

Methodology for the Development of Interface Design Guidelines Based on Local Cultural Dimensions

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Abstract. This paper will discuss the methodology for the development of interface design according to cultural dimensions of Malaysian culture. This paper will discuss previous works of cultural interface design development and the application of Malaysian cultural dimensions in interface design.

Keywords: Culture Dimensions · Interface Design · Interface Components

1 Introduction

Users from different cultures use computer interface in different ways. They have a different mental model of visual representation, navigation, interaction and layout, and have different communication patterns and expectations [1]. Reference [4] states that culture is how users of some cultures view and interpret images and specific information. When using a computer application for the first time, users will try to adapt to design components that exist on an interface. Although the user is an expert users or have regular computer use, they still need to familiarize themselves with the type of link, the meaning of icons or symbols used, menu selection, layout and how to fill data.

The cultural background of application developer also affect the design of the interface. Interface development process will encounter problems if the culture of the developer is different from the user's and developers do not carry out the study of cultural trends in advance. Developers indirectly will enter their cultural values as well as affect the functionality and aesthetic features into the interface. Otherwise, if an interface fully implement localization element will increase the efficiency and user satisfaction [3].

According to [5], website designers need to do a lot of planning, research, analysis, design, evaluation, documentation and training to understand more about the user, market and business. Therefore, web developers need to make adjustments to meet the needs of users of different cultures.

Web developers also need to follow the rules or the appropriate methodology for developing the interface according to the target culture. The following section will discuss the types of methodologies to develop cultural interface.

2 Cultural Model and Methodology

According to [1], previous cultural model are not sensitive enough to be used on other cultures because these models are too stereotype and only suitable to only one culture. These models also have disadvantages in terms of usability testing because the number of users is not exhaustive and does not represent the target culture.

Reference [1] develop a methodology for developing culture interface. There are four phases in the methodology namely understand the context of use, define a cultural model for the target culture, website design production and evaluate the effectiveness of web communication. Local website audit and cultural marker [6] used to identify interface component. Interface components identified are visual representations, multimedia, colour, layout, navigation, links, content & structure and language. Dimensional culture model used is the Hofstede cultural model and Hall and Hall's. To assess the effectiveness of interface design, prototype evaluated in terms of learnability, efficiency, minimal errors, satisfaction, comprehension and desirability.

Reference [7] also build a model named 'investigative strategical model'. This model consists of four phases: Investigation, Translation, Implementation and Evaluation. To identify the cultural characteristics, ethno-methodologically techniques is used. Features of interface components are analyzed using foraging technique. For culture model, they do not put a specific model to be used by the interface developer. Then the prototype will be developed according to the information of phase 1 and phase 2. The prototype of culture interface will be evaluated in terms of preference (acceptability), usability (usage of site content and tools and also productivity (involves the development of e-commerce website).

The study focuses on the development of methodologies and guidelines for interface design. According to [7], users from the same country does not necessarily fit with Hofstede's cultural model, Especially with users of other countries. Most studies involving the development of culture interfaces using cultural dimensions of Hofstede [3, 4, 5, 8, 9, 10, 11]. Assessment tests are carried out on users coming from Western countries. Most of the interface is also designed according to the characteristics of Western society as stated in [1]. Reference [7] also states that "Computer software and the internet were predominately a North American skilled white male market. It has now become a worldwide commodity and the market has now grown to include all nations, creeds, gender and task use".

3 Malaysian Cultural Dimension and Culture Interface Model

Malaysia is a country consisting of various races, have different cultural and beliefs. An inter-cultural researchers, Dr. Asma Abdullah has expressed the cultural dimensions of Malaysian society. She has made a study of organization culture and found that Malaysian society is represented with 8 types of cultural dimensions: Harmony, Relationship, Hierarchy, Shame, High Contextual Communications, Polychronic Time, Group Orientation and Belief in God.

Therefore, this paper will discuss the methodology for the development of interface design according to cultural dimensions. To achieve the objectives of the study, the phases involved are preliminary analysis, design, development, implementation and evaluation. Several key processes need to be implemented: documentation analysis, a preliminary study to strengthen the problem statement, interview for preliminary analysis, the construction of a questionnaire, a confirmation of survey question, collecting data through surveys, construction of adaptation rules, prototype development and evaluation.

In preliminary analysis, researchers have to analyze the existing interface design of intended application to see the similarities of the interface components, the preferred components and interaction of the users. These can be done by interview, questionnaires or observation. Interviews with the culture experts and interface specialists is necessary to get the latest information and trends in culture and interface design. Cultural experts interview provide information about the use of culture by other researchers and make a comparison with the use of the existing definition of Malaysian culture.

In the design phase, questionnaire of culture dimensions and interface components preferences is developed. The instrument developed is based on the description and characteristics for each dimension. The information obtained is used to propose interface components involved or equivalent to the cultural dimensions that have been identified. Then, user interface designs are grouped according to cultural dimensions and interface components. For instance, one of the interface components, metaphor, necessary to focus when designing interfaces for users who have cultural dimension of hierarchy, high contextual communication, group orientation, orientation polychronic time, and belief in God. Questions or items are divided according to the five components of the interface which are the metaphor, navigation, interaction, appearance and mental models.

After the survey questions for the cultural dimensions and also questions for interface design has been completed, the two sets of questions will go through the validation process by experts. Experts will confirm that the items or questions are appropriate to the construct described and suitable as instruments for data collection. Experts involved are cultural experts and interface specialists. The survey is distributed to the target user and data collected will be used to propose an adaptation rules.

The adaptation rules and user model is developed in development phase. Interface culture prototype will also produced according to the adaptation rules. The last phase is the implementation and evaluation. In implementation phase, the prototype will be tested by the target user. They will use the non-adaptive and adaptive interface and make a comparison by answering a questionnaire and observation by the tester.

4 Conclusion

Understanding of the culture characteristics is very important in the development of application interface to be used by users from different cultures. The interface according to the specifications of culture can improve performance and user productivity. Users will feel more comfortable and satisfied with the interface according to their tastes. Culture model selection is also important to ensure that cultural identity is represented correctly. The involvement of culture experts in the development of culture

interface is necessary so that an understanding of the cultural needs are parallel with interface usability requirements.

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