Determinants of Use Intensity in Social Networking Sites
A Cross-cultural Study of Korea and USA

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Abstract: This study examined the antecedents and consequences of intensity of SNS use in a cross-cultural context. A survey of 977 SNS users was performed in Korea and USA, and the causal relationship was tested using structural equation modelling. Consumer innovativeness, propensity to share information, and privacy concern affected intensity of SNS use and the usage of SNS enabled social capital. In addition, the effects of innovativeness and privacy concern on intensity of SNS use were greater in the U.S. sample than in the Korean sample. This moderation effects come from the differences of collectivism and individualism and the implications and further researches were suggested.

1 INTRODUCTION

Recently, social networking sites are gaining popularity throughout the world. The number of Facebook user is estimated over one billion in the world, 8 million in Korea, and 160 million in US[1]. People can bridge and bond their relationships in the social networking sites, and they are perceived to be a good and easy tool of accumulating social capital (Ellison et al., 2007). The differences in online social networking may cause another type of digital divide (Pfeil et al., 2009). Age difference is said to a main source of digital divide (Prensky, 2001), but there might be other personal or personality related factors influencing social networking sites use and social capital from the use.

There are studies on the use of social networking sites and social capital (Ellison et al., 2007); (Valenzuela et al., 2009). We attempt to extend previous research in two ways. First, we examine the impacts of three personality related variables - privacy concern, consumer innovativeness, and propensity to share information– on the use of social networking sites. Second, we examine if there are cross-cultural differences in the relationships between personality-related variables and social networking sites (SNS) use.

The findings from this research will provide empirical evidence to the practitioners and academics in the SNS related field, especially who are interested in cross-cultural variations. We established hypothesis after literature review and presented results of an empirical study in the remainder of this paper.

2 THEORETICAL BACKGROUNDS

Ever since Ellison et al. (2007) examined the relationship between Facebook intensity and social capital, the dynamics of social capital in social network sites have been widely tested (Valenzuela et al., 2009); (Steinfield et al., 2008). Besides the topic of social capital, a stream of study on the factors of consumer behavior in online social networks is gaining popularity recently. There were studies on adoption of SNS (Cheung and Lee, 2010); (Joinson, 2008), electronic word-of-mouth (eWOM) on SNSs (Jansen et al., 2009); (Chu and Kim, 2011),

[1] www.socialbakers.com/facebook-statistics

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personality and SNS use (Correa et al., 2010); (Pagani et al., 2011). Another group of research is focused on examining how cultural contexts influence the uses of SNS (Kim et al., 2011); (Chu and Choi, 2011). Yet very few researches are addressing the relationship between consumer characteristics and SNS use in cultural contexts. Most previous studies considered positive determinants of SNS adoption or use (Pagani et al., 2011); (Thorbjørnsen et al., 2007), but there are few studies that considered both positive and negative determinants of SNS use.

This research examines the impacts of consumer innovativeness, propensity to share information, and privacy concern on SNS use and SNS-enabled social capital in a cross-cultural context.

2.1 Consumer Innovativeness

The concept of innovativeness is a personality trait defined as the degree to which an individual makes innovative decisions independently of the communicated experience of others (Midgley and Dowling, 1978). Especially, domain specific innovativeness (DSI) reflecting the tendency to adopt innovations within a specific product domain has been a good predictor for consumer behavior on the Internet (Goldsmith, 2001); (Park and Jun, 2003).

Consumer DSI was positively associated with both creating new content (active use) and consuming the contents of others (passive use) on the social networking sites (Pagani et al., 2011). Since social networks are still in the growth stage, we propose that a person with high innovativeness in the technology domain will spend more time using SNS. Furthermore, as innovators are the first group of consumers to adopt new features or functions of products, they will likely use them more than others.

H1: High innovativeness in technology domain will be positively associated with intensity of SNS use.

2.2 Propensity to Share Information

Identity expressiveness has been regarded as a good determinant of intention and behavior for symbolic goods or in public settings of consumption (Hirschman and Holbrook, 1981); (Richins, 1994). Expressiveness was found to be a strong driver of using mobile communication services (Thorbjørnsen et al., 2007). Similarly, Pagani et al. (2011) showed both self-identity expressiveness and social-identity expressiveness are positively related to active use of social networking sites. Although identity expressiveness is a good motive for using SNS, sharing content or information is another motive. Many social network sites such as Facebook and Myspace support users in sharing content, especially LinkedIn is most commonly used for information providing and gathering, not on socializing (DiMicco et al., 2008). Social networks are based on information sharing and revealing enough information is one of the strongest motivator of SNS use (Acquisti and Gross, 2006). Travel blogs have been perceived as useful sources of information for those who are planning trips, and the bloggers may have high propensity to share information. According to Constant et al. (1994), sharing tangible information depends on pro-social attitudes and norms whereas sharing expertise depends on people's own self-expressive needs. Propensity to share information is regarded as part of pro-social transformation behaviors as well as a personal norm reflecting the costs and benefits of sharing and is significantly related with the use of collaborative electronic media (Jarvenpaa and Staples, 2000).

H2: Propensity to share information will be positively associated with intensity of SNS use.

2.3 Privacy Concern

Social networking sites may raise privacy concerns since they allow users to search for profiles of other members. Users are concerned about their privacy when their personal information is used without their permissions or knowledge (Phelps et al., 2000). While most SNS users are aware of the visibility of their profiles, they seem to believe their ability to control the information revelation (Acquisti and Gross, 2006). Some possible reasons for revealing one's information at the risk of privacy invasion include cost benefit approach (Donath and Boyd, 2004), peer pressure and herding behavior, relaxed attitudes towards (or lack of interest in) personal privacy, incomplete information, faith in the networking service or trust in its members(Gross and Acquisti, 2005).

Another reaction to the privacy concern on SNS may be staying away from it. Privacy concern was associated with negative attitudes toward SNS (Boyd, 2008), but not with the behavioral intention (Tan et al., 2012). A survey on college students showed that privacy concern was higher for non-members of Facebook than for members, and non-members showed stronger sensitivity towards privacy than members (Acquisti and Gross, 2006). Although the results of previous researches are mixed, individuals with high privacy concern will

have lower intensity of SNS use due to either not using them or using them passively.

H3: Privacy concern will be negatively associated with intensity of SNS use.

2.4 Intensity of SNS use and Social Capital

The relationship between Facebook use and social capital has been positively significant in most previous researches (Papacharissi and Mendelson, 2008); (Burke et al., 2010). While Facebook use was associated with social capital in general, the relationship was moderated by the ability and inclination of the users (Burke et al., 2010). Although the impact of Facebook use on social capital has been investigated in previous studies, fewer studies have tested the relationship between SNS use overall and social capital.

H4: Intensity of SNS use will be positively associated with SNS-enabled Social Capital.

2.5 Cross-cultural Variations

Facebook has been allowing users to track the actions, beliefs and interests of the larger groups to which they belong, which may serve a social searching or a surveillance function (Joinson, 2008). The desire to meet new people on Facebook was a primary motivation for opening their profile. Many Facebook users may expect reciprocity in social surveillance when they leave their privacy settings relatively open (Gross and Acquisti, 2005). In general, collectivism culture has stronger peer pressure to adhere to societal norms than individualism culture (Hofstede, 2001), which is also related with herding behavior. Innovators tend to perceive less risk in their adoption process (Alda´s-Manzano et al, 2009), and once they started to adopt SNS by leaving their privacy open, the majority in collectivism culture will more likely follow the same practice as a herding behavior than those in individualism culture. In addition, people in the culture of high peer pressure and herding behavior will expect more reciprocity in social surveillance, especially among in-group members since they are interested in tracking others in the group. This tendency might alleviate the negative impact of privacy concern on intensity of SNS use.

A recent study on mobile phone adoption showed that the innovation factor of Bass diffusion model had higher impact on adoption in individualism culture than in collectivism culture (Lee et al., 2013). In contrast, in collectivism culture imitation factor was more effective on adoption than it was in individualism culture. These findings imply that innovativeness may be less effective in explaining adoption behavior in collectivism culture than in individualism culture. Another recent study reports that the relationship between consumer innovativeness and adoption of innovation varies across cultural norms and values (Truong, 2013). Based on the discussion above, we propose the following hypotheses.

H5a: The relationship between privacy concern and intensity of SNS use will be moderated by cross-cultural variations.

H5b: The relationship between innovativeness and intensity of SNS use will be moderated by cross-cultural variations.

3 METHOD

3.1 Samples

A total of 977 responses were collected through an online survey in South Korea and the U.S. The subjects for this study were confined to smartphone users. Responses consist of 50.4% men and 49.6% women. In the sample, 39.9% were in their twenties, 39.8% were in their thirties and20.3% were in their forties. The sample consisted of white-collars (30.2%), professionals (15.3%), (under)graduate students (14.3%), housewives (12.2%), sales/service (8.7%), government employees (3.6%), production (2.7%), and etc. (13.1%).

3.2 Measures

All measurement items used seven-point scales (1=very strongly disagree, 7=very strongly agree). Consumer innovativeness was measured using five items based from Keller and Holland (1978), Goldsmith(2001): (1) “I can understand the latest products or service without any help of others”, (2) “I know about the new technology trend in my interest area”, (3) “Compared to others, I am the first person to accept the new technology”, (4) “In general, others ask me advice of the new technology”, (5) “I purchase new product before most other people do”. Propensity to share information was measured by the agreement with the following five statements based from Davenport and Prusak (2000), Hsu et al. (2007) : (1) “I frequently share new information and my knowledge with others”, (2) “I frequently talk about the information,

knowledge and know-how with others", (3) "I exchange information and data with others regularly", (4) "I share purchase information or knowledge with others", (5) "I share my knowledge and experiences with others voluntarily". Privacy concern was measured using three items based from Xin et al. (2012): (1) "I am concerned about the negative consequences of unknown parties accessing my private information on this mobile social network", (2) "I am concerned that my private information on the mobile social network may be misused", (3) "I am concerned that unknown parties have access to my private information on this mobile social network". Intensity of SNS use was measured by the agreement with the following six statements based from Ellison et al. (2007): (1) "SNS is part of my everyday activity", (2) "I am proud to tell people I'm on SNS", (3) SNS has become part of my daily routine", (4) "I feel out of touch when I haven't logged onto SNS for a while", (5) "I feel I am part of the SNS community", (6) "I would be sorry if SNS shut down". The measurement of intensity of SNS use was not confined to a specific SNS; rather it was SNS use in the aggregate. We did not measure the use of a separate SNS since the types and popularity of SNS between Korea and USA are different. Social capital was measured using three items based from Ellison et al. (2007): (1) "If I needed an emergency loan of $100, I know someone at SNS I can turn to", (2) "There is someone at SNS I can turn to for advice about making very important decisions", (3) "The people I interact with at SNS would be good job references for me".

Table 1: Confirmatory factor analysis results.

Construct /items	Unstandardized loading	t-value	Construct Reliability	AVE
Innovativeness			0.920	0.699
INNO1	0.749*	26.801		
INNO2	0.832*	31.433		
INNO3	0.911*	36.390		
INNO4	0.889*	34.951		
INNO5	0.788*	28.928		
Propensity to share information			0.901	0.647
PROP1	0.743*	26.297		
PROP2	0.735*	25.695		
PROP3	0.835*	31.706		
PROP4	0.829*	30.895		
PROP5	0.870*	33.275		
Privacy concern			0.906	0.764
PRIV1	0.759*	27.386		
PRIV2	0.960*	38.742		
PRIV3	0.892*	34.433		
Intensity of SNS use			0.943	0.733
INT1	0.847*	32.620		
INT2	0.846*	32.438		
INT3	0.830*	31.460		
INT4	0.815*	30.557		
INT5	0.938*	38.574		
INT6	0.855*	32.965		
Social Capital			0.888	0.725
SC1	0.787*	28.589		
SC2	0.900*	35.054		
SC3	0.864*	33.312		

* Parameter estimates are significant at the .001 level.
** AVE = average variance extracted

4 RESULTS

4.1 Validity of Measurements

Following Anderson and Gerbing (1998), we conducted the confirmatory factor analysis in order to establish the reliability and discriminant validity of the multi-item scales.

Although the chi-square value for this model was significant (727.325, with 192 degrees of freedom [df], p = .00), these statistics are sensitive to the sample size and model complexity; as such, the goodness-of-fit index (GFI), Tucker–Lewis index (TLI), and comparative fit index (CFI) are more appropriate for assessing the model fit here (Bagozzi and Yi, 1988); (Bearden et al., 1982).

GFI (0.932), AGFI (0.911), TLI (0.965), CFI (0.971), SRMR (0.039), and RMSEA (0.053) indicate a satisfactory model fit. Furthermore, all the individual scales exceed the recommended standards proposed by Baggozi and Yi (1988) in terms of construct reliability (greater than 0.60) and average variance extracted (AVE) by the latent construct (greater than 0.50). Further, all item loadings indicate significant t-values, suggesting that convergent validity was achieved.

The squared correlation between the two constructs is less than all the AVE for each construct (See table 1 and 2), suggesting discriminant validity was achieved (Fornell and Larcker, 1981). In addition, as shown in table 2, the confidence interval for each pair-wise correlation estimate does not include the value of 1. This result also suggested that discriminant validity was achieved (Anderson and Gerbing, 1988).

Table 2: Correlation Matrix.

	INNO	PROP	PRIV	INT	SC
INNO		0.498	0.000	0.160	0.162
PROP	0.706 (0.019)		0.007	0.187	0.218
PRIV	0.019 (0.034)	0.081 (0.034)		0.008	0.006
INT	0.400 (0.029)	0.433 (0.029)	-0.090 (0.034)		0.567
SC	0.403 (0.030)	0.467 (0.029)	-0.079 (0.034)	0.753 (0.017)	

INNO: Innovativeness, PROP: Propensity to share information, PRIV: Privacy concern, INT: Intensity of SNS use, SC: Social Capital.
Construct correlations (and standard errors) appear below the diagonal. Squared correlations appear above the diagonal.

4.2 Hypotheses Test

AMOS 20.0 was used to test the model and hypotheses. The covariance structure testing of the research model resulted in a chi-square statistic of 766.420 (df = 195, p = 0.00). Although this chi-square value was significant, this statistic is sensitive to the sample size and model complexity; as such, the goodness-of-fit index (GFI), non-normed fit index (NNFI), and comparative fit index (CFI) are more appropriate for assessing the model fit here (Bagozzi and Yi, 1988; Bearden, Sharma and Teel, 1982). GFI (0.928), AGFI (0.907), NNFI (0.963), CFI (0.969), SRMR (0.048), RMSEA (0.055) indicate a satisfactory model fit.

The results of the hypotheses test are summarized in Table3, which show that all proposed relationships received strong support.

Table 3: Hypotheses Test Results.

H	Path	Path Coefficient	t-value	Results
H1	INNO→INT	0.201	3.759*	Support
H2	PROP→INT	0.378	6.773*	Support
H3	PRIV→INT	-0.135	-3.948*	Support
H4	INT→SC	0.768	24.144*	Support

INNO: Innovativeness, PROP: Propensity to share information, PRIV: Privacy concern, INT: Intensity of SNS use, SC: Social Capital.
* p< 0.01

4.3 Cultural Effect

In order to investigate the moderating effect of national culture in explaining Intensity of SNS use and social capital, we performed a multi-group analysis for Korean sample and the U.S. sample. We performed a multi-group analysis to test for statistical differences in the structural relationships across the two groups. The initial baseline model (unconstrained model) was estimated by allowing all the model parameters to be free estimates. Then we constrained one path to be equal across the two samples. A significant difference would imply that the path coefficient is statistically different across the two groups. An insignificant difference in-between the constrained and unconstrained models with respect to the degree of freedom would suggest an equal path coefficient across the two groups. The results of the multi-group comparison are summarized in Table 4.

Table 4: Multi-group comparison results.

Path	Korea	U.S	Chi-square difference test	Results of Multi-group comparison
INNO→INT	0.109 (1.425)	**0.324 (4.556)** **	**χ^2d(1) = 4.176***	**Korea < U.S.**
PROP→INT	**0.345 (4.308)****	**0.283 (4.258)** **	χ^2d(1) = 0.356	Korea = U.S.
PRIV→INT	-0.033 (-0.726)	**-0.213 (-4.064)** **	**χ^2d(1) = 6.719****	**Korea < U.S.**
INT→SC	**0.773 (16.073)****	**0.696 (17.221)****	χ^2d(1) = 1.538	Korea = U.S.

**p< 0.01, * p<0.05
INNO: Innovativeness, PROP: Propensity to share information, PRIV: Privacy concern, INT: Intensity of SNS use, SC: Social Capital.
The coefficients are non-standardized values. *t*-values are in parentheses.

As shown in Table 4, the effect of innovativeness and privacy concern on intensity of SNS use was greater for U.S sample than for Korean sample. However, there is no significant difference in the two paths (propensity to share information → intensity of SNS use, intensity of SNS use → social capital) between Korean sample and U.S. sample.

5 CONCLUSIONS

This study developed a causal model consisting the antecedents and consequences of intensity of SNS use and examined the model using survey data from USA and South Korea. Among the antecedents of intensity of SNS use, consumer innovativeness and

propensity to share information were positively related to intensity of SNS use, whereas privacy concern was the opposite. Since intensity of SNS use determines social capital, the results imply that social capital may be influenced by consumer characteristics other than the age-related differences although it is indirect. The study reports that innovative users spend more time using SNS let alone they adopt it earlier than others. The results of this study also show that propensity to share information affects intensity of SNS use. It implies that social networking sites need to promote information sharing beyond the mere expression of user identity. Social networking sites may raise privacy concerns since they allow users to search for profiles of other members. Consumers who had high privacy concern had lower intensity of SNS use due to either not using them or using them passively. Social networking sites need to understand that users with high privacy concern can leave the sites and try to reduce the concern on privacy by adding the opt-in type of networking.

Culture was found to moderate the relationships between the antecedents (privacy concern and consumer innovativeness) and intensity of SNS use. The negative impact of privacy concern on intensity of SNS use was alleviated in the collectivism culture. People in the culture of high peer pressure and herding behavior tend to expect more reciprocity in social surveillance, especially among in-group members since they are interested in tracking others in the group. This tendency might alleviate the negative impact of privacy concern on intensity of SNS use.

The positive impact of innovativeness on intensity of SNS use was alleviated in the collectivism culture. This is maybe because the imitation factor predicts adoption behavior better than the innovation factor in the collectivism culture. This finding implies that social networking sites should focus more on group behavior than individual behavior in order to promote SNS use.

Despite several notable contributions, there are a few limitations to this study, which may be overcome by further research. First, this study only considered consumer innovativeness and privacy concern as antecedents of intensity of SNS use. Various personal variables (i.e. demographics, perception, attitudes, and etc.) will be considered in the further research.

Second, most measurements were retrospective, depending on the respondents' memory of past shopping behavior, so there were the errors of measurements. More accurate measurement scale will be developed in a further study.

Third, an experimental research will be needed to obtain more accurate effects of antecedents on intensity of SNS use in the next stage.

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