The 3rd International Innovation Technology Proceedings
Vol 3 No 1 (2025): October
E-ISSN: 3030-9948
https://iite-proceeding.poltekindonusa.ac.id

Smartwatch Features and Sustainable Healthy Behavior: Analysis of the Influence of Convenience, Challenge Relevance, and Social Support on Gen Z

Agus Susanto[1*], Markus Utomo Sukendar[2], Maharani Ayuning Tyas[3]
[1,2,3]Media Production, Politeknik Indonusa Surakarta
*Corresponding author: agussus@yahoo.com

Received:	Revised:	Accepted:	Published:
July 9, 2025	July 16, 2025	July 31, 2025	October 6, 2025

Abstract

The use of wearable devices in health promotion is increasing significantly, particularly through the features embedded in smartwatches. Generation Z represents the age group with the highest usage of these devices in daily activities, offering substantial potential for technology-based interventions in shaping sustainable healthy behavior. This study aims to analyze the influence of perceived convenience, challenge relevance, and social support in smartwatch use on the likelihood of adopting sustainable healthy behavior. A quantitative method was employed using a survey administered to Generation Z respondents during May and June 2025. Data were analyzed using binary logistic regression to identify variables with statistically significant influence. The results indicate that social support has a significant effect on the likelihood of engaging in sustainable healthy behavior, with a p-value of 0.010 and an odds ratio of 1.270. Perceived convenience shows a near-significant influence with a p-value of 0.066 and an odds ratio of 1.133. Meanwhile, challenge relevance does not demonstrate a statistically significant effect, with a p-value of 0.320 and an odds ratio of 0.918. These findings suggest that smartwatch features that encourage user interaction and peer support are more effective in shaping health behavior among younger populations. Accordingly, digital health communication strategies should prioritize the strengthening of social support components in device-based interventions targeting Generation Z.

Keywords: *smartwatch, sustainable healthy behavior, Generation Z*

Introduction

The rapid advancement of digital technology has transformed how individuals manage and monitor their personal health (Dhar, Kumar and Karmakar, 2023). Among the most prominent innovations is the smartwatch, a wearable device that serves not only as a timekeeper but also as a multifunctional health assistant. Equipped with features such as activity tracking, sleep monitoring, heart rate detection, and real-time health notifications, the smartwatch has become a preferred tool for promoting healthy lifestyles (Charan, Khurana and Kalia, 2023; Asim *et al.*, 2024). Its popularity is particularly evident among Generation Z (Gen Z), a demographic cohort born into a digital environment and highly responsive to personal and interactive technology (Tiku, Rathod and Tiku, 2024). This

group demonstrates an increased awareness of health-related issues, coupled with a strong preference for technologically driven solutions that align with their daily routines.

Global trends confirm the growing adoption of smartwatches, the number of active smartwatch users worldwide is projected to exceed 230 million by 2025 (Pangarkar, 2025). In Indonesia, the trend reflects a similar trajectory. Nearly half of smartwatch users belong to Gen Z and early millennials, driven by motivations such as fitness tracking, health awareness, and integration into a digitally oriented lifestyle (Raharjo *et al.*, 2025). This trend highlights the potential of smartwatches to function as strategic instruments for encouraging sustainable health behaviors, especially among younger populations that are highly familiar with digital ecosystems.

Academic research has long explored the variables that influence the effectiveness of wearable health technology. Perceived ease of use, for instance, has been identified as a crucial determinant in the adoption of health technology, particularly for digital-native populations who value fast and accessible solutions (Chau *et al.*, 2019; Zhang and Mao, 2023). Additionally, the presence of goal-oriented challenges that align with users' personal interests has been linked to increased motivation and commitment to physical activity (Caldeira *et al.*, 2017). Social support, whether through peer influence or digital community engagement, has also been recognized as a factor that enhances users' adherence to health goals and reinforces behavioral consistency (Bao and Lee, 2023). Rather than operating in isolation, these factors interact dynamically and collectively shape the user experience.

For Gen Z, motivations to maintain a healthy lifestyle are not purely based on physical needs. They are embedded within broader sociotechnical contexts that influence everyday behavior. Their approach to health is often mediated by fast-paced information consumption, digital dependency, and expectations for personalized experiences (Choi, Keil and Baird, 2022; Prasanna and Priyanka, 2024). In this setting, smartwatch features can serve as a bridge connecting individual health aspirations with technological capabilities. While the presence of various smartwatch functionalities offers a promising avenue for health promotion, there remains a need to better understand how the interplay among usability, perceived relevance of challenges, and social encouragement influences sustained engagement with health practices.

The emergence of personalized reminders, fitness challenges, and social connectivity within smartwatch platforms signals a shift in how digital health is being practiced and experienced. These features invite reconsideration of conventional health promotion strategies by incorporating adaptive and context-sensitive mechanisms. Investigating how users interpret and respond to such features offers insights into behavior formation, particularly in youth populations whose media habits and digital literacy differ substantially from previous generations.

This study aims to examine the relationship between users' perceptions of smartwatch features, namely convenience, challenge relevance, and social support and the development of sustained healthy behaviors among Generation Z. By exploring these dimensions within a unified framework, the study seeks to contribute to a deeper understanding of how wearable technologies can support public health initiatives in the digital age. The findings are expected to inform the design of more responsive and user-centered health technologies, as well as to offer evidence-based recommendations for enhancing digital health engagement among young, tech-savvy populations.

Method

This study employed a quantitative approach with a correlational design to explore the influence of smartwatch features on sustainable healthy behavior among Generation Z. The research was carried out in the Soloraya region of Central Java, Indonesia, during the period of May to June 2025. The target population included individuals aged 17 to 25 years who were active smartwatch users and resided in both urban and suburban areas within the region.

A total of 205 respondents participated in the study. Stratified random sampling was used to ensure proportional representation across districts and educational levels. Participants were recruited through schools, universities, and local health communities.

Data were collected using a structured self-administered questionnaire. The instrument consisted of items that measured perceived convenience, challenge relevance, and social support, along with binary indicators of sustainable healthy behavior. All items were rated using a five-point Likert scale, while the dependent variable was categorized into two groups based on behavioral thresholds established during the pilot phase.

The questionnaire was validated by three academic experts in health communication and behavioral science. A pilot study involving 30 participants confirmed the clarity and reliability of the instrument, with Cronbach's alpha values exceeding 0.70 for all constructs.

Logistic regression analysis was applied to examine the influence of the three independent variables on the binary outcome. Data analysis was conducted using SPSS, and statistical significance was set at a 0.05 level.

Result

The following section presents an overview of the respondents' characteristics and the descriptive trends of the key research variables.

Table 1. Respondents' Sociodemographic Characteristics

Variable	Category	Frequency	Percent
Age	> 20	131	63.9
	< 20	74	36.1
Gender	Male	64	31.2
	Female	141	68.8
Occupation	Student	133	64.9
	Part-time worker	41	20.0
	Unemployed	21	10.2
	Entrepreneur	10	4.9
Education	Senior high school	150	73.2
	Diploma (D1–D3)	11	5.4
	Bachelor's degree	44	21.5

A total of 205 respondents participated in the study. The majority of participants (63.9%) were above 20 years old, while the remaining 36.1% were under 20. In terms of gender distribution, females dominated the sample, accounting for 68.8% of respondents, whereas males represented 31.2%. Regarding employment status, most participants identified as students (64.9%), followed by part-time workers (20.0%). A smaller proportion reported being unemployed (10.2%) or engaged in entrepreneurship (4.9%). In terms of educational background, the majority had completed senior high school (73.2%), while 21.5% held a bachelor's degree and only 5.4% had attained a diploma-level education (D1–D3).

Table 2. Variables in the Equation

Variable	B	S.E.	Wald	df	Sig.	Exp(B)
Convenience	0.125	0.068	3.374	1	0.066	1.133
Relevance	-0.086	0.086	0.987	1	0.320	0.918
Social Support	0.239	0.093	6.626	1	0.010	1.270
Constant	-1.781	0.649	7.540	1	0.006	0.168

The logistic regression analysis was employed to assess how convenience, challenge relevance, and social support contribute to the likelihood of Generation Z individuals adopting sustainable healthy behavior through smartwatch use. The model demonstrated a moderate fit, with a -2 Log Likelihood value of 127.432. Variance explained was 17.6% based on the Cox & Snell R^2 and 31.6% on the Nagelkerke R^2, indicating that the predictors offered meaningful insight into the behavioral outcome. Model convergence was achieved

after six iterations, confirming estimation stability. These values suggest that the included variables provide a substantial contribution in modeling the behavioral patterns of interest, although room remains for additional influencing factors beyond the model's scope.

Among the three independent variables tested, social support was the only statistically significant factor influencing sustainable healthy behavior ($p = 0.010$). A positive regression coefficient ($B = 0.239$) and an odds ratio of 1.270 indicate that higher levels of perceived social support were associated with an increased likelihood of engaging in health-promoting behaviors. Convenience, while not statistically significant at the 0.05 level ($p = 0.066$), showed a directional effect, suggesting a potential positive association with behavior change. Meanwhile, challenge relevance had no significant contribution ($p = 0.320$), with an odds ratio below 1 ($Exp(B) = 0.918$), suggesting a limited or even inverse effect in this context. The constant in the model was statistically significant ($p = 0.006$), indicating the baseline tendency toward the behavior in the absence of predictor influence.

Discussion

The findings of this study indicate that among the three examined predictors like convenience, challenge relevance, and social support, social support emerged as the only factor with a statistically significant association with the likelihood of sustainable healthy behavior among Generation Z smartwatch users. The positive coefficient for social support suggests that individuals who perceive greater encouragement and reinforcement from peers, family members, or digital communities are more likely to maintain consistent health-related routines (Bochimoto *et al.*, 2023; Pennington and Dam, 2023). This observation aligns with the core principles of Social Cognitive Theory, which emphasizes the role of reciprocal interactions between personal, behavioral, and environmental determinants in shaping individual choices. In this context, smartwatch functionalities that enable interpersonal engagement, such as sharing achievements or receiving feedback, appear to strengthen behavioral commitment through processes of social modeling and normative influence (Yin *et al.*, 2021; Alluhaidan *et al.*, 2023).

Convenience, although positively associated with behavior, did not show a statistically significant influence. This pattern may suggest that while accessibility and ease of use are appreciated by users, these features do not independently sustain long-term health behavior adherence. Previous research has identified convenience as an initial driver for technology adoption but not a consistent motivator for behavioral maintenance over time. Among Generation Z, who are highly familiar with digital tools, the perceived value of convenience may be taken for granted and therefore may not serve as a differentiating motivator (Budiyanto, Rahayu and Widowati, 2024; Mechta *et al.*, 2024).

Meanwhile, the absence of a significant association between challenge relevance and behavior deviates from earlier findings that emphasized the importance of goal alignment and personal resonance in fostering engagement with health interventions. It is possible that relevance, when not accompanied by social interaction or communal accountability, lacks sufficient motivational force to drive sustained behavioral outcomes.

These findings also contribute to the development of Uses and Gratifications Theory by demonstrating that smartwatch users are motivated not solely by information access or data tracking but also by the fulfillment of psychological and social needs (Pingo and Narayan, 2020). The significant role of social support suggests that users are drawn to features that promote affirmation, connection, and belonging. Wearable health technologies that incorporate social functionalities, such as collaborative goals or performance comparisons, fulfill dual gratifications, health monitoring and interpersonal engagement. These results affirm that the effectiveness of digital health tools cannot be understood solely through their technical affordances but must also consider the symbolic and social dimensions of their use (Wilde, Haddadi and Alomainy, 2015).

This study offers strength in its analytical clarity by focusing on motivationally relevant predictors among a digitally literate demographic, applying a rigorous logistic regression framework. The insights provided may inform the design of more socially integrated wearable technologies that align with user behavior. Nonetheless, certain limitations must be acknowledged. The exclusion of individual psychological variables, such as health literacy, internal motivation, and previous health conditions, may have constrained the depth of the behavioral model. In addition, the cross-sectional nature of the study prevents conclusions about causal relationships. Future research should employ longitudinal methodologies and incorporate qualitative perspectives to explore the dynamic interaction between technology use and health behavior over time.

Conclusion

The study concludes that among the three observed variables, convenience, challenge relevance, and social support, only social support shows a meaningful influence on the likelihood of sustaining healthy behavior among Generation Z smartwatch users. The findings demonstrate that consistent encouragement and interaction from others contribute significantly to the maintenance of health-related routines. In contrast, convenience and challenge relevance, although present in the technological features, do not independently strengthen long-term behavioral commitment. This suggests that functional benefits alone may be insufficient without an element of interpersonal or emotional reinforcement.

Based on these results, it is recommended that developers of wearable health devices enhance features that support user interaction and community engagement. Applications

that allow users to set shared goals, exchange feedback, or join peer-based health programs may increase motivation and long-term usage. For practitioners and health promotion planners, integrating social dimensions into digital campaigns targeted at young users is essential for strengthening participation. Future studies are advised to explore additional behavioral factors, adopt longitudinal research designs, and incorporate mixed methods to provide deeper insights into how technological engagement influences sustained healthy behavior.

References

Alluhaidan, A.S. *et al.* (2023) 'Empowerment Enabled by Information and Communications Technology and Intention to Sustain a Healthy Behavior: Survey of General Users.', *JMIR human factors*, 10(1), pp. e47103–e47103. Available at: https://doi.org/10.2196/47103.

Asim, M. *et al.* (2024) 'Transformation of Digital Health: Advancing Telerehabilitation with Smartwatch Technology', *Journal of Pakistan Medical Association*, 74(11), pp. 2023–2025. Available at: https://doi.org/10.47391/JPMA.24-94.

Bao, H. and Lee, E.W.J. (2023) 'Examining Theoretical Frameworks and Antecedents of Health Apps and Wearables Use: A Scoping Review.', *Health Communication*, 39(12), pp. 1–11. Available at: https://doi.org/10.1080/10410236.2023.2283655.

Bochimoto, H. *et al.* (2023) 'Association Between Workplace Social Support and Use of Health-Promoting Wearable Devices: A Prospective Cohort Study of Japanese Employees.', *Journal of UOEH*, 45 2(2), pp. 95–103. Available at: https://doi.org/10.7888/JUOEH.45.95.

Budiyanto, W., Rahayu, M.K.P. and Widowati, R. (2024) 'The Role of Convenience and Usability in the Adoption of Electronic Management Systems: A Theoretical and Empirical Review', *Asian Journal of Applied Business and Management*, 3(4), pp. 437–456. Available at: https://doi.org/10.55927/AJABM.V3I4.12185.

Caldeira, K.M. *et al.* (2017) 'Risk factors for gambling and substance use among recent college students', *Drug and Alcohol Dependence*, 179, pp. 280–290. Available at: https://doi.org/10.1016/J.DRUGALCDEP.2017.06.024.

Charan, G.S., Khurana, M.S. and Kalia, R. (2023) 'Wearable technology: how healthcare is changing forever', *Journal of Chitwan Medical College*, 13(3), pp. 111–113. Available at: https://doi.org/10.54530/JCMC.1376.

Chau, K.Y. *et al.* (2019) 'Smart technology for healthcare: Exploring the antecedents of adoption intention of healthcare wearable technology.', *Health Psychology Research*, 7(1), pp. 8099–8099. Available at: https://doi.org/10.4081/HPR.2019.8099.

Choi, H.Y., Keil, M. and Baird, A.M. (2022) 'Intention to use smartwatch health applications: A regulatory fit and locus of control perspective', *The information Manager*, 59(6), pp. 103687–103687. Available at: https://doi.org/10.1016/J.IM.2022.103687.

Dhar, R., Kumar, A. and Karmakar, S. (2023) 'Smart wearable devices for real-time health

monitoring', *Asian journal of medical sciences*, 14(12), pp. 1–3. Available at: https://doi.org/10.3126/AJMS.V14I12.58664.

Mechta, M. *et al.* (2024) 'Customers' intentions to adopt digital health services: An extended TAM', *Marketing science and inspirations*, 19(4), pp. 2–16. Available at: https://doi.org/10.46286/MSI.2024.19.4.1.

Pangarkar, T. (2025) *Smartwatch Statistics 2025 By Wearables, Technology, Devices*.

Pennington, N. and Dam, L. (2023) 'Social interaction, support preferences, and the use of wearable health trackers', *Frontiers in Communication*, 8. Available at: https://doi.org/10.3389/FCOMM.2023.1256452/PDF.

Pingo, Z. and Narayan, B. (2020) '"My smartwatch told me to see a sleep doctor": a study of activity tracker use', *Online Information Review*, 44(2), pp. 503–519. Available at: https://doi.org/10.1108/OIR-04-2018-0115/FULL/HTML.

Prasanna, M. and Priyanka, A.L. (2024) 'Marketing to Gen Z: Understanding the Preferences and Behaviors of Next Generation', *International Journal For Multidisciplinary Research*, 6(4). Available at: https://doi.org/10.36948/IJFMR.2024.V06I04.26612.

Raharjo, A.C.P. *et al.* (2025) 'Determinasi Niat Keberlanjutan Penggunaan Smartwatch Di Indonesia: Peran Penting Self-Quantification Behavior', *Jurnal Bisnis dan Kewirausahaan*, 14(1), pp. 01–15. Available at: https://doi.org/10.37476/jbk.v14i1.4938.

Tiku, R., Rathod, A. and Tiku, B. (2024) 'The Positive Impact of Smart Watches on Human Health', *International healthcare research journal*, 8(2), pp. SC1–SC3. Available at: https://doi.org/10.26440/IHRJ/0802.05630.

Wilde, N., Haddadi, H. and Alomainy, A. (2015) 'Future Feasibility of Using Wearable Interfaces to Provide Social Support', *MOBIHEALTH 2015 - 5th EAI International Conference on Wireless Mobile Communication and Healthcare - Transforming Healthcare through Innovations in Mobile and Wireless Technologies*, 1(2), pp. 178–181. Available at: https://doi.org/10.4108/EAI.14-10-2015.2261584.

Yin, M. *et al.* (2021) 'The Investigation of Mobile Health Stickiness: The Role of Social Support in a Sustainable Health Approach', *Sustainability*, 13(4), p. 1693. Available at: https://doi.org/10.3390/SU13041693.

Zhang, J. and Mao, E. (2023) 'What Makes Consumers Adopt a Wearable Fitness Device?', *International Journal of E-business Research*, 19(1), pp. 1–17. Available at: https://doi.org/10.4018/IJEBR.323204.