



# Applying the technology acceptance model in a two-country study of SMS advertising<sup>☆</sup>



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## ABSTRACT

Short message service (SMS) allows marketers to interact directly with target consumers at specific times and locations via their mobile phones. Using a modified technology acceptance model, this study examines factors that influence consumers' acceptance of SMS advertising. Data were collected in the U.S. and Korea to test the conceptual model and the cross-cultural validity of the measurement scales. The findings suggest that these scales are valid in the two national contexts. The usefulness construct is important to establish consumers' favorable attitudes toward acceptance of SMS ads in both countries. Young Korean consumers' attitudes toward SMS ads are more positive than their American counterparts. Although social influence has no effect on Korean consumers' attitudes toward acceptance, it does show a positive relationship with American consumers' attitudes. This study reveals that consumers' acceptance of SMS ads does differ in the two culturally distinctive countries.

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## 1. Introduction

The growing importance of the mobile phone as a new direct interactive medium in mobile media is in its portability and capability to function as a small computer. Based on mobile phone users' demographic information and usage patterns, advertisers can deliver personalized marketing messages to users via their mobile phones at specific times and locations (Peters, Amato, & Hollenbeck, 2007).

To gain a better understanding of the effectiveness of mobile marketing, a cross-cultural approach may help identify important factors that influence consumers' perceptions of mobile advertising. This study selects American and Korean consumers for comparison because of their distinctive cultural differences as well as their propensities to accepting mobile marketing.

Mobile phone penetration rates in the U.S. and Korea are over 90%. In 2011, mobile advertising spending in America and Korea reached \$1 billion and \$322 million, respectively (eMarketer, 2012). International marketers have already integrated mobile technologies in the media-mix to build brands because using permission-based mobile advertising can capture consumers' attention

and raise brand awareness (Okazaki & Taylor, 2008; Yunos, Gao, & Shim, 2003).

Cultural values are important factors that influence consumers' innovative behaviors of accepting technology-related products (Steenkamp, Hofstede, & Wedel, 1999; Straub, 1994; Veiga, Floyd, & Dechant, 2001; Yaveroglu & Donthu, 2002). Short message service (SMS) is a mobile application that allows users to communicate with text messages. Rapid adoption of SMS by consumers allows advertisers to interact with them via personalized marketing messages.

Through a better understanding of what influences consumers' acceptance of mobile advertising across cultures, international marketers can develop effective strategies that make SMS advertising more relevant to the target audiences' needs. This study will address the following two research questions. RQ1. Does adoption of SMS technology influence consumers' attitudes toward acceptance of SMS advertising? RQ2. Do the attitudes toward use vary in different countries?

Few empirical studies have used the technology acceptance model (TAM) to examine consumers' acceptance of SMS advertising. This study focuses on how the perceived ease of use, perceived usefulness and social influence affect consumers' attitudes toward acceptance of SMS advertising and the relationship between attitudes and intention to use. By comparing American and Korean consumers' attitudes toward SMS ads and intentions to use SMS advertising, this study also examines cross-cultural scale validity. In addition, the findings may provide advertisers a better understanding of the impact of cross-cultural differences on consumers' adoption of SMS advertising.

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## 2. Conceptual framework and theoretical model

### 2.1. Mobile advertising

Short message service (SMS) and wireless application protocol (WAP) are two commonly used mobile advertising platforms in Europe and America. WAP is a platform for multimedia message service (MMS). Fewer American consumers adopt WAP because of the high fees and poor connection speed (Cuneo, 2006). In Asia, SMS is a widely adopted mobile phone application (Kim, Park, & Oh, 2008) and it allows mobile phone users to send and respond to messages up to 160 characters. Seventy percent of American mobile advertising is sent via SMS (Bruno, 2006) as an advertising call-in system. Consumers can participate in consumer promotional activities or request mobile coupons by texting the advertisers. In early 2009, ten million mobile coupons were redeemed via mobile devices (Wortham, 2009). The American Wireless Advertising Association's guidelines require mobile advertisers to provide consumers with opt-in/out services for mobile ads. This permission-based model allows consumers to control when and where to receive SMS advertising via their mobile phones. However, prior research shows that most American consumers have no interest in receiving any kind of mobile marketing activities via their mobile devices (Reedy, 2009).

### 2.2. Technology acceptance model (TAM)

This study uses a modified technology acceptance model to examine consumers' intentions to use SMS advertising. The TAM derives from the theory of reasoned action (TRA), a behavioral model developed by Ajzen and Fishbein (1980). Originally, TAM was developed to examine user's adoption behaviors of computer information systems in the workplace (Davis, 1989) and then was extended to study new technology acceptance behavior in various technology-related research, including mobile marketing (Gefen, Arahanna, & Straub, 2003; Hong & Tam, 2006; Kim et al., 2008; Zhang & Mao, 2008). TAM postulates that users' adoption of information technology is determined by two technology-related attitudinal dimensions, namely, perceived usefulness (PU) and perceived ease of use (PEOU). According to Davis (1989), perceived usefulness and perceived ease of use would influence adopters' attitudes toward use which would in turn lead to intentions to adopt the technology. The central thesis of TAM is to predict an individual's behavioral intention. In addition to the original constructs proposed in TAM, social influence (SI) (Bagozzi, Wong, Abe, & Bergami, 2000) is incorporated in the model to study the effects of opinions of others on attitudes toward acceptance.

## 3. Hofstede's cultural dimensions

Consumers' adoption of an innovation is subscribed to the individual countries' cultural orientations. The societal norms and beliefs of a country would shape its people's perceptions, dispositions and behaviors (Steenkamp et al., 1999). Culture is a set of established values and beliefs that is shared among people within the same nation. Hofstede's (1997) cultural dimensions – individualism, uncertainty avoidance, masculinity and power distance – remain as the basis for a significant proportion of cross-cultural consumer research (De Mooij, 2010; Yaveroglu & Donthu, 2002). Past research reveals that people living in individualistic societies with a strong masculinity orientation are more innovative (Steenkamp et al., 1999). As noted earlier, the U.S. and Korea are selected for this study because of their different cultural characteristics in individualism and masculinity. According to Hofstede's (1997) cultural scores, the U.S. ranks 1st in individualism and 15th in masculinity while Korea ranks 43rd in individualism and 41st in masculinity.

In individualistic societies, ties between people are loose because they are more independent in attitudes and behaviors. Individualists

are motivated by self-interest and achievement of personal goals. Their decision-making process is internalized. In contrast, collectivists' behaviors are regulated by in-group norms that emphasize sharing, cooperation, and group harmony. Their decision process relies on external cues. In masculine societies, people tend to be more assertive, decisive, and ambitious (Hofstede, 1997).

## 4. Perceived characteristics of using SMS advertising

In the technology acceptance model, perceived ease of use (PEOU) refers to the degree of required effort that is needed to take advantage of an application (Davis, 1989). In this instance, a person expects the use of a technology will be free of effort. Compared to the standard computer keyboard, the small keypad on the mobile phone is not user-friendly. Sending and receiving text messages still require some mental effort (Dickinger & Kleijnen, 2008). In this study, the skills of sending SMS form the basis of developing items that measure the PEOU construct.

Perceived usefulness (PU) is the extent to which users expect the application of technology in their jobs will improve their performance. Lu, Deng, and Wang (2010) found that PU is a significant factor that influences consumers to adopt SMS. However, PEOU does not affect SMS adoption (Koufaris, 2002). In general, the utilitarian benefits of product attributes communicated via advertising are an important determinant of consumer response (Ducoffe, 1995). The perceived benefits of opting in to SMS advertising include convenience, discount coupons, and participation in consumer promotions.

These benefits are advertising values that are perceived as general cognitive antecedents of attitude toward advertising (Ducoffe, 1995). As the means-end-chain model (Mowen & Minor, 2001) suggests, the instrumental values of product attributes directly link with the terminal values of what consumers receive in using the products. In this instance, the utilitarian benefits of opting in to SMS ads provide a means to reach the desired end state of being rewarded. The utilitarian value that fits the construct definition of PU will be used to study its relationship with the attitude construct. An experimental study by Lee and Hill (2013) reveals that types of message influence utilitarian perception of mobile SMS. According to TAM, the belief variable perceived ease of use has a direct effect on attitude toward adoption as well as a mediated relationship through perceived usefulness.

### 4.1. Adoption of SMS advertising

In consumer innovation diffusion, Gatignon and Robertson (1985) suggest that heavy users with significant experience in similar product categories are more responsive to new ideas. In Korea, redeeming SMS coupons for goods is very popular among young consumers where they even forward SMS coupons to their friends as gifts (Wortham, 2009). Thus, young Korean consumers' attitudes toward acceptance of SMS advertising may be influenced by their disposition toward using SMS as a tool to respond to advertising, as well as their experience in using the medium.

According to Sultan and Rohm (2008), factors that affect the effectiveness of mobile marketing include levels of mobile technology and penetration, regulatory constraints and levels of consumer acceptance in different cultural settings. Younger demographics higher in socioeconomic status are more responsive to SMS marketing (Trappey & Woodside, 2005). Adoption of innovation is faster in countries that have homogeneous national characteristics and highly concentrated populations (Dekimpe, Parker, & Sarvary, 2000). Korea represents a collectivist culture with a homogeneous population that is more group oriented, while the U. S. represents a more heterogeneous population with an individualistic orientation (Hofstede, 1997). One important difference between individualism and collectivism is the decision making process. Societies that value strong individualism attach importance to one's individual achievement and personal autonomy, thereby

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