological metrics collected by WHOOP (e.g., HRV, Sleep Stages) are too sensitive to be continuously monitored by a commercial entity.	.755
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I feel confident that WHOOP effectively protects my sensitive health data.	.532
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I am worried about data collected by WHOOP being used for purposes other than optimizing my health/performance.	.782
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - Even though WHOOP provides useful insights, I sometimes hesitate to share my health data due to privacy risks.	.787

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Factor Analysis – User Satisfaction

Communalities

	Initial	Extraction
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I am very satisfied with my decision to use the WHOOP service.	1.000	.700
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - My experiences with WHOOP have met or exceeded my initial expectations.	1.000	.802
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I find the overall quality of the WHOOP service (device + software) to be excellent.	1.000	.793
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I have a strong positive feeling about my relationship with WHOOP as a service provider.	1.000	.673
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - My experience with WHOOP is better than I initially expected.	1.000	.752

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.720	74.396	74.396	3.720	74.396	74.396
2	.476	9.525	83.921			
3	.388	7.759	91.679			
4	.263	5.265	96.944			
5	.153	3.056	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component 1
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I am very satisfied with my decision to use the WHOOP service.	.837

Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - My experiences with WHOOP have met or exceeded my initial expectations.	.896
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I find the overall quality of the WHOOP service (device + software) to be excellent.	.890
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I have a strong positive feeling about my relationship with WHOOP as a service provider.	.821
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - My experience with WHOOP is better than I initially expected.	.867

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Factor Analysis – Continuance

Communalities

	Initial	Extraction
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I intend to renew my WHOOP subscription when my current term expires.	1.000	.895
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I plan to continue using the WHOOP service for the next year or more.	1.000	.850
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I am unlikely to switch to another wearable service in the near future.	1.000	.711

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.456	81.876	81.876	2.456	81.876	81.876
2	.412	13.746	95.622			
3	.131	4.378	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component 1
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I intend to renew my WHOOP subscription when my current term expires.	.946
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I plan to continue using the WHOOP service for the next year or more.	.922
Please rate your level of agreement with the following statements regarding your WHOOP experience. (1 = Strongly Disagree to 5 = Strongly Agree). - I am unlikely to switch to another wearable service in the near future.	.843

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Descriptives

Descriptive Statistics

	N	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Perceived Usefulness	100	4.0460	.62530	-1.090	.241	1.857	.478
Perceived Value	100	3.2850	.80090	-.333	.241	.419	.478
Privacy Concerns	100	2.4060	.75930	.558	.241	-.016	.478
User Satisfaction	100	3.8100	.80823	-.749	.241	.749	.478
Retention Intention	100	3.6600	1.07307	-.643	.241	-.104	.478
Valid N (listwise)	100						