Examining the Cultural Differences in Acceptance of Mobile Augmented Reality: Comparison of South Korea and Ireland

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Abstract

Augmented Reality (AR) is one of the emerging technologies used in cultural heritage tourism sites around the world. However, the process of having behavioural intention to use AR can be varied in different culture. Thus, this study selected two different countries, South Korea and Ireland, having high smartphone penetration rates, but with very different cultural profiles, and investigated the impact of cultural difference on acceptance of AR application (app) in cultural heritage tourism sites. Further, this study focused on the aesthetic and hedonic characteristics of AR apps from the perspective of hedonic information system. The results showed that aesthetics of AR have the strongest influence on perceived enjoyment. Also, as expected, South Korea, having high power distance, collectivism, and high uncertainty avoidance culture, displayed stronger dependence on social influence and hedonic characteristics of AR. Based on these findings, we present theoretical and practical implications.
Keywords: Cultural difference; Mobile Augmented Reality (AR); Acceptance; Cross-cultural analysis; South Korea; Ireland

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1 Introduction

Augmented reality (AR) provides its users with virtual 3D images or information that superimposed on the real-world view captured from the camera of device (Azuma et al., 2001; Bujak et al., 2013; Kounavis et al., 2012). Smartphone meets all of the requirements posed by AR because it has camera of capturing the real-world view and capability of rendering and displaying 3D graphics or video (Henrysson & Ollila, 2004). Thus, with explosive growth of penetration rates of smartphone, app-based AR has been more accessible to wider users. Especially, cultural heritage tourism is one of the most important areas served by mobile AR app (Portalés et al., 2009) which provides digitally restored artifacts, thereby prevent degradation of cultural heritage sites aggravated by frequent access by tourists and let them perceive fun and usefulness (Haugstvedt & Krogstie, 2012). Recently, a considerable number of

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heritage institutions and tourism organizations around the world, such as the Deoksugung & Gyeongbokgung Palace in Seoul, An Post Museum in Dublin, the Louvre Museum in Paris and the British Museum in London, have developed and provided with their mobile AR apps. However, even though various AR apps are widely produced, provided, and used, cultural difference may influence on the AR acceptance (Harris et al., 2005). Several prior research papers demonstrate that the process having behavioural intention to use information systems (IS) varies in different cultures (e.g. western and eastern) (Harris et al., 2005; Kim et al., 2011; Srite & Karahanna, 2006). Cho & Cheon (2005) selected the United States, the United Kingdom, Japan, and Korea, because these countries are the greatest advertising revenues in western and eastern cultures respectively, but they have very different cultural profiles. In this vein, this study selected South Korea and Ireland, having high level of smartphone penetration and interest in AR app, but with noticeably different cultural profiles. In addition, this study focused on the aesthetics and enjoyment of AR app from the perspective of hedonic information system. The aim of this paper is to assess the impact of aesthetics and perceived attributes including enjoyment on behavioural intention to use AR in cultural heritage tourism sites, and to investigate the influence of cultural difference between South Korea and Ireland on these causal sequences.

2 Theoretical Background

2.1 Aesthetic and Hedonic Features of Augmented Reality

AR is a visual techniques that superimposes digitized virtual information on top of the real-world view as captured by the camera of computer, smartphone or other devices (Kounavis et al., 2012), which, thus, appear to the its users that virtual and real objects coexisted in the same space (Azuma, 1997) and thereby it enhances not only real world but also users' cognitive capability toward the surroundings in real time (Bujak et al., 2013) (Figure. 1).
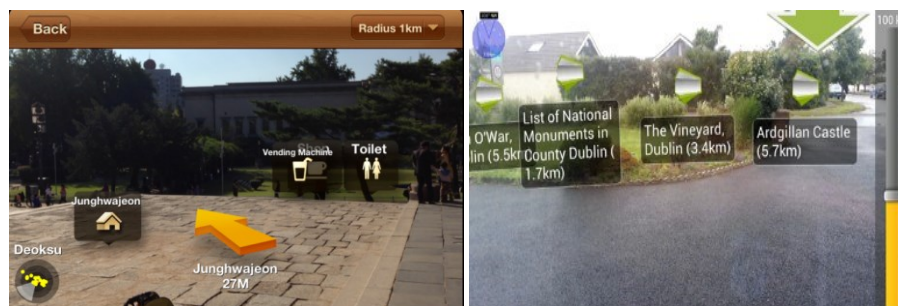
Fig. 1. Snapshots of AR (Left : Deoksugung in my hand, Right : Dublin AR,)

In other words, AR has a feature of immersing its users in virtually enhanced real world (Di Serio et al., 2013). Immersion is defined as "becoming physically or virtually a part of the experience itself" (Pine & Gilmore, 1998, p. 31) and the features of aesthetics, one of the 4 realms of experience (entertainment, education, aesthetics, and escapism) proposed by Pine & Gilmore (1998). Aesthetic experience, defined as "indulged in environments" (Oh et al., 2007. p.121), features passive

participation and immersion of the consumers. The tourists who use AR app in tourism sites passively participates in activities and does not directly affect or influence the performance while immersed in tourism sites. Thus, we placed emphasis on aesthetic features of AR with experience economy (Pine & Gilmore, 1998). Moreover, aesthetics has a particular significance in app-based AR because smartphone has physical limitations such as smaller display with lower resolution than traditional devices such as desktop computer (Sadeh, 2003), therefore, it is important to design the mobile app by taking into account the mobile space in order to deliver the information accurately and clearly (Lee & Chung, 2009).

Further, this study focused on hedonic feature as well as utilitarian feature of AR with motivational theory proposed by Deci (1975), which posits that user acceptance of a product or service can be explained by extrinsic and intrinsic motivations. In the context of IT usage, the extrinsic motivation concerns about the drive of utilitarian purpose of IS usage such as expecting reward or benefits and analyzing function rationally (Deci & Ryan, 1987), whereas the intrinsic motivation relates to the drive of hedonic purpose of IS usage such as expecting pleasure or satisfaction from the interaction with the system itself (Van der Heijden, 2004). Perceived usefulness (PU) and perceived ease of use (PEOU) focused on extrinsic motivation whereas perceived enjoyment (PENJ) focused on intrinsic motivation (Ayeh et al., 2013; Van der Heijden, 2004). These three beliefs are principal constructs in TAM to predict users' attitude and behavioural intention (Davis, 1989; Kim et al., 2009; Van der Heijden, 2004). Thus, in this study, we tried to investigate both extrinsic and intrinsic motivation influencing the behavioural intention to use AR in cultural heritage tourism sites.

2.2 Cultural Difference

Cultural difference can be a barrier to technology transfer (Lee, 2013), and the process of IS acceptance can be influenced by culture (Harris et al., 2005). Especially, app-based AR are influenced easily and strongly by culture-level phenomena because it features interaction, and operate as part of network, thus, a cross-cultural approach about IT acceptance is needed (Di Serio et al., 2013; Harris et al., 2005).

Table 1. Cultural dimensions and mobile phone penetration in selected countries

Definition[***]		Korea	Ireland
Smartphone penetration	-	73.0%[*] (rank 2)	57.0%[*] (rank 11)
Masculinity/ Femininity	Degree to which gender inequalities are espoused by an individual. (e.g. masculinity emphasizes work goal, femininity emphasizes personal goals)	39[**] (F)	68[**] (M)
Power Distance	Degree to which large differentials of power and inequality are accepted as normal by the individual.	60[**] (H)	28[**] (L)
Individualism /Collectivism	Degree to which the individual emphasizes his/her own needs as opposed to the group needs and prefer to act as an individual rather than as a member of a group.	18[**] (C)	70[**] (I)
Uncertainty Avoidance	The level of risk accepted by the individual which can be gleaned by his/her emphasis own rule obedience, ritual behavior and labor mobility.	85[**] (H)	35[**] (L)

Note: [*]Strategy Analysis (2013), [**]Hofstede (2000), [***]Cited from Lee, Trimi, & Kim (2013)

In this vein, this study drew upon the measures of cultural dimensions of Hofstede (1980) and examined the influence of cultural difference on AR acceptance between two countries. Hofstede (1980) proposed the four cultural dimensions on which countries are comparable: masculinity/femininity; power distance; individualism /collectivism; and uncertainty avoidance. The definition of each dimensions are shown on Table 1. As shown in the Table 1, both South Korea and the Ireland have high smartphone penetration rates in the world at 73.0% (rank 2) and 57.0% (rank 11) respectively (Statista, 2013). Furthermore, both countries have actively launched AR apps in cultural heritage sites.

3   Hypotheses Development

In order to investigate the cultural difference between Ireland and Korea in the context of the process to having behavioural intention to use AR in cultural heritage tourism sites, we proposed the following conceptual model based on the extant literature as shown in Figure 2. In this section, we present the hypotheses development for the relationship among the constructs.
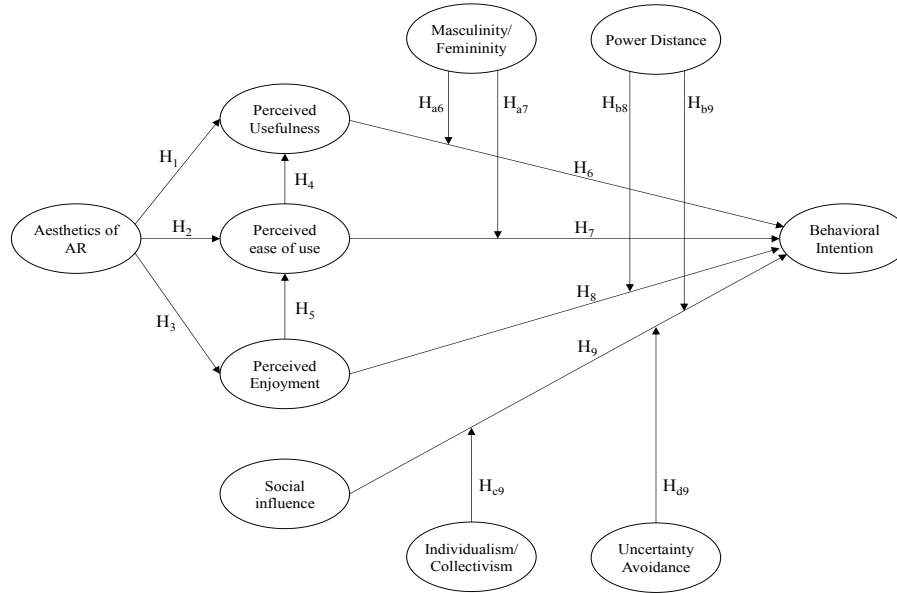
Fig. 2. Proposed model

3.1 Aesthetics and Beliefs

Aesthetic experience, defined as "indulged in environment," features passive participation and immersion of the consumers (Pine & Gilmore, 1998; Oh et al., 2007). AR provides its users aesthetic experience, in which they passively participate and immerse themselves in virtually enhanced environment (Di Serio et al., 2013). The aesthetics means the beauty that can be expressed through the elements such as color, photographs, font style, and layout. Even though the size and resolution of smartphone has been bigger and higher, there are still limitations of providing or receiving some information. However, these physical limitations can be overcome by the beauty of the IS (Sarker & Wells, 2003). As aesthetics has a strong halo effect (Al Sokkar & Law, 2013), which is defined as a tendency through which initial outstanding impression or characteristics of something affect overall judgments even after contradictory evidence is exposed (Rosenzweig, 2009). In this vein, initial impressions derived from the aesthetic aspects can induce users to judge the usefulness or joyfulness of the product. Also, a well-designed AR app helps delivering information accurately and clearly. Empirically, aesthetics of IS (e.g. mobile commerce website) have been demonstrated that it has an effect on formulating or inducing positive beliefs such as PU, PEOU, and PENJ (Li & Yeh, 2010). Therefore we postulated that aesthetics of AR affect cognitive and affective beliefs of AR app, thus, the following hypotheses are proposed:

H₁: Aesthetics of AR has a positive impact on PU of AR.
H₂: Aesthetics of AR has a positive impact on PEOU of AR.
H₃: Aesthetics of AR has a positive impact on PENJ of AR.

3.2 Relationships among Perceived Usefulness, Perceived Ease of Use and Perceived Enjoyment

According to TAM (Davis, 1989; Davis et al., 1992), PU, PEOU and PENJ are three principal constructs to predict users' behavioural intention. Also, PEOU has been verified in a number of previous studies to significantly and positively affect the PU (Davis, 1989; Haugstvedt & Krogstie, 2012; Kim et al., 2009; Van der Heijden, 2004). Haugstvedt & Krogstie (2012) investigated the relationship between the beliefs and behavioural intention to use mobile AR in the context of cultural heritage. The results showed that PEOU significantly influences on PU, PENJ and behavioural intention. However, on the contrary to this, Solomon (2009) postulated that in experience hierarchy, individuals act on the basis of their emotional reactions, thus, affective factors such as PENJ induces cognitive factors such as PEOU. Ayeh et al (2013) demonstrated that PENJ significantly influenced on cognitive beliefs (i.e., PU and PEOU), attitude and intention to use user-generated media for travel planning. Therefore, this study suggested that PEOU influence on PENJ.

H_4: PEOU of AR has a positive impact on PU of AR.
H_5: PENJ of AR has a positive impact on PEOU of AR.

3.3 Influencing Factors of Behavioural Intention to Use AR

According to motivational theory (Deci, 1975), behavioural intention to use IS can be explained with extrinsic and intrinsic motivations. As stated above, this study focused on both utilitarian and hedonic feature of AR within motivational theory.

First, this study adopted three beliefs of TAM: PU, PEOU and PENJ. For PU and PEOU focus on extrinsic motivation whereas PENJ focuses on intrinsic motivation (Ayeh et al., 2013; Van der Heijden, 2004), and these three beliefs are principal constructs for predicting users' attitude and behavioural intention. Social influence (SI), defined as "the degree to which an individual perceives that important others believe he or she should use the new system" (Venkatesh et al., 2003, p. 451), is also a direct determinant of behavioural intention. According to Venkatesh et al. (2003), SI tends to appear to be important only in the early stage of individual experience with IS in mandatory settings. Even though AR apps investigated for this study are spontaneously used by its users, as AR is cutting-edge technology and has feature of interaction, this study added SI as an independent construct to investigate the influence of SI on behavioural intention to use AR. Thus, the following hypotheses are proposed:

H_6: PU of AR has a positive impact on intention to use AR.
H_7: PEOU of AR has a positive impact on intention to use AR.
H_8: PENJ of AR has a positive impact on intention to use AR.
H_9: SI has a positive impact on intention to use AR.

3.4 Cultural Differences in South Korea and Ireland's Intention to Use AR

3.4.1 Masculinity/ Femininity

Countries can be distinguished by the psychological gender which the societies espouse: masculinity and femininity (Hofstede, 1984). Masculinity culture has values reflecting emphasis on work goals, assertiveness, and material success, whereas

femininity culture has values focusing on quality of life goals, nurturing and modesty (Hofstede, 1998). Thus, instrumental values such as PU are highly regarded masculine value, while PEOU focuses on creation of a pleasant and less frustrating work environment (Venkatesh et al., 2003; Venkatesh & Morris, 2000). PU is related to improvement of job performance. In masculinity culture, focusing on work goals and success, PU are expected to receive more attentions. In contrast, in femininity culture, individuals tend to put the bigger emphasis on availability of technology support staff (Venkatesh & Morris, 2000). South Korea has a strong femininity culture while Ireland has strong masculinity culture (see the Table 1). Therefore, it can be assumed that the Irish tend to focus on usefulness of AR whereas South Koreans tend to focus on PEOU of AR. Thus, the following hypothesis are proposed:

H_{a6}: The relationship between PU and behavioural intention to use AR will be stronger in Ireland's masculinity culture than in South Korea's femininity culture.

H_{a7}: The relationship between PEOU and behavioural intention to use AR will be stronger in South Korea's femininity culture than in Ireland's masculinity culture.

3.4.2 Power distance

Power distance is defined as the degree to which power and inequality are accepted as normal by the individuals of the society (Hofstede, 1984). In higher power distance culture, individuals tend to take it for granted that their superiors have more power and accept the status quo. According to Harris et al. (2005), this can be translated that individuals are more relaxed and fun-loving than ones in lower power distance culture, which, in turn, may induce a great demand for hedonic services. The results of the Harris et al. (2005)'s research showed that the respondents of Hong Kong (higher power distance) tend to display more positive attitude to hedonic service than the respondents of UK (lower power distance). SI is also an important factor in higher power distance cultures because it is related to compliance (Kelman, 1958). In other words, individuals from higher power distance culture, are more concerned about complying with the opinion or rules of superiors and group to gain favorable reaction from the other and avoid punishment (Hofstede, 1984; Srite & Karahanna, 2006). Thus, the following hypothesis are proposed:

H_{b8}: The relationship between PENJ and behavioural intention to use AR will be stronger in South Korea's higher power distance culture than in Ireland's lower power distance culture.

H_{b9}: The relationship between SI and behavioural intention to use AR will be stronger in South Korea's higher power distance culture than in Ireland's lower power distance culture.

3.4.3 Individualism/ Collectivism & Uncertainty Avoidance

People from individual culture tend to be motivated by personal preference or needs, whereas people from collectivist culture are more likely to lean toward a socially appropriate manner (Triandis, 1995). Therefore, people from collectivist culture are more likely to conform to and depend on others in group (Hui & Triandis, 1986), while peoples from individualist culture are more likely to behave according to their own attitude (Quintal, Lee & Soutar, 2010). Indeed, word-of-mouth communication will be stronger in collectivist culture than in individualist culture (Harris et al.,

2005). Thus, it can be assumed that the power of SI can be stronger in collectivist culture. In this vein, in the context of AR usage, people in collectivist culture are more likely to decide to use AR in cultural heritage tourism sites according to SI. Meanwhile, lack of information may induce people to be nervous and perceive risk (Vitell et al., 1993). Thus, in the context of usage of newly developed IS such as AR, informational and normative influence is absolutely critical. According to some previous research papers (e.g. Evaristo & Karahanna, 1998; Srite & Karahanna, 2006), informational and normative influence from others in group reduce uncertainty about whether usage of IS is appropriate. In this vein, it can be assumed that SI will have stronger effect on AR usage in collectivist cultures than individualist cultures. Thus, the following hypothesis are proposed:

H_{c9}: The relationship between SI and behavioural intention to use AR will be stronger in South Korea's collectivist culture than in Ireland's individualist culture.

H_{d9}: The relationship between SI and behavioural intention to use AR will be stronger in South Korea's higher uncertainty avoidance culture than in Ireland's lower uncertainty avoidance culture.

4 Research Method

4.1 Data Collection

The surveys were conducted at Deoksugung palace in South Korea and An Post Museum in Ireland. Deoksugung palace, one of the royal palaces in Korea, launched a mobile app called 'Deoksugung, in my hands', which contains 1,634 items of including pictures, videos and 3D images related to the palace and nearby points-of-interest through AR. In Ireland, 'Dublin AR' app, which contains text, pictures and video, was developed for An Post Museum, one of historic buildings in the Dublin's independence trail. The project was initiated by Manchester Metropolitan University, Dublin Institute of Technology and the Dublin City Council to create awareness and enhance the tourist experience in the context of historical heritage in Dublin (Han et al., 2013). Considering that most visitors are not aware of the apps, we provided the manual to let visitors familiarize with the app before conducting survey so that they can evaluate the app more accurately. Then, the randomly selected visitors used AR apps in Deoksugung palace and An Post Museum for about 30 minutes and participated in the survey. All respondents received a gift certificates worth KRW5,000 (about USD 5) as a reward for participation. A total number of 145 questionnaires were collected in Deoksugung Palace and 119 questionnaires were collected in An Post Museum. Most of respondents of Deoksugung Place are female (94, 64.8 %), about half of respondents are between 20 and 29 (46.2%) or students (60.0%). In An Post Museum, 136 questionnaires were collected at first, however, 17 questionnaires were eliminated due to missing data. Most of the respondents of An Post Museum are female (98, 82.4%), age below 29 (92.4%) and students (89.9%). Although the respondents of these surveys are young and high-educated, only 48 (33.1%) and 11 (9.1%) respondents of Korea and Ireland had ever used AR respectively.

4.2 Measures

Measurement items were adopted from previous literature (e.g. Oh et al., 2007; Van der Heijden, 2004; Venkatesh et al., 2013). All items were measured on a seven-point likert scale with strongly disagree (1) and strongly agree (7). This procedure yield 24 measurement items which are summarized by each construct: aesthetics (five items), PU (four items), PEOU (four items), PENJ (four items), SI (four items) and intention to use AR (three items). Same questionnaire used both in South Korean and Ireland but a survey questionnaire was translated from English into Korean by individuals who were proficient in both languages when collect data at Deoksugung Palace in South Korea. Then, researchers who are fluent in English and Korean with academic specializations in the area under study compared the translated version with the original version. No material discrepancies were found. These processes in the pretest stage showed that all those questions were valid and reliable.

5   Analysis and Results

In order to test the proposed research model and compare the two countries, Korea and Ireland, we used a partial least squares (PLS) regression analysis, using PLS-Graph Version 3.0. PLS regression analysis has several advantages including small sample size, and few assumptions about measurement scale and normal distribution (Ahuja & Thatcher, 2005). Using PLS-Graph, the measurement model and structural model were estimated.

5.1 Measurement Model

In this study, exploratory factor analysis results in eight factors with eigenvalues greater than one. The results did not indicate that the single-factor structure accounts for most of the variance, suggesting that common method bias is not a concern in the data. To validate our measurement model, we undertook validity assessments of content, convergent, and discriminant validity. First, the content validity of our survey was established from the existing literature, and our measures were constructed by adopting constructs validated by other researchers. Second, convergent validity was established by examining composite reliability (CR), Cronbach's alpha, and the average variance extracted (AVE) (Bhattacherjee & Sanford 2006). Cronbach's alpha (greater than 0.5), CR (greater than 0.7) and AVE (greater than 0.5) of the survey from Korea and Ireland indicated that all of the constructs used in our research model satisfied the requirements. Thus, the results established that the items demonstrated convergent validity. Finally, the discriminant validity of the measurement model was checked by comparing the square root of the AVE for each construct with the correlations between that construct and other constructs. The results showed that the square root of the AVE for each construct exceeded the correlations between that construct and other construct. Thus, the discriminant validity of the instrument was established (Chung et al., 2014).

5.2 Structural Model

Structural equation modelling, for testing the validity of the proposed model, was conducted twice for Korea and Ireland respectively to assess how hypothesized relationships vary according to cultural difference. The size of the bootstrapping

sample that was used in the PLS analyses was 500. Table 2 shows the results of the hypothesis tests of Korea and Ireland respectively.

Table 2. Standardized Structural Estimates and Tests of the Hypotheses

H	Path			Deoksugung palace (Korea)		An Post Museum (Ireland)		Result
				Estimates	t-value	Estimates	t-value	
H_1	EST	→	PU	0.404	4.713	0.264	2.675	Accepted
H_2	EST	→	PEOU	0.235	2.363	0.179	2.034	Accepted
H_3	EST	→	PENJ	0.658	10.839	0.680	12.219	Accepted
H_4	PEOU	→	PU	0.364	3.908	0.464	5.158	Accepted
H_5	PENJ	→	PEOU	0.477	4.790	0.583	7.247	Accepted
H_6	PU	→	BI	**0.235**	2.226	0.123	0.978	**Rejected**
H_7	PEOU	→	BI	0.105	1.233	**0.401**	3.765	**Rejected**
H_8	PENJ	→	BI	**0.336**	3.355	0.235	2.096	Accepted
H_9	SI	→	BI	**0.223**	2.824	0.149	2.310	Accepted
R^2	PU			0.457 (45.7%)		0.427 (42.7%)		
	PEOU			0.430 (43.0%)		0.515 (51.5%)		
	PENJ			0.433 (43.3%)		0.463 (46.3%)		
	BI			0.564 (56.4%)		0.592 (59.2%)		

Note: Aesthetics (EST), Perceived usefulness (PU), Perceived ease of use (PEOU), Perceived enjoyment (PENJ), Intention to use AR (BI), Social influence (SI)

The Hypothesis 1, 2, and 3 considered the impact of aesthetics of AR on perceived attributes. In both countries, aesthetics of AR had strongest influence on PENJ. The relationship between PU and behavioural intention to use AR was not stronger in Ireland's masculinity culture than in South Korea's femininity culture. The path of the Korea was significant (β=0.235, t=2.226, p<0.05), whereas the path of the Ireland was not significant (β=0.123, t=0.978, n.s.), thus not supporting Hypothesis a6. Also, the relationship between PEOU and behavioural intention to use AR was not stronger in South Korea's femininity culture than in Ireland's masculinity culture. The path of the South Korea was not significant (β =0.105, t=1.233, n.s.), while the path of the Ireland was significant (β=0.401, t=3.765, p<0.001), thus not supporting Hypothesis a7. However, as expected, the relationship between PENJ and behavioural intention to use AR was stronger in South Korea's higher power distance culture than in Ireland's lower power distance culture. The path from PENJ to behavioural intention to use AR was significant in both countries, but larger for South Korea (β=.336, t=3.355, p<0.001), than Ireland (β=0.235, t=2.096, p<0.05), thus supporting the Hypothesis b8. The path from SI to behavioural intention to use AR was significant in both countries, but larger for South Korea (β =0.223, t=2.824, p<0.01), than Ireland (β=0.149, t=2.310, p<0.05). This result is supporting the Hypothesis b9, c9 and d9.

6 Discussion, Implications and Limitations

This study provides theoretical and practical implications. One of the theoretical implications is the roles of aesthetics, which was found that the strongest attribute of PENJ in both countries. This result demonstrated that aesthetic features of IS can induce hedonic perception. The findings of the present study is remarkably meaningful because most of studies that investigated the process from perceived attributes of AR to attitudes or behavioural intention to use, have focused on only the

utilitarian component of AR such as PU and PEOU (e.g. Vlahakis et al. 2001) or functional quality of AR. In terms of the application of cultural difference, only a small number of research papers have applied structural equation model (SEM) (e.g. Srite & Karahanna, 2006). However, by drawing upon SEM, this study empirically tested the impact of cultural difference on the causal sequence toward behavioural intention to use AR. The results showed that there is no relationship between the impact of utilitarian components of AR and masculinity/femininity culture while the impact of hedonic component and SI on behavioural intention to use AR was stronger in higher power distance, collectivism, uncertainty avoidance, and power distance culture of South Korea. These results are partly consistent with several previous research papers (e.g. Harris et al., 2005; Srite & Karahanna, 2006; Venkatesh & Morris, 2000). Destination marketing managers and AR developers in the cultural heritage tourism sites around the world can refer to this study in design and operation of actual operations of the AR app. In eastern and western cultures, aesthetics of AR is crucial component for formulating positive perception about AR, in turn, which induces behavioural intention to use AR. Usability, PENJ, and SI should be considered as crucial component of AR in higher power distance, uncertainty avoidance and collectivist cultures, whereas PEOU of AR and manual should be focused in lower power distance, uncertainty avoidance and individualist cultures. The present study has some limitations. First, as AR apps have not yet been commercialized enough to be known to many tourists, the manual about the way to use AR apps had to be produced and provided for respondents before conducting survey. Thus, only young and highly educated people who are willing to accept AR apps could participate in this survey, which make it hard to say the subjects of this study are representativeness of each culture. Second, this study investigated two different AR apps in each country: "Deoksugung, in my hand" in South Korea and "Dublin AR" in Ireland. Thus, it is possible that the aesthetic and functional differences between these two AR apps were reflected in this result. Therefore, future studies should assess the respondents who use same app, but from different cultural area for investigating the impact of cultural difference on behavioural intention to use IS more accurately.

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