User Validation of Cultural Dimensions of a Website Design

Aaron Marcus and Chava Alexander

Aaron Marcus and Associates, Inc.,
1196 Euclid Avenue, Suite 1F, Berkeley, CA, 94708 USA
{Aaron.Marcus,Chava.Alexander}@AMandA.com
www.AMandA.com

Abstract. The majority of Websites are constructed with a single homogenous user in mind, or a limited number of user profiles, usually from one country or culture. In order to accommodate the international growth of the Internet, this mono-cultural bias of Website design must change. If crucial steps of user-centered user-interface (UI) development for Websites are omitted, which happens when people unconsciously apply their own rules to interactive communication intended for others, effective communication of the Website will be less successful, or may even be dysfunctional.

People from different countries/cultures have certain expectations of a particular site that may differ significantly from other countries/cultures. For example, many middle-class Germans may typically prefer a design that is more subdued and easy to navigate, while many middle-class Mexicans may prefer a more colorful screen and tolerate more ambiguity.

The present study is derived from the previous efforts of Marcus and Baumgartner [4, 5]. Using five cultural dimensions (from Hofstede, as a useful, well-known set) and the schema of five UI design components, Marcus and Baumgartner created a five-by-five matrix that allowed for twenty-five fields of interest. The authors analyzed 12 corporate business-to-business and business-to-consumer interactive Websites and found patterns in divergence from corporate design standards. Baumgartner, with Marcus' assistance, also analyzed a set of 29 culture dimensions abstracted from nine models and presented to a group of 57 experts. The two authors analyzed the experts' evaluations of the importance of each dimension [2]. They reviewed this list to derive which items comprised the top five in levels of importance. "Best of breed" culture dimensions are context, technology, uncertainty avoidance, time perception, and authority conception, in that order.

Context is described as the amount and specificity of information in a given communication. The cultural dimension of technology is comprised of the experience of technology and technological development. As a cultural dimension, technology has to do with the development and attitude of the members of a certain society towards technological development. The cultural dimension of uncertainty avoidance takes into account the behavior of the user regarding uncertain or unknown situations. Time perception concerns whether one has a long- or short-term orientation to achieving objectives and whether one is oriented to the past, present, or future. This cultural dimension can be related to the perceived amount of time that it takes to comprehend and utilize a

N. Aykin (Ed.): Usability and Internationalization, Part II, HCII 2007, LNCS 4560, pp. 160–167, 2007.

Website. Authority conception concerns how people think of authority and the way their behavior is influenced when reacting to a Web UI design as official and authoritative, or not [4, 5].

Hofstede's five cultural indexes include power distance, individualism vs. collectivism, gender roles, uncertainty avoidance, and long-term time orientation. Power distance is defined as the extent to which the less powerful members of organizations and institutions (like the family) accept and expect that power is distributed unequally. This index measures whether or not there is a strong representation of inequality of a society. Individualism is the opposite of collectivism. This index demonstrates how loose or tight the ties are between individuals and their society at large. Masculinity is generally understood to be the opposite of femininity. This index refers to the roles people play according to their genders. Uncertainty avoidance concerns a society's tolerance for uncertainty and ambiguity. This index includes to what extent a culture programs its members to feel either comfortable or uncomfortable in unstructured situations. Long-term time orientation is generally the opposite of short-term time orientation. Long-term time orientation values thrift, education, and perseverance, while short-term time-orientation is concerned more with the achieving short-term goals, fulfilling obligations, and protecting one's self under changing conditions [3]'.

This study concerns an analysis of certain (undisclosable) public-facing pages of a financial-related Website by individuals from different countries and cultures. Based on the previously cited studies and after Website design interviews with twenty-four individuals from eleven different countries, the authors of this paper intend to shed light on these two questions: which dimensions seem to have the strongest impact or effect on a particular ethnic group? What considerations about culture should developers take into account when designing Websites for specific cultures/countries?

The authors used a working Website and carried out user-preferences tests. Preferences were extracted from a questionnaire of seven distinct questions that were based on the usability of and user opinions of the Website. The questionnaire consisted of three parts. The first part inquired about demographic variables. The second part contained questions based on the navigation of the Website. The third part measured the user experience and preferences. The goal of the user tests was to examine whether users with culturally different backgrounds experience and evaluate Websites in a way that is consistent with their culture-specific attributes.

The participants selected for this experiment ranged from students to professionals, with an age range of 20-50, all living in the San Francisco Bay area of California. The participants had been living in the United States for less than five years and came directly from their respective countries, which included Argentina, Canada, France, Germany, Italy, Mexico, the Netherlands, Poland, Russia, Slovakia, and the United Kingdom.

When comparing the final results with Hofstede's cultural dimensions, the following results became clear: cultural dimensions must be considered in order for a Website to be effective. For example, cultures like Russia and Slovakia, with a high level of power distance find Websites most useful when they have concise language and demonstrate a high level of professionalism. Countries such as Germany, the Netherlands, Poland, Great Britain and Canada, which

have a shorter-term time orientation, desire a Website that is quick to navigate and does not require a lot of time and effort through which to browse. Participants from countries with a high index score for uncertainty avoidance, such as Argentina, France and Mexico, are not trusting of Website content, want Websites that look highly official and professional, want them in their own languages. Countries that ranked relatively higher in individualism, such as Italy, need to have a Website design that is particular to their culture and country.

Keywords: culture, design, dimensions, interface, user, Web.

1 Introduction

At its origin, the World-Wide Web claimed only a selective group of users: primarily male researchers and military project-managers located in a small area of the USA. Only a decade ago, the Web community was a male-dominated, Western-oriented society, with the design of Websites reflecting the homogenous audience. Now, a wide variety of users, from all demographics, are participating in Internet activities. According to Marcus [4], the Web implies the availability of and easy access to knowledge-based products among all peoples in all countries worldwide. Moreover, according to Cook and Finlayson [1], in 2005, roughly 75% of the Internet population is estimated to be non-English speaking.

Assessing the rapid international expansion of the Internet, it is widely understood that the current homogenous Website design should change. Currently, many Web pages have a form designed to appeal to North Americans. According to Simon [7], the World-Wide Web is a creation of technology developed primarily in the USA and Europe that exemplifies the values and norms of these advanced industrial countries. The value systems of these countries favor rationality, technology, speed, time saving, profit, individuality, and a democratic, egalitarian political model. English is the dominant language on the Internet and is present on most sites, including multi-language sites.

According to Cook and Finlayson [1], merely recognizing differences such as language, geographic location, and religious orientation is inadequate. Although these differences play a role, differences in attitudes, expectations, and the nature of social structures and relationships prove even a greater concern.

These cross-cultural differences indicate that there is a need to change the user-interface design depending on the culture/country of the user. This study uses Marcus and Baumgartner' five cultural dimensions [4, 5] and Hofstede's Cultural Index scale [3] to determine which cultural dimensions have the strongest impact on user-interface (UI) or human-computer-interaction (HCI) design. The current study examines the differences in preferences for Website design of participants from eleven different countries.

As Hoft [2] has described cultural dimensions, they can be divided into two categories: objective and subjective. Objective categories are "easy-to-research cultural differences like political and economic contexts, text directions in writing systems, and differences in the way that you format the time of day, dates, and numbers. Subjective categories cover information like value systems, behavior systems, and intellectual systems." This paper will focus on subjective categories based on the responses of the participants.

2 Research Approach and Research Questions

Available evidence about user preferences for localized or globalized Websites is limited at present. This study intends to fill this gap by presenting empirical evidence that enables user-interface designers to develop more culturally appropriate Web designs. In addition, the study aims at identifying the expectations and preferences of members of various cultures concerning Website design.

The authors examined a working international Website (oriented to financial-related content) and carried out a usability study of preferences. The test was comprised of three main sections. The first section examined the participants' backgrounds and their overall beliefs regarding what they thought would be contained in the Website. The second portion directed the participants to use the Website in order to find items in different locations and categories. The third portion asked the participants about their personal opinions about the Website. The final portion was used to assess the participant's opinions about the overall imagery of the site.

Research questions for the user tests included the following:

- How would you describe the imagery of the site in your personal opinion?
- Would this Website appeal to people in your country?
- What content is missing?
- What features would you like to see included?
- What would be two changes you would make to the site?
- Is there anything in the Website that you feel is inappropriate?

3 Evaluation Study

The goal of the user tests was to examine whether users with culturally different backgrounds experience and evaluate Websites in a way that is consistent with their cultural-specific attributes as described and predicted by a culture model.

3.1 Method

Based on results of research previously conducted by Marcus and Baumgartner [4, 5], the authors developed a questionnaire composed of questions related to the usability and aesthetics of the Website. The questionnaire consisted of three parts. The first part inquired about demographic variables. The second part contained questions about the navigation of the Website. The third part measured the user experience and preferences. The test as a whole focused on the usability issues as well as the cultural dimensions of the Website.

The participants selected for this experiment ranged from students to professionals, with an age range of 20-50, all living in the San Francisco Bay area of California. The participants had been living in the United States for less than five years and came directly from their respective countries, which included Argentina, Canada, France, Germany, Italy, Mexico, the Netherlands, Poland, Russia, Slovakia, and the United Kingdom.

3.2 Results and Conclusions

In total, 25 participants returned questionnaires to the author's firm.

Examinations of the findings for the user preferences regarding the test Website showed that the majority of participants agreed the visual image shown (a golfer or a baseball player) was not culturally acceptable and could even be insulting to their cultures. As a subsequent recommendation, the authors believe that when designing a Website for a country outside of the USA, an internationally admired sport such as soccer should be used, or a sport suitable for a specific country, such as ice-fishing for Canada, when appropriate and feasible.

Participants' comments indicated a feeling that golf was a "rich American sport" that would deter the participant from looking through the site. In addition, when initially seeing a baseball player, individuals from other cultures would assume that the Website was specifically for an American audience. This emotional reaction seems especially important when considering cultures that have a high score on Hofstede's individualism index [3, p. 53], which represents the fact that people from these countries have a strong desire to have a personal representation of their own country in the imagery they see. In addition, this strong emotional response also seems important for countries that have a high score on Hofstede's uncertainty-avoidance index [3, p. 113], which implies that people from these countries would avoid what they feel is not meaningful and/or familiar to them.

According to research conducted by Marcus and Baumgartner [4, 5], when designing Websites, it is necessary to consider the context of the Website. This would include items such as images, color, user audience, *etc*. A factor under consideration is the difference in peoples' visual or aesthetic preferences. Participants from Argentina, France, Mexico, Russia, Slovakia, and the United Kingdom preferred less white space in the visual layouts and screens. These participants expressed the desire to view a Website that contained fewer words and more imagery and color. In addition, the imagery of the test Website tended to be repetitive and was not relevant to the information at hand. On the other hand, participants from Canada, Germany, Italy, the Netherlands, and Poland did, in fact, like the fact that there was a lot of white space on the screen. They did not mind that there was a relatively small use of colors or of large images on the Website.

Although these differences suggest some design guidelines, further research must be conducted in order to have a clear understanding of the precise relationships linking the amount of white space, color, layout and imagery to cultural dimensions for specific countries when designing Websites. Based on the above study, it seems practical and feasible to gain these data for better Website design.

When choosing images, several participants suggested that there should be a direct, explicit relationship between the actual image and the purpose of the Website. According to Hofstede's data, this is especially important when designing Websites for countries with a high level of uncertainty avoidance [3, p. 113]. Marcus and Baumgartner [4, 5] also have mentioned the importance of considering uncertainty avoidance when designing Websites. This cultural attribute implies that it is important to make the purpose of the Website clear, so that users feel comfortable and capable of working with the site. In addition, countries with a high uncertainty avoidance index score will avoid a Website through which they feel they do not understand how

to navigate or of which they do not understand the purpose. Marcus and Baumgartner [4, 5] have also noted the importance of considering time perception, including the length of time it requires to navigate through a site. The images and colors must strongly effect and make the users feel more comfortable with the site. For example, a participant from the United Kingdom mentioned that she did not feel the test Website was secure because the official company logo colors were different than the ones that she was used to in the United Kingdom (the corporate logo was undergoing gradual change worldwide). Also, there should be a clear image denoting the purpose of the Website in order to enable the user to feel more comfortable with the site.

Marcus and Baumgartner [4, 5] have discussed at length the importance of environment and technology. Participants from countries such as Mexico, Russia, and Slovakia who are used to a very basic Website took longer to locate the information for which they were searching. On the other hand, participants from countries that are more technologically advanced were disappointed and felt that the Website could have been designed with a higher level of technological development. This was especially true for the German participants.

In addition, countries with a low score on Hofstede's long-term time-orientation index [3, p. 261] seemed to need to have a quick and concise idea of the purpose of the Website. The Website needed to be attention-grabbing and eye-catching. These participants had little desire to spend much time searching for what they were looking for. They were impatient and preferred to have a picture of what they were interested in purchasing. For example, "shorter-term" German participants stated that they only wanted to see images with which they were working with directly. These images must be useful and functional. External images are not viewed unless they have a correlation with the materials for which they are looking. A direct contrast would be "longer-term" Chinese individuals who enjoy images in lieu of text.

The size of the images is also an important technological factor to consider when designing Websites. According to Marcus and Baumgartner [4], the technological abilities of the audience must be considered. Even though a large majority of the participants stated that they preferred to see the actual images larger, participants from countries with a lower economic status, such as Russia and Slovakia, mentioned that they would be concerned that it would take longer to navigate through the site because the graphics were too large and would cause some delays in downloading them. In addition, the total amount of imagery is also an important factor when designing a Website. This comparison is strongest between Germany and Mexico. The German participants stated that too many graphics would clutter up the site, versus the Mexican participants, who mentioned that they desired a larger number of graphics.

According to Marcus and Baumgartner [4], the context in which the Website is presented varies across cultures. A clear comparison of the importance of the nature of Website design would be between statements from four different groups of participants. The participants from Canada and Germany liked the fact that there was no use of Flash and that the user could click on the featured offers without leaving the Home page. On the other hand, participants from Mexico and the United Kingdom would have preferred a Website that contained more use of Flash and allowed them to navigate thoroughly through the Website. The second group of participants felt that if

there were added Flash components, the designers would make the Website appear to be more legitimate.

As stated earlier in the introduction, when designing a Website, it is crucial to have a precise understanding of the audience. Several of the participants thought that the Website was not designed for them because there were no images displayed with which they could identify. This lack of identification was particularly clear when participants mentioned the desire to view images of athletes playing their national sport, such as ice fishing or soccer, and was especially strong with participants who had a low score on Hofstede's power-distance index [3]. These participants seemed to want to feel they were on equal levels with the sponsors of the Website and that the sponsors of the Website appreciated their visiting.

When designing the search functionality of a Website, it is also important to have a clear understanding of how people from different countries and cultures navigate through information. Acceptable design can be done with appropriate visual cues and images. One participant from France and two from Mexico did not understand how to navigate at all through the Website, and the majority of the other participants did not successfully find that for which they had been looking. The improper understanding of Website navigation and losing one's way through the navigation can contribute to a negative experience for the overall usability of the Website.

4 Conclusion

There is a clear and identified need to understand the role that images, layout, color, and navigation play when designing Websites from a cross-cultural prospective. As expected from the literature of culture analysis, the findings of this limited study demonstrate that there are clear patterns of difference among user preferences and experiences of Websites for people from different cultures. Some of these preferences have been described in previous research; others need to be researched further to be understood completely.

As the Web becomes more application-based versus catalogue- or document-based, different culture-related design considerations may need to be considered and implemented. For example, for some groups, in only a few more years people may not have the need to carry around laptops, and the primary use of the Internet will be for service.

After thorough review of the literature at present, the authors recommend that that customized sites should be designed for different cultures not just for language translation or country localization. In addition, designers in those regions should organize an appropriate design strategy as well as perform user testing in those regions to study the relations of culture to user-interface design more thoroughly.

The experience gained from these user tests led to important insights, confirmed previous notions, and helped bring about changes in the client's approach to Web design. This example may inspire others to undertake similar analysis and design efforts. Further analysis of culture and other dimension and more detailed measurement may yield further insight and more specific design recommendations in the future.

References

1. Cook, J., Finlayson, M.: The Impact of Cultural Diversity on Website Design. Advanced Management Journal, Summer 70(3), 15–23 (2005)
2. Hoft, N.L: Developing a Cultural Model. In: Galdo, D., Elisa, M., Nielsen, Jakob (eds.) International User-Interfaces, pp. 41–73. John Wiley and Sons, New York (1996)
3. Hoftstede, Geert.: Cultures and Organizations. McGraw-Hill, New York (1997)
4. Marcus, Aaron, Baumgartner, Valentina-Johanna.: User-Interface Design vs. Culture. In: Proceedings, International Conference on Internationalization of Products and Services (IWIPS 2003), July 2003, Berlin, Germany, pp, 67–78 (2003)
5. Marcus, Aaron, Baumgartner, Valentina-Johanna.: A Practical Set of Culture Dimensions for Global User-Interface Development. In: Masoodian, M., Jones, S., Rogers, B. (eds.) APCHI 2004. LNCS, vol. 3101, pp. 252–261. Springer, Heidelberg (2004)
6. Marcus, Aaron, Gould, E.W.: Crosscurrents: Cultural Dimensions and Global Web User-Interface Design. Interactions, ACM Publisher 7(4), 32–46 (2000), www.acm.org
7. Simon, S.: The Impact of Culture and Gender on Websites: An Empirical Study. Database for Advances in Information Systems, Winter 2001 32(1), 18–37 (2001)