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Abstract

Providing recommendations is acknowledged as an important feature of a business-to-consumer online storefront. Although many studies have been conducted the algorithms and operational procedures relating to personalized recommender systems, empirical evidence demonstrating relationships between social presence and two important outcomes of evaluating recommender systems, reuse intention and trust, remains lacking. To test the existence of a causal link between social presence and reuse intention, and the mediating role of trust between these two variables, this study conducted experiments varying the levels of social presence while providing personalized recommendations to users based on their explicit preferences. This study also compared these effects in two different product contexts: hedonic and utilitarian products. Interactions of social presence and customer reviews were also investigated in these experiments. The results show that higher social presence increases both reuse intention and trust in recommender systems. In addition, the influence of social presence on reuse intention in the context of recommending utilitarian products differ that in the context of recommending hedonic products.

Keywords: Personalization, Social Presence, Recommender Systems

1 INTRODUCTION

Many companies involved in e-commerce seek to provide personalized Web experiences for their customers to gain their loyalty and increase switching costs. Moreover, many studies have suggested approaches to provide product and service recommendations based on the explicit and implicit preferences of customers. Collaborative filtering is one of the successful recommendation techniques in various Web sites like other method such as content-based filtering, hybrid, and etc.; this method predicts user preferences on the basis of the preferences of similar users (Liang et al., 2007; Tam and Ho, 2006).

Recommender systems contribute to better customer experiences and enhance success in meeting their needs (Liang et al., 2007). These systems reduce search efforts exerted by customers and increase customer loyalty by providing relevant product recommendations. In addition, such system affect the decision making process of online users (Kumar and Benbasat, 2006; Tam and Ho, 2005, 2006; Wang et al., 2004). Personalized recommendations are positively related to the satisfaction of users via the experience of social presence on Web sites (Gefen and Straub, 2003; Pavlou, 2003). That is, the perception of social presence affects satisfaction with e-commerce (Kumar and Benbasat, 2006; Tam and Ho, 2005).

When recommender systems present their recommendations to target users, they can provide user lists that are similar to those on stumbleupon.com and lines of reasoning that are similar to those used by amazon.com: "Recommend because you purchased_____." The social context of users with similar tastes may elicit the experience of the presence of others, renders the system more trustworthy (Gefen and Straub, 2004).

However, only a few studies have been conducted on how social presence affects evaluations of personalized recommender systems. Thus, the purpose of this report is to investigate relationships between social presence and evaluation of recommender systems in terms of trust and reuse intention. We address the following research questions. First, does providing users with information gleaned from those with similar tastes and in similar social networks associated with positive effects due to the perceived social presence of other users in the process of recommending products? Second, does perceived social presence influence reuse intention and trust with regard to recommender systems?

We summarize related studies in Section 2, and address our research model and hypotheses in Section 3. We explain the methodology used to test the research hypotheses in Section 4 and results are discussed in Section 5. We conclude by discussing theoretical and managerial implications.

2 LITERATURE REVIEW

2.1 Personalized Recommender Systems

Personalization on the Web entails providing content or services segmented according to consumer preferences (Ho and Tam, 2005; Liang et al., 2007). This practice increases customer loyalty and enables targeted and one-to-one marketing. The purpose of providing personalized recommendations involves increasing customer loyalty and boosting cross-selling by reducing the search efforts of customers and enabling individual marketing to customers (Tam and Ho, 2006). Through personalized Web service, customers can increase their satisfaction with and trust in providers. Thus, the personalization of Web experiences has perceived as critical for e-commerce (Ho and Kwok, 2003; Ho and Tam, 2005; Komiak and Benbasat, 2006).

Personalization techniques can be classified in terms of their input sources and governing algorithms. Input sources are divided primarily according to as whether they use explicit preferences, such as product ratings, or implicit data, such as visiting logs. Recommendation algorithms are categorized into collaborative, content-based, and hybrid. Collaborative filtering is considered a social information filtering technique because it automates the process of using 'word-of-mouth' to influence customer preferences for products or services. Collaborative filtering involves recommending items based on preferences of similar customers in online stores. Unlike collaborative

filtering, content-based filtering is a method for finding similar products or services by comparing user profiles and product information, such as product descriptions and features. Hybrid approaches combine collaborative and content-based filtering, either in parallel fashion to calculate prediction values or sequentially, in stages, to increase recommendation performance (Choeh and Lee, 2008). In this study, we use collaborative filtering since it identifies users who have similar taste. Thus we can present similar users to survey participants.

Recommender systems can reduce customers' search efforts. Users exposed to relevant Web content sought less information and spent less time on decision making (Tam and Ho, 2006). Although span and duration of searches were reduced, recommender systems also affected consumers' decision making (Tam and Ho, 2005, 2006). Customers chose more items from personalized recommendation lists than from randomized recommendation lists (Tam and Ho, 2005) and they evaluated relevant Web content more highly (Tam and Ho, 2006). In addition, the effects of recommendations on the navigation patterns of customers inside e-commerce sites are identified with their clickstream data (Lee, 2008; Senecal et al., 2005). Since recommender systems are based on diverse algorithms and can present recommendations in many ways, the characteristics of recommender systems are also related to decision quality and effort (Xiao and Benbasat 2007). Characteristics of recommender systems include type of recommendation algorithms, methods for user modeling and preference elicitation, and format of recommendations. Kramer (2007) found that users were more likely to accept recommendations when their user model had been built in a more transparent way. Users tended to listen to a greater number of ringtones when the recommendation set was small and they were able to sort recommendation list (Tam and Ho, 2005).

Many studies have identified the constructs by which users evaluate recommender systems (Al-Natour et al., 2008; Ho and Kwok, 2003; Komiak and Benbasat, 2006; Kumar and Benbasat, 2006; Liang et al., 2006; Wang and Benbasat, 2007). Trust, perceived usefulness, and satisfaction were most widely used constructs for measuring user evaluations (Xiao and Benbasat 2007). Users evaluated e-commerce sites providing recommendations as more useful (Tam and Ho, 2006). When personalized systems provided more accurate news recommendations, user satisfaction increased (Liang et al. 2006). Initial trust in recommender systems was augmented by providing the reasoning and justifications behind the recommendations (Wang and Benbasat, 2007). When consumers think that the decision-making process and outcomes of recommender systems are similar to their own, the perceived usefulness of and trust in such systems are improved (Al-Natour et al., 2008). User evaluations measured in terms of trust and perceived usefulness have positive effects on reuse intention and adoption of recommender systems (Al-Natour et al., 2008; Komiak and Benbasat, 2006).

2.2   Social Presence and Social Network

Among the various ways of filtering adopted by recommender systems, collaborative filtering might offer the best opportunity for improving user satisfaction with recommender systems because this method bases recommendations on similarities between the user and others. In addition, many recent studies have noted that interactions with a social group in an online environment affect attitudes toward Web service providers (Gefen and Straub, 2004; Kim et al., 2007; Kumar and Benbasat, 2006). At this point, positive user attitudes toward Web service providers might be built by considering the social cues embedded in Web pages, including the social presence. That is, social cues are related to user evaluations of Web services by enabling the user to feel more comfortable with and similar to other users (Kim et al., 2007). Therefore, social presence is positively related to user satisfaction with and reuse intention toward personalized recommender systems.

Social presence affects the way individuals perceive a medium and individuals from whom they receive messages and communications (Wang and Benbasat, 2007). Social presence influences the trust of customers because it involves interactions with other users. Indeed, social presence has been referred to as the degree to which a medium allows a user to establish personal connections with other users (Kumar and Benbasat, 2002, 2006; Wang and Benbasat, 2007). Social presence consists of intimacy and immediacy (Wang et al., 2007). Intimacy involves how close a Web user feels to similar

users and immediacy represents the degree of psychological distance between a user and other similar users (Wang et al., 2007).

In addition, a social network can produce similar effects through interactions among individuals within a specific group. When users are aware of the attitudes toward some product within their social network, they tend to form similar attitudes. Therefore, a social network can exert more influence on Web user via social presence in the personalized recommender systems on Web sites.

However, few previous studies have addressed user evaluations of recommender systems considering the factor of social presence. Thus, in this report, we investigate the effects of social presence on evaluations of personalized recommender systems.

3   RESEARCH MODEL

Figure 1 presents our research model and shows the relationships among perceived social presence, trust, and reuse intention with regard to recommender systems. Previous studies have shown that providing personalized recommendations affects the decision-making process of customers (Komiak and Benbasat, 2006; Tam and Ho, 2005; Wang and Benbasat, 2007).
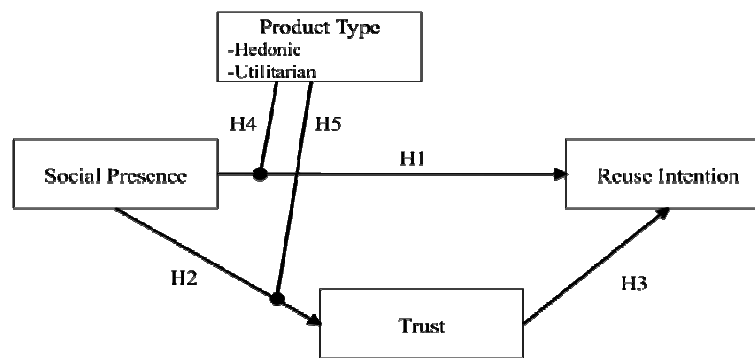

Figure 1.   Research model

By providing opportunities for interactions with other online users, Web service providers can increase the perceived social presence of the providers (Gefen and Straub, 2003). Social presence on recommender systems can bring awareness of the existence and opinions' of similar users to other users. Interactions with other users with similar tastes can help with making decisions about purchases and options. Therefore, social presence has an antecedent role with regard to user attitudes toward recommender systems and affects user purchasing and decision making (Gefen and Straub, 2003). Thus, social presence affects users' reuse intentions (Pavlou, 2007), and we offer the following hypothesis:

H1: Social presence will increase the reuse intentions of users with regard to recommender systems.

A study on reuse intention and trust among online users found that social presence influenced reuse intention via affecting the trust of users (Gefen, 2000; Gefen and Straub, 2003, 2004). Some studies have suggested that social presence constitutes a factor that influences the interest and trust of users. In addition, Gefen and Straub (2003) have argued, based on the technology acceptance model, that the richness of social presence might increase user trust (Gefen, 2000; Gefen and Straub, 2004).

Trust has been conceptualized as a one-dimensional construct for an e-vendor that results in certain behavioral intentions on the part of consumers. The trust consumers form based on cues received from an initial encounter with a stimulus. It invokes consumers' beliefs that his or her vulnerabilities will not be exploited.

Thus, online stores with diverse features providing social presence are able to positively affect the development of trust. A previous study showed that personalized recommendations delivered with social cues, such as voice or text, affect trust among users (Qiu and Benbasat, 2005). Social presence

develops trust in users and affects their attitudes toward provided services (Kim et al., 2007). Social presence also contributes to user evaluations of Web sites and of such Web services as personalized recommendations (Kim et al., 2007; Kumar and Benbasat, 2002). Thus, we propose the following hypothesis:

H2: Social presence is positively related to users' trust in recommender systems.

Previous studies have reported that trust constitutes a necessary condition for satisfaction and intention to use (Gefen, 2000; Komiak and Benbasat, 2008). Factors related to the development and maintenance of trust are associated with user attitudes and purchases (Jarvenpaa et al., 2000; Komiak and Benbasat, 2008). In addition, a study on customer acceptance of e-commerce suggested that trust might be related to reuse intention and that trust increases the intentions of users to make purchases (Gefen, 2000; Komiak and Benbasat, 2008). Thus, trust represents a key factor influencing intentions to use recommender systems.

H3: Trust in recommender systems is positively related to reuse intentions toward recommender systems.

Previous studies on customer purchase behaviors have demonstrated that hedonic and utilitarian products have different effects on customer perceptions (Hirschman and Holbrook, 1982; Van der Heijden, 2004). Hedonic products are typically discretionary and utilitarian products are typically necessary (Goetzinger and Park, 2005). Therefore, these two product types provide valuable insights about customer online purchases made as a result of both emotion and reason.

Trust involves a willingness to accept vulnerability, based on positive expectations of the intention or behavior of another. Also, trust involves a willingness to rely on an exchange partner in whom one has confidence. Therefore, trusting beliefs will impact positively on purchase intention.

Thus, we propose the following hypotheses concerning the relationship between social presence and product type:

H4: The effects of social presence on reuse intentions toward recommender systems will differ by recommended product type.

H5: The effects of social presence on trust in recommender systems will differ based on recommended product type.

4   RESEARCH METHODOLOGY

This research involved 368 undergraduate students recruited from two private universities in South Korea in exchange for a 30% chance of winning a gift worth 3,000 Korean won. All participants reported shopping on the Web. We conducted experiments in relation to two products: ringtones for a mobile phone represented a hedonic product and TOEIC study-aid books[1] represented a utilitarian product (Hirschman and Holbrook, 1982; Van der Heijden, 2004). The two products were selected to examine the differences in user perceptions on recommender systems.

The Top 30 most popular ringtones according to the Nate.com[2] bestseller list and the 30 most popular TOEIC study-aid books according to Yes24.com[3] were used for the experiments. Fifty participants were selected to act as raters and the remaining participants served as testers. In the first stage, the 50 raters used a 7-poing Likert scale to evaluate the 30 ringtones and TOEIC study-aid books. After the testers evaluated 10 ringtones or TOEIC study-aid books, they viewed one of four different recommendation result pages. This page showed the recommendation results with regard to the remaining 20 items they had not yet rated. After viewing these results, testers completed questionnaires consisting of 11 items to be rated on a 7-point Likert scale (three items addressed reuse

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[1] TOEIC is the abbreviations for "Test of English for International Communication". The study-aid books constitute preparation materials for the test and most Korean undergraduate students take this test in order to enter business firms.
[2] An Internet portal site operated by a Korean mobile service provider
[3] No. 1 online bookstore in South Korea

intention, three items addressed trust, and five items addressed social presence). All items included in the questionnaires were derived from previous studies.

We revised survey items based on the result of pilot tests to improve reliability and validity. This study checked the validity of each dimension—social presence, trust, and reuse intention—in two stages. The first stage involved checking construct validity using exploratory factor analysis (EFA). After EFA, one of items measuring social presence was deleted because of incorrect loading. The second stage involved confirming the identified factors by checking convergent validity and discriminant validity with confirmatory factor analysis (CFA). Items were loaded significantly on their intended constructs, suggesting convergent validity. Meanwhile, covariances between constructs were not included in confidence intervals ($\Phi \pm 2S.E$), as suggested by Anderson and Gerbing (1998). As a result, the discriminant validity between constructs was also supported. Figure 2 shows the results of confirmatory factor analysis with regard to convergent validity and discriminant validity. Since fit measures are within suggested ranges, the CFA model shows good fit. After testing the validity, a reliability test was conducted with an internal consistency test (Cronbach's *alpha*). The measurement items used in this study were shown to be reliable in that Cronbach's *alpha* values for all dimensions were at least 0.7. Finally, we conducted an ANOVA and structural equation modelling (SEM) to verify the proposed research model. AMOS 7.0 was used for data analysis.
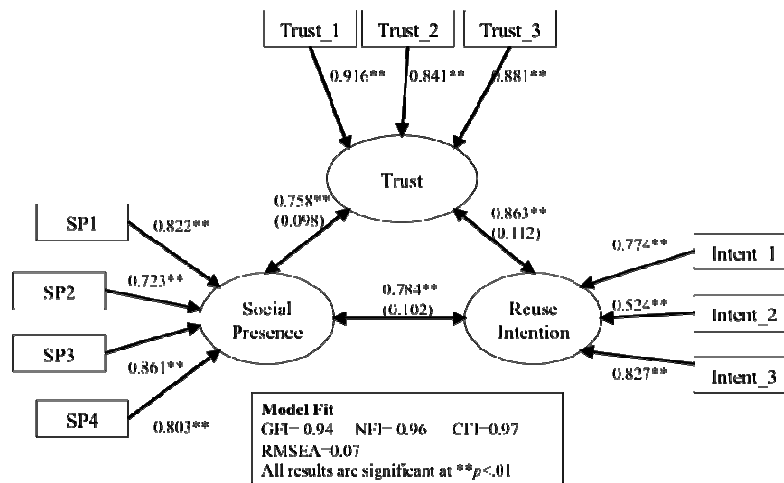

Figure 2.   Results of confirmatory factor analysis

4.1   Study 1: Effects of Information about Similar Users

Study 1 investigated the effects of information about similar users on social presence by personalized recommendation. Thus we divided test groups as Table 2.

First of all, we conducted to check the differences between group A and B. Group A and B were divided by whether we provide personalized recommendations. Recommendations for Group A are Top 5 items favoured by 50 raters and recommendations for Group B are selected by collaborative filtering algorithm. We checked manipulation of social presence by t-test for two groups as Table 1 and the result supported that there are differences between Group A and B for ringtones. However, there was no significant difference between Group A and B for TOEIC study-aid book.

In addition, we conducted another experiment to see the effects of providing similar users on social presence: providing the users who have similar taste (Group C) and providing real friends who also have similar taste (Group D) as explained in Table 2. Same recommendation algorithm is applied to select personalized recommendations for Group B, C and D.

We manipulated the level of social presence by varying information about similar users, as summarized in Table 2. The testers assigned to Group A viewed non-personalized recommendations

for the top five products preferred by all raters. The testers assigned to Groups B, C, and D viewed five items identified by a collaborative filtering algorithm as items that users might prefer.

DV	Product	Group	Mean	S.E	F	Sig.	t	Sig.
Social Presence	ALL	A	3.032	1.165	3.147	.079	-3.077	.003
		B	3.629	0.987				
	Ringtones	A	2.906	1.143	3.413	.070	-3.118	.003
		B	3.708	0.851				
	TOEIC study-aid books	A	3.167	1.193	0.648	.424	-1.327	.189
		B	3.555	1.108				

Table 1. Result of t-test

Approximately 30 testers were randomly assigned to Groups A, B, and C. Although recommendations for Groups B, C, and D were calculated with the same algorithm, the testers in Group C viewed lists derived from those with similar tastes. Testers in Group D viewed the same results as those in Group C as well as a list derived from friends with similar tastes. Thus, the testers assigned to Group D already knew some raters as classmates and checked with these friends before rating their own preferences during the first stage of the experiment. This experiment was conducted with regard to two products, as explained above.

Product/Group	Group A	Group B	Group C	Group D
Bell	Non-personalized recommendations	Personalized recommendations	Personalized recommendations + Similar user list	Personalized recommendations + Similar user list + Similar friend list
TOEIC study-aid books				

Table 2.   Group settings

Table 3 shows the differences among the experimental groups with regard to perceived social presence. The average values for perceived social presence increased from Group A to Group D with regard to both products, with the exception of Groups C and D with regard to ringtones. Providing information about similar users had greater impact on recommendations of ringtones than on recommendations of TOEIC books. However, provision of information about friends had similar effects with regard to both products. We performed Duncan's test to identify differences among groups. Groups A and D differed significantly with regard to perceived social presence and Groups B, C, and D had no significant differences with regard to both products.

Type	Group	N	Mean	Order	F	p-value
All	A	62	3.032	4	9.22	.000
	B	62	3.629	3		
	C	63	3.857	2		
	D	61	4.053	1		
	Total	248	3.642			
Ringtones	A	32	2.906	4	6.83	.000
	B	30	3.708	3		
	C	30	4.092	1		
	D	31	4.048	2		
	Total	123	3.590			
TOEIC study-aid books	A	30	3.167	4	2.94	.014
	B	32	3.555	3		
	C	33	3.644	2		
	D	30	4.058	1		
	Total	125	3.500			

Table 3.   Differences in perceived social presence

Figure 3 shows the results of the proposed model using data from all participants. The measures of fit for the proposed model are acceptable (GFI = 0.94, AGFI = 0.89, NFI = 0.96, RMSEA = 0.07, CFI = 0.97). The path coefficient of *H1* was 0.260 (p= .011). Thus, *H1,* social presence influences reuse intention, was supported. The relationship between social presence and trust (*H2*) was supported in that the path coefficient was 0.901 (p= .000). The relationship between the reuse intention of users and trust (*H3*) was also supported in that the path coefficient was 0.639 (p= .000). Trust in recommender systems appears to have stronger impact on reuse intention compared to social presence. However, social presence also directly affected trust and reuse intention.
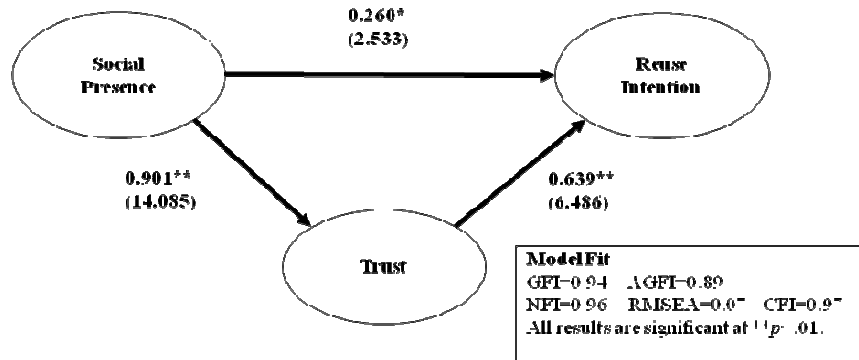

Figure 3.   Results for proposed model

Table 4 presents the results of comparing the differences in the proposed model between the two product categories. Test results for the two products are similar among all participants. Whereas the path coefficient between social presence and reuse intention is significant with regard to ringtones, 2.694 (p = .007), it is not significant with regard to TOEIC study-aid books, 0.785 (p = .432). Thus, H4 is accepted. However, all the relationships between social presence and trust for the two products are significant and their path coefficients have similar values. Thus, H5 is not accepted. Therefore, we found that social presence had different effects on reuse intentions with regard to hedonic and utilitarian products. Users showed greater concern about social presence when recommender systems suggested items for fun than when they suggested utilitarian products.

Path	Product	Estimate	S.E.	T	p-value
Social Presence →Reuse Intention	Ringtones	0.373	0.138	2.695	.007
	TOEIC	0.123	0.157	0.785	.432
Social Presence →Trust	Ringtones	0.855	0.090	9.479	.000
	TOEIC	0.962	0.091	10.527	.000
Trust →Reuse Intention	Ringtones	0.485	0.133	3.663	.000
	TOEIC	0.800	0.148	5.411	.000
Fit measure	GFI	RMSEA	AGFI	NFI	CFI
Ringtones	0.90	0.09	0.83	0.93	0.96
TOEIC	0.91	0.09	0.84	0.94	0.97

Table 4.   Comparison among path coefficients

4.2   Study 2: Effects of Personalization and Customer Review

Study 2 examined the effects of customer reviews on social presence. We manipulated test groups by adding customer reviews to existing Group A and B as summarized in Table 5. The testers in Group A

and B were the same as those in Study 1. The testers in Group E viewed the same recommendations seen by those in Group A as well as viewing customer reviews of recommended ringtones from Nate.com and recommended books from Yes24.com. In same way, the testers in Group F viewed personalized recommendations and customer reviews about these products. This experiment was also performed with regard to the two product categories used in Study 1.

	Non-personalized Recommendation	Personalized Recommendation
Not providing customer reviews	Group A	Group B
Providing customer reviews	Group E	Group F

Table 5.   Experimental design

Table 6 shows the results of the manipulation for the three constructs—social presence, trust, and reuse intention—by group. We performed an ANOVA to examine differences among social presence, trust, and reuse intention among the groups. Groups demonstrated different average values for social presence and trust with regard to ringtones. However, no difference in reuse intention emerged among the groups. The non-personalized groups (Groups A and E) showed lower average values related to perceived social presence than the personalized groups (Groups B and F). The provision of customer reviews did not increase the perceived social presence in that the average values for Groups A and E, and did not differ significantly from those of Groups B and F. While the provision of personalized recommendations for ringtones increase perceived social presence, the provision of customer reviews couldn't increase perceived social presence. However, groups did not significantly differ in terms of these constructs with regard to TOEIC study-aid books, shown in Table 6 and 7.

Ringtones	Social presence (S.E.)	Trust (S.E.)	Reuse intention (S.E.)	TOEIC study-aid books	Social presence (S.E.)	Trust (S.E.)	Reuse intention (S.E.)
No support for PR				**No support for PR**			
No support for CR (A)	2.91 (0.20)	3.39 (0.22)	3.53 (0.20)	No support for CR (A)	3.17 (0.22)	3.61 (0.22)	3.64 (0.24)
High support for CR (E)	3.07 (0.18)	3.52 (0.16)	3.67 (0.19)	High support for CR (E)	3.12 (0.19)	3.87 (0.21)	3.84 (0.19)
High Support for PR				**High Support for PR**			
No support for CR (B)	3.71 (0.16)	4.17 (0.20)	4.21 (0.23)	No support for CR (B)	3.64 (0.20)	3.99 (0.24)	4.33 (0.24)
High support for CR (F)	3.75 (0.14)	3.89 (0.21)	4.01 (0.17)	High support for CR (F)	3.44 (0.16)	3.97 (0.18)	3.92 (0.19)

Table 6.   Descriptive statistics for dependent variables (PR, personalized recommendations; CR, customer reviews)

Ringtones				TOEIC study-aid books		
Group	N	1	2	Group	N	1
A	32	2.9063		A	30	3.1667
E	30	3.0667		E	30	3.1167
B	30		3.7083	B	30	3.6417
F	30		3.7500	F	30	3.4417

Sig.		.515	.866	Sig.		.083

Table 7. Results of Duncan's test on group differences for social presence

5   CONCLUSIONS & IMPLICATIONS

The findings show that social presence affects customer trust and reuse intention when the latter interact with recommender systems. The theoretical contribution of this study can be explained as follows.

First, providing personalized recommendations increases perceived social presence among users of recommender systems. Personalized recommendation groups (Groups B and F) have higher social presence than non-personalized groups (Groups A and E). Provision of information about the preferences of similar users (Group C) and users within personal social networks (Group D) affected perceived social presence among users. However, the differences in perceived social presence were not significantly different from results obtained after providing personalized recommendations without providing information about the preferences held by similar users or friends (Group B).

Second, social presence affects trust and reuse intention with regard to recommender systems, and trust has stronger positive effects on reuse intention compared to social presence. Thus, social presence directly affects the reuse intentions of user with regard to recommender systems, and also indirectly affects reuse intention through trust.

Third, user responses to different product types, utilitarian and hedonic, differed with regard to the relationship between social presence and reuse intention. Whereas the relationships between social presence and trust and between trust and reuse intention were significant, the effect of social presence on reuse intention was not significant with regard to recommendations of TOEIC study-aid books. We can interpret this result as indicating that consumers consider the opinions of other users to a lesser degree with regard to a utilitarian product than with a hedonic product. However the relationship between social presence and trust was significant in all contexts. Therefore, social presence enhances acceptance of and trust in recommender systems among online users. In addition, providing customer reviews did not increase the perceived social presence of a recommender system with regard to either product category.

Our findings show that customers of an online store build trust and perceive social presence in a Web site via personalized recommendations. Trust and social presence also have positive relationships with reuse intentions with regard to a Web service provider. Previous studies have suggested that the usefulness and accuracy of recommender systems have positive effects on reuse intentions. We added considerations of the effects of social cues on evaluating recommender systems that involve other users.

This study has several limitations. First, our sample was composed only of undergraduate students. Thus, future research should include participants within a more diverse age range. Second, this study was conducted with regard to simple product types, hedonic and utilitarian. The inclusion of a greater number of products within each product type should demonstrate even more profound effects of these constructs on recommender systems.

Nonetheless, this study showed the importance of social presence in personalized recommender systems. Managers of online stores providing personalized recommendations should focus on the experience of social presence in interactions with recommendation systems to enhance trust placed in such systems. Although some Web 2.0 applications provide information about similar users for specific items, many transactional online stores continue to provide recommendations without generating any experience of social presence. Many social networking sites seek to exploit social network information for purposes of services or products with greater appeal. Social presence on Web services may enhance the effectiveness of their activities.

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