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Seniors' usage of mobile social network sites: Applying theories of innovation diffusion and uses and gratifications

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ABSTRACT

Seniors are substantial users of mobile devices to communicate and participate in mobile social network sites (MSNS) to interact, but there has been little theoretically based understanding of what motivates seniors' use of MSNS for tourism. To bridge the gap, this study applied the theory of the diffusion of innovations as well as the theory of uses and gratifications to explain why seniors use MSNS. Key explanatory variables included site attachment and authentic experience. Results indicate that the effect of innovation diffusion on authentic experience was greater than on site attachment. The effect of uses and gratifications was also greater on authentic experience than on site attachment. In addition, this study examined the moderating role between purchase and non-purchase groups. The effects of uses and gratifications on site attachment and authentic experience were stronger in the purchase group than in the nonpurchase group, while on the other hand, the effects of innovation diffusion on site attachment and authentic experience were stronger in the non-purchase group than in the purchase group. The findings of this study suggest theoretical and practical implications for senior MSNS usage in the tourism domain.

1. Introduction

The emerging senior market plays an important role in the tourism industry due to the affluent purchasing power of seniors (Kim, Lee, & Bonn, 2016d; Kim, Lee, Kim, & Kim, 2013). In South Korea (hereafter "Korea"), the population of those over 50 is more than one third (35.5%) of the total population in 2016 and will reach more than one half (53.4%) of the population by 2040 (Korean Statistical Information Service, 2016). Those 50 years old and over are defined as seniors in this study because of their distinctive characteristics in the tourism areas (e.g., Kim et al., 2016d, 2013). Specifically, Anderson and Langmeyer (1982) identify differences in tourism motivations, planning, and the cost of travel between over-50 and under-50 age groups, suggesting that age can be used for market segmentation. The American Association of Retired Persons (2017) also describes seniors as people who are age 50 and older. With regard to marketing perspectives, the distinction between the over-50 segment and the under-50 segment significantly benefits marketing managers because of the clear differences in their responses to promotions, advertising, products, and travels (Anderson & Langmeyer, 1982; Kim, Chung, Lee, & Kim, 2011; Treguer, 1994). Because our study focuses on the market segmentation

of senior mobile social network sites (MSNS) users for tourism purposes (Kim, Bonn, & Lee, 2017a; Kim, Lee, & Bonn, 2017b), this study regards seniors as being over the age of 50.

Korea is one of the fastest aging countries in the world, with more than one-third of the population being seniors referred to as the mature market, elderly market, gray market, or silver market (Kim & Preis, 2016; Kim, Kim, Kim, & Kim, 2016c). Seniors continue to represent an important and rapidly growing segment of the population in Korea that can potentially assume a more dominant position within the travel and tourism industry given their financial affluence and desire to travel (Kim et al., 2011, 2013). Moreover, Korean seniors have higher adoption rates of information and communication technology products and services related to travel than other countries, such as the United States of America (Kim et al., 2016d, 2016c). A majority of Korean seniors use mobile MSNS for travel and tourism purposes, in addition to using it for enjoying and spending their discretionary time (Kim et al., 2017b, 2017a). As a result, two of the major challenges in contemporary Korean society are the information and communication technology revolution and the demographic shift caused by an aging population (Kim & Preis, 2016; Kim, Lee, & Preis, 2016e). Hence, this study focuses on understanding and forecasting Korean seniors' use of technology

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(MSNS) for one of their favorite activities, which is tourism.

A majority of seniors extensively uses mobile devices to communicate and participate in mobile social network sites (MSNS) to interact with other users (Gallup Korea, 2015; Korea Internet Security Agency, 2016). Despite the importance and distinctiveness of the senior segment in the MSNS market, there has been little theoretically grounded research on seniors' usage of MSNS for tourism purposes. This study addresses that limitation by examining senior MSNS usage for tourism products and services based on theories of innovation diffusion as well as uses and gratifications.

Innovation diffusion theory (IDT) is a theoretical paradigm to identify why people adopt new ideas and technologies (Robertson, 1967; Rogers, 1983). The IDT has proved useful to explain seniors' technology adoption (Sugarhood, Wherton, Procter, Hinder, & Greenhalgh, 2014), tourists' behavior (Agag & El-Masry, 2016; Ganglmair-Wooliscroft & Wooliscroft, 2016), and usage of social network sites (SNS) (Chiang, 2013). Particularly, IDT provides an attractive model that explains the intentions of tourists to participate in the online travel community and significantly influences intention to purchase as well as generate positive word of mouth (Agag & El-Masry, 2016). More importantly, the attributes of innovation specified by IDT - complexity, relative advantage, and compatibility - explain continued use of social network sites (SNS) (Chiang, 2013).

In addition to IDT, uses and gratifications theory (UGT) is used to explain why audiences utilize specific media to meet specific gratifications (Katz, Blumler, & Gurevitch, 1973). Research has demonstrated the utility of UGT to identify the reasons people use SNS (Chiang, 2013; Han, Min, & Lee, 2015; Smock, Ellison, Lampe, & Wohn, 2011). Research based on UGT has been conducted on MSNS usage (Ha, Kim, Libaque-Saenz, Chang, & Park, 2015), seniors' usage of mobile devices (Magsamen-Conrad, Dowd, Abuljadail, Alsulaiman, & Shareefi, 2015), and seniors' SNS usage (Jung & Sundar, 2016). More importantly, Gallego, Bueno, and Noyes (2016) find that UGT explains the effects of convenience and entertainment on intention to use information and communication technology and that information seeking and status on sharing experiences lead to continued intention to use the technology. UGT suggests that meeting the needs of three types of gratification - informativeness, social interactivity, and playfulness - motivates an individual's sustained intention to use a social network site (Chiang, 2013). Therefore, the objective of this research is to understand senior users' intention to use MSNS for tourism activities, by integrating the IDT and UGT models. To achieve this goal, a conceptual model is developed with the key constructs of the two models to predict MSNS users' behavioral intention.

Prior research suggests two factors that play an important role in purchasing online tourism products and services. First, site attachment has been shown to play a vital role in purchasing tourism products and services in mobile sites (Kim, Chung, Lee, & Preis, 2016a, 2016b), SNS (Kim et al., 2016d), and online sites (Kim, Chung, Lee, & Preis, 2015). Site attachment is defined as keeping users connected to online communities and has been shown to be an important element in increasing loyalty to SNS (Kim et al., 2016e). Second, prior research indicates that authentic experience is a significant factor driving the purchase of online tourism products and services (Gilmore & Pine, 2007; Reinecke & Trepte, 2014). However, previous studies applying IDT or UGT, which largely predate the Web, have understandably not engaged much with the two vital constructs of site attachment and authentic experience in MSNS. This study addresses that deficiency by developing a research model that incorporates site attachment and authentic experience into a theoretical model based on IDT and UGT for explaining use of MSNS by seniors for tourism-related activities.

In SNS, research on purchase has been well documented in terms of brand evaluations (Naylor, Lamberton, & West, 2012), word of mouth (See To & Ho, 2014), decision making processes (Xie & Lee, 2015), and tourism products (Rondán-Cataluña, Arenas-Gaitán, & Ramírez-Correa, 2015). IDT has been used to explain the reasons why consumers

purchase tourism products from online travel communities (Agag & El-Masry, 2016). And UGT sheds light on new opportunities for purchasing products on SNS (Baek, Cho, & Kim, 2014; Zhang, Shabbir, & Abro, 2015). In particular, attachment to the products of mobile phones is closely related to consumers' purchase of the mobile devices (Mugge, Schifferstein, & Schoormans, 2010). Likewise, authentic experience of a wine place is significantly associated with consumers' wine purchase (Moulard, Babin, & Griffin, 2015). Despite the importance of consumer purchase in MSNS, there is little research on the moderating role between purchase and non-purchase groups in MSNS among the senior tourism market. Thus, the purpose of this study is twofold: to develop and verify a comprehensive research model of integrating IDT and UGT to explain site attachment and authentic experience; and to examine the moderating effect of purchase and non-purchase groups in the context of seniors' use of MSNS for tourism.

By doing so, this study makes a theoretical contribution by extending and integrating prior work on IDT and UGT to the online context, specifically explaining site attachment and authentic experience. This study also makes a practical contribution by offering distinctive marketing strategies to the MSNS industry based on insights about the moderating role of purchasers and non-purchasers in the combined IDT and UGT model.

2. Literature review

2.1. Theoretical background

2.1.1. Mobile social network sites for seniors

The proliferation of mobile devices (e.g., smartphones, tablets) have prompted the development of a plethora of MSNS. Research has offered us valuable insights on how MSNS can be used by businesses for marketing communications, sales enhancement, and relationships with customers (Yadav, Joshi, & Rahman, 2015). Tourism industry is one of the emerging sectors adopting these new MSNS channels as communication and marketing tools (Gulbahar & Yildirim, 2015). In libraries, the main uses of MSNS include searching and sharing information, consumer self-service, and keyword-identified auto-responses (e.g., a mobile auto-response service) as basic functions (Xu, Kang, Song, & Clarke, 2015). In MSNS commerce, users' perceived usefulness has a positive effect on their continuing usage of mobile social commerce, which is a booster for brand loyalty (Hew, Lee, Ooi, & Lin, 2016). MSNS users' satisfaction has a positive impact on sustained intention to use, while emotional exhaustion has a negative effect on sustained use of MSNS (Chaouali, 2016).

Seniors, more than non-seniors, are adopting SNS to extend their social relationships (Chakraborty, Vishik, & Rao, 2013; Choudrie & Vyas, 2014). Seniors are well poised to leverage SNS-based knowledge management that involves peer sharing, evaluation of content, ease of use, affordability, information types, self-organizing, and peer trust (Dumbrell & Steele, 2014). Seniors on SNS consider family role and privacy control as important characteristics, followed by the design of the user interface, adaptive solutions to compensate old, and health information (Coelho & Duarte, 2016). Attachments of common bond and identity play a vital role in explaining seniors' intention to revisit SNS for tourism (Kim et al., 2016d). Among seniors using MSNS for tourism purposes, benefits and authentic experience play an important role in predicting their intention to revisit MSM moderated by the effect of discretionary time (Kim et al., 2017a). Moreover, senior MSNS users' flow experience is found to have a significant effect on subjective well-being, which in turn highly influences purchase intention, together with the moderating role of anxiety attachment in tourism activities (Kim et al., 2017b). Given the importance of MSNS in senior tourism, this study aims to utilize IDT and UGT to examine what makes seniors adopt and then become sustained users of MSNS for tourism products and services.

2.1.2. Innovation diffusion theory

Innovation is defined as “a process whereby a new thought, behavior, or thing is conceived of and brought into reality” (Robertson, 1967, p. 19). Diffusion is defined as “the process by which an innovation is communicated through certain channels over time among the members of a social system” (Rogers, 1983, p. 12). IDT is defined as a rational contemplation that seeks to clarify how, why, and at what degree new ideas and technologies spread over people (Robertson, 1967; Rogers, 1983). Also, the IDT refers to “how this attitude is formed, how it leads to the eventual adoption or rejection decision, and how innovation characteristics fit into this process” (Karahanna, Straub, & Chervany, 1999, p. 186). Information systems researchers have adapted the characteristics of innovations presented by Rogers and refined a set of constructs that could be used to study individual technology acceptance (Moore & Benbasat, 1991; Venkatesh, Morris, Davis, & Davis, 2003). According to IDT, the attributes of technology that predict user adoption are ease of use, relative advantage over existing options, compatibility with prior technologies, values and preferences, easy demonstrability of its results, and trialability of the technology without having to make a huge a priori investment in resources (Venkatesh et al., 2003).

These attributes were shown to significantly influence adoption in mobile banking (Al-Jabri & Sohail, 2012). Based on IDT, the perceived characteristics of innovation and self-efficacy have significant impacts on the adoption: however, emotional attachment to paper books, that is compatibility with prior values and preferences, has a negative influence on the relationship between user attitudes and adoption of eBook readers (Waheed, Kaur, Ain, & Sanni, 2015).

IDT has been used to dynamically understand the spread of ethical tourism behaviors through a population, revealing a link between relatively static tourist innovativeness and the innovation diffusion (Ganglmair-Wooliscroft & Wooliscroft, 2016). Alongside the technology acceptance model, IDT offers a compelling model for explaining tourists' intention to participate in online travel communities, which in turn positively influences intention to purchase as well as generate positive word of mouth (Agag & El-Masry, 2016). Further, attributes of innovation specified by IDT (i.e., complexity, relative advantage, and compatibility) explain why people continue to join and use SNS (Chiang, 2013). Despite the significance of the IDT for seniors, tourism, and SNS, there has been a paucity of studies using IDT to explicitly explain the adoption of MSNS for tourism by seniors. In the next section, we will argue why UGT explains not only the adoption of MSNS but also the intent to continue to use it by seniors for tourism.

2.1.3. Uses and gratifications theory

UGT is an audience-centered approach to understanding why and how people actively and continuously use specific media to satisfy (or gratify) specific needs (Katz et al., 1973). In other words, UGT explains why people select a specific medium over other communication media and reveals the psychological needs that inspire people to use particular media (Cheung, Chiu, & Lee, 2011). UGT has been well developed and proven useful in understanding the theoretical dimensions for assessing usage of the Internet and electronic commerce interfaces (Stafford, Stafford, & Schkade, 2004). Unlike traditional media, new forms of media, such as SNS, partition general use into various segments accounting for a more comprehensive explanation of how motivations are associated with use (Smock et al., 2011). In UGT, social presence of the SNS engenders the gratifications of peoples' needs for social connection which in turn influences continued usage. UGT argues that meeting the needs for three types of gratification motivate an individual's sustained intention to use a social network site; hedonic gratifications (enjoyment, fantasy, and escapism), utilitarian gratifications (achievement), and social gratifications (social interaction and social presence) (Li, Liu, Xu, Heikkilä, & Van Der Heijden, 2015). The important antecedents of SNS users' attitude and intentions for sustained use are articulated and empirically validated by research based on UGT (Chiang, 2013). The

linkage between peoples' needs for immediacy and the easy access to real-time features offered by MSNS explains why they are used even more than traditional SNS (Han et al., 2015).

According to UGT, the aforementioned gratifications and mobile convenience influence seniors' attitudes towards MSNS use, which in turn impacts their actual use of MSNS (Ha et al., 2015). From a UGT model, seniors differ from the general population in their use of mobile devices in terms of information search, relationship maintenance, style, playfulness and killing time, and organization (Magsamen-Conrad et al., 2015). Social bonding is a major motivation for seniors participating in most of the activities on SNS. Using the message interactivity feature, as predicted by the UGT model, leads to greater SNS use (Jung & Sundar, 2016). Based on the literature review above, this study posits that seniors use MSNS for tourism activities, by meeting their gratifications for informativeness, social interactivity, and playfulness. The following section describes research outlining what makes seniors distinct in their use of SNS from other population segments.

2.2. Hypothesis development

2.2.1. Relationship between innovation diffusion and site attachment

While IDT specifically focuses on explaining the adoption of an innovation, the basic argument can be extended to explain not only adoption of an innovation but also intention for sustained attachment to the innovation, in this case a MSNS site. IDT outlines several attributes of an innovation, such as simplicity, benefit, and compatibility that make the innovation more likely to diffuse and adopt (Rogers, 1983). Attachment theory has a critical role in the context of senior mobile device users for tourism purposes (Kim et al., 2016c). Site attachment is defined as mobile device users' affective connections to websites in which the users become involved (Kim et al., 2016a). Site attachment is formed from certain motivations (e.g., perceived usefulness, source credibility, value, trust) in mobile tourism contexts (Kim et al., 2016b, 2015).

Innovation diffusion attributes of the IDT have significant impacts on attitudes toward adopting new technologies (Karahanna et al., 1999). Specifically, perceived usefulness of shopping sites, an IDT attribute, has a positive effect on mobile device users' attachment to the sites for travel and tourism products and services (Kim et al., 2016a). For smartphone users, time saving from the shopping sites, another IDT attribute, influences their attachment to the sites for tourism purposes (Kim et al., 2016b). More importantly, among senior users of smartphones and tablets, usefulness of the devices, another IDT attribute, significantly leads to their attachment to the devices for tourism activities (Kim et al., 2016c). Drawing on the literature review above, this study posits that senior MSNS users' site attachment is predicted by attributes of IDT in the context of tourism and travel activities. Thus, this study proposes the following hypothesis:

H1. Attributes that explain diffusion of an innovation have a positive effect on site attachment among seniors using MSNS for tourism purposes.

2.2.2. Relationship between innovation diffusion and authentic experience

Authentic experience is defined as natural, original, exceptional, genuine, real, true, or high quality of feeling that is determined by consumers and thus authenticity has acted as catalyst in the success of social networks (e.g., YouTube, Facebook, Myspace) (Gilmore & Pine, 2007). Authentic experience plays an important role in the context of senior MSNS users for tourism and travel purposes (Kim et al., 2017a). Online authenticity has a significant longitudinal impact on subjective well-being (positive and negative affect as well as satisfaction with life) and users with low degrees of well-being are less likely to feel authentic on SNS (Reinecke & Trepte, 2014).

Complexity, relative advantage, and compatibility - which are IDT attributes - play a critical role in explaining why people report

intending to continually use SNS (Chiang, 2013). In the field of tourism, attributes of innovation have been shown to significantly influence diffusion of ethical experiences by tourists (Ganglmair-Wooliscroft & Wooliscroft, 2016). Specifically, ease of use (an innovation attribute), positively influences seniors' attitudes toward using e-commerce websites (Smith, 2008). This suggests that simplicity is related to quality of feeling (e.g., authentic experience). In online travel communities, perceived usefulness (another innovation attribute) has a direct and positive influence on consumer attitude toward online travel community and on consumer trust (Agag & El-Masry, 2016). This positive influence on consumer attitude toward the online travel community also implies an authentic experience. Compatibility – another innovation attribute – in early majority, late majority, and laggards has been shown to positively influence users' attitude towards intention for continuing use of SNS (Chiang, 2013). This again implies that compatibility of an innovation diffusion attribute is related to authentic experience. We therefore propose that attributes of IDT predict senior MSNS users' authentic experience in the tourism context. Therefore, this study posits the following hypothesis:

H2. Attributes that explain diffusion of an innovation have a positive effect on authentic experience among seniors using MSNS for tourism purposes.

2.2.3. Relationship between uses and gratifications and site attachment

In addition to IDT, as discussed above, UGT also has a significant impact on MSNS users' emotion and behavior (Chaouali, 2016). UGT identifies several features which are used to meet certain gratifications including informativeness, social interactivity, and playfulness. Informativeness is defined as users' ability to use SNS to manage information or deliver meaning (Chiang, 2013). Social interactivity is defined as a behavior to “provide opportunities for people to get acquainted, to become familiar with one another, and to build trust” (Ren, Kraut, & Kiesler, 2007, p. 387). Playfulness is defined as “the degree to which a current or potential user believes that the social network site will bring him/her a sense of enjoyment and pleasure” (Sledgianowski & Kulviwat, 2009, p. 75).

Attachment theory plays a key explanatory role in the context of senior MSNS users for tourism activities (Kim et al., 2016e). In the UGT paradigm, usage of online SNS is strongly determined by uses and gratifications attributes (e.g., informativeness, social interaction, playfulness) (Cheung et al., 2011). Specifically, according to the UGT model, informativeness positively influences users' propensity for using SNS (Chiang, 2013), implying that informativeness is related to affective connection (e.g., site attachment). Social interactivity has a positive effect on attachments of common bond and identity in online communities (Ren et al., 2007), suggesting therefore that social interactivity is related to site attachment. Entertaining features that meet gratifications has a significant effect on site attachment among mobile tourism shoppers (Kim et al., 2016b), suggesting that playfulness is positively related to site attachment. We therefore argue that attributes of UGT can predict senior MSNS users' site attachment in tourism. Hence, this study posits the following hypothesis:

H3. Use of MSNS features that meet the gratification needs among seniors using them for tourism purposes has a positive effect on their site attachment.

2.2.4. Relationship between uses and gratifications and authentic experience

In addition to IDT, as discussed above, UGT also explain why and how users develop an authentic experience using SNS. SNS is a key aspect of contemporary culture and can be a space for individuals to interact (Lugueti, Goodyear, & André, 2017). The UGT contributes to understanding of senior citizens' SNS use as an emerging communication tool (Jung & Sundar, 2016). In UGT, informativeness has been

shown to positively influence laggard users' attitude towards using SNS (Chiang, 2013), implying that informativeness is related to quality of feeling (e.g., authentic experience). Social interactivity positively affects cognitive, hedonic, and integrative gratifications in MSNS (Ha et al., 2015), and is therefore associated with authentic experience. Positive affect of using SNS has a significant impact on the sustained experience of authenticity on SNS (Reinecke & Trepte, 2014), suggesting that playfulness is related to authentic experience. Meeting gratifications of enjoyment and fantasy (i.e., playfulness) have been shown to have a highly significant effect on continuously playing games on SNS (Li et al., 2015). Moreover, meeting gratifications of escapism has a positive effect on satisfaction with MSNS usage, implying a high quality of authentic experience (Chaouali, 2016). This research suggests that attributes of UGT predict senior MSNS users' authentic experience for tourism activities. Thus, this study proposes the following hypothesis:

H4. Use of MSNS features that meet the gratification needs among seniors using them for tourism purposes has a positive effect on their authentic experience.

2.2.5. Relationship between site attachment and intention for continuing use

Site attachment contributes to increasing senior SNS users' loyalty to the SNS, resulting in an intention for continuing (or sustained) use of the SNS for tourism and travel activities (Kim et al., 2016e). Attachment to information systems has a significant effect on intention to participate in the community (Choi, 2013). In online group purchasing of travel products and services, site attachment to a group purchasing site has a positive impact on loyalty to the group buying site (Kim et al., 2015). In addition, tourism shoppers' site attachment to a mobile site influences their reciprocal altruism on the mobile site (Kim et al., 2016b). Among senior SNS users for tourism, attachment of a common bond and identity plays an important role in explaining the intention to revisit (Kim et al., 2016d). In the context of mobile tourism shopping, shoppers' site attachment to a mobile site has a significant impact on their intention for continuing use of the mobile site (Kim et al., 2016a). We therefore argue that seniors' attachment to tourism sites leads to their intention for continuing use, suggesting the following hypothesis:

H5. Site attachment has a positive effect on seniors' intention for continuing use of MSNS for tourism purposes.

2.2.6. Relationship between authentic experience and intention for continuing use

In addition to site attachment, authentic experience also contributes to boosting senior MSNS users' intention for continuing use of MSNS for tourism (Kim et al., 2017a). As a sign of postmodernism, online social networking sites create a sense of authenticity by enabling customers to create a SNS presence they consider real. This feature is a crucial component to strive and succeed in SNS (Gilmore & Pine, 2007). A significant linkage between perceived authenticity and behavioral intention of tourists exists in an island of cultural and natural heritage sites (Ramkissoon & Uysal, 2011). Since the relationship between authentic experiences and repurchase intention is significant, it is essential to increase authenticity to meet consumer expectations when ethnic theme businesses want to enhance consumer return rates (Tsai & Lu, 2012). The importance of the authentication of cultural tourist experiences (in restaurant spaces) has been highlighted from the perspective of online marketing, tourists' revisit, and online reviews (Mkono, 2013). In a longitudinal study of SNS, online authenticity has been shown to have a significant impact on subjective well-being of SNS users (Reinecke & Trepte, 2014). This study proposes that senior MSNS users' intention for continuing use is positively influenced by their authentic experience in tourism contexts. Hence, we propose the following hypothesis:

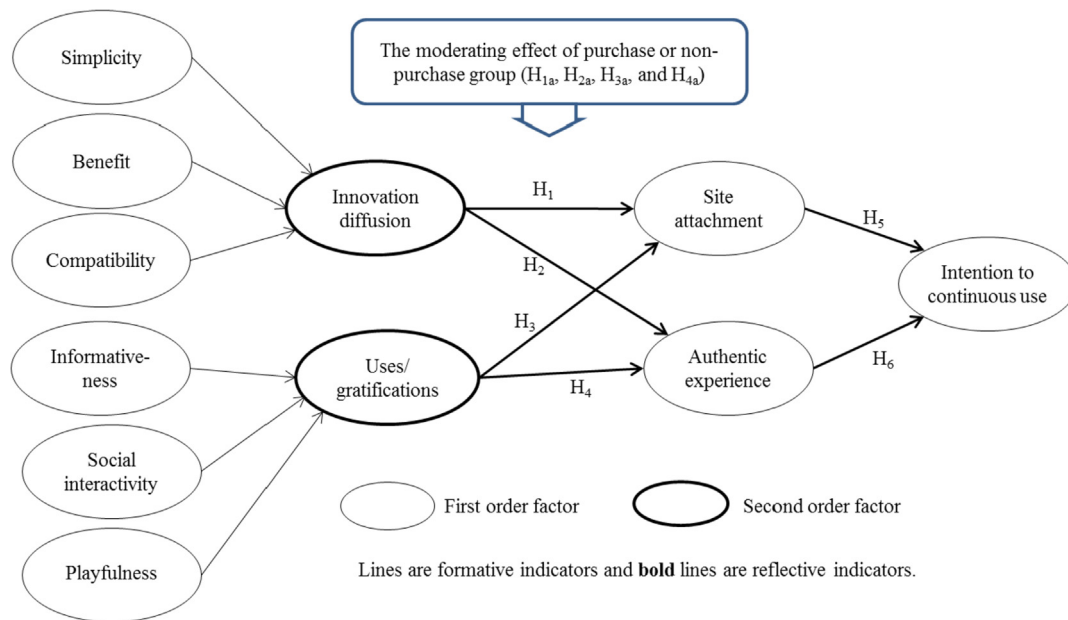


Fig. 1. Proposed research model.

H6. Authentic experience has a positive effect on intention for continuing use among seniors using MSNS for tourism purposes.

2.2.7. Moderating effect of purchase or non-purchase

Motivational and cognitive differences offer a compelling explanation about the differences between the distinctive purchasing behavior of two consumer types – users who are buyers and those who are non-buyers (Fotopoulos, Krystallis, & Ness, 2003). For example, the information about a product and its aesthetic features are an important leverage of purchase for buyers, while a product’s perceived quality is a less important leverage of purchase for the non-buyers (Fotopoulos et al., 2003). Research has shown that different motivations, elicited by open-ended surveys, explain why some lottery-eligible individuals play the lottery while others do not (Miyazaki, Langenderfer, & Sprott, 1999). Specifically, analyses of playing intensity reveal several non-purchase motivations that effectively explain such behavior, while enduring non-purchase motivations such as bad value, low involvement, and belief against lottery appear to counteract purchase motivations much more than situational motivations (e.g., lack of fund, time, and attention) (Miyazaki et al., 1999). More relevant to this study, research has shown that there are differences in the electronic purchase intention between buyers and non-buyers (Sánchez-Torres, Varon-Sandoval, & Sánchez-Alzate, 2017). In other words, compared to the buyer group, the non-buyer group has a high perception of risk regarding the use of the Internet to make purchases, low positive utility in using this channel, difficulty of use, and lack of conditions needed to make purchases online, the latter being associated with the high digital gap (Sánchez-Torres et al., 2017). Furthermore, in SNS, behaviors of buyers are different from those of non-buyers in terms of their use of social network sites, social identity, altruism, telepresence, and word-of-mouth (WOM) (Rondán-Cataluña et al., 2015). In particular, telepresence and WOM are variables that most influence purchasing online tourist services for people connected to SNS, whereas these variables do not influence clients who have bought offline tourist services (Rondán-Cataluña et al., 2015). Hence, this study posits that consumer behaviors in MSNS are different between buyers and non-buyers. Purchase in this study is defined as buy or pay for a reservation for tourism products or services using money or an equivalent method through MSNS.

As predicted by IDT, consumers in online travel community have higher intention to purchase than those not in an online travel

community because the former offers attributes of innovation more likely to adopt such as relative advantages, compatibility, and ease of use (Agag & El-Masry, 2016). Attachment to a product is extended to brand attachment because consumers are more eager to buy products bearing the same brand and attached consumers are more likely to recommend the same brand products to others (Mugge et al., 2010).

SNS has created new opportunities for collecting product purchase information and UGT has been extended to take advantage of this more detailed data on whether SNS users purchase products or not via SNS (Zhang et al., 2015). The UGT model explains how purchasing behaviors in SNS differ across attachment style groups, indicating that attachment styles moderate the relationship between use of SNS and SNS-related outcomes (Baek et al., 2014). In addition, seniors with greater desire for gratifications of psycho- and socio-pleasure and attachment among Buddhists have higher buying intention for technology products such as an electronic Buddha than those with lower gratifications (Lo, 2014). Authenticity of a wine vendor is a positive attribute that leads to quality perceptions and purchase (Moullard et al., 2015), revealing that consumers with better authentic experience have higher intention to purchase than those without this experience. These findings while not being from the tourism area, point to the generalizable nature of insights from UGT. Therefore, this study argues that purchase and non-purchase have moderating effects in the context of MSNS as articulated in the following four hypotheses:

H1a. Purchase/non-purchase groups moderate the relationship between innovation diffusion and site attachment among seniors using MSNS for tourism purposes.

H2a. Purchase/non-purchase groups moderate the relationship between innovation diffusion and authentic experience among seniors using MSNS for tourism purposes.

H3a. Purchase/non-purchase groups moderate the relationship between uses/gratifications and site attachment among seniors using MSNS for tourism purposes.

H4a. Purchase/non-purchase groups moderate the relationship between uses/gratifications and authentic experience among seniors using MSNS for tourism purposes.

Based on the hypotheses, this study suggests a research model as shown in Fig. 1.

Table 1
Measurement sources and contexts.

Constructs	Sources	Contexts
Simplicity	Agag and El-Masry (2016) Chiang (2013)	IDT; technology acceptance model; online travel community. IDT; UGT; SNS.
Benefit	Al-Jabri and Sohail (2012) Rogers (1983)	IDT; information technology adoption; mobile banking. IDT; diffusion and adoption; innovativeness and adopter categories.
Compatibility	Robertson (1967) Waheed et al. (2015)	IDT; process of innovation and diffusion; adopter categories based on relative time of adoption of innovation. IDT; eBook readers; technology adoption.
Informativeness	Stafford et al. (2004) Kim et al. (2017a)	UGT; e-commerce; Internet service provider. MSNS; senior users; tourism and travel purposes.
Social interactivity	Ha et al. (2015) Han et al. (2015)	UGT; MSNS; mobile instant messengers. UGT; MSNS; cross-sectional study.
Playfulness	Magsamen-Conrad et al. (2015) Smock et al. (2011)	UGT; tablets; senior users. UGT; SNS users; unbundling feature use.
Site attachment	Kim et al. (2015, 2016a)	Online group-buying; tourism products and services. ELM; mobile shopping; tourism products.
Authentic experience	Gilmore and Pine (2007) Mkono (2013)	Authenticity; fake reality; marketing strategy. Authenticity; online marketing; tourism businesses.
Intention for continuing use	Kim et al. (2016d, 2016e)	SNS; senior users; tourism and travel activities. SNS; senior users; and tourism purposes.

3. Methods

3.1. Measurements

In this study, nine constructs were developed as shown in Table 1. Based on IDT, innovation attributes were measured by simplicity, benefit, and compatibility, and in accordance with UGT, gratification features were measured by informativeness, social interactivity, and playfulness. In addition, three constructs of site attachment, authentic experience, and intention for continuing use were measured in the context of MSNS. All the items for the constructs were adapted from prior literature and adapted to fit senior MSNS users for tourism purposes.

In terms of the independent variables, for innovation diffusion four items of *simplicity* were adapted from Agag and El-Masry (2016) and Chiang (2013). Four items to assess *benefit* were adapted from Al-Jabri and Sohail (2012) and Rogers (1983). Four items to measure *compatibility* were adapted from Robertson (1967) and Waheed et al. (2015). For uses and gratifications, *informativeness* was assessed using four items adapted from Kim et al. (2017a) and Stafford et al. (2004). *Social interactivity* was assessed by using four items adapted from Ha et al. (2015) and Han et al. (2015). *Playfulness* was assessed by using four items adapted from Magsamen-Conrad et al. (2015) and Smock et al. (2011).

Based on the procedures outlined by Jarvis, Mackenzie, Podsakoff, and Burke (2004) and Hair Jr, Hult, Ringle, and Sarstedt (2017), this study operationalized the constructs from IDT and UGT as second order factors of formative constructs for five reasons. First, direction of causality comes from items (e.g., attributes from IDT and UGT) to constructs (e.g., innovation diffusion and uses/gratifications). Second, indicators (e.g., simplicity, benefit, compatibility, informativeness, social interactivity, playfulness) define characteristics of the constructs. Third, the indicators do not need to have the same or similar content and share a comment theme. Fourth, the formative constructs do not require indicators to co-vary with each other. Finally, tourism-related studies adopting formative measurement approach are relatively good fit to explain consumer behavior (Ahrholdt, Gudergan, & Ringle, 2017; do Valle & Assaker, 2016). Therefore, we followed the assessment of formative measurement models for the formative constructs of innovation diffusion from IDT and uses/gratifications from UGT based on the aforementioned three indicators for each.

In terms of the dependent variables, to measure *site attachment*, five items were adopted from previous research by Kim et al. (2015, 2016a). To measure *authentic experience*, five items were adopted from prior research by Gilmore and Pine (2007) and Mkono (2013). To assess

intention for continuing use, five items were utilized from prior research by Kim et al. (2016d, 2016e).

All items for the nine constructs were measured on a seven-point Likert scale, ranging from “strongly disagree” (1) to “strongly agree” (7). Based on existing research (Kim et al., 2016d), seven items representing general questions related to MSNS (i.e., length of experience, spent time, devices used, primary motivation, place for accessing, purchase or reservation, and frequently accessed MSNS) were developed. In addition, this study included six items pertaining to socio-demographics (i.e., gender, age, educational level, marital status, monthly household income, and occupation).

Three academic experts in tourism, senior, and social networks were asked to assess whether the items were appropriate to measure senior MSNS usage to verify the content validity. To check whether measurement items need to be deleted, added, or reworded, two MSNS professionals were also asked to review the survey items. A pre-test was conducted to verify the questionnaire items with 50 seniors who were 50 years or older and used MSNS for tourism purposes within the past 6 months. As a result of these three procedures, two items were deleted because of overlapping meaning on one item for site attachment (i.e., “I have engaged in using this mobile SNS for tourism-related activities”) and one item for intention for continuing use (i.e., “I will add new postings for tourism-related activities in this mobile SNS on a regular basis in the future”). In addition, a few minor changes were made for clarity. More importantly, we asked the respondents to make a note on the questionnaire during the pre-test if they have any changes, recommendations, suggestions, and comments about each question. Accordingly, the results from the pre-test data were used to screen measures of appropriateness in the context of senior MSNS users for tourism purposes. Also, scale refinements based on item-total correlations and exploratory factor analysis (EFA) were conducted based on the pre-test with 50 senior MSNS users, applying the PLS-SEM software.

3.2. Data collection

Tourism researchers have employed online surveys because it offers fast and cost-effective answers from today's online consumers (Kim et al., 2016d). An online survey is the most suitable for the data collection method since this study examines consumer behavior specific to MSNS. The respondents in this study were Korean seniors who are 50 years or older and have used MSNS for tourism products and services. Based upon MSNS users' gender and age of data provided by Korea Internet Security Agency (2016) and Korean Statistical Information Service (2016), a quota sampling method was used in this study.

A highly ranked online survey firm, Embrain (2016), was employed

to conduct the online survey since the survey firm practices rigorous procedures for obtaining quality data. For example, panel registration numbers are used to validate the identity of respondents; using their legal names and membership identification, each respondent is double checked; and when a respondent completes too fast or in recurring patterns to get an incentive, the survey system identifies and eliminates them. Further, each respondent gets a different sequence of questions, a rotational function used for multiple choice items to avoid response bias. Each respondent was required to present the name of a MSNS which the respondent had most frequently visited regarding travel products and/or services. The MSNS name mentioned by each respondent appeared on their particular survey screen for every subsequent question.

The online survey was conducted from February 16 to 29, 2016. An online survey expects approximately a 5% response rate in general (American Association for Public Opinion Research, 2015). In addition, sample of approximately 400 respondents are appropriate to conduct multi-group analysis (Hair, Black, Babin, & Anderson, 2010). Hence, invitations to participate in the survey, with information regarding the survey's purpose, were sent via email to 7100 seniors of 50 years or older, drawn at random, from the survey firm's national consumer database of 1,182,045 panel members. Of those panels, 1014 seniors responded to the survey invitation. In order to check if they had used a MSNS for travel products or services within the past 6 months, a screening question was purposely designed for this survey and asked the seniors (i.e., "In the past 6 months, have you used any MSNS to get or post information, to engage in social activities, or to make reservations or purchases related to tourism-related purposes?"). Of 605 qualified seniors who responded 'yes' to this screening question, 549 seniors actually completed the survey, generating a response rate of 7.7%.

After checking outliers, inappropriate answers, or missing data (Hair et al., 2010), 500 respondents were used for the final analysis. For example, if a respondent spends too short a time answering survey questions or if a respondent's answers follow a "response-set" pattern (e.g. all 1's or all 5's), data from that respondent were eliminated since such patterns indicate unreliable or untrustworthy responses (Lee, Lee, & Lee, 2008). Specifically, collected data were screened based on correlations, outliers, and time spent to answer the survey. In other words, when deviating from these criteria, responses were not included in the final data set.

3.3. Data analysis

The research employed partial least squares (PLS)-structural equation modeling (SEM) analysis to test the proposed model and hypotheses for several reasons. First, compared to traditional SEM analyses, PLS-SEM requires minimal demands of the sample to validate a model with bootstrap re-sampling method as a non-parametric approach (Chin, Marcolin, & Newsted, 2003). Second, PLS-SEM can analyze both reflective and formative indicators simultaneously within a model (Chin, 1998). Third, PLS-SEM has been proposed as more appropriate for complicated models or multi-group analysis than traditional SEMs (Hair, Sarstedt, Ringle, & Mena, 2012). Thus, SmartPLS 3.2.6 was used to analyze the measurement and structural models in this study (Ringle, Wende, & Becker, 2015).

To compare the differences between purchase and non-purchase groups, multi-group analysis was used, as suggested by Chin (1998), Chin et al. (2003), Keil et al. (2000, p. 315), and Thompson, Higgins, and Howell (1994, p. 181) as follows:

$$t_{ij} = \frac{p_1 - p_2}{\sqrt{\frac{(n_1 - 1) \times SE_1^2 + (n_2 - 1) \times SE_2^2}{n_1 + n_2 - 2}} \times \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

where p_1 is the path coefficient in the structural model of purchase, n_1 is the sample size of the data set for purchase, SE_1 is the standard error of the path in the structural model for purchase, t_{ij} is the t statistic with

$n_1 + n_2 - 2$ degrees of freedom, i is 1 for the purchase group, and j is 2 for the non-purchase group.

Since respondents were asked to rate all survey questions at once, common method variance was a potential issue. Thus, precautions were undertaken using several procedural remedies to address common method bias (Conway & Lance, 2010; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). First, in order to select only seniors who utilized MSNS for tourism purposes during the past 6 months, a screening question was employed at the beginning of the survey [i.e., "Please indicate which age group you are in: (1) Below 50 years old or (2) 50 and over"]. Second, the introduction section in the questionnaire included a description of the study's purpose, followed by a statement assuring all respondents of anonymity. Third, to decrease respondent apprehension, survey instructions noted that there were no right or wrong answers to the questions. Fourth, the questionnaire consisted of three parts: the first part included general information, the second one included measurement items related to the research model, and the third one included personal questions about demographic characteristics. Fifth, the orders of scale items were randomly rotated for each respondent in order to reduce the response bias.

Harman's single factor test was performed to confirm if common method variance was present in the resultant data set (Harman, 1967). That is, all self-reported survey items were entered into an exploratory factor analysis (EFA). Using this process, if a single factor emerges or one factor accounts for more than 50% of the variance in the variables, common method variance is present (Podsakoff et al., 2003). The EFA results showed that seven factors were delineated (eigenvalue > 1), with the first factor accounting for 13.22% of the variance. Subsequent factors explained 12.97%, 11.29%, 10.67%, 9.41%, 9.38%, and 8.24%, respectively. Since the single-factor test has been found to have some limitations (Chin, Thatcher, & Wright, 2012), a marker variable approach was also employed. For this procedure, a PLS algorithm was applied. A marker variable (avoidance attachment of senior MSNS users) was used to estimate the correlations on every theoretical construct in the PLS path model. The corrections between the marker variable and each of the constructs in the PLS path model were simplicity (0.169), benefit (0.168), compatibility (0.094), informativeness (0.154), social interactivity (0.079), playfulness (0.095), site attachment (0.066), authentic experience (0.065), and intention for continuing use (0.131). The resultant average of the squared multiple corrections was 0.014 for the nine theoretical constructs which is small and insignificant compared to the cutoff (0.1) (Lindell & Whitney, 2001). Hence, both the traditional single-factor test and the marker variable approach suggested that common method bias was not an issue in the study (Lindell & Whitney, 2001).

4. Results

4.1. Respondents' profile

As shown in Table 2, there were more males (54.8%) than females (45.2%). A majority of respondents fell in the 50–59 years age group (85.4%). One half of the sample had university degrees (52.4%) and married seniors were dominant (87.8%). A plurality of respondents (36.2%) fell into the 4.00–5.99 million Korean Won (US \$3430 – 5137) of monthly household income. Also, a plurality of respondents was office workers (30.0%) and had experience with MSNS for one and a half year to three years (43.0%). Just under one half of respondents (46.4%) spent more than 10–29 min on MSNS. A majority of respondents used smartphones for MSNS (91.6%) and used MSNS for searching or posting information (80.4%). Almost two-thirds of the sample (64.0%) used MSNS at home. Almost one half of seniors (48.8%) purchased tourism products via MSNS. Most frequently accessed MSNS for tourism purposes were Facebook (17.8%), Kakao (17.0%), Naver (10.4%), Coupang (8.0%), and Hana tour (6.0%).

Table 2
Demographic and general characteristics of respondents.

Characteristics	N (500)	% (100)	Characteristics	N (500)	% (100)
Gender			Length of experience with MSNS		
Male	274	54.8	Less than 6 months	70	14.0
Female	226	45.2	More than 6–18 months	175	35.0
Age			More than 19–36 months	215	43.0
50–59 years old	427	85.4	More than 37 months and over	37	8.0
60 and over	73	14.6	Time spent on MSNS		
Educational level			Less than 10 min	34	6.8
Below or high school	124	24.8	More than 10–29 min	232	46.4
2-year college	52	10.4	More than 30–59 min	189	37.8
University	262	52.4	More than 60 min and over	45	9.0
Graduate school or higher	62	12.4	Device used to access MSNS		
Marital status			Smartphone	458	91.6
Married	439	87.8	Tablet (e.g., iPad, Galaxy tab)	42	8.4
Single	25	5.0	Primary motivation for joining MSNS		
Divorced	26	5.2	Searching or posting information	402	80.4
Widower/widow	10	2.0	Relationship building or social activities	98	19.6
Monthly household income			Place for accessing MSNS		
Less than 2.00 million KRW ^a	43	8.6	Home	320	64.0
2.00–3.99 million KRW ^a	127	25.4	Office	121	24.2
4.00–5.99 million KRW	181	36.2	Mobile	59	11.8
6.00 and over million KRW	149	29.8	The most frequently accessed MSNS		
Occupation			Facebook	89	17.8
Professional	39	7.8	Kakao	85	17.0
Business owner	35	7.0	Naver	49	10.4
Service worker	46	9.2	Coupang	40	8.0
Office worker	150	30.0	Hana tour	30	6.0
Civil servant	20	4.0	Korea Tourism Organization	28	5.6
Home maker	104	20.8	Ticket Monster	11	2.2
Retiree	26	5.2	Twitter	10	2.0
Self-employed	74	14.8	Mode Tour	9	1.8
Blue collar worker	6	1.2	WeMakePrice	6	1.2

^a US \$1 = 1166 KRW (Korean won).

4.2. Grouping check

A question regarding purchase or non-purchase was asked of the respondents (“Did you reserve or purchase product or service related to tourism purposes through MSNS?”). The respondents (n = 500) were split into two groups depending on their answer of yes or no. The purchase group represented 48.8% (n = 244), whereas the non-purchase group accounted for 51.2% (n = 256). Thus, the grouping check reveals that the deviation of the collected data on purchase and non-purchase groups is fairly rational for the multi-group analysis.

4.3. Measurement model

Based on CFA, all 37 items used to measure the independent and dependent variables in this study were analyzed since their factor loadings were greater than 0.7 as shown in Table 3 (Kline, 2011). All nine constructs of simplicity, benefit, compatibility, informativeness, social interactivity, playfulness, site attachment, authentic experience, and intention for continuing use exceeded the minimum requirements of reliability, convergent validity, and discriminant validity as shown in Table 4. Specifically, all Cronbach's Alphas were greater than 0.70, demonstrating that all constructs were satisfactorily reliable (Campbell & Fiske, 1959). The composite reliability scores were greater than 0.70 and average variance extracted (AVE) for each construct was greater than 0.50, indicating that convergent validity was satisfactory (Bhattacharjee & Sanford, 2006). Discriminant validity was confirmed since the square root of the AVE for each construct presented was greater than each inter-construct correlation coefficient (Fornell & Larcker, 1981).

4.4. Structural model

We assessed three separate models of the entire group, purchase

group, and non-purchase group, employing partial least squares (PLS)-structural equation modeling (SEM). Differences between the purchase and non-purchase models were then tested. Across all respondents the model resulted in an R² or explained variance of 50.0% for site attachment, 60.7% for authentic experience and 50.2% for intention for continuing use (Hair et al., 2010). Bootstrapping was employed to calculate the path estimates and t-statistics for the relationships, which include large numbers of re-samplings to assess the pattern of a statistic's sampling distribution (Kline, 2011). Since the data of this study did not meet the standards of multivariate normality, we performed a bootstrap re-sampling method as a non-parametric method to evaluate whether the main and moderating effects were significant (Chin et al., 2003).

As shown in Fig. 2, all six hypotheses in the entire model are supported. Specifically, innovation diffusion significantly influences site attachment (H₁: β = 0.428, t-value = 7.244, p < 0.001) and authentic experience (H₂: β = 0.447, t-value = 7.787, p < 0.001). Uses/gratifications have significant effects on site attachment (H₃: β = 0.314, t-value = 5.076, p < 0.001) and authentic experience (H₄: β = 0.371, t-value = 6.799, p < 0.001). Lastly, intention for continuing use is influenced by site attachment (H₅: β = 0.256, t value = 5.224, p < 0.001) and authentic experience (H₆: β = 0.506, t value = 12.785, p < 0.001).

H_{1a}, H_{2a}, H_{3a}, and H_{4a} were also tested to examine the moderating effect of purchase versus non-purchase group. As shown in Table 5, the model explained a greater variance for site attachment (5.4%), authentic experience (4.8%), and intention for continuing use (4.0%) in the non-purchase group than those of the purchase group. In addition, a comparison of the standardized path coefficients indicates that innovation diffusion has stronger effects on site attachment and authentic experience in the non-purchase group than those of the purchase group. On the other hand, uses/gratifications had higher impacts on site attachment and authentic experience in the purchase group than those of

Table 3
Confirmatory factor analysis of measurement model (entire group).

Constructs	Factor loading	Mean	SD ^a
Simplicity			
1. Interactions using this MSNS for tourism-related activities are clear and understandable.	0.816	4.788	0.915
2. Interactions using this MSNS for tourism-related activities do not require a lot of mental effort.	0.780	4.574	0.965
3. I find using this MSNS for tourism-related activities easy.	0.841	4.876	0.929
4. I find that interactions using this MSNS for tourism-related activities are easy to get what I want.	0.879	4.650	0.991
Benefit			
1. Members of this MSNS share knowledge or experiences for tourism-related activities with other members.	0.851	4.826	1.017
2. This MSNS is useful for gathering information for tourism-related activities.	0.833	5.076	0.894
3. Members benefit from this MSNS for tourism-related activities.	0.810	4.786	0.939
4. Members of this MSNS form friendships with others for tourism-related activities.	0.821	4.522	1.083
Compatibility			
1. Using this MSNS for tourism-related activities is compatible with all aspects of my life.	0.875	4.284	1.011
2. I think that using this MSNS for tourism-related activities fits well with the way I like to communicate.	0.917	4.456	1.013
3. Using this MSNS for tourism-related activities fits into my lifestyle.	0.925	4.388	1.041
4. I think that using this MSNS for tourism-related activities suits me.	0.920	4.500	1.037
Informativeness			
1. On this MSNS for tourism-related activities, I can use various multimedia mode of communication.	0.893	4.608	1.055
2. On this MSNS for tourism-related activities, I can use various electronic modes of communication.	0.877	4.702	1.058
3. On this MSNS for tourism-related activities, I can share diverse knowledge.	0.915	4.834	1.014
4. On this MSNS for tourism-related activities, I can search diverse information.	0.838	5.036	0.974
Social interactivity			
1. Using this MSNS for tourism-related activities enables me to create interpersonal relationships with other members.	0.895	4.484	1.062
2. Using this MSNS for tourism-related activities helps me maintain social relationships with other members.	0.932	4.428	1.086
3. Using this MSNS for tourism-related activities helps me make new friends.	0.932	4.364	1.134
4. Using this MSNS for tourism-related activities enhances my social relationships with others.	0.934	4.426	1.117
Playfulness			
1. Using this MSNS for tourism-related activities is enjoyable for me.	0.912	4.848	0.900
2. Using this MSNS for tourism-related activities is pleasurable for me.	0.936	4.758	0.911
3. Using this MSNS for tourism-related activities is fun for me.	0.903	4.842	0.925
4. Using this MSNS for tourism-related activities keeps me happy.	0.884	4.568	1.016
Site attachment			
1. I am deeply involved in using this MSNS for tourism-related activities.	0.833	4.508	1.055
2. Using this MSNS for tourism-related activities is part of me.	0.904	3.806	1.171
3. I am attached to using this MSNS for tourism-related activities.	0.925	4.024	1.189
4. Using this MSNS for tourism-related activities is important to me.	0.920	4.196	1.188
Authentic experience			
1. The MSNS provides me with authentic experiences.	0.871	4.386	1.006
2. The MSNS provides me with genuine experiences.	0.913	4.332	1.028
3. The MSNS provides me with exceptional experiences.	0.931	4.370	1.079
4. The MSNS provides me with unique experiences.	0.907	4.276	1.069
5. Overall, The MSNS provides me with original experiences.	0.904	4.382	1.076
Intention for continuing use			
1. I will add some new information for tourism-related activities in this MSNS on a regular basis in the future.	0.853	4.526	1.079
2. I will frequently update this MSNS for tourism-related activities in the future.	0.864	4.430	1.128
3. I will search for the information on tourism-related activities on this MSNS regularly.	0.864	4.860	1.001
4. I will continue to use this MSNS for tourism-related activities.	0.871	5.018	1.012

Note: All items were measured on 7-point Likert scales of the range.

^a Standard deviation.

the non-purchase group.

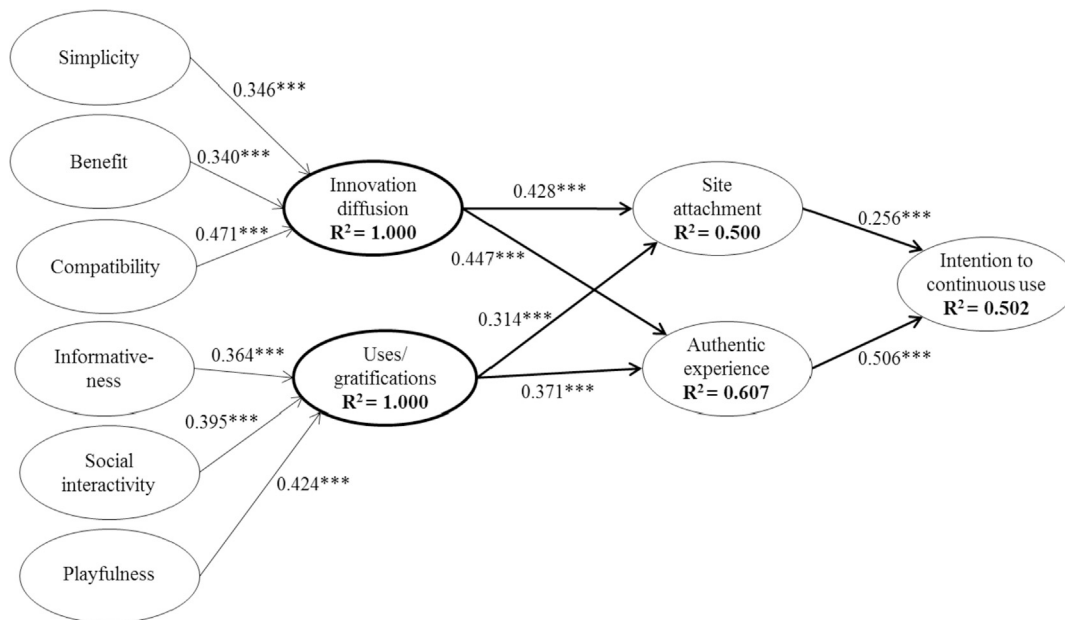
In order to perform a multi-group analysis for two sub-models, we applied PLS-SEM to compare the model across the purchase and non-

purchase groups. The coefficients of the four paths across the purchase and non-purchase groups were significantly different (see Table 5). In the non-purchase group, the magnitude of the coefficient between

Table 4
Reliability and discriminant validity (entire group).

Model	Construct	AVE	Correlation of the constructs									
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Entire group	(1) Simplicity	0.690	0.831									
	(2) Benefit	0.687	0.653	0.829								
	(3) Compatibility	0.827	0.618	0.601	0.909							
	(4) Informativeness	0.777	0.622	0.618	0.532	0.881						
	(5) Social interactivity	0.843	0.514	0.603	0.554	0.622	0.918					
	(6) Playfulness	0.826	0.584	0.594	0.702	0.558	0.537	0.909				
	(7) Site attachment	0.803	0.533	0.496	0.700	0.501	0.505	0.658	0.869			
	(8) Authentic experience	0.819	0.610	0.619	0.694	0.599	0.584	0.672	0.695	0.950		
	(9) Intention for continuing use	0.745	0.579	0.610	0.702	0.565	0.562	0.646	0.608	0.684	0.863	
		Cronbach's α		0.850	0.848	0.930	0.904	0.938	0.930	0.918	0.945	0.886
	Composite reliability		0.899	0.898	0.950	0.933	0.956	0.950	0.942	0.958	0.921	

Note: The square root of AVE is along the diagonal; correlation is below the diagonal.



Note: ***p < 0.001. Four control variables of gender, age, educational level, and monthly household income, and occupation were linked to authentic experience and intention for continuing use.

Fig. 2. Results of the research model for the entire group.

innovation diffusion and site attachment as well as innovation diffusion and authentic experience were significantly greater than those of the purchase group. Hence, the result supports H_{1a} and H_{2a}. On the other hand, the magnitude of the coefficient between uses/gratifications and site attachment as well as uses/gratifications and authentic experience were significantly greater in the purchase group than those of the non-purchase group. Therefore, the result supported H_{3a} and H_{4a}. We diagnosed multicollinearity using the variance inflation factor (VIF) of each independent variable. Since all values for VIF fell between 1.589 and 2.949, multicollinearity was not a concern in this study (Hair et al., 2010, 2012).

4.5. Inclusion of control variables

In order to conduct a precise evaluation of the proposed research model, we controlled for demographic variables of gender, age, educational level, occupation, and monthly household income. This study assessed whether inclusion of those variables affects a more or less precise interpretation of the results (Spector & Brannick, 2011). Based on the PLS analysis using 500 bootstraps, we added the four control variables between authentic experience and intention for continuing use to investigate whether the relationships were supported after controlling for these variables. The statistics still supported the six hypotheses after including the four control variables (see Fig. 3). Hence, the findings indicate that gender, age, educational level, occupation, and monthly household income did not confound the hypothesized

results.

5. Conclusion and implications

This research integrated the IDT and UGT paradigm since the attributes of innovation diffusion and uses and gratifications are complementarily appropriate to explain why consumers intend to engage with SNS continuously, demonstrate site attachment, and report an authentic experience. In addition, this study tested the moderating role of purchase or non-purchase. This study reveals that the effect of the attributes of innovation diffusion (simplicity, benefit, and compatibility) was greater on providing an authentic experience than on site attachment. Likewise, the effect of uses and gratifications (informativeness, social interactivity, and playfulness) was also greater on providing an authentic experience than on site attachment. Further, the effects of uses and gratifications influenced seniors' site attachment and perception of authentic experience more in the purchase group than in the non-purchase group. On the other hand, the effects of attributes of the MSNS innovation on site attachment and authentic experience were stronger in the non-purchase group than in the purchase group. We next discuss the theoretical and practical implications of this study for seniors' usage of MSNS for tourism.

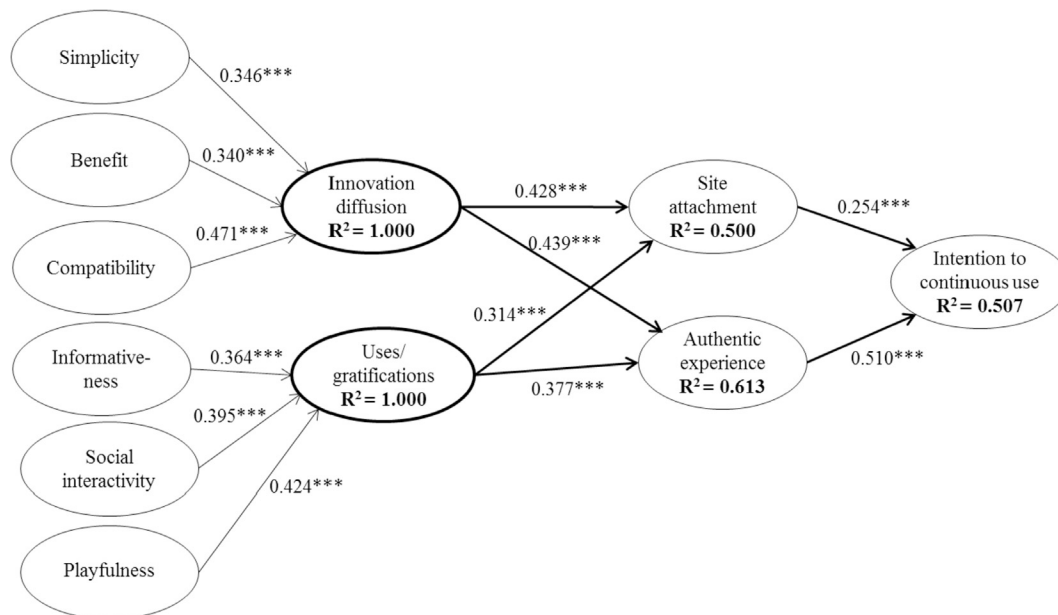
5.1. Theoretical implications

Given the emergence of a larger senior population, this theoretically

Table 5 Comparison of path coefficients between purchase and non-purchase groups.

Hypothesis	Path	Purchase group (A)	Non-purchase group (B)	t-value (A-B)	p value (A-B)	Test of hypothesis
H _{1a}	Innovation diffusion → Site attachment	0.335***	0.504***	-22.624	< 0.001	Supported
H _{2a}	Innovation diffusion → Authentic experience	0.392***	0.486***	-12.433	< 0.001	Supported
H _{3a}	Uses/gratifications → Site attachment	0.386***	0.249***	17.819	< 0.001	Supported
H _{4a}	Uses/gratifications → Authentic experience	0.411***	0.343***	9.311	< 0.001	Supported

R²: Coefficient of determination (variance explained)
 The purchase group: Site attachment (46.9%); Authentic experience (58.0%)
 The non-purchase group: Site attachment (52.3%); Authentic experience (62.8%)



Note: ***p < 0.001. The figures in the parentheses are t-value.

Fig. 3. Entire model considering four control variables.

grounded research makes several contributions to senior MSNS usage for tourism purposes. First, this is arguably the first study to identify the significant impact of the integrate model of IDT and UGT on site attachment and authentic experience among senior MSNS users in the tourism literature. Specifically, by integrating the two models, this study found that both IDT and UGT had significant and distinct contributions to explain site attachment and authentic experience of MSNS use. Thus, overall, the results provide a holistic framework for explaining how IDT and UGT influence seniors intention for continuing use of MSNS for tourism through progressive phases. Second, the findings contribute to research on senior tourism by verifying the vital effects of site attachment and authentic experience on intention for continuing use, demonstrating the greater impacts of innovation diffusion as well as uses and gratifications on authentic experience in MSNS. Third, the results contribute to tourism research by identifying the significant differences between purchase and non-purchase groups on the four theoretical relationships based on IDT and UGT. Hence, this study offers the potential to drive a new theoretical momentum for future research on MSNS in the senior tourism sector.

This study identified the significant effects of innovation diffusion on site attachment and authentic experience. The findings support prior literature on the relationships between innovation diffusion and emotional attachment (Waheed et al., 2015) as well as innovation diffusion and ethical experience (Ganglmair-Wooliscroft & Wooliscroft, 2016). Also, this study identified the significant effects of uses and gratifications on site attachment and authentic experience. This research extends previous research on the relationships between uses and gratifications and SNS use (Chiang, 2013) as well as uses and gratifications and MSNS use (Chaouali, 2016). Importantly, this study revealed that intention for continuing use was significantly influenced by site attachment and authentic experience. The findings are consistent with prior research on relationships between site attachment and continuing use (Kim et al., 2016a) as well as authentic experience and continuing use (Reinecke & Trepte, 2014). In summary, this study contributes to new insights to research in senior tourism, by demonstrating the value of integrating IDT and UGT explanations for senior users' site attachment and authentic experience with MSNS.

This study makes important theoretical contributions related to identifying the moderating role of differences between purchase and non-purchase groups in the four relationships. The effects of uses and

gratifications on site attachment and authentic experience were much stronger in the purchase group than in the non-purchase group. This suggests that seniors in the purchase group are more influenced to use MSNS based on it gratifying certain needs such as informativeness, social interactivity, and playfulness. These seniors, who bought products or services for tourism purposes from social media, were more attached to, and had more authentic experiences from MSNS because it gratified their needs rather than due to the innovation attributes of the MSNS (Lo, 2014; Moulard et al., 2015; Zhang et al., 2015).

In contrast, the effects of innovation diffusion on site attachment and authentic experience were stronger in the non-purchase group than in the purchase group. This suggests that seniors in the non-purchase group are more influenced to use MSNS based on the attributes of innovation, such as simplicity, benefit, and compatibility. These seniors, who did not buy products or services for tourism purposes from social media, are attached to MSNS and have a more authentic experience based more on the attributes of the MSNS innovation than because of gratifying their needs (Agag & El-Masry, 2016; Baek et al., 2014). These findings contribute to new empirically validated theoretical insights about what factors motivate seniors to attach with MSNS in the context of tourism, what attributes lead to an authentic experience, and what variables predict their intentions of continued use of MSNS in the context of tourism.

5.2. Practical implications

Because of the growing market segment of the senior population, this study on senior MSNS usage for tourism purposes offers key insights to marketers. This study gives businesses practical insights related to the significant relationship between innovation diffusion and site attachment. For example, simplicity, benefit, and compatibility on MSNS are vital for seniors' site attachment to the MSNS. Accordingly, MSNS designers should incorporate characteristics of ease of use, relative advantage (or benefit), and compatibility into the webpage of their MSNS to increase seniors' site attachment. Also, this research provides senior tourism businesses useful insights about the highly significant effects of innovation diffusion on authentic experience. In other words, these businesses should design their MSNS to be understandable, useful, and suitable to enhance seniors' authentic experience for tourism purposes. In addition, businesses should take heed of this

study's findings about the significant effect of uses and gratifications on site attachment. For instance, marketers should build their MSNS to be informative, socially interactive, and playful in order to strengthen seniors' site attachment to their sites. Businesses need to act on this study's findings of the highly significant impact of uses and gratifications on authentic experience. That is, businesses should add self-efficacy, social relationship, and enjoyment in the promotion of their MSNS to create seniors' authentic experience in MSNS for tourism activities.

The findings enable practitioners to make better-informed decisions on marketing strategies based on the significant relationship this study found between site attachment and intention for continuing use. Specifically, MSNS practitioners should develop emotional involvement and affective connection in the design of the MSNS to improve seniors' intention for continuing use of the MSNS for travel products and services. Marketers need to create effective practices based on this study's finding of a highly significant effect of authentic experience on intention for continuing use. For instance, stakeholders should input genuine, exceptional, unique, and original characteristics into the profile of their MSNS to incentivize seniors' intention for continuing use for tourism. Further, this study provides useful insights for the improvement of current MSNS for senior users based on the critical role of authentic experience. That is, MSNS should bolster and maintain their MSNS for seniors' high quality of feelings by adding authentic elements, which, in turn, enable seniors to become continuously involved in using mobile communication and interaction in MSNS for tourism.

This study's findings of the differences between purchase and non-purchase groups in MSNS offer decision-making implications to the MSNS industry for tourism products and services as marketing strategies. For instance, these insights could be implemented to market segmentation according to the purchase or non-purchase group. Specifically, marketers should foster strategies for market segmentation based on purchasers or non-purchasers by targeting seniors, rather than as a single homogenous market. For example, when practitioners target purchasers, they would motivate uses and gratifications attributes of their MSNS by stimulating seniors' self-confidence, friendship, and pleasure through audio and video contents on MSNS. On the other hand, when stakeholders target non-purchasers, they would boost innovation diffusion attributes of their MSNS by attracting seniors to feel convenient, advantageous, and suitable on instant messages and chatting programs in MSNS. In summary, this study has many practical implications to MSNS stakeholders inspired by the IDT and GUT as well as differences between purchasers and non-purchasers for the seniors' market segmentation in the tourism context.

5.3. Limitations and future research directions

As with all studies, this current research has limitations. First, the study's sample is limited to Korea so that caution should be heeded in generalizing the results of this research. Second, the question used to differentiate purchases and non-purchases did not ask respondents to specifically name an MSNS. Future research should specifically ask the names of MSNS to ensure that respondents answer consistently while thinking of a certain MSNS. Third, this study focused on seniors' using mobile devices for social networks. Future research needs to consider other devices such as wearable devices for social networking such as a smartwatch. Fourth, this study compared the purchasers and non-purchasers applying the IDT and UGT model at one point in time. Therefore, further research is needed to support the validity of the research model, and a future longitudinal study should explore seniors' purchase behavior for tourism products and services in MSNS over time. Fifth, the scope of this research focuses on Korea, seniors, and tourism-related uses of MSNS. Accordingly, future studies are required to extend these specific boundaries of the senior population of MSNS users in Korea for travel and tourism activities in order to better generalize the current implications for the literature on the adoption of MSNS use in general.

Sixth, this study applied IDT and UGT to Korean senior MSNS users for tourism purposes based on the previous literature (e.g., Chiang, 2013; Stafford et al., 2004), but future research literature should consider, in addition, the technology adoption model (TAM) and unified theory of acceptance and use of technology (UTAUT) for information technology adoption (e.g., Agag & El-Masry, 2016; Karahanna et al., 1999; Venkatesh et al., 2003). Thus, future research should include the TAM and UTAUT to assess a comparative explanation of MSNS adoption for general populations in different countries, utilizing multiple theories and substantiating hypotheses (Sparrowe & Mayer, 2011). Finally, future research should consider cross-cultural comparison (e.g., between South Korean and USA) and age difference analysis (e.g., between seniors and non-seniors) to identify what are the differences and similarities between them regarding using mobile devices for tourism information.

Declaration of conflicting interests

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