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The effect of consumer innovativeness on perceived value and continuance intention to use smartwatch

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ABSTRACT

Innovations happen everywhere. Recently, smartwatches have become increasingly popular. It is therefore critical for academic researchers and IT firms to understand the consumer's responses to this kind of technology. Nevertheless, little attention has been paid to the role of innovativeness in building users' continuance intention in the context of smartwatches. This research combined several acceptance-related theories (e.g., diffusion of innovations theory, technology acceptance model, expectation-confirmation theory, and flow theory) to explore the factors affecting consumers' continuance intention to use or purchase a smartwatch. Data were collected (n = 276) by purposive sampling and subjected to confirmatory factor analysis with structural equation modeling. The findings revealed that consumer innovativeness was associated with their continuance intention mediated by hedonic value and utilitarian value. Specifically, consumer innovativeness was positively correlated to both hedonic value and utilitarian value, and both hedonic value and utilitarian value were positively correlated to continuance intention with respect to smartwatches. Furthermore, we found that consumers feel more satisfied with the usefulness of a smartwatch than enjoyment/joy. These results imply that users' continuance intention not only hinges on perceived values, but also on consumer innovativeness. Therefore, understanding the users' continuance intention of using smartwatches is an essential issue for both academia and industry in a rapidly changing and competitive environment.

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1. Introduction

The most recent forecast data from CCS insight (2014), which provides a new global forecast for wearable devices — including smartwatches, wristbands, smart eyewear, wearable cameras, and tokens, clip-ons and jewelry — indicates that more than 25 billion wearable devices will be in use worldwide by 2018, with sales growing from 22 million in 2014 to 135 million in 2018. To date, a majority of wearables sold consist of wristbands, such as mi band from a local brand (Xiaomi) in China. Nevertheless, in 2018 it is projected that more than half of wearables sold will be smartwatches including Apple, Samsung, Pebble, and Fitbit. Apparently, wrist-worn devices will dominate the smart wearables market in the coming years; in particular, smartwatches will account for the

lion's share of wearable technology over the next couple years (Leggatt, 2014). Nowadays, most smartwatches on the market utilize small high-resolution graphical displays and have the ability to run different apps which tend to be tightly tethered to a smartphone using Bluetooth. For example, many smartwatches not only allow users to receive and respond to notifications (i.e., messages, phone calls) immediately and conveniently but also provide a variety of medical and health-related applications to measure workouts, track activity, and further help encourage healthy routines (Kalantarian & Sarrafzadeh, 2015; Xu & Lyons, 2015).

As a newly emerging wearable device, a number of commercial smartwatches have been released and widely used, and the wearables market is heading for continued double-digit growth each year (IDC, 2016). However, a major problem with this kind of device is its short battery life, mainly due to the power absorbed by wireless communication (Min et al., 2015). That is to say, a long-lasting battery duration is an important requirement for wearable interfaces (Starner, 2001). From the innovation perspective, according to the diffusion of innovations (DOI) theory proposed by Rogers (1983), it is postulated that adopters of any new innovation

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or idea can be categorized as innovators, early adopters, early majority, late majority, and laggards, based on a normal distribution. Furthermore, Moore (1991) argues that there is a chasm between the early market (innovators and early adopters) and the mainstream market. Due to the dynamically fast-moving technology environment, some people hold the idea that there are very few smart gadgets that stimulate their desire to use a wearable device at the moment (Leggatt, 2014). In other words, central to DOI theory is the concept of consumer innovativeness, which can be considered at a general level to represent a characteristic which relates to an individual's basic tendency to adopt new innovations. Consequently, it can be seen that smartwatches presently fall into "chasm", due to battery life and availability problems, so the priority for manufacturers and information technology (IT) companies is to steer smartwatches into early majority by eliminating the gap.

Recent evidence indicates that smartwatches have been marketed as devices that allow for the presentation of information in a manner that is simple and easier to access than smartphones (Giang, Shanti, Chen, Zhou, & Donmez, 2015). As a result, smartwatches are becoming more popular in the enterprise at present; thus, IT companies must take serious steps to revamp them as carefully as they do laptops and smartphones. Based on the consumer's perspective, such experience plays a fundamental role in determining their preferences, which then influence their purchase decisions (Gentile, Spiller, & Noci, 2007). Several studies have documented that customer experience has emerged as an important issue in product and service design (Dube & Helkkula, 2015; Mishra, 2016; Overmars & Poels, 2015). Consistent with Kim and Shin (2015) and Ernst and Ernst (2016), smartwatch adoption is an especially important issue within a wearable technology context. Although the importance of the value perception of customer experiences has been widely used on technology products, there has been little discussion about the experiential value of using smartwatches being studied. Moreover, psychological variables include both state-like and trait-like elements. Psychological traits are consistent over time, whereas state reveals ongoing changes connected to the time-on-task (Hertzog & Nesselrode, 1987). In this study, consumer innovativeness is viewed as trait-like variable, while utilitarian value, hedonic value, and continuance intention are considered as state-like variables. Therefore, the present study is an attempt to look at consumer innovativeness, consumer innovativeness, experiential values, and continuance intention in smartwatches, so that manufacturers or IT firms can launch successful products (i.e., wearable devices) in the future.

2. Research contents and hypotheses

The diffusion of innovations theory (Rogers, 1983), technology acceptance model (Davis, Bagozzi, & Warshaw, 1989), expectation-confirmation theory (Bhattacharjee, 2001), and flow theory (Koufaris, 2002) are the major theories that are widely discussed and used by various researchers to predict the adoption process and consumer's decision behavior for the target market. Nevertheless, little attention has been paid to the role of innovativeness in building users' continuance intention in the context of emerging IT. Accordingly, in this study, we synthesize the above-mentioned theories to conduct a new model to explain the users' intention to continue using smartwatches, and the contents of this research focused on the following constructs: consumer innovativeness, experiential values, and continuance intention.

2.1. Consumer innovativeness

Rogers and Shoemaker (1971) define innovativeness as the degree to which an individual is more earlier in adopting new ideas

than other people of his social community, implying that the individual's psychological need for uniqueness and social identification plays an important role of innovativeness (Bartels & Reinders, 2011). Building on this previous literature, Foxall, Goldsmith, and Brown (1998) conceptualize consumer innovativeness as the tendency to buy new products in a particular product category soon after they emerge in the market and relatively earlier than most other consumers in the market segment. In other words, if consumers who display greater innovativeness over a new product, they may have a higher likelihood of being early adopter of innovative offering than other consumers (Strutton, Lumpkin, & Vitell, 2011). Moreover, consumer innovativeness is an innate or inherent trait that can be considered to represent a personality trait (Bartels & Reinders, 2011), which includes psychological factors such as curiosity, ambition and rationality alongside sociological elements such as exposure to media sources, and searching for sources of information concerning innovations (Midgley & Dowling, 1978).

In a recent research on consumer innovativeness in new product adoption intentions, Li, Zhang, and Wang (2015) point out that consumer innovativeness remains an important concept in understanding the adoption of new products, and predict consumers' innovative buying behavior using innovativeness as a personality trait. However, most existing studies neglect the relationship between consumer and product (Aroean & Michaelidou, 2015; Goldsmith & Flynn, 1992; Hussain & Rashidi, 2015; Park, Jun, & Lee, 2015). As a result, to investigate consumer innovativeness in depth, we must evaluate the connection between the consumer and the product itself. Furthermore, according to Vandecasteele and Geuens (2010), most previous innovativeness scales pay attention to hedonic and functional dimensions. Working from these different perspectives, utilitarian dimension represents innovative consumers who are appealed to functional or practical new products (Venkatraman, 1991); on the other hand, Roehrich (1994) views hedonic innovativeness dimension as the driver to adopt products for hedonic or affective reasons, such as to delight in the newness of the product and to enjoy feelings of joy and satisfaction. Therefore, considering all of this evidence, it seems that we must emphasize not only the connection between the consumer and the product itself but also two-dimension innovativeness in buying behavior.

2.2. Experiential value

Values are not only guiding principles or standards about some desirable end-state of existence but the means that people use to evaluate actions and events (Rokeach, 1973). Value may be extrinsic—the experience helps the shopper to achieve some specific objective. On the other hand, it may be intrinsic—the experience is enjoyed for its own sake (Batra & Ahtola, 1991). Meanwhile, Sheth, Newman, and Gross (1991) employ the experiential value theory to explain why consumers will continue to purchase products and categorize experiential values into functional, conditional, social, emotional and epistemic value. Despite this broad conceptualization, some scholars suggest that hedonic and utilitarian constructs are two distinct dimensions of consumer attitude toward buying intention (Babin, Darden, & Griffin, 1994; Voss, Spangenberg, & Grohmann, 2003). Following Dhar and Wertenbroch (2000), utilitarian value refers to the goal-oriented, rational, and functional purpose when using a product, whereas hedonic value implies the enjoyment being primary benefits of customer participation in service or product. Thus, we suggest that both utilitarian and hedonic values of using smartwatches play important roles in customers' continuance intention.

Innovativeness is recognized as the consumers' decision-

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