



Factors influencing smartphone use and dependency in South Korea



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ABSTRACT

This study examined the factors affecting the South Korean people's use of smartphones within the framework of the technology acceptance model (TAM). Using an in-person survey ($N = 852$), the study confirmed the propositions of the TAM. The study also included individuals' psychological antecedents, such as motivations for social inclusion and instrumental use of smartphones, innovativeness, behavioral activation system (BAS), and locus of control. While the motivations and innovativeness verified previous studies' findings, BAS and locus of control demonstrated their unique contributions to explaining smartphone use. Smartphone dependency was also affected by the antecedents in the use of smartphones.

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1. Introduction

Smartphones have been changing the ways in which people communicate with others, find information, have fun, and manage their everyday lives. Moreover, the recent developments of new operating systems, abundant applications, and competition between vendors have facilitated a remarkable growth in the number of users. For instance, as of January 2012, 101.3 million people in the United States own and use a smartphone, comprising 43.29% of the total 234 million users of mobile phones (Mogg, 2012). Similarly, in South Korea, where the adoption of new communication technologies is relatively faster than other countries, more than 20 million people were using a smartphone as of October 2011, comprising approximately 40% of the whole South Korean population (Kim, 2011).

This unprecedented growth of smartphone use attracts academic attention, given that smartphones are an integration of the functions of voice communication, Internet access, and data retrieval and management. These functions of communication technologies, by and large, have been studied in isolation. However, smartphones are a new technology that encompasses the research areas of interpersonal and mass communication, as well as information management, and therefore research on smartphones is expected to contribute to theory building for today's communication technologies in which multifaceted aspects of communication are embedded. To this end, it is first necessary to look at the factors that affect individuals' use of smartphones.

Yet, research that has examined the antecedents of smartphone use is largely undocumented. The primary purpose of the present study is, thus, to explore individuals' psychological factors that influence their use of smartphones within the framework of the technology acceptance model (TAM). Although we employ the TAM as a theoretical framework, we are equally, if not more, interested in the effects of psychological antecedents on the key variables of the TAM – perceived usefulness (PU) and perceived ease of use (PEOU). These psychological antecedents include motivations for smartphone use, innovativeness, behavioral activation system (BAS), locus of control, and perceived relationship control. Further, we are also interested in the effects of these psychological factors on smartphone users' dependency on the medium. Given that a variety of functions and features are embedded in smartphones and that the number of users is continuously growing, the use of smartphones is likely to increase users' dependency on the medium. Thus, we investigate the associations among the psychological antecedents, the TAM variables, and smartphone dependency.

The study focuses particularly upon the case of South Korea since it is well known that the country has been one of the most advanced countries with respect to the adoption and use of new communication technologies. In the case of smartphones, as of late-2011, it was reported that most people involved in economic activities were using a smartphone, and more than 60% of 20–30 year-olds possessed a smartphone (Kim, 2011). In another report, 77% of Korean smartphone users were using it on public transportation, such as on a bus or subway, while 59.4% reported that they were using their smartphone anywhere (Myung, 2010). These statistics indicate that the adoption and use of smartphones in South Korea have already passed the

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threshold and play an essential role in people's communication and information activities. In fact, in a survey, 70.2% of participants said that smartphones had already been popularized (Choi, 2011). Therefore, a study about South Korean people's smartphone use is expected not only to help us understand the associations among individuals' psychological factors, the TAM variables, and smartphone dependency but also to suggest practical implications for other countries that are in earlier stages of smartphone adoption.

2. The technology acceptance model as a theoretical framework

The TAM has been one of the most extensively employed theoretical frameworks for examining the factors of technology adoption and use (Bagozzi, 2007). Focusing on the associations among perceived usefulness (PU), perceived ease of use (PEOU), and behavioral intention to use or actual system use, the model seeks to predict the relative importance of PU and PEOU, together with other variables relevant to specific research contexts, on either intention to use or actual use (Davis, Bagozzi, & Warshaw, 1989). *Perceived usefulness* is defined as a potential user's subjective assessment that using a given technology system will improve his or her job performance, while *perceived ease of use* refers to the extent to which the potential user anticipates little effort to use the technology (Davis et al., 1989). The key prediction of the TAM is that PEOU affects PU, and both PEOU and PU jointly influence behavioral intention to use or actual system use of a particular technology system. In addition, the TAM suggests that it is necessary to include other relevant variables that may affect the two key variables of the model – PU and PEOU – in order to complement the simplicity and generality of the model.

There have been a few hundred published studies that used the TAM as a theoretical framework, demonstrating the robustness of the model, in the areas of personal computers and software applications (e.g., Venkatesh & Brown, 2001), the Internet in general (e.g., Moon & Kim, 2001), email (e.g., Gefen & Straub, 1997), e-learning (e.g., Park, Lee, & Cheong, 2008), online communities (e.g., Chung, Park, Wang, Fulk, & McLaughlin, 2010), wireless mobile data services (e.g., Lu, Wang, & Yu, 2007), and Internet phones (e.g., Park, 2010). These studies overall indicate that the TAM is a parsimonious and well-suited model that explains the adoption and use of various information and communication technology (ICT) systems.

In the case of smartphones, their usefulness with numerous advanced features and functions has been much heralded among users. For instance, South Korean users recognize that smartphones are useful for information searches and surfing, email checks, music downloads, map information, schedule management, use of social networking sites, and gaming (Myung, 2010). Also, given that smartphone users typically used regular cellphones previously and that they are assumed to use the Internet quite heavily, they are likely to perceive that smartphones do not require a new set of technology skills. Since there are already a considerable number of smartphone users in South Korea, the present study focuses on intention to keep using smartphones. Combining the theoretical predictions from the TAM and their applicability to the context of smartphones, the following hypotheses were proposed:

H1. PEOU will be positively associated with: (a) PU of smartphones and (b) intention to keep using smartphones.

H2a. PU will be positively associated with intention to keep using smartphones.

3. Exploring psychological factors affecting smartphone use

It is notable that the TAM has received some criticisms with respect to its theoretical contributions. For instance, Bagozzi (2007) posited that the two key variables in the TAM-PU and PEOU – have received too much attention, which in turn limits the search for other key variables that may explain people's technology adoption and use. Similarly, Benbasat and Barki (2007) claimed that past studies did not fully explore the factors that actually make a given technology perceived as useful despite replications of the validity of PU. As an attempt to overcome these shortcomings, the present study employs individuals' psychological factors relevant to the use of smartphones – motivations for smartphone use, innovativeness, behavioral activation system (BAS), locus of control, and perceived relationship control. The rationale of inclusion and the role of these factors are described below.

3.1. Motivations for smartphone use

Previous studies (e.g., Park, 2010; Park et al., 2008) have sought integration between the TAM and the uses and gratifications approach (Rubin, 2002) on the basis that the two theoretical approaches commonly explain the underlying personal factors that influence people's use of ICTs. Following this line of research, the present study includes two motivations of telephone use: social inclusion and instrumental use. Social inclusion includes chatting, gossiping, or maintaining family contacts, while instrumental use refers to the use of the telephone for utility, such as making appointments, ordering products, or seeking information. With respect to the study of telephone use, Keller (1977) identified two broad motivations, namely intrinsic (or social) and instrumental (or task-oriented) use. Similarly, Fischer (1992) also classified two basic motivations of telephone use: social and practical use. In addition, Claisse and Rowe (1987) distinguished between relational and functional motives of telephone use. In sum, these studies altogether categorized social and instrumental motives of telephone use (Park, 2010).

As for smartphones, the motivations of use will be similar to the traditional uses of the telephone given that smartphones are an extension of existing telephones or cellphones with more advanced features connected to the Internet. In past research, the motivations for social inclusion and instrumental use were found to be significantly associated with PU, PEOU, and actual system use (Park, 2010). Thus, we set forth the following hypotheses:

H3. Motivation for social inclusion will be positively associated with: (a) PU, (b) PEOU, and (c) intention to keep using smartphones.

H4. Motivation for instrumental use will be positively associated with: (a) PU, (b) PEOU, and (c) intention to keep using smartphones.

3.2. Innovativeness

Another important antecedent with respect to the use of smartphones is individuals' innovativeness, since smartphones are one of the most advanced currently available communication technologies across the world. According to diffusion theory, technological innovation adoption is associated with one's innovative traits to try new products (Rogers, 2003). In fact, the causes of innovativeness have their psychological roots in an individual's novelty-seeking motives (Hirschman, 1980), and these roots of innovativeness include personality styles such as venturesomeness and communication

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