Holistic Integration of Product Attributes with Consumer Behavioral Aspects for the Use of Wearable Technology

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The use of wearable technology is rapidly increasing to meet diverse consumer needs and desires (e.g., fitness and wellness, safety and security, fashion and lifestyle). According to the report by Scalar Research Market (2016), wearable technology market valued 29.92 billion dollars in 2016, which has been anticipated to reach 71.23 billion dollars by 2021. Wearable technology refers to electronic and computer devices that can be worn or embedded in different types of wearable products (e.g., clothing, shoes, accessories) and are often able to carry out different tasks and functions (e.g., mental and physical health tracking). In this study, we interchangeably used this phrase, wearable technology, with the term, wearables. To design, develop, and produce a successful product embedding wearable technology, it is crucial to know consumers' preferences, expectations, and needs, which enables industry professionals to predict consumers' attitudes towards the wearables and their purchase intentions.

Numerous previous studies exist addressing the factors influencing consumers' acceptance, attitude, and intention towards the use of wearable technology, using consumer behavior theories. Researchers in the design and product development area have used design attributes/criteria when developing and evaluating new products. However, limited research exists on the holistic integration of wearables' attributes (e.g., aesthetic, expressive, functional, tracking) with consumers' behavioral aspects towards the use of wearables. Thus, it is crucial to revisit existing models and reflect this gap into our proposing framework in this study.

We aimed to propose a holistic framework, embedding the various concepts that should be considered when conducting study on consumers' purchase intention towards the use of wearables in the current digital transformation era. To accomplish this goal, various models related to the consumer behavior and product design attributes have been examined. Naming a few are the functional, expressive, aesthetic (FEA) consumer needs model (Lamb & Kallal, 1992), technology acceptance model (TAM) (Davis, 1989), theory of reasoned action (TRA) (Fishbein & Ajzen, 1980). The major concepts from these models were used for developing our proposed framework, which embeds a more comprehensive process and provides the better understanding of consumers' expectation, acceptance, and purchase intention of wearables. The proposed framework is beneficial for various stakeholders (e.g., designers, product developers, manufacturers, researchers in apparel design and consumer behavior) by providing a profound understanding of (a) consumer expectations of wearables; (b) factors influencing consumers' attitude and intention towards its use; and (c) possible research opportunities for future studies.

Figure 1 depicts the summary of our proposed framework. Consumers' attitude and purchase intention towards the use of wearables are influenced by both intrinsic and extrinsic product attributes, and subjective norm. Product attributes have consisted of extrinsic attributes

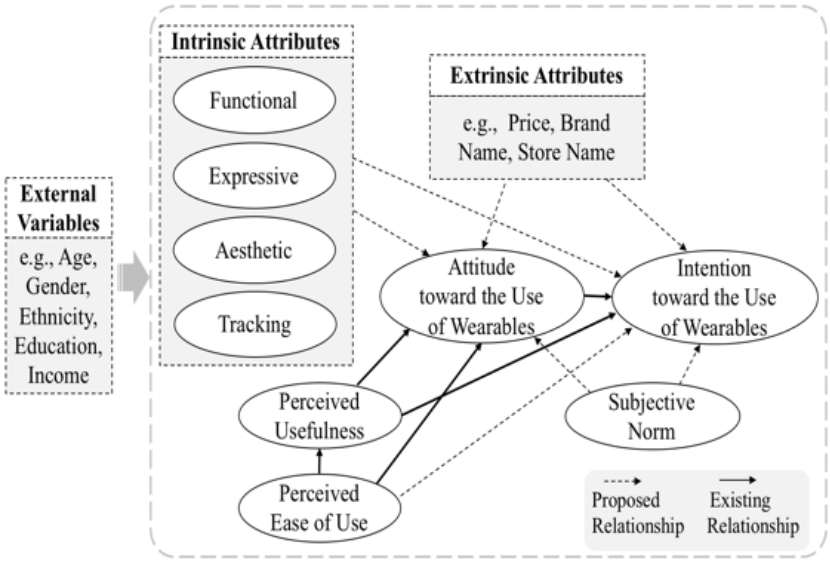

Figure1. Holistic framework for the use of wearables.

added by manufacturers/ retailers and intrinsic or inherent attributes to clarify target consumers' expectations and criteria for using wearables. By adding functional (e.g., physical comfort, utility), expressive (e.g., communicative and symbolic aspect), and aesthetic (e.g., color) attributes, this framework can not only predict consumers' expectations and needs in terms of design criteria, but also give an understanding of the influence of the design criteria on target consumers' attitude and purchase intention towards the use of wearables. These FEA dimensions can help us to examine the design aspects of wearables, but have limitations to examine tracking attributes, which is the main characteristic of wearables. Tracking attributes (e.g., mental and physical health tracking), which were investigated in several previous studies in other disciplines (e.g., Koo, 2017), were added as one of the main intrinsic attributes and predictors in this framework.

Extrinsic attributes are also considered as one of the predictors for consumers' attitude and purchase intention of these products. Since previous researchers have recommended subjective norm, perceived social pressure to perform/not to perform a behavior, as an important antecedent to explain target consumers' usage behavior of wearables, subjective norm was adopted from the TRA (Fishbein & Ajzen, 1980) and integrated to this framework. Furthermore, this framework allows to explore different demographic variables, which may have influence on the overall relationships among the concepts in the framework.

The proposed framework is unique and valuable as it can apply in both academic and industry. It can reveal the extrinsic and intrinsic product attributes that are essential to fulfill consumers' expectations and needs of wearables and provide a profound view of the role of perceived social norms and demographic variables on target consumers' attitude and intention towards the use of wearables. More specifically, this framework can assist product designers, developers, manufacturers, and merchandisers to identify the essential product attributes, consumers' needs and expectations of wearables and let them have a more precise and successful product design and development based on the target consumers' needs.

References

Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice Hall.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of

information technology. *MIS quarterly*, 319-340.
Koo, S. H. (2017). Consumer differences in the United States and India on wearable trackers. *Family and Consumer Sciences Research Journal*, *46*(1), 40-56.
Lamb, J. M., & Kallal, M. J. (1992). A conceptual framework for apparel design. *Clothing and Textiles Research Journal*, *10*(2), 42-47.
Wearable technology market. (2016, October 4). Retrieved form https://www.scalarmarketresearch.com/market-reports/wearable-technology-market