

Ethnographic Research of User Behavior of Mobile Devices of China, Korea, India, and The Netherlands

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Abstract. A product and its cultural understanding explain the social perception and value of the product and its users. Recent cultural studies show that cultural differences can have influence on the usage and satisfaction of the product through the advent of the Internet and globalization. This study explores such differences in four countries, based on observations on the usage of mobile media. As part of ethnographical method, researchers visited Korea, China, India and the Netherlands, observed and interviewed a total of 48 subjects (12 for each country) in order to analyze the characteristics their use of mobile media. The observations were performed over four sectors of gaining, managing, sharing and enjoying media content, which were further investigated through two times of comprehensive synthesized analysis by local researchers. After the observations, 10 major differences were found over three categories. How to collect and share media content varied depending on each culture. Particularly, content was used for personal entertainment as well as for social networking purpose with varied details. These differences are believed to stem from cultural differences, which would help understand the expected experience and value in each of the countries.

Keywords: User Centered Design, Cultural Difference, Interface Design, Ethnographical Research.

1 Introduction

1.1 Cultural Differences

The necessity of culture studies arises when human, as the agent of interface manipulation, and their cognition process are taken into consideration.[1] The main interest of HCI is to find the way to overcome the gap between the interface of the computing system and human being, thus, to offer a solution by which communication of manipulation and actual use is facilitated. The cognition and judgment of human is very important when it comes to interface manipulation. The user faces difficulty to manipulate a product if its interface doesn't meet the expectation of the users' mental model. Then, how is the users' mental model formed? According to Norman[2], the way the user experience the perception of the world affects the formation of this mental model. The users' experience may be

regarded as the synthesis of memories in relation to everyday life, education, action, etc. and it cannot be separated from the cultural background and circumstances in which the user is living. Therefore, we think that the cultural background may also affect the user satisfaction upon the interface manipulation. Nisbetts's study proved several facts that can back up this kind of idea. He explained that the cultural difference between the East and West strongly affects the criteria of cognition and judgments; The way of people choose nouns, how they define the upper side and the lower side, and how they differ themselves and others. [3]

To figure out the cultural difference focusing on the utilization culture and the value sets, like the case of Boztepe, understanding upon Cross Cultural Communication is necessary.[4] We think it will be helpful for designing a product which, beyond providing fundamental usability, satisfies the overall value and requirements of the user. Furthermore, the recent trend of design objective is changing to 'providing a more amazing experience' from 'maximizing the efficiency of it.' Due to this kind of change, studies in relation to the user experience are becoming more important and interests toward user participating design method are arising since it may be useful to collect and analyze the user's experience.

1.2 Several Issues That Describe Cultural Differences

Researchers including Nisbett[3] suggested comparison key words that showed strong contrast among each culture. In case of Hofstede[5], he explained that there is an invisible part and clearly distinctive part between the individuals and culture, and in human nature. Above the common nature that triggers human behavior, culture is positioned and on the top of it the personal characteristics exists. Studies upon cultural difference have been strenuously focusing on the difference between these two areas. Accordingly, in this study, rather than focusing on the common behavior in the use of a given product, we focus on the difference between personality and culture.

Hofstede made use of culture dimension to define work-related value. The reason why we chose his argument was because it provides a viewpoint by which we can understand the way that the participants perform a given task that is mainly about the interaction with a product. We chose Hall's dimension to find out what releases the right response. Through his argument, we expected to decide the appropriateness of each behavior against using a product. We chose Trompenaars's dimension to determine the way in which a group of people solves problem.[6] Through his argument, we expected to gain understandings about the participants' objectives of using the product.

In short, to understand the cultural difference regarding the product, we covered the purpose of the use, the influence of the product use by each culture, and the cultural tolerance shown for the product. However, we didn't expect that all the comparison criteria would be helpful. As we didn't try to find the answers for many questions nor to observe various kinds of behaviors but only those that were limited and related to the use of product, the analysis were made selectively with the cultural dimension that we thought would be proper for this study.

Table 1. Synthesized categories of Cultural Variables from Hofstede, T.Hall and Trompenaars

Researchers	Cultural Variable Categories
Hofstede	Power Distance
	Individualism vs. Collectivism
	Masculinity vs. Femininity
	Uncertainty avoidance
Edward T.Hall	Time
	Context
	Proxemics
	PMS
	Message Velocity
	Action Chain
Trompenaars	Universalism vs. Particularism
	Individualism vs. Collectivism
	Neutral vs. Emotional
	Specific vs. Diffuse
	Achievement vs. Ascription
	Attitudes Toward Time
	Attitudes Toward Environment

2 Observation Research

Along with cultural gap, many other factors were considered in selecting four countries. These candidates were finally boiled down to Korea, China, Indian and the Netherlands by availability of researchers, subjects with similar standard of living, Internet accessibility, and the prospect of cultural research. Korea was an initiative choice, because it was where the research company was located, the research was designed, and allowed more pilot tests to be attempted. The major reason for China was that it is one of the fastest growing economies together with Brazil, Russia and India (so-called the BRIC) and has the biggest market in the world. India was chosen because it was also one of the BRIC members. Since Indians shows widely ranging gaps depending on the class, region, and religion, the Indian culture cannot be defined simply. However, India has shown a remarkable economic growth lately, and few studies have done on its younger generation compared to other countries. The Netherlands made the list because it could present a stark cultural contrast with those of Korea, China and India, helping the study to reveal their cultural environments. This study mainly used a process of observing users' behaviors and analyzing them. The observations first were performed as a primary approach, and in-depth interviews and brief survey were added to supplement the interpretation. In case a country-specific obstacle might arise, the field study was divided into required and optional sections to provide Procedural flexibly during the limited study period.

The results of the observations and interviews were categorized by keywords with the KJ method. As they were organized into similar issues by an inductive approach, the differences became distinctive.

This study was based on comments from the 48 interviewees, 12 from each of the countries. Conclusion was made from these remarks, and the local researches re-organized the data through two times of workshops in order to exclude extreme interpretations. Because this study was qualitative by nature, how many people agreed or who said what would not be meaningful. Followings include the data verified by the local researchers.

The observation data were classified into 10 categories, which were sub-divided into three sections: personal aspect, social aspect, and technical trend.(Table 2.)

The personal aspect showed individual taste of media and products with a focus on a product, media, and personal experience and their value. The social aspect included a user's community surrounding the product and media content. The technical trend covered differences by country in social phenomena caused by trends of technical development.

3 Findings

3.1 Physical Possession and Management of Media Content

The Korean and Chinese users obtained high-definition videos and music through peer to peer methods. One of the most frequently used ways was an instant messenger, which was particularly apparent among the users in their early twenties. Since the Internet infrastructure was well and widely established in Korea, many of them enjoyed a music streaming service. They did not take a physical player as a requirement.

On the contrary, most of the Dutch interviewees said that it was somewhat special to buy media files, but that they were willing to purchase content for their favorite singers or ones worth an eternal storage.

There were no distinctive cultural differences in managing media. It is believed that how they keep and manage media files depend on personal taste and the development of the Internet. (Table. 2)

3.2 Use of Digital Media Product and Social Relations

A noticeably different set of data on awareness of technology was collected from the Chinese and Dutch users. The Chinese users thought it was good to buy a latest product with advanced functions. They regarded a gadget quipped with a variety of features as a good machine. Additionally, buying a much-hyped product could represent their self-images to others. The Dutch consumers agreed that a versatile product is good, but they did not feel the necessity to keep up with technological advancement and trends. One of the Dutch users even replied that it was hard for him/her to understand why Koreans or Chinese are so interested in buying newly released mobile phones. And most of the users from any country, except for China, preferred an easy-to-use product. But, some of the Chinese subjects said that they would choose products with as many features as possible, even if they end up not using all of them.

The Chinese, Korean and Indians thought that playing music out loud was a rude behavior. However, listening music without an earphone was seen socially accepted

in China. The low-income Indian users were generous toward the noise. The Indians valued personal indulgence, the Koreans and Chinese appreciated respect for a person and his/her communities, and the Dutch interviewees prioritized the obedience of social standards. The Indians showed a different approach toward privacy depending on their income status. For most of the low-income users, a mobile phone did not belong to one person. They believed that a phone could be shared with friends or family members whenever a phone chip is replaced. However, the middle- and high- income Indians emphasized privacy.

Table 2. Synthesized issues after affinity diagramming (KJ Mapping) with findings of user researches

Categories	
Physical Possession and Management of Media Content	Taste of Content Selection
	Characteristics of Media Usage
	Frequency of Media Usage
	Recognition of Copyright
Use of Digital Media Product and Social Relations	Social Awareness of Technology and Attitudes toward Convergence
	Etiquette and Privacy
	Personal Originality
	Importance of Instant Communication
	Photos and Entertainment

4 Analysis

The quantitatively collected research data can be analyzed on the basis of the previously suggested issues.

- 1. The issue regarding the product usage focused on cultural dimension
- 2. The cultural difference issue based on the contents use behavior
- 3. Experience values by different countries found from the synthesis of the two above-mentioned issues

4.1 The Issue Regarding the Product Usage Focused on Cultural Dimension

In the early part of this paper, we applied cultural dimensions suggested by other researchers to divide each area and to make a brief summary. With Hofstede's variable, we tried to figure out how it affects the interaction between the product and the user. With Hall's dimension, we tried to learn how appropriate each behavior, related to use of the product, could be. With Trompenaars's dimension, we expected to figure out the purpose that the participants have when they use the product.

However, on the contrary to our naive expectations, it wasn't meaningful to categorize the findings of this study into each area. Most of the findings were able to be divided into other categories. The conclusion we reached during a workshop session, in which the data was interpreted, was that the findings were either unessential or over-valued. But, luckily, some of the interpretations were still valid.

4.1.1 Individualism vs. Collectivism

None will show the difference between the East and West better than the case of Individualism and Collectivism. Whenever issues related to how people use contents or what/how they prefer to use occurred, Individualism and Collectivism showed a distinct contrast. In this study, the relationship between a person and his/her community surrounding media provided an important aspect. The Koreans, Chinese and Indians thought that using and sharing media was not just for the users, but also for friends or members in their communities. And by sharing their personal experience, the users confirmed and strengthened their ties to communities. Conversely, the Dutch users drew a clear line between the person and the group. This demonstrates that there have been needs for the huge trend of online social networking.

4.1.2 Uncertainty Avoidance

Korea, along with Japan, showed very high degree in avoiding uncertainty. If necessary, the participants tried to share as much information as they could. Although Korean male participants introduced themselves as having introversive personality, they were very active in communications, for example, exchanging SMS, file sharing, etc. At the time Hofstede ran his study, there would not have been enough data regarding China. However, based on the findings of this study, we assume that China will be in the similar range as of Korea for the case of this variable. In case of the Netherlands, the frequency of phone conversation or SMS was low, but, on the contrary, a lot of conversation and information was made and share during face-to-face communication.

4.1.3 Polychronic Time and Monochronic Time

Interestingly, the participants of this study showed quite a different results comparing to the existing studies. According to Hall, the Japanese participants appeared to be polychronic in personal relationship while to be Monochronic in work related situations. But the findings from our investigation showed that all the participants from Korea, China, and India preferred multi-functions both in relationships and performance; and due to their polychronic characteristics, preference toward multi-tasking performance were observed. It may be interpreted as the outcome of varied relationships and working conditions that have been witnessed along with technology development and diversity encouragement.

4.1.4 Low Context Culture – High Context Culture

In the aspect of communication, utilization degree of media, and sharing of media contents, the culture of each country showed significant differences in terms of the dimension of low context culture and high context culture. The Chinese and Korean participants were able to operate smooth communication with other groups even when

the subject of conversation and behaviors were not clear. But the group with which they actively shared information was the more intimate group. Meantime, the Dutch participants were categorized to people from relatively low context culture. They preferred using direct and clear expressions. The Indian participants showed similarity in this part and it was more distinct in the higher income group.

4.1.5 Neutral vs. Emotional

In case of selection and utilization of media, the participants showed various layers of emotions which were quite different by each country. The Dutch participants reacted calmly and were rational upon their selection and utilization of media. But the Chinese participants identified themselves with the equipment and media they possessed. Accordingly, some of them revealed that they felt ashamed when their equipment reported error or malfunction.

4.1.6 Achievement vs. Ascription

It is well known that the people from the Eastern culture are ascription-oriented. While the Dutch participants did not identify themselves with the product, ascription of meaning was significantly observed among the participants from China, Korea, and India. They regarded the equipment that they paid a lot of money or a famous brand product as something that represented themselves. Some of the Korean participants purchased the equipment, as if it was a toy, and they answered they had bought it because of the certain functions it contains. They thought the equipment will represent their unique personality.

4.2 The Cultural Difference Issue Based on the Contents Use Behavior

This study found that despite the developmental gaps of a product and its infrastructure, there were cultural differences from country to country.

Those cultural differences in content can be summarized as followed. In terms of Obtaining content, all of the Koreans, Chinese, and Indians were open to purchasing favorite content and sharing it. However, the Korean and Chinese particularly enjoyed recording and creating their personal experiences, which was contrary to the Dutch users.

In regard to content Managing, personal taste and infrastructure, as opposed to cultural difference, were more influential. However, retouching photos and inventing unique poses were commonly found among the Korean users.

Regarding content Sharing, the Korean, Chinese and Indian participants used content sharing as a way to enhance their tie to their communities, or identify their positions in them.

In the cultural difference in Enjoying content, all of the users from the four countries put priority to personal satisfaction. However, how to utilize entertainment content as one of the social networking activities varied. In Korea and China, the content was used to represent their character, and in the Indian users emphasized entertainment as a source of amusement for multiple users. For the Dutch participants, entertainment content did not have any purpose other than personal satisfaction.

4.3 Experience Values by Different Countries Found from the Synthesis of the Two Above-Mentioned Issues

The type of experience the users expect with their mobile phones was also different. The Korean users thought recording personal experience and sharing it with others was the best use of mobile media. The Chinese emphasized personal satisfaction and social recognition, and the Indians prioritized technical benefits a user and his/her group could enjoy, and the Dutch interviewees preferred a phone identifiable with them, based on privacy.

These differences revealed what users want with media products, and provided insight on how to position mobile products in local markets.

A mobile device that would be appropriate for the Chinese market is the one that has an appealing and unique identity. It seems like the Chinese users will prefer a mobile device which has multi-functions.

For Korean users, it seems like a device with which they can create and share experience will be the most appealing one. They prefer easy, useful, transformable, sharable, enjoyable product.

For Indian users, a product that can leverage a variety of contents will be useful. Relatively affordable price and a service system through which they can consume a lot of contents would be welcomed in their market. Also, providing a solution to allow a group of people share one device would be a realistic suggestion as well.

For Dutch users, it seems like practical and value-oriented product will be the appealing one. Throughout our investigation, we learned that they prefer to purchase products that would sustainably pursue identities related to socio-cultural issues (e.g., etiquette) or eco-friendly campaigns.

5 Conclusion

This study aimed to find cultural differences through the observation of the users' mobile equipment utilization. By applying the cultural dimensions, we found that the preferred values of each culture are different. The difference in value that we learned from this study may contribute to product design activities that are based on the users' experience. The findings will be a valuable data by which you can predict what kind of experience will be expected from a newly designed product in each culture. Moreover, it will provide useful information for localization strategy.

This study also showed the base of a useful methodology for culture-based research. It would be helpful if study designs were built from the cultural gaps that have been clarified through this Study. Public observation in the Netherlands and survey in India were particularly challenging. The Koreans were not active during interviews. These differences also have its roots in cultural attributes and need to be supplemented.

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References

1. Alan Dix, J.E.F., Abowd, G.D., Beale, R.: Human-Computer Interaction, 3rd edn., Dix, A., (ed.) p. 834. Prentice Hall, Englewood Cliffs (2003)
2. Norman, D.A.: The design of everyday things, 1st Doubleday/Currency edn., xv, 257 p. Doubleday, New York (1990)
3. Nisbett, R.: The Geography of thought; How Asians and Westerners Think Differently and Why. The Free Press, New York (2003)
4. Boztepe, S.: Toward a framework of product development for global markets: a user-value-based approach. *Design Studies* 28(5), 21 (2007)
5. Hofstede, G.: Culture and Organizations: Software in the Mind. McGraw-Hill International, UK (1991)
6. Trompenaars, F.: Riding the waves of culture. McGraw-Hill, New York (1997)