Analysis on Intercultural Differences through User Experiences of Mobile Phone for glocalization

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Abstract: The aims of this paper are 1) to give an overview of major concepts and theories which are useful to interpret cultural variances; 2) to determine the distinctive cultural inclinations of each country in user experiences related to mobile phones; 3) to map cultural models to mobile phone user interface design for applying to design practice. This cross-cultural comparative study also provides comparisons of major works of Hall, Hofstede, Trompenaars, Jordan, Aaron, and Umpleby. Cultural theoretical concepts evaluate the user experience pattern of mobile phones. In order to conduct and develop a specific research framework for cultural interface design, an online survey was conducted in Korea, China and Japan. The responses interpret Hofstede's cultural dimensions for UI design of mobile phones to help understand the Asian mobile phone market. Preferences of products are becoming more similar and glocalization enhances the cultural identity. If interfaces are to be usable, useful, and appealing to global users, developers must account for cultural aspects in glocalizing their products.

Keywords: Culture, Human Behaviors, Glocalization, Interaction Design, Mobile phone

1. Introduction

1.1 Background and Motivation of the Study

Comparative and intercultural studies are becoming more important in the global business environment [1]. The studies on cultural interface design have evolved from addressing linguistic and semiotic perspectives to define user interface (UI) design, creating new cultural models, comparing cognitive styles, and analysis on usability. In the HCI community, thematic areas such as globalization and localization, cross-cultural user interface design, access in human computer interaction, and personalization and customization are emerging issues parallel to HCI.

Micro-Macro

Many cognitive psychologists have focused the West and the East. Edward T. Hall [2] identified 2 classic dimensions of culture in his books, *The Silent Language* (1959) and *The Hidden Dimension* (1969). Firstly, he identified high and low-context cultures, the concept is concerned with the ways information is transmitted. According to Hall, all transactions can be characterized as high, low, or middle. High context transactions feature pre-programmed information that is in the receiver and in the setting, with only minimal information in the transmitted message. Low context transactions are the reverse. Nisbett R. E. [3] compared Asian and Western

points of view in his book. Nisbett proposed that the thought patterns of East Asians and Westerners differ greatly and classified these differences as holistic and analytic. However, when positioning Korea, China and Japan (3Cs) in their theories, they were grouped in the same axis as high context and holistic. Mark Penn and E. Kinney Zalesne [4] mentioned, "Small is the new big." which is an important concept in understanding the impact of the Chinese. Unlike the other research on the difference between the East and West, they are narrowed down to only East Asian countries such as 3Cs. The 3Cs are comparatively homogeneous in its ethnicity. One nation is assumed to have a single culture. In practical terms, national boundaries have been the preferred level of resolution and each nation is the preferred unit of analysis.

Internalization-globalization

In computer science, *Internationalization* is the process of designing software applications that it can be adapted to various languages and regions. *Localization* is the process of adapting internationalized product/service for a specific region or language by adding local-specific components and translations. One type of international product model enables all groups involved in internalization to share an understanding of the components that make up the product. The components include an international base, a user interface, a market specific part and country specific information [5]. Mobile UI design involves more user experiences based on culture. *Globalization* these days is a social force, requires the dynamic processes of *institutionalization* and *culturalization* [6]. Globalization has joined different cultures and made into something different. The National Geographic article[1] titled Globalization states, "When cultures receive outside influences, they ignore some and adopt others, and then almost immediately start to transform them." *Glocalization*[2], a combined word globalization with localization, is a term that was invented in order to emphasize that the globalization of a product is more likely to succeed when the product or service is adapted specifically to each locality or culture it is marketed in. This research is intended to reinterpret the previous research done by Eune [7], which presented the design direction from a marketing point of view, from a cultural one.

Measuring Index

There is a standard personality index, MBTI, to measure personality. Yet, it is hard to find ample measurement for cultural interface design. Lee [8] has provided knowledge about cross-country and cross-produced cultural characteristics that will enhance our understanding of the interaction between the culture and the user experience. Therefore, cultural variables are useful to compare because it is possible to formulate a parameter. Hofstede's dimension had 2 weaknesses to provide directions for UI design. Firstly, Hofstede's cultural dimension [9] is accepted and used for cross-national research in organizational and managerial settings [10]. Secondly, cultural variables can be too abstract to explain the behaviors of mobile phone users which make it difficult to use directly in design practice. The survey questions and responses will provide useful considerations to understand different cultural markets.

Cano theory: personal- cultural

Process of using and consuming products is influenced by the cultural values and the general situation of an individual [11]. People carry mental programs that are developed during their childhoods and are reinforced by their cultures [12]. This is meaningful in an analysis of user preferences and recognition of mobile phones because user they are based in the culture. The Cano theory [13] about the relation indicates, the preference and

[1] http://magma.nationalgeographic.com/2000/culture/global/section1.html

[2] The term first appeared in the late 1980s in articles by Japanese economists in the Harvard Business Review.

satisfaction of hum ans fluct uate according to the functions and the length of use of the product. There are two axes such as 'satisfie d custom er - dissatisfied custom er' and 'product/service d ysfunctional - serv ice fully fun ctional'. User's satisfa ction ca n gra dually cha nge from attractive (delighters), to one-dimensional (more is better) and to (must be). On the other hand, considering that the personal and the cultural have a relationship when many are grouped together, they m ay seem like the ent ire co untry's cu lture. Preference and satisfaction can ch ange fro m personal to cu ltural and to universal as t ime passes with m odification f rom t he C ano theory (Figure. 1).
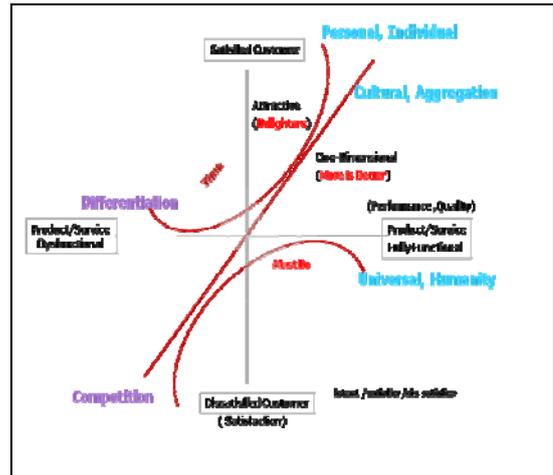

Figure. 1 Personal-Universal relation

Evolution

User interface design focuses on usability, but emotion and interaction have become more important .Then Jacob Neilson's [1 4] th eory becomes n o lon ger relevant. Jord an mentioned "b eyond usability" in h is boo k. Do nald Norman also mentioned th at d esign becomes more imp ortant t han usab ility in h is bo ok [15]. Eu ne's prior research [16] fo und that weight of usab ility decreases importance o f emotion related increase. Sh e d eveloped five i ndexes for U I eval uation: aest hetic, recognizable, usable, a ffective, di fferential and de sirable. As an evaluation, Hofstede's valu e changes al ong ti me. W an [1 7] h as qu estions wh ether th e current cu ltural in dex scores for users coming from Islamic countries are di fferent from the scores produced by Hofstede in 1980 and 2009. T able 1 com pares t he di fferences of t he i ndex scores t hat generate t he understanding of cul tural dimensions for M uslims bet ween 1 980 a nd findings reported in th is study. Th e cu rrent ind ex reflects wh at is being re ported i n 19 80s; p ower distance (Low), i ndividualism (Hi gh), and uncertainty avoi dance (Low). One reason may be due to the continual i nfluences of the acc ulturation factors that may occur throughout the years. From this result, we can gain some understanding as to how Korea was known as t he Morning Calm nation to Dynamic Korea.

Table 1. Index scores of Hofstede's dimensions for selected Islamic countries

Year of 1980

Cultural Dimension	Arab Countries(*)	Iran	Malaysia
Power Distance	80; High	58; Low	104; High
Individualism	38; Low	41; Low	26; Low
Masculinity	53; Medium	43; Low	50; Medium
Uncertainty Avoidance	68; High	59; High	36; Low
Long Term Orientation	Not Available	Not Available	Not Available

(*) Arab countries (Egypt, Iraq, Kuwait, Lebanon, Libya, Saudi Arabia, UAE)

Year of 2009

Cultural Dimension	Arab Countries (*)	Iran	Malays
Power Distance	18; Low	18; Low	30; Low
Individualism	71; High	71; High	75; Hig
Masculinity	49; Medium	49; Medium	36; Low
Uncertainty Avoidance	41; Low	41; Low	14; Low
Long Term Orientation	36; Low	36; Low	35; Low

(*) Arab countries (Iraq, Jordan, Syria, Yemen)

1.2 Scope and Method

People carry mobile p hones all th e ti me. So , m obile ph ones are not on ly for co mmunication but also an identifying tool. They express one's personality and characteristics and reflect his/her culture. This study focused on user experience for perception, preference and satisfaction by placing emphasis on culture. Since, "Culture is a fuzzy set of attitudes, beliefs, behavioral norms, and basic assumptions and values that are shared by a group of

people, and that influence each member's behavior and his/her interpretations of the "meaning" of other people's behavior [18];" it expands the idea hinted in Hall's definition, i.e. the role of culture as both an influence factor for behavior as well as an interpretation factor of behavior.

The questionnaire helped to give an overview of mobile phone usage patterns, design preferences, awareness of next-generation mobile phones, and cultural characteristics in 3Cs. Among many questions based on previous Eune's research [19], only 22 questions were used in this paper because only they were relevant to cultural perspectives (see the right column of Table 7). Online surveys which have been done by 3 international survey agencies [20] has been performed in 3Cs. Eune's earlier research, focused on technological advancement, brand, and purchase intent by placing emphasis on depth in its marketing view. The survey was done on male and female internet users between 15-39 years of age with experience in mobile phones. The age ratio of those surveyed was 2:4:4 (age of 15-19:20-29:30-39). The Online Surveys were collected through e-mail, combined and analyzed through full packaging software application.

Table 2. Survey Scheme

Target for Survey	Korea	China	Japan
Number of sampling	1040	644	527
Sampling method	Purposive Quota Random Sampling		
Survey Institute	Metrix Inc Infoplant		Marcom-China
Method and Duration	Online survey through email for 2 weeks		

1.3 Procedure

(1). First, the online survey research investigated each nation's characteristics in comparing the 3Cs. We used adapted the framework as part of the data gathering process to be interpreted by different nations.

(2). It was followed by the literature review on the understanding of cultural dimensions to develop a single standard model for this study.

(3). Interpret cultural differences in terms of each nation

We used our framework to highlight the commonalities of world values shared by 3Cs to Hofstede's cultural dimensions. Table 7 shows comparisons of design that highlight culture dimension patterns following Hofstede's model. 15 experts, using card sorting methods, categorized the 22 questions into 5 cultural variables of Hofstede's dimensions after researching various models. Therefore, 2-6 questions were put in each category of cultural dimensions in Table 7.

(3). Map Culture Dimensions to UI Components.

Figure. 2　Procedure of the study

These identified a relationship between cultural characteristics and mobile handset usage and confirmed discrepancies reflected in the usage of mobile phones. The survey investigated whether mobile phone UI/UX imposed with the designs of each culture.

(4). Suggest Design a UI guideline for a Culture

In using cultural models to predict how 3Cs user' behavior about mobile phone usage impacts the UI design. The answers show how the results fit the predictions.

2. Review of the survey of National Characteristics on marketing views

Results of the questionnaire gave us an overview of mobile phone usage, purchase, design preferences, awareness of next-generation mobile phones, wireless internet usage, and cultural characteristics reflected in the usage of mobile phones in Korea, China, and Japan. Based on this, national differences in mobile phones can be presented in Table 3. This chapter based on Eune's study [19] reports the overview from understanding Asian national differences among 3Cs.

Table 3. Representative Characteristics of Korea, Japan, and China on Mobile phones

Section	Common	Korea	China	Japan
User/ user's behavior analysis	-Inclinations in uses and values -Intending values -Human relationships -Interested functions -dissatisfactions	-Maniac uses of various capabilities -Pursuit on functional values -Pursuit on technology-oriented values -Grouped/ concentrated Music/ PC /internet linked interests -Complaints on capability and price of the device	-uses on simple voice communication and business -emotion and showing off/ pursuit on symbolic values -pursuit on flowing value -pursuit on relationship/ mixed diversity -interests on game, and movies -dissatisfactions on device design	-purpose oriented use -emotional value/ pursuit on convenience -stability oriented value -self centered/ considerations on others/ interest on camera functions/ dissatisfactions on the transmitting price
Function /consuming behavior and main functions on use	-importance on price, brand, and design -main uses on text messaging -importance on the size and thickness, display size/resolution. Size and thickness, recharging capability, weight, display size/complaints on resolution.	-importance on price (31.9%), brand (24.5%), design (15.5%) -importance on watch, schedule managing, and camera functions. -size and thickness>display size and resolution>camera functions -size and thickness, recharging capability, camera functions, complaints on using menus. -watch/alarm/schedule manager (71.7%)> game (42.7%)>photo shooting/transmitting (36.8%)>pictures/changing rings (34%)	-importance on brand (35.3%), price (23.9%), design(15.9%), price>brand on multiple responses -importance on game functions -size and thickness>color and material>display size and resolution>weight -color and material, weight -size and thickness, color and material, weight, display size and dissatisfactions on resolution. -game (50.1%)> watch/alarm/schedule manager (29%)>picture changes in rings (27.3%)	-price(27.3%), design(22.2%),brand(15.5%), putting the most importance on designs among 3 nations, less importance on brands (first place on multiple responses) -importance on camera functions -size and thickness>display size and resolution>color and material>camera functions -importance on color and material -size and thickness, recharging spec and standby time, display size and resolution, camera functions, weight, dissatisfactions on using menus -watch/alarm/schedule manager (61.2%)>photo shooting/transmitting > pictures/changes in rings (29.5%)>weather/news/entertainment/stock (29.3%)
Design Image / preferred design	-preference on folding types -grey color -high gloss/firm materials -simple designs -more importance on size ant various functions -GUI with icons -simple/free starting booting display	-folding, sliding, rotation method -concentrations on grey color, high preference on white and blue -two tone -acceptable design>unique design -sharp and high-tech design -preference on dynamic booting display	-folding and sliding types -concentrations on silver, high preference on blue and red -single color, especial on high gloss -unique design -comparably decorative design -sharp and high-tech/ round and friendly design. -preference on dynamic booting display. -various and detailed navigation pad	-concentrations on folding types. Preferences on rotation and bar types(no preference on sliding types) -various color, preference on black than white High preference of pink and blue. -single, half high-gloss -acceptable design>unique design -sharp and high-tech -simple, slim, friendly, emotional image -less preference on icons -still images on booting display

It led us to reach the following key features. First, mobile phone-related awareness and culture in the 3Cs were influenced by technological maturity, policies and strategy of wireless service providers/manufacturers. Second, Koreans and Japanese responded similarly to questions regarding technological maturity, while Chinese and Koreans seem to have more in common in terms of users' tendencies. Third, findings indicated that there was little in common among the countries related policies or strategy of telecom service providers/manufacturers.
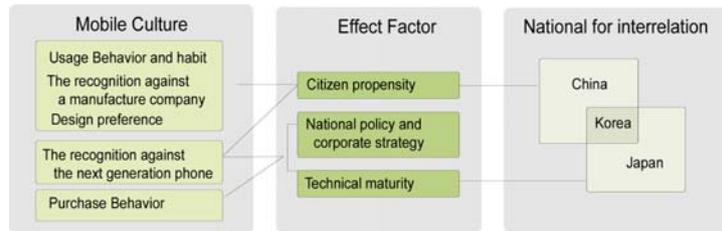
Figure.3 Relationship between Mobile Culture and Determining Influences

3. Reviews and Interpretations of Cultural Models

3.1 Introduction of Cultural Models

Culture has been defined in many ways because of its multi-dimensional characteristics. Identifying cultural characteristics is difficult because we lack a measure that can find implicit levels of culture based on Straub, D.W [21]. In trying to address this, Parsons, T. and Shils, E.A. have conceived of culture as a set of dimensions that provide a framework for cross-cultural comparisons of user behavior [22].Work in defining cultural dimensions has been undertaken by Hofstede Greert, Edward T. Hall, Trompenaars Fon, and Parson, T & Shils E. A. and Kluckhohn & Strodtbeck Schwartz [23].

(1). Cultural dimension by Hofstede Geert [24] has been the main focus. An overview of Geert Hofstede's cultural dimensions for the index of culture comparison would be useful. Hofstede's Cultural Dimensions are explained as follows.

Table 4.　Hofstede's Cultural Dimensions [25]

Power Distance Index (PDI)	Focuses on the degree of equality, or inequality, between people in the country's society. A High Power Distance ranking indicates that inequalities of power and wealth have been allowed to grow within the society. It is the extent to which the less powerful members of organizations and institutions (like the family) accept and expect that power is distributed unequally.
Individualism (IDV)	Focuses on the degree the society reinforces individual or collective achievement and interpersonal relationships. A High Individualism ranking indicates that individuality and individual rights are paramount within the society.
Masculinity (MAS)	Focuses on the degree the society reinforces, or does not reinforce, the traditional masculine work role model of male achievement, control, and power. A High Masculinity ranking indicates the country experiences a high degree of gender differentiation.
Uncertainty Avoidance (UAI)	Focuses on the level of tolerance for uncertainty and ambiguity within the society for unstructured situations; it ultimately refers to man's search for Truth. A High Uncertainty Avoidance ranking indicates the country has a low tolerance for uncertainty and ambiguity.
Long-Term Orientation(LTO)	Focuses on the degree the society embraces, or does not embrace long-term devotion to traditional, forward thinking values. High Long-Term Orientation ranking indicates the country prescribes to the values of long-term commitments and respect for tradition.

(2). Jordan [26] clustered various countries into cultural groups. His groups included Democrats, Meritocrats, Egalitarians, Supportive, Libertarians, Planners, Collectivists and Authoritarians. For example, he characterized France as a Supportive culture, the United States as a Democratic culture, which is a tough, short-term culture in which there is a very strong emphasis on individual expression. Although, it will be mentioned later, Korea belongs to Collectivist, while Japan is a Planner. There is no mention of China in Jordan's research. No countries can have the same national features, but according to this research, China has been put in the same group as Hong Kong, India, Indonesia, Malaysia, Philippines, Singapore and West Africa.

(3) Umpleby [27] compared two cultural variables on Hofstede and Trompenaars's [28] dimension scale. Both approaches proposed a set of cultural dimensions along which dominant value systems can be ordered. The dimensions can be grouped into several categories. He also suggested 4 categories for organizational and

management purposes such as relations between people, motivational orientation, and attitude toward time and communication. Umpleby's idea is reflected in Table 9.

(4). Marcus [29] made a model of User Interface Components (metaphor, mental model, navigation, interaction and appearance) combined with Hofsted. Marcus and Baumgartner [30] combined the scheme of Hofstede's cultural dimensions and the scheme of design components in a five-by-five matrix to evaluate corporate website with perspectives. Examples are shown in Table 5. The research of Honold [31] predicts how German and Chinese consumers gain information through website usage in using this frame of Marcus's cultural models as well. These exemplary cases imply that the issue of user interfaces for various platforms such as desktop, web, and mobile reach across culturally diverse user communities, within a single country/language group, and certainly across the world.

Table 5. Marcus' Model using Hofstede's cultural dimensions and UI design components

	PD	IDV	MAS	UA	LTO
Metaphors	SIE HIT	SIE McD	McD	S SIE SAP IKE MER	
Mental Model	HIT	S SIE PEO MER	SIE	SIE	SIE
Navigation	S		SIE	SIE McD	
Interaction			SIE McD MER		
Appearance	SIE PEO COC		McD	SIE McD	SIE

Metaphor: Clear concepts via words, images, sound, and music

Mental Models: Appropriate organization and representation of data, functions, tasks, roles, and people in organizations of work or play.

Navigation: Efficient movement within mental models via menus, dialogue boxes, and control panels, etc.

Interaction: Effective input/output sequencing including feedback; overall behavior of human computer and human-human systems.

Appearance: How the product/service appears to the senses (visual, acoustic, tactile, etc), especially related to visual identity and/or branding objectives.

3.2. Interpretation of National-Cultural Differences by Hofsted's Cultural Dimension

Here are the implications by nation based on Cultural Dimension for Hofstede's view [32]. The following are the results when the three Asian nations are separated for comparison purposes.
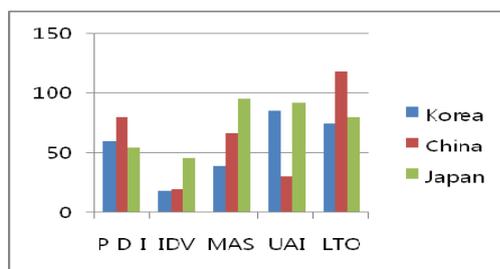

Figure. 4   Hofstede's Value Graph

Cultural Dimension	Hofstede's Value
1.Power Distance Index (PDI)	Japan<Korea< China
2. Individualism (IDV)	Korea<China< Japan
3.Masculinity (MAS)	Korea<China<Japan
4.Uncertainty Avoidance Index(UAI)	China< Korea<Japan
5. Long-Term Orientation (LTO)	Korea<Japan<China

Table 6. Hofstede's Value

This analysis below is modification of an extract of Eune's paper [33] for a comprehensive understanding of this cultural study.

(1). Korea[3]

According to Jordan [26], in Korea is long-term oriented, high power distance culture, it is difficult to obtain an individual opinion. South Korea's highest Hofstede Dimension is UAI at 85, indicating the society's low level of tolerance for uncertainty. In an effort to minimize or reduce this level of uncertainty, strict rules, laws, policies, and regulations are adopted and implemented. As a result of this high Uncertainty Avoidance characteristic, the society does not readily accept change and is very risk-adverse. South Korea has a low IDV rank of 18. The society fosters strong relationships where everyone takes responsibility for fellow members of their group.

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3. http://www.geert-hofstede.com/hofstede_south_korea.shtml

(2). China[4]

China as Authoritarians has very high respect for authority. China is moderately future oriented and comfortable with uncertainty. Hofstede an alysis fo r Chin a has LTO t he h ighest-ranking factor (118), which is tru e for all Asian cu ltures. Th is Dimension ind icates a so ciety's t ime perspective an d an attitu de o f persevering; th at is, overcoming ob stacles with t ime, if no t with will and st rength. Th e Ch inese rank lower th an an y other Asian country in IDV ranking, at 20 compared to an average of 24.

(3). Japan[5]

Jordan characterized Japan as a Planner culture, very future oriented cultures, with a strong dislike of uncertainty. Japanese are moderately collectivist with a moderate respect for authority. The core values developed by primary forces t hat s haped Ja panese culture incl ude High PD I, I ndividualism, S trong U AI and M asculinity. S trong Uncertainty Avoidance is featu red in Atypical of Asian cultures, due to historic geographical/political isolation and concern about external threat, the comfortable familiarity of ethnic homogeneity, and the pervasive tradition of kata.

4. Results and Discussions

4.1 Interpretation of National-Cultural Differences based on Survey

This stud y is to compare th e Surv ey resu lts o n each nation's inclination using th is matrix and Hofstede's own interpretation to find relevant con sistency an d dissonance. Fo llowing are resu lt of th e co mparisons based on cultural dimension. The basis for the cross-cultural comparative study was established by defining the essence of culture and theoretical framework. It attempted to in terpret the interrelationships among characteristics of usage patterns, subjective preference, and cultural values of users. Below (Table 7) is Surv ey Frame for Cross-Culture mobile UI|UX design. Questions were asked to these 3Cs. To analyze a country's preference in design based only on cu lture is difficult. So, th is research used th e questions written below. Th ese questions are used to see a country's cultures in a design point of vie w. T hen eac h dimension is ask ed sev eral questions related to th ese subjects. Cultural dimension can be interpreted according to categorized answers.

Table 7. Survey Questions for the Interpretation of National-Cultural Differences

Cultural Variables	Questions
Long-Term Orientation (LTO)	- Do you prefer to use a menu' vs. 'Do you prefer to use hot keys'? - Do you want to make calls while walking? - Do you keep the phone at hand or keep in pocket while it's not being used? - Are most of your calls out of necessity (not to chat or enjoy conversation)? - Do you prefer additional functions besides current functions? - Do you prefer sleek and futuristic design styles?
Masculinity (MAS)	- Do you use service outlets shop rather than to trouble shoot yourself? - What do you do when the call doesn't go through? Rather than just giving up, I would leave a voice message or use SMS.
Power Distance Index (PDI)	- Are Functions more important than the size of the phone? - Would you keep your current phone as long as it doesn't break down?
Individualism (IDV)	- Do you like to use your mobile service to keep your appointment times flexible? - Do you use functions besides phone calls & SMS very often? - Level of use of alarm function; Do you use the alarm function to awaken you up in the morning? - Do you try to keep your voice down when using the phone in public places? - Do you turn off your mobile phone when you do not want to be bothered?

	- Do you Prefer standard design styles to Fashionable Design Styles?
Uncertainty Avoidance Index (UAI)	- Do you use your home telephone when it is cheaper in cost at home instead of the mobile phone? - Do you lock your mobile phone with a secret code so that only you can access the phone? - Are you interested in mobile phone related sales events and discount benefits? - Do you keep conversations short without chatting? - Do you decorate your phone with stickers and accessories? - Do you prefer dynamic animated screens over static screens?

(1). Long Term Orientation (LTO): Attitude of Time

Ways of task handling and temporal perception have the same ranking. Comparing the author's and Hofstede's results differ for Korea. In general, Korea follows Hofstede's value. However, when it comes to IT, Korea has advanced and is eager to upgrade. Koreans love new products and to multitask. Values associated with LTO are thrift and perseverant; values associated with short term orientation are respect for tradition and fulfilling social obligations. The Chinese national tendency is to ward LTO; Chinese are slow toward time and have long term perspectives in attitudes compared to Koreans.

(2). Masculinity and Power Distance Index (PDI): Nature of Motivations

Nature of motivation includes masculinity and PDI in Hofstede's value. This is related to the concepts of nature and human activity. Gender difference is least in Korea followed by China then Japan. Male Japanese usually read the manuals and repair broken objects. In the nature of human activity, there are two questions such as, "Would I keep my current phone as long as it doesn't break down?" and 'Is function more important than the size of my phone?" The order of PDI represents the distribution among the society in money/power is Japan<Korea<China. Koreans were more dependent and cared more for others' perspectives.

(3). Individualism (IDV): Related to Human

IDV's in Hofstede's is Related to Human Category. One individualist extreme was Western societies. Japan exhibits more individualism. Japanese express their personalities in what they do. As mentioned earlier, Koreans want to hear from others and ask each other for opinions. A best seller can create a large impact on the sales market. Chinese are very flexible while Japanese are very persistent in following rules.

(4). Uncertainty Avoidance Index (UAI): Communication Matters

Message Contexting and Expression have been grouped with the UAI in Hofstede's study in the Communication Matters category. According to the interpretation of UAI, people in uncertainty-avoiding countries such as Japan have more control over their emotions and are motivated by inner nervous energy. The opposite types, uncertainty-accepting cultures like China, are more tolerant of opinions different from what they are used to; they try to have as few rules as possible.

4.2 Cultural UI|UX Design Guidelines for each Nation

The results identify the differences and similarities among countries on culture. These cultural value systems affect human thinking, feeling, and the behavior of using mobile phones in predictable ways. Characteristics as well as discrepancies among the 3Cs will not only prove to be useful data in helping to understand each nation, but also valuable for businesses making inroads into these countries. To learn practical principles and techniques, these Cultural UI|UX Design Guidelines are immediately useful in terms of both analysis and design tasks for 3Cs.

Table 8. Cultural UI|UX Design Guidelines by each Nation

Cultural Dimensions	Korea	China	Japan
Long-Term Orientation (LTO)	^. Emphasis on human relationship	^.Preference on round image ^.Do chatting with no main reason ^ Emphasis on human relationship ^.chatting as major interaction. ^ to adding function like MSN ^. Focused on General Audience	-Minimal and focused images; sharp borders, lines, edges; - concentration on showing task or product - Quick-results -Japanese prefer images in place of text
Masculinity (MAS)	V. "Feminine" colors, shapes, sounds V. acceptance of Cuteness V. Practical, function-oriented, give them new or multi function V. Natural image, traditional art, soft focus used to generate emotional/ aesthetic appeal V.Acceptance of Cuteness V.focus on relation rather than Action V. Provide Social Networking		^.due to Serious about game and reward for win, offer sports games and service ^. work-oriented prior to family, offer business content ^.Artwork may be utilitarian/instrumental
Power Distance Index (PDI)		^.Due to emphasis on organization and nations, enhance brand ^.suggest symmetry menu structure ^.Due to preference on strict hierarchy, give them navigation power. ^.Ranking oriented ^.password, authentication	
Individualism (IDV)	V. Offer function of participate as group, V. Profile pictures are of cartoons, animals and celebrities.		^.Offer personalized factor such as mobile accessory ^.Pursuit multiple device. ^.Keyword searches
Uncertainty Avoidance Index (UAI)	^.Clarity of meaning of icon should be considered.	V. Provide to open ended learning broad assignment, V. Provide few timetables V. Varity skin theme, and melody.	^.Persist on identity ^. Usability is very important ^.Precise, complete, detailed input and feedback of status

^: status due to values of dimension is high while V: status due to values of dimension is low.

4.3 Cultural UI Design Guidelines with UI components

Table 9 is an adapted Marcus m odel wh ich is a 5*5 matrix combined with Hofstede's d imensions. Within the user-interface com ponents are considered whe n developers desi gn mobile phones. Thi s veri fied t hat these questions are c ulturally meaningful because the res ults from the que stions are rele vant to Hofsted' s model a nd Jordan's cul tural gr oup. M arcus [34] mentions, four fa ctors are see n as impacting key desi gns attributes to images, layou t, co lor and   navigation. Practitio ners will   have an opp ortunity to put th eir und erstanding i nto design practice. This synthesis can reveal each dimension's overall status quo for 3Cs. Hofstede 's variables are too difficult directly ap ply to u ser in terface. Attitu de of t ime, Natu re of Mo tivation, related to Human , and Communication matters can be replaced by titles of Hofstede' dimensions. These terms are m ore intuitive while Hofsted's dimension is widely accepted.

Table 9. Cultural UI Design Guidelines with UI components

Cultural Model	Cultural Dimensions	1.Metaphor	2.Mental Model	3.Navigation	4.Interaction	5.Appearance
Attitude of Time	Long-Term Orientation (LTO)	- Do you prefer additional functions besides current functions?	- Are most of your calls out of necessity (not to chat or enjoy conversation)?	- Do you prefer to use a menu' vs. 'Do you prefer to use hot keys'?	- Do you want to make calls while walking? - Do you keep the phone at hand or keep in pocket while it's not being used?	- Do you prefer sleek and futuristic design styles?
Nature of Motivation	Masculinity (MAS)			- Do you use service outlets shop rather than to trouble shoot yourself?	- What do you do when the call doesn't go through? Rather than just giving up, I would leave a voice message or use SMS.	
	Power Distance Index (PDI)		- Is Function more important than the size of the phone?		- Would you keep your current phone as long as it doesn't break down?	

Related to Human	Individualism (IDV)		- Do you like to use your mobile service to keep your appointment times flexible? - Do you try to keep your voice down when using the phone in public places?	- Do you use functions besides phone calls & SMS very often?	- Level of use of alarm function; Do you use the alarm function to awaken you up in the morning? - Do you turn off your mobile phone when you do not want to be bothered?	- Do you prefer standard design styles to fashionable design styles?
Communication Matters	Uncertainty Avoidance Index (UAI)	- Do you use your home telephone when it is cheaper in cost at home instead of the mobile phone?	- Do you keep conversations short without chatting?	- Are you interested in mobile phone related sales events and discount benefits?	- Do you lock your mobile phone with a secret code so that only you can access the phone? - Do you prefer dynamic animated screens over static screens?	- Do you decorate your phone with stickers and accessories?

4.4 Conclusion

This paper intends to show how cultural theory and these cultural models by expert's influence user-interface design. Concepts of cultural models are to be used as a comparison tool of different cultures. The goal is to develop the most useful model as a cultural design reference to survey other countries. Mobile phone developers should learn to from Jordan's [26] cultural groups, being their target users, and consider Hofstede's [10] cultural before determining which research approaches are most appropriate. The second part of the study followed with online survey analysis on 3C's mobile phone users. Korea shows a very as collectivist characteristics, is and ready to use new functions. Mobile phone UI|UX design practitioners have to think to develops to social network function such as SNS and recommendation system for each others. China shows respect for authority and exploratory tendencies. Japan prefers static interaction with one's style. Cultural differences are at times an annoyance at best and often a failure for marketing drawback. Therefore, cross-cultural research will provide the comprehensive understanding which translates to more successful results for marketing. A country meets the global standard of the world when it is able to glocalize. This cultural user interface research is the key to understanding those needs and to provide the companies with advanced market positioning.

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