A Comparative Study on National Culture of SNS User : Comparison of Korea, China, and U.S.

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Abstract

Our work empirically investigates the cultural differences of Social Networking Service (SNS) users in China, Korea and U.S. We construct a survey questionnaire from existing literature and test it for reliability, validity, and model fit. Then we collect data and validate the cultural differences of SNS users in three nations. Our results show different rankings from existing literature in cultural dimensions about three nations. In terms of masculinity, we find China 〉 U.S. 〉 Korea, similar to Hofstede. In individualism, we find U.S. 〉 Korea 〉 China, different from Hofstede (U.S. 〉 China 〉 Korea). In power distance, it is shown that Korea 〉 China 〉 U.S., different from Hofstede (China 〉 Korea 〉 U.S.). Uncertainty avoidance is found that U.S. 〉 Korea 〉 China, lowered ranking of Korea from the top among three nations in Hofstede. We find that these outcomes would be useful in updating national culture of the three nations and for future research about cultural impacts on SNS adoption.

Keywords : Social Networking Service, National Culture, Survey Development, Empirical Testing

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1. Introduction

Globally diffused is the electronic commerce since 2000 due to the fact that supporting technologies free business activities from spatio-temporal constraints. Spurred by the early success and accumulated knowledge in Korea, SK Communications had tried foreign direct investments in China in 2004, Japan and U.S. in 2005, Tiwan, Vietnam and Germany in 2006 to provide its flagship social networking service, CyWorld. However, the service had not been successful and the company had to withdraw from Germany, Japan, U.S. and Tiwan in 2009 (ETNEWS, 2009. 11. 6). Social Network Service (SNS) is one of the major features of Web 2.0. Korean SNS users constitute 70% of Korean population according to Mckinsey, 2011. The Korean users mainly use facebook, twitter, and me2day [McKinsey and Company, 2011].

We propose that the failure in the oversea business comes from neglecting cultural differences among users in these countries : successful social networking service in Korea whose culture features strong collectivism might not succeed in other countries with strong individualism in their culture. Thus, the focus of this work is cultural differences of SNS users.

Research on cultural differences was pioneered by Hofstede [1980]. In our current literature search, we have found 57 articles in Korea in this genre starting from 1991. However, no single article dealt with SNS users in this perspective. Therefore, we develop a survey questionnaire, statistically test reliability, validity, and fitness of the model in order to compare cultural differences among these countries empirically, and investigate the cultural differences among Korea, China, and U.S.

2. Four Dimensions and Scores of National Culture

We introduce Hofstede's national culture and its methodology since it is the starting point to discuss limitations of prior research and contribution of our work.

2.1 Culture and National Culture

Definitions, conceptualizations, and dimensions used to describe culture are frequently discussed in literature. Specifically, Kroeber and Kluckhohn [1952] identified 164 definitions of culture, and Sackmann [1992] discussed how culture has been framed in various studies as ideologies, coherent sets of beliefs, basic assumptions, shared sets of core values, important understandings, and the collective will : Jermier et al. [1991] made this distinction between tacit and explicit components of culture, describing the tacit aspect as ideational while the more explicit artifacts of culture are referred to as material.

Culture has been studied at the national, organizational, or subunit level (Leidner and Kayworth, 2006). This study has a focus on the culture at the national level. The most popular conceptualization of national culture has been Hofstede's [1980] original taxonomy. His work defines national culture as mental programming or software of the mind that distinguishes one group

or category of people from another [Hofstede, 2010]. Hofstede analyzed a large database of employee value scores collected by IBM between 1967 and 1973 covering more than 70 countries. From the initial results, a model was developed that identified four dimensions in differentiating cultures : masculinity, individualism, power distance, and uncertainty avoidance.

Trompenaars [1996] described national culture as : universalism v. particularism, affective v. neutral relationships, specificity v. diffuseness, achievement v. ascription, and internal v. external control. Other works have conceptualized national culture in terms of such values as confucian dynamism [Hofstede and Bond, 1988], polychronism versus monochronism [Hall and Hall, 1990], context [Hall, 1976], and time-orientation [Hofstede and Bond, 1988; Trompenaars, 1996].

A breakthrough in the study of national culture was made by Lynn [1971] who showed results of a factor analysis with the frequency of chronic psychosis, average calorie intake, suicide rates, and cigarette consumption and identified a dimension of anxiety. Lynn and Hampson [1975] extended this work to two dimensions, neuroticism and extraversion. Later, Lynn [1981] added psychoticism and in the meantime Lynn [1991] focused on a new potential dimension, competitiveness.

2.2 Four Dimensions of National Culture

The most wide-spread conceptualization of national culture is Hofstede's four dimensions : masculinity, individualism, power distance, and uncertainty avoidance. Masculinity, with its opposite pole femininity, refers to the degree to which countries differ in regard to clearly differentiated roles and expectation for men and women. Masculine values reflect emphasis on work goals, assertiveness, and material success [Hofstede, 1984; Hoppe, 1993]. In contrast, feminine values focus on quality of life goals, nurturing, and modesty.

Individualism, with its opposite pole collectivism, spells out the degree to which members in a country define themselves by the group or organization to which they belong [Hoppe, 1993]. Social behavior in individualism culture is primarily guided by personal goals, while that in collectivism culture is mainly guided by the goals of the group, organization, or extended family to which they belong and from which they receive protection in exchange for unquestioning loyalty [Hofstede 1984, Srite and Karahanna, 2006].

Power distance is the extent to which the less powerful members accept and expect that power is distributed unequally [Hofstede, 1984]. In countries with small power distance, people have come to expect that differences in power among them will be minimized. In contrast, in countries with large power distance, the majority accepts and expects that there are clear distinctions between those with power and those without [Hoppe, 1993].

Uncertainty avoidance defines the degree to which the majority of a country prefers formal

rules and explicitly structured activities to deal with unclear or unpredictable situations (Hoppe, 1993). In strong uncertainty avoidance cultures, individuals feel threatened by unknown or uncertain situations. This is expressed through increased nervous stress and anxiety and the need for predictability through strict laws, formal rules, regulations, and policies in organizations, institutions, and relationships [Hofstede, 1984].

2.3 Calculating Method of National Culture

In 1967, Hofstede started his pioneering study. <Table 1> reveals the questionnaire to measure four dimension of national culture[1]; <Table 2> shows national culture scores. The method of calculating scores and results are the followings [Hofstede, 1984].

Masculinity values were calculated for the countries in the IBM database. Masculinity was based on the country's factor score in a factor analysis of the 14 work goals. Through multiplying the factor scores by 20 and adding 50, scores were put into a range from 0 for the most feminine country to 100 for the most masculine country.

Similarly, individualism values were also based on the country's factor score in a factor analysis. The factor scores for individualism were multiplied by 25 and a constant number of 50 points was added. This process puts the scores in a range from 0 for the most collectivist country to 100 for the most individualist country.

Power distance values were calculated from the mean scores of the sample of IBM employees in a country on these three questions. The formular was adding the three scores after multiplying each with a fixed number and finally add-

〈Table 1〉 Questionnaires of Hofstede's Landmark Study

National culture	Questionnaires
Masculinity	• Try to think of those factors that would be important to you in an ideal job : disregard the extent to which they are contained in your present job. How import is it to you to have an opportunity for high earnings • get the recognition you deserve when you do a good job • have an opportunity for advancement to higher-level jobs • have challenging work to do-work from which you can get a personal sense of accomplishment
Individualism	• have a job that leaves you sufficient time for your personal or family life • have considerable freedom to adopt you own approach to the job • have challenging work to do-work from which you can get a personal sense of accomplishment
Power distance	• How frequently, in your experience, does the following problem occur : employees being afraid to express disagreement with their managers? • Subordinates' perception of their boss's actual decision-making style • Subordinates' preference for their boss's decision-making style
Uncertainty avoidance	• How often do you feel nervous or tense at work? • Company rules should not be broken-even when the employee thinks it is in the company's best interest. • How long do you think you will continue working for IBM?

1) The question item of the work goal challenge in the masculinity dimension was also associated with that of the individualism dimension.

ing another fixed number. The purpose of the formula was to get index values ranging from 0 for a small power distance country to 100 for a large power distance country.

Uncertainty avoidance values for each country were computed from the mean scores of questions 1 and 2 and the percentage score for question 3. The formular used is based on simple mathematics : adding or subtracting the three scores after multiplying each by a fixed number and finally adding another fixed number. uncertainty avoidance values would range from 0 for the weakest uncertainty avoidance country to 100 for the strongest one.

〈Table 2〉 Hofstede's Scores

Country	Masculinity	Individualism	Power distance	Uncertainty Avoidance
Argentina	56	46	49	86
Australia	61	90	36	51
Austria	79	55	11	70
Austria	79	55	11	70
Bangladesh*	55	20	80	60
Belgium	54	75	65	94
Brazil	49	38	69	76
Bulgaria*	40	30	70	85
Canada	52	80	39	48
Chile	28	23	63	86
China*	**66**	**20**	**80**	**30**
Colombia	64	13	67	80
Costa Rica	21	15	35	86
Czech Republic*	57	58	57	74
Denmark	16	74	18	23
Ecuador	63	8	78	67
El Salvador	40	19	66	94
Estonia*	30	60	40	60
Finland	26	63	33	59
France	43	71	68	86
Germany	66	67	35	65
Greece	57	35	60	112
Guatemala	37	6	95	101
Hong Kong	57	25	68	29
Hungary*	88	80	46	82
India	56	48	77	40
Indonesia	46	14	78	48
Iran	43	41	58	59
Ireland	68	70	28	35
Israel	47	54	13	81
Italy	70	76	50	75
Jamaica	68	39	45	13
Japan	95	46	54	92
Luxembourg*	50	60	40	70

Malaysia	50	26	104	36
Malta*	47	59	56	96
Mexico	69	30	81	82
Morocco*	53	46	70	68
Netherlands	14	80	38	53
New Zealand	58	79	22	49
Norway	8	69	31	50
Pakistan	50	14	55	70
Panama	44	11	95	86
Peru	42	16	64	87
Philippines	64	32	94	44
Poland*	64	60	68	93
Portugal	31	27	63	104
Romania*	42	30	90	90
Russia*	36	39	93	95
Singapore	48	20	74	8
Slovakia*	110	52	104	51
South Africa	63	65	49	49
South Korea	**39**	**18**	**60**	**85**
Spain	42	51	57	86
Surinam*	37	47	85	92
Sweden	5	71	31	29
Switzerland	70	68	34	58
Taiwan	45	17	58	69
Thailand	34	20	64	64
Trinidad*	58	16	47	55
Turkey	45	37	66	85
United Kingdom	66	89	35	35
United States	**62**	**91**	**40**	**46**
Uruguay	38	36	61	100
Venezuela	73	12	81	76
Vietnam*	40	20	70	30

*Estimated values.

3. Limitations of Previous Literature

Existing survey questionnaires have some limitations in research methodology, constructs, and research context.

3.1 Limitations of Research Method

As summarized in <Table 3>, we analyze representative five questionnaires used in literature for the empirical approach toward national culture. Fundamental works are Hofstede's landmark study [1980], Value Survey Module 94, Value Survey Module 08. Representative work in MIS field is Srite and Karahanna [2006]. Mostly cited after Hofstede is GLOBE Study [House et al., 2004]. Their questionnaires are shown in <Table 1>, <Table 4>~<Table 6>.

<Table 3> also shows limitations of these

〈Table 3〉 Reliability, Validity, and Fit of Questionnaires

	Reliability	Validity	Fit
Hofstede' landmark study, 1980	X	O	X
Hofstede's VSM 94	O	X	X
Hofstede's VSM 08	O	X	X
Srite and Karahanna, 2006	O	O	X
GLOBE Study, 2004	O	X	X

methodologies lacking reliability, validity, or fit. Unfortunately, existing questionnaires are limited in these aspects, constraining their application to empirical works.

3.2 Limitations of Construct

Constructs have not been consistent due to the fact that the initial construct in 1980 is different from following constructs, not allowing direct comparison among seminal works. More specifically, Hofstede [1984] and The Global Leadership and Organizational Behavior Effectiveness Research Program (GLOBE) [2004] shared the research topic of national culture; however their constructs were different. GLOBE is the results of 10-year research program. GLOBE results are presented in the form of quantitative data based on response of about 17,000 managers from 951 organizations functioning in 62 societies throughout the world. GLOBE subdivided 4 dimensions of Hofstede's national culture into 9 dimensions. <Table 4> lists a part of GLOBE's Questionnaire.

〈Table 4〉 GLOBE's Questionnaire

National Culture		Questionnaire
Masculinity	Assertiveness	• In this society, people are generally "assertive-nonassertive." • In this society, people are generally "tough-tender."
	Performance Orientation	• In this society, students are encouraged to strive for continuously improved performance, • In this organization, employees are encouraged to strive for continuously improved performance
Individualism /Collectivism	Institutional Collectivism	• In this society, leaders encourage group loyalty even if individual goals suffer. "strongly agree-strongly disagree" • The economic system in this society is designed to maximize : "Individual interests-Collective interests"
	In-Group Collectivism	• In this society, children take pride in the individual accomplishments of their parents : "strongly agree-strongly disagree" • In this society, parents take pride in the individual accomplishments of their children : "strongly agree-strongly disagree"
Power Distance		• In this society, followers are expected to "Obey their leader without question-Question their leaders when in disagreement" • In this society, power is : "Concentrated at the top-Shared throughout the society"
Uncertainty Avoidance		• In this society, orderliness and consistency are stressed, even at the expense of experimentation and innovation. "strongly agree-strongly disagree" • In this society, societal requirements and instructions are spelled out in detail so citizens know that they are expected to do. "strongly agree-strongly disagree"

3.3 Limitations of Questionnaire

The measurement instrument used in Hofstede's study was a series of VSM which is the questionnaire that Hofstede used starting from 1967. The questionnaire has been updated five times. The newest one is the VSM 08 with such a caution that VSM 08 still has several limitations of scientific research and leaves a lot on the user's judgement [Hofstede, 2010].

The original questionnaire was from the 1967~1973 IBM attitude survey. From the IBM questionnaires, the first value survey module (VSM 80) was issued. VSM 80 contained 27 content questions and 6 demographic questions. A weakness of the VSM 80 was its dependence on the accidental set of questions used in the IBM survey. The VSM 80 had not been composed for the purpose of reflecting international differences in value patterns. Therefore in 1981 Hofstede issued an experimentally extended version, VSM 81. On the basis of the analysis of its results, VSM 82 was issued. This was widely used for the next 12 years. The VSM 82 contained 47 con-

〈Table 5〉 VSM 97 and VSM 08

National Culture	VSM 94	VSM 08
Masculinity	• Please think of an ideal job, disregarding your present job, if you have one. In choosing an ideal job, how important would it be to you to work with people who cooperate well with one another • When people have failed in life, it is often their own fault • Most people can be trusted • have an opportunity for advancement to higher level jobs	• Please think of an ideal job, disregarding your present job, if you have one. In choosing an ideal job, how important would it be to you to have pleasant people to work with • get recognition for good performance • live in a desirable area • have chances for promotion
Individualism	• have security of employment • have sufficient time for your personal or family life • have good physical working conditions (good ventilation and lighting, adequate work space, etc.) • have an element of variety and adventure in the job	• have security of employment • have sufficient time for your personal or home life • have a job respected by your family and friends • do work that is interesting
Power Distance	• be consulted by your direct superior in his/her decisions • have a good working relationship with your direct superior • How frequently, in your experience, are subordinates afraid to express disagreement with their superiors? • An organization structure in which certain subordinates have two bosses should be avoided at all costs	• be consulted by your boss in decisions involving your work • have a boss (direct superior) you can respect • How often, in your experience, are subordinates afraid to contradict their boss (or students their teacher?) • An organization structure in which certain subordinates have two bosses should be avoided at all cost
Uncertainty Avoidance	• Competition between employees usually does more harm than good • How often do you feel nervous or tense at work? • One can be a good manager without having precise answers to most questions that subordinates may raise about their work • A company's or organization's rules should not be broken, not even when the employee thinks it is in the company's best interest	• All in all, how would you describe your state of health these days • How often do you feel nervous or tense? • One can be a good manager without having a precise answer to every question that a subordinate may raise about his or her work • A company's or organization's rules should not be broken not even when the employee thinks breaking the rule would be in the organization's best interest

tent questions and 6 demographic questions. Only 13 of the questions were needed to compute scores on the four dimensions identified by Hofstede. The questions in the VSM 82 were only applicable to employed respondents.

Unfortunately, the VSM 82 turned out that the samples from different researchers were insufficiently matched. In the meantime, the research of Michael Harris Bond from Hong Kong, had led to the identification of a fifth dimension : long term versus short term orientation [Hofstede and Bond, 1988]. In 1994, VSM 94 was published whose questionnaire was adapted to respondents without a paid job. The VSM 94 was used in the past 14 years. But, the measurement of long versus short term orientation in the VSM 94 has been problematic. Thus VSM 08 was published, including new items like monumentalism vs. flexumility.

Srite and Karahanna [2006] studied the role of espoused national cultural values in technology acceptance. They used the cultural values

〈Table 6〉 Srite and Karahanna's Questionnaire

National Culture	Questionnaire
Masculinity	• It is preferable to have a man in high level position rather than a woman • There are some jobs in which a man can always do better than a woman • It is more important for man to have a professional career than it is for women to have a professional career • Solving organizational problems requires the active forcible approach which is typical of men • Women do not value recognition and promotion in their work as much as men do
Individualism	• Being accepted as a member of a group is more important than having autonomy and independence • being accepted as a member of a group is more important than being independent • Group success is more important than individual success • Being loyal to a group is more important than individual gain • Individual rewards are not as important as group welfare • It is more important for a manager to encourage loyalty and a sense of duty in subordinates than it is to encourage individual initiative
Power Distance	• Managers should make most decisions without consulting subordinates • Managers should not ask subordinates for advice, because they might appear less powerful • Decision making power should stay with top management in the organization and not be delegated to lower level employees • Employees should not question their manager's decisions • A manager should perform work which is difficult and important and delegate tasks which are repetitive and mundane to subordinates • Higher level managers should receive more benefits and privileges than lower level managers and professional staff • Managers should be careful not to ask the opinions of subordinates too frequently, otherwise the manager might appear to be weak and incompetent
Uncertainty Aoidance	• Rules and regulations are important because they inform workers what the organization expects of them • Order and structure are very important in a work environment • It is important to have job requirements and instructions spelled out in detail so that people always know that they are expected to do • It is better to have a bad situation that you know about, than to have an uncertain situation which might be better • Providing opportunities to be innovative is more important than requiring standardized work procedures • People should avoid making changes because things could get worse

of masculinity, individualism, power distance, and uncertainty avoidance. The measurement instrument of these four dimension was derived from Hofstede [1984] and Dorfman and Howell [1988]. <Table 6> shows the questionnaire that Srite and Karahanna used. Srite and Karahanna used the same dimensions of national culture as that of Hofstede. But their question items were different from those of Hofstede in the contents and the number of the questions.

4. Research Model and Methods

4.1 Research Model

The focus of this work is cultural differences of SNS users. We argue that when an online company considers going abroad, they should understands the cultural difference of foreign countries in order to succeed. We find 57 articles about national culture in Korea. However, no single article dealt with SNS users in this perspective. After the literature review, we conclude that existing survey questionnaires could not be adopted for measuring and comparing national cultures because of differences in research methodology, constructs, and research context. Therefore, we develop a survey questionnaire based on the review of existing literature and test the questionnaire in the perspectives of reliability, validity, and fit of the model.

Though we mention a plethora of research about national culture in the previous section [Lynn, 1971; Hall, 1976; Hall and Hall, 1990; Trompenaars, 1996], Our work is based on Hofstede [1980] since the work is most commonly cited. Hofstede [2010] used five dimensions of national culture : masculinity, individualism, power distance, uncertainty avoidance, and long-term orientation. Most common in the literature is using Hofstede's four dimension only excluding long-term orientation; so we follow the same trend. We chose China, Korea, and U.S. because these nations are major targets for Korean online companies to open their business. According to Hofstede [1980], these three nations had different scores and ranking in aforementioned four dimentions of national culture and we propose interesting scores and rankings should be found amoung SNS users in the economies.

4.2 Data Collection

We collect data from college students of Korean and China between September and November in 2010. We collect 2 sets of data from Korea and China that include 467 undergraduate students in Korea and 177 undergraduate students in China, and use secondary data that Srite and Karahanna [2006] had collected from 181 undergraduate students in U.S. Gender distribution of respondents is male 51.5%, female 48.5% in Korea; male 43.1%, female 56.9% in China; male 45.6%, female 54.4% in U.S.

4.3 Instrumental Development

We adopt masculinity, individualism, power distance, uncertainty avoidance as four dimensions of national culture. Existing items are adopted in part and new items are developed, based on previous literature. Our questionnaire is based on Hofstede [1984], VSM 08, GLOBE study [House et al., 2004], Srite and Karahanna

〈Table 7〉 Questionnaire Development

National Culture	Questionnaire	Sources
Masculinity	I am generally assertive-nonassertive	House [2004]
	I am generally tough-tender	House [2004]
	I am dominant and aggressive-compassionate and understanding	Wagner and Hollenbeck [1995]
	I emphasis on achievement-cooperation	Hofstede [1984]; McClelland [1985]
Individualism	I emphasis on collective accomplishments-individual accomplishments	Srite and Karahanna [2006]
	I act for collective interests-individual interests, when collective interest conflicts with individual one	Hofstede [1984]
	I emphasis on being accepted as a member of a group-having autonomy and independence	Srite and Karahanna [2006]
	I emphasis on being loyal to a group-individual gain	Srite and Karahanna [2006] Triandis [1995]
Power Distance	Actually, power is concentrated at the top-shared throughout the society	Srite and Karahanna [2006]
	Actually, followers are expected to obey their leader without question-question their leaders when in disagreement	VSM 08
	Actually, rank and position in the hierarchy should have special privileges : strongly agree- strongly disagree	House [2004]
	Actually, a person's influence is based primarily on one's ability and contribution to the organization-the authority of one's position	House [2004]
Uncertainty Avoidance	I challenge new one, even taking risks	Hofstede [1984]
	I emphasis on new trial and innovation-orderliness and consistency	House [2004]
	I emphasis on innovative opportunities-rules and procedures	Srite and Karahanna [2006] VSM 08
	I spell out requirements and instructions in detail for other people : strongly agree- strongly disagree	House [2004] Srite and Karahanna [2006]

[2006], McClelland [1985], Wagner and Hollenbeck [1995], and Triandis [1995]. The measurement instrument is reviewed by both researchers and students. <Table 7> presents the questionnaire that was used in this study. The measurement items were anchored on seven-point Likert scales (1 = strongly agree, 7 = strongly disagree).

5. Data Analysis

5.1 Validity and Reliability

We conduct various tests to assess construct validity and reliability of the instrument [Gerbing and Hamilton, 1996]. We apply an exploratory factor analysis (EFA) to gain initial insights about item dimensionality. We conduct EFA with Varimax rotation with the original pool of 16 items. <Table 8> presents the results of EFA. A four-factor structure emerges with all predefined indicators loading on to their respective constructs, which thereby affirms convergent validity and dimensionality of the constructs. Four primary factors account for 55.1% of overall variance.

However, power 2 item fails to load highly on

'power distance' factor. Consequently, this item is dropped from further analysis. By turns, mas1 and uncert4 are dropped after EFA. <Table 9> shows the remained items and the excluded items after EFA. As a final result of EFA, we have reached at <Table 10>.

〈Table 8〉 First Exploratory Factor Analysis Results

	Component			
	1	2	3	4
mas 1	.097	.368	**.527**	.116
mas 2	-.025	.020	**.818**	.050
mas 3	.003	.189	**.810**	-.033
mas 4	-.197	-.054	**.548**	.126
indiv 1	**.763**	.130	.020	-.125
indiv 2	**.717**	.123	-.132	-.092
indiv 3	**.727**	-.115	-.002	-.014
indiv 4	**.834**	-.009	-.044	-.031
power 1	-.062	-.013	-.032	**.813**
power 2	-.141	-.055	.139	.399
power 3	.135	.138	.007	**.807**
power 4	-.184	-.053	.065	**.618**
uncert 1	.033	**.747**	.146	.027
uncert 2	-.034	**.863**	.003	-.068
uncert 3	.019	**.848**	.041	-.058
uncert 4	.133	**.309**	.149	.255

〈Table 9〉 Excluded Items after EFA

Constructs	Remained Items	Excluded Items
Masculinity	mas 2, mas 3, mas 4	mas 1
Individualism	indiv 1, indiv 2, indiv 3, indiv 4	
Power distance	power 1, power 3, power 4	power 2
Uncertainty avoidance	uncert 1, uncert 2, uncert 3	uncert 4

〈Table 10〉 Final EFA results

	Component			
	1	2	3	4
mas 1	.068	.308	**.600**	.112
mas 2	-.071	-.039	**.831**	.041
mas 3	-.030	.141	**.849**	-.025
indiv 1	**.768**	.116	.064	-.121
indiv 2	**.737**	.138	-.123	-.069
indiv 3	**.725**	-.130	.027	-.006
indiv 4	**.840**	-.017	-.020	-.006
power 1	-.077	-.032	-.013	**.836**
power 3	.115	.099	.057	**.845**
power 4	-.196	-.057	.062	**.610**
uncert 1	.044	**.745**	.194	.059
uncert 2	-.010	**.876**	.029	-.041
uncert 3	.039	**.851**	.099	-.032

To test the reliability of the items, we also calculate composite reliability, Cronbachs Alpha, and average variance extracted (AVE) using AMOS 6.0. <Table 11> presents the results of reliability tests. Composite reliability calculations show high internal consistency for four constructs ; masculinity = 0.803, individualism = 0.778, power distance = 0.794, and uncertainty avoidance = 0.864. All the values are above the 0.70 recommended level [Fornell and Larcker, 1981]. Cronbachs Alpha calculations also show high internal consistency; masculinity = 0.652, individualism = 0.777, power distance = 0.661, and uncertainty avoidance = 0.768. All are above the 0.60 recommended level. We calculate AVE but do not get values above the 0.50 recommended level [Fornell and Larcker, 1981]; masculinity = 0.453, individualism = 0.471, power distance = 0.434, uncertainty avoidance = 0.579. Overall, our items show the proper results at reliability test.

〈Table 11〉 Reliability

Construct	Composite Reliability	Cronbachs Alpha	AVE
Masculinity	0.803	0.652	0.453
Individualism	0.778	0.777	0.471
Power distance	0.794	0.661	0.434
Uncertainty avoidance	0.864	0.768	0.579

〈Table 12〉 Discriminant Validity

Construct	Masculinity	Individualism	Power distance	Uncertainty avoidance
Masculinity	0.673			
Individualism	-0.049	0.686		
Power distance	0.064	-0.118	0.659	
Uncertainty avoidance	0.289	0.072	-0.009	0.761

To assess discriminant validity, two criteria need to be met [Chin, 2003]. First, indicator should load more strongly on their corresponding construct than on other constructs in the model. <Table 12> shows that loadings of items on their respective constructs were higher than cross-loadings of the items on other constructs. Second, the square root of the AVE should be larger than the inter-construct correlations. Since both criteria are met, we conclude that the constructs exhibit adequate discriminant validity. Thus results suggest that the scales exhibit adequate validity.

5.2 Model Fit

We conduct a confirmatory factor analysis (CFA) using AMOS 6.0. CFA enables us to estimate the reliability of the overall instrument. 13 items are entered into CFA and each item is allocated to each factor of national culture. In this study, absolute indexes of goodness-of-fit such as chi-square, goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), non-normed fit index (NNFI), comparative fit index (CFI), standardized root mean square residual (SRMR), and root mean square error of approximation (RMSEA) are used to evaluate the models. Model fit indices show an excellent fit ; χ^2 = 231.479, d.f. = 59, Normed χ^2 = 3.923, GFI = 0.947, AGFI = 0.918, NNFI = 0.893, CFI = 0.919, SRMR = 0.061, RMSEA = 0.067. In summary, the application of conventional scale development procedures display excellent overall model fit. <Table 13> shows fit indices for the measurement models.

〈Table 13〉 Fit Indices for the Measurement Models

Fit indices	Thresholds	Measurement Model
χ^2(d.f.)	Smaller Non-significant	231.479(59)
χ^2/d.f.	< 2~5	3.923
GFI	> 0.90	0.947
AGFI	> 0.80	0.918
NNFI (TLI)	> 0.90	0.893
CFI	> 0.90	0.919
SRMR	< 0.08	0.061
RMSEA	< 0.08	0.067

5.3 Comparative Study on National Culture

We compare national culture of Korea, China, and U.S. in terms of masculinity, individualism, power distance, uncertainty avoidance. As shown at <Table 14>, the national culture scores of three countries show differences among national cultures.

In terms of masculinity, we find China (4.41) > U.S. (3.75) > Korea (3.57), similar to Hofstede. In individualism, we find U.S. (5.50) > Korea (4.07) > China (3.60), different from Hofstede (U.S. > China > Korea). We think it can be explained by Hofstede [2010] itself, stating that "National wealth causes individualism. When a country's wealth increases, its citizens get access to resources that allow them to do their own thing" In power distance, it is shown that Korea (4.96) > China (4.61) > U.S. (2.80), different from Hofstede (China > Korea > U.S.). Uncertainty avoidance is found that U.S. (5.28) > Korea (3.80) > China (3.22), lowered ranking of Korea from the top among three nations in Hofstede. Hofstede [1984] explains that in countries experiencing war within their territory, anxiety mounts further. We think that it simply reflects the fact that 60 years has passed since the Korean War.

6. Conclusion

6.1 Summary and Discussion

In this study, we review the empirical literature about national culture, develop the questionnaire of national culture, and test its reliability, validity, and model fit. Using the questionnaire with reliability, validity ad model fit, we measure national culture and compared national culture among Korea, China, and U.S.

We review five representative empirical articles about national culture : Hoftstede [1980]'s landmark study, VSM 94, VSM 08, Srite and Karahanna [2006]'s paper, GLOBE Study [2004]. We find out the problems that the questionnaires used in their research are not suitable for our investigation. According to the rigorous empirical procedure, we develop the questionnaire of national culture that could overcome the problems. We conduct an exploratory factor analysis (EFA), composite reliability, Cronbachs Alpha and test discriminant validity. Our constructs and items show the proper reliability and validity. Then, we conduct a confirmatory factor analysis (CFA) for testing model fit. Model fit indices show excellent fit. Thus, the application of conventional scale development

〈Table 14〉 National Culture Scores

Construct	This study			Hofstede study		
	Korea	China	U.S.	Korea	China	U.S.
Masculinity	3.57	4.41	3.75	39	66	62
Individualism	4.07	3.60	5.50	18	20	91
Power distance	4.96	4.61	2.80	60	80	40
Uncertainty avoidance	3.80	3.22	5.28	85	30	46

procedures displays excellent overall model fit.

Then, we compare national culture of Korea, China, and U.S. in terms of masculinity, individualism, power distance, uncertainty avoidance, through analyzing data set collected with proven questionnaire. We find different outcomes from Hofstede to some extent. To summarize : masculinity (China > U.S. > Korea), individualism (U.S. > Korea > China), power distance (Korea > China > U.S.), and uncertainty avoidance (U.S. > Korea > China).

Online companies should consider the cultural differences of the target nations using four dimensions we have investigated. Our findings from SNS users can be summarized as following.

Masculinity : Korean users show less masculinity than Chinese users. Cyworld in Korea reflects such a trait. For example, users of Cyworld decorate mini-homepage, chat with friends, share albums, send a gift for celebrations. We doubt that such a service might fit well with more masculinity culture of China.

Individualism : As expected. U.S. SNS users show stronger individualism than Korean users. U.S. users may prefer individual activities to group activities, which should be considered in opening SNS in such countries.

Power distance : Korean SNS users have longer power distance than U.S. users. U.S. users are more prone to present opposite opinions, ask questions, criticize the view, and discuss the topic. Design of SNS in such countries should consider this trait and allow more funtionalies to reflect it.

Uncertainty avoidance : Chinese users have less uncertainty avoidance than U.S. users. U.S. users are prone to avoid changes, follow the regulations strictly, depend a lot on expert advices. This cultural trait should also be reflected in SNS design.

6.2 Contributions and Limitations

This study tests reliability, validity, and model fit of questionnaire for national culture and contributes to the future research by adding the more rigorous method and updated scores on national culture. When firms consider implementing their SNS in other countries, our results could be instrumental for setting up the micro-segmentation strategy, viz. they can measure national culture using the questionnaire, divide on-line user group by culturally similar group, and carry out the differentiated strategy for a target region or a target segmentation.

Finally, we should admit that this work, of course, has limitations in comparing the national culture scores of SNS users in Korea, China, and U.S. We collect data for Korea and China, but use secondary data for U.S. users, even with slightly inconsistent questionnaire to measure the national culture of U.S.

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