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Website Fit: An Overview

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Abstract

Designing a website using a standard user interface without taking into consideration cultural differences may need to be relooked. A country such as Malaysia, who has a multi-racial population composition, may need more innovative web designs that could fulfill the preferences of its diverse online users. While there are many discussions on this issue, empirical investigation on the linkage between culture and web design is quite limited. Therefore, this paper attempts to fulfill this gap by proposing a study on this topic. After reviewing the related literature, we proposed a research model in which we hypothesized that culture affects individuals' preference of interface design. Moreover, we hypothesized that cultural markers and cultural dimensions in a website interface that fit with users' cultural dimensions will affect website usability and later their experience. Methodology and conclusion are also discussed.

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1. Introduction

Since website's interface intermediates between a system and users, it is important that it must accommodate the need of the users that is to make it easy to use [30]. Many systems including websites

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have failed because developers of the systems have overlooked these three important aspects: who is the user [40], can the user use it easily and [31] is the user satisfied in using it [36].

In order to achieve what is considered as a good system, the best solution is to focus on the users [26]. Human factor has become an important aspect to be researched by the Human Computer Interface (HCI) researchers as computer users are no longer dominated by computer experts but also common people. As the users vary in their knowledge, culture and language, a study of the users' interface becomes very important especially on website interface where the system will be used by diverse users.

Previously, website users were homogeneous: male, occupation specific (academician or researcher), western society and one culture oriented [21]. Internet has evolved to other parts of the world; therefore, website users are not only coming from one geographical location and cultural-background. According to the World Internet Users statistics, majority of Internet users are no longer from North American and Europe like it was used to be. People from Asia, Latin America, Middle East and Africa represent more than 50% of the Internet population in the world [13]. Considering this fact, therefore, it is probably no longer relevant to have one standard website interface that could cater these diverse users.

According to Marcus and Baumgartner [22, p.252], "people from different countries/cultures use user-interfaces (UIs) in different ways, prefer different graphical layouts, and have different expectations and patterns in behaviour". Boor and Russo [6] described the different meanings of colour according to some cultures. Website users from China, for instance, preferred as a background colour of a website interface because in their culture, red is considered as a good colour. But it is not so in Egypt, as the red colour represents death. In addition to colour, because of the writing orientation, layout orientation websites in Japan tend to be top to bottom, left to right for England and right to left for Arab countries. The selection and organization of interface components and elements need to fit well with users' cultural dimensions in order to increase the usability of a website as the users' requirements are strongly influenced by their culture [34].

Website culturability is a term introduced by Barber and Badre [4]. The term culturability is combination of the terms culture and usability. They argued that culture affects websites' usability. Different culture requires different set of users' interface since the preferable elements of the users' interface varies among culture. They also argued that certain countries or cultures may have specific elements in their website user interface and they named them cultural markers. Specific cultural markers such as colour, spatial organization, fonts, shapes, icons and metaphors, geography, sound and motion can be customized according to their respective culture. Their experiment results showed that users from Italy prefer and are comfortable with interface that has cultural markers for Italian. Other studies also indicated the importance of cultural markers in terms of their effect on users' preference and performance [32], [2] [37], [3].

There are HCI researchers who link the websites interface design with the cultural models developed by culture gurus such as Geert Hofstede, Edward T. Hall and Fons Trompenaars. Marcus and Gould [23], for instance use Hofstede's culture dimensions i.e., Power Distance, Uncertainty Avoidance, Masculinity, Individualism and Long Term Orientation in their investigation of culture on website design.

They argue that cultural dimensions should be reflected in the website's user interface.

Recently, HCI researchers have started to look at another element within usability domain since users' usability context such as easy to learn and ease of use, have been explored explicitly. Logan [18, p.61] initiated the idea of looking at users' experience (or users' feeling) in usability research. He defines emotional usability as "the degree to which a product is desirable or serves a need beyond the […] functional objective". Hassenzahl and Tractinsky [11] define user experience as "a consequence of a user's internal state (predispositions, expectations, needs, motivation, mood, etc.), the characteristics of the designed system (e.g. complexity, purpose, usability, functionality, etc.) and the context (or the environment) within which the interaction occurs (e.g. organisational/social setting, meaningfulness of the activity, voluntariness of use, etc.)". User experience deals with a user feelings when he or she interacts with an artefact (in this case: website); is he or she feels comfort, happy or enjoyment, when using the website? Logan, Augaitis and Renk [19] and Kim and Moon [17] also stressed the importance of incorporating emotions when designing an interface, as it will bring forth a variety of emotion such as joy, pleasure, trustworthiness, satisfaction and sophistication.

The paper is organized as follows. Firstly, it starts with an introduction. Secondly, a brief overview of Malaysia is discussed, and then a literature review on culture and website design is described. Finally, a research model is presented, and end with a conclusion.

2. Malaysia: An Overview

According to Malaysia Population and Housing Census for 2000, the total population of Malaysia is 23.27 million people which 50.4% are Malay and Bumiputra, 23.7% are Chinese, 11% are Indigenenous, 7.1% are Indian and another 7.8% are others. There are three major ethnic groups in Malaysia which are Malay, Chinese and Indian and they live in their own culture. Isa [14] described Malay who is the largest community lives in Malay culture; Islam is their religion; use Malay Language and most of them live in villages and are dominant in politics and government sector. According to him, Chinese who use various Chinese dialects such as Hokkien, Hakka and Cantonese and majority of them live in town and control business sector. Lastly Indian, majority of them are Hindu and use Tamil language and live mainly in the west coast of the Peninsular Malaysia.

Due to the cultural diversities of Malaysia, there are websites such as educational institutions, newspapers and political parties that were developed to serve specific ethnic groups. For instance, UITM (Universiti Teknologi Mara) portal where most of the students are Malays, TAR (Tengku Abdul Rahman) colleagues where the majority of the students are Chinese and Malaysia India Council (MIC) portal where all members are Indian (Figure 1).

Figure 1. Examples of ethnic-based websites

3. Literature review

Based on preliminary findings of the previous researches related to website design and culture, we found that most of them are using the Hofstede cultural dimensions to explain users' interface design elements and characteristics [9][1][39]. There are also studies that investigated website characteristics and elements by making comparison between two countries like Malaysia with United States of America, Malaysia with Australia and Malaysia with Britain respectively [9][8][1][45]. A study investigated the cultural influences on government, commercial, specific Malay and Chinese websites and users' interface for older adults in Malaysia [39].

Gould, Zakaria and Yusof [9] identified design elements associated with Hofstede and Trompenaars's cultural dimensions for Malaysia and United States websites. They selected one website for each country of railway, education and retail sector. They performed a content analysis on the design elements by observing and counting the occurrence according to Power Distance, Collectivism (Hofstede) and Diffuse Relational style (Trompenaars). Based on their study, researchers recommended some guidelines that can be used by web designers in designing websites' interface for Malaysia and United States or other countries with similar characteristics.

Another study in the field is an experiment conducted by Fink and Laupase [8]. In this study

sixty Malaysian and Australian subjects were selected and given eight e-commerce and service-industry websites operating in Malaysia or Australia, or both. In their study, differences attributable to culture were noted for four of the websites, where the local tend to give biased judgment. As result, Malaysians tended to give higher ratings to the Malaysia websites. Incorporating culture in the user interface, Hisham and Edwards [12] identified user's requirements and needs of a prototype of web mail application for older adults. Their findings were:

- Colourful graphics and moving picture are important to Malaysian older adults – especially to novice users,
- Too much wording or text on the screen is discouraging to older adults,
- Graphic hyperlinks and button are more appealing than text hyperlinks,
- Labelled icons are preferred to menus,
- Everyday terminologies are preferred to formal terminologies for both Malay and English user-interfaces,
- Malay older adults prefer a Malay interface whilst Chinese and Indian older adults prefer an English user-interface,
- The icons used on standard web browsers are not intuitive to these users, and
- A linear user-interface structure is preferred, regardless of the level of computer experience.

In another study, Ahmad, Mouratidis and Peterson [1] made a comparison between Malaysian and British websites for tourism, education and banking sectors. They used Hofstede's power distance in their study. These dimensions were chosen as to make comparative study more valid since the score of the dimensions between these countries differ significantly (Hofstede, 1999). They found that the interface web design's characteristics are in accordance to their cultural dimensions. Since Malaysia is a high power country, they love to use leaders' image and a proper title when addressing them such as Datuk, Tunku, Yang Di Pertuan Agung, to use logo, official stamp and certification, awards and prizes to show the greatness of organizations and extensively use of metaphors and symbols.

Tong and Robertson [39] studied multicultural website design of forty websites and divided them into four categories: government, commercial, Malay and Chinese specific websites. The study found a significant different between Government and Commercial website. The government websites were using a mono culture biased that is Malay, in contrast to commercial websites, which were accommodating the diversified culture in Malaysia by using English as the medium of language.

Cultural diversity has become a new challenge for Human Computer Interaction researchers, which is until now largely being dominated by Western ideas and values since most of computer systems are originated in North America and Europe [15][46]. Only in early 1990s, IBM, Microsoft and Apple Computers started initiating research in internationalization and localization of software because of the globalism and users' cultural diversity [23].

Reviews of the literatures have shown that there are a number of studies conducted on websites' interface design, culture and usability but mostly in the United States, representing western cultures,

while, studies in Asian cultures are mainly focusing on Chinese and Japanese cultures [1]. Reviewing journals and conference, Kamppuri, Bednarik, and Tukiainen [15] found that from 1990 to 2006, only 0.9% (28 out of 3286) of HCI related studies were on the "culture and website design". Overall, studies in this field are quite limited.

A study of Kamppuri, Bednarik, and Tukiainen [15] also revealed some important findings. First, only four articles on culture and website interface were found between 1990 and 1997 and the number increased gradually to twenty four articles between 1998 and 2005. This seems to indicate that the popularity of the topic is only gaining interest from HCI researchers quite recently. Secondly 40% of the articles were related to design issues such as user interface design, usability engineering and technology development. The culture related studies were related to the characteristic of a user, cultural context of a user and culture as a larger system. All of the studies (4 articles) that used culture models utilized Hofstede's culture model and contextual methods. This shows that human factor especially users characteristics based on their culture is the main theme of most researches and Hofstede culture model is the popular choice when investigating the cultural effects. There are 10 articles studied on American culture, 5 articles on Chinese culture, and 4 articles on Japanese culture. An investigation on culture and web design in Malaysia was yet being conducted during this time.

The study on culture and interface design was first initiated by Boor and Russo [6]. They highlighted the importance of culture in designing a computer system interface in meeting the diversified international users. Later, based on their study, Watson, Ho, and Rahman [42] claimed that culture is more dominant in influencing users' acceptance of a system as compared to technology as it is very difficult to break "culturally well- established patterns of behaviour". The effect of culture on the website's interface has become more critical as organizations started to target global users and websites become a primary tool to convey the information. Sheridan [33] claimed that website designers tend to ignore the importance of culture as they are more focusing on real estate, artistic templates and brand messaging.

The work on culture and interface was further explored by Barber and Badre [4]. They proposed a group of specific interface design elements, which they called cultural markers of a website for a different culture or nation. They postulated that fitting design elements such as colours, spatial organization, fonts, shapes, icons and metaphors, geography, language, flags, and sounds to users' culture will increase the usability of a website. Sheppard and Scholtz [32] found that users' performance increases when they use interface that uses cultural markers that fit their culture. Tina and Paynter [38] found that Japanese users prefer white colour as compared to the Anglo Saxon users who prefer blue. They also found that Germans prefer vertical navigation menus as compared to horizontal menu for Chinese and Japanese users. In a related study in a multiracial country, Tong and Robertson [39] identified several cultural markers for two ethnic groups i.e., Malay and Chinese. His study was based on content analysis approach (observation) and so far there is no experiment has been done to support the findings.

All of the studies discussed above used content analysis as their main methodology. This

highlights the limitation of the current studies in this field where real users' perspective are not being used. The findings are only subject to the interpretation of the researchers and are not empirically verified through more sophisticated statistical analysis.

A study by Marcus and Gould [23] also falls in the same limitation where in introducing a suitable website interface design using Hofstede Cultural Model, they only examined existing website designs. There are other researchers who also use the same strategy [33],[20],[9],[37],[44]. Their studies were just based on the analysis of the existing websites and no experiment that solicits evaluation from users was performed. Therefore, user experience is a new paradigm of website usability studies where users' feelings are being considered when they interact with a website. In similar vein, Okada and Watanabe [29] have borrowed Kansei Engineering approach introduced by Nagamichi [24] that is to incorporate user feeling in designing a website interface. They suggest website comfortability as an extended usability domain where functionality is not the only factor to be looked into. In other words, users' pleasantness (hedonic aspect) must be taken into account when interact with a website. Kansei Engineering approach takes into account human's feelings in the product design phase. They argue that people will visit a place that they are comfortable and will repeat to go back to that place. In the case of a website, incorporating users' feeling in the design will make the users to feel comfortable with the website and make them to visit the website again. Based on Kansei, it is very critical for web designers to address users' emotion when designing a website interface as during interaction with the web, users may feel comfort, pleasure, trustworthy and satisfied. Kansei introduced a new method in addressing usability issues as the approach is not only looking at the aspect of the system functionality but also the emotion of users to create a good system.

Finally, reviewing previous studies, we found that studies, which investigated the relationship between culture and website design were conducted by comparing groups at a country level i.e., between two or more countries (cross culture) [32], [37], [2]. Badre [2] for instance compared Italian and American web users. Sheppard and Scholtz [32] used Arabs who live in the United States and those who live in Arab countries and Sun [37] studied German, Chinese and Brazilian users. This provides an opportunity for a study on different ethnic groups in one country such as Malaysia where several ethnic groups exist.

Therefore, this study attempts to fill several gaps. First, this proposed study will be conducted in Malaysia. Our literature review search indicates that studies on this topic in Malaysia are limited. Most of the studies in this topic were conducted either in Japan and China. Moreover, conducting such study in Malaysia, as a multiracial country with diverse culture provides an opportunity to complement previous studies'.

4. Research model

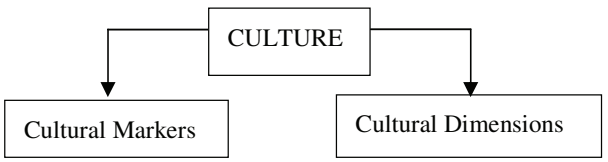
Previous literatures showed that designing a website's interface in accordance to culture will lead to a higher website's usability [4], [7], [16], [40], [27], [10], [5], [43]. Different group of researchers

use different approaches in investigating the influence of culture on website interface design and can be divided into three: using cultural markers for website interface elements [4], [32], [2], [3], matching and associating website interface characteristics with cultural dimensions [33], [23], [20] ,[9] and lastly incorporating culture with other approaches [44], [37], [28]. Several studies as discussed in the previous section have shown that users prefer an interface with cultural markers and appropriate cultural markers results in higher user performance [32], [2], [3]. Cultural markers also lead to user comfortability [37], [29].

Another group of researchers use culture model to investigate the relationship between culture and interface design. Marcus and Gould [23] suggested that cultural dimensions for a website's interface can be derived by investigating various website across many cultures. In their study, they found that the appearance of a website interface in a culture can be explained by Hofstede's cultural dimensions. Others HCI researchers also use Hofstede and other culture models to find the appropriate website interface [20], [33], [9], [22],[35],[35],[1],[39]. Most of these researchers used Hofstede cultural dimensions except Sun [37] who used Hall's high and low context and Gould, Zakaria and Yusof [9] who used Trompenaars's diffuse relational style cultural dimension. Generally, cultural dimensions guide people's behaviour, thinking and feeling and it is not surprising to see that people prefer websites that fit with their chosen interface characteristics.

The last group of HCI researchers incorporate culture in a study of usability. By accommodating users' emotion in a system's interface such as comfort, it will lead to higher usability. Okada and Castello [28] investigated the effect of cross culture on website comfortability and found that culture influences the preference of users in the aspect of comfortability.

The research model as shown in Figure 2 has been developed based on the review of the literature. The research model postulates that culture affects individuals' preference of interface design and an integration of cultural markers and cultural dimensions in a website interface will enhance its usability and later their experience.



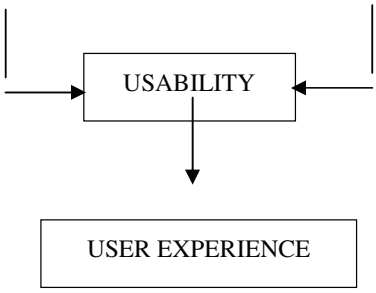


Figure 2. Research Model

5. Research method

As highlighted as a limitation of the previous studies, this proposed study attempts to overcome the limitation by adopting a different methodology. We will first use focus groups represented by three ethnic groups and find the preferred interface's features and characteristics using Barber and Badre's cultural markers and Marcus's interface components guidelines for each ethnic group. Based on the focus group analysis, we will then design several website prototypes for each ethnic group incorporating appropriate cultural markers and web-design layouts that fit the groups. Finally, we will conduct experiments where subjects are shown all the prototypes and ask them to rate each website in terms of its usability. The methodology is probably the significant contribution of this study as unlike other previous studies which developed web design through content analysis, this study will develop web design based on feedback of real users and again testing it on the real users.

6. Conclusion

Reviewing previous literature showed that the effect of culture should never be ignored in designing a website's interface. As culture shape people thinking, actions and feelings, an appropriate interface design that is aligned to the culture is essential. As the world composed of various cultures, one standard website interface may not be appropriate. In the research model, we hypothesized that culture affects individuals' preference of interface design. Furthermore, we hypothesized that cultural markers and cultural dimensions in a website interface that fit with users' cultural dimensions will affect website usability and later their experience. This proposed study attempts to test these hypotheses and probably its forthcoming empirical results will further add new knowledge to this field.

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