


Digital Fitness and Sustainable Consumption: Understanding Consumer Motivations and Barriers


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Abstract

As digital fitness platforms and wellness technologies become the norm in modern health routines, understanding what impacts the user's engagement is key to creating inclusive, ethical and sustainable solutions. Specifically, we explore participation in online fitness environment and related purchasing behavior through the lens of personal traits, digital trust, and motivational drivers. Utilizing 680 respondents' survey data, the analysis uses statistical testing and behavioral segmentation to reveal specific user patterns and preferences. Findings indicate that younger users who are physically active, especially females and those having higher trust in personal data privacy, were more likely to use online exercise programs and to share personal health data. Behavioural segmentation uncovers three distinct user clusters with varying degrees of digital engagement, which demonstrates a considerable diversity in how users engage health-related technologies. In addition, purchases of products in the fitness and nutrition category seem to be motivated not by price or by ethical issues but by financial incentives and gender differentiation. The study emphasizes that privacy and trust, existing workout habits and cost are the prime factors driving the use of digital fitness offerings. In contrast, poor digital readiness, concerns around data management, and the influence of ethical product attributes act as key hindrances in driving sustainable adoption. This study provides a new perspective by combining the behavioral, attitudinal and demographic predictions into one model of engagement with digital fitness products. These findings add to the broader discussions on sustainable consumption, identifying routes for improving health, equity, and digital wellbeing through inclusive and affordable technology uptake.

Keywords: Sustainable consumption; e-commerce; fitness; digital marketing; wellness.

JEL Classification: D12; I15; Q56; M31; O33.

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1. Introduction

The digital fitness and wellbeing market achieved a global revenue of USD 50.01 billion in 2024, reflecting its significant expansion (Statista, 2025). Ranging from web-based platforms to mobile applications, digital services such as diet planner platforms, fitness applications, and wearable technologies offer convenient, accessible, and personalized fitness solutions that empower consumers to manage their fitness routines and dietary habits independently (Abeltino

et al., 2025; Spanakis et al., 2016). At the same time, their incorporation fosters the global acceptance of health-aware and sustainable living practices (Stancu et al., 2022).

Despite the rapid growth and technological advancement of digital fitness ecosystems, consumer adoption remains uneven and fragmented (Jia & Ye, 2024; Rana et al., 2024). A considerable body of research has examined the adoption of digital wellness technologies, focusing primarily on usability, technological acceptance, and the role of personalized features in increasing user engagement (Specker Sullivan & Reiner, 2021). In parallel, studies have highlighted the importance of gamification elements and wearable device integration in enhancing the consumer fitness experience (Gupta et al., 2021). However, existing literature rarely considers whether sustainability considerations influence consumer decision-making within digital fitness environments (Elmor et al., 2024). Even though sustainable consumption has received much attention across industries, its implications for digital business models remain under-researched (Gossen & Lell, 2023). There is little research on whether consumers make fitness and nutrition purchasing decisions facilitated or shaped by digital platforms based on environmental or ethical considerations (Nie et al., 2021).

Also, it is important to notice another problematic issue, i.e., the absence of a real "user profiling", considering user behavior patterns, attitude aspects, and motivations related to the sustainability issues (Di Nocera & Tempestini, 2024). Prior research typically focuses on either demographic segmentation or technology acceptance, or fails to capture the holistic influence of trust, personalization needs, and sustainability awareness on user preferences in digital fitness ecosystems (Angosto et al., 2023; Baer et al., 2022; Methlagl et al., 2023).

This paper seeks to explore how the behavioural, demographic, and sustainability factors affect consumer adoption of digital fitness services. More specifically, it aims to reveal determinants of adoption intention, investigate the roles of trust, personalization, and willingness to share data, and to what extent green considerations influence a consumer's willingness to buy fitness and nutrition products in digital channels. Based on the profiling of consumers' motivations and barriers, these findings offer insights to the industry in terms of how digital fitness offerings can be designed to resonate with the needs of users concerned with sustainability.

To address these gaps, this study is guided by the following research questions:

1. What demographic and behavioural characteristics are associated with consumers' intention to adopt digital fitness and wellness services?
2. How does trust in privacy policies influence consumers' willingness to share personal data within digital fitness platforms?
3. Are there distinct user profiles based on their needs for personalization, gamification, and integration with wearable technologies?
4. To what extent do sustainability considerations influence purchasing decisions related to fitness and nutrition products in the digital environment?

By analysing survey data from 680 Greek consumers, this study provides behavior-based user segmentation that goes beyond traditional demographic profiling. It identifies key predictors of adoption intent, demonstrates the role of digital trust, and offers practical insights for fitness providers, marketers, and platform designers who aim to align their offerings with sustainability-conscious consumers.

The innovative perspective of this study contributes to our understanding of the dynamic nature of sustainable consumption. In identifying which consumer groups are more willing to use technology to engage in health and wellness, the study contributes to the sustainable

consumption agenda by highlighting preventive, health-oriented behavior and the shift away from high-cost, resource-intensive built physical infrastructure industries. In addition, the high correlation with the discount sensitivity to online product purchases implies that for broader adoption of sustainable health behaviours, particularly among young consumers and those with lower incomes, perceived value and affordability are likely key motivators. Crucially, the study indicates that users who already trust health services with data privacy are more likely to adopt digital fitness solutions, highlighting the importance of transparency, ethics, and inclusivity in digital platforms, key components of digital sustainability and responsible consumption. This combination of behavioural data with the understanding of digital health engagement presents a novel, people-first approach for encouraging sustainable lifestyle choices, in line with both the European Green Deal and the UN Sustainable Development Goals, notably SDG 3 and SDG 12.

The questionnaire was designed to correspond precisely to the study's four research questions and included numerous choice items. The first section includes demographic characteristics to answer RQ1 regarding the relationship between demographic and behavioural features and the adoption of digital fitness services. The second section is related to exercise and service usage patterns, such as previous use of nutrition and fitness services, exercise motives, and purchase history, relevant to RQ1 as well. For RQ2, items assessed belief in data privacy policies and willingness to provide personally identifiable data for personalised product recommendations. For RQ3, preference statements are investigated, including personalised options, gamification, and wearable technology integration, as well as desired attributes of digital fitness sites. For RQ4, sustainability concerns are explored, including ethical sources, environmental concerns, and peer ratings influencing the consumer's choice of fitness and nutrition products, among others. In this way, the structure of the questionnaire ensures each research question is precisely tied to corresponding questionnaire items.

2. Literature Review on Digital Fitness and Sustainable Consumption

The evolution of digital fitness services has significantly reshaped consumer interaction with health and wellbeing platforms (Singh & Singh, 2023). Mobile fitness applications, wearable devices, and diet planning tools have become widely accessible (Nogueira-Rio et al., 2024), offering users personalized fitness experiences supported by real-time feedback, progress tracking, and social features (Dharia et al., 2018; Kranz et al., 2013). The use of AI and machine learning systems within digital fitness services can automate workout tracking, as well as provide personalized and adaptive recommendations, resulting in a more engaging and effective user experience (Farrokhi et al., 2021).

One of the key areas of research in the domain is gamification and personalization as user engagement strategies. Gamification incorporates gaming, competitive, and incentive-based aspects in fitness applications and wearable trackers to motivate users to achieve fitness outcomes and sustain participation over time (Cho et al., 2021; Ozdamli & Milrich, 2023; Tu et al., 2019). Nevertheless, some studies suggest that although gamification may increase initial user engagement, its effects on maintaining fitness behavior over a more extended period are not apparent (Rodrigues et al., 2022).

Previous studies on technology acceptance have predominantly used conceptual frameworks such as the Technology Acceptance Model (TAM) and the Expectation Confirmation Theory (ECT) to investigate user behavior (Hossain & Quaddus, 2012). However, recent research in

the fitness field indicates that adherence to these principles may not be enough to meet the increasingly sophisticated demands of current users, who also value psychological satisfaction, enjoyment, trust and privacy in addition to functional performance (Oesterreich et al., 2024). New theoretical paradigms, such as the Motivation, Engagement, and Thriving in User Experience (METUX) model, pinpoint that the design and use of technology should enable the users' basic psychological needs across all spheres of experience, from initial adoption up to enduring societal consequences (Peters et al., 2018). Based on these theoretical frameworks, recent research logically advances from traditional technology acceptance models toward a more comprehensive understanding of user engagement, wellbeing, and behavior of digital fitness participants.

Within this changing paradigm of user-centered design and psychological engagement, wearable fitness tracking devices are a key technology that can directly impact user experience and continued usage (Ferreira et al., 2021). Wearable devices are the cornerstone of digital fitness ecosystems, as the ability to synchronize real-time health information and offer personalized biofeedback has a significant impact on user satisfaction and continued fitness behaviors (Del-Valle-Soto et al., 2024). However, obstacles such as technological fatigue, apprehensions regarding data precision, and the perceived obsolescence of devices persistently hinder broader acceptance (Padyab & Habibipour, 2021).

Combined with these user experience perspectives, attention to privacy and trust has emerged as equally salient to users in choosing and maintaining digital fitness technologies (Durid et al., 2023; Singh, 2023). Therefore, users are now particularly interested in data management transparency and are willing to share more with platform when they are fully trusting of the platform's privacy policies (Lambillotte & Bart, 2023). Yet not all user groups experience these privacy concerns (Hong et al., 2021). Empirical studies suggest that younger people are more inclined to display an increased level of comfort and adaptability in the dissemination of personal information, whereas individuals in older age groups frequently exhibit a pronounced degree of skepticism and prudence regarding data-sharing methodologies (Bietz et al., 2019; Zeissig et al., 2017).

Despite such individual differences in privacy issues, the importance of customized fitness experiences is equally important among multiple demographics (Jang & Kim, 2025). Customized features, including personalized programs, real-time assessment, and integration with wearable devices, have frequently been cited as the most important factors influencing user satisfaction and adherence in digital fitness systems. The incorporation of gamification elements, encompassing incentives, challenges, and progress monitoring, augments intrinsic motivation and facilitates sustained commitment to physical fitness adherence (Fatima et al., 2023). However, those personalization and gamification features that drive engagement tend to rely on broad sets of personal data collected on these platforms, a fact that can exacerbate user suspicions related to privacy. When data practices are not transparent enough, perceived risks associated with the misuse of data can outweigh the motivational benefits of these functionalities, ultimately undermining trust and long-term engagement with the platform (Kozyreva et al., 2020).

Digital fitness services can create and support sustainable consumption by providing tailored plans that suggest environmentally-friendly and low-impact nutrition options (Culos-Reed et al., 2021). Offering information about environmental best practices and the development of community spaces where people can share their sustainability fitness experience might also help to promote the behavior to consumers to adopt and sustain such practices while driving increased engagement and loyalty as their needs evolve (Liang et al., 2023; Sathya et al., 2024).

While sustainability concerns have taken over in several industries like fashion or food (Adams et al., 2021; Todeschini et al., 2017), little research has been done on integrating sustainability in digital fitness services (Nie et al., 2021). The factors of age, gender, and socioeconomic status represent essential components to consider in the examination of consumer preferences concerning digital fitness services. Young consumers, such as millennials and Generation Z, have a higher acceptance of services because of their inherent digital capability and stronger environmental concerns (Li et al., 2024), compared with older consumers, for whom targeted education programmes can increase acceptance. Gender considerations also influence preferences, as women tend to appreciate fitness apps that are sustainable and sourced ethically, while men appreciate the functionality or usability (Vilkaite-Vaitone, 2024). Moreover, rich people are more likely than low-income people to pay for premium, sustainability-conscious solutions, while cost remains a significant consideration for low-income individuals (Deloitte, 2022).

Consumer acceptance of digital fitness services is also influenced by behavioural aspects (Dhiman et al., 2019). Consumers with solid pro-environmental values are more receptive to fitness platforms that advocate for sustainable practice and ethical sourcing (Chuan et al., 2025). Further, early adopters of technology are the ones who drive popularity for novel digital wellness solutions because the latter are easy to use and personalisable, and because users can monitor their progress in real time (Ylilehto et al., 2021). Social media also plays an essential role, with fitness influencers and eco-conscious communities adeptly championing sustainable fitness strategies and encouraging consumer involvement in green digital products (Hafyana & Alzubi, 2024).

Sustainability factors are having a greater impact on consumer uptake of digital fitness services. Eco-friendly products, such as sustainable workout equipment or environmentally-friendly nutrition plans (Subie et al., 2009). Ethical sourcing practices, including fair trade raw materials and sustainable supply chains, also play a significant role in building consumer trust and loyalty (Tanveer et al., 2021). Furthermore, services with less environmental impact, such as virtual workouts that reduce transportation needs and encourage environmentally friendly behavior, could be more attractive for their environmental friendliness (Vijayalakshmi et al., 2025).

Given these patterns of behavior, the importance of multi-faceted consumer portraits has been increasingly acknowledged (Androniceanu et al., 2020), particularly in clarifying the relationship between behavioural inclinations, sustainability motivations, and privacy perceptions in influencing the adoption of digital fitness solutions. This integrated profiling can inform the development of digital fitness platforms that balance consumer demand for personalisation, privacy protection, and environmental consideration.

3. Methodology and Data

Given the purpose of our study, a structured questionnaire was developed and distributed through email invitations and social media platforms to leverage the broad reach and cost-effectiveness of digital surveys. To boost the response rates of our research and uphold ethical standards, informed consent was obtained by providing participants with detailed information about the study, emphasizing voluntary participation and maintaining confidentiality. The survey was conducted during the first quarter of 2025 and yielded a sample of 680 Greek consumers.

Methodologically, this study used non-parametric statistical tests (Mann-Whitney U test) to compare differences between independent groups, without assuming their data followed a normal distribution. It also applied the Chi-square test to investigate possible associations between categorical variables. Generally, using these non-parametric methods comes with several benefits. They require fewer assumptions about how the data is distributed. Also, they tend to be more reliable when dealing with small groups of participants or data, making the study's findings more valid.

The demographic analysis of the respondents indicates that most are relatively young, with the group of participants aged 20-35 years old being the largest in number. Significantly, both 21 and 22 years of age appear to figure at around 4.6% of all responses, indicating a substantial coverage of younger adults. Regarding gender, though the sample is slightly skewed female (64.1%), 35.6% identify as male, and a small number identify as a different gender. Participants are highly educated, with 39.3% holding a Master's degree and 30.9% having a higher education degree, indicating a well-educated and possibly health-aware population. As to occupation, the public sector is predominant, with 43.7% working in government, followed by those who work in the private sector (26.9%), self-employed or unemployed in smaller numbers. Results from the income categories show the majority of the sample with middle income status, with the same income categories 901–1200€ (13.2%), 601–900€ (12.8%) and 1201–1500€ (11.8%) being the most common.

4. Results

This section presents the findings of our statistical analysis based on the research questions presented. First, we aim to investigate the demographic and behavioural characteristics associated with consumers' intention to adopt digital fitness and wellness services (RQ1). Behaviourally, the respondents are fitness active, with 44.6% currently working out weekly and 27.2% engaging in some form of health and fitness activity daily. Only 9.7% work out less than once a month. A full 87.8 percent of participants have used professional fitness services in the past, including gym memberships, online fitness programs, and group training sessions. Moreover, 65.1% have visited a dietitian/nutritionist, indicating a high demand for expert help on health and wellbeing. 67.8 per cent are willing to use such online fitness programmes, a potential for platforms that give personalised support and proactive content for home workouts. Employing non-parametric tests, we analysed the effect of demographics on willingness to join online fitness programs. Results are summarized in Table 1. As shown, all demographics are significantly associated with consumers' willingness to join an online fitness program, except for their education level and educational status.

Table 1. Non-parametric tests of willingness to join digital fitness programs depending on their demographic

Variable	Mann-Whitney U test	Chi2	P-value	Interpretation
Age	46995.5		0.00019	Statistically significant
Gender		13.12	0.0014	Statistically significant
Education		3.658	0.3008	Non-significant
Employment		2.86	0.414	Non-significant
Income		20.66	0.0043	Statistically significant
Exercise frequency		2.77	0.8577	Non-significant

Source: Authors' calculation.

Chi-square tests support that there is a significant difference between gender and willingness to use a digital fitness service ($\chi^2 = 9.26$, $p = 0.0095$). This suggests that the gender of users positively impacts their attitude towards digital fitness subscriptions. More precisely, this implies that men and women are markedly different in their likelihood of indicating interest in purchasing the service from such businesses. In line with literature in fitness and wellbeing (Adams, 2025; Lyu et al., 2024), this finding further emphasizes the need for gender-sensitive marketing and product design in digital fitness; different engagement patterns might mirror discrepancies in motivation, expectation, or digital confidence between male and female users. Regarding the statistical significance of income ($\chi^2 = 20.66$, $p = 0.0043$), participants with higher income levels showed the highest intention to subscribe to an online fitness program, especially when personal guidance was provided. Respondents with lower monthly income were more hesitant or resistant to technology use, possibly caused by economic circumstances, perceived the trade-offs between costs and benefits, or aversion to the expenses of technology. In the policy or business context, it follows that tiered pricing models or freemium offerings are important to consider for different income levels. Finally, the Mann–Whitney U test confirms that there is a statistically significant difference in age between individuals who are willing to join an online fitness program and those who are not. Those who indicated a willingness to participate were significantly younger than the "No" respondents. This result reinforces the perception that digital engagement and fitness uptake are more common amongst younger individuals and suggests targeting youth outreach strategies. Finally, while 'active' users might expect to be the most obvious target market for digital programmes, our results suggest that they are not that different in this regard - occasional and regular exercisers were equally likely to say they would join an online fitness service. This result may suggest that low-active individuals see the Internet as a supplement to their regular activity, whereas high-active participants think that their current behaviour is effective (as coached sport, gym membership, etc.) and find less added value in paying for an online programme.

When the analysis focuses on how trust in privacy policies influences consumers' willingness to share personal data within digital fitness platforms (RQ2), the responses reveal a split in digital trust among consumers. When questioned if they have faith in the privacy policies of the fitness and nutrition apps, the responses were nearly evenly divided: 50.7% are not trusting the data practices of these platforms, versus 49.3% who have faith. This equilibrium suggests a high level of scepticism, indicating that data transparency and accountability should be central to corporate strategies for digital platforms. This careful perspective is supported when examining consumers' attitudes towards sharing personal information for personalized recommendations. A majority - 55.1% - are not positive about sharing their data, while only 44.9% are willing to do so. These findings highlight a key counterintuitive point: Even those who trust platforms cannot be assumed to share data. Consistent with previous research (Iman, 2024; Kuan & Lee, 2023), this indicates the need for platform designers and marketers to be more explicit about data security, provide more control over data sharing, and demonstrate the practical utility of personalized features.

Next, Table 2 presents the results to investigate trust-related and demographic drivers of individuals' willingness to share personal data with fitness platforms. Chi-square tests indicate that the association of trust in privacy policies was strongest with data sharing ($\chi^2 = 96.66$, $p < 0.00001$). People are much more willing to share data if they can trust how it will be used. Those who had previously sought professional help (i.e., personal trainers, nutritionists, etc.) were also more likely to share data ($\chi^2 = 16.84$, $p = 0.00004$), which could be attributed to experience with health data systems. Gender ($\chi^2 = 15.52$, $p = 0.0004$) and education ($\chi^2 = 11.61$,

$p = 0.0088$) also had a significant impact, where males and higher educated individuals were more likely to be open to data sharing. Furthermore, there was a statistically significant association with age as well ($p = 0.0029$), with younger participants being more likely to want to release their data.

Table 2. Non-parametric tests of willingness to share personal data within digital fitness programs, depending on their socio-demographic characteristics

Variable	Mann-Whitney U test	Chi2	P-value	Interpretation
Age	48695		0.0029	Statistically significant
Gender		15.52	0.0004	Statistically significant
Education		11.61	0.0088	Statistically significant
Employment		2.86	0.414	Non-significant
Income		20.66	0.0043	Statistically significant
Previous use of health apps		16.84	0.00004	Statistically significant
Trust privacy		96.66	0.000007	Statistically significant

Source: Authors' calculation.

As for the distinct digital fitness user profiles (RQ3), preferences regarding motivational features in digital fitness services imply a high demand for personalized and limit-breaking support. The most requested platform feature (chosen by 40% of respondents) was personalized progress tracking. This is then closely followed by virtual training sessions (20%), AI nutrition planning (13.7%), and time-saving tools (15.4%). Of note, only 7.7 percent said that wearables should take priority, indicating that while wearables are important, they are certainly not the number one driver of engagement for most users.

Next, a K-Means cluster analysis was performed to assess user segmentation based on preferences for digital fitness features, including five binary preference variables: tracking, virtual sessions, AI nutrition, wearable integration, and time-saving tools. Prior to clustering, the data were standardized to ensure equal weighting of features. The optimal number of clusters was determined using the elbow method, which involved plotting the within-cluster sum of squares (WCSS) for different values of k and identifying the point at which the marginal gain in explained variance diminished. K-Means clustering was then performed using the selected value of k , and the resulting clusters were interpreted based on the relative prevalence of the binary preferences within each group. Based on responses, three different clusters of users were identified as well. These clusters were verified by silhouette scores (optimal k at $k = 3$, silhouette = 0.774) and principal component analysis (PCA), which showed two dimensions.

The first cluster, Trackers, which comprises approximately 38.9% of the sample, has a strong preference for activity monitoring alone, rather than other digital functionalities. This group is demographically majority female (approximately 61%) and has a significant membership of people with higher or postgraduate education. In terms of age, the majority of individuals in this group are young adults (18–34). These characteristics denote a user profile that is task-oriented, health-conscious, and not averse to structured self-monitoring, but less likely to be interested in high-tech engagement (e.g., artificial intelligence (AI), wearable integration). Their selective use of fitness apps may indicate a desire for simplicity, normality, and personal control in monitoring health and fitness.

The second-largest cluster of Passive Users (53.7%) consists of users with persistent low engagement across all five digital fitness features. The gender ratio in this group seems to be more or less equal; they have male and female candidates in approximately the same proportion. The level of education is usually high. In particular, most users have graduated from university,

but the group is still more mixed compared to the first group. Most passive users were 26 to 50 years old, meaning a middle-aged population that can suffer from digital fatigue (having too much digital content), with little time at their disposal and a lack of awareness of the productivity of digital fitness. Their withdrawal is an indication that education itself is not sufficient for digital adoption, especially when motivation or perceived relevance is low.

The third smallest (7.4%) cluster -Wearable Enthusiasts- is characterised by users with high wearable device integration, which demonstrates a higher level of digital fitness. This group is predominantly made up of men (about 75%), with highly educated individuals, including a high percentage of people with postgraduate degrees. Most individuals in this group are young adults, especially people aged 18-34 years old. These attributes appear to reflect an extremely technology-proficient, innovation-seeking user base that may be in line with the "quantified self" trend. This strong interest will likely mean wanting real-time feedback, syncing across devices, and data-driven optimisation of fitness behaviour. This segment could be considered as the innovators or trend setters in the digital wellness space.

When asked why consumers favoured fitness apps over more conventional methods, the key reasons given are gamification and interaction (34.4%), personalized recommendations (28.8%) and integration with smart devices, such as smartwatches (21.3%). These preferences suggest the existence of different user types, with some drawn to tech integration, others to custom plans, or game-like aspects. Several other benefits that users mentioned among their reasons for using digital fitness apps include accessibility and convenience, measurable results, motivation reminders, cost savings, and a sense of community. These resemble the motives for autonomy and relatedness, rooted in digital motivation theories. Nevertheless, consumers also listed significant drawbacks. Four key criticisms of the apps were found: limited personalization, inaccuracy of data (e.g. unreliable step counting or calorie expenditure), reliance on the technology and long-term loss of motivation. Significantly, issues of privacy also emerged as an obstacle. This tension - the desire for personalization and friction around data sharing - demonstrates a duality that platforms need to address head-on, with transparent, ethical, and user-centered design tactics.

These demographic differences highlight that digital fitness preferences are not equally spread across the population, as supported by previous research (Oyibo & Vassileva, 2020; Sanchez et al., 2020). For younger and well-educated people, the devices belong either to the sphere of tracking (Trackers) or wearables (Wearable Enthusiasts), while in the middle-aged educated strata (Passive Users), a significant share is still not digitally active. Still, education should be a good driver. This underscores the significance of motivational, psychological, and contextual barriers that are more meaningful than mere demographic predictors.

Finally, the analysis aims to determine the extent to which sustainability considerations influence purchasing decisions for fitness and nutrition products in the digital environment (RQ4). Findings imply that despite growing sustainability consideration, it has yet to be a significant catalyst when consumers make purchases of digital fitness and nutrition products. Just over half (52.2%) have not bought fitness or nutrition-related products online (47.8% did), suggesting a moderate penetration of e-commerce in the area. When respondents were asked what makes them want to buy such products online, the majority cited client reviews (17.4%), price (13.4%), and discounts or special offers (9.1%). While sustainability and ethical consumption were among the response choices in the survey, they were infrequently chosen by most respondents, suggesting that financial and social proof appear to persuade the public about their purchasing decisions more than the environment. This underscores both a challenge and an opportunity that sustainability communication needs to become more visible and more

genuine, as Weder et al. (2021) argue, and more related to tangible value for the end user, if any shift is to be observed from a "nice to have" to a "must have" purchasing criterion.

Next, for demographic factors and consumer attention toward sustainability-related and ethical dimensions in their online purchase of fitness and nutrition, statistical tests were performed. Age stands as the only demographic characteristic with statistically significant differences among sustainability-oriented purchase behaviours according to the analysis. Older participants were significantly more likely to consider sustainability ($\chi^2 = 95.99$, $p = 0.0017$) and ethical factors ($\chi^2 = 95.70$, $p = 0.0018$) when it came to choosing digital fitness purchases. These results also imply that maturity is associated with more environmental and ethical awareness regarding digital consumption. In contrast, the gender, education level, and income influences were not observed for any of the sustainability factors (environmental responsibility, eco-friendly features, or influence by online reviews). This suggests that younger consumers may be digitalised but not yet 'socialized' to the same degree by their consumption behaviour to hold sustainability values.

Finally, despite the expectations that behavioural engagement with digital fitness would influence purchase behaviour in relation to sustainability, no significant associations were found between several key behavioural variables and respondents' likelihood of considering sustainability or ethical concerns. More specifically, exercise frequency, trust in data privacy policy, willingness to share personal data, and exposure to fitness-related advertisements were not significant predictors of those consumer segments who reported that sustainability or ethics had relevance as purchasing criteria. Participants' future intent to join a personalised online fitness programme or purchase a subscription-based nutrition service also did not yield statistically significant differences in the sustainability outcome. This reveals a critical gap in the existing knowledge, as basic digital engagement might not be effective in fostering sustainability awareness or transforming it into actionable steps. Further research is essential to investigate the underlying attitudinal, psychosocial, or life-stage-related factors that may impact this relationship, highlighting the importance of integrated, value-centric design in promoting ethical digital consumption.

5. Discussion

This study provides a composite examination of user engagement in the digital fitness environment to enhance sustainable behaviour (Hafyana and Alzubi, 2024), using qualitative insights from Greek consumers. The results show that trust, demographics, and feature-specific preferences are central in users shaping engagement and sustainable consumption in digital fitness. More specifically, digital fitness platforms that integrate social media can shape eco-friendly choices by increasing environmental awareness and promoting sustainable fitness services. Simultaneously, results illustrate that digital fitness environments using technologies can also enhance sustainable behaviour, aligning with previous empirical studies (Liu et al., 2023), by improving digital capability, employability skills, and innovative thinking. Information sharing, marketing strategies, and perceptive benefits further mediate the relationship between digital skills and sustainable intentions. It is important that digital fitness interventions can lower psychosocial barriers to physical activity, such as lack of motivation or social support, by fostering social connectedness and providing accessible, engaging experiences leading to more consistent and sustainable behaviour change (Reiner and Reed, 2024).

Moreover, the findings demonstrate that a strong relationship might exist between trust in data security and the adoption of health technologies (Kisekka and Giboney, 2018; Dhagarra et al., 2020). Particularly, higher trust and confidence in data protection measures consistently lead to greater acceptance and use of digital health tools, while privacy and security concerns act as significant barriers. Belief in the effectiveness of information security safeguards and trust in information systems are positively associated with consumers' willingness to share records. Conversely, privacy concerns reduce usage and positive attitudes toward technologies (Catapan et al., 2025). Also, similar to previous research (Yang et al., 2022), results indicate that cost sensitivity can significantly limit the general adoption of health-related apps and devices. Many users are unwilling to pay for these technologies, and hidden or ongoing costs often lead to discontinuation, even among initial adopters.

At the same time, the preference for online programs and health/performance data sharing among younger, gainfully employed individuals supports earlier findings that younger demographics are more willing to engage in self-monitoring and integrate wearable technologies into their routines (Krebs and Duncan, 2015). Nevertheless, findings show that factors such as sustainability labels, peer reviews, and ethical considerations may not be significant factors of purchasing behaviour, contradicting previous empirical findings (Suganya, 2023; Negar and Varma, 2025).

6. Conclusion

This study offers a multi-aspect examination of user engagement in the digital fitness environment to enhance sustainable behaviour. Based on a qualitative analysis of Greek consumers, the results have demonstrated the significant influence of trust, demographics, and feature-specific preferences on consumer sustainable preferences. In the context of digital fitness and sustainable consumption, this study identifies a set of motivations for adopting technology-based wellness behaviours. Findings suggest that the top reasons for the workout trend include data security trust, regular exercise habits, and prior experience with fitness experts, which are typical of the digitally savvy and health-conscious user base. Online fitness programs and health/performance data sharing are especially appealing to the younger, gainfully employed generation for whom health and wellness monitoring is already a value. Monetary incentives, including the availability of discounted items, additionally drive engagement, suggesting that low-cost access is imperative in growing participation. These results demonstrate how digital fitness can support sustainable, health-promoting practices when it is described in ways that resonate with users' values, schedules, and perceived benefits.

However, there are some barriers to the widespread utilization of digital fitness applications to promote sustainable consumption. Results suggest that many consumers, termed passive users, have little inclination for digital capabilities, suggesting deficiencies in their digital preparedness or perceived applicability. Furthermore, the lack of trust over the handling of personal information continues to stand in the way, even among those interested in living healthier lives. In contrast, characteristics typically associated with ethical consumption, including sustainability and peer reviews, did not significantly influence product purchasing, demonstrating that consciousness of the data does not always translate to behaviour in this realm. These obstacles underscore the necessity for transparent, approachable, and customized digital health ecosystems, which enable individuals to make informed choices.

Findings have substantive implications for policymakers, platform designers, and health promotion agencies interested in promoting sustainable consumption and digital health equity. First, efforts to create digital trust, such as clear data policies and ethical platform design, could be associated with higher levels of data sharing and platform use. Moreover, financial accessibility, such as specially targeted discounts or subsidised app access, seems to be an important factor to stimulate adaptation, certainly among passive users. Third, identifying user segmentation can guide the design of communication strategies and platform features that align with user preferences, to promote long-term engagement and to limit resource-heavy fitness activities. These findings are in harmony with the ideals of sustainable consumption and the promotion of health-enhancing behaviours that cost-effective technology-based solutions can achieve.

Nevertheless, the present study has several limitations that should be acknowledged. Self-reported data may be subject to social desirability bias, while the cross-sectional nature of the study design limits generalizability. Also, the distribution of respondents across demographic groups and regions may not be uniform, with specific segments being overrepresented. This distribution may have influenced the results by reflecting more strongly the attitudes and behaviours of these subgroups, thereby limiting the extent to which the findings can be generalized to the broader population. Thus, future research could examine longitudinal data to examine behavioural changes in response to targeted interventions. Furthermore, potential exists for a more detailed exploration of sustainability attitudes, for instance, regarding how digital fitness consumers appraise environmental and social issues. Moreover, extending the research to cross-cultural and pan-European settings could increase the level of external validity of the segmentation model and might reveal other behavioural patterns related to the adoption of digital wellness.

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