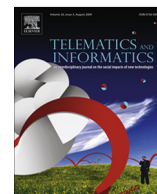




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Domain-specific innovativeness and new product adoption: A case of wearable devices

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ABSTRACT

Wearable technology has recently started gaining mass market attention, but the actual adoption of the technology is not up to expectations. The current study examines the effects of consumers' domain-specific innovativeness (DSI) on the adoption of wearable technology. In this study, consumer DSI is first conceptualized to have two dimensions namely, product-possessing innovativeness (PPI) and information-possessing innovativeness (IPI). The effects of PPI and IPI on perceived attributes of wearable technology (relative advantage, social image, aesthetics, and novelty) are then examined, which influence purchase intention. Exploratory and confirmatory factor analyses were conducted on a survey data from young consumers. Structural equation modeling was employed to evaluate the proposed research model. Results demonstrate that 1) the DSI construct must be examined in the two dimensions so that it can properly measure the nature and characteristics of DSI, 2) IPI plays an important role, having a positive effect on all four perceived attributes of IT innovations, 3) PPI has a positive effect on perceived social image and perceived novelty, and finally 4) all perceived attributes of IT innovations have a positive effect on consumers' purchase intention of wearable devices. Implications for research and practice are discussed.

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1. Introduction

Most of people use smart phones and/or laptops every day, and to many people, these gadgets have become a big part of their life. When a new gadget such as an Apple iPhone is launched, some people even wait in queues from the previous night. In order to create new markets, businesses must strive to develop new products that create new value. Recently wearable devices have become popular and their usage is increasingly extended. Technological advances in wearable devices have resulted in a plethora of wearable devices, including smart watches and glasses and home monitoring devices. It is predicted that the retail revenue from smart wearable devices will reach \$ 19 billion by 2018 compared with \$ 1.4 billion in 2013

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(Juniper Research, 2013). The wearable technology market is projected to create significant opportunities for businesses in a number of product categories; however, the market penetration rate is still low (Juniper Research, 2014).

Marketing research suggests that businesses must identify and target prospective consumers and build a critical mass of customer base for successful new product adoption. It is critical that targeted communication with innovators, or consumers who show interests in new products, must be made early and in an effective manner in order to achieve market penetration more quickly. Rogers (2003) emphasized the role of innovators in the spread of innovation and knowledge. The ability of businesses to identify and effectively communicate with innovators has a direct influence on the success or failure of the introduction of new product (Carter, 1998; McCarty et al., 1999).

The adoption of new products remains an important issue for researchers and practitioners (Huh and Kim, 2008). Much research on technology adoption of wearable devices, however, has focused on the utilization of technology acceptance model and its extensions (Nasir and Yurder, 2015; Gao et al., 2015). For instance, the technology acceptance model was used in order to explain consumers' intention to use smartwatches, which is one of the popular types of wearable devices (Chuah et al., 2016). It examined the adoption challenges mostly associated with wearable devices or related technology issues. The focus was set on investigating the relationships between the objective characteristics of wearable devices, user perceptions and attitudes, and behaviors towards the use and adoption of wearable devices. While useful, this approach tends to neglect the role of individual characteristics which is considered to be critical in new product adoption. Little is known about why some people are more likely to adopt wearable devices and how individual characteristics affect his/her use and adoption of wearable technology.

The role of consumer innovativeness in the use and adoption of new products has been emphasized in the marketing literature (Midgley and Dowling, 1978; Hirschman, 1980; Goldsmith and Hofacker, 1991; Im et al., 2003; Hauser et al., 2006). Past research identified consumer's innovativeness as an important personal trait that influences a person's intention to adopt a new product (Hirschman, 1980). Recent studies have examined the adoption of various consumer electronic products (e.g., iPad) from the perspective of personal innovativeness (Chao et al., 2012, 2013; Ho and Wu, 2011). Chao et al. (2012) suggested that, consumers' domain specific innovativeness (DSI) is a critical determinant for the adoption of new products, as the association between broad, global innovativeness and new product purchase is mediated by DSI (Goldsmith et al., 1995). Interestingly, however, many studies reported that the relationship between DSI and product adoption was weak, thus suggesting further research needs to be made to better understand how DSI drives adoption of new products (Im et al., 2007; Chao et al., 2012).

To fill the gap in the literature, the current study redefines and examines the DSI construct and its relationship with innovative attributes of wearable devices, and investigates their effects on purchase intention of wearable devices. In this paper, DSI is conceptualized to be of two dimensions namely, product-possessing innovativeness (PPI) and information-possessing innovativeness (IPI). The effects of PPI and IPI on perceived attributes of IT innovations within the context of wearable technology (relative advantage, social image, aesthetics, and novelty) are then examined. Lastly, our research model examines the effects of perceived attributes of IT innovations on purchase intention.

The data came from a survey of 312 college students who tend to adopt new electronic devices earlier than other demographic groups (Lee, 2014). The findings from this study contributes to research and practice by examining the redefined DSI construct, and exploring the relationships among the components of DSI, perceived attributes of new innovative wearable devices, and consumers' intentions to adopt the products, and testing its validity in an empirical setting. In addition, the results of this paper can serve as a reference for businesses to establish marketing strategies for successful early adoption of IT innovations in wearable technology.

The rest of this paper is organized as follows. Section 2 provides the theoretical background of this study regarding wearable technology and its attributes and DSI, followed by the development of our research model in Section 3. Section 4 describes research methodology. Section 5 presents the results of the study followed by the discussions and implications for research and practice in Section 6. Section 7 concludes the study.

2. Theoretical background

2.1. Wearable technology

Wearable technology has recently started gaining mass market attention as new, innovative prototypes such as Google Glass appears to the market. Wearable devices refer to any electronic device or product designed to provide a specific service that can be worn by the user. Wearable technologies are unique in their requirements and functions as the technology incorporate computer and electronic technologies to clothing and other accessories. Typical wearable devices may include components such as sensors, speech recognition technologies, positioning chips, displays, and special monitoring devices. They must be self-powered and fully functional in order to provide access to information anywhere and at any time. Wearable technology presents many new challenges in the design of functional wearable devices that would meet the needs of users.

Various types of wearable devices exist today including smart watches, fitness trackers, smart clothing, body sensors, and other wearable devices available for healthcare, public safety, and other industrial purposes (Tehrani and Michael, 2014). Research on wearable devices has investigated issues that range from creating an integrated framework for using wearable technology (Fraile et al., 2010), new measures for wearable technology (Hensel et al., 2006), design and implementation of

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