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The Perceived Social Roles of Mobile Phones in Travel

Iis P. Tussyadiah
School of Tourism & Hospitality Management, Temple University

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ABSTRACT

This study aims at measuring tourists' perception towards the social characteristics of mobile devices and how they may lead to the perceived social role of mobile phones while traveling. Informed by social role theory and computing technology continuum of perspective (CP) model, the hypothesized relationships between mobile computing CP, respondents' psychological traits, frequency of mobile phone use for travel, and perceived social role of mobile phones during traveling were tested. The results demonstrate that perceived intelligence and socialness of mobile phones prompt tourists to respond socially to mobile computing technology, thus emphasizing the importance of anthropomorphism in the designing of mobile technology for travel. As a managerial implication, smart mobile applications suggesting the roles of mobile devices as personal travel companions and/or assistants should be developed to increase the persuasive power of mobile phones for tourists.

Keywords: *mobile technology, anthropomorphism, computers as social actors, travel, social role theory*

INTRODUCTION

Mobile computing has penetrated the human life and many more people rely heavily on mobile technology to assist them with basic daily interactions and activities. Fogg (2002) suggests the term "functional triad" to explain three different roles of technology for its users: technology as tools (i.e., to assist people with performing a multitude of tasks, such as searching for information and recommendation), as media (i.e., to facilitate experiences from social interaction with others), and as social actors (i.e., to provide social support for its users). While the roles of mobile technology as tools and media, and how these roles can be utilized to influence the behavior of its users, have been widely researched (see Gretzel, 2011; Kabassi, 2010; Martin, Alzua, & Lamsfus, 2011), their role as social actors has yet to be explored.

Due to its portability (i.e., people cling to mobile phones wherever they go to), it can be argued that mobile phones are the most intimate technology devices of our time. Furthermore, the ascription of human-like characteristics in computing devices has been our integral part of design and use of technology (Marakas, Johnson & Palmer, 2000). As computing technology fills the role traditionally held by humans, there is a tendency that users treat the social relationships between them and the technology devices as literal (Nass & Moon, 2000). Hence, the persuasive effects of mobile computing on consumers' opinion and behavior can be comparable to those of human contacts. This suggests a great importance of understanding the social support that mobile computing can provide to tourists on-the-go that may lead to some forms of travel behavior.

Therefore, the goal of this study is to investigate the perceived social roles and capabilities of mobile phones in the context of travel by applying the social role theory and the technology continuum of perspective (CP) model (Johnson, Marakas & Palmer, 2006; 2008; Marakas, Johnson & Palmer, 2000). The objectives of the study are twofold: (1) to identify the perceived social characteristics of mobile technology by investigating the mobile computing continuum of perspective, and (2) to propose and test the relationships between the perceived social characteristics of mobile phones and the perceived social role of mobile phones while traveling. The results of this study provide an understanding of the social attribution to mobile technology and the social interactions between tourists and mobile devices at the destinations. The results can provide destination marketers with strategies to capitalize on the designing of mobile technology for tourists.

CONCEPTUAL FOUNDATION

The Social Roles of Technology

An underlying concept in understanding how people respond socially to computing technology is the metaphor of anthropomorphism, which is the attribution of humanlike traits to non-human agents (Guthrie, 1993). The application of this metaphor leads to the designing of technology based on human characteristics (e.g., ascription of human brain in neural network). Johnson, Marakas and Palmer (2008) suggest that the use of anthropomorphism in technology has been widely accepted in our society that we have created an anthropomorphic language to describe computers (e.g., "Computers go to sleep.") and a technomorpic language to describe ourselves (e.g., "I am wired this way.").

In human-computer interaction (HCI) context, the Computers as Social Actors (CASA) paradigm proposes that people respond socially to computing technology in the same manner as they respond to other people (Nass, Steuer, & Tauber, 1994; Nass et al., 1995), even when they know they should not have to (Reeves & Nass, 1996). CASA researchers have conducted experimental studies in laboratory settings to observe interactions between participants and computer programs designed specifically to possess human characteristics. For example, computer programs were designed to display gender (Lee, 2003), to flatter, praise or criticize users' performance (Fogg & Nass, 1997; Nass & Steuer, 1993) or to display similar or dissimilar interaction cues with their users (Moon & Nass, 1998). Based on these experiments, they found that participants react to computers no differently than they react to other people, in that the norms of interaction observed between humans and computers are no different than those among humans. However, since the technology used in these experiments was designed for a specific use within the laboratory settings, Hall and Henningsen (2008) argue that the drawback of CASA research is the difficulty to generalize its findings to the real world.

Drawing from CASA researchers, Marakas, Johnson and Palmer (2000) developed a model called computing technology continuum of perspective (CP) in an attempt to explain the social roles of computing technology in the society at large. Drawing on the social role theory, the model theorizes that "when placed in an interactive setting with technology that displays certain social cues, people will not only respond socially, but may actually believe that the technology in some way has agency and can act independently" (Johnson, Marakas, & Palmer, 2008, p. 171).

The continuum is considered to be anchored by individuals with a locally simplex perspective at one end and with a globally complex perspective at the other. Individuals with a locally simplex perspective see computers as tools and they believe that people have control over them. On the other hand, individuals with a globally complex perspective see computers as having influence over their lives. However, it is further suggested that most people interacting with computers do not reside at the extremes of the continuum, but somewhere in between (Johnson, Marakas, & Palmer, 2008).

Informed by the social role theory, the CP model suggests that the perception of the social roles of technology is generated by two different drivers: the capability and social characteristics of the computing technology and the characteristics of its users. According to the model, there are several dimensions to measure the perceived social characteristics of computing technology (referred to as "Technology CP"), which include intelligence, socialness, emotion, and control. Meanwhile, the characteristics of users are represented in the model by four constructs of psychological traits: locus of control, self-esteem, neuroticism, and general technology self-efficacy. Since the CP model was developed, there were limited empirical studies to test the applicability of the model and its hypothesized relationships among its constructs. This study attempts to apply the CP model to investigate the social roles of mobile devices for users in the context of travel.

The Social Roles of Mobile Devices

People make increasing use of mobile technologies and mobile devices, including cell phones, personal digital assistants (PDAs) and tablet personal computers (PCs), now replace the traditional tools and media. Mobile devices are often considered the most familiar technology for people due to its portability and capability in supporting complex tasks for daily activities. A considerable amount of researchers have focused their emphasis on designing mobile devices to have humanlike characteristics. Schmeil and Broll (2007) designed an anthropomorphic user interface for a mobile virtual assistant device to have similar characteristics as a real (human) assistant in terms of display and speech recognition. Yim and Shaw (2009) integrated non-verbal anthropomorphic affect features, which include facial and gestural expressions, to a mobile robotic device in order to encourage social interactions among multiple users in a tele-conference or mobile-network setting. Most recently, in 2011 Apple, Inc. introduced *Siri* (speech interpretation and recognition interface), a feature on their *iPhone 4S* devices that resembles a personal assistant. *Siri* is capable of speaking, hearing and understanding commands, as well as completing delegated tasks (*Apple, Inc.*, n.d.).

Considering the nature of mobile phone use (i.e., the fact that people carry the phone and touch it with their fingers all the time), it is argued that people display an emotional attachment to mobile phones (often referred to as mobile phone affinity). Researchers discovered that the feeling people get when they misplace their cell phones is comparable to the feeling they get if a family pet goes missing (Kansas State University, 2011). Further, from a study using functional magnetic resonance imaging (fMRI) among 18 – 25 year old users with their iPhones as stimuli, Lindstrom (2011) found that the participants' brains responded to the sound of their cell phones as they would respond to the presence of or proximity to their boyfriend/girlfriend or a family member. This indicates a strong perception of mobile phones as an important part of people's life.

Nowadays, people turn to their mobile phones for support in unstructured or dead time (e.g., time spent waiting for the train or standing in line to get to a concert) and while traveling. Indeed, the ability of mobile technology to exchange a large amount of data and information in real time has allowed mobile devices to be widely used in the tourism industry as mobile guides, recommender systems, as well as location-based services (Edwards et al., 2006; Rasinger, Fuchs & Höpken, 2007). In fact, numerous studies have supported the importance of mobile phones for travelers to gain meaningful tourism experiences (Wang, Park & Fesenmaier, 2011). However, little is known about tourists' perception regarding the social roles of mobile devices for their tourism experience. As tourists are away from their usual environment (i.e., displaced), mobile phones could give the needed social support for tourists while experiencing tourism destinations. Hence, this study focuses on the social roles that mobile phones play in supporting tourists on the move.

Research Hypotheses

Based on the study by Johnson, Marakas and Palmer (2006; 2008), this study attempts to apply the technology CP to mobile computing and test the hypothesized relationships among mobile technology CP and perceived social role of mobile phones while traveling. Specifically, the following hypotheses are proposed:

H1: People's perception on the social characteristics of mobile phones influences their perception on the social role of mobile phones while traveling.

H2: People's locus of control influences their perception on the social role of mobile phones while traveling.

H3: People's self-esteem influences their perception on the social role of mobile phones while traveling.

H4: People's neuroticism influences their perception on the social role of mobile phones while traveling.

H5: People's mobile computing self-efficacy influences their perception on the social role of mobile phones while traveling.

Additionally, since the model is applied in a travel context, it is necessary to consider contextual variables that might contribute to the social attribution of mobile phones. In this study, it is hypothesized that the more often tourists use mobile technology for different purposes while traveling, the stronger they would perceive the social role of mobile phones.

H6: The intensity of use of mobile phones for travel purposes influences their perception on the social role of mobile phones while traveling.

METHODOLOGY

To achieve the first goal of measuring the mobile technology CP, the general computing CP developed in the study by Johnson, Marakas and Palmer (2008) were modified and applied to the mobile computing settings. For the second goal of the study, factors representing mobile technology CP, psychological traits (i.e., locus of control, self-esteem, neuroticism, and mobile technology self-efficacy) and frequency of mobile use for travel were measured. Locus of control was measured using seven items from Levenson's (1973) scale. Self-esteem was measured using seven items from Rosenberg's (1965) scale. Neuroticism was measured using eight items from Eysenck personality inventory neuroticism scale (Eysenck & Eysenck, 1968). The items measuring mobile technology self-efficacy (MTSE) were adapted from the generalized computing self-efficacy (GCSE) (Marakas, Johnson & Palmer, 2000). The social role of mobile computing was measured using three items that describe the role of mobile phones as a companion, a personal assistant, and a mentor for tourists during traveling. Finally, six items measuring the intensity of use of mobile phone for travel were developed based on a previous study by Tussyadiah and Zach (in press) on the use of geo-based technology for travel. All items were presented in 5-point Likert-type scale with Agree–Disagree anchor statements (the frequency of use was measured by 5-point scale from Never to Always).

A pilot study to test the reliability of measurement items was conducted from December 21 – 31, 2011 with convenience sampling through social media channels resulted in 111 respondents. After accommodating some necessary adjustments to the questionnaire, the main survey was conducted from March 20 – 30, 2012. An invitation to participate in the survey was distributed to 10000 email addresses of American travelers who have requested travel-related information through *vacationfun.com*, resulting in 354 completed responses (a total of 3.5% response rate). The descriptive statistics were reviewed to explain the mobile technology CP in order to show the range from respondents with the locally simplex to the globally complex perspectives. Linear regression analysis was performed to test the hypothesized relationships among the constructs developed in the mobile technology CP model (*H1 – H6*).

RESULTS AND DISCUSSION

The majority of respondents were female (71%) and older, with 29.1% between the ages of 55 – 64 years, 27.7% between 45 and 54 years old; only about 31% respondents were younger than 45 years old. Respondents were highly educated, with 34.6% holding Graduate or Advanced Degree and 30.6% Bachelor's Degree. Most respondents (84%) have been using a cell phone for more than five years. In terms of mobile devices, 54.2% respondents use smart phones (e.g., iPhone, Android, Blackberry, etc.) and the rest of them use traditional cell phones.

Respondents indicated that they use their mobile phone more frequently for calling/texting to share experiences (*mean* = 3.48, *s.d.* = 1.283) and recording experiences by taking pictures, videos, etc. (*mean* = 3.26, *s.d.* = 1.381) during traveling. Other types of uses such as using mobile map for navigation, using social media app for recommendation, etc. were quite low. Several independent-samples t-tests were conducted to identify mean differences in terms of frequency for of mobile phone use for travel among different groups of respondents. As presented in Table 1, it can be observed that smart phone users used their phones more frequently for different functions during traveling than traditional phone users. Significant mean differences in terms of all types of use were also identified between respondents who are younger than 45 and those who are 45 years or older, even though the mean differences are smaller than those between the smart phone and traditional phone user groups. This indicates that younger respondents tend to use their cell phones more often during traveling. In terms of gender, significant differences were found between female and male respondents in terms of recording and sharing experience. Female respondents use their cell phones more often than male to record travel experiences by taking pictures, videos, etc. (Female, *mean* (*s.d.*) = 3.49 (1.351); Male, *mean* (*s.d.*) = 2.75 (1.310); *t* (*sig.*) = 4.746 (.000)) and to share travel experiences with others through calls/texts (Female, *mean* (*s.d.*) = 3.69 (1.280); Male, *mean* (*s.d.*) = 2.98 (1.194); *t* (*sig.*) = 4.880 (.000)). However, no significant mean difference was found in terms of other types of use.

Table 1
Independent-Samples t-test for the Frequency of Use of Cell Phones for Travel

Constructs	Types of Cell Phones		t (Sig.) df = 352
	Smart Phones N = 183	Traditional Phones N = 158	
	Mean (s.d.)	Mean (s.d.)	
Using a mobile map for navigation and way-finding.	3.29 (1.209)	1.23 (.676)	**19.060 (.000)**
Using a mobile app to search for information regarding attractions, restaurants, etc.	3.52 (1.186)	1.25 (.740)	**20.836 (.000)**
Using a mobile guide or destination app to learn more about the place.	3.03 (1.212)	1.20 (.663)	**17.002 (.000)**
Using a mobile social media to find recommendation.	2.81 (1.415)	1.15 (.551)	**13.930 (.000)**
Recording experiences by taking pictures, videos, etc.	3.95 (1.020)	2.47 (1.305)	**11.771 (.000)**
Calling/texting to share travel experiences with others.	3.80 (1.185)	3.10 (1.303)	**5.216 (.000)**

According to the Techonology CP model, Marakas, Johnson and Palmer (2000) suggest that individuals lie along the continuum between the two extremes of locally simplex and globally simplex perspectives, and that the majority of them will be in the middle rather than at either end. This suggests that the data should follow a normal distribution. To assess the normality of the data, Kolmogorov-Smirnov one-sample tests were conducted. The *p*-values of all 13 constructs were less than .05 (see Table 2), indicating that the data do not have an approximate normal distribution. Based on the skewness, most items measuring Perceived Intelligence and Perceived Control of Rights are negatively skewed, representing that the majority of respondents lie closer to the globally complex perspective. On the other hand, items measuring Perceived Socialness are positively skewed, indicating that the majority of respondents lie closer to the locally simplex perspective. In other words, the majority of respondents perceive mobile phones as smart and capable of infringing the users' rights, but less social.

Principal component analysis was performed to reduce the variables measuring the mobile technology CP for further analysis. As illustrated in Table 2, the 13 items loaded into three dimensions: perceived intelligence, perceived socialness, and perceived control of rights, which explained 65.61% of the variance. Principal Component Analysis was also performed to reduce the variables measuring the intensity of use of mobile phones for travel and the social roles of cell phones for travel. Items measuring the intensity of use of mobile phones for travel loaded into one factor (6 items, *Cronbach's alpha*: 0.895), which explained 66.5% of the variance. The perceived social roles of mobile computing loaded into one factor explaining 81.2% of the variance, with *Cronbach's alpha* of 0.882.

Table 2
Factors of Mobile Technology Continuum of Perspective

Measurement Items	Mean	S.D.	KS-Z (Sig.)	Factor Loading	Eigen-value (% of Var.)	Cronbach's Alpha
Perceived Intelligence					27.01	.841
Cell phones are capable of effectively guiding and educating people.	3.63	.970	4.663 (.000)	.828		
Cell phones are capable of telling people to navigate around an unfamiliar city.	3.89	.896	5.806 (.000)	.815		
Cell phones are capable of facilitating a simultaneous discussion among many people.	3.44	1.049	4.179 (.000)	.765		
Cell phones are capable of remembering things.	3.65	1.029	5.290 (.000)	.737		
Cell phones are capable of telling us the answers when we have questions.	3.34	1.158	4.857 (.000)	.680		
Perceived Socialness					23.92	.823
Cell phones are capable of holding intelligent conversations.	2.22	1.161	4.038 (.000)	.753		
Cell phones are capable of caring for people.	1.88	1.069	5.827 (.000)	.743		
I have owned a cell phone that didn't like me.	1.73	.983	6.513 (.000)	.709		
Cell phones are capable of controlling my actions.	1.66	.966	6.997 (.000)	.703		
Cell phones are capable of learning from their experiences.	2.40	1.096	3.397 (.000)	.654		
When I play a game with a cell phone, I worry that it might cheat.	1.81	.968	5.994 (.000)	.652		
Perceived Control of Rights					14.68	.866
Cell phones are capable of infringing on personal rights and freedom.	2.76	1.328	3.458 (.000)	.892		
Cell phones are capable of invading privacy.	3.23	1.321	4.366 (.000)	.858		

KMO = .809; Bartlett's χ^2 = 2140.749, Sig. = .000

To identify the mean differences in terms of mobile technology CP and perceived social roles of mobile phones for travel among different groups of respondents, several independent-samples t-tests were conducted (see Table 3). Significant mean differences were found between respondents younger than 45 years old and those of 45 years or older in terms of perceived intelligence and perceived social role of mobile phones for travel; younger respondents have a higher perception than older respondents. Significant mean differences were also found between respondents who use smart phones and those using traditional mobile phones in terms of perceived intelligence, perceived socialness, and perceived social role.

Variables measuring the psychological traits of mobile phone users indicated a strong internal consistency: locus of control (*Cronbach's alpha*: 0.885), self-esteem (*Cronbach's alpha*: 0.781), neuroticism (*Cronbach's alpha*: 0.909), and mobile computing self-efficacy (*Cronbach's alpha*: 0.924). As illustrated in Table 4, differences can be observed between the group of respondents who are younger than 45 years old and those who are 45 or older in terms of all four constructs. The older respondents have higher self-esteem, but lower locus of control and neuroticism, and mobile computing self-efficacy than the younger respondents. No significance difference was found in terms of other demographic variables.

Table 3
Independent-Samples t-test for Mobile Technology CP and Perceived Social Role of Cell Phone for Travel

Constructs	Age of Respondents		
	< 45 y.o. N = 113	≥ 45 y.o. N = 241	t (Sig.) df = 352
	Mean (s.d.)	Mean (s.d.)	
Perceived Intelligence	3.75 (.739)	3.51 (.816)	**-2.658 (.008)**
Perceived Socialness	2.00 (.740)	1.92 (.761)	-.891 (.374)
Perceived Control of Rights	3.00 (1.209)	3.00 (1.263)	.046 (.964)
Perceived Social Role for Travel	3.14 (1.142)	2.55 (1.161)	**-4.490 (.000)**
Constructs	Types of Cell Phones		
	Smart Phones N = 186	Traditional Phones N = 158	t (Sig.) df = 342
	Mean (s.d.)	Mean (s.d.)	
Perceived Intelligence	3.76 (.702)	3.38 (.871)	**4.485 (.000)**
Perceived Socialness	2.04 (.775)	1.87 (.743)	**2.092 (.037)**
Perceived Control of Rights	3.03 (1.230)	2.93 (1.260)	.757 (.450)
Perceived Social Role for Travel	3.33 (1.044)	2.09 (1.000)	**11.199 (.000)**

Table 4
Independent-Samples t-test for Respondents' Psychological Traits

Constructs	Age of Respondents		
	< 45 y.o. N = 113	≥ 45 y.o. N = 241	t (Sig.) df = 352
	Mean (s.d.)	Mean (s.d.)	
Locus of Control	2.27 (.705)	2.10 (.767)	**2.047 (.041)**
Self-Esteem	4.13 (.559)	4.29 (.568)	**2.500 (.013)**
Neuroticism	2.50 (.910)	2.12 (.802)	**-3.993 (.000)**
Mobile Computing Self-Efficacy	4.01 (.559)	3.45 (.568)	**-5.564 (.000)**

Regression analysis was performed to test the hypothesized relationships between the social role of mobile technology in travel and its drivers and yielded a significant prediction (R^2=.654; F=77.411; p=.000). Perceived Intelligence (β=.199; p=.000), Perceived Socialness (β=.185; p=.000), and Frequency of Use (β=.663; p=.000) were found to significantly explain the variation in the perceived social role of mobile technology for travel (*H1a*, *H1b,* and *H6* were supported). Perceived Control of Rights was not found to significantly predict the perceived social role of mobile phone (*H1c* was not supported). None of the cell phone users' characteristics (i.e., psychological traits) were found to be the significant drivers of the dependent variable (*H2 – H5* were not supported). Based on the results of several independent-samples t-tests that were conducted previously, it was considered necessary to observe the influence of the demographic variables (i.e., age and gender) and the types of cell phones to the perceived social roles of cell phones for travel. However, none of the demographic variables or the types of cell phones used was found to significantly predict the dependent variable.

The results indicate that users who perceive that mobile phones are intelligent and possess social characteristics tend to interact more socially with their mobile phones and perceive the presence of social support from their mobile phones while traveling. In other words, social interactions can be prompted by the intelligence and socialness of mobile phones. This supports the anthropomorphic approach to the designing of mobile technology and akin to the results from the studies of CASA researchers. It was also identified that the frequency of use of mobile phones for travel significantly predicts the perceived social role of mobile phones while traveling. This indicates that the more tourists rely on mobile phones to assist them with various activities while traveling (e.g., assistance regarding information, direction, navigation, recommendation, etc.), the more likely they perceive the social support from their mobile phones. As tourists are displaced and away from their normal social circles, mobile phones can act as their travel companions and/or personal assistants that support them with intelligent responses and guidance while giving them appropriate social cues. These include the conditions where tourists feel that their smart phones may replace the existence of close personal allies to accompany them while navigating around and experiencing tourism destinations (i.e., being there when needed). The results also show that the respondents' characteristics were not found to be the significant predictors of their perceived social role of mobile phones in the context of travel. That is to say, regardless of their personal characteristics (i.e., including age, gender, and psychological traits), tourists place a social value to their mobile phones based on the characteristics of the phones and how often they use their mobile phones while traveling.

CONCLUSION

The contribution of the study is twofold: *first*, it highlights the application of computing technology CP in mobile computing context, and, *second*, it explains how the mobile computing CP influences the perceived social role of mobile phones for travel, along with other predictors. The mobile computing CP ranges between the locally simplex to globally simplex perspectives, with the assumption that the majority of people would lie in the middle of the continuum. The mean scores for most items measuring mobile computing CP are indicative of this suggestion, with the majority of them lie closer to the median value. However, the results from Kolmogorov-Smirnov one-sample tests show that the data are not normally distributed. That is to say, most respondents perceive mobile phones as highly intelligent and capable of infringing rights (i.e., closer to the globally complex perspective), but low in terms of socialness (i.e., closer to the locally simplex perspective). Significant mean differences between different groups of respondents were observed in terms of perceived intelligence and perceived socialness of mobile phones. Younger respondents and those using smart phones show higher mean scores in terms of these perceptions compared to the older respondents and those who use traditional phones. This explains that the real capabilities and features of a mobile phone induce respondents' perception of their cell phone's social characteristics and capabilities.

The second contribution of this study is the testing of the proposed model to predict the perceived social role of mobile technology based on the mobile computing CP, psychological traits of users, and the frequency of use of mobile phones in the context of travel. The results assist researchers and practitioners alike in understanding what prompted people to respond socially to mobile computing technology. The results from regression analysis demonstrate that the perceived social role of mobile phones during traveling is influenced by the perceived intelligence of the mobile phones (i.e., the capability of mobile phones to provide intelligent support), the perceived socialness of the mobile phones (i.e., the capability of mobile phones to provide social cues), and the frequency of use of mobile phones for different purposes while traveling. To put it briefly, people respond socially to smart, social phones and regard them as social companions while traveling. This study supports and extends the results from CASA researchers by applying the concepts outside the laboratory settings into real use situations (i.e., the travel context) using commonly-used consumer devices (i.e., cell phones), hence adds to the generalizability of the results.

It was also identified from the analysis that users' characteristics did not significantly predict the perceived social roles of mobile phones for travel, which highlight the importance of the technology characteristics to instill social interactions between users and technology regardless of who the users are. These results support the relevance of attaching human characteristics (i.e., anthropomorphism) in the designing of mobile technology devices, applications, and features, as well as different functionalities of mobile technology for tourism and travel contexts. Consequently, destination marketers embracing mobile technology for marketing and persuasion, especially in influencing on-site consumption decisions, should consider designing mobile technology and applications that suggest high intelligence and socialness. In other words, smart mobile devices that act as travel companions should be developed to provide social support and increase the persuasive power of mobile phones for tourists.

In an attempt to investigate the social role of mobile phones in a general travel context, this study did not capture users' perception toward the social support of mobile phones in different travel contexts. Depending on the contextual factors of travel, there might be other variables influencing the perceived social roles of mobile technology such as the presence or absence of travel parties (i.e., tourists who travel alone might rely more on mobile phones for support, thus perceive a stronger social support), respondents' familiarity or involvement with destinations, etc.

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