

Effect of Cultural Factors on Online Privacy Concern : Korea vs. China

Wan Lili* · Daihwan Min**

Abstract

This paper has studied whether cultural factors have an effect on privacy concern of Internet users in Korea and China. The result has shown that power distance, individualism, uncertainty avoidance, and long-term orientation are positively related to privacy concern, while masculinity is negatively related to privacy concern. This study has also found some similarities and differences between the two countries. First, privacy concern of Korean Internet users is significantly higher than that of Chinese users. Second, individualism and uncertainty avoidance significantly affect privacy concern in both Korea and China, although individualism in Korea has stronger effect than that in China. Third, long term orientation has a significant effect in only Korea while power distance is significant only in China. These results suggest that an online company doing businesses in multiple countries should have country-specific privacy policies to deal with the privacy concern of Internet users in different countries.

Keywords : Cultural Dimension, Privacy Concern, Power Distance, Individualism, Masculinity,
Uncertainty Avoidance, Long-Term Orientation

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* Professor, College of Global Business Administration, Hankuk University of Foreign Studies, e-mail : shelleyone@naver.com

** Corresponding Author, Professor, Department of MIS/Digital Management, Korea University Sejong Campus,
e-mail : mismdh@korea.ac.kr

1. Introduction

With the dramatic increase in Internet users during the last decade, online privacy has become one of the most critical issues in the networked society. According to a poll, 94% of American consumers consider online privacy important [NYMITY, 2011]. In the US, 92% of Internet users say they are “somewhat” or “very” concerned about online privacy [TRUSTe, 2014], while 88% say it is “unfair” for companies to do such tracking without an Internet user’s permission [IBOPE Zogby International, 2010]. Most Korean Internet users (97.9%) think personal information protection is important or very important. 86.6% of Korean Internet users are concerned about personal information intrusion [KISA, 2013]. In China, 85% of Internet users are “somewhat or very concerned” about privacy.

In addition, Internet economy has nowadays become a critical part of the national economy all around the world. The high level of privacy concern by Internet users presents an obstacle to the development of the Internet economy. Moreover, with the advent of new technologies such as smart phones and cloud computing, privacy concern has become a major issue of interest.

However, privacy issues in different countries need careful attention from many international companies. If privacy issues are not dealt properly, it will surely bring big problems to the companies. For example, one of Google’s applications, “Street View,” encountered boycott or investigation in many countries such as Korea,

Japan, and Belgium, due to privacy. Apple was also investigated in some European countries, like French, Germany, and Italy in 2011, since iPhone and iPad collected and stored customers’ location information. Therefore, a deep understanding of privacy issues in different countries is necessary.

Especially, some famous Korean companies failed in the Chinese market and had to quit from China. With the popularity of Hallyu¹⁾ and Korean products in China, the trade between Korea and China has increased steadily and will continue to increase in the future. Although two countries share many similarities in culture, differences also make it hard to acclimatize to the other country. Understanding differences in privacy concern by Internet users in Korea and China is important for companies which have a plan to do business in both countries. However, cultural differences do exist even among Asian countries. The difference in the influence of cultural dimensions on privacy concern in Korea and China needs an investigation. This study attempts to examine the effect of Hofstede’s five cultural characteristics on privacy concern by Internet users in Korea and China.

The remainder of this paper is organized as follows : the next section reviews the existing literature; the third section presents the research model and hypotheses; the following section explains how the research is conducted; the fifth section discusses the results; and the final section summarizes the research in terms

1) This represents the Korean Wave of pop culture that sweeps many nations across Asia.

of contributions, limitations, and directions for further research.

2. Literature Review

2.1 Cultural Characteristics

In order to examine the effect of cultural characteristics on privacy concern, this study adopts Hofstede's five cultural dimensions of power distance, individualism–collectivism, masculinity–femininity, uncertainty avoidance, and long-term orientation, since these dimensions are widely used by international marketing and management scholars. Culture is defined as the “collective programming of the mind which distinguishes the members of one group or category of people from another” [Hofstede, 1980; Hofstede, 1991].

Culture provides people in a certain society with values, shared beliefs, or group norms. In addition, culture influences peoples' perceptions and their interpretation of the world. It influences their expectations, attitudes, and ultimately their behaviors in everyday life [Adler and Gundersen, 2007]. As a result, people from one country or region have the same background because of their shared history, economy, geography, religion, and demographics.

- **Power Distance Index (PDI)** : PDI refers to the degree of inequality between the less powerful members of organizations and the more powerful ones [Hofstede, 1980]. Power and inequality are fundamental elements in any society and people are very keen to power distribution. Although all societies are unequal, some are more unequal than others.

PDI reflects how much members of a group accept unequal power distribution or specific superior–subordinate roles. Individuals in high power distance culture tolerate greater levels of power inequality than those in low power distance culture.

- **Individualism (IDV)** : IDV is the degree to which an individual is independent of collectivity or organizations. In the individualistic society, ties between individuals are loose. Individuals pursue primarily their own interests. In the collectivistic society, individuals tend to be tightly integrated into strong and cohesive in-groups. Individuals in high individualism culture emphasize individual initiative and achievement, while those in high collectivism culture underline loyalty, belonging, and emotional dependence on collectivity [Hofstede, 1980; Hofstede, 1991].
- **Masculinity (MAS)** : MAS versus femininity refers to the distribution of roles between the genders. Masculinity refers to the extent to which a society values assertiveness, the acquisition of money and things, and not caring for others [Hofstede, 1980]. Individuals in a masculine society actively participate in competition, value achievement, and resolve conflict. In contrast, people in a feminine society appreciate discretion, modesty, and caring for others. The feminine society places emphasis on relationships and quality of life.
- **Uncertainty Avoidance Index (UAI)** : UAI deals with a society's tolerance for uncertainty and ambiguity. It indicates the extent to which individuals try to avoid unknown, un-

certain, and ambiguous situations that make them uncomfortable. Individuals in high uncertainty avoiding culture tend to value security, avoid risk, and try to minimize the possibility of such situations by strict laws and rules. In contrast, individuals in uncertainty accepting culture are more tolerant of risk and accept behaviors and opinions different from their own.

- **Long-Term Orientation (LTO)** : LTO refers to the extent to which an individual adheres to forward thinking or the future. This concept is found in the teachings of Confucius and can be applied to countries all around the world. Individuals in a society with high long-term orientation are inclined to consider thrift, persistence, and long-term commitments as valuable. Individuals in a short-term orientated society emphasize personal steadiness, stability, respect for tradition, and saving face.

2.2 Privacy concern

Information privacy refers to the right of entities (individuals, groups, or institutions) to

determine for themselves when, how, and to what extent information about themselves is communicated to others [Westin, 1967]. Information privacy concern refers to an entity's subjective views of safety within the context of information privacy [Campbell, 1997]. During the past decade, the issue of information privacy has drawn considerable attention among researchers in disciplines such as law, public policy, marketing, organizational behavior, and information systems [Caudill and Murphy, 2000; Culnan, 2000; Goodwin, 1991; Newman and Rao, 2000; Smith et al., 1996]. In the e-commerce field, several studies viewed privacy concern as the biggest threat perceived by online users and examined its influence on e-commerce adoption [Culnan and Armstrong, 1999; Eddy et al., 1999; Hoffman et al., 1999; Sheehan, 2002]. Subsequent studies supported the importance of privacy on adoption decisions [Malhotra et al., 2004; Van Slyke et al., 2006; Dinev and Hart, 2006]. Internet users with high levels of concern about information privacy believe that organizations generally tend to behave opportunistically with their personal information. Hence, in response

<Table 1> Existing Research on Hofstede's Cultural Dimensions and Privacy Concern

Culture	Effect	Support	No support
PDI	High PDI → high concern	Milberg et al. [2000]	Milberg et al. [1995]
	Low PDI → high concern	Bellman et al. [2004] (secondary use)	
IDV	High IDV → high concern	Milberg et al. [2000]; Cho et al. [2009]	Milberg et al. [1995]
	Low IDV → high concern	Bellman et al. [2004] (Errors)	
MAS	High MAS → high concern	Milberg et al. [2000]	
	Low MAS → high concern	Bellman et al. [2004] (secondary use)	
UAI	High UAI → high concern		Milberg et al. [1995]
	Low UAI → high concern	Milberg et al. [2000]; Cho et al. [2009]	Bellman et al. [2004]

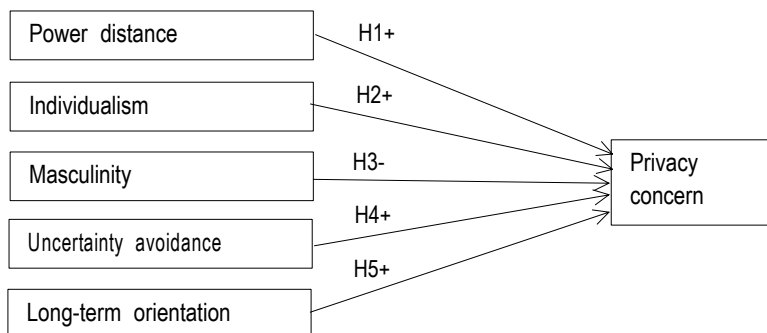
to a request from a website for personal information, they will likely respond by undertaking several protective behaviors such as refusing to provide personal information [Dinev and Hart, 2006] or providing incorrect personal information [Son and Kim, 2008].

Previous literature suggests that a variety of antecedent factors influence the level of privacy concern of an Internet user, including organizational or societal characteristics, such as industry sector, culture, and regulatory law [Malhotra et al., 2004; Milberg et al., 1995; Culnan and Bies, 2003], and personal characteristics, such as past experience and privacy awareness [Smith et al., 1996; Okazaki et al., 2009]. As noted before, Internet users in different countries reside in heterogeneous social conditions which may cause significant differences in the level of concern across nations [Cho et al., 2009]. Empirical research has supported that individuals in different countries display varying degrees of concern about online privacy [Milberg et al., 1995; Cho et al., 2009]. Generally, Western countries show higher privacy concern when compared with Asian countries [Cho et al., 2009].

Hofstede's five cultural dimensions have been used in several multinational or cross-cultural studies [Milberg et al., 1995; Milberg et al., 2000; Bellman, et al., 2004; Cho et al., 2009] in order to investigate their impact on privacy concern. However, either hypothesized relationship between cultural dimensions and privacy was not supported by their data or no consensus was reached (Refer to <Table 1>). Further, the focus of some studies has been on offline information privacy rather than online privacy. Only a few have studied online privacy concern [Bellman et al., 2004; Cho et al., 2009]. The findings of previous studies are not only inconsistent, but also difficult to evaluate the accuracy of meanings [Cho et al., 2009]. All of the existing privacy studies only focus on three or four cultural dimensions. Long-term orientation, the last dimension added into Hofstede's cultural dimensions, is neglected in existing culture privacy studies. A study containing all of the five cultural dimensions is necessary.

3. Research model

Both theoretical arguments and empirical stu-



<Figure 1> Research Model

dies generally suggest that cultural values should have significant effects on privacy concerns of Internet users. This study proposes a research model as in <Figure 1>.

Although individuals in high power distance culture tolerate greater power inequality, higher power distance is associated with greater mistrust toward more powerful entities, such as companies [Cho et al., 2009]. Individuals in higher power distance culture feel that entities with power are a potential threat and rarely can be trusted [Hofstede, 1991]. In addition, a positive relationship between interpersonal distrust and concerns for personal information privacy was found [Smith et al., 1996]. Hence, individuals in higher power distance countries would exhibit higher levels of privacy concern [Milberg et al., 1995; Cho et al., 2009]. Therefore, we postulate :

H1 : *A higher level of power distance is related to a higher level of privacy concern.*

Individualism is associated with a strong desire for private life and independence from the collective. Consequently, individuals in highly individualistic culture would be more concerned about potential privacy intrusion into their lives, while collectivistic societies accept more easily the practice of organizations that intrude into the private life of an individual [Milberg et al., 1995; Milberg et al., 2000]. This leads to the next hypothesis :

H2 : *A higher level of individualism is related to a higher level of privacy concern.*

As highly masculine culture places greater emphasis on achievement and material success, people are more willing to provide private information in exchange for potential economic benefits such as convenience [Milberg et al., 2000, Bellman et al., 2004]. Individuals with high masculinity are more assertive and think they can resolve any conflict resulting from privacy intrusion. As a result, their privacy concern will be generally lower than individuals from feminine culture. Therefore, the next hypothesis is :

H3 : *A higher level of masculinity is related to a lower level of privacy concern.*

Low uncertainty avoidance has been associated with low levels of anxiety, stress, and willingness to take risks [Hofstede, 1980; Hofstede, 1991]. High uncertainty avoidance has been associated with higher levels of concern for security. Further, people in countries with high uncertainty avoidance had a pessimistic perspective toward the motive of companies. Thus, privacy concern may be positively related to uncertainty avoidance [Milberg et al., 2000; Cho et al., 2009]. Therefore, we expect :

H4 : *A higher level of uncertainty avoidance is related to a higher level of privacy concern.*

Long-term orientation is associated with good buyer-seller relationship [Ganesan, 1994]. Individuals with higher long-term orientation want to have a good, lasting relationship with an website and continue to use the website in the future. Any privacy issue will become an ob-

stacle to the long-term relationship with the website. As a result, the privacy concern should be higher for individuals in a long-term oriented society. Thus, we hypothesize :

H5 : A higher level of long-term orientation is related to a higher level of privacy concern.

In summary, lower MAS and higher PDI, IDV, UAI, and LTO would exhibit higher levels of privacy concern. Individuals with these cultural values would exhibit higher levels of concern for privacy.

4. Research method

This section describes the scale development, sample, and data collection. Most of the meas-

urement scales for constructs in this study were adapted from earlier studies in which the measurement scales had been proven to be valid and reliable. All the items used a seven-point Likert scale from “strongly disagreeable” to “strongly agreeable.”

Privacy concern was measured with one-dimensional conceptualization of online privacy concerns adapted from Smith et al. [1996], Malhotra et al. [2004], and Son and Kim [2008]. Multidimensional construct model was not used, due to the constraints of the questionnaire length. However, the items were comprehensive enough to measure the key dimensions of privacy concerns identified in previous studies [Smith

〈Table 2〉 Korean Respondents

Category		Number of respondents	(%)
Gender	Male	120	51.9
	Female	111	48.1
Age	Less than 20	39	16.9
	21~25	172	74.5
	26~30	20	8.7
Education	High school	1	0.4
	Undergraduate	230	99.6
Hours of daily Internet use	Less than 1 hour	18	7.8
	1~2 hours	78	33.8
	2~3 hours	78	33.8
	3~4 hours	36	15.6
	4~5 hours	12	5.2
	More than 5 hours	9	3.9
Years of using the Internet	3~4 years	1	0.4
	4~5 years	4	1.7
	More than 5 years	226	97.8

〈Table 3〉 Chinese Respondents

Category		Number of respondents	(%)
Gender	Male	114	50.7
	Female	111	49.3
Age	Less than 20	55	24.4
	21~25	169	75.1
	26~30	1	0.4
Education	Undergraduate	214	95.1
	Master	11	4.9
Hours of daily Internet use	< 1 hour	35	15.6
	1~2 hours	84	37.3
	2~3 hours	63	28.0
	3~4 hours	18	8.0
	4~5 hours	12	5.3
Years of using the Internet	> 5 hours	13	5.8
	< 1 year	1	0.4
	1~2 years	30	13.3
	2~3 years	31	13.8
	3~4 years	21	9.3
	4~5 years	32	14.2
> 5 years	110	48.9	

et al., 1996], such as collection, errors, unauthorized secondary use, and improper access. Stewart and Segars [2002] suggested that ‘concern for information privacy’ may be represented more parsimoniously as a higher-order single factor. Similarly, Buchanan et al. [2006] suggested that a single-factor solution should

be plausible for privacy concern measurement. Some words were changed to make these scales appropriate for this study.

All of the existing cross-cultural privacy research used Hofstede’s cultural value indices instead of measuring the cultural value directly. Although using Hofstede’s culture value indices

〈Table 4〉 Factor Analysis and Reliability

Factors	Items	Source	Factor loading	Cronbach's alpha
Privacy concern	Share information without authorization	Smith et al. [1996]; Malhotra et al. [2004]; Son and Kim [2008]	0.825	0.889
	Not take enough steps to block unauthorized access		0.817	
	Not protect computer databases from unauthorized access		0.813	
	Use information for other purposes without permission		0.796	
	Sell information in database to other companies		0.761	
	Not enough time and effort to prevent unauthorized access		0.689	
	Collecting too much information		0.676	
	Information collected and stored is not accurate		0.541	
	Ask for personal information bothers me		0.534	
Masculinity	Professional work is more important to men than to women	Hofstede [2001]; Zheng [2009]	0.842	0.820
	Man's job position is higher than woman's		0.825	
	Coercive methods to solve problem		0.733	
	Man use logical analysis while woman use instinct		0.707	
	Meeting taking charge by man is more efficient		0.660	
Individualism	Pay attention to my own work	Hofstede [2001]; Singelis et al. [1995]; Zheng [2009]	0.758	0.700
	I am a unique and special one		0.737	
	Success is because of my own ability		0.683	
	Never share privacy with others		0.671	
Uncertainty avoidance	Incline to avoid unpredictable things	Hofstede [2001]; Zheng [2009]	0.818	0.732
	Concern about the risk of uncertainty		0.780	
	Don't like equivocal situations		0.754	
Power distance	Importance of a good relationship with seniority	Hofstede [2001]; Zheng [2009]	0.835	0.708
	Importance of senior's consultation for decisions		0.775	
Long-term orientation	Pay more attention to future than now	Hofstede [2001]; Zheng [2009]	0.888	0.712
	Importance of long term result in planning		0.795	

is an easier way to do research, it can't reflect cultural changes in some countries which have gone through significant changes over the past decades. Moreover, criticism of Hofstede's approach emerged from many fronts [Erez, 1993; Myers and Tan, 2002; Tayeb, 1994]. One problem was that Hofstede's study was conducted in many countries but only with IBM employees, thus reflecting the idiosyncrasies of that firm. Hofstede's work was also grounded on the assumption that employees hired by IBM would be representatives of the culture from which they came—a dubious assumption. It is possible that employees who were selected by IBM for its way of doing business differ in some ways from others in the same country. In this study, cultural value was directly measured with scales adapted from previous research [Singelis et al., 1995; Rai et al., 2009].

The survey questionnaire was translated into Korean and Chinese so that data could be collected in both countries. Before the final survey, pilot test was administered to nine Korean students and seven Chinese students. Word changes were made according to the feedback from the pilot test. After the question items were ordered randomly, the final survey was administered to college students of China and Korea in the fall semester of 2012. As a young generation, especially students could better represent the general population of Internet users. After deleting responses with missing data and insincere responses, 231 Korean data and 225 Chinese data were used for analysis. Among all of the 456 respondents, 99.6% were student; and 48.7% were female. 78.1% of them spent no more than

3 hours a day on average on the Internet and 73.7% had used the Internet for more than 5 years.

5. Data Analysis and Result Discussion

5.1 Factor Analysis and Reliability

Exploratory factor analysis was used in order to examine the dimensionality among question items and to determine whether data can be condensed or summarized in a smaller set of factors. Varimax for factor rotation was used. Result of KMO test (0.833) and Bartlett's test ($P = 0.000$) confirmed the suitability of factor analysis to the sample. After a few iterations, all remaining items fell into the supposed factor with Cronbach's alpha values over 0.7 (See <Table 4>). Some items grouped into wrong factors and degrading reliability were deleted.

5.2 Differences in Privacy Concern between Korea and China

In order to test the difference in privacy concern between Korea and China, the average response to the question items measuring privacy concern was used for the ANOVA test. The result showed that the privacy concerns in both countries were quite high (Korea = 5.224, China = 5.026, '5' means 'somewhat concerned'). Moreover, the privacy concern in Korea was significantly higher than that in China ($F = 5.810$, $P = 0.016$). Similar research supported that individuals in different countries displayed varying degrees of concern about online privacy

[Milberg et al., 1995; Cho et al., 2009]. South Korea had a comprehensive Internet real-name policy²⁾ since 2007, regulating users of emails, online forums, blogs, online videos, and many other Internet services. For those who wanted to apply for an email or online chatting service account in South Korea, they had to fill a form first, providing detailed information including their name, identity number, address, phone number, and profession. On the contrary, since there was no such real-name law until December 2012³⁾ in China, it was possible for Chinese Internet users to refuse to provide information or provide incorrect personal information when registering at a website. The more personal information provided to the website, the higher the concern for privacy.

<Table 5> Difference in Privacy Concern between Korea and China

Country	Mean	Std. Deviation	Std. Error	F	P
Korea	5.224	0.952	0.063	5.810	0.016
China	5.026	0.782	0.053		

5.3 Differences in culture between Korea and China

ANOVA is used to investigate the differences in culture between Korea and China. Among the five cultural dimensions, power distance (Korea = 5.431, China = 5.753, $P = 0.000$), masculinity (Korea = 3.192, China = 3.998, $P = 0.000$)

<Table 6> Differences in Cultural Dimensions between Korea and China

	Korea	China	P	Hofstede index	
				Korea	China
PDI	5.431	5.753	.000	60	80
IDV	5.408	4.738	.000	18	20
MAS	3.192	3.998	.000	39	66
UAI	4.710	4.532	.071	85	30
LTO	5.026	5.340	.001	75	118

and long-term orientation (Korea = 5.026, China = 5.340, $P = 0.001$) of Korea were lower than those of China, which coincided to Hofstede's cultural value indices. However, individualism of Korea was higher than that of China (Korea = 5.408, China = 4.738, $P = 0.000$), while Hofstede's IDV indices of Korea and China were nearly same (Korea = 18, China = 20). Uncertainty avoidance of Korea and China had no significant difference (Korea = 4.710, China = 4.738, $P = 0.071$), while Hofstede's UAI index of Korea was much higher than that of China (Korea = 85, China = 30). This difference may result from the fact that the samples used in this study and those in the Hofstede's study were different. The samples of this research were college students, while Hofstede's research tested the cultural value among IBM employees. Furthermore, Hofstede's value indices were measured decades ago. Meanwhile, the economic development in both Korea and China might lead to noticeable changes in the cultural values, especially for China, with the change from planned economy to market economy.

5.4 Hypotheses Test

Multiple regression was used to test the hy-

2) Constitutional Court of Korea ruled on August 23, 2012 that the Internet real name policy was unconstitutional.

3) In December 2012, the Chinese national legislature passed the real name law which made the identity verification by websites mandatory by June 2014.

〈Table 7〉 Multiple Regression Result with Overall Data

	Standardized Coefficients	t	P	Tolerance	VIF
PDI	0.201	4.319	0.000	0.891	1.122
IDV	0.190	4.258	0.000	0.974	1.026
MAS	-0.119	-2.642	0.009	0.958	1.044
UAI	0.195	4.338	0.000	0.953	1.049
LTO	0.125	2.679	0.008	0.890	1.124

pothesis first with the overall data and then with Korean data and Chinese data separately.

With the overall data, all the cultural dimensions significantly affected the dependent variable, privacy concern. Power distance had the strongest effect on privacy concern ($B = 0.201$, $P = 0.000$), followed by uncertainty avoidance ($B = 0.195$, $P = 0.000$), individualism ($B = 0.190$, $P = 0.000$), and long-term orientation ($B = 0.125$, $P = 0.008$). Masculinity had a negative effect on privacy concern ($B = -0.119$, $P = 0.009$) as expected in Hypothesis 3. As a result, all of the hypotheses were supported, although R-square of the regression model with overall data was 0.180.⁴⁾ Typically, the effect of cultural dimensions and other demographical factors were not as high as that of direct independent factors such as propensity to privacy, privacy awareness, and perceived justice. The multicollinearity among independent variables was not found in this multiple regression, as all VIFs in 〈Table 7〉 were much less than the threshold value of 10.

Next, multiple regressions were carried out with Korean data and Chinese data separately. R-square of the Korean regression model was 0.155, while R-square of the Chinese regression

model was a little higher, 0.228. Like the overall model, individualism and uncertainty avoidance had significant effects on privacy concern both in Korea and China. However, masculinity did not have a significant effect at the 5% level in Korea ($B = -0.123$, $P = 0.055$) and China ($B = -0.085$, $P = 0.205$), although standardized coefficients of masculinity in both countries were negative, as the model with overall data. The significance of masculinity in the model with overall data may be due to the larger sample size. Power distance in Korea was not significant ($B = 0.093$, $P = 0.168$), while PDI in China was significant ($B = 0.311$, $P = 0.000$). On the contrary, long-term orientation in China was not significant ($B = 0.100$, $P = 0.143$), while LTO in Korea was significant ($B = 0.147$, $P = 0.028$).

In Korea, individualism ($B = 0.213$, $P = 0.001$) had the strongest effect, followed by uncertainty avoidance ($B = 0.197$, $P = 0.003$) and long-term orientation ($B = 0.147$, $P = 0.028$). In China, power distance ($B = 0.311$, $P = 0.000$) had the strongest effect, followed by uncertainty avoidance ($B = 0.208$, $P = 0.002$) and individualism ($B = 0.140$, $P = 0.034$).

6. Discussion

Power distance has a positive effect on privacy concern. In other words, privacy concern of those who think the society is more unequal is higher than that of those who think the society is less unequal. The effect of power distance on privacy concern was found among Chinese students, but not among Korean students. A further analysis was carried out to

4) R-square in Cho et al.'s study [2009] was only 0.126.

<Table 8> Multiple Regression Results with Korea and China

	Korea			China		
	Standardized Coefficients	t	P	Standardized Coefficients	t	P
PDI	0.093	1.383	0.168	0.311	4.778	0.000
IDV	0.213	3.290	0.001	0.140	2.141	0.034
MAS	-0.123	-1.926	0.055	-0.085	-1.272	0.205
UAI	0.197	3.055	0.003	0.208	3.099	0.002
LTO	0.147	2.219	0.028	0.100	1.469	0.143

clarify this difference. The respondents from each country were divided into two groups of high power distance group and low power distance group. Then, average privacy concern of each group was calculated, as shown in <Table 9>. In both countries, people with higher PDI showed higher privacy concern than those with lower PDI. This confirms the positive effect of power distance on privacy concern, in general. The difference in privacy concern between the high PDI group and the low PDI group of China reached the statistically significant level, whereas the difference between the two groups of Korea was not large enough to show the statistical significance.

<Table 9> Privacy Concern by PDI Level

	High PDI group	Low PDI group
Korea	5.401	5.059
China	5.316	4.826

Individualism significantly affects privacy concern overall, as well as in each country. The same result has been found by previous studies [Milberg et al., 2000; Cho et al., 2009]. Individualism is associated with a strong desire for private life and independence from the collective. Consequently, people with high individualism

are more likely to be concerned about potential privacy intrusion, while those with low individualism are less sensitive to the invasion of privacy by others or by the practices of groups and organizations. This phenomenon can be explained by the high context communication theory [Hall, 1977]. High individualism is often linked to low context [Hofstede, 1991], that is, direct and detailed communication. In other words, Internet users with high individualism would favour low context communication. Therefore, when engaging in online transactions, they would prefer that all transaction-related information be highly explicit and clearly spelled out, which would result in a higher level of concern about online privacy. In contrast, Internet users with low individualism are accustomed to more indirect communication and would not be on high alert against privacy invasion.

Although masculinity has a negative effect on privacy concern overall, the effect has not been found in either country. The results from previous studies are not consistent, either. Milberg et al. [2000] have found individuals from higher masculinity culture exhibit higher privacy concern, while Bellman et al. [2004] have not found the effect on privacy concern, but found that lower MAS has led to higher second-

dary use concern. Although Korean data has shown the marginal effect of masculinity on privacy concern, this issue needs further investigation in the future for better understanding.

Uncertainty avoidance has a positive effect on privacy overall, as well as in each country. In other words, people with high uncertainty avoidance exhibit higher levels of privacy concern in eastern countries like Korea and China. On the contrary, previous studies by Milberg et al. [2000] and Cho et al. [2009] have found a negative effect of uncertainty avoidance on privacy concern. One major difference between the previous studies and this study is the composition of samples. The previous studies have included samples from western countries where people are exposed to a more complex and dynamic society with more sophisticated regulation for privacy protection. Consequently, they would be less concerned about privacy issues.

Long-term orientation significantly affects privacy concern positively in general. This phenomenon has been found only in Korea, but not in China. Even though long-term orientation is higher in China than in Korea, the privacy concern in Korea is higher than in China. This seemingly conflicting result might be caused by the opposite directions in the Internet real name policy. People with long-term orientation in Korea would have high concerns about their privacy information already given to numerous websites under the mandatory real name policy. In contrast, although people in China have higher long-term orientation, they would not have higher privacy concern yet, since the Chinese government has just started the enforcement of

the real name policy. As a result, a longer relationship with a website is not associated with higher privacy concern in China yet.

7. Conclusion

This study first investigated the effects of Hofstede's five cultural dimensions (power distance, individualism, masculinity, uncertainty avoidance, long-term orientation) on privacy concern of Internet users and then compared the effects in two countries, Korea and China. The result has confirmed the overall expected effects that power distance, individualism, uncertainty avoidance, and long-term orientation are positively related to privacy concern, while masculinity is negatively related to privacy concern. The overall effects of individualism and uncertainty avoidance have been found in both countries. However, the effect of masculinity has not been found in either country. In addition, the effect of power distance has been found only in China, while the effect of long-term orientation has been found only in Korea.

This study is different from previous studies in that it directly measured cultural dimensions by the survey method, instead of using Hofstede's national indices. Thanks to this direct measurement, this study has found diverse relationships between cultural characteristics and privacy concern in the two countries.

The overall level of privacy concern among internet users in both countries was quite high. Hence, regulators, government officials, educational institutions, e-commerce vendors and a host of other organizations should take note of

the findings from this study and introduce policies that reduce individuals' concern about potential privacy violations. The differences observed in this study suggest that online companies should use country-specific approach to handle privacy information and will increasingly have to customize their information collection and management strategies to match the privacy concerns of consumers in different countries.

Since this study relied on international samples of Korean and Chinese college students, the generalizability of the result is limited. Korea and China are all Asian countries, which share some similarities in cultural values. Although using college students to represent the Internet user would be acceptable, future research should attempt to replicate our findings using broader samples from various countries with individual-level measures instead of Hofstede's index of cultural values.

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■ Author Profile**Lili Wan**

She has a Ph.D from Korea University in Korea. She holds a Bachelor degree from Tongji Medical College of Huazhong University of Science and Technology and a Master degree from Beijing Union Medical College (Tshing-hua University medical college) in China. She is a professor at College of Global Business Administration, Hankuk University of Foreign Studies. Her research interests include areas such as medical information system, e-business, online privacy, and mobile business.

**Daihwan Min**

He is currently a professor at MIS Department of Korea University Sejong Campus. He has a Ph.D. in Business Administration with specialization in Computer Information Systems from the University of Michigan. He holds a BBA degree from Seoul National University and Mater of Industrial Engineering from KAIST. His research interests include information privacy and security, e-business, management of IS, systems analysis and design, interface design, social media, and big data.