

Resistance or Indifference to Smart Clothing

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Introduction Smart clothing is a type of wearable device with built-in sensors that can receive data about wearers or their surroundings. These devices work wirelessly or through other devices such as smartphones and tablets. According to Hayward (2018), promising areas for future smart apparel expansion include the medical, lifestyle, sports and fitness, health, fashion, industrial and military industries. In particular, the sports, fitness, and medical sectors are expected to dominate the smart apparel market by 2026. This study explores smart clothing in the sports and fitness field and investigates factors influencing resistance to smart clothing for fitness.

Literature Review

Innovation resistance: Innovation resistance, which is defined as rejection or resistance to innovation, may be classified as a negative response to innovation and its associated changes. To date, many studies have identified factors that encourage the acceptance and spread of innovation. However, resistance to change is a defensive and adaptive propensity intended to protect the present state, and thus resistance to innovation is a normal response to finding psychological stability (Diamond, 1986). The fact that about 47% of leading companies that released innovative products fail to saturate the market and are excluded from the competitive market (Gourville, 2006) shows the significance of innovation resistance. In this study, we designate innovation characteristics as the independent variable and innovation resistance as the dependent variable based on Ram's innovation resistance model.

Smart clothing: Smart clothing is a convergence of clothing that combines IT technology and high-tech fibers, materials, and technologies. According to Kwon (2017), smart clothing is a textile product that uses sensors and reaction systems to stimulate the environment or the human body. Park (2014) identified smart clothing as a high-performance and multi-functional new concept that can manifest various functions in a complex manner or exhibit new functions. Experts believe that among all wearable smart devices, smart clothing will experience the highest increase in sales in the future, based on the sluggishness of fitness trackers, the oversupply of smartwatches, and global companies' development of smart clothing. The purpose of this study is to present a new perspective to consider when designing smart clothing by identifying the perceived attributes of smart clothing for fitness and factors affecting consumer resistance.

Method Since smart clothing is at the initial stage of its release and has not yet been commercialized, it is difficult to conduct a user survey. In addition, since the purpose of this

study is to reveal the factors of resistance to innovation among general consumers, we presented survey respondents with definitions of smart clothing and stimulants consisting of photos of commercialized fitness smart clothes and descriptions of major functions and prices. To test the research hypotheses, a web-based survey was employed to collect data. A total of 160 valid responses were included in the final data analysis. This study included the perceived lifestyle-smart clothing compatibility, perceived smart clothing-technology compatibility, and relative advantage of smart clothing for fitness to validate the presented hypotheses. Moderators included consumers' fashion innovativeness and health consciousness. All items were reported on a 5-point Likert scale where 1 was denoted as "Strongly Disagree" and 5 was denoted as "Strongly Agree"

Results SPSS Statistics 26 was used to analyze the validity and reliability of this study and to verify the hypothesis. As a result of the exploratory factor analysis, six factors, including lifestyle compatibility, clothing-technology compatibility, relative advantage, fashion innovativeness, health consciousness, and resistance to innovation were confirmed. All the variables of Cronbach's alpha values were above .7, confirming the reliability. The average age of the respondents was 44.13 years old with a range from 19 to 69. Among respondents, 65.6% were male and only 5.6% of respondents said that they had purchased smart clothing. In response to a question about the appropriate price of smart clothing, 12.5% of respondents said that the price of smart clothing should be the same as or similar to regular clothing, and 79.4% of respondents said that it could be up to two to three times more expensive.

Hypothesis testing: Multiple regression analysis was conducted to verify the effect of smart clothing properties for fitness on innovation resistance. As a result of the analysis, lifestyle compatibility and the relative advantages of smart clothing did not significantly affect innovation resistance, so hypothesis 1, and hypothesis 2 were rejected. With regard to clothing-technology compatibility, the standardized regression coefficient was negatively significant, meaning it had a negative effect on the innovation resistance. Therefore, hypothesis 3 was supported. The hierarchical regression method was used to verify the effect of consumers' fashion innovativeness and health consciousness between the attributes of smart clothing for fitness and consumer innovation resistance. As a result, hypothesis 5 was partially supported by an analysis of the moderating effect of health consciousness between the properties of smart clothing and innovation resistance. In the relationship between clothing-technology compatibility and innovation resistance of fitness smart clothing, consumers' health consciousness has a significant negative moderating effect ($p < 0.001$). On the other hand, it was found that fashion innovativeness had no effect on the relationship between the properties of smart clothing and the resistance to innovation, so hypothesis 4 was rejected.

Conclusion Based on the results of this study, it is necessary to develop smart clothing for fitness with functions suitable for implementation as clothing. In addition, the spread of smart clothing will be possible if high-functional smart clothing for professional use is released for health conscience consumers.

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