

DIY Consumers and Wearable Electronics: What Factors Affect Technology Adoption?

Kristi Rogers and Juyeon Park,
Colorado State University, USA

Keywords: *Wearables, DIY, Creativity, TAM*

Introduction. The use of wearable electronics is increasing and projected to grow 32.78% between 2013 and 2018 (Wood, 2014). However, long-term consumer acceptance of wearable technology is a challenge in the industry (Wood, 2014). Wearable electronics represent a unique product segment because the human body is the interface (Gemperle, Kasabach, Stivoric, Bauer & Martin, 1998), and thus the technology acceptance process followed by consumers may differ from the acceptance process for more traditional technologies. Consumer characteristics are also changing; a growing segment of the consumer population engages in Do-It-Yourself (DIY) activities, creating a “make or buy decision” (Wolf & McQuitty, 2011, p.155). As DIY consumers seek new ways to customize their consumption experience, and given how specifically a wearable device must fit a user’s needs, an analysis of DIY consumer acceptance of wearable technology may provide much-needed insights into consumer behaviors regarding this product category. To this end, this study explored factors which affect DIY consumers’ attitude toward and intention to adopt wearable technology. We examined this research objective within the Technology Acceptance Model (TAM). For this study, the two variables of the original TAM were used, i.e., perceived usefulness (PU) and perceived ease of use (PEOU), and the variable perceived playfulness (PP) was added to account for the factor of intrinsic motivation when technology is used for both work and pleasure (Moon and Kim, 2000).

Methods. This study conducted focus group interviews with seventeen U.S. adult participants (N = 17; 8 men and 9 women; 2 focus groups), recruited using flyers and snowball sampling. Participants took a survey to establish their individual tendency towards creativity, DIY activity and initial acceptance of wearable technology. They were then given a chance to examine and play with a mock version of a wearable electronic device. Finally, a focus group was convened to allow participants to discuss their experience and perceptions of the wearable device before and after the hands-on activity. Focus group data were transcribed verbatim and the thematic content analysis method was used to identify common themes across the data. Survey data were analyzed using IBM SPSS 23.0. Linear regression analyses were performed to investigate the relationships between the TAM variables (PU, PEOU, perceived playfulness, attitude, and intention to adopt wearable technology) and characteristics of the participants (creativity and DIY involvement).

Results. The survey data indicated interesting relationships among the variables. Creativity showed strong linear relationships with usefulness ($p = .018$, $B = .564$, $F = 7.000$, $R^2 = .318$) and playfulness ($p = .048$, $B = .485$, $F = 4.622$, $R^2 = .236$). Those who perceived wearable technology useful demonstrated strong intentions to adopt it in the future ($p = .042$, $B = .497$, $F = 4.928$, $R^2 = .247$). The survey results signify that DIY consumers with higher levels of creativity tended to

perceive more usefulness and playfulness of wearable technology. The more useful they perceived wearable technology, the likelier they were to adopt the technology. Consistent with survey results, in focus group data, creativity appeared to affect DIY consumers' experience and adoption of wearable technology. Initially, participants described feeling that the device was inaccessible, futuristic, foreign, and intimidating. Following the activity, participants expressed that the device seemed usable, human, and that "it kind of expanded its capabilities as far as what it could do." One participant cited a relationship between fun and creativity. She felt she could "kind of get more creative with it because we were joking around the whole time. ...It was fun." Creative idea-sharing also helped one participant overcome his initial attitude about the device as such: "It seemed inaccessible or intimidating, but once we got all our ideas flowing, it was like, oh well, maybe it's still intimidating, but I'm willing to take it on because I want this so bad because it's going to be so awesome." Participant intention to adopt the technology also seemed to change after the hands-on activity. One participant said he had seen the device before, but would definitely consider wearing it now. Individual consumer characteristics seemed to affect user willingness to adopt the wearable device if it allowed for customization, and a user could make it his or her "own."

Discussion, Future Research, and Implications. Both survey and focus group data gathered in this exploratory study indicated that creativity of DIY consumers affects adoption of wearable technology. The characteristic of creativity helped participants overcome the initial intimidation of the device, allowed them to perceive it more favorably in terms of playfulness and usefulness, and increased the likelihood of device adoption, especially if it could be customized. Given the small sample size, future studies should implement TAM with a larger sample to further validate insights from this study. Given the current challenge of technology acceptance for wearables and the growth of the DIY community, this study is an important step forward. Building on this work, academic and industry professionals can understand the needs of this increasingly powerful demographic of consumers alongside the advancement of wearable technology.

References.

- Gemperle, F., Kasabach, C., Stivoric, J., Bauer, M., & Martin, R. (1998, October). Design for wearability. In *Wearable Computers, 1998. Digest of Papers. Second International Symposium on* (pp. 116-122). Institute of Electrical and Electronics Engineers.
- Moon, J. W., & Kim, Y. G. (2001). Extending the TAM for a World-Wide-Web context. *Information & Management*, 38(4), 217-230.
- Wolf, M., & McQuitty, S. (2011). Understanding the do-it-yourself consumer: DIY motivations and outcomes. *AMS review*, 1(3-4), 154-170.
- Wood, L., (2014). Wearable wireless sensor trends - global market overview 2014. *Business Wire*. Retrieved from www.businesswire.com/news/home/20140402006300/en#.VMvhdmhzRly