Determinates of Consumer Adoption Attitudes: An Empirical Study of Smart Home Services

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ABSTRACT

Smart home services (SHS) have been developed by related firms and have had a strong impact on consumers’ lives. This research integrates involvement antecedents, innovation diffusion factors and a technology acceptance model to develop a conceptual framework for discussing consumer attitudes and adoption behaviors toward smart home service applications. A sample of 580 respondents from different smart home buildings in Taiwan was asked to complete a survey. This paper proposes and validates a structured methodology for assessing and improving smart home service development. The research results verify that involvement antecedents (interest), innovation diffusion factors (observability, compatibility, relative advantage), and technology acceptance model (perceived usefulness) positively affect consumer attitudes toward the adoption of smart home services and that positive adoption attitudes lead to higher levels of adoption behavior. Perceived ease of use has no influence on consumer adoption attitudes toward smart home services unless through the mediating effects of perceived usefulness. Demographic variables, including gender, age and personal income, play important segmentation roles in the promotion strategies for smart home services.

Keywords: Information Technologies (IT), Innovation Diffusion Theory, Involvement, Smart Home, Technology Acceptance Mode (TAM)

1. INTRODUCTION

As the functions of mobile phones and information technologies (IT) improved and increased, the related firms developed more and more smart home services (SHS) for consumers. Smart home (or digital home) service markets include network and internet services. Network services include a physical network connection (e.g., cable, satellite and telecommunication firms) that delivers a mix of voice, video and broadband internet services. Internet services providers (e.g., network service providers) deliver data applications and storage, entertainment content, social networking services, etc (Current analysis, 2013). In practice, smart home services could make consumers lives more convenient and forming a profitable economic sector. One after another, telecommunication companies and network service providers have invested in smart home (or digital home) services in order to generate revenue and change people’s lives (see Jin Noh & Seong Kim, 2010). With the rapid growth in the size of the smart home market, the strategic imperative

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for service providers is to ensure customer satisfaction. Even when consumers live in smart home buildings, they may not adopt the available services if they are not familiar with SHS or perceive them to be impractical. There is a need to survey the perceptions of consumers who have adopted smart home services, in order to develop new applications which will encourage the use of these services. It is also important to market them to reluctant consumers. The context of smart home service adoption contains both individual and product factors. Individual factors can be gender, age, experience, personal traits and involvement. Product factors include product features and usefulness. In this study, SHS (performed by any digital devices integrated with NFC or other related IT) refers to applications such as remote control smart homes, e-posters, community bulletins, healthcare services, entertainment services etc.

In this digital commercial environment, researchers have employed the diffusion of innovation theory (DOI) and a technology acceptance model (TAM) as base models for determining the key factors that influence the use and acceptance of digital technology (e.g., Park & Chen, 2007; Yang & Zhou, 2011; Egca & González, 2011; Mohebbi et al., 2012). For instance, relevant IT and IS studies have verified that factors from innovation diffusion theory, including compatibility, trialability, observability, complexity, and relative advantage, have distinct effects on consumer adoption behavior (Feng, 2007; Park et al., 2007). Several researchers indicated that the perceived usefulness and perceived ease of use from the TAM model affects consumer behavioral intentions (e.g. Fang et al., 2005; Nysveen et al., 2005; Amin, 2007; Schneberger et al., 2007/2008; Shih & Chan, 2010). Moreover, involvement antecedents (see Zaichkowsky, 1986; Laurent & Kapferer, 1985; Rodgers & Schneider, 1993) have been confirmed by researchers to affect consumer adopt behaviors toward varied products or services (e.g. Andrews et al., 1990; Kokkinaki & Lunt, 1999; Huang et al., 2010). As a result, involvement antecedents have been integrated into the research framework. The perception comparisons of key factors by various types of consumers (classified in terms of gender, age and personal income) are also discussed in this study.

The objective of this paper is to investigate consumers motivations affecting an adoption decision for smart home services. This will be achieved by employing involvement antecedents and DOI and TAM as the base models. We hypothesize that consumer intention to use smart home services is mostly determined by attitudes toward using smart home services and the perceived usefulness of the services. Other constructs in the model include consumer involvement (i.e. interest and pleasure), trialability, observability, comparability, relative advantage and perceived ease of use. This study proposes an outcome from the model that helps in understanding the influential factors of smart home service consumer behavior, and provides suggestions for future research in this area. The conceptual framework is shown in Figure 1. The rest of this paper is organized as follows. Section 2 gives a review of the literature in the areas of involvement antecedents, DOI factors, TAM model, adoption attitudes and usage intentions. Section 3 lists the case examples and introduces the methodology used in the research. Section 4 presents the background of data sources and analysis and gives the research findings of the study. Finally, Section 5 provides the discussion and conclusion.

2. CONCEPTUAL DEVELOPMENT

This section provides a literature review and explores the underlying theory concerning involvement antecedents, DOI and TAM factors. These models pertain to adoption attitudes and usage intentions, and they are itemized by the discussion factors in the conceptual framework of this research.
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