



Consumers' acceptance of smart virtual closets



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ABSTRACT

The purpose of the study is to investigate how various factors influence consumers' adoption intention of smart virtual closets. An extended technology acceptance model was proposed with three additional factors: a social influence variable (subjective norm), a personality trait (technology optimism), and a product feature (aesthetics). The results confirmed all relationships in the original technology acceptance model (e.g., usefulness → attitude, ease of use → attitude, usefulness → intention, and attitude → intention) and indicated significant relationships of all new proposed paths. All three factors, subjective norm, technology optimism, and aesthetics, significantly affected consumers' perceptions of ease of use and usefulness. However, instead of a positive relationship, subjective norm negatively influenced perceived ease of use. In addition, subjective norm also directly influenced usage intention. These findings advance theory and provide a solid basis for businesses aimed at improving user adoption of smart virtual closets.

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1. Introduction

Nowadays, people are spending more time on wearing the right apparel to impress their coworkers, superiors, customers, family members, and friends (Goh et al., 2011). However, people may find it difficult to coordinate their clothes with limited time (Fukuda and Nakatani, 2011) and to choose the right garment for the right occasion (Goh et al., 2011). They may spend 10 min staring at their closets and wondering what to wear. Therefore, a lot of studies have proposed smart virtual closets, which are technologies that can be applied in computer, tablet, smartphone, and Internet, as solutions to help people organize their wardrobe. For example, track when users wear an item, where users wear it, and when the item needs to be cleaned; sort apparel items based on different categories (e.g., hat, scarf, jewelry, shoe, and shirt,) and different styles (e.g., casual, formal, and sportswear); recommend outfits based on the weather and season by considering colors, styles, events, and users' emotions; check which new fashion item to purchase and whether it suits the users' closets and styles; and borrow fashion items with friends through social networking (Fukuda and Nakatani, 2011; Goh et al., 2011; Miura et al., 2013). Various versions of smart virtual closets have been applied in the current market, for example, "I Wear", "My Fashion Closet", "The Man's Closet", "Wardrobe Assistance", "Digital Wardrobe", "Bag Gallery: My Pocket Closet", "What is in my Wardrobe", "Closet Buddy" (Etebari, 2014).

Although many research projects have been conducted to

develop user-friendly smart virtual closets (e.g., Etebari, 2014; Fukuda and Nakatani, 2011; Goh et al., 2011; Li and Hu, 2014; Ling et al., 2007; Miura et al., 2013; Wang, 2000) and many different versions of virtual closet have been carried on the market (Etebari, 2014), no study has investigated what factors may attract consumers to adopt this technology, even though it is an important issue for businesses and companies (Gao et al., 2015). Every business has the prime objective of attracting and keeping consumers (Murali et al., 2016). It is important to understand consumers' attitudes toward smart virtual closets and why they accept or reject them. Therefore, the current study is going to fill a research gap by investigating consumers' adoption intention of smart virtual closets from various factors.

2. Theoretical background and hypotheses

2.1. Technology acceptance model

Technology acceptance model (TAM) (Davis et al., 1989) is one of the most popular theoretical models for investigating consumer's acceptance of technology (Kim and Shin, 2015). It has proven to be a valid model in various contexts, including computer (Davis et al., 1989), wearable technology (Gao et al., 2015), smartphones (Park and Chen, 2007), smart clothing (Chae, 2009), solar-powered clothing (Hwang, 2014), and smart watches (Kim and Shin, 2015).

Two particular beliefs, perceived ease of use and perceived usefulness, are primary predictors for consumers' adoption of

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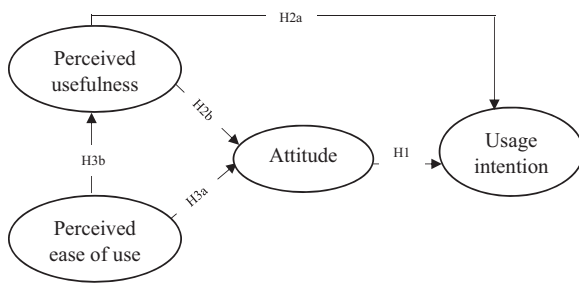


Fig. 1. Original TAM (Davis et al., 1989).

technology (Davis et al., 1989). Perceived usefulness refers to the degree that a technology increases consumer's job performance (Davis, 1989; Davis et al., 1989). Perceived ease of use refers to the degree that a technology frees consumers' efforts. When a technology is perceived as easy to operate, consumers believe that the technology is useful and they have a positive attitude toward it (Kim and Shin, 2015). Perceived usefulness and attitude further positively influence users' intention to use the technology (Kim and Shin, 2015). Therefore, the following hypotheses were proposed based on the TAM (Fig. 1):

H1. Attitude positively influences consumers' usage intention.

H2a. Perceived usefulness positively influences consumers' usage intention.

H2b. Perceived usefulness positively influences consumer's attitude.

H3a. Perceived ease of use positively influences consumers' attitude.

H3b. Perceived ease of use positively influences perceived usefulness.

2.2. Extended model

Across empirical studies, perceived usefulness and perceived ease of use are strong determinants of attitude and usage intention (e.g., Chae, 2009; Gao et al., 2015). Because usefulness and ease of use are fundamental drivers of usage intentions, it is important to understand which factors may influence these drivers (Venkatesh and Davis, 2000). This knowledge would enable business managers to create effective strategies to increase user acceptance.

Fig. 2 shows a proposed model which extended TAM by incorporating three additional factors: a social influence process (subjective norm), a personality trait (technology optimism), and a product feature (aesthetics). The following section will define each

factor and develop theoretical rationale for the causal relationships of the model (Venkatesh and Davis, 2000).

2.2.1. Subjective norm

Although TAM is an adoption of the theory of reasoned action (Ajzen and Fishbein, 1980), it does not include a social influence variable, subjective norm (Davis et al., 1989), which refers to a person's perception that people who are important to him/her think he/she should perform a behavior (Ajzen and Fishbein, 1980). However, Davis et al. (1989) acknowledged the need to investigate the impact of social influences on usage behavior.

Theoretically, individuals' perceptions are influenced by significant others because the individuals conform to significant others' expectations to obtain rewards (Hsu and Lin, 2008). Empirically, subjective norm was shown to have a significant relationship with other factors in TAM. For example, a meta-analysis study reported that subjective norm was related to usefulness in 92% studies ($n=24$), ease of use in 67% studies ($n=21$), and behavior intentions in 86% studies ($n=22$) (Schepers and Wetzels, 2007). Another meta-analysis study also suggested that TAM should include social influence (Legris et al., 2003).

According to Taneja et al. (2006), significant others' expectations of using a technology may make an individual believe that using the technology will enhance his/her performance, thereby increasing the perceived usefulness. Significant others' expectations make a person trust a technology (Wu and Chen, 2005), and trust is positively related to the person's perceived ease of use (Pavlou, 2003; Wu and Chen, 2005). Furthermore, based on the theory of reasoned action, subjective norm determines behavior intention (Ajzen and Fishbein, 1980). Individuals are motivated to take actions if they believe that significant others expect them to perform the actions (Venkatesh and Davis, 2000). In the current study, if significant others suggest to use virtual closets, individuals may believe that smart virtual closets are useful, ease to use, and in turn intend to use it. Therefore, the following hypotheses were proposed (Fig. 2):

H4a. Subjective norm positively influences perceived usefulness.

H4b. Subjective norm positively influences perceived ease of use.

H4c. Subjective norm positively influences consumers' usage intention.

2.2.2. Technology optimism

Technology optimism refers to a positive view of technology that technology offers people increased control, flexibility, and efficiency in their lives (Parasuraman, 2000). Because optimists are worried less about possible negative outcomes, technology optimism leads to more positive perceptions and willingness to adopt

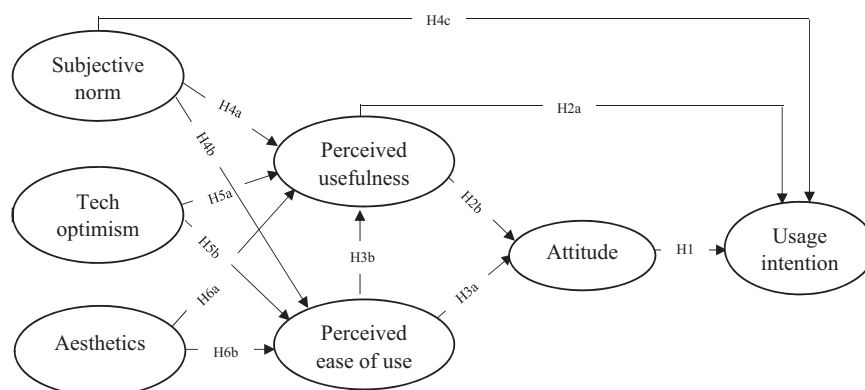


Fig. 2. Extended TAM model.

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