

Willingness to use Fashion Mobile Applications to Purchase Fashion Products: A comparison between the United States and South Korea

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ABSTRACT

This study focused on United States and South Korean consumers' intention to use fashion mobile applications to purchase fashion products and how that intention is affected by cultural differences. A modified Technology Acceptance Model and E-commerce Adoption Model was utilized. A survey was designed and administered to smartphone users enrolled in fashion programs at both a United States university and two South Korean universities. Findings showed significant differences in three variables between the two cultures: perceived social influence, perceived entertainment, and fashion innovativeness. Path analysis revealed that the motivations of intention to purchase fashion products through fashion mobile applications were differentiated by cultural differences. The findings of this study are relevant and contribute to a comprehensive perspective on mobile marketing strategies for fashion retailers, especially electronic retailers who are particularly well positioned to take advantage of this new sales medium.

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Keywords: E-commerce, South Korean consumers, US consumers, mobile applications

Introduction

Over the past ten years smartphones have emerged as a popular handheld device for a wide variety of activities, most recently product purchasing through mobile applications. As of 2013, there were 56% of people who owned smart mobile devices worldwide of which 80% of time on mobile was spent inside apps, while 72% of tablet owners purchased online from their tablets

each week (Hepburn, 2013). Thanks to the smartphone, not only has the use of the Internet via mobile devices increased, but the development of mobile commerce has also rapidly advanced since mobile devices using Wi-Fi, enable user access anywhere, at any time, compared to the fixed location of personal computers and Internet connection (Kim *et al.*, 2009; Ko *et al.*, 2009).

As mobile commerce has become more widely developed, the mobile operation infrastructure and the mobile application market have become more sophisticated allowing for the purchasing of goods and services through mobile devices (McGrath and McCormick, 2013). For fashion retailers mobile commerce is a noticeably successful marketing tool because they can advertise, promote, and sell their fashion brands and products through mobile applications (Kim *et al.*, 2009).

As consumer usage in mobile technologies and the number of their accompanying applications has grown, academicians, companies and marketers have begun to focus their attention on this new media, resulting in a burgeoning body of research. As a newer technology, FMAs have not been extensively examined in relation to consumer behavior. Therefore, building on previous mobile Internet shopping research, this study focused on United States and South Korean consumers' intention to use FMAs to purchase fashion products.

Theoretical framework

Understanding the variables that influence mobile users' usage and purchasing intent are important to mobile commerce (m-commerce), especially with the increasing use of smartphones. Since its introduction, researchers have modified the Technology Acceptance Model (TAM) after a new technology has been adopted. Although the validity of the TAM has been recognized, over the decades researchers have identified additional variables that improve the model for specific, newer technologies, such as e-commerce (Li and Huang, 2009) and m-commerce (Kim *et al.*, 2009; Ko *et al.*, 2009; Yang and Kim, 2012).

Since m-commerce is an extension of e-commerce, this study also utilized elements of the E-commerce Adoption Model (EAM) developed by Crespo and Bosque (2008). They found that innovativeness was the most important variable to users' adoption of new technologies, including e-commerce and online shopping (Crespo and Bosque, 2008; Jordaan and Simpson, 2006). Since

innovativeness has been identified as an important determinant of intention to use new technology, it was added to the proposed model in order to verify how innovativeness affects users' attitudes to use FMAs. However, in order to focus on fashion, innovativeness in this study was limited to fashion innovativeness. Based upon previous research a proposed Fashion Mobile Application Acceptance Model was used in this study to examine intention to purchase fashion products through FMAs. In this model, the variables perceived usefulness, perceived ease of use, fashion innovativeness, attitude toward using FMAs, and intention to purchase fashion products through FMAs were used.

Perceived social influence

Since consumers often consider shopping to be a social activity, they are willing to engage in communication with others in a shopping context (Kim, 2006). According to Katz *et al.* (1973), an individual's new media usage was highly influenced by other people. This implies that perceived social influence has a significant relationship to perceived usefulness of new media, that is, the perceived attributes of the new media and its functions. In this research, perceived social influence is defined as the degree to which a person believes that their use of FMAs will be influenced by other people's opinions. In this new platform, perceived social influence will also affect perceived usefulness. Thus:

H1: Perceived social influence is positively related to the perceived usefulness of FMAs.

Perceived information

In order to determine the relationship between increased accessibility of new information and perceived usefulness, in this research, perceived information is defined as the degree to which a person believes that using a FMA will be informative. To date, there are no studies that used information as an indicator of perceived usefulness for FMAs. Thus, the following hypothesis was developed for this study:

H2: Perceived information is positively related to the perceived usefulness of FMAs.

Perceived entertainment

Entertainment has been confirmed as an important variable for the usage of new technology such as the mobile Internet (Lee *et al.*, 2002) and mobile Internet shopping (Yang and Kim, 2012). According to Nysveen *et al.* (2005), perceived enjoyment (perceived entertainment) is defined as the degree to which it is enjoyable to use the technology. Furthermore, entertainment was found to be a critical variable in creating a positive attitude toward new technology. Supporting this finding, previous researchers also found the significance of the entertainment variable in m-commerce (Kim *et al.*, 2007; Lu and Su, 2009) and on purchasing intention (Lu and Su, 2009).

In this study, perceived entertainment is defined as the degree to which a person believes that using a FMA will be enjoyable. However, according to Katz *et al.* (1973), enjoyment is related to perceived usefulness because they found that people wanted to use a media more when an entertainment factor existed, and when applied to FMA the following hypothesis is proposed:

H3: Perceived entertainment is positively related to the perceived usefulness of FMAs.

Perceived usefulness

As an important determinant of technology acceptance for many decades, perceived usefulness has referred to “the degree to which a person believes that using a particular system would enhance his or her job performance” (Davis, 1989, p. 320). After 20 years of research, perceived usefulness has been proven to have a strong relationship to user acceptance, attitude, and behavior (Kim *et al.*, 2009; Ko *et al.*, 2009). In addition, there were supported findings that perceived usefulness was positively related to attitudes toward using new technology, such as the mobile Internet (Kim *et al.*, 2007). In this study, perceived

usefulness has been defined as the degree to which a person believes that using a FMA will enhance his or her shopping experience. Hence the following hypothesis:

H4: Perceived usefulness is positively related to the users’ attitude toward using FMAs

Perceived ease of use

As another significant variable introduced in the original TAM, perceived ease of use attempts to explain how easy users’ perception of a technology needs to be in order for them to adopt it. Whereas perceived usefulness has been found to impact attitudes toward all technologies, previous researchers have found that the impact of ease of use on attitudes toward using technology depended on the specific technologies or situations (Wu and Wang, 2005). In other words, in m-commerce, the perception of ease of use is an important causal variable affecting perceived attitudes toward the adoption of the new technology (Venkatesh *et al.*, 2003). In this research, perceived ease of use is defined as the degree to which a person believes that using a FMA will be free of effort. Since FMAs are a very new technology, ease of use could prove to be a contributor to positive attitudes toward fashion applications. Thus, the following hypothesis can be developed:

H5: Perceived ease of use is positively related to the users’ attitude toward using FMAs.

Fashion innovativeness

Innovativeness has been defined as “the degree to which an individual is relatively earlier in adopting new ideas than other members of his/her social system” (Rogers, 1995, p. 22). Many previous researchers found that innovativeness impacts a person’s attitude and behavioral intention in e-commerce (Crespo and Bosque, 2008). In this study, innovativeness is limited to fashion innovativeness as this research focuses only on FMAs. Fashion innovativeness is referred to as the degree to which an individual adopts a new fashion early on, relative to other members of his/her

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social system. Assuming these variables had a significant impact on consumer attitude towards e-commerce (Crespo and Bosque, 2008) and general innovativeness has highly impacted fashion innovativeness (Jordaan and Simpson, 2006); the effect of fashion innovativeness can be tested by the following hypothesis:

H6: Fashion innovativeness is positively related to the users' attitude toward using FMAs.

Perceived attitude toward using fashion mobile applications

Since the Theory of Reasoned Action (TRA) was proposed by Fishbein and Ajzen (1975), attitudes have been recognized as a significant determinant of intention. In previous research of m-commerce, positive attitudes towards shopping through mobile technology were significantly associated with intention to purchase through mobile technology (Kim *et al.*, 2009). Accordingly, application of TRA to the study of attitudes towards using FMAs is appropriate as these attitudes may be a direct indicator of future intention to use FMAs for fashion shopping. Therefore, a positive association between attitude toward FMAs and the intention to use FMAs to buy fashion products suggests the following hypothesis:

H7: Attitude toward using FMAs will positively influence intention to purchase fashion products through FMAs.

Cross-cultural differences

The United States and South Korea were selected for this study as these two

countries lead the world in mobile smartphone usage, but are culturally dissimilar (Koo *et al.*, 2012). While there are different cultural categories utilized, typically the United States is classified as an individualistic and low-context culture, while South Korea is classified as collectivist and high-context culture (Hofstede and Hofstede, 2005).

In an individualistic, low-context culture there is a belief that individuals are distinctly separate, they are more independent, less likely to rely on others to make purchase decisions, and are more comfortable with uncertainty. In comparison, in high-context societies, group behavior and harmony are important, while purchase decisions are more often influenced by the opinions of other and reference groups. Such cultural traits are likely to influence technology adoption and usage as well as purchasing intentions (Strom *et al.*, 2014). Yang (2010) utilizing TAM, investigated mobile data service adoption differences between Americans and South Koreans. Results indicated that cultural differences did have an influence on the adoption of mobile data service. Therefore, the following hypothesis was tested:

H8: Intention to purchase fashion products through FMAs will differ between United States and South Korean consumers.

The research model based on these hypotheses, an extended TAM, which was adapted from the original TAM and the EAM, is provided in Figure 1.

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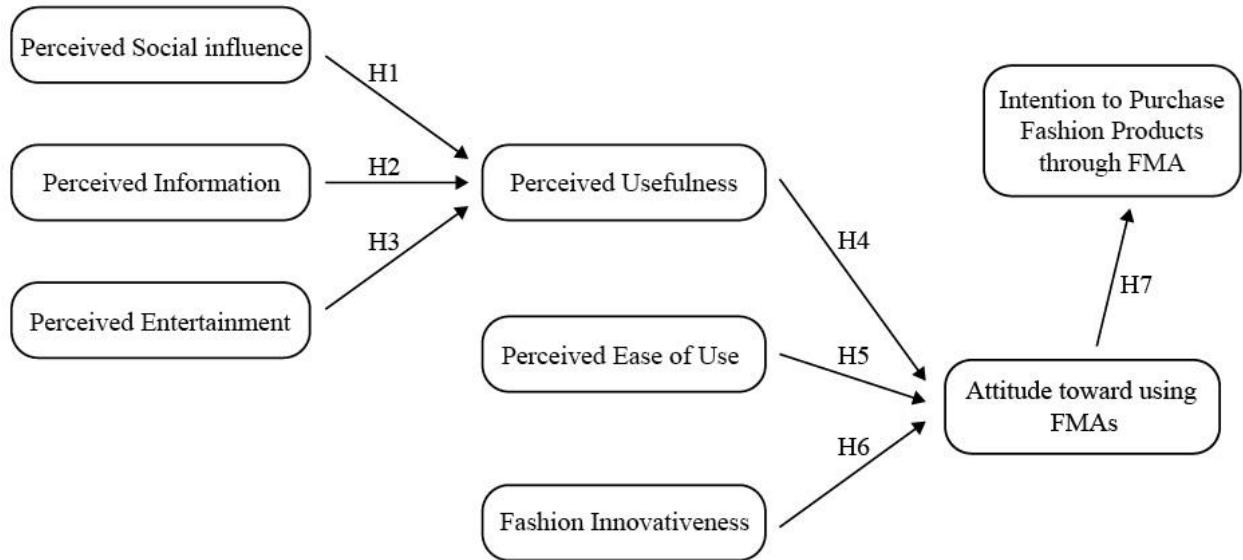


Figure1. Proposed fashion mobile applications acceptance model.

Method

Measurement

The questionnaire consisted of technology acceptance scale items derived from previous literature which were modified for the mobile technology context. The instrument included 40 items with seven point Likert-type scales, from 1 (strongly disagree) to 7 (strongly agree) to measure perceived social influence (SI), perceived entertainment (EN), perceived information (IN), perceived usefulness (UF), perceived ease of use (EU), fashion innovativeness (FI), attitude toward using FMAs (ATFMA), and intention to purchase fashion through FMAs (IPFMA). For this study, SI, EN, and IN were drawn from five items developed by Bauer *et al.* (2005), Ko *et al.* (2009), and Lee *et al.* (2002). UF and EU were selected from five items developed by Davis (1989) and Ko *et al.* (2009), and FI was chosen from five items developed by Jordaan and Simpson (2006) and Belleau *et al.* (2005). ATFMA was drawn from five items developed by Bauer *et al.* (2005) and Kim *et al.* (2009) and finally, IPFMA was selected from five items developed by Bauer *et al.* (2005), and Ko *et al.* (2009). See Table 1 for all Likert-type items.

In order to ensure instrument equivalence between the United States and South Korean survey, the instrument was translated into Korean and then back-translated to ensure consistent meaning. A small group of graduate students' (N=15) pilot tested the instrument and procedure to ensure clarity of item wording and instructions.

Sample selection and recruitment

For this exploratory study, a convenience sample of smartphone users were recruited from the fashion programs at both a mid-sized, Midwestern university located in in the United States and two South Korean universities. University students are appropriate participants for this study as they are comfortable with new technology, are highly involved with fashion, and are important potential consumers on m-commerce (Carte, 2012). Additionally, university students who are majoring in fashion are seeking fashion information and fashion related technology so they may use FMAs more than other people. The participants were recruited by email notification through universities' student listserve, posting fliers in the universities' buildings, and through classroom

announcements. Participants were directed to the link for the online survey. In order to minimize collecting data during a vacation period, the Korean survey was released earlier than the U.S. survey. South Korea has long winter vacations beginning at the end of December and lasting through early March. The South Korean survey was opened for six weeks, from first week of December through the second week of January, 2013. The U.S. survey was open for four weeks, from the last week of January through the third week of February, 2013. As an incentive for participation, three of the participants were randomly awarded a cash prize of \$30. For the final analysis, a total of 83 responses from U.S. respondents and a total of 82 responses from South Korean respondents were considered useable.

Results

Participant characteristics

The majority of both the U.S and South Korean participants had previously used FMAs (N=141). Eighty-seven percent of the U.S. participants (N=75) reported they had used FMAs. Within the U.S. sample, 29.1% reported using FMAs “once a day” (N=25). In comparison, 82.5% of South Korean participants (N=66) reported that they had previously used FMAs and within that group, 27.5% responded that they had been using FMAs “more than twice a week”

(N=22). Both groups had similar demographics. The U.S. sample largely consisted of sophomores (N=26), freshmen (N=22), and both junior and senior students (N=21) with a mean age of 20 (SD=1.35, range=18-23), while the South Korean sample broke down statistically into seniors (N=23), sophomores (N=20), and both freshmen and junior students (N=16) with a mean age of 21 (SD=2.24, range=18-30).

Preliminary analyses

Confirmatory factor analysis (CFA) with varimax rotation was conducted to identify any group-related variables. Items that had poor loading values (< 0.55) were excluded resulting in a total of 38 items included in the analysis. After rotation, there were five factors with Eigenvalues over 1, which accounted for 69.94% of the cumulative variance. The Cronbach’s alpha values for all eight factors were above the recommended value level of 0.80, which represented a reasonable internal consistency of the items in the scales. Convergent validity was assessed by the magnitude of the factor loadings of each item. Every item loaded significantly at $p > .005$. See Table 1 for the Cronbach’s alpha, descriptive statistics, and confirmatory factor analysis. In summary, this measurement model has demonstrated adequate reliability and convergent validity.

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Table 1. Confirmatory factor analysis for item measures

Items	Cronbach’s Alpha	Item Mean (SD)	Factor Loading
<u>Perceived Social Influence</u>			
	0.88		
Using FMAs make a good impression on other people.		4.39 (1.45)	0.66
FMAs improve the way I am perceived.		4.15 (1.49)	0.71
Using FMAs gives me a sense of belonging to other users.		4.64 (1.57)	0.66
By using FMAs, I can demonstrate my innovativeness to my friends.		4.92 (1.36)	0.71
If I use FMAs, most of the people who are important to me would regard it as valuable.		4.32 (1.49)	0.59
<u>Perceived Information</u>			
	0.80		
FMAs are reliable.		5.28 (1.20)	0.55
FMAs provide up-to-date information with a timely service.		5.35 (1.30)	0.61
FMAs provide exclusive information.		5.11 (1.34)	0.61

FMA's are useful in obtaining fashion information.		5.77 (1.13)	0.66
FMA's provide the personalized fashion ads or promotions I need.		4.76 (1.48)	0.51
<u>Perceived Entertainment</u>	0.87		
Using FMA's is enjoyable.		5.53 (1.26)	0.76
After using FMA, I want to use the application again.		5.22 (1.38)	0.72
It is enjoyable to search fashion products via FMA's.		5.58 (1.27)	0.64
I never think about time passing when I play with FMA's.		4.75 (1.59)	0.43
I am pleased with shopping for fashion products through FMA's.		4.89 (1.44)	0.73
<u>Perceived Usefulness</u>	0.85		
I can benefit from FMA's.		5.32 (1.11)	0.69
FMA's are useful.		5.52 (1.21)	0.76
FMA's make purchase recommendations of what fashion products I need.		5.10 (1.34)	0.59
FMA's enhance my task effectiveness.		4.74 (1.46)	0.60
Using FMA's would make it easier to shop fashion products.		5.29 (1.33)	0.63
<u>Perceived Ease of Use</u>	0.90		
It is easy to use FMA's.		5.79 (1.11)	0.74
It is easy to learn how to purchase fashion products through FMA's.		5.64 (1.16)	0.76
It would be easy for me to become skillful at using FMA's.		5.89 (1.12)	0.75
Learning to operate FMA's would be easy for me.		5.95 (.99)	0.72
I would find it easy to get FMA's to purchase fashion products.		5.58 (1.30)	0.69
<u>Fashion Innovativeness</u>	0.91		
In general, I am among the first in my circle of friends to buy a new fashion products.		4.81 (1.70)	0.81
Compared to my friends, I own many new fashion items.		4.90 (1.56)	0.79
I am among the first in my circle of friends to know the names of the latest fashions and styles.		5.33 (1.43)	0.82
I know more about new fashions before other people do.		5.29 (1.29)	0.76
I have a strong interest in new fashions.		5.65 (1.31)	0.77
<u>Attitude toward using FMA</u>	0.89		
I find using FMA's positive.		5.70 (1.12)	0.73
I appreciate using FMA's.		5.13 (1.41)	0.77
I like using FMA's to purchase fashion products.		4.63 (1.73)	0.83
Generally, I find FMA's a good thing.		5.62 (1.17)	0.74
Using FMA's is pleasant.		5.43 (1.20)	0.76
<u>Intention to purchase fashion products through FMA</u>	0.91		
My general intention to buy fashion products through FMA's is high.		4.90 (1.61)	0.78
I would consider about buying fashion products through FMA's.		5.01 (1.59)	0.83
I will buy fashion products through FMA's in the future.		4.92 (1.69)	0.84
I intend to learn how to use FMA's for purchasing fashion products in the future.		5.46 (1.34)	0.55
I will highly recommend FMA's for purchasing fashion products to others.		5.32 (1.35)	0.73

Note: Item scale ranged from 1 (strongly disagree) to 7 (strongly agree).
Factor loading significant at 0.55.

In order to compare means of perceptions about FMAs of the two different groups, the independent samples t-test was computed using α , type I error, value of 0.05. The data collections were made independently; therefore, the resulting information from one sample is unrelated to the other. Table 2 provides the value of t , the degrees of freedom, and the significance level, which is the most important indicator of the test. The mean scores for the variables of perceived social influence, perceived entertainment, and fashion innovativeness were found to be significantly different

between the two groups (SI: $t(163) = -2.095$, $p < 0.05$; EN: $t(163) = 2.121$, $p < 0.05$; FI: $t(163) = 3.047$, $p < 0.05$). As presented in Table 2, the mean scores of two different samples for the rest of the variables including perceived information, perceived usefulness, perceived ease of use, attitude toward using FMAs, and intention to purchase fashion product through FMAs demonstrated no significant difference between the two groups (IN: $t(163) = -1.332$, $p > 0.05$; UF: $t(163) = -0.211$, $p > .05$; EU: $t(163) = -1.180$, $p > 0.05$; ATFMA: $t(163) = 1.823$, $p > 0.05$; IPFMA: $t(163) = 0.565$, $p > 0.05$).

Table 2. Result of the independent samples t-test

	J t T	T-test for Equality of Means			
		df	Sig (2-tailed)	Mean Difference	Std. Error Difference
Perceived Social Influence	-2.095	151.994	0.038	-.391	.187
Perceived Information	-1.332	148.197	0.185	-.199	.149
Perceived Entertainment	2.121	145.211	0.036	.372	.175
Perceived Usefulness	-0.211	152.829	0.833	-.034	.161
Perceived Ease of Use	-1.18	163	0.240	-.177	.150
Fashion Innovativeness	3.0447	136.795	0.003	.584	.192
Attitude toward Using FMA	1.823	146.977	0.070	.316	.174
Intention to Purchase Fashion Product through FMA	0.566	150.507	0.573	.115	.203

Note: Item scale ranged from 1 (strongly disagree) to 7 (strongly agree).

Hypotheses testing

A path analysis was used to discover the relationships between FMAs motivators and intention to purchase fashion products through FMAs. Due to the small sample size of this study, composite scores were created by combining the items of each variable of interest to make up the scale. In order to measure the adequacy of the mediational component and to provide initial assessment of data suitability for maximum likelihood estimation, the normality of the variables was tested. In addition, in order to measure maximum likelihood estimation to see the normality of the variables, joint multivariate normality was assessed. The variables' multivariate kurtosis was 28.698 with a critical ratio of 14.572. Since the value of the

multivariate kurtosis is larger than the recommended value of 1, the deviation from joint normality is large enough to justify the use of the Bollen-Stine Bootstrapping procedure which is recommended by AMOS to test the model fit with nonnormal data or moderate sample sizes and the use of bias-corrected confidence intervals to assess parameters.

A Bollen-Stine Bootstrapping procedure was employed and the Modification Indices (MI) showed a significant modification index for adding a new path between entertainment and attitude toward using FMAs (MI = 11.094, Estimated Parameter Change = 0.134) to improve model fit ($p_{boot} > 0.05$, RSEMA = 0.092, CFI > 0.95,

TLI > 0.90, AGFI > 0.80, and SRMR < 0.02) (Bollen and Stien, 1992).

The presence of moderation was examined through multigroup path analysis to compare two different cultures. For precise comparison, all regression paths of the multigroup model were fixed for equality between the two different groups. As a result, there was a significant improvement in model fit of the Fully Moderated Model shown by a significant difference between the value of Chi square ($\Delta\chi^2$) and the comparative fit index difference (ΔCFI) (Cheung and Rensvold, 2002), which supports the fact that a presence of the moderation factor should be added for the following regression analysis.

A z-test of the difference between regression coefficients was completed to indicate the best-fitted moderated model ($p < 0.05$, RMSEA = 0.073, CFI = 0.98, TLI = 0.96, AGFI = 0.81, SRMR = 0.03).

Lastly, the relevant coefficient of the final model between two different samples was assessed. The results of the hypotheses testing are presented in Figures 2 and 3, which are the models with standardized path coefficients. As shown in the Figures, there were significant differences between the American and South Korean samples in terms of significant magnitude, as well as model parameters. Table 3 shows significant relationships of variables and cultural difference between the two groups. As proposed, perceived social influence, perceived information, and perceived

entertainment showed a significant impact on perceived usefulness in the American sample ($\beta_a = 0.30, p < 0.05$; $\beta_b = 0.18, p < 0.05$; $\beta_c = 0.53, p < 0.05$) but perceived social influence was not significantly related to perceived usefulness in the South Korean sample ($\beta_a = 0.04, p > 0.05$; $\beta_b = 0.38, p < 0.05$; $\beta_c = 0.58, p < 0.05$). Thus Hypotheses 1, 2, and 3 were supported in the American group but only Hypotheses 2 and 3 were supported in the South Korean group. Perceived ease of use had a positive impact on attitudes toward FMAs in both groups ($\beta_e = 0.15, p < 0.05$ for Americans; $\beta_e = 0.11, p < 0.05$ for South Koreans), supporting Hypothesis 5 for both groups. Perceived usefulness and fashion innovativeness were significantly related to attitudes toward using FMAs in the South Korean sample ($\beta_d = 0.33, p < 0.05$; $\beta_f = 0.31, p < 0.05$), supporting Hypotheses 4 and 6, but not significantly related in the American sample ($\beta_d = 0.04, p > 0.05$; $\beta_f = 0.02, p > 0.05$). On the other hand, perceived entertainment had a significant direct relationship to attitude toward using FMAs in the American sample ($\beta_g = 0.71, p < 0.05$) but not in the South Korean sample ($\beta_g = 0.27, p > 0.05$). Finally, attitudes toward using FMAs showed a strong positive impact on intention to purchase fashion products through FMAs in both groups ($\beta_h = 0.81, p < 0.05$ for Americans; $\beta_h = 0.88, p < 0.05$ for South Koreans), which supported Hypothesis 7.

Table 3. Direct, indirect, and total effects for models

Path	American Group Parameters				Korean Group Parameters			
	Estimates	Lower CI	Upper CI	p	Estimates	Lower CI	Upper CI	p
Path a	.30	.18	.42	.001	.04	-.11	.19	.621
Path b	.18	.03	.33	.018	.38	.22	.42	.002
Path c	.53	.39	.67	.001	.58	.43	.71	.001
Path d	.04	-.13	.27	.6	.33	.05	.61	.019
Path e	.15	.02	.34	.029	.11	.01	.22	.031
Path f	.02	-.13	.20	.803	.31	.15	.44	.001
Path g	.71	.50	.92	.000	.27	-.01	.56	.057
Path h	.81	.73	.88	.001	.88	.80	.94	.002

Note: Bias-corrected 95% Confidence Intervals for Estimates

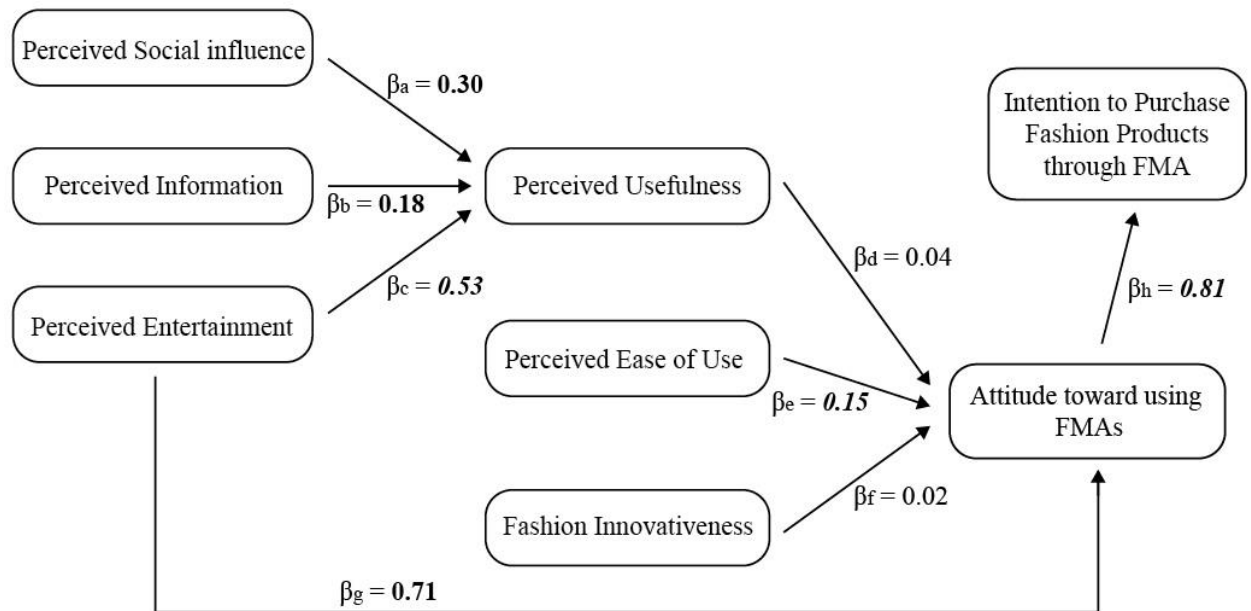


Figure 2. Path diagram of American group.

Note: Goodness of Fit Statistics: Chi-square = 42.73 (df = 23, p= .007), RMSEA = .073, CFI = .98, TLI = .96, AGFI = .81, SRMR = .03. p < .05

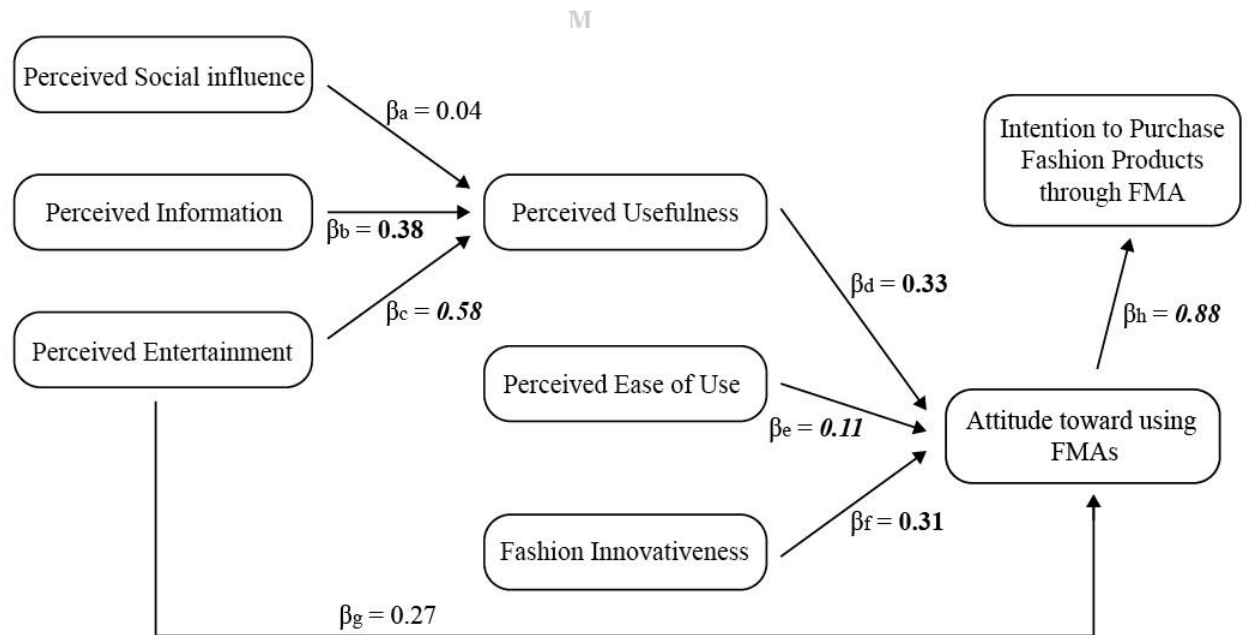


Figure 3 Path diagram of South Korean group.

Note: Goodness of Fit Statistics: Chi-square = 42.73 (df = 23, p= .007), RMSEA = .073, CFI = .98, TLI = .96, AGFI = .81, SRMR = .03. p < .05

Discussion and conclusions

This study examined the relationships between motivational variables and an individual's intention to purchase fashion products through FMA. The results of the independent samples t-test showed that the variables perceived social influence, fashion innovativeness, and perceived entertainment were significantly different between the two cultures. These results indicated that perceived social influence and fashion innovativeness, among other variables, are significant predictors for shopping fashion products through FMAs.

Although perceived social influence had the smallest mean score, it had a significant difference between the two cultures. The findings showed that South Korean respondents are more influenced than the American respondents by family members and friends in the use of FMAs. According to Liu and McClure (2001), South Korean consumers are less likely to engage in direct expression of their opinions and to engage in indirect problem-solving behavior because they are members of a collectivist culture. This interpretation supports findings of this study as the South Korean respondents were more highly influenced by others' opinions while using FMAs than the American respondents, who are members of a more individualistic culture (de Mooij & Hofstede, 2011). This result would suggest that some users, such as fashion followers, might be shopping on FMAs for fashion-related products recommended by friends within their social network. It also implies that users who want to engage in fashion to share and fulfill their interests may use FMAs that provide space to post fashion information and images for other FMA users. However in this study, perceived social influence was not a significant influencing factor of perceived usefulness.

Another interesting research finding from the independent sample t-test was related to fashion innovativeness. Compared to previous mobile technology acceptance research, fashion innovativeness was uniquely included in this study to identify users who were highly involved in fashion.

From the results of the t-test, fashion innovativeness was significantly different between the American respondents and the South Korean respondents. Although the two cultures have the same media awareness, online shopping availability, and level of access to high fashion, American respondents scored significantly higher in fashion innovativeness than South Korean respondents. Previous research has revealed that individuals who have higher fashion innovativeness are more likely to be opinion leaders (Cho & Workman, 2011). Therefore, the results of this research indicate that the American respondents were more likely to be innovators and subsequently to have influence over others as to the use of FMAs. In contrast, the South Korean respondents placed much more value on perceived social influence, relying on others' opinions in their usage of FMAs.

The result of path analysis showed a significant cultural difference on intentions to purchase fashion products through FMAs. First the results of the path analysis showed that perceived social influence had crucial effects on perceived usefulness in American participants, but not in South Korean participants. Although the U.S. respondents indicated that perceived social influence impacted perceived usefulness, perceived usefulness was not considered a significant moderator of attitude to use FMA. Therefore, for this group, perceived social influence does not influence an individual's intention to buy fashion products through FMA.

Second, perceived usefulness, as moderated by perceived information, was significant for both the South Korean and American respondents. Results indicate that both South Korean and American FMA users are motivated to use FMAs to search and share specific information related to fashion brands and fashion products. Furthermore, FMAs that are designed to share information about fashion retailers and products are likely to increase customers' brand loyalty.

Findings indicated that the direct path of perceived entertainment on attitude toward FMAs improved the model fit for both cultures. However, path analysis

revealed that perceived entertainment was a significant direct motivational factor for the American culture, whereas for the South Korean culture it manifested itself as an indirect motivational factor through perceived usefulness. Although the path was different, perceived entertainment was found to be an important motivational variable for both groups and a significant indicator for perceived usefulness. As shown in the resultant South Korean model, perceived usefulness which was mostly affected by perceived entertainment was the most significant variable related to a positive attitude toward FMAs. Direct versus indirect motivation of perceived entertainment on attitude toward using FMA's may be attributed to a cultural impact on technology uses (Shin, 2012). Studies have found that U.S. consumers use mobile service to enhance individualism like enjoying games by themselves, whereas Korean users use it as an affinity with friends and peers interactive tool (Leung & Wei, 2000; Shin, 2008). Therefore, this study suggests that fashion retailers, who want to enhance users' mobile shopping experience, should make FMAs entertaining in order to cultivate a positive interaction with customers. It may be that taking a hedonic approach in the design and marketing of FMA's by fashion retailers would increase usage and ultimately sales for this consumer group.

One of the most significant motivational factors to have positive attitudes toward FMAs was perceived usefulness, which was affected by perceived entertainment and information for only the Korean sample. The positive relationship between perceived usefulness and attitude toward mobile marketing and online shopping has been confirmed by previous researchers (Ha & Stoel, 2009).

Similar to perceived usefulness, path analysis indicated that fashion innovativeness was also a significant motivational factor only for the South Korean sample. Although t-test analysis revealed a significant difference in fashion innovativeness between the two groups with the American group reporting higher

innovativeness, path analysis was important only for the South Korean sample. Previous research has indicated that South Koreans often view themselves as innovators because of their heavy use of the Internet and other communication tools and mobile data services (Park & Jun, 2003; Yang, 2010a). However, although self-identified as innovators, South Koreans may spend time online due to conformity and peers expectations of Internet usage which is expected in a collectivist society. Lim and Park (2013) found that Koreans demonstrated only domain-specific innovativeness in adoption of technology products due to Korean's high uncertainty avoidance. Additionally, it may be that fashion innovativeness and technology innovativeness are more closely linked for the South Korean sample than for the U.S. sample. The perceived ease of use was a significant motivational factor for having a positive attitude toward using FMAs in both cultures. However, this variable was more significant in American culture than in South Korean culture. This indicates that American users are more likely to have a positive attitude toward using FMAs that are easy to use and provide easy access to fashion information and suggests important FMA marketing implications for fashion retailers. To be widely adopted by more general mobile consumers, the fashion retailers should develop FMAs that are easy and intuitive for consumers to use. This may influence the consumers' perceptions toward using FMAs and consequently increase fashion product purchase through the applications.

As expected, perceived attitude toward using FMAs was the most significant predictor of intention to purchase fashion products through FMAs for both South Korean and American participants. This relationship between a positive and direct influence of the attitude toward using technology and intention to use the technology has been well documented in the literature (Kim *et al.*, 2009; Ko *et al.*, 2009). This includes the more recent mobile technology as a positive attitude toward m-

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commerce has a positive and direct effect on mobile shopping intentions (Kim *et al.*, 2009). This finding implies that once the positive attitude toward using FMAs has been built, users would be willing to purchase fashion products through the applications.

FMAs are an emerging trend with globally distributed users and as such are considered an important marketing tool by fashion retailers. As such, findings of this study are relevant and contribute to a comprehensive perspective on mobile marketing strategies for fashion retailers, especially electronic retailers who are particularly well positioned to take advantage of this new sales medium. The results of this study indicate that to be successful in a global fashion industry, fashion retailers need to develop their FMAs by considering factors related to consumers' cultural backgrounds, influences, and fashion preferences.

Interestingly, the findings of this study suggest FMA should be developed to include an entertainment and informational components to attract South Korean consumers. FMAs should provide these users with interesting fashion-related news that offer fashion ideas and opportunities to learn about newer styles. By developing appropriate informational and entertaining FMAs, fashion retailers can establish strong relationships with South Korean customers. For example, including exciting fashion related videos in FMAs may provide the entertainment experience that the FMA user is looking for. Furthermore, fashion retailers should make FMAs that target the South Korean fashion innovators who influence South Korean fashion followers to adopt mobile applications; ultimately selling more fashion products.

In contrast, to appeal to U.S. consumers, ease of use must be considered while developing FMAs while still providing an entertainment experience. Local U.S. retailers should provide interesting but simple fashion related activities, such as puzzles and role playing games to encourage greater adoption of FMAs. By communicating with American consumers through those FMAs, fashion retailers have

an opportunity to interact holistically with the consumer and at the same time promote and sell their products.

Limitations and future research

Efforts were made to reduce the limitations of this research, but several still remain worth reviewing. One limitation was the use of path analysis rather than a two stage Structural Equation Model which would have provided better understanding of the model and greater confidence in the findings. Another limitation of this study is related to sampling. Since the sample used for this study consisted of university students in a specific department from only two geographic regions, the American Midwest and the middle of South Korea, the generalizability of the conclusions need to be applied carefully. Although this convenient sampling was deliberately chosen, for the generalization of findings, further research should include FMA users who have careers and thus more disposable income. Since consumers who have careers often have less time to go shopping, these professionals may use FMAs as a convenience tool reducing time and traveling costs. Since the results of this study showed cultural differences between a U.S and South Korea FMA user, an extension of this research to include consumers from other cultures, like European, Mid-Asian, and South American countries, might yield interesting results.

There are a number of avenues for further research suggested by these results. First, to generate a better understanding of how mobile applications can meet individual consumer's needs and wants, future research that categorizes FMAs by service characteristics in relation to shopping motivations needs to be undertaken. Future research to categorize FMAs would replicate the study using different kinds of FMAs, such as fashion magazines for fashion information, fashion games for entertainment, and brand applications for the fashion brands promotions. Further comparative studies that focus on a variety of FMAs may yield different results.

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