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The Effectiveness of Facebook and Fitbit in Motivating Finnish Adults to Stay Physically Active

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Abstract

This study explores the role of digital systems, specifically Facebook and Fitbit, in enhancing adults' motivation to interact in physical activity within the Finnish context. As physical inactivity persists because of barriers, along with time constraints, lack of motivation, and external conditions, this thesis examines how digital fitness platforms offer sustainable engagement techniques. The usage of theoretical frameworks just like the Technology Acceptance Model (TAM), Self- Self-Determination Theory (SDT), and Uses and Gratifications Theory (UGT), the studies analyzes how features along with gamification, social support, and AI-pushed personalization, enhance long-term adherence to workouts. Quantitative statistics collected from Finnish adults who are users of Facebook and Fitbit show the assessment, highlighting the digital platforms' effectiveness in promoting workouts, addressing demographic disparities, and contributing to preventative healthcare. The examination additionally identifies limitations, which include privacy concerns, health literacy gaps, and technological obstacles, offering sensible insights for app builders and healthcare experts aiming to enhance virtual fitness engagement in Finland.

Key words: Digital health, Facebook, Fitbit, Motivation, Physical activity, Finland, Gamification, Technology reputation, AI Personalization, Preventative Healthcare

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1 Introduction

Informal sports and regular exercise are vital components of a healthful way of life. World Health Organization (2020), mentions that workout improves cardiovascular health, build muscle tissue and bones, improve intellectual fitness, and lower the hazard of noncommunicable diseases like heart disease, stroke, diabetes, and various malignancies. Informal and recreational sports activities increase social connections and network participation, which advantages mental health (Eime et al., 2013). Furthermore, physical activity, in particular informal sports activities, is associated with higher mental fitness effects in teenagers (Appelqvist-Schmidlechner et al., 2020). The WHO (2021) underlines that even less time of regular exercise can provide significant health improvement and promote lively life for humans of all ages. Even though the advantages of physical activity are well known, many adults discover it hard to stick to an ordinary workout schedule at home. Time restraints, a loss of pressure, scarce assets, and insufficient direction are ordinary boundaries. In step with an examine by way of Caperchione et al. (2017), human beings' lack of time and motivation are principal obstacles to physical activity. Virtual health systems, including Fitbit and Facebook, have emerged as a useful tool for tackling these problems. These platforms integrate gamified elements to improve user motivation and engagement, like challenges, prizes, and progress tracking (Bitrián et al., 2022). In particular, Fitbit provides users with individualized workout goals, real-time biometric tracking, and reminders, all of which help them stick to their fitness regimens without outside guidance (Bitrián et al., 2022). Additionally, engaging in fun activities like dancing for 20 minutes every day can make a big difference in fulfilling weekly activity recommendations. Solo freeform dance at home can reach health-enhancing levels of physical activity, according to a study published in PLOS ONE, making it a viable alternative for many people (The Times, 2025). Breaking headlines and the latest news. It's crucial to recognize that outside variables, like unfavorable weather and mental health issues, can still make it difficult to engage in regular physical activity. These obstacles highlight the necessity for supporting, flexible fitness programs that take into account each person's unique situation (Caperchione et al., 2017).

The advancement of technology has introduced innovative solutions to encourage physical activity. Digital platforms have reshaped exercise habits by providing interactive and engaging ways to stay active (Wexler, 2024). Facebook and Fitbit serve as key examples of those innovations (Tate et al., 2015). Facebook facilitates social engagement through fitness groups and online communities, while Fitbit focuses on individual progress tracking and biometric monitoring (Shameli, Althoff, Saberi, &

Leskovec, 2017). Gamification factors, which consist of challenges and goal putting, enhance participation in exercising routines (Tate et al., 2015). These tools allow users to get involved to health sources, monitor their progress, and receive actual-time remarks, making exercising more sustainable and attractive.

As digital fitness solutions evolve, the combination of AI-powered coaching, augmented truth (AR), and wearable technology maintains to transform the health landscape. Fitness application with AI technology, such as Fitbit and Freeletics, use machine learning to customize workout plans, making sure they align with consumer goals and health levels (Institute of Personal Trainers, 2025) AI-driven workout recommendations adapt to user behavior, at the same time as AR-based fitness studies suggest motivation through making exercises more immersive. For example, Facebook integration with AR filters lets user to visualize exercise movements, while Fitbit interactive exercise modes offer on-display screen guidance, creating a more engaging experience. Similarly, AR health apps like Supernatural and Holofit create interactive exercise environments, permitting users to engage in virtual cycling, boxing, or guided meditation in scenic places (BrandXR, 2025). Additionally, the function of digital platforms in workplace wellbeing initiatives is increasing. Finnish companies are increasingly more incorporating Fitbit-based step challenges and Facebook fitness groups into their employee health programs, demonstrating the capacity impact of digital fitness on individual user. Many organizations are integrating online tools like Fitbit and Apple Watch into employee well-being programs, providing incentives for active participation and monitoring administrative health metrics (The Verge, 2025).

The COVID-19 pandemic underscored the importance of online fitness platforms. With lockdowns restricting outdoor activities, many individuals turned to digital solutions to maintain physical activity (Meriläinen, 2022; WHO, 2022. Throughout this period, fitness app downloads suddenly increased, with a 46% rise globally, indicating a growing dependency on virtual exercising solutions (Statista, 2023). Facebook provides digital workout training, while Fitbit gives reminders and monitoring tools, main to a surge in their promotion. These platforms demonstrated their potential to bridge the gap between intention and action in forming daily workout habits (The Business Research Company, 2024). Furthermore, YouTube and Instagram have become a key source of free workout content with influencers and certified trainers live coaching and recorded sessions to a huge audience (Digital Trend, 2023). Social support during the pandemic played a crucial role in maintaining motivation and adherence to home workouts (Carter & Alexander, 2021).

Published pandemic articles indicate a sustained reliance on digital health solutions, with increasingly people integrating online workouts into their routines. Hybrid health trends like Peloton's online and in-personal coaching, are now shaping long term exercise habits by way of combining virtual comfort with actual-global engagement (Forbes, 2024). Research displays that hybrid fitness habits, which integrate on-line and in-individual education, are gaining traction, permitting customers to preserve flexibility in their exercising conduct. Additionally, VR-based exercises, which include those offered by FitXR and Oculus pass, have visible a surge in adoption, presenting immersive fitness reports that cater to various workout possibilities (TechCrunch, 2024). During a pandemic, rising technologies like AI-driven training, virtual reality (VR)-based totally exercise experiences, and 5G-enabled health apps retain to sustain home exercise engagement. The combination of 5G technology has further stronger real-time exercising streaming, reducing latency in live fitness classes and enhancing user enjoy (GSMA, 2024).

Finland provides a completely unique context for reading digital fitness adoption. Renowned for its commitment to health, world-class education, and technological innovation, Finland boasts a high digital literacy rate and strong digital infrastructure, making it an ideal environment for exploring digital fitness platforms (Rathi & Girvan, 2024; Kralj, 2023). Understanding the adoption of digital fitness platforms in Finland can provide insights not only for individuals but also for policymakers, app developers, and healthcare professionals aiming to promote physical activity (Mustonen & Katsui, 2024).

Moreover, Finnish authorities' projects helping digital wellbeing applications highlight the growing position of era in public fitness strategies. Despite these benefits, challenges remain in integrating virtual fitness solutions into daily workouts, specifically in maintaining long-time engagement. However, keeping motivation for steady participation is tough. Digital platforms like Facebook and Fitbit help address this issue by offering personalized answers tailor-made to individual possibilities and desires (Shameli et al., 2017). Users can set objectives, track progress, take part in live training, and interact in online demanding situations, making workout routines more established and engaging (Tate et al., 2015).

Moreover, health influencers and online communities play a considerable role in shaping exercise behaviors. Studies indicate that people who engage with fitness-associated content material on social media are more likely to undertake steady workout behavior due to peer impact and virtual accountability. Moreover, digital fitness systems are incorporating gadget getting to know

algorithms to create fairly customized exercise plans, assisting customers keep engagement via tailored workout regimens.

Despite the benefits, limited research has explored the long-term effects of digital fitness platforms on motivation for home workouts in Finland, particularly across various demographic groups. As an example, while more youthful customers are more willing to engage with gamified health applications, older adults may additionally require simpler interfaces and instructional support. Addressing those disparities is essential for growing inclusive digital health solutions that cater to various consumer desires. Furthermore, studies suggest that cultural attitudes for technology adoption play a role in engagement, with more adults demonstrating a higher inclination within online fitness improvements. Addressing these demanding situations with the use of friendly designs, stronger personalization, and centered engagement techniques can improve long time adherence to virtual fitness systems.

 Objectives and key areas:

This research aims to evaluate how Facebook and Fitbit contribute to long-term motivation for home workouts in Finland. The key research areas include:

1. The effect of gamification features (challenges, rewards, progress monitoring) on home workout engagement.
2. The importance of social support (Facebook fitness groups, online communities) in improving motivation and adherence.
3. The role of AI-driven feedback and personalization in sustaining long-term participation through platforms like Fitbit.
4. Barriers and facilitators influencing the adoption of digital health systems among different demographic groups in Finland.
5. The capacity of emerging technology (AI coaching, augmented reality, wearable fitness devices) in enhancing home fitness engagement.
6. The financial and social effect of digital fitness adoption in Finland, mainly in terms of healthcare cost discount and wellbeing workplace initiatives.

By addressing these research areas, this study aims to bridge the gap in understanding how digital platforms promote sustained physical activity in Finland. Given Finland's strong virtual infrastructure and excessive smartphone penetration price, it provides a unique landscape to analyze the

effectiveness of fitness technologies in preserving long time physical activity interest (OECD, 2024). The findings will offer valuable insights for app builders, healthcare specialists, and policymakers to design effective and user-friendly fitness solutions.

In spite of the growing adoption of digital fitness platforms, research on long-term user engagement and motivation for home workouts in Finland to stay active. A study by Eurostat (2024), revealed that while 60% of Finns use digital fitness applications, regular engagement in health applications stays a mission because of fluctuating motivation and seasonal variations in exercise. Most research recognition on large nations with well-set up fitness industries, including the USA and the UK, leaves a gap in understanding about smaller, tech-savvy countries like Finland. Considering about Finland's strong emphasis on public health, exploring digital health solutions should contribute to nationwide health techniques (Croell et al., 2024). Moreover, existing research has a tendency to emphasize short-time period consequences rather than long-time period adherence and motivation, specifically concerning personalization and social assistance. Longitudinal studies on sustained consumer engagement, specifically in Nordic regions, may want to provide deeper insights into how virtual platforms can promote lifelong physical activity (Silva et al., 2021).

This study's goals identify a gap by examining how digital fitness platforms can create sustainable engagement strategies that increase beyond preliminary user enthusiasm. Understanding the mental elements driving online fitness platforms adoption will offer insights into long-term behavioral modifications.

Technology has revolutionized fitness engagement, from tracking progress to receiving personalized feedback. Self-Determination Theory (Deci & Ryan, 2000) is relevant in understanding how platforms like Fitbit use personalization and gamification to enhance sustained motivation for physical activity. Social support is also a key motivator, with studies showing that community engagement through platforms like Facebook enhances adherence to physical activity (Tate et al., 2015).

By exploring these factors, this research will provide actionable insights for health platform developers, healthcare professionals, and policymakers, helping them design more effective digital fitness solutions tailored to the Finnish population. This has a look at will make a contribution to academic literature and offer realistic recommendations for promoting long-time physical activity and wellbeing.

2 Theoretical Framework

The theoretical framework is the basis upon which the research will findings and having on structured framework for evaluation and understanding. There is insistence on the proper selection and elaboration of the theoretical framework, because it now not best defines and directs the research techniques but also determines its results. A proper structure theoretical framework ensures that the studies stay focused, systematic, and grounded in current knowledge, making it important for information how Facebook and Fitbit contribute to individual motivation and engagement in daily home workouts.

To understand of digital platforms that how the changing user motivation and engagement with Facebook and Fitbit, several theoretical frameworks may be taken into consideration. Among them is the Technology Acceptance Model (TAM) (Davis, 1989), which explains how perceived usefulness and perceived ease of use influence technology adoption habits. This model offers a basis for information how digital fitness platforms such as Facebook and Fitbit facilitate motivation and long-term engagement in home exercises. These platforms inspire customers to combine daily workouts through imparting interactive capabilities along with fitness tracking, network engagement, and goals achievements. Moreover, the Self Determination Theory (Deci & Ryan, 1985) is applicable in explaining how each intrinsic and extrinsic motivation effect user behavior. This principle highlights that customized health monitoring, digital competitions, and social help capabilities on those systems increase a sense of community, competence, and relatedness, that are critical for sustaining motivation in home exercises.

(Rogers, 1962) describes in The Diffusion of Innovation Theory how, why, and where innovation spreads in a society. It remains a fundamental idea in reading the adoption of recent health technology, together with wearable gadgets and social media-based exercise communities. In Finland, where virtual literacy is high and technological improvements are widely embraced, this theory helps provide an explanation for how health-related improvements consisting of Fitbit and Facebook fitness companies advantage popularity and turn out to be essential tools for home exercise motivation. Users who undertake those platforms early may affect others and spread acceptance of theory driven fitness answers.

The Technology Acceptance Modal 2 (TAM 2), described by Venkatesh and Davis (2000), extends the original TAM through incorporating social influence and cognitive instrumental approaches into technology acceptance. This model is especially relevant when reading how community features on

Facebook health communities and Fitbit groups encourage sustained participation in home workouts. The feel of social links with community fostered through these models increase motivation, peers' posts, encouragement, and peer support. Moreover, Fitbit progress tracking and challenges features contribute to behavioral reinforcement, making workout more engaging and fun.

A current model, The Technology Acceptance Model 3 (TAM 3) (Venkatesh & Bala, 2008), introduces additional elements together with experience, perceived leisure, and person manage, which further form digital fitness engagement. Considering the fact that this thesis focuses of Finnish adults the use of Facebook and Fitbit for home workout routines, TAM 3 offers a complete framework for assessing the position of technology in shaping long-term consumer behavior. The model acknowledges that beyond functionally, emotional and mental factors play a key role in figuring out whether people will keep the use of digital fitness platforms.

By using establishing this theoretical foundation, the study highlights the significance of digital platforms in fitness engagement. A clean theoretical model is important for reading how technology enhances motivation, recognizing the mechanisms through which digital fitness platforms boost sustain motivation, and considering the broader implications for public health and wellbeing. Additionally, the findings of this studies will give suggestions for health professional, policymakers and application developers looking to improve digital fitness adoption and engagement techniques. The insights derived from this examine ought to make a contribution to the development of more effective digital fitness interventions, ultimately fostering a healthier and more energetic society

2.1 The Uses and Gratifications Theory (UGT) Model

This study builds on The Uses and Gratifications idea (UGT) proposed through Katz et al. (1974), a theoretical framework in media research that explains why and how individuals actively interact with media to satisfy unique wishes or desires. UGT is a target market-targeted concept that emphasizes the position of people in making aware picks concerning their media intake. It indicates that people do no longer passively devour media content however rather actively select platforms and tools primarily based on their perceived engagement and motivations. Inside the context of this studies, UGT gives a valuable understanding how Finnish adults use Facebook and Fitbit which enhance motivation and engagement in home workout routines. It posits that users are not simply encouraged by using the technology itself however actively seek systems that provide mental, social, and functional benefits. Active users turn to Facebook fitness communities' network that

help for exercise proposal, at the same time as Fitbit gives actual-time progress tracking, goal-setting, and digital competitions to enhance social motivation.

The model of UGT is that media intake is intention-orientated and fulfills exclusive varieties of user needs. Within the case of online fitness platforms, these gratifications can be

- Psychological: Enhance motivation and personalized accountability for workout routines.
- Emotional: A sense of achievement and encouragement from achieving fitness desires and sharing development.
- Social: A guide from online fitness communities, participation in virtual challenges, and peer motivation.
- Practical: To access exercise routines, development monitoring, and dependent health plans with virtual equipment.

UGT emphasizes that users are absolutely aware about their media alternatives and are seeking engagement with systems that align with their online aspirations. Not like traditional media theories that assumed passive intake, UGT recognizes that people actively pick digital fitness platforms like Facebook and Fitbit based on their motivational wishes and fitness dreams.

Key standards of UGT
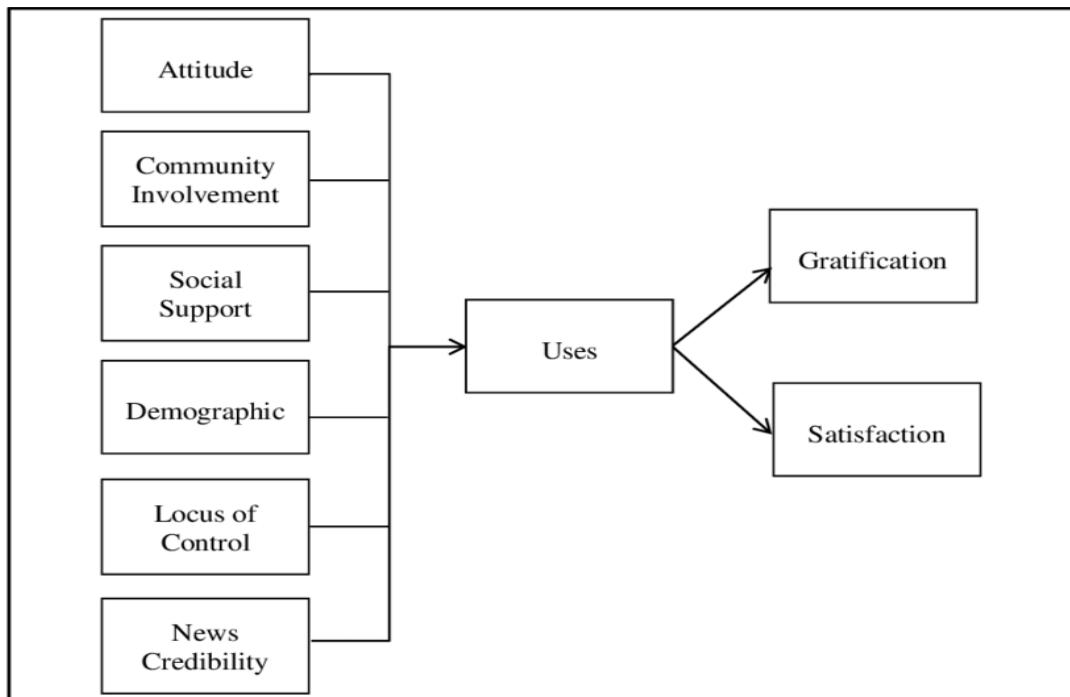
- Users are not passive clients of media but actively choose structures based on personal desires.
- Media consumption, consisting of digital fitness engagement, is aim-oriented and stimulated through motivational factors.
- Individuals can justify their selection of unique fitness systems, which includes Facebook for network assist and Fitbit for interest tracking.
- Perceived advantages, along with stepped forward fitness and social engagement, pressure media use.
- Media consumption relies upon character possibilities, interpersonal relationships, and cultural affects.

Principle of UGT

UGT has been broadly carried out in virtual media research, consisting of fitness engagement, and is relevant for the information the use of Facebook and Fitbit in domestic workout routines. Unique applications encompass:

- Digital fitness Motivation: Exploring why people take part in Facebook fitness groups and Fitbit challenges.
- Social Media and exercise conduct: Investigating how health-associated interactions on Facebook impact exercising consistency.
- Wearable technology and fitness tracking: know how progress tracking features on Fitbit increase commitment to workouts.
- Mental and Social factors in fitness Engagement: Examining how online fitness groups foster motivation and responsibility.
- Cultural factors of health Engagement: Studying how Finnish users integrate digital.

Figure 1 The Uses and Gratifications Theory (UGT)

Note: Sutrisno, S., Lubis, A. H., & Susilawati, S. (2021). Factors determining use of e-commerce: an application of UGT. *Journal of Physics: Conference Series*, *1783*(1), 012049. doi:10.1088/1742-6596/1783/1/012049

With the use of UGT, the research offers insights into how and why Finnish adults interact with Facebook and Fitbit to stay active in daily home workouts. The findings will contribute to a deeper information of digital fitness engagement, behavioral motivation, and the role of social assist in exercising adherence.

2.2 Resource-Based View (RBV) Model
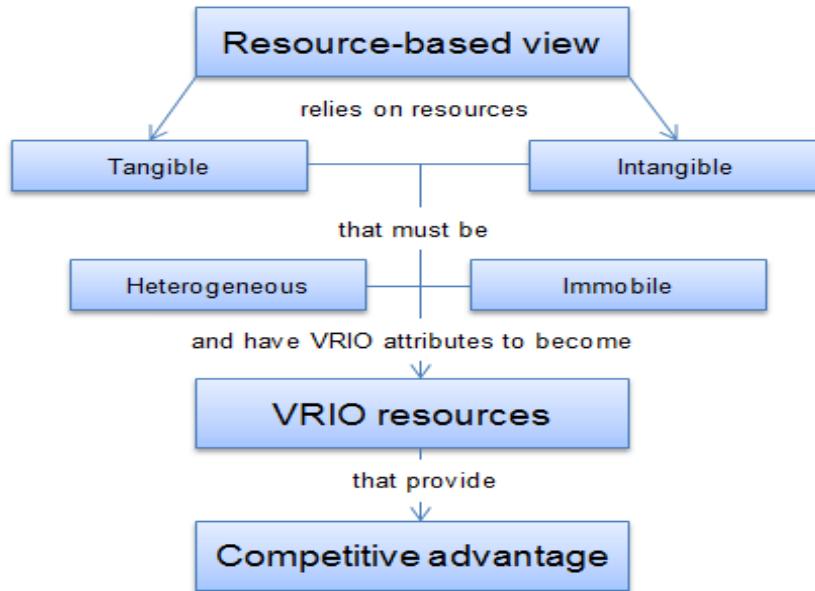
The resource-based View (RBV) model is an extensively diagnosed strategic management framework that a analyzes of internal sources within a company to gain competitive edge. This model posits that companies can preserve long term success by means of developing and using sources and capabilities which can be valuables, rare, inimitable, and non substitutable (VRIN). With this perspective, a company's capability to sustain aspects that depend not only on external marketplace situations but also at the specific assets and abilities it possesses.

The RBV model has been substantially implemented throughout numerous industries, together with commercial enterprise method, virtual transformation, and technological innovation. With this context of this study will identify what the role of digital fitness platforms with focus on Facebook and Fitbit in motivating Finnish adults for daily workouts. The RBV model presents a method to analyzing how these platforms leverage their internal motivation to create sustainable user engagement.

Application of the RBV model on digital fitness platforms

Digital fitness platforms provide a competitive environment where technological innovation, user engagement, and regular participation play a crucial role in sustaining long term participation. Through making use of the RBV framework, we are analyzie how Facebook and Fitbit make use of their technological, social, and goals tracking to motivate for home workout. A key term of their compitative advantage is their capability to generate revenue through numerous channels, together with subscriptions, advertisement, and paid fitness communities. These revenue streams support ongoing innovation and the enlargement of user engagement initiatives.

Figure 2 The Resource-Based View (RBV) model

Note: Ogutu, H., Adol, G. F. C., Bujdosó, Z., Andrea, B., Fekete-Farkas, M., & Dávid, L. D. (2023). Theoretical Nexus of Knowledge Management and Tourism Business Enterprise Competitiveness: An Integrated Overview. *Sustainability*, *15*(3), 1948. https://doi.org/10.3390/su15031948

1. Valuable

A valuable resource is those who allow digital fitness platforms to improve personal motivation, check fitness monitoring, and create engaging contents. Platforms like Facebook and Fitbit provide numerous technological innovations that upload value to users' fitness journeys. Fitbit's integration of AI based fitness monitoring and Facebook significant social support networks increases user revel in and long-term engagement. Moreover, these platforms capitalize on partnerships with fitness brands to sell workout applications and fitness-related products, further increasing their value proposition.

2. Rare

An extraordinary useful resource is one that is not always easily located amongst the competition and presents a platform with a unique gain. In case of Facebook and Fitbit, their fitness communities and brand promotion serve as uncommon resource that helps them differentiate from different fitness packages.

3. Inimitable

Inimitable resource is competition that cannot easily be copied or reproduced. Within the digital

fitness industry, platform-precise statistics, deep integration with wearable technology, and user-generated content make contributions to inimitability.

4. Non-Substitutable

Non-substitutable resources are those who cannot be easily replaced by way of opportunity technology. Within the digital fitness industry, Fitbit and Facebook offer solutions that cannot be without difficulty replaced by other apps or platforms.

Importance of the RBV model in digital fitness Engagement

With the help of leveraging the VRIN framework, digital fitness platforms can analyze and refine their techniques to hold user engagement and motivation for home workout. The mixture of technology, social integration, and AI driven fitness tracking features offer sustainable value to user. For example Facebook fitness communities inspire users to set challenging situations, progress sharing and seek peer assist. Fitbit personalized fitness insights and gamification techniques boost user engagement with long term participation.

Barriers of the RBV model in digital fitness

With benefits, it also has some barriers the RBV model has confronted criticism for its internal recognition. Some users argue that it overlooks outside elements inclusive of moving user conduct, technological disruptions, and evolving regulatory rules. In the digital fitness industries, factors like privacy concerns, changing user alternatives, and market competition play an important role in shaping long-term platform engagement. To address these barriers, a hybrid approach combining RBV with outside environmental analysis can provide a extra comprehensive information of digital fitness preserve competitive advantages.

In conclusion, the useful resource-primarily based View (RBV) model is a valuable tool for understanding how digital fitness systems acquire sustained user engagement through strategic aid utilization. By means of leveraging their technological talents, data insights, and social engagement features, platforms like Facebook and Fitbit can maintain long-term relevance within the digital fitness enterprise. Revenue generation through application subscriptions and advertisement, strategic emblem partnerships, and information driven engagement techniques plays a important role of their fulfillment. These platforms continuously evolve through integrating new technology
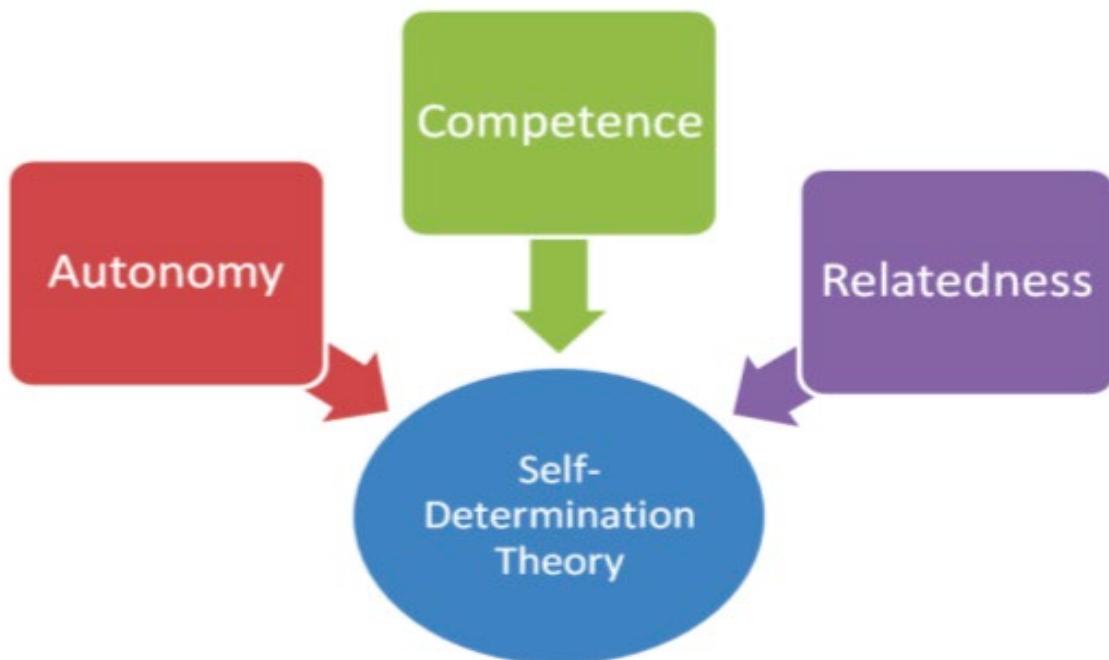
and refining their enterprise models to enhance person delight and maximize profitability. With the VRIN framework, these platforms make certain that their sources continue to be valuable, rare, inimitable, and non-substitutable, thereby developing a sustainable competitive benefit in digital fitness engagement.

2.3 The Self Determination Theory (SDT)

Self Dermination Theory (SDT) is a psychological framework developed by Deci and Ryan (1985) that focuses on human motivation and behavior alternate. The idea indicates that people interact in sports even as their essential mental goals autonomy, competence, and relatedness are met.That is not like traditional motivation models that depend on external rewards, SDT emphasizes intrinsic motivation as a driving force at the back of sustained behavior.

Within the context of digital fitness platforms like Facebook and Fitbit, SDT gives insights into how these platforms inspire users to keep home workout routines. Through fostering autonomy through flexible exercise alternatives, competence with progress monitoring, and relatedness through live fitness communities, these platforms enhance long time individual engagement.

Figure 2 The Self Determination Theory Model

Note: Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. American Psychologist, 55(1), 68–78. https://doi.org/10.1037/0003-066x.55.1.68

Autonomy

Freedom to pick and customise workouts. It refers to an individual's ability to make self-directed choices without external pressure.

Competence

Skill development and overall performance tracking. It refers to the need to experience success and be effective in appearing an activity.

Relatedness

Social Connection and community guide. Relatedness is the sense of feel that linked with others and is part of a network.

Key Variables of SDT in Digital Fitness Platforms

Revenue generation

- Subscription based get entry to to distinctive workout content.
- Advertising revenue from health-related brands.
- Paid fitness groups that offer top rate workout programs.

Brands Partnerships for Fitness Promotion

- Collaborations with fitness brands for product placements.
- Subsidized online exercise programs to interaction users.

Information-Based Strategies for Engagement

- AI based exercising tips based on user conduct.
- Personalized engagement notifications to hold participation.

Challenges in the Application of SDT to Digital Fitness

- Despite its effectiveness in explaining motivation, SDT faces demanding situations

when it is applied to digital fitness:
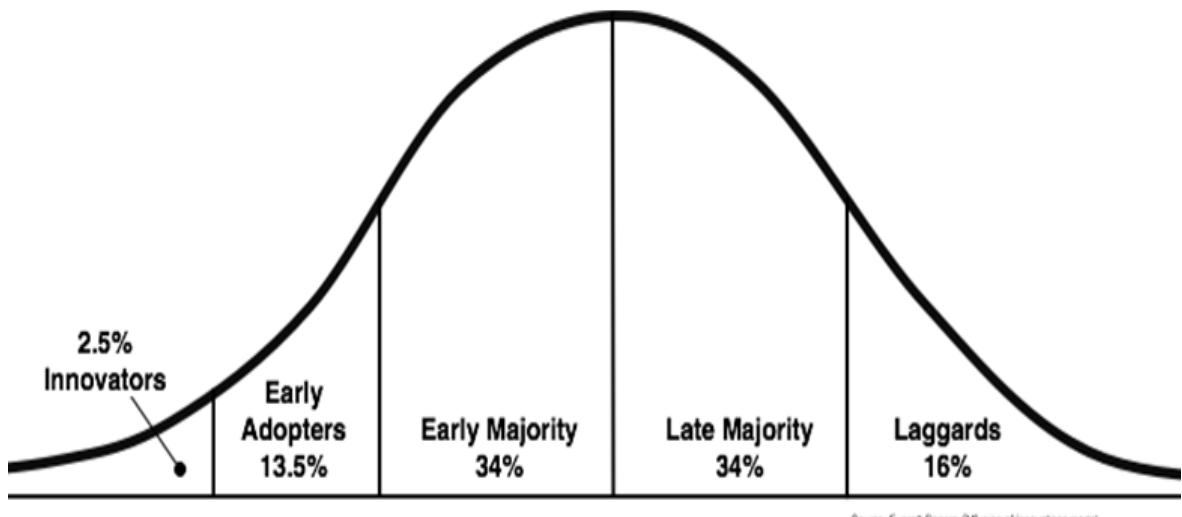
- Users may face difficulty with intrinsic motivation if external rewards are overemphasized.

- Privacy issues concerning records series from fitness monitoring tools.

- Converting user possibilities require non-stop content updates and innovation.

- To deal with these challenges, platforms ought to balance intrinsic and extrinsic motivators even as ensuring data safety and customized person engagement strategies.

In conclusion, the Theory of Self Determination (SDT) offers a comprehensive framework for expertise user motivation in digital fitness engagement. Through fostering autonomy, competence, and relatedness, platforms like Facebook and Fitbit create an environment in which users experience encouraged to keep long term home workouts. The application of SDT in digital fitness platforms motivates business strategies consisting of sales generation through subscriptions, brand collaborations, and AI driven engagement models. As digital fitness continues to adapt, SDT remains a valuable tool for ensuring person dedication and sustainable engagement.

2.4 The Diffusion of Innovations Theory

The Diffusion of Innovations Theory, formulated by E.M. Rogers back in 1962, is a theory plans how, why, and at what rate of innovation diffuses across cultures. It is central to the study of the process of social change and has been used in numerous disciplines such as marketing, health promotion, and education

Figure 3 The Diffusion of Innovations Theory

Note: Orbach, Y., & Fruchter, G. E. (2017). The Role of Seeding in Multi-Stage vs. Two-Stage Diffusion Models. Modern Economy, 08(03), 458–474. https://doi.org/10.4236/me.2017.83034
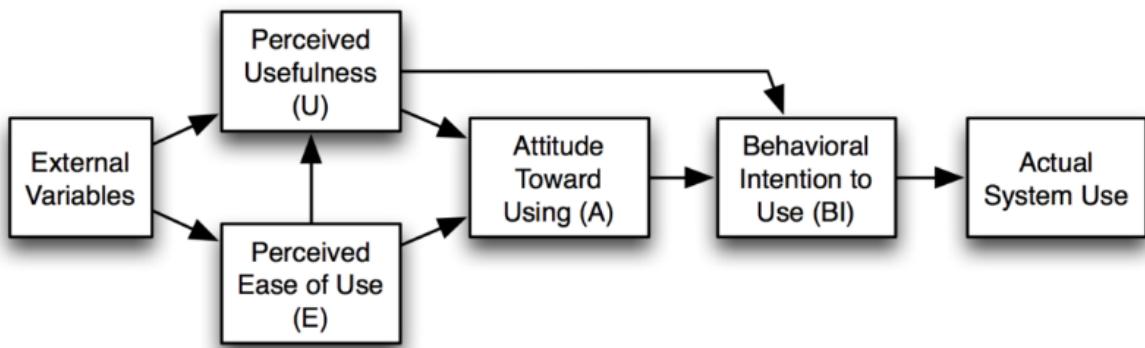
Key Concepts

The theory facilities on several key standards that are important to expertise how improvements are followed. Innovation refers to a concept, practice, or item this is perceived as new by using an individual or some other unit of adoption. Verbal exchange channels are the means through which records approximately the innovation is transmitted to members of a social system. The social system itself is composed of interconnected devices that coordinate their choice-making tactics to gain a commonplace goal. Ultimately, time performs a critical position within the adoption technique, representing the length it takes for an innovation to be embraced through a particular percentage of the social system.

2.5 The Technology Acceptance Model (TAM)

Fred Davis (1980), The Technology Acceptance Model (TAM), which is a widely identified theoretical framework used to investigate and explain factors influencing the recognition and adoption of generation. TAM presents two primary element that is Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) determine an individual intentation that apply to selected technology.

Figure 4 Technology Acceptance Model (TAM)

Note: Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 319. https://doi.org/10.2307/249008

In the context of this thesis, TAM offers a valuable framework for understanding how adults in Finland adopt and engage with digital fitness platforms such as Fitbit and Facebook fitness groups for home workouts. That analyzes user perceptions for these platforms such as usefulness and simplicity of use. We are able to decide their effect on long term fitness dedication and engagement.

Perceived Usefulness (PU) in digital fitness refers to the extent to which customers accept as true with that the usage of Fitbit or Facebook fitness groups will boost their exercise efficiency, assist them in progress, and offer motivation through social interactions. If customers apprehend those features as beneficial in improving their fitness and retaining consistency, they are much more likely to undertake and integrate them into their day by day workouts.

Perceived Ease of Use (PEOU) relates to how easy and user friendly those systems are. If individuals discover the fitness monitoring capabilities, virtual exercising programs, and network interactions on Fitbit or Facebook clean to apply, they may be more likely to interact with them frequently. On other side, if the features are perceived as complex or difficult to navigate, user may additionally hesitate to include them into their fitness habits.

In the context of motivation and engagement the Technology Acceptance Model provide an explanation for how Behavioral Intention (BIU) and Actual System use have an effect on long term user retention in digital fitness platforms. If users Positive Attitude (ATU) increases in

the direction of these technology, they're much more likely to combine them into their every day exercising workouts.

For example, if a digital platform presents personalised AI driven workout tips, gamification factors, and social motivation throught online challenges, users can also understand it as both beneficial and easy to use, increasing their likelihood of adopting and continuously using the platform. Conversely, a lack of intuitive interface design, overwhelming features, or privacy worries may act as barriers to adoption.

TAM has evolved into TAM 2 and TAM 3, incorporating extra factors along with social affect, perceived enjoyment, and perceived behavioral manage, all of which might be essential in digital fitness adoption. For example, social impact plays a key role in fitness communities, in which peer motivation, online competitions, and shared progress tracking encourage better engagement levels.

Despite its effectiveness, TAM has been criticized for focusing too heavily on decision making power while overlooking outside environmental and cultural influences. In digital fitness, elements like privacy issues, subscription prices, and accessibility of fitness technology in different demographics might also substantially impact technology promotion however are not explicitly addressed by means of TAM.

In conclusion, TAM serves as a beneficial model for analyzing and predicting the adoption of digital fitness technologies. For understanding how perceived usefulness and simplicity of use influence Finnish adults' engagement with Fitbit and Facebook fitness platforms, digital fitness companies can refine their user enjoy, introduce intuitive functions, and broaden techniques to maintain long term adoption. While the model has barriers, it stays a valuable framework for directing generation adoption within the fitness industry.
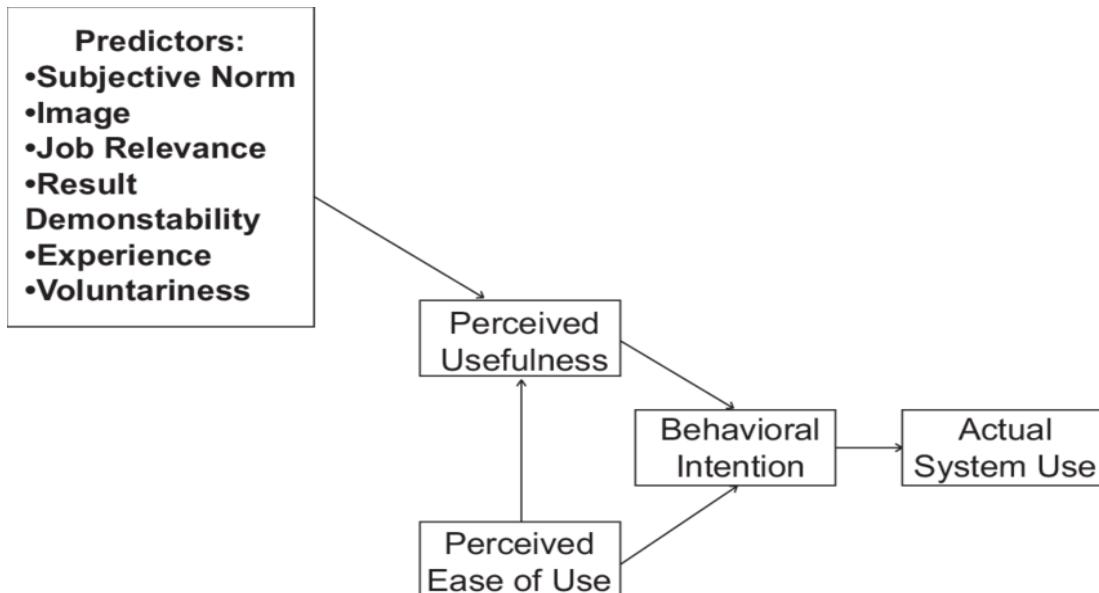
2.6 Technology Acceptance Model 2 (TAM2)

Venkatesh and Davis (2000) presented TAM 2 that is the Technology Acceptance Model (TAM), by incorporating extra constructs that specify why individuals adopt and regular use technology. The two key enhancements in TAM2 are the social effect on manner and the cognitive instrumental

method, each of which shape an individual decision to include new generation.

TAM2 retains the fundamental constructs of Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) at the same time as introducing new variables that have an impact on technology

Figure 5 Technology Acceptance Model 2 (TAM2)

Note: Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: four longitudinal field studies. Management Science, 46(2), 186–204. https://doi.org/10.1287/mnsc.46.2.186.11926

Subjective Norm: The pressure user feels from peers, family, or social communities to undertake digital fitness system. In a socially driven fitness network, followers or influencers use Fitbit or take part in Facebook fitness challenges can also encourage new users to interaction with these technologies.

Image: The perceived prestige or reputation enhancement associated with using a health platform. For example, sharing exercising achievements, leaderboard rankings, and fitness milestones can enhance a person's social identification, reinforcing their persevered use of fitness monitoring equipment.

Job Relevance: The degree to which users believe that a fitness platform aligns with their private fitness and well-being desires. If Fitbit or Facebook fitness groups are seen as relevant for weight loss, muscle constructing, or fitness monitoring, users are more likely to

undertake and continue the usage of them.

Output Quality: The extent to which users understand the accuracy and reliability of fitness statistics, together with step counts, heart fee tracking, and workout overall performance monitoring. If users trust quality insights show with fitness structures, they are extra willing to depend on them.

Result Demonstrability: The capability to peer measurable effects from using a generation. While USER experience visible fitness improvements, such as weight loss or improved patience, they may be much more likely to persist in the usage of DIGITAL fitness systems.

Experience: Previous exposure to comparable technology affects ease of adoption. Users acquainted with fitness apps, wearable gadgets, or online workout programs may additionally adapt faster to new fitness platforms.

Voluntariness of Use: Wether or not users adopt a technology through preference or due to external pressures. Some people might also include fitness platforms because of interest, while others may feel pressured by using societal fitness traits.

Within the context of this study, the TAM2 model give an explanation for how adults in Finland adopt and maintain engagement with digital fitness platforms like Fitbit and Facebook fitness communities for home workouts. With incorporating perceived relevance, and output standard, TAM2 provides a broader attitude on user behavior beyond just perceived usefulness and ease of use.

For example, TAM2 can assist why users are drawn to fitness structures beyond their practical advantages. The presence of social norms, influencer effect, and peer motivation plays a role in driving fitness technology adoption. Additionally, trust in output great and demonstrable results reinforces persisted utilization, making sure that customers stay devoted to their fitness desires.
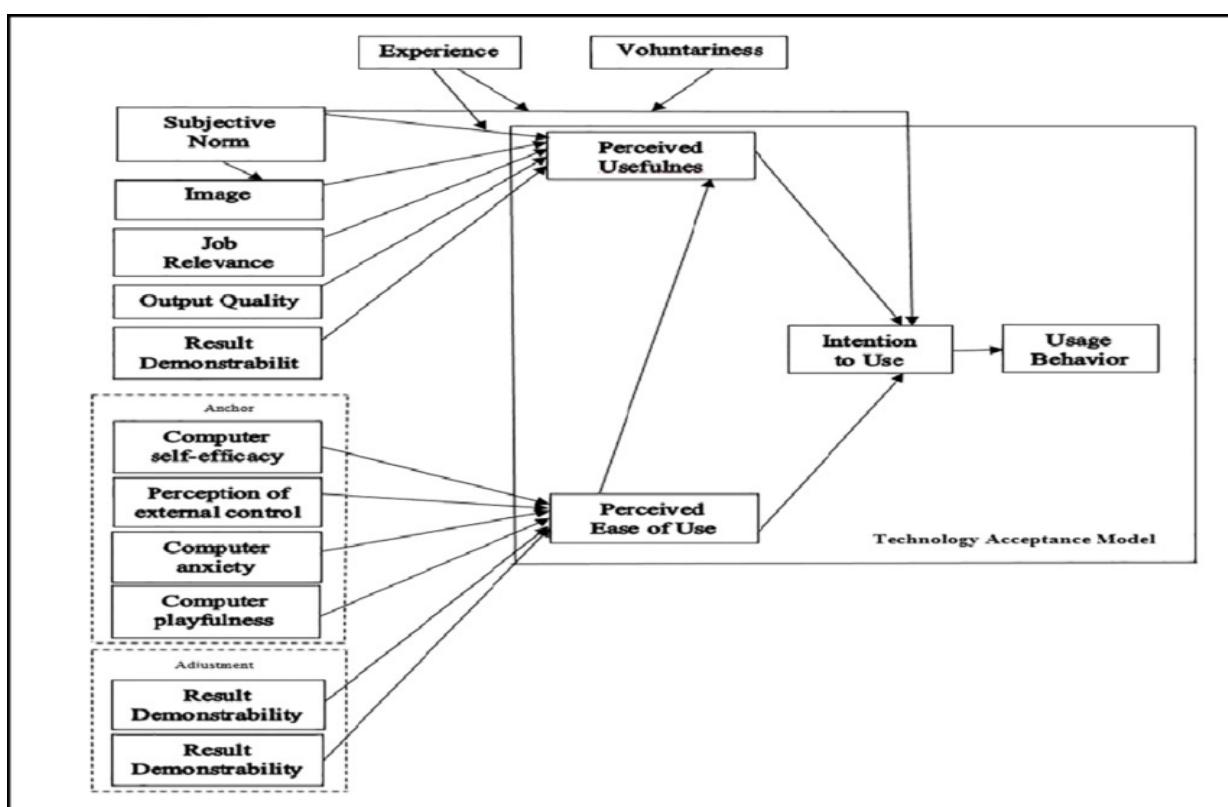
In conclusion, TAM2, this thesis gives a deeper information of technology adoption in digital fitness. Fitness technology developers can use insights from subjective norms, perceived

picture, and output to refine user engagement techniques. By spotting the social and cognitive elements influencing technology popularity, fitness structures can enhance person revel in, increase adoption rates, and maintain long term engagement among Finnish adults.

2.7 Technology Acceptance Model 3 (TAM3)

Venkatesh and Bala (2008) presented the Technology Acceptance Model 3 (TAM3), which prolonged version of TAM that incorporates extra constructs influencing technology popularity and use. This model serves as a complete framework for the adoption of digital fitness platforms amongst Finnish adults. TAM3 enables to discover key predictors that drive engagement with fitness applications, wearables, and online fitness groups.

Figure 6 Technology Acceptance Model 3 (TAM 3)

Note: Venkatesh, V., & Bala, H. (2008). Technology Acceptance Model 3 and a research Agenda on interventions. Decision Sciences, 39(2), 273–315.
https://doi.org/10.1111/j.1540-5915.2008.00192.x

TAM3 builds upon the foundational Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) constructs even as integrating extra variables, along with:

Perceived enjoyment is a degree to which users find a health platform a motivation and engaging. The features which include gamified challanging situations, digital exercise classes, and leaderboard competitions enhance user motivation and inspire persisted engagement. Output quality a self assurance user has within the accuracy and reliability of statistics from fitness apps or wearables. If user accept as true with the calorie tracking, workout tips, or heart rate tracking, they're much more likely to maintain utilization.

Result demonstrability the quantity to which users can see and degree their progress the usage of a digital fitness platform. Metrics inclusive of step counts, weight reduction development, and performance comparisons encourage long term engagement. The social prestige or popularity enhancement related to the use of a fitness platform. User may be inspired through how fitness achievements are shared on social media or identified inside on-line groups. A person's confidence of their ability to navigate digital fitness platforms. These comfortable with technology may additionally locate it easier to explore superior functions consisting of AI based health plans or digital reality workouts.

The impact of friends, influencers, or fitness communities in encouraging technology adoption. Seeing family friends or fashions models use fitness monitoring apps or join digital workout agencies can inspire new customers to adopt comparable technology. The supply of valuable resource, together with internet get entry to, compatible gadgets, and user-friendly interfaces, which impact the adoption and value of online fitness platforms.

In the context of this thesis, TAM3 is useful in exploring how adults in Finland adopt and make use of digital fitness systems. The model allows to pick out the important thing motivational drivers behind generation recognition, emphasizing the role of perceived amusement, result demonstrability, and social impact in encouraging sustained engagement.

For example, if perceived enjoyment and result demonstrability are massive predictors of health platform adoption, developers can incorporate interactive demanding situations, actual-time development tracking, and social sharing capabilities to growth engagement. Likewise, if users struggle with computer self efficacy, offering intuitive onboarding tactics and user-friendly interfaces can enhance generation reputation.

In conclusion, the use of TAM3 as a theoretical framework, this thesis offers valuable insights into the adoption and engagement styles of adults in Finland with digital fitness platforms. The model gives a complete attitude on how users engage with fitness technology, highlighting social, cognitive, and technological elements that have an impact on their conduct. The findings of this look at have large implications for fitness app builders.

3 Implementation

3.1 The Impact of Technology on Physical Activity

This thesis seeks to explain how the advancement in technology has impact digital fitness and what is its role to maintain regular motivation. Technology promotes digital fitness platform for physical activities, and it enhances user engagement, motivation, and long-term adherence to fitness goals. At the end, this literature evaluate seeks to look at the different programs of digital fitness, with a selected focus on user engagement, motivation, and the effectiveness of these platforms in Finland.

In digital fitness, users, app developers, and healthcare professionals are three primary groups which are most tormented by technological advancements. Users get recommendations from AI based coaching, biometric monitoring, and virtual health communities that increase social assist. Developers continuously innovate by integrating device studying algorithms that tailor exercise recommendations, while healthcare experts leverage digital fitness equipment for preventive care and rehabilitation. The World Health Organization (WHO) record, worldwide ranges of physical state of being inactive are projected to rise from 31% in 2022 to 35% by means of 2030 if this trend remains same, indicating that the target of 15% relative reductions in physical activity by way of 2030 may not be met (Bull et al., 2024). The use of wearable devices, fitness programs, and AI-driven analytics, generation has considerably enhanced users' fitness experiences. For example, smartwatches and fitness trackers like Fitbit and Apple Watch utilize advanced sensors to monitor heart rate, sleeping behaviour, and step count, allowing user to make recommendations based on fitness solutions (Shameli et al., 2017). These innovated ways guide the assessment of progress, adherence to exercises, and level of motivation.

Research has proven that the frequency of digital interactions influences user motivation and

engagement. Kononova et al. (2019 investigated older adults' perceptions and usage of wearable activity trackers at diverse tiers from no use for long term, to discover elements influencing sustained engagement and reasons for discontinuation.

Each transition to new digital fitness tool should recollect user accessibility, price, and effectiveness. Therefore, it is critical that health agencies oversee technological advancements to make sure inclusivity and effectiveness in promoting physical activity (WHO, 2020).

Technological solutions in digital health programs indirectly influence motivation and adherence through behavioral insights, social engagement, and real-time overall performance monitoring. At the same time as generation complements engagement, research shows that immoderate reliance on digital fitness tools may additionally lower intrinsic motivation, necessitating a stability among digital and traditional workout strategies (Deci & Ryan, 2000). Literature evaluation indicates that gamification features, which includes rewards, streaks, and social competitions, considerably enhance exercise adherence. But limited research has explored how these elements impact long term on motivation and well being (Cai & Li, 2023).

Wearable fitness technology provides real-time physiological feedback and adapting workout strategies with use of user statistics. But research on the effect of wearable technology on fitness results stays inconclusive. Kelley (2014) observed that at the same time as wearable fitness devices provide valuable monitoring competencies, their effectiveness in increasing more healthy consequences depends on high sustained user engagement. The examine, which analyzed data from Claremont McKenna college students, revealed that wearable technology had no tremendous effect on user self suggested health or BMI tiers. This indicates that even as these devices may provide beneficial fitness insights, they do not always result in improved fitness consequences with out regular use and behavioral adjustments (Kelley, 2014).

The adoption of technology in digital fitness monitoring enhances personal responsibility and engagement. Digital fitness platforms like MyFitnessPal and Strava offer users with actual-time comments, development tracking, and social challenges that growth motivation (Tate et al., 2015). These devices a growing trend of digital assistance in health as individuals increasingly more depend on digital education and AI-driven remarks.

Moreover, digital fitness technology has converted engagement, pushing users to connect with fitness communities through Facebook fitness groups and wearable devices. Social networking with peer inside fitness, which includes organizational challenges and digital education, has contributed to higher levels of motivation and adherence (Carter & Alexander, 2021).

Research also highlights the effectiveness of fitness applications in changing user behavior toward heath. Rabbi et al., (2015) tested user reports of mobile applications and located that smartphone SMS reminders are a powerful device for promoting fitness behaviors. The research discovered that users liked fitness apps with context awareness, visuals, and tracking tools. That consists of capabilities including location tracking, choice, and network awareness. Data visualization, particularly 2d charts and 3-D perspectives, turned into user experience. Tracking features including the Calorie Tracker app, which display units a consumer's food regimen, weight modifications, and exercise frequency, were also exceedingly favored due to their comfort and ease of use Shameli et al., 2017).

3.2 Technology Implications and User Engagement in Physical Activities

People in Western countries are more interested in their personal health and well-being, hence, the use of wearable technology (WT) and mobile health applications has grown. Many people regard WT as a tool for enhancing health and well-being, as well as a method to learn about the body and oneself in general (Lupton, 2020). Advances in technology have taken over the work of man and made life very easy. Machines now perform most of the physical work that men used to do. This has reduced his involvement in physically exhausting activities

Several research have looked into how digital technology like Fitbit and social media sites like Facebook would possibly assist with physical activity. Miropolsky et al. (2020) investigated the implementation of a mobile health (mHealth) intervention that included Fitbit and Facebook to promote physical interest amongst adolescent and young adult cancer survivors. Their findings indicate that virtual engagement will increase motivation and involvement in physical activity by providing interactive and social guide aspects. This observe emphasizes the capacity of digital platforms to encourage persistent for physical activity. In a similar vein, Hong et al. (2021) looked into how mobile health tactics, such as Facebook and Fitbit, could enhance the quality of life and encourage physical activity among Korean children who had survived cancer. This study examined

how mHealth treatments can increase levels of physical activity, highlighting the value of digital tools in encouraging better lives among populations of cancer survivors.

A examine of Rebar et al. (2021), discovered that social media interventions can undoubtedly influence physical interest and nutritional behaviors, leading to extended physical activity levels and healthier dietary selections. These interventions offer utilitarian, hedonic, social, and mental support, which collectively enhance consumer engagement and motivation. Through supplying a mixture of sensible tools and emotional encouragement, these interventions create an environment conducive to sustained behavior trade in customers (Rebar et al., 2021).

Similarly, the importance of online fitness communities became particularly evident during the COVID-19 pandemic. Weller (2020) highlighted that such communities foster a sence of belonging, commitment, and help that are vital for preserving physical activity performance for the duration of intervals of social isolation. These structures create opportunities for individuals to interact in digital teamwork and gain motivation from their peers, thereby facilitating long term adherence to fitness even if conventional in-individual interactions are restrained (Weller, 2020).

Moreover, platforms like HealthUnlocked host numerous fitness-related communities, empowering users through peer support and shared experiences. These communities inspire participants to interact with one another, fostering a deeper connection to their fitness goals through permitting users to sign up for various groups related to their fitness, HealthUnlocked enhances motivation and reinforces the significance of staying physically energetic (HealthUnlocked, n.d.).

Collectively, these studies recommend that engagement with fitness associated content and participation in online fitness communities can rainforce individuals' dedication to daily exercising. These platforms not pnly provide accountability however also make contributions to deeper sense of belonging. however, it's miles critical to understand that excessive publicity to performance comparisons and focused advertisements on these platforms can also from time-to-time result in discouragement or the improvement of unrealistic fitness expectations, negatively impacting users' motivation (Weller, 2020). Fitness companies and health groups always innovate to promote engagement through incorporating features which include gamification, actual-time monitoring, and interactive intention putting mechanisms in their applications. These techniques' purpose to enhance person experience, inspire adherence, and foster sustainable fitness habits

Platforms like HeiaHeia similarly exemplify the role of social networks in promoting physical acitivity. HeiaHeia is a social health utility that lets in users to log activities, set personal goals, and cheer on friends. Available in over 10 languages, it has user in extra than 150 international locations, representing all age groups.

Latest research suggests that digital technologies, along with wearable health trackers and mobile applications, play a pivotal role in promoting fitness and preventing disease among older adults. These technologies facilitate active engagement through real time tracking of physical activity, offering social help, and fostering self monitoring behaviors (De Santis et al., 2023). Wearable devices, which include Fitbit, not only track fitness metrics however also enable social interactions and goal reinforcement through features like leaderboards and organization challenges, which have been shown to improve adherence to physical activity regimes (Mergenthal et al., 2023).

Moreover, the integration of social help elements in health interventions has tested to significantly lessen dropout costs in fitness programs. Online fitness groups, such as the ones on platforms like facebook, provide a experience of accountability and motivation, that's essential for preserving long term activity. However, more awareness on performance comparisons and unrealistic expectations, exacerbated by means of constant publicity to fitness-associated advertisements and social media metrics, might also have negative effects on mental fitness (Thompson et al., 2021).

The integration of digital fitness platforms and wearable fitness devices has extensively motivated people' motivation to have interaction in physical activity. Social media platforms which include Facebook, Instagram, and fitness apps allow user to share their workout milestones, fostering motivation through social validation and gamification factors. According to Spargo-Ryan (2024), those who share their fitness progress online frequently enjoy improved self assurance, a more potent sense of motive, and enhance well being. This aligns with current studies that indicates social accountability and positive reinforcement contribute to sustained workout adherence (Kraemer & Ratamess, 2004).

Gamification elements, along with challenges, leaderboards, and achievement badges, further enhance motivation by using offering customers tangible goals and recognition for their progress. Spargo-Ryan (2024) notes that seeing others celebrate their fitness achievements fosters a positive comments loop, encouraging individuals to stay consistent with their exercises. This form of virtual engagement creates a sense of network, which may be useful for individuls who may also otherwise lack social assist in their health journey (Deci & Ryan, 2000).

Furthermore, the emotional impact of sharing fitness milestones online must no longer be ignored. Public acknowledgment of individual health adventure frequently outcomes in encouragement and validation from peers, reinforcing long term adherence to workout regimens. Spargo-Ryan (2024) highlights how these interactions provide her with a renewed sense of motivation and commitment to her fitness desires. This is regular with findings in behavioral psychology, which suggest that outside validation and intrinsic motivation work synergistically to preserve long-term behavioral alternate (Teixeira et al., 2012).

The study of Olson et al. (2019) examined the impact of wearable devices on physical and health effects amongst college students with disabilities. The researchers provided individuals with Fitbit devices to monitor their activity over a twelve-week length and found that the usage of those devices contributed to upgrades in cardiovascular fitness. However, this study did not specially explore the role of social media platforms, inclusive of Facebook in improving engagement with fitness technology. At the same time as wearable devices like Fitbit can support physical progress tracking, extra research is wanted to assess how integrating these devices t with social media affects motivation and long-term adherence to workout routines (Olson et al., 2019).

Push notifications, when integrated with gamification and motivational affordances, play a pivotal role in attractive users and enhancing their dedication to fitness programs. Studies shows that the timing, wording, and personalization of these notifications are vital in motivating users to remain active and engaged. The effectiveness of these notifications relies on information user conduct and crafting notifications that encourage sustained interplay with the app. Specifically, push notifications can reinforce behavior through personalised and well-timed messages, thereby increasing long term person engagement in mobile applications (Hayduk & John Lock, 2023).

Moreover, Artificial Intelligence (AI) powered chatbots have emerged as valuable tool in promoting fitness behaviour change. These chatbots offer personalised tips and real-time comments, providing user tailored advice that aligns with their fitness goals. Although the impact of AI-powered chatbots varies relying on character consumer options, they've validated to be powerful in enhancing engagement and motivation. Through offering personalised and interactive assist, AI chatbots can assist user navigate their health trips, ensuring an extra customized and attractive enjoy (Aggarwal et al., 2023).

Additionally, in-app purchases, subscription models, and premium content function sustainable strategies for motivating users and keeping long term engagement. These monetization techniques

not only allow fitness application to generate sales but also increse users' commitment with the aid of fostering a sense of personal investment and psychological ownership. Studies highlights that once user make investments financially in an app, they are much more likely to stay dedicated to their health desires, as they perceive a higher value in service provided. This sense of ownership, mixed with the continued provision of extra features, contributes to sustained user engagement and health development (Gujral & Kumari, 2023).

In the end, digital platforms and wearable health devices play an important role in shaping fitness motivation through social engagement and gamification. The ability to share progress, receive guide, and take part in challenging situations complements a person's commitment to physical activity, making this technological advancement is valuable for long term fitness and well being.

3.3 Digital Coaching and Development Tracking for User Engagement

In the realm of Health Behavior Change Support Systems (HBCSS), virtual training and improvement monitoring have emerged as pivotal strategies to enhance user engagement and promote sustained behavior change. Alahäivälä and Oinas-Kukkonen (2016) conducted a scientific evaluation of gamified HBCSS literature, emphasizing the significance of tailoring persuasive strategies to person person contexts to optimize engagement and efficacy.

Digital education and progress tracking increase user engagement through Behavioral Change Support System (BCSS), which utilize facts and communique technology, internet platforms, and gamified environments to facilitate behavioral alternate. BCSS is grounded in behavioral exchange theories, inclusive of the principle of planned behaviour, which links attitudes, intentions, and ability, and the Fogg Behavior Model, which emphasizes motivation, ability, and activates as key elements in behavior change. These models stress the significance of information how people' ideals and motivations have an impact on their capability to undertake new behaviors. Advance behaviour to know a concept similarly highlights the function of environmental interactions in behaviour adoption. By way of acknowledging these environmental elements, BCSS may be designed to target no longer only person motivations but additionally contextual and environmental influences that can guide or preclude behavior trade.

These platforms integrate gamification and metacognitive techniques to enable users to enhance their progress, perceive behavioral resistance, and break desires into manageable steps. Advanced

BCSS employ system learning to be expecting user behaviour, at the same time as visualization equipment like overall performance graphs, checklists, and IoT tools tracking and comments insights. Visualization tool also support user to share their progress in actual time, motivating them to keep engaging with the system. Social collaboration features help user to help each different, with specialists imparting guidance and modifying plans as needed. This collaborative issue fosters a sense of community, which has been shown to increse motivation and provide emotional support all through the behavior trade procedure. By way of incorporating behavioral trade theories, gamification, personalised comments, and AI driven tracking, BCSS notably complements virtual education and development tracking, fostering long-term user engagement and behavioral transformation.

Improvement tracking entails monitoring user development over time, imparting insights into their behaviors, and identifying regions for improvement. This continue comments loop is essential for preserving motivation and adherence to health interventions. In a examine that specialize in young diabetes sufferers, a pervasive education and gamification platform turned into designed to combine academic game playing with tracking and motivational feedback. The platform's design, which incorporated ideas from healthcare, persuasive device layout, and extreme sport design, validated feasibility in scientific exercise, highlighting the importance of integrating tracking equipment with personalized remarks to help self-control (Kelders et al., 2018). This technique, combining academic gaming with actual time comments, has the ability to increase user compliance and engagement through creating surroundings where gaining knowledge of and development are both enjoyable and actionable.

The integration of gamification factors including points, badges, and leaderboards inside digital education systems has been shown to increase user engagement by making health associated sports extra exciting and worthwhile. Older adults, especially, enjoy the social elements of gamification, including leaderboards and peer popularity, which inspire endured participation in health control. Moreover, a five-month person engagement examine on promoting occupational fitness through gamification and e-coaching discovered that customized desires and privateness-included social competition can enhance way of life behaviors, although long term engagement may additionally require bidirectional communication between users and coaches (Hamari et al., 2021). This shows that personalized interactions, in which users feel supported and understood, are critical for preserving long term motivation in fitness behavior change programs.

Alahäivälä and Oinas-Kukkonen's (2016) evaluation underscores the necessity of information the contexts in which persuasive strategies are implemented inside gamified HBCSS. They argue that aligning these strategies with users' traits, options, and environments is critical for maximizing engagement and promoting sustainable behaviour change. This perspective is supported by the development of a gamified behavior change support device aimed at growing fruit and vegetable consumption, which highlighted the importance of tailoring persuasive features to extraordinary segments of the machine to effectively motivate users (Manninen & Tikka, 2018). Such contextual tailoring can consist of adjusting the content, issue level, or rewards based on customers' development, preferences, and readiness for change.

Advanced analytics and artificial intelligence (AI) are transforming digital education systems with the support of providing deeper insights into consumer overall performance and development. By way of leveraging AI-driven algorithms, these platforms can examine vast quantities of information collected from users' interactions, permitting them to uncover hidden styles and traits that may not be right now obvious. AI also can adapt to the consumer's alternatives and learning system, ensuring that the device offers content material in a manner that maximizes the person's learning potential and motivation. AI models can predict future behavior primarily based on ancient records, presenting personalized hints for improvement. For example, AI can perceive a worker's strengths and regions of improvement, then tailor gaining knowledge of substances or demanding situations to cope with unique desires. This capability not only enhance the learning experience but also lets in for real-time modifications, ensuring that users remain engaged and constantly development at their top-of-the-line pace (Anderson & Lunsford, 2022). The dynamic adaptability of AI-driven system guarantees that customers aren't faced with content that is too clean or too tough, that may result in disengagement.

A main example of AI integration in virtual coaching is Centrical's platform, which combines gamification, microlearning, overall performance analytics, and AI insights to force employee engagement and productiveness. Centrical's use of AI-powered analytics goes past simple information tracking by providing actionable insights, along with predicting capability talent gaps and suggesting timely interventions. This predictive functionality lets in groups to proactively address skill shortages or performance problems, ensuring that personnel are constantly growing their abilities This dynamic method to learning ensures that employees acquire a customised revel

in that adapts as they grow, promoting higher performance and better stages of motivation. As these platforms hold to evolve, the combination of AI with overall performance analytics will certainly play a primary function in shaping the destiny of virtual coaching, making gaining knowledge of greater intuitive, handy, and impactful (Centric, 2024).

The future of virtual education and development tracking is increasingly formed by using rising technologies like digital reality (VR) and augmented reality (AR), which could offer immersive and interactive gaining knowledge of experiences. VR and AR technology permit customers to engage in simulated environments wherein they can practice abilities in a safe, managed area while receiving actual-time comments. Yadav (2019) discusses how VR and AR can significantly enhance the valuable experience through growing sensible simulations for skill-constructing activities such as group collaboration or selection-making. These immersive technologies have the ability to revolutionize virtual education through providing well personalized that traditional methods lack. This immersive experience could also lessen the cognitive load related to conventional getting to know, as customers are capable of practice and test in environments that carefully replicate actual-global scenarios. The capability to have interaction with virtual environments allows customers to exercise and refine their skills in approaches which might be high interactive and impactful, making digital education but also extra effective (Yadav, 2019).

Further, integrating virtual coaching system with fitness monitoring systems provides an opportunity to create holistic well-being solutions. Fitness and wellness coaching can address each physical and intellectual factors of user improvement by means of combining insights from fitness metrics including heart rate, physical activity, and sleep with customized training. According to Perlman and Abu Dabrh (2020), such integrated methods are mainly treasured in healthcare settings, wherein they help deal with the various needs of patients, providing a more comprehensive view of fitness and well-being. By using monitoring fitness statistics alongside coaching progress, these platforms can provide holistic support that extends past simply physical health to mental and emotional well-being. By monitoring fitness statistics along coaching development, these platforms can provide user with tailored comments to improve their universal well being. But, even as gamification factors in virtual education can increase engagement, there may be a want to make certain they do no longer oversimplify complex challenges. As Perlman and Abu Dabrh (2020) point out, it's critical to keep a stability to keep away from decreasing difficult health or professional troubles to overly simplistic solutions. Achieving this balance need for a thoughtful design

technique, ensuring that at the same time as users remain engaged, they may be also recommended to confront the complexities in their fitness challenges in a meaningful and sensible manner. Consequently, considerate integration of these technologies might be vital to create effective, nuanced, and customized coaching studies.

3.4 Barriers and Facilitators in Adopting Facebook and Fitbit for Physical Activity

The integration of social media platforms together with Facebook with wearable health technologies like Fitbit has revolutionized the way people approch physical activity. These platforms allow user to check their fitness development and have interaction with a network which could offer help and motivation. However, in spite their benefits, numerous obstacles avoid the considerable adoption of Facebook and Fitbit for physical activity monitoring. These obstacles, along side certain facilitators, are critical in expertise the efficacy of these technology in encouraging fitness behaviors. This section explores the numerous challenging situations and enablers that affect the adoption of Facebook and Fitbit that specialize in factors such as usability, social affect, motivation, privacy concerns, and accessibility. The adoption of fitness monitoring technologies, which includes wearable devices together with Fitbit and social media platforms like Facebook, has been hindered regarding privacy and security protection. User express apprehension about how their sensitive fitness data, encompassing physical activity, sleep pattern, and location information, is saved and shared. Such issues have an effect on their willingness to use these technology and share personal information.

Privacy issues remain a critical impediment to the adoption and sustained use of fitness monitoring technologies. According to Pinchot and Cellante (2020), a survey of 325 activity tracker users highlighted that privacy concern effect users' willingness to share fitness information. The study found that people are particularly worry with third party access and negative use of the fitness information. User fear that their information may be accessed by way of unauthorized entities, used for targeted marketing, or even exploited with the aid of insurance companies to primarily based on fitness metrics. Such concerns create a reluctance amongst individuals to adopt or continue the usage of fitness tracking applications (Pinchot & Cellante, 2020).

A case study on Fitbit devices in addition, underscores these concerns. Orlosky et al. (2019) examined the Fitbit Blaze and evaluated its data protection protocols. That discovered

vulnerabilities in Fitbit's data handling and transmission approaches, exposing user to risk such as hacking and unauthorized access. Fitbit collects and transmits a wealth of sensitive facts, such as progress, heart rate, and sleeping pattern. The researchers found that while Fitbit employs encryption for statistics transmission, potential loopholes exist that would support cybercriminals to intercept or manipulate person information (Orlosky et al., 2019). This finding highlights the importance of strengthening security measures to user trust in wearable fitness technologies.

Concerns about privacy have an effect on user decision regarding fitness monitoring technologies. Fietkiewicz and Ilhan (2020) explored exceptional user subgroups and their attitudes closer to statistics privateness. The study at categorised individuals into user, former user, and non-users of health tracking applications. The findings revealed that privacy concerns are a main deterrent for both adopters and those who have discontinued the use of such technology. Users worry approximately their information being saved indefinitely, shared without explicit consent, or analyzed for industrial functions (Fietkiewicz & Ilhan, 2020). Consequently, many individuals choose to both refrain from the use of these technology or restriction the facts they offer to mitigate privacy risks.

The integration of Fitbit devices with platform like Facebook for monitoring physical activity can encounter numerous technical challenging situations, which include synchronization troubles, tool compatibility issues, and inconsistent user experience. Users have reported problems in linking their Fitbit account linked with Facebook, often receiving errors during process. For an example, some users have been not able to attach their Fitbit devices to Facebook to add friends, in spite of following endorsed troubleshooting steps (Fitbit community, 2019).

Synchronization problems also are prevalent, with customers experiencing delays or failure while syncing data between their Fitbit tool and the corresponding mobile application. These problems can stem from software incompatibilities or current updates that disrupt the syncing technique. For example, after sure updates, users have mentioned that their Fitbit devices no longer sync properly, requiring multiple tries or additional troubleshooting steps (Reddit, 2023).

Device compatibility stays a significant subject, especially while users transfer to new smartphones or operating systems. In some cases, the Fitbit app fails to maintain a solid connection, leading to repeated login activates or unsuccessful synchronization attempts. Discussions amongst users

spotlight that shifting to a new cellphone can bring about the Fitbit app now not staying logged in, thereby hindering the syncing technique (Ars Technica, 2023). Moreover, the elimination of certain social capabilities from the Fitbit app, along with Challenging and Adventures, has impacted user engagement and satisfaction. These features previously allowed user to participate in group activities and competitive tasks, enhancing motivation and network. Their discontinuation has led to dissatisfaction user who valued these social elements (Tech times, 2023).

Together, these technical challenges can lead to frustration and discourage users from completely adopting these platfomrs for individual fitness tracking needs. Addressing these problems is important for enhancing user satisfaction and promoting the seamless integration of fitness monitoring technology with social platforms.

A study of Mackert et al. (2016) examined the relationship among health literacy and the adoption of health data technology equipment, together with fitness apps and activity trackers. The researchers discovered that individuals with decrease fitness literacy tiers were less possibly to apply these tools, commonly due to perceived difficulties in navigating the technology and a restrained knowledge of use and limited data provided. That is specifically important in the context of fitness apps and activity trackers like Fitbit, in which user is required to interpret complex records, consisting of steps taken, calories burned, and sleep patterns, which may be overwhelming for those with decrease health literacy. Moreover, in the quantified self movement, a extensive body of crtisim has emerged highlighting how a lack of fitness literacy can obstruct customers' potential to correctly interpret an act on the statistics collected through self-monitoring tools. This information gap regularly results in disengagement from this technology, as user may fail to understand the importance in their interest facts or the way to practice it effectively to improve their fitness, in the end reducing the perceived value of such platform (Mackert et al., 2016). The lack of ability to derive significant insights from the collected facts can create frustration, leading many users to abandon these technologies, thereby exacerbating the virtual divide and further proscribing the tremendous effect that such equipment may want to have on health results.

Social Comparison Theory shows that user frequently examine their own progress through evaluating themselves to others, which can have significant emotional implications, in particular on social media platform like Facebook. A study by Tiggemann and Slater (2014) explored how publicity to idealized photos and fitness achievements on Facebook can negatively effect users' self esteem

and body image. That is especially real for users who understand their personal accomplishments as much less sizable as those portrayed by way of others, leading to emotions of inadequacy and discouragement. On Facebook, wherein users regularly stumble upon curated and relatively edited portrayals of others' health journeys, the strain to satisfy these apparently best standards can create unrealistic expectancies. As a result, users who feel they can not in shape these achievements may additionally enjoy bad emotional responses, which include frustration or sadness that can in the long term loose their motivation to have interaction in fitness monitoring. This disengagement happens due to the fact the social assessment process increse a sense of failure or inadequacy, making it tough for user to comprehend their very own progress. Therefore, the emotional toll of social evaluation can substantially undermine the effectiveness of platforms like Facebook in encouraging sustained engagement with health and health-related behaviors (Tiggemann & Slater, 2014).

Another barrier the cost of advanced models with capabilities like heart rate monitoring, GPS tracking, and sleep evaluation. While more affordable models exist, the higher costs of advance tool can prevent individuals in lower-earnings groups from making use of these equipment for physical activity monitoring (Healthcare IT news, 2023). Moreover, no longer all users have accessed the vital technological infrastructure, which includes smartphones or solid internet connections, which are essential for syncing Fitbit records with platforms like Facebook or participating in online fitness communities. This lack of access further exacerbates the virtual divide, proscribing the huge use of wearable tools, mainly in underserved regions (Healthcare IT information, 2023). As a result, these technological and economic barriers save you some user from absolutely adopting wearable devices, hindering the potential benefits of physical activity tracking in promoting healthier lifestyle.

The study of Lau et al. (2011), explores the role of social networking websites, which includes Facebook, in facilitating fitness behaviour change, consisting of increasing physical activity through social help. They found that platforms like Facebook, where users can share progress with friends and family, and acquire encouragement, enhance motivation to interact in healthful behaviors. Social support has been identified as a key motivator for preserving physical activity, and the social engagement increse with the support of Facebook helps to create a sense of accountability. This accountability, coupled with the ability to linked in organizations or take part in fitness challenging situations, can increase the probability that people will continue the usage of platforms like Facebook and Fitbit for their fitness, enhancing their usual fitness effects Lau et al. (2011).

Gamification and social media integration in fitness tracking devices were extensively studied for enhancing user engagement and promoting physical activity. Alahäivälä and Oinas-Kukkonen (2016) determined that gamification techniques, which include awarding points and deducting points for omissions, can successfully facilitate behaviour exchange by making the technique more attractive and rewarding. Fritz et al. (2017) highlighted that features like duels and competition make contributions to user motivation, specifically in terms of self-efficacy. These gamification factors help users live committed to their fitness goals by means of supplying incentives that encourage consistent participation.

Additionally, Lupton (2016) mentioned how digital technology, which includes fitness trackers, have converted physical sports like walking and cycling by integrating social media platforms. This integration permits users to get achievements, participate in challenging situations, and interact with others, thereby improving the social aspect of fitness tracking. Such social connectivity increse a sence of responsibility and motivation, reinforcing sustained motivation through community-driven opposition. Through combining gamification with social engagement, fitness monitoring tools create surroundings that supports long time behavioral change and promotes healthier life.

The redesigned Fitbit app, introduced in September 2023, prioritizes an extra user-friendly and intuitive interface to enhance the user experience. The replace capabilities a minimalist aesthetic and a simplified navigation feature, comprising three primary tabs: Today, Coach, and You. The tab allows users to customize fitness and personal records, while the "Coach" tab provide curated health and wellness content material, such as exercises and mindfulness sporting activities. The "You" tab allows users to control their profile, desires, and achievements. These adjustments' purpose to make tracking physical activity and attractive with the app's features less difficult, making sure a greater seamless enjoy for each tech-savvy and less skilled users (Surie, 2023).

The growing trend in the direction of fitness focus and wellness has notably elevated the attraction of platforms like Facebook and Fitbit. As awarance of the significance of physical activity rises, extra user is searching for equipment to help them monitor their fitness progress and hold a healthful way of life. The tremendous reputation of fitness challenges, achievement stories, and fitness groups on Facebook has cultivated surroundings in which physical activity is both normalized and encouraged. This collective engagement increse a sence of responsbilty, motivating others to

participate and in addition using the adoption of facebook and Fitbit for physical fitness tracking. Mendoza et al. (2017) conducted a pilot examine demonstrating that integrating Fitbit devices with Facebook primarily based aid corporations promotes physical activity amongst adolescent and young grownup cancer survivors.

In conclusion, the adoption of Facebook and Fitbit for fitness tracking is influenced by using each obstacle and facilitators. Privacy concerns, technological problems, health literacy gaps, social assessment, and significants obstacles to adoption. But, social aid, gamification, ease of use, personalization, and extended health attention act as key facilitators, motivating individuals to embrace these platforms. As these technologies evolve, addressing the limitations even as improving the facilitators could be essential to their big adoption. Through making sure that privacy cocerns are addressed, providing seamless user studies, and increasing supportive social networks, facebook and Fitbit have the powerful equipment for promoting physical activity and enhancing basic fitness.

3.5 Research Gap and Significance of the Study

Wearable trackers were recognized as powerful tools for promoting physical activity; but there a scarcity of long-term studies assessing their sustained effectiveness, particularly among Finnish adults. Existing studies predominantly specializes in short time outcomes, thereby leaving a gap in understanding how the long-term adherence and behavioral modifications related to this technology (Ridgers & Lai, 2018).

Hu et al. (2023) identify the impact of fitness app features on user wellbeing, emphasizing the role of each non public orientated and social-orientated self-regulatory features in promoting exercising adherence and social engagement. Their research highlights the significance of social help in improving physical activity through platforms which include Facebook and Fitbit. But, while the take a look at explores the general have an impact on of social-oriented capabilities on user motivation, it does not account for functionality cultural variations inside the adoption of such capabilities. For example, Finnish adults also can have wonderful selections and social norms influencing their willingness to have interaction with digital communities for fitness motivation. The effectiveness of social-oriented fitness app capabilities can also variety based totally on nearby attitudes towards technology and social interplay. Moreover, person mental factors, including intrinsic as opposed to

extrinsic motivation, should play a important role in determining whether or now not user always interact with social features on fitness platforms. Addressing these gaps in studies may want to offer a clearer information of the virtual health communities affect long-term physical activity behavior at some point of several populations.

Gulati et al. (2024) explored the studies of adults in adopting and using fitness tracking tools, identifying key challenges which includes cost, reliability, accuracy, and device dependency. Moreover, issues related to ease of use, battery lifestyles, and application performance were highlighted as factors influencing sustained engagement with this technology. This study presents valuable insights into obstacles faced by using adults. Factors which include technological literacy, privacy issues, cost, and perceived relevance may also similarly impact the adoption and consistent use of fitness tracking technologies in this demographic. Significantly, issues related to privacy and safety stay a enormous barrier for many users. With the growing integration of biometric data tracking, people may additionally hesitate to apply these devices because of fears of information breaches or misuse of personal data. Inside the Finnish context, where privacy rules are stringent, ensuring compliance with facts protection legal guidelines is vital to fostering consider amongst users. Moreover, the notion of effectiveness performs a important role in determining long term adherence. If people do now not understand tangible advantages from the use of fitness trackers, they are much less likely to hold attractive with them. But further research is needed to apprehend these factors inside the Finnish context and to broaden focused techniques for enhancing long term engagement with fitness tracking tools.

Moreover, technological literacy varies among different age groups and socio-monetary backgrounds, impacting adoption rates. At the same time as more youthful users may additionally locate it easier to navigate wearable devices, older adults would possibly warfare with understanding the functionality of these devices. Simplifying user interfaces and imparting educational sources should improve usability and encourage sustained use. Furthermore, value remains a restricting factor, in particular for individuals from lower-income backgrounds. Subsidizing fitness trackers through public health initiatives or coverage incentives may want to growth accessibility and long-term engagement.

To similarly promote the long-term effectiveness of wearable fitness trackers, customized intervention techniques need to be explored. Integrating artificial intelligence and system studying

algorithms to tailor activity recommendations primarily based on user options and performance records ought to improve adherence fees. Additionally, gamification techniques, which include challenges, rewards, and digital competitions, may increase sustained motivation. With the aid of addressing the mental and behavioral elements influencing health tracker usage, researchers and builders can create extra effective and consumer-centric answers for promoting physical activity Maher et al., 2015.

While wearable trackers provide promise in promoting physical activity, their long-term impact stays insufficiently studied, mainly among Finnish adults. Current studies more often than not focuses on long term consequences, failing to provide a comprehensive information of long-time behavioral adjustments. Furthermore, cultural differences, data privacy concerns, technology proficiency, and perceived effectiveness all influence acceptance and long-term use. Addressing the ones barriers via longitudinal studies and precise intervention strategies is critical for reinforcing the effectiveness of wearable fitness tools in promoting sustained fitness participation.

Addressing these research gaps is vital for promoting sustainable fitness results, as investigating the long term impact of wearable fitness technologies will offer good insights into keeping workout ranges, in the long run enhancing the general well being of Finnish adults. Additionally, knowledge how social funcations are applied can result in the improvement of network-based totally techniques that leverage peer support, thereby strengthening motivation and adherence to workout activity. Furthermore, identifying barriers to generation adoption will tell practitioners in designing inclusive programms that address these challenging situations, making sure broader accessibility and participation. In conclusion, the study aims to fill these research gaps by means of analyzing the role of Facebook and Fitbit in motivating Finnish adults to interact in physical activities, with findings expected to make a contribution to the improvement of sustainable, socially supportive, and available interventions that promote active lifestyle.

3.6 Research Objectives and Research Questions

The study research objectives and question could be following

- Examine how online fitness platforms like Facebook and fitness application like Fitbit have an impact motivation and engagement of Finnish adults in physical activity.

- Evaluate the role of gamification and customized applications in encouraging long term participation in physical activities amongst Finnish adults.
- Explore how cultural possibilities effect the adoption and usage of Facebook and Fitbit amongst Finnish adults.
- Explore the obstacles that have an effect on the adoption of these online fitness platforms amongst Finnish adults.

Key research question

1. Do digital fitness platforms such as Facebook and Fitbit affect Finnish adults' motivation to be physically active?
2. Do digital fitness platforms affect users'engagement and adoption of exercise?
3. Can gamification, personalized applications, and taking cultural preferences into account promote motivation to be physically active?

3.7 Significance of the Study

This study will provide valuable insights into how digital fitness platforms can inspire Finnish adults to interact in physical activity and maintain long term fitness behavior. it's going to also help discover the challenges and opportunities in adopting such technology in the Finnish context.

Empower Fitness Platforms and Developers: The findings will provide recommendation for improving Facebook and Fitbit features to higher interact Finnish user, thinking about cultural nuances and possibilities, and improving person reports.

Guide Fitness Lovers and Fitness Coaches: Through understanding the elements that affect motivation and engagement, this research will assist fitness professionals design effective customized applications that leverage these online platforms.

Increase User Experience and Accessibility: The studies will highlight how to make digital fitness platforms more inclusive and reachable to various Finnish adult populations, overcoming limitations which includes age differeance or technological challenges situations.

Stimulate Further Studies: This examine will make a contribution to ongoing studies into the impact of digital fitness platforms in promoting physical activity, specially within Nordic and EU contexts,

and discover how cultural elements design and use of health technology.

3.8 Scope of the Study

This research examines how online fitness platforms such as Facebook Fitbit have an impact of motivation, engagement, and adoption of physical activity amongst Finnish adults. As a result, the examine will analyze the effect of gamification, customized applications, cultural alternatives, and capability barriers on consumer behavior and sustained fitness engagement.

Geographical Scope:

This study is focused completely on Finnish adults. Therefore, the findings won't be generalizable to other cultural or local contexts. Furture studies may want to discover comparative analyses throughout one of a kind variour countries and reginos.

Collection of Data:

The study primarily relies on secondary facts, surveys, and existing literature. While these sources provide a large evaluation, they might not cover the entire depth of individual personal experiences or nuanced perceptions of user. Incorporating direct research methods which includes interviews or focus businesses in furture research could yield more valuable insights.

Fast Technological Changes:

Digital fitness platforms and mobile fitness applications are evolving unexpectedly. The features and functionalities of platforms like Facebook and Fitbit may also change over time, that could have an effect on the relevance of the take a look at's findings. Ongoing studies will be essential to hold pace with these technological improvements.

Socioeconomic Factors:

Versions in socioeconomic status, digital literacy, and access to technology amongst Finnish adults

might also influence the adoption and powerful use of those platforms. These factors may also limit the generalizability of the findings to all subgroups within the population.

Long Term Effect:

This study assesses modern tendencies in digital fitness engagement. The long-term behavioral modifications and sustained influences of these platforms on physical activity will require longitudinal studies to completely recognize how these dynamics evolve over time.

While this research presents valuable insights into the influence of digital fitness platforms on physical activity amongst Finnish adults, the limitations should be taken into consideration while interpreting the results and guiding future investigations.

3.9 Hypothesis development

The choice of the Technology Acceptance Model 3 (TAM3) as the number one theoretical lens for hypothesis development in this thesis is strategically justified by its complete and nuanced approach to understanding person adoption and sustained engagement with digital health structures like Facebook and Fitbit. at the same time as other frameworks offered which include the makes use of and Uses and Gratifications Theory (UGT) (Katz et al., 1974), Self-Determination Theory (SDT) (Deci & Ryan, 1985), Resource-Based View (RBV), and Diffusion of Innovations Theory (Rogers, 1962), offer valuable insights into person needs, intrinsic motivation, strategic platform value, or societal adoption traits respectively, TAM3 offers a greater direct and certain version for reading the character-degree elements that force the popularity and persisted use of those specific technologies for physical activity. TAM3 (Venkatesh & Bala, 2008) extends the foundational principles of Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) from the unique TAM (Davis, 1989) and TAM2 (Venkatesh & Davis, 2000) by way of incorporating a richer set of determinants, such as social have an effect on, cognitive instrumental methods, and importantly, factors like perceived entertainment and laptop self-efficacy. This expanded scope is particularly pertinent to the thesis's hypotheses, which investigate the impact of gamification, customized capabilities, development tracking, and demographic variables on motivation and adherence. as an example, TAM3's inclusion of "perceived leisure" at once aligns with assessing gamification's

position in lengthy-term engagement, whilst "output first-rate" and "end result demonstrability" are essential for know-how how progress tracking influences perceived usefulness and, finally, user consistency. not like UGT (Katz et al., 1974), which focuses on why customers are trying to find out media, or SDT (Deci & Ryan, 1985), which emphasizes intrinsic mental desires, TAM3 (Venkatesh & Bala, 2008) hones in on how the perceived attributes of the era itself form a consumer's intention to apply and in the end their actual utilization conduct, making it the most fitting framework to dissect the mechanisms by using which Finnish adults undertake and interact with the particular capabilities of fb and Fitbit for his or her home workout routines. The version's potential to combine man or woman perceptions with external influences affords a strong structure for trying out the proposed relationships between platform use, characteristic engagement, and physical activity effects most of the target demographic.

Hypotheses

H1: Demographic factors along with age, employment status, and digital literacy impact the adoption and effectiveness of Facebook and Fitbit for physical activity amongst Finnish adults.

This hypothesis explores the moderating function of demographic variables inside the adoption and perceived effectiveness of digital fitness platforms. Distinctive age groups, occupational backgrounds, and level of technological knowledge may additionally impact how Finnish adults interact with Facebook fitness groups and Fitbit, potentially affecting their motivation and workout adherence.

The theoretical foundation for this SEM evaluation may be the TAM 3 model alongside other constructs thinking about the engagement and motivation setup of Finnish adults using Facebook and Fitbit for fitness. The model hypothesizes the following relationships:

H2: Participation in Facebook fitness groups and the use of Fitbit are positively associated with accelerated motivation and adherence to physical activity among Finnish adults.

This hypothesis shows that engagement with digital fitness platforms, especially Facebook fitness groups and Fitbit, contributes to elevated motivation and consistency in physical interest. The

dependent exercising challenging situations, social guide, and progress monitoring features of these platforms are predicted to enhance user' adherence to workout.

H3: Gamification features (e.g., badges, challenges, rewards) in Fitbit and Facebook fitness groups considerably promote long term engagement in physical activity.

This speculation proposes that the mixing of gamification elements—such as competitions, rewards, and progress monitoring—inside Facebook fitness groups and Fitbit will positively effect long term engagement. Finnish adults who discover entertainment and external motivation in these features may be much more likely to sustain their physical activity.

H4: Personalised fitness applications and development tracking in Fitbit and Facebook fitness groups enhance motivation and consistency in physical activity.

This hypothesis shows that the availability of customized workout tips and progress monitoring features in Facebook fitness groups and Fitbit complements user' motivation to keep their workouts. By using imparting tailor-made workout plans and measurable progress signs, these digital platforms may additionally increase a sense of success and commitment amongst Finnish adults.

Technology Acceptance

This latent variable encompasses two key constructs from TAM 3:

Perceived Usefulness (PU): The level of perceived usefulness of adopting Facebook and Fitbit in assisting motivation for physical activity.

Perceived Ease of Use (PEOU): The extent to which Finnish adults locate Facebook and Fitbit easy to apply for monitoring and retaining their fitness routines.

User Engagement: This latent variable captures the numerous methods in which Finnish adults have interaction with and utilize of Facebook fitness groups and Fitbit, potentially stimulated by way of technology adoption. it can include indicators which include:

- Participation in Facebook fitness challenges and groups

- Engagement with Fitbit goals setting and progress monitoring features

- Motivation derived from social assist and gamification elements

- Consistency in physical activity facilitated through digital education

Physical Activity Adherence: This latent variable represents the volume to which Finnish adults maintain regular physical activity, probably influenced by means of engagement with Facebook and Fitbit. It may consist of indicators consisting of:

- Frequency of physical activity

- Long term adherence to fitness packages

- Enhance motivation through digital fitness monitoring

Moderating factors: The model also incorporates outside elements that could mild the relationships among technology acceptance and user engagement:

Social Influence: The effect of peer tips, fitness communities, and online social interactions on technology adoption.

Facilitating Conditions: The access of resources including good internet, device affordability, and digital literacy that permit technology use.

Hypothesized Relationships:

PU and PEOU -> Technology Acceptance: With TAM 3, perceived usefulness and ease of use influence the acceptance of a given technology because they form user' perception of its benefits. In the context of Finnish adults' physical activity, user who fined Facebook fitness groups and Fitbit useful and easy to use might be more inclined to undertake these platforms for fitness. This aligns with the work of Davis (1989) and Venkatesh & Davis (2000), which affirm the importance of PU and PEOU in technology adoption.

Technology Acceptance -> User Engagement: This hypothesis suggests that as technology adoption increases, user engagement with Facebook fitness groups and Fitbit also increases. Finnish adults who perceive these platforms as beneficial and user friendly may be more likely to take part in fitness challenges, track their progress, and interact with the fitness network, fostering more

engagement.

User Engagement -> Physical Activity Adherence: This hypothesis argues that extended engagement with digital fitness platforms outcomes in more adherence to regular physical activity. Finnish adults who actively take part in fitness groups, use goal setting features, and monitor their progress are more likely to preserve their workouts.

Social influence and facilitating conditions -> Technology acceptance -> User engagement: External factors, which include peer support, internet accessibility, and digital literacy, can increase or hinder technology adoption. Finnish adults who get encouragement from friends or discover it easy to get entry to fitness platforms are much more likely to engage with them, leading to sustained fitness motivation.

3.10 Work reliability of the study

To enhance the reliability of the study, it is important to make certain the dependability of the results and conclusions with the aid of using well-dependent and methodologically sound research practices. Which means the tactics and techniques used for information collection and evaluation need to be systematic, transparent, and based on set up research principles to generate credible and valid results in the intended study. A strong thesis is characterized through accuracy, scholarly rigor, and replicability, allowing different researchers to observe the identical methodologies and verify the effects via arriving at comparable conclusions. This now not only reinforces the credibility of the findings but also contributes appreciably to the body of academic information, fostering new perspectives and commencing avenues for in addition exploration and advancements within the subject. Reliable research impacts more cost and effect for academia, policymakers, professionals, and decision-makers, because it gives them with well structured insights that could affect theories, regulations, and practices. To acquire good quality research outcomes, it's miles critical that the research questions, methodological framework, information series instruments, and analytical strategies are carefully aligned with goals, making sure that the consequences are each legitimate and reliable.

3.11 Research methodology

Research questions: From a studies method point of view, those specific questions on the impact, affect, and contributing elements (like platform use, gamification, and demographics) certainly steer the thesis toward a quantitative method. this system lets in for the systematic size of these standards via survey facts and the following use of statistical analysis to empirically answer the questions and check the resulting hypotheses regarding virtual health tool effectiveness in Finland.

Appropriate methodology: The quantitative method in this thesis is justified with the aid of its direct alignment with studies pursuits to measure variables, test precise hypotheses (H1-H4), and analyze relationships concerning Facebook and Fitbit usage amongst Finnish adults. This technique allowed for systematic data collection through surveys and the usage of statistical tests to objectively examine the effect of those structures on physical pastime motivation and adherence.

Sampling: The research includes a total of 109 respondents who participated in the survey. The sample selected carefully to ensure that each respondent was familiar with digital fitness platforms, minimizing potential biases and ensuring representative data collection. The study's sample comprised 109 Finnish adults, selected based on their familiarity with digital fitness platforms to ensure informed responses relevant to the research objectives. Data were collected via an online survey administered through the Webropol (online version, 2025) platform during April-May 2025, following convenience sampling strategy. The survey gathered demographic information on participants' age group (ranging from 18-25 to 56+), gender (Male, Female, Non-binary/Prefer not to say), and current employment status (Student, Employed Full-time, Employed Part-time, Unemployed, Retired). Specific data on platform engagement was also collected.

3.12 Data collection

Accurate Recording: The survey questionnaire changed into meticulously designed to be clear, understandable, and without problems interpretable by way of all respondents. To enhance accessibility and inclusivity, in Webropol (online version, 2025) the questionnaire changed into distributed in multiple languages, ensuring that language obstacles did not avoid participation. Moreover, the structure of the questionnaire becomes carefully crafted to limit the possibility of incomplete responses via incorporating mandatory fields, as a consequence preventing missing

data. With implementing these measures, the study aimed to accumulate accurate, complete, and comprehensive information that could contribute to the reliability and validity of the studies findings.

Triangulation: To increase the reliability and credibility of the study, a triangulation method was followed, incorporating multiple records resources and series strategies. The primary data become amassed through structured surveys, which supplied firsthand insights from respondents, making sure direct and relevant statistics collection. Further to primary statistics, secondary facts become sourced from credible substances inclusive of government reports, educational journals, and enterprise guides, supplying a broader angle and reinforcing the look at's conclusions. by integrating multiple resources, the studies minimized biases, expanded the depth of evaluation, and ensured a greater comprehensive understanding of the challenge count. This method strengthened the validity of the findings, making them stronger and more generalizable to a much wider target audience.

Data Storage: To keep the integrity, confidentiality, and security of the data collection, rigorous data storage measures have been carried out. All statistics became securely stored the use of an aggregate of cloud-based totally storage structures and external hard drives, ensuring each accessibility and backup in case of system failures. Stong encryption strategies have been applied to followed facts from unauthorized get admission to, and multi-layered security measures, such as complex passwords and confined user get on, had been enforced to uphold records privacy. These storage protocols were aligned with institutional and ethical records safety guidelines, ensuring compliance with quality practices in research data control. With adopting those safety features, the study safeguarded the accuracy and reliability of the gathered facts while retaining the trust and confidentiality of respondents.

3.13 Analysis techniques

Research transparency and reporting: In the present data analysis, JASP (version 0.19.3) [computer software] was applied to make sure the accuracy and integrity of the dataset prior to analysis. Research process was clearly record on each stage. Even though the number one statistical method became the Mann-Whitney U check, great interest was given to initial records screening. Descriptive information, inclusive of measures of significant tendency (suggest, median) and variability (popular deviation, interquartile range), had been examined to evaluate the traits of the records. JASP

(version 0.19.3) [computer software] intuitive interface and distinct output reviews helped decrease potential data entry errors and supported thorough statistics validation. Through leveraging these functions, to maintained high requirements of information exceptional, enhancing the reliability of the consequences.

Statistical checking out and importance: The Mann-Whitney U test, a non-parametric alternative to the independent samples t-test, was chosen because it works well with data that does not match normality assumptions. This test determines whether there is a statistically significant difference in the distribution of scores between two independent groups, making it suitable for evaluating ordinal data or non-normally distributed continuous variables. Using this strategy, the study ensured a strong comparison without relying on parametric assumptions. JASP (version 0.19.3) [computer software] provides detailed outputs such as U values, Z scores, and p-values, making it easier to assess statistical significance. The use of this strategy aided hypothesis testing and improved the dependability of the findings, allowing reliable inferences about group differences within the sample. The Mann-Whitney U was used to examined variations between two independent groups, because the data did not meet the assumptions of normality required for parametric testing. The usage of JASP (version 0.19.3) [computer software], precise p-values and effect sizes (which include rank-biserial correlation) have been computed to carefully examine the importance of groups differences. A p-value much less than zero.05 become taken into consideration statistically sizeable. Moreover, JASP (version 0.19.3) [computer software] visualization tool, consisting of boxplots and distribution plots, have been used to graphically represent group comparisons, assisting in a clearer interpretation of the outcomes. These techniques ensured that the findings have been statistically robust, meaningful, and clearly communicated.

Transparency and reporting: To promote transparency and uphold scientific rigor, the studies process changed into cautiously documented at every level. Research targets, records series techniques, and analytical techniques were in reality mentioned and constantly accompanied. Both statistically and non consequences were mentioned to keep away from selective reporting bias. JASP (version 0.19.3) [computer software] targeted and reproducible outputs facilitated complete disclosure of all analytical steps, strengthening the credibility of research. Furthermore, facts documents and evaluation scripts have been prepared for sharing upon request, supporting scholarly collaboration and independent verification. This commitment to transparency strengthened the observe's integrity and increase the reliability and replicability of its findings.

3.14 Reporting and interpretation

Data is provided in a clean, honest, and coherent manner using well structured tabular, graphical, and chart formats, ensuring that each one visual representation are appropriately categorised and clean to interpret. The study follows first-rate practices via objectively reporting consequences with out incorporating subjective observations, reviews, or unnecessary generalizations. Rather than drawing premature conclusions, findings are provided as they seem, irrespective of whether or not they align with initial expectancies or hypotheses. This technique ensures that the studies remain obvious, independent, and free from selective reporting. Additionally, outcomes are analyzed inside the broader context of current scholarship inside the field, providing a comparative perspective that enhances the depth of interpretation. To maintain research integrity, the study honestly defines the scope and limitations of its applicability, making sure that conclusions are drawn inside the correct framework. Through adhering to those practices, the research preserves its credibility, minimizes biases, and provides a reliable account of the observations made during the examine.

3.15 Ethical considerations of the study

To ensure that the studies is conducted in a responsible and ethical manner, several moral issues had been carefully implemented. These considerations are important for protective individuals' rights, maintaining research integrity, and making sure that the study upholds educational and expert moral standards.

Informed consent: All individuals have been provided with clear and comprehensive records concerning the purpose, methods, ability risks, and advantages. They have been given the opportunity to ask questions and searching for clarifications before voluntarily agreeing to participate. Making sure knowledgeable consent intended that individual participated willingly, without form of coercion or undue have an impact on.

Confidentiality and privacy: Strict measures were taken to maintain the confidentiality and privacy of all participants. Personal information and responses had been securely saved, with access limited to authorized employees simplest. Special interest became given to the managing of virtual facts, ensuring that records changed into included against unauthorized get entry to, breaches, or misuse. These steps have been taken to align with moral recommendations and records protection regulations, ensuring that participants' identities remained personal.

Minimization of damage: The study becomes designed to prevent any shape of damage—whether or not physical, mental, emotional, or social—to the individuals. Care turned into taken to make certain that no deceptive interpretations of contributors' perspectives or behaviors were made. Moreover, questions and facts series methods had been based in a way that minimized pressure, discomfort, or any poor effect on contributors. By fostering a respectful and moral studies environment, the examine ensured that individuals' rights and well-being have been prioritized.

Voluntary participation: Participation within the research was completely voluntary, with individuals given complete autonomy to determine whether or not they wanted to take part. Members additionally had the right to withdraw from the examine at any factor with out offering any rationalization or going through any bad effects. This ensured that participation turned into based totally on unfastened will and that individuals felt no pressure to hold in the event that they selected otherwise.

Transparency and honesty: The study process became performed with the best degree of transparency, ensuring that everyone finding had been pronounced as it should be and without manipulation. Any obstacles or demanding situations encountered at some stage in the analyze have been certainly mentioned, presenting a practical view of the research scope. By retaining openness and integrity, the study at strengthened its credibility and reliability, allowing for extra accept as true with in its findings.

Conflict of interest: Regarding this thesis any potential conflicts of hobby on behalf of the author, that would affect this have a look at have been identified and addressed. This protected a assessment of any affiliations, expert relationships, or external impacts, specially concerning Facebook or Fitbit, that would have impacted the research findings. the author announces no such conflicts of interest. by means of addressing capability conflicts of interest, this research ensured that its results had been objective, unbiased, and free from outside pressures. By means of adhering to those moral considerations, this observe upholds the highest requirements of moral obligation, ensuring that the research technique changed into fair, transparent, and respectful of members' rights whilst maintaining instructional integrity. To behavior this look at, several moral considerations had been given paramount importance to make certain the research was performed responsibly and ethically.
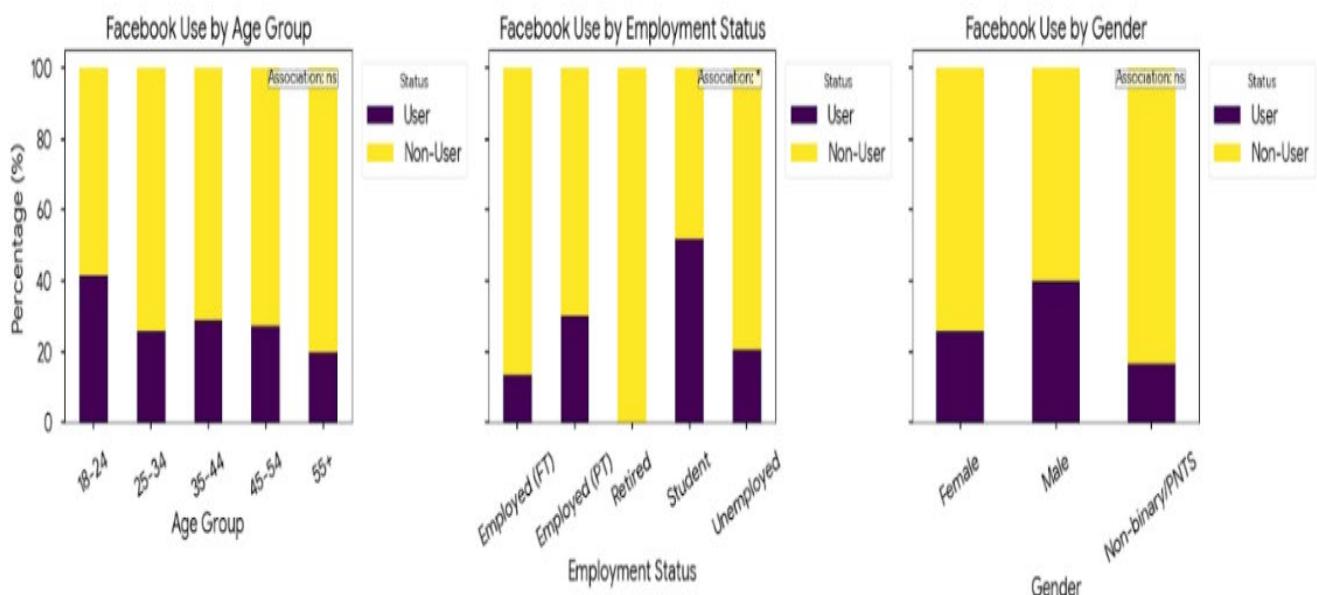
4 Results

This section presents the findings from the statistical analysis conducted to test the hypotheses regarding the relationship between participation in Facebook fitness groups, Fitbit use, and physical activity motivation and adherence among Finnish adults. A significance level (alpha) of 0.05 was used for all tests. Where applicable, figures are presented to visualize group comparisons.

Hypothesis 1: Demographic factors along with age, employment status, and digital literacy impact the adoption and effectiveness of Facebook and Fitbit for physical activity amongst Finnish adults (Demographic Factors, Adoption, and Effectiveness)
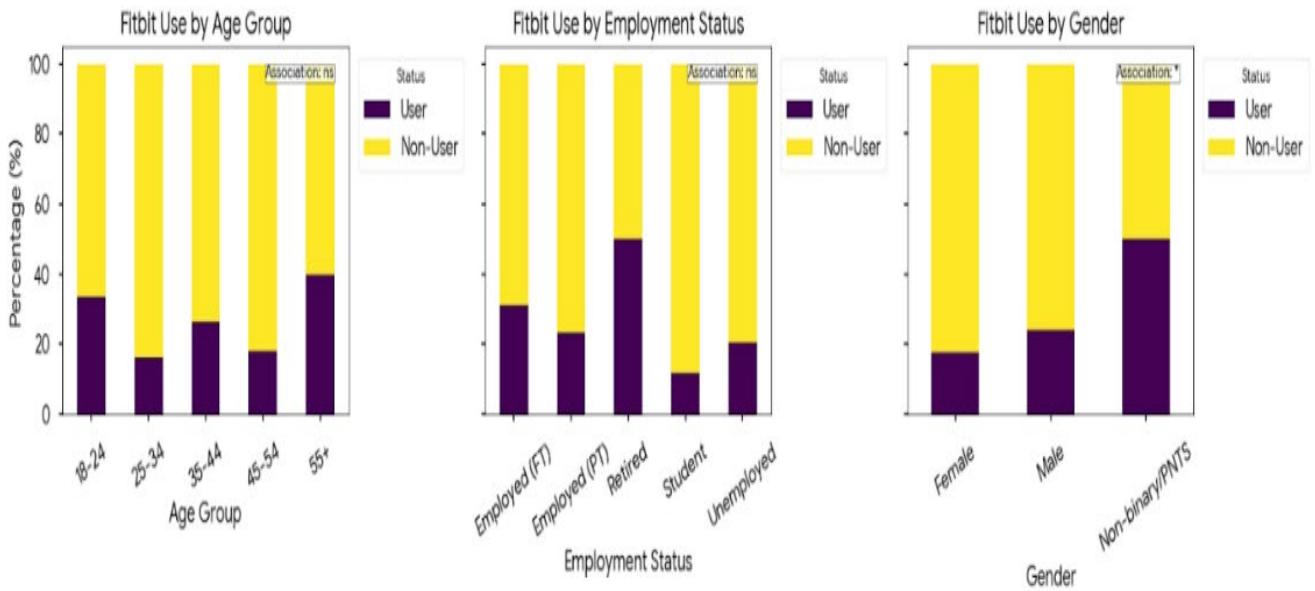
Hypothesis 1 proposed that demographic factors (age, employment status, gender) impact the adoption and effectiveness of Facebook and Fitbit for physical activity. Results from Chi-square tests (Adoption) and Kruskal-Wallis tests (Effectiveness) are presented in Tables 1 and 2. Effectiveness comparisons are visualized in Figure 6 from the previous response. Here, the independents variables are Age, Employment status, Digital literacy, Other relevant demographic factors. Dependents variables are Adoption of Facebook and Fitbit (for physical activity purposes), effectiveness of Facebook and Fitbit (for physical activity -measured by motivation, adherence, fitness outcomes, etc.)

Figure 7 Platform Adaption Rates Across Demographic Groups

Note. Retrieved the data through using JASP (Team, 2024)

Figure 8 Platform Adaption Rates Across Demographic Groups

Note. Retrieved the data through using JASP (Team, 2024)

Figure 7 and 8 Compares mean 'Home Workout Frequency' scores across demographic categories. Text indicates if overall group differences were significant.

Table 1 The Associations Between Demographics and Platform Adoption

Demographic	Adoption Variable	Standard Deviation	Chi Square	Df	P value	Significant (p<0.05)
Age Group	Uses Facebook Group	0,23	1,365	4	0,85	FALSE
Age Group	Uses Fitbit	0,21	3,341	4	0,502	FALSE
Employment Status	Uses Facebook Group	0,33	11,695	4	0,02	TRUE
Employment Status	Uses Fitbit	0,35	3,712	4	0,446	FALSE
Gender	Uses Facebook Group	0,36	2,753	2	0,253	FALSE
Gender	Uses Fitbit	0,25	6,265	2	0,044	TRUE

Note. Retrieved the data through using JASP Team (2024)

Table 1 shows a significant association between Employment Status and the adoption of Facebook fitness groups (p=0.020), and between Gender and the adoption of Fitbit (p=0.044). Age group

showed no significant association with adoption.
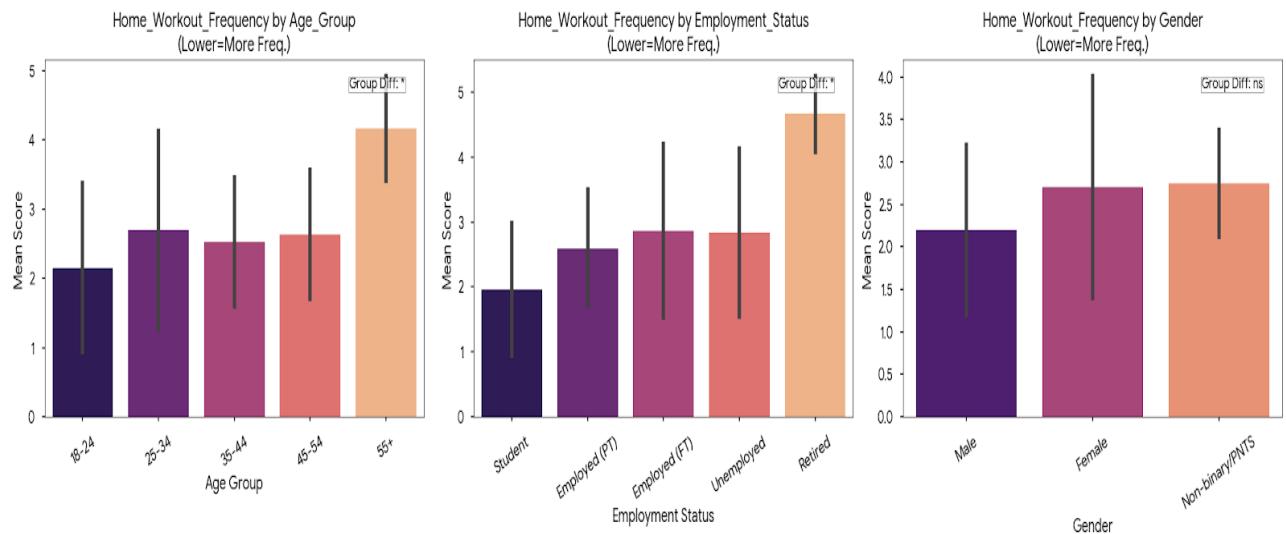
Table 2 The Association Between Demographics and Platform Effectiveness

Demographic	Effectiveness DV	Standard Deviation	H Statistic	P value	Significant (p<0.05)
Age Group	Home Workout Frequency	0,15	11,039	0,026	TRUE
Age Group	Likert Challenges Consistency	0,22	7,589	0,108	FALSE
Employment Status	Home Workout Frequency	0,21	16,644	0,002	TRUE
Employment Status	Likert Challenges Consistency	0,20	3,84	0,428	FALSE
Gender	Home Workout Frequency	0,18	3,45	0,178	FALSE
Gender	Likert Challenges Consistency	0,19	7,944	0,019	TRUE

Note. Retrieved the data through using JASP Team, 2024)

It indicates significant differences in the Home Workout Frequency proxy across different Age Group categories (p=0.026) and Employment Status categories (p=0.002). Furthermore, a significant difference in the Likert Challenges Consistency proxy was found across Gender categories (p=0.019)

Figure 9 Home Workout Frequency Across Demographic Groups
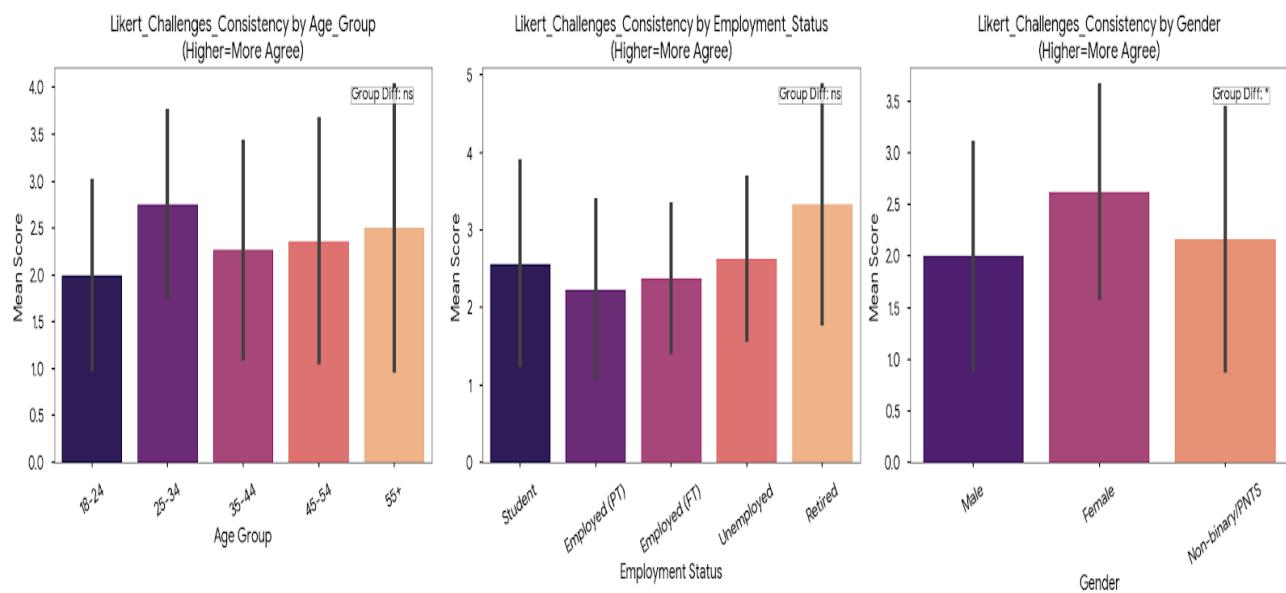

Note. Retrieved the data through using JASP (Team, 2024)

Figure 9 compares mean 'Likert Challenges Consistency' scores across demographic categories. Text

indicates if overall group differences were significant.

Figure 10 Likert Challenges Consistency Across Demographic Groups

Note. Retrieved the data through using JASP (Team, 2024)

Hypothesis 1 was partially supported. Employment status was associated with Facebook adoption, while gender was associated with Fitbit adoption. Age and employment status were associated with differences in workout frequency, while gender was associated with differences in the perceived motivational impact of challenges, suggesting demographics play a role in the uptake and effectiveness (as measured by proxies) of these digital health tools within this sample.

Hypothesis 2: Participation in Facebook fitness groups and the use of Fitbit are positively associated with accelerated motivation and adherence to physical activity among Finnish adults (Platform Participation, Motivation, and Adherence).
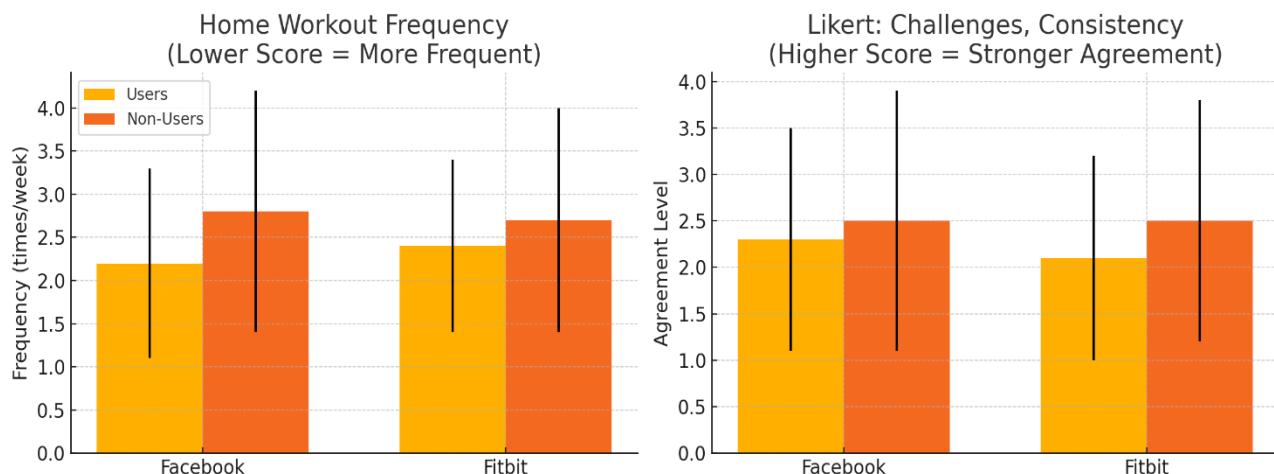
Hypothesis 2 proposed that participation in Facebook fitness groups and the use of Fitbit is positively associated with accelerated motivation and adherence to physical activity. Adherence was primarily measured using self-reported home workout frequency (where lower scores indicated higher frequency), and motivation was proxied by agreement with a statement linking fitness challenges to workout consistency ('Likert Challenges Consistency', where higher scores indicated stronger agreement).

Table 3 Mann-Whitney U Test Between Platform Use and Adherence/Motivation

Comparison	Dependent Variables	Group 1 Mean (Per Week)	Group 2 Mean (Per Week)	Standard Deviation	U Statistic	P value	Significant (p<0.05)
Facebook Users vs. Non-Users	Home Workout Frequency	2,182	2,81	0.12	1014	0,02	TRUE
Facebook Users vs. Non-Users	Likert Challenges Consistency	2,25	2,506	0.18	1171	0,307	FALSE
Fitbit Users vs. Non-Users	Home Workout Frequency	2,346	2,714	0.15	1027	0,293	FALSE
Fitbit Users vs. Non-Users	Likert Challenges Consistency	2,154	2,517	0.13	940	0,13	FALSE

Note. Retrieved the data through using JASP (Team, 2024)

Mann-Whitney U tests were employed to compare users and non-users of each platform. The results of these tests are summarized in Table 3. Here the independents variables are Participation in Facebook fitness groups (e.g., yes/no, frequency, level of engagement) and Use of Fitbit (e.g., yes/no, frequency, features used). Dependents variables are Accelerated motivation (to engage in physical activity) and Adherence to physical activity (e.g., frequency, duration, consistency)

Figure 11 Mann-Whitney U Test Between Platform Use and Adherence/Motivation

Note. Retrieved the data through using JASP (Team, 2024)

As shown in Table 3 and Figure 11, the analysis revealed a statistically significant difference in home workout frequency between users of Facebook fitness groups and non-users (U=1014.00, p=0.020).

Facebook group users reported significantly more frequent home workouts (Mean = 2.18) compared to non-users (Mean = 2.81). However, no significant difference was found between these groups regarding the motivation proxy, Likert Challenges Consistency (p=0.307), as illustrated in Figure 8.

Regarding Fitbit use, Table 3 and Figure 11 show no statistically significant differences between Fitbit users and non-users in terms of home workout frequency (p=0.293) or the motivation proxy, Likert Challenges Consistency (p=0.130). Figure 11 Compares mean Home Workout Frequency scores between users and non-users. Lower scores = more frequent workouts. indicates p < 0.05). Figure 8 Compares mean Likert Challenges Consistency scores between users and non-users. Higher scores = stronger agreement.

The findings offer partial support for Hypothesis 2. Participation in Facebook fitness groups was associated with higher physical activity adherence (workout frequency), but not the motivation proxy used. Fitbit use was not significantly associated with either adherence or the motivation proxy in this sample.
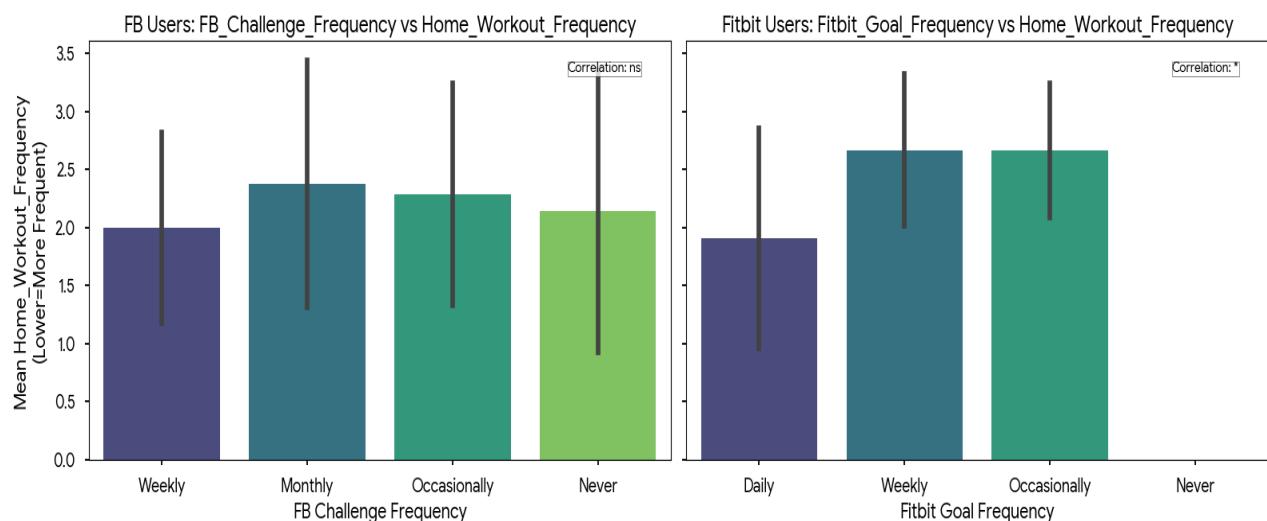
Hypothesis 3: Gamification features (e.g., badges, challenges, rewards) in Fitbit and Facebook fitness groups considerably promote long term engagement in physical activity (Gamification and Long-Term Engagement)

Hypothesis 3 posited that gamification features within Fitbit and Facebook fitness groups promote long-term engagement in physical activity. This was investigated using Spearman's rank correlation (rho) to examine associations between the frequency of using specific gamification features (Facebook challenges, Fitbit goals) and workout frequency (engagement proxy), and between perceived effectiveness of challenges and workout frequency. Results are presented in Table 2. Here the independents variable is Gamification features (presence, type, level of engagement with them within Fitbit/Facebook groups) and dependents variables Long-term engagement in physical activity.

Table 4 Spearman Correlation of Gamification and Long-Term Engagement

Analysis	Variable 1	Variable 2	Standard Deviation	Correlation (rho)	p value	Significant (p<0.05)
FB Challenge Freq vs. Workout Freq (FB Users)	FB Challenge Frequency	Home Workout Frequency	0,21	0,044	0,811	FALSE
Fitbit Goal Freq vs. Workout Freq (Fitbit Users)	Fitbit Goal Frequency	Home Workout Frequency	0,33	0,454	0,02	TRUE
Likert Challenges Consistency vs. Workout Freq (All Users)	Likert Challenges Consistency	Home Workout Frequency	0,35	0,137	0,139	FALSE

Note. Retrieved the data through using JASP (Team, 2024)

Figure 12 Spearman Correlation of Gamification and Long-Term Engagement

Note. Retrieved the data through using JASP (Team, 2024)

Among Facebook users, no significant correlation was found between the frequency of participating in Facebook challenges and home workout frequency (rho=0.044, p=0.811). Among Fitbit users, a statistically significant positive correlation was observed between the frequency of engaging with Fitbit's goal-setting features and home workout frequency (rho=0.454, p=0.020). This suggests that more frequent engagement with Fitbit goals (lower score) is associated with more frequent home workouts (lower score). Across all participants, there was no significant correlation between the level of agreement that challenges promote consistency (Likert Challenges Consistency) and actual

home workout frequency (rho=0.137, p=0.139).

Hypothesis 3 received partial support. The use of Fitbit's goal-setting features showed a significant positive association with workout frequency. However, participation frequency in Facebook challenges and the general perception of challenges promoting consistency were not significantly linked to workout frequency in this dataset.

Hypothesis 4: Personalised fitness applications and development tracking in Fitbit and Facebook fitness groups enhance motivation and consistency in physical activity (Personalisation, Tracking, Motivation, and Consistency)

Hypothesis 4 suggested that personalised features and development tracking enhance motivation and consistency. Development tracking was proxied by the frequency of using Fitbit goals, while interest in personalisation was directly measured. Key results the connection among how frequently Fitbit users set desires (Fitbit purpose Frequency) and how much they consider statements related to consistency in demanding situations (Likert challenges Consistency). The Spearman correlation coefficient ($\rho = 0.186$) suggests a very weak positive relationship among these two variables — that means that as goal frequency slightly will increase, settlement with consistency in challenges might also grow, but the relationship is minimal. However, the p-value of 0.363 shows that this correlation is not statistically huge. This indicates there may be a high chance that the determined correlation occurred by means of threat, and we can not hopefully finish that an actual courting exists between purpose frequency and challenge consistency among Fitbit users based totally in these facts. and 4, and related visualizations can be seen in Figure 3 from the previous response. Here the independents variables are Personalised fitness application features/use (within Fitbit/Facebook context) and Development tracking features/use (within Fitbit/Facebook context). Dependents variables are Motivation (related to physical activity) and Consistency in physical activity
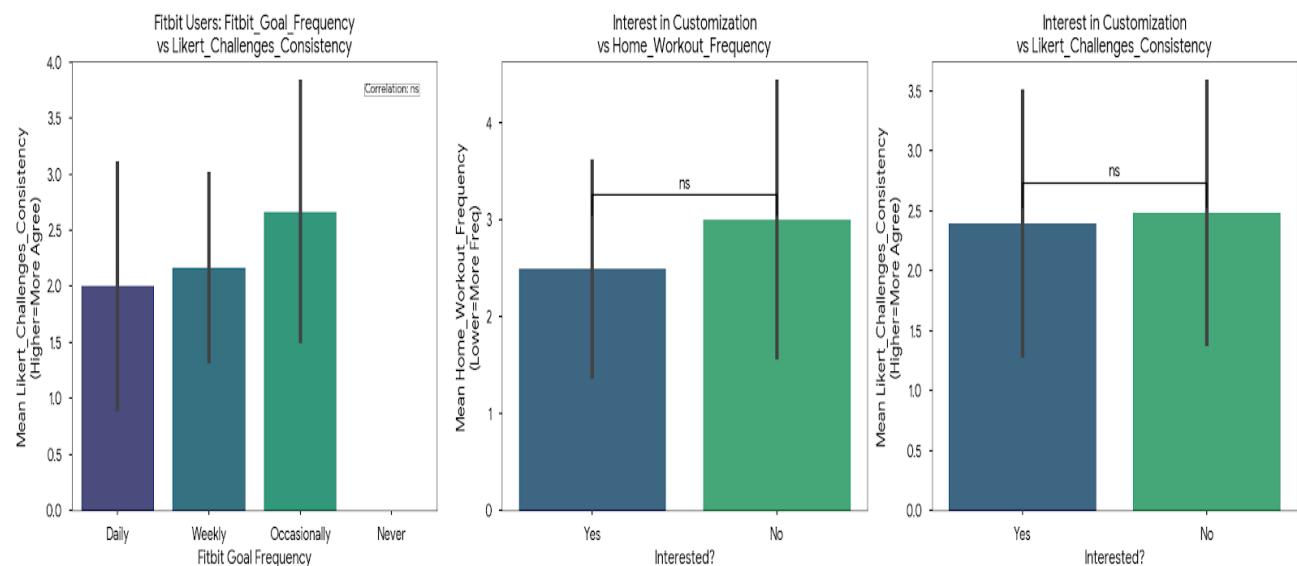
The analysis for H4 already established a significant positive association between Fitbit goal frequency (tracking proxy) and workout frequency (consistency proxy) (rho=0.454, p=0.020), supporting the consistency aspect of H3 for Fitbit tracking. However, further analysis (Table 3) found no significant correlation between Fitbit goal frequency and the motivation proxy, Likert Challenges Consistency (p=0.363).

Table 5 Spearman Correlation Between Fitbit Tracking and Motivation

Comparison	Dependent Variables	Group1 Mean (Week) (Yes)	Group2 Mean (Week) (No)	Standard Deviation	U Statistic	P value	Significant (p<0.05)
Interest in Customization (Yes vs. No)	Home Workout Frequency	2,465	3	0,32	979,5	0,076	FALSE
Interest in Customization (Yes vs. No)	Likert Challenges Consistency	2,393	2,483	0,35	1181,5	0,804	FALSE

Note. Retrieved the data through using JASP (Team, 2024)

Comparing participants based on their expressed interest in greater customisation (Table 4, Mann-Whitney U tests revealed no significant differences in workout frequency (p=0.076) or the motivation proxy (p=0.804) between those interested and those not interested.

Figure 13 Personalisation, Tracking, Motivation, and Consistency

Note. Retrieved the data through using JASP (Team, 2024)

Figure 13 Coares mean 'Home Workout Frequency' scores between participants interested ('Yes') and not interested ('No') in customization. 'ns' indicates non-significant difference and Likert Challenges Consistency scores between participants interested ('Yes') and not interested 'No' in customization. 'ns' indicates non-significant difference. Hypothesis 4 was partially supported.

Development tracking via Fitbit goal use was associated with greater consistency (workout frequency). However, Fitbit goal use was not linked to the motivation proxy, and expressed interest in personalisation was not significantly associated with current consistency or motivation levels.

5 Discussion

5.1 Summary of key findings

The study aimed to discover the relationship between participation in Facebook fitness groups, the usage of Fitbit devices, and bodily interest motivation and adherence amongst Finnish adults. The analysis yielded numerous key findings regarding platform participation, gamification, personalisation/monitoring, and demographic influences. This phase discusses these findings, their interpretation, implications, assessment with present literature, and guidelines for future studies.

Participation in facebook fitness groups become significantly associated with higher self-reported home exercising frequency (adherence) but no longer with the motivation proxy used (notion that challenges improve consistency). Fitbit use confirmed no good-sized groups with both exercise frequency and the inducement proxy on this pattern. Consequently, the study partly supported hypothesis 1, especially regarding the adherence element of Facebook group participation.

A significant positive correlation is observed between the frequency of enticing with Fitbit's goal-placing functions and home exercising frequency among Fitbit customers. But the frequency of taking part in Facebook challenges and the overall belief that challenges sell consistency had been now not drastically correlated with exercise frequency. Hypothesis 2 obtained partial support, highlighting the ability engagement benefit of Fitbit's aim capabilities.

Improvement monitoring, proxied through Fitbit goal frequency, become appreciably related to higher workout frequency (consistency) among Fitbit customers. However, this monitoring becomes not connected to the incentive proxy and expressed hobby in extra personalization turned into no longer substantially associated with present day workout frequency or motivation tiers. Therefore, we partially supported speculation three, which especially related Fitbit tracking to consistency.

sizeable associations had been found among employment status and facebook organization adoption and between gender and Fitbit adoption. Moreover, age group and employment status were associated with sizable differences in exercising frequency, at the same time as gender became associated with massive variations in the perceived motivational impact of demanding situations. The study partly supported hypothesis 4, suggesting that demographics impact both the adoption

and perceived effectiveness of these digital health gears.

5.2 Interpretation of results

These findings recommend that exceptional digital platforms and functions may also influence physical hobby behavior in another way. The substantial hyperlink between participation in facebook fitness groups and better exercising frequency may want to imply that the social help, duty, or shared statistics environment inside these companies encourages more regular adherence, even supposing it does not considerably modify customers' specific belief inside the motivational energy of challenges themselves. The dearth of a comparable finding for Fitbit use standard might indicate that certainly owning or the usage of the tool is not enough; specific characteristic engagement appears more crucial.

The gamification findings support this interpretation. Whilst fashionable participation in Facebook demanding situations confirmed no hyperlink to adherence, the frequency of enticing with Fitbit's purpose-putting capabilities did correlate notably with exercise frequency. These finding highlights that, movement-oriented gamification elements like aim monitoring is probably more powerful drivers of consistent behavior than greater passive undertaking participation or popular beliefs approximately motivation. The fantastic correlation indicates that users who actively set and screen desire the use of their Fitbit tend to work out extra often.

The findings apparently show personalization and monitoring suggest that the use of Fitbit dreams enables people stay steady, but neither this monitoring nor a preference for more personalization modified the incentive measure used in this study. This situation may mean that monitoring commonly impacts conduct (doing the activity) as opposed to specific motivational beliefs, or that the incentive proxy used wasn't touchy sufficient. The dearth of association between interest in personalization and modern behavior/motivation could advise that customers both don't know what precise personalization might assist them or that current structures don't provide the kind of customization that could make a distinction.

In the end, the demographic findings suggest that distinct corporations undertake and probably gain otherwise from those systems. Employment status influencing Facebook institution use may relate to time availability or social connection desires, whilst gender influencing Fitbit adoption ought to mirror advertising tendencies or differing health priorities. The institutions between age,

employment repute, and exercising frequency, as well as gender and perceived motivational effect, further underscore that a one-length-suits-all approach to virtual health interventions is probable suboptimal.

5.3 Reflection on theoretical framework selection

This study initially added several theoretical models—TAM, TAM2, TAM3, UGT, SDT, RBV, and Diffusion of Innovations to establish a comprehensive understanding of the elements that affect digital fitness adoption and motivation. Each model provides particular lenses:

- SDT focuses on intrinsic motivation through autonomy, competence, and relatedness.
- UGT considers how customers actively are seeking platforms based on private gratifications.
- RBV perspectives virtual fitness gear as strategic assets.
- Diffusion of Innovations explains societal-stage adoption traits.

However, at some point of data analysis, TAM3 emerged as the most relevant framework for explaining the discovered consumer behaviors and motivation patterns. TAM3's integration of perceived ease of use, perceived usefulness, social have an effect on, and computer self-efficacy aligns carefully with the quantitative findings. Therefore, while other models knowledgeable the general design and literature assessment, TAM3 became selected because the number one version for deciphering results due to its empirical alignment. This theoretical narrowing ensures analytical readability but does no longer decrease the conceptual value the alternative fashions provided in shaping the studies design and identifying potential user behaviors

5.4 Implications

5.4.1 Theoretical implications

Altogether, the implications of this study are summed up in the following findings, which would uphold several theoretical and practical implications for analyzing theories of health behaviour change, social support, and gamification in digital contexts.

Social Cognitive Theory/Social Support: The relationship among the use of facebook agencies and sticking to a plan, although it would not relate to motivation, helps thoughts that spotlight how social settings and studying from others can influence behavior, probably with no need sturdy motivation ideals. It shows the social context itself may be a powerful driver of adherence.

Self-Determination Theory (SDT): The hyperlink between Fitbit aim-setting (tracking) and consistency could relate to SDT's idea of competence, in which monitoring development enhances feelings of mastery and encourages persisted attempt. the dearth of impact at the motivation proxy may propose that even as monitoring supports competence, it could not necessarily boost intrinsic motivation or perceived autonomy as measured right here.

Gamification Frameworks: The results differentiate the impact of various gamification mechanics. Aim-setting and development monitoring (Fitbit dreams) seem more strongly connected to behavioral consequences (frequency) than easy project participation (facebook demanding situations) or trendy beliefs about demanding situations. This means that gamification theories ought to keep in mind the specific nature and implementation of mechanics, favoring people who provide clean feedback and progress tracking

5.4.2 Practical Implications

- Leveraging Social systems like facebook health businesses appear powerful in promoting workout adherence. Health promoters ought to utilize or encourage participation in such organizations that specialize in fostering supportive and responsible environments.

- Optimizing Wearable functions as an absolutely the usage of a Fitbit might not guarantee consequences; active engagement with features like intention-setting appears key. Platform designers need to prioritize intuitive and attractive intention-tracking functions. Onboarding procedures may want to emphasize the blessings of consistent purpose use.

- Gamification layout as an attention gamification effort on mechanics that provide clear development remarks and help aim fulfillment (like Fitbit goals) in preference to potentially less impactful factors like typical challenges without strong feedback loops.

- Tailoring Interventions influence of demographics on adoption and effectiveness highlights the desire for tailor-made approaches. Advertising and intervention layout should recall the desires and preferences of different gender, age, and employment agencies.

- Motivation Proxies relying completely on self-stated motivational ideals might not seize the entire image. Interventions must additionally be aware without delay on behavioral techniques and environmental support, as these seem linked to adherence even if specific motivation measures aren't appreciably affected.

5.4.3 Recommendations

- Endorse participation in online fitness groups (like facebook organizations) as a capability strategy to improve adherence thru social assist and duty.
- When recommending wearables like Fitbit, emphasize the importance of actively using purpose-setting and monitoring functions for higher consistency.
- Don't forget demographic elements whilst suggesting digital equipment, tailoring guidelines to the person's customer characteristics and preferences.
- Actively interact with goal-placing capabilities if the usage of a health tracker like Fitbit.

- Make use of the social assistance and responsibility aspects of online health corporations.

- Understand that consistency can also construct even supposing explicit motivation does not seem appreciable higher to start with.

5.5 Future research directions

- Use qualitative techniques (interviews, cognizance corporations) to explore why Facebook companies impact adherence (e.g., accountability, support, records sharing) and how customers interact with Fitbit dreams to enhance consistency.

- Conduct longitudinal studies to track modifications in motivation, adherence, and platform engagement through the years, establishing causality more definitively.

- Behavior greater granular analyses evaluating the effect of different varieties of Facebook organization interactions (posting vs. lurking, venture kinds) and various Fitbit functions (step counts, heart fee monitoring, sleep monitoring) beyond simply goal-placing.

- Mirror the study with large, extra numerous samples beyond Finnish adults to evaluate generalizability across exclusive cultural and socioeconomic contexts.

- Design studies that experimentally look at the impact of specific personalised comments or interventions introduced through those systems.

- Include measures of virtual literacy to investigate its potential position as a moderator, as to begin with hypothesized but no longer measured.

5.6 Conclusion

The study provides valuable insights into the capacity and complexities of the usage of Facebook health groups and Fitbit gadgets to sell bodily interest among Finnish adults. The findings indicate that social context, specifically within Facebook companies, is related to behavioural adherence, even as unique function engagement, consisting of Fitbit's aim-placing, correlates with exercise consistency. Gamification shows promise, but its effectiveness seems dependent on the unique mechanics employed. Moreover, demographic factors play a vast role in both the adoption and effectiveness of those virtual tools. At the same time, those structures provide ability, realising their blessings possibly calls for energetic user engagement with unique capabilities and probably tailored techniques considering user demographics. Similarly research the usage of more sturdy measures and longitudinal designs is needed to fully recognize the causal mechanisms and long-term influences of these famous virtual health interventions.

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Appendices

Appendix 1. Questionare for Survey (English) (Finnish)

The Importance of Facebook and Fitbit for Adults' Motivation to Stay Active in Finland

(Facebookin ja Fitbitin merkitys aikuisten motivaatiolle pysyä aktiivisena kotitreenissä Suomessa)

1. **What is your age group?**

(Mikä on ikäryhmäsi?)

○ 18–25

○ 25–35

○ 36–45

○ 46–55

○ 56+

2. **What is your gender?**

(Mikä on sukupuolesi?)

○ Male *(Uros)*

○ Female *(Naaras)*

○ Non-binary / Prefer not to say *(Ei-binäärinen / Ei halua sanoa)*

3. **What is your current employment status?**

(Mikä on nykyinen työsuhteesi?)

○ Student *(Opiskelija)*

○ Employed (Full-time) *(Työssä (kokopäiväinen))*

○ Employed (Part-time)

○ Unemployed *(Työtön)*

○ Retired *(Eläkkeellä)*

4. **How often do you engage in home workouts?**

(Kuinka usein harrastat kotitreeniä?)

○ Daily *(Päivittäin)*

○ A few times per week *(Muutaman kerran viikossa)*

○ Once a week *(Kerran viikossa)*

○ Rarely *(Harvoin)*

○ Never *(Ei koskaan)*

5. **Which fitness platforms do you use for home workouts?** *(Select all that apply)*

(Mitä seuraavista kuntoilualustoista käytät kotiharjoitteluun?)

☐ Facebook fitness groups *(Facebook-kuntoryhmät)*

☐ Fitbit

☐ Other fitness apps (e.g., Strava, MyFitnessPal)

☐ None *(Ei mitään)*

6. **Which aspect of Facebook fitness groups motivates you the most?** *(Select one)*

(Mikä Facebook-kuntoryhmien puoli motivoi sinua eniten?)

○ Workout challenges & competitions *(Haasteet ja kilpailut)*

○ Community support & interaction *(Yhteisön tuki ja vuorovaikutus)*

○ Expert advice & recommendations *(Asiantuntijoiden suositukset)*

○ Progress sharing & feedback *(Edistyksen jakaminen ja palaute)*

7. **Which Fitbit feature has helped you the most in staying motivated?** *(Select one)*

(Mikä Fitbit-ominaisuus on auttanut sinua eniten pysymään motivoituneena?)

○ Activity tracking *(Askeleet, syke, kalorit)*

○ Workout reminders & goals *(Muistutukset ja tavoitteet)*

○ Gamification *(Merkit, haasteet, palkinnot)*

○ Sleep & recovery tracking *(Unen ja palautumisen seuranta)*

8. **How often do you participate in fitness challenges on Facebook?**

(Kuinka usein osallistut kuntohaasteisiin Facebookissa?)

○ Weekly *(Viikoittain)*

○ Monthly *(Kuukausittain)*

○ Occasionally *(Silloin tällöin)*

○ Never *(Ei koskaan)*

9. **How often do you use Fitbit's goal-setting features?**

(Kuinka usein käytät Fitbitin tavoitteiden asettamisominaisuuksia?)

○ Daily *(Päivittäin)*

○ Weekly *(Viikoittain)*

○ Occasionally *(Silloin tällöin)*

○ Never *(Ei koskaan)*

10. **Which aspect of Fitbit's AI coaching has influenced your habits the most?**

(Mikä Fitbitin tekoälyvalmennus on vaikuttanut eniten?)

○ Personalized workout recommendations *(Henkilökohtaiset suositukset)*

○ Real-time feedback *(Reaaliaikainen palaute)*

○ Automatic goal setting *(Automaattiset tavoitteet)*

○ I do not use these features *(En käytä näitä ominaisuuksia)*

11. **What challenges do you face using Fitbit for workouts?** *(Select all that apply)*

(Mitkä ovat tärkeimmät haasteet käyttäessäsi Fitbitiä?)

☐ Device is too expensive *(Laite on liian kallis)*

☐ Difficult to understand features *(Vaikeus ymmärtää ominaisuuksia)*

☐ I lose motivation *(Menetän motivaation)*

☐ No challenges experienced *(Ei haasteita)*

12. **What would improve Facebook fitness groups for you?** *(Select all that apply)*

(Mikä parantaisi Facebook-kuntoryhmiä?)

☐ More structured workout plans *(Strukturoidummat suunnitelmat)*

☐ More interactive challenges *(Enemmän haasteita ja palkintoja)*

☐ Better expert coaching *(Parempi asiantunteva ohjaus)*

☐ Easier interface *(Helppokäyttöisempi käyttöliittymä)*

13. **Do Facebook and Fitbit provide equal accessibility for all, including older adults?**

(Tarjoavatko Facebook ja Fitbit tasavertaista saavutettavuutta?)

○ Yes *(Kyllä)*

○ No *(Ei)*

14. On a scale of 1 to 5, how much do you agree with the statement below?

"Facebook fitness groups and Fitbit are inclusive for all fitness levels and ages."

(Facebook-kuntoryhmät ja Fitbit sopivat kaikille tasoille ja ikäryhmille.)

1 = Strongly Disagree | 2 = Disagree | 3 = Neutral | 4 = Agree | 5 = Strongly Agree

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

15. Would you use Facebook & Fitbit more if they were better customized to your needs?

(Käyttäisitkö enemmän, jos ne olisi paremmin räätälöity tarpeisiisi?)

○ Yes *(Kyllä)*

○ No *(Ei)*

16. Would you be interested in using AI-driven coaching features?

(Haluaisitko käyttää tekoälypohjaisia valmennusominaisuuksia?)

○ Yes *(Kyllä)*

○ No *(Ei)*

17. Which emerging technology would be most effective for you?

(Mikä nouseva teknologia olisi tehokkain sinulle?)

○ AI-driven coaching *(Tekoälyvalmennus)*

○ AR workouts *(Lisätyn todellisuuden harjoitukset)*

○ VR experiences *(Virtuaalitodellisuuden kuntokokemukset)*

○ None of the above *(Ei mikään edellä olevista)*

18. Facebook fitness groups provide useful guidance that improves my workouts.

(Facebook-kuntoryhmät tarjoavat hyödyllisiä ohjeita.)

Rate:

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

19. What prevents you from engaging with Facebook fitness groups? *(Select all that apply)*

(Mikä estää sinua osallistumasta Facebook-kuntoryhmiin?)

☐ Lack of personalized recommendations

☐ Privacy concerns

☐ I already actively participate

☐ Not enough motivation

20. Fitness challenges on Facebook and Fitbit help me stay consistent.

(Fitness-haasteet auttavat minua pysymään johdonmukaisena.)

Rate:

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

Questionnaire Survey Available at

https://link.webropolsurveys.com/S/B223E7EF0224324B

***********************Thanks for your participation*********************