Exploring the Impact of Cultures on Web Usability Test

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Abstract. Many previous studies reveal that cultures not only affect web design, but also impact web usability test. Most previous cross cultural web usability research adopted a western usability method to collect data from users, however some researchers have recognized that there is a need to define usability by considering in cultural context [7] [12] [15]. The traditional usability method is not a properly way to investigate people from different cultures. New usability methods are required to be developed to completely understand users from different cultures. Much more research is required to be developed to reach at guidelines for possible differences which web developers could integrate in methodology when web usability evaluating in a target culture market. In this paper, the literature review begins in illustrating the constant transformation and evolution of the web usability concept, then come to the discussion of the problems in the previous cross cultural usability methodologies. Furthermore an usability evaluation is constructed. Finally the ways for improving cultural usability methodology are recommended based on the initial results of the experiment. It is hoped that this research would contribute to an increased awareness of how culture may impact usability evaluation and the implications can help and ensure more efficient usability evaluation.

Keywords: Cross Cultural Web Usability.

1 Introduction

According to previous research, different cultures not only affect web design, but also influence web usability. Many types of usability evaluation method have been identified, such as interviews, think-aloud protocols, moderated tests, group walkthrough, card sorts. Most cross cultural web studies applied Western usability method to collect data from target users and the most popular usability is defined as a general quality of a product that can be added at a certain stage in the design process [11] [22]. However some researchers have recognized that there is a need to define usability by considering in cultural context. For examples, Nielsen [22] and Fernandes [13] revealed that the results of usability tests which were established by web developers may not work efficiently across different cultures. The web products have to be tested in the target culture to make sure that the product is accepted by the target market and would not offend a specific culture. One of the core issues that the web

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developers are required to pay attention is cultural aspect may impact on cross cultural usability evaluation. The popular usability test method in Western culture may not work properly in other cultures. In 1998 Barber and Badre [4] suggest "culturability" which combines the two words "usability" and "culture". They constructed a cultural marker approach which is a kind of systematic usability method to examine hundreds of websites, and then define cultural markers such as colors, fonts, icons, metaphors, language, preferences for text and graphics, help features and navigation tools to facilitate user performance. In 2002, Ever also suggested that different data collection methods need to be developed for the different cultures involved while investigating the same topic for cross cultural web research. The issue "Are there ways we can adapt methods to suit different cultures" is raise by some researchers [3]. Also Gould [15] echoed that culture affects usability tests and interviews, and doubted that if the participants always express themselves honestly in cross cultural usability survey.

Indeed, new usability methods and techniques are required to be developed to fit users from different cultural contexts. The social - cultural context surrounding the product is often ignored in research and practice. As usability is one of the core terms in human-computer interaction research, it should represent the interdisciplinary attributes of this area. More research is required to be developed to reach at guidelines for possible differences that web developers could integrate in methodology when web usability evaluating in a target culture market.

2 Web Usability and Web Usability Evaluation Method

Initially web usability is derived from engineering ways, the ISO Standard 9241 defines usability as the extent to which a product can be used by a specific group of users to accomplish their goals with efficiency, effectiveness, efficiency and satisfaction in a specified context to use. This definition implies that a usable web site design should be intuitive and transparent. It supports users in carrying out the intended task efficiently, easily, enjoyably, functionally, and quickly. Nielsen [22] defines five attributes of web usability as learnability, efficiency, memorability, errors, satisfaction. Based on Human-computer interaction (HCI) studies, Preece [25] defines usability as follows. The design of computer systems that are safe, efficient, easy, functional and enjoyable to use is the main concern in HCI.

In the past, many types of usability method have been identified, such as interviews, think-aloud protocols, moderated tests, group walkthrough. Group walkthrough is frequently applied to help orient designers in the process of creation of the websites, providing feedback on the progress of the work. This method is properly for testing the interaction of the website with completely novice and it helps the developing of guidelines for improving the usability of the website. Questionnaires can be used to obtain information of the choices, desires, expectations and satisfaction of the users of the websites. Questionnaires are useful and informative in all phases of the development and design of the website. Interviews and Focus groups. Two techniques differ from questionnaires. The evaluator interacts directly with the participants, inducing opinions and comments on the web product. The participants in this type of investigation response to the questions according to their experiences and preference regarding interaction with the website. The interviews are often structures

formally, the focus group is less formal and allow participants to discuss their experiences together. The participants were asked to express their opinions to acquire suggestions for adding new services or improving the website. These investigation techniques can be applied in all phases of the development and design of websites. Think Aloud method involves a participant expressing about what they are thinking while they interact with a web product. The method can be applied by assigning the users a specific task or allowing users navigation freely, and it is applied particularly for the evaluation of prototypes or already existing websites. The experimenter play a "leader" role during the investigation process and they have to stimulate the participant to keep on thinking aloud, eliciting them to depict what is happening. This technique is especially useful, as it can help the experimenter to capture a wide range of cognitive activities of the participants.

3 Culture and Web Usability Evaluation

The relationship between culture and usability has been brought by Barber and Badre [4] and they suggested culturability, which combines two words, usability and culture. They built up a approach "cultural markers" which are systematic usability methods to evaluate hundreds of websites, and then define cultural design elements such as colors, fonts, icons, metaphors, geography, sounds, motions, flags, language, preferences for text vs. graphics, directionality of how language is written, help features and navigation tools to facilitate user performance. The merging of culture and usability - Culturability has implications for web design. Usability must be re-defined based on cultural context.

Sun [28] applied "cultural markers" approach to explore how cultural markers affect web usability by interviewing target users about their interaction experiences of websites. Some important implications are revealed from her study, "Culture is moving from borders of web usability to the forefront. Cultural marker should be one metric in usability matrix as learnability, efficiency, satisfaction, and so on." [28]. Later, Sun [28] stated that the traditional usability method which is derived from the engineering way, user and task analysis actually could not provide thorough discoveries of cultural factors in the observed site. When the traditional usability method is applied, culture is approached statically, and researchers seek universal patterns for different cultures. Most researchers have not paid attentions on the ever-changing cultural context and some related studies of cross cultural interface design elements usually stay at the state of ethnic cultural preferences and ignore to discuss the dynamic relationship between the cultural preferences and digressive power.

According to Mantovani [18], "The meeting place becomes the Internet, the World Wide Web, which is increasingly considered no longer as a pure physical structure, but as a cultural space in which new forms of social relations and identity are experimented". Also, Gamberini and Valentini [14] revealed that the role of usability keeps on expanding and transforming. It is recommended that web usability is required to take cultural and social context into account in the investigation of web products, as they are not to be regarded as only tools, unrelated to the concrete environment in which they are used. Thus, usability evaluation has to be carried out within cultural context, from which actions take their meaning.

4 Previous Cross Cultural Web Usability Evaluation Research

According to Yeo's study [31], participants who own higher rank than the experimenter comments the software negatively; those with equal or lower status than the experimenter were more positive and the way to criticize the software is more polite and subtle in his study he had done to localize the software in Malaysia. This kind of self-censorship was based on the relationship of the participants to the test moderator. Based on Hofstede's five cultural dimension [16], Malaysia society is categorized as a high power-distance, moderately high collectivism. Malaysia people sought to keep relationship in harmony and save face for each own by refusing to be harsher and negative, whilst the participants whose status is higher sensed their problems had made them look clumsy so they picked up the drawbacks of the software. The implication of Yeo's study is that to acquire honest response of a users' experiences, an experimenter of the equal status or lower might be needed when establish a think-aloud experiment. Yeo [32] suggested that usability assessment techniques from Western should only be applied with participants who were already experienced users, familiar with the experimenter, and own higher status than the experimenter. Apparently, some problems for our traditional focus on inexperienced users were revealed in Yeo's suggestions, meanwhile those problems unbalanced the empirical design of the previous usability measurement.

An Indian researcher Chavan [9] found the problems of relationship between participants and moderators in her research. The willingness of participants to comments on products is influenced by gender, youth, and class. Usually women would talk only with women; younger researchers had more success than older, more senior people. The difference to stronger social relationship based on liking for people similar to one's self was featured by Chavan [9]. Also, Chavan [9] recommended that India users usually do not want to comments about the software products under any condition and suggests using an approach which is derived from Indian Bollywood drama theories.

In the usability study of Clemmensen et al. [10], it is found support for both the above explanations in a study comparing the role of test moderators in usability measurements in India, China, and Denmark. According to gender and age among conventional end users in India, Indian experimenter is supposed to deal with self-censorship. While a male research needed to interview with a rural woman, this woman's male relative is supposed to accompany with her. In Denmark, usability measurements operate most smoothly when the researchers and users were the similar age, gender, and have the similar level of job experience. Clemmensen et al. [10] recommended that cross cultural usability assessments need to be consistent with suggestions as follows, including consider those users who are less comfortable with foreigner or more traditional, assess the evaluator effect and choose researchers properly to those users (who are more traditional) and modify the test protocols to localize scenarios, ask different questions and apply more direct approach. Clemmansen et al. [10] found that moderators operate measurements in China have to apply lots of more straight investigations since users would not identify their actions unless prompted. However, many often provided a backward think- aloud analysis of their choices, after a period of silence.

Shi [26] also found that Chinese people needed steady instigating when he reviewed usability assessments in Bejing. Chinese peoples' silence is imputed to the holistic considering mode and interpersonal needs of East Asians. According to

Nisbett's description [24], Asian thought concentrate on relations among people and events, social concordance, and the acceptance of instinctive operation change; Western thought is more heedful to a tangible and visible entity, formal logical system, categories, manipulate, and stable theories of explanation when confront rightness and the true.

Based on the above literature review, many studies imply that the current cross cultural usability methods are not properly for different culture. Cultures impact moderated tests, interviews, and think - aloud protocols. The existing cross cultural usability approaches are not methodical as we think [15].

5 Construction of a Web Usability Evaluation

During the author's earlier study in 2008, a cross cultural web usability evaluation is constructed. Taiwanese and British users were recruited in the interviews. It was found that the way young Taiwanese users (who were graduate students in the UK) to criticize the web product and their explicit and straightforward attitudes are quite different as Hofstede's cultural measure. Therefore, the inconsistency formulate the motivation for this study. The aim of this research is to identify the cultural factors that influence usability evaluation, then examine how these cultural factors influence participants' attitude in usability evaluation, further identify ways to improve cultural usability testing. Finally, the author wants to gain awareness of how Taiwanese users use websites.

5.1 Method

Eight Taiwanese users were recruited in this experiment and all of them have 10 years experiences in using internet and navigating in websites. Four of them are undergraduates and graduates students and their average age is twenty five years old. The other four participants have many years experiences in work and their average age is forty two years old. "Facebook" social web is used as the instrument to test the feedback of Taiwanese users. All of the participants have two years experiences in using "Facebook". SUS method is applied to gauge the users' response. During this experiment, users are asked to fill in a survey sheet which is called SUS (System Usability Scale), based on the users' experiences using "Facebook". According to the related international usability evaluation research, SUS method is an efficient method to understand the target users [2] [5] [30]. System Usability Scale is developed at Digital Equipment Corp in1986. It consists of ten items. One of the items is adapted by replacing "system" with "website". The ten items are translated into traditional Chinese as Taiwanese use traditional Chinese. After finishing the SUS, the participants were interviewed and asked three questions which is related to their experiences in using "Facebook".

5.2 Initial Results and Discussions

According to Hofstede's cultural dimensional model, Taiwan is ranked tenth among seventy four countries in collectivism dimension and is ranked third among thirty nine countries in long term time orientation dimension. Collectivist culture tends to value group welfare more than the individual's target, where the achievement of an individual is not regarded as important as the accomplishment of the group, and

believes in group relationship, cares about saving face for others, value harmony more than truth. Long-term time orientation plays a crucial role in Asian countries (e.g., Taiwan, China, Hong Kong and Singapore) that have been influenced by Confucianism. People in these countries believe strongly that an unequal state of connection is required to keep a society stable, a clear hierarchical relationship is needed to keep family and society in harmony, aged people own more authority, younger people have to be filial to older people, students have to obey teacher's order, and virtuous behavior is identified as hard-working and perseverant.

Based on the initial observation, four of young Taiwanese participants are willing to express their opinions about the website and present the advantage and disadvantage very directly, actually they are not afraid to criticize the website, even the experimenter who is ranked higher that the users (the experimenter is participants' teacher). Whist older Taiwanese participants have different attitude to answer the questions from the experimenter, they do not response the question directly and immediately, and the experimenter needs to encourage them to express their opinions more, even they criticize the website, usually they use an indirect and polite way to show their feedback. Two of Older Taiwanese users does not feel comfortable in the process of this experiment. The presence of the evaluator makes this user uncomfortable and it is considered as in an examination circumstance. Actually, according to the observation in the interview, young Taiwanese users' attitude reveal the reverse of Hofstede's theories. Based on SUS scores, it indicated a neutral or favorable response.

5.3 The Implication

While young Taiwanese users joint an usability experiment, the status, age, or authority of the experimenter would not influence their attitude to response to the questions in interview. While older Taiwanese users participate the experiment, the status, age, or authority of the experimenter is a matter to the participants. It would influence them the way to express themselves. Based on Hofstede's measure of collectivism and long term time orientation, Taiwanese were expected to be less critical of the technology. However, the initial results of this experiment reveal that young Taiwanese are willing to criticize the website and not afraid to express their ideas, but the attitudes of older Taiwanese are still consistent with Hofstede's dimension theories. The implication is that western usability evaluation can work efficiently, while the usability participants are young generation Taiwanese. While the usability participants are older Taiwanese, the usability evaluation method needs to be adapted. According to the initial result, it is revealed that cultural dimension theories could be too stereotype. Actually culture is dynamic, it is why the attitudes and responses of young Taiwanese are reverse to Hofstede's cultural dimension, but older Taiwanese users' response is still quite consistent with Hofstede's theory.

6 Conclusions and Future Work

Results from this Taiwanese study might be revelatory of results in other Asian cultures which have been influenced by Confucianism a lot. It is recommended that if web developers want to comprehend the accurate response of target culture users, the properly means is to recruit users from target cultures to get the direct response. Even evaluate the users in the same culture, the method needs to be adapted based on

different age. Those cultural dimensional model are categorized in a particular time. Those models could be reference but needs to be applied cautiously as Hofstede's cultural model treats culture as a stable phenomenon, but culture is always changing and developing in reality.

Alternatively applying an ethnographic study seems to be a properly solution. It will allow the researcher to comprehend the real users from a different cultural perspective, learn to understand the thought processes of another culture and look at it from the indigenes' viewpoint. Applying the 'participant observation' method of an ethnographic study, the behavior of the different cultures should be observed to reveal ordinary activities of actual interaction with cultural website. This approach leads to consideration the context in which these behaviors take place. A good rapid ethnography - time deepening strategies for HCI field research developed by Millen [19] is recommended and explained in the following. Step first, narrow the field research focus and scope, such as zoom in on the important activities and use the core informants. Step second, use multiple approaches of interactive observation to gain the likeliness of finding eccentric and useful user behaviors. Step third, apply cooperative and computerized iterative data analyze methods.

In the forthcoming paper, a more in-depth analysis of eight participants data will be executed. Experiments using other culture users are managed and more rigorous evaluation method would be applied. It is hoped that outcome of the research will gain increased awareness of how culture may affect usability testing and also ensure more efficient usability testing with minimal cultural influences.

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