

Cross Cultural Design Considerations in HealthCare

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Abstract. Increasing number of health care providers are leveraging the power of technology to provide access to medical practitioners and patients on a global scale. However, there is limited research in the area of cross cultural design of the tools being used. This paper presents a work-in-progress in the area of cross cultural design of health care tools. The main interest is to outline some of the cross cultural challenges of designing and implementing healthcare tools on a global scale and some possible solutions.

Keywords: Healthcare, Cross-Cultural, User Experience, Usability.

1 Introduction

The use of technology in the administration of healthcare is increasing at an explosive rate. However, usability research in this field is lacking. Too often healthcare providers and patients alike are faced with using tools that they are unaccustomed to within their local culture [1-3]. These tools are often forced into usage by market forces rather than local user needs. As a consequence, medical providers often spend more time dealing with the intricacies of the new tools and less time with patients [1-3].

In many developing countries, the modern day health care provider is not bound by an office. In many instances the care provider will travel to the site of the patient to gauge the extent of the illness and provide necessary care. Armed with new technologies such as diagnostic tools and decision support systems, the new breed of care providers can: take better readings; make more accurate diagnosis; and offer more effective treatments. These new tools have changed the nature of the relationships between healthcare providers and patients in rural settings. However, there are significant cultural ramifications of this new status quo. In many environments, there is a degree of distrust with the new tools that recommend alternate treatments. These new treatments often come with smaller prescriptions than what the patients are accustomed. In some instances the direct questions asked in the data gathering process using the new tools can be deemed offensive and lead to resistance in the sharing of vital personal information. This can lead to inaccurate assessments of the health condition and subsequent treatment. Often, the misunderstandings can be attributed to the poorly designed interfaces of the respective tools being used in the healthcare. Since these tools are typically developed in countries other than where they are used, there

is usually a gap between the end user and the developer. This may lead to cross cultural misunderstandings. This paper describes some of these cross cultural challenges.

The remainder of the paper is organized as follows. Section 2 proposes a working definition of culture and the internationalization and localization process. Section 3 introduces the SLICK model and describes its various components. Section 4 describes the experiment design and what will be carried out and section 5 draws conclusion that can be expected out of the findings.

2 Background

2.1 Culture

Culture is hard to define. Various researchers have developed their own definitions. Ting-Toomey defines culture as “a complex frame of reference that consists of patterns of traditions, beliefs, values, norms, symbols, and meanings that are shared to varying degrees by interacting members of a community”[4]. A signification amount of Human Computer Interaction (HCI) research applies Hofstede’s findings towards the understanding of culture and its significance to their product [5]. Hofstede carried out perhaps the largest study of culture by surveying over 120,000 IBM employees worldwide about people’s behavior’s in large organizations. Using this survey he discovered significant differences in people’s behaviors using which he developed national rankings. However, critics of this cultural model cite the lack of correlation between Hofstede’s anthropological findings and cultural attitudes towards information technology[6].

2.2 Internationalization and Localization

The literature is filled with examples of product acceptance failures due to cross cultural misunderstandings. A product designed for an international audience must be carefully designed to gain acceptance within the local community[7]. Internationalization refers to the process of isolating the culturally specific elements from a product; for example the isolation of French text from a program development in France. Internationalization occurs in the country where the product is originally developed. It is not uncommon for development groups to focus only on elements related to text, numbers and dates [7].

Localization refers to the process of infusing a specific cultural context onto a previously internationalized product [8]; for instance, translating French text and message files into Spanish for Spanish users. Like internationalization, localization is usually limited to translating the text, date and number formats. But creating a product that functions in another culture involves more than this. Properly localized software applications, just like properly localized automobiles, toasters, beverages, and magazines, reflect the values, ethics, morals and language (or languages) of the nation in question [8]. In localizing a product, in addition to idiomatic language translation, such details as time zones, currency, local color sensitivities, product or service names, gender roles, and geographic examples must all be considered. A successfully localized service or product is one that appears to have been developed within the local culture [9].

3 The SLICK Model

Any healthcare tool that is localized carefully has a greater chance of acceptance. Research findings indicate that mobile health and electronic health product launches in several countries have met with varying degrees of acceptance from the local community. The objective of this paper is to propose a new methodology for testing the design of the product using the SLICK model [10]. The SLICK model was developed as a result of a meta search of the most widely used cultural variables – *symbolism, local variables, individualism, color and knowledge gathering patterns*. Culturally specific examples of each variable could easily be identified in the literature and tested with the specific product.

3.1 Symbolism

Russo and Boor [7] claim that “Images are the visual language of culture that does not always translate – just like words.” Images or symbols that may reflect one meaning in one culture may not map the equivalent meaning in another. Del Galdo [11] and Marcus and Gould [12] point out the use of symbolic representations from a culture in user interface design will increase the preference and acceptance of the application.

3.2 Local Variables

One of the first steps in the preparation of entering a product into an international market is the issue of translation of all interface text into the local language. This can be a very complicated task as the translation must make accommodations for issues such as computer-human interaction [13]. The list of local variables that can be tested for the internationalization of user interfaces can be extensive. The list includes: Translation, Jargon, words that don’t exist, product names, text flow, character sets, number date time formats, phone numbers, people’s names, masculinity, religious practices and holidays.

3.3 Individualism

Triandis defines Individualism “as a social pattern that consists of loosely linked individuals who view themselves as independent of collectives; are primarily motivated by their own preferences, needs, rights, and the contracts they have established with others; give priority to their personal goals over the goals of others; and emphasize the rational analysis of the advantages and disadvantages to associating with others”[14]. Triandis defines Collectivism as “a social pattern consisting of closely linked individuals who see themselves as parts of one or more collectives (family, co-worker, tribe, nation); are primarily motivated by the norms of, and duties imposed by, those collectives; are willing to give priority to the goals of these collectives over their personal goals; and emphasize their connectedness to the members of these collectives.” Triandis explains that as these terms are used by many people in different parts of the world and are given various meanings, they can be difficult to measure [14].

3.4 Color

What color represents and how it is interpreted varies greatly across cultures [15]. Findings from Courtney [16] and Russo and Boor [7] suggest that color can impact the acceptance of a user interface design.

Culture	Red	Blue	Green	Yellow	White
United States	Danger	Masculinity	Safety	Cowardice	Purity
France	Aristocracy	Freedom Peace	Criminality	Temporary	Neutrality
Egypt	Death	Virtue Faith Truth	Fertility Strength	Happiness Prosperity	Joy
India	Life Creativity		Prosperity Fertility	Success	Death Purity
Japan	Anger Danger	Villainy	Future Youth Energy	Grace Nobility	Death
China	Happiness	Heavens Clouds	Ming Dynasty Heavens Clouds	Birth Wealth Power	Death Purity

Fig. 1. The meaning of color in different cultures (Russo and Boor, 1993)

3.5 Knowledge Gathering Patterns

Kaplan [17] indicated that cultures have different thought patterns. Kaplan’s work has highlighted the correlations between language and thought pattern. Kaplan’s study reports several types of thinking patterns namely linear, parallel, and circular or indirection (random). Kaplan attributed the differences in these language styles to cultural variations.

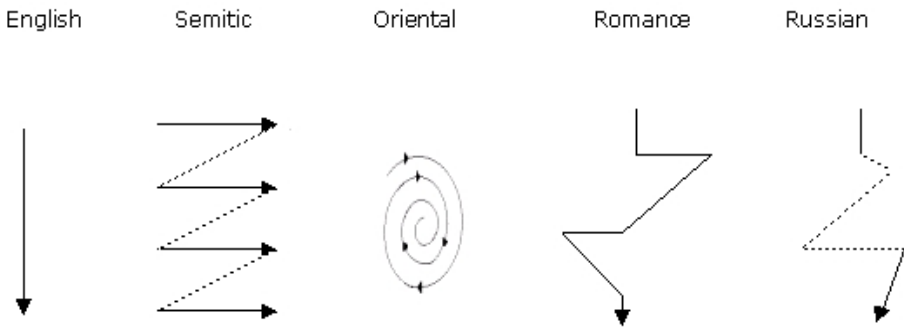


Fig. 2. Kaplan’s Cultural Thought Patterns (Kaplan, 1966)

4 Experiment Design

The SLICK model can be applied in the design of culturally sensitive healthcare tools for an international setting. To test the effectiveness of the model, data about user preference of healthcare tools will be collected from an existing framework where eHealth tools are currently being used. A partnership with a healthcare provider in rural Uganda is currently being developed for this study. It is envisioned that for this study, data will be gathered from eHealth providers and recipients in a two-step process after IRB approval.

In the first stage, user satisfaction data will be collected from 10 randomly selected adult users of eHealth tools. This will include both providers and recipients of the service. This data collection will be carried out using a closed questionnaire that will be administered by personnel in Uganda. The responses from the questionnaire will be used to measure the levels of satisfaction with the cultural sensitivity of the user interfaces of the eHealth tools.

Based on the findings of the data collection, a modified prototype of the user interface of the same eHealth tool will be developed by applying the SLICK model. Through the SLICK model, we can assume the following information about the Ugandan culture:

Symbolism: From the literature, we know that the Ugandan culture has certain symbols that are unique to the country. For example, the waste basket symbol used in the West should be modified to resemble a closed trash can for Uganda. The use of any symbols in the user interface of the eHealth tool should be carefully selected not to cause offense.

Local Variable: From the literature, we know that British English is the primary language of Uganda. Therefore, all translation should employ British English standards. We also know there are certain customs that are indigenous to the *Ugandan culture*. For example, Uganda has a high degree of masculinity and the user interface of the eHealth tool should be aware of this fact.

Individualism: From the literature, we know that Uganda is a collectivistic country where the greater good of many outweighs the good of one. An example of the possible implications of this cultural factor could apply to the sharing of sensitive medical information. In the Western cultures, medical information is highly sensitive and is not shared with anyone else but the patient. However, in collectivistic countries, medical information will be readily shared with members of the local community.

Color: From the literature, we know that certain colors have different meanings in different parts of the world. While color in Uganda is not as sensitive, there are still color preferences within the culture. For example, Green, Red and Black are the national colors of Uganda and are more commonly used in the culture.

Knowledge Gathering Pattern: From the literature, we know that Ugandan culture has an Oriental language pattern. An implication of this could be that direct questions might be deemed offensive. For example, information about medical history should be sought out using indirect questioning techniques.

Once the modified prototype of the interface is developed, it will be shown to 10 adult users of eHealth tools. User satisfaction data will then be collected from these end users using the same questionnaire used in step one of the data collection process. The two data sets will then be statistically compared to determine if the cultural modifications made using the SLICK model resulted in any improvements with the end user satisfaction with eHealth tool. The resulting outcome of the study would be shared with the eHealth tool developer to incorporate in any future versions.

5 Conclusions

The goal of this research paper is to outline some of the cross cultural challenges of designing and implementing healthcare tools on a global scale. The results of the experiment described in the paper will shed light on some of the cultural factors that affect user satisfaction and a possible solution. The paper also highlights the need for more user experience research to better understand the international end user. User experience research would assist software developers to develop cross culturally sensitive products that would be well received within the local community. The results from this study will further research in this field. The findings of the study can be further strengthened by replicating the study in another environment and also by using a different eHealth tool. The findings from such a comparative study would extend our understanding of the field of cross cultural interface design.

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