

Localization of Web Sites: Is there still a need for it?

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Abstract. In the light of the existing literature on the issue of cross-cultural interface design, we carried out a small-scale study in order to ascertain cultural differences in local web sites, specifically those of universities. Our hypotheses with regard to cross-cultural variation were based on Hofstede's theory [6]. Contrary to expectations, very little evidence of cultural differences in the interfaces of the web sites was reported. Subsequently, an online survey was conducted among webmasters of university web sites in an attempt to provide preliminary explanations for the unexpected findings. It seems that the Web has promoted the emergence of a cosmopolitan online culture, a hybrid culture overriding traditional cultural differences.

1 Introduction

A considerable amount of literature on web site development stresses that, in order to attract and retain more customers, it is vital to localize a global web site, i.e. to adapt the web site to a local community. Localization of a web site includes translating text content and adjusting graphical and visual elements, content and examples to make them culturally appropriate [5], [7].

Members of a culture do not only share a common language, but also common cultural conventions. Since measurement units, keyboard configurations, default paper sizes, character sets and notational standards for writing time, dates, addresses, numbers, currency, etc differ from one culture to another, it is self-evident that local web sites should address these issues. Some jokes, symbols, icons, graphics or even colors may be completely acceptable in one country, but trigger negative reactions in another country. Sometimes the style or tone of the site's text might even be considered offensive by a particular cultural entity, as a result of which the text need to be rewritten rather than merely translated.

In their book *International User Interfaces* [2], Nielsen and Del Galdo stress that localization should encompass more than a 'surface-level' adaptation, by acknowledging underlying cultural differences such as interface design preferences and the local culture's perception of usability. The role of culture in user interface has

also been addressed by Evers and Day [4]. Barber and Badre [1] detected the existence of cultural markers, i.e. web design elements that are prevalent in web sites of a particular culture (e.g. color, icons, symbols). Sheppard and Scholtz [9] and Sun [10] conducted pilot studies to determine if the absence or presence of cultural markers affects the user's preference or performance.

Cultural differences have also been investigated from an anthropological perspective, looking at the intangible nuances of a culture's social hierarchy, individualism, gender roles, attitude towards uncertainty and time-orientation (Marcus and Gould [8]; Dormann and Chisalita [3]). This type of research is commonly approached through Hofstede's cross-cultural theory [6]. According to Hofstede, cultural differences are based in deeply rooted values that can be categorized along five fundamental dimensions: *power distance*, *collectivism-individualism*, *masculinity-femininity*, *uncertainty avoidance*, and *long and short-term orientation*. His research is based on a large-scale survey which was carried out between 1967 and 1973 and which covered 53 countries representing the major regions of the world. These were rated for each dimension, usually on a scale from 0 to 100. Marcus and Gould [8] attempt to apply those dimensions to global web interface design, providing suggestions and guidelines to produce successfully localized web sites. Dormann and Chisalita [3] conducted an empirical study in order to determine the extent to which value orientations are expressed in sites from 'masculine' and 'feminine' countries and to examine value differences between participants from countries of both poles.

The present paper reports the results of small-scale action research that was inspired by the aforementioned studies. As web sites are developed in many different cultures around the world, we assumed that interface designs would be influenced by the culture in which they originate and would thus reflect value orientations in accordance with Hofstede's theory. As part of their localization course program, 16 students were asked to analyze homepages of university web sites in different countries in search of distinctive features which could illustrate cross-cultural variation as predicted on the basis of Hofstede's theory. To our surprise, the students' reports contained little evidence of clear cross-cultural differences in design. Subsequently, an online survey was conducted among webmasters of university web sites in an attempt to provide preliminary explanations for the unexpected findings.

The article is structured as follows. Section 2 offers a description of the setup and outcome of the pilot experiment. A discussion of the findings of the experiment is provided in section 3. Section 4 reports on the webmaster survey and finally section 5 presents conclusions and further research.

2 The Pilot Experiment

In December 2003, 16 students who had previously attended a class outlining Hofstede's cultural model, were requested to participate in our experiment. Our methodology was somewhat inspired by Dormann and Chisalita's [3] experiment. Our goal was to determine the extent to which the homepage design of local web sites reflected the Hofstede score assigned to their country for different cultural dimensions.

2.1 Constraints and Limits of the Study

- We decided to restrict our study to Hofstede's four initial dimensions, i.e. power distance, collectivism-individualism, masculinity-femininity and uncertainty avoidance. We omitted long and short-term orientation, as we felt that this fifth dimension, which is based on values derived from the Chinese philosopher Confucius, could prove intangible to the participants.
- We also concentrated on one domain, university web sites, in order to rule out any domain-specific differences.
- Students were asked to evaluate only the homepage, focusing on the visual parameters (images, symbols, logos, etc) and design elements (color, lay-out, etc), since they would evaluate university homepages from countries of which they did not always master the language.

All 16 participants were Belgian students, 10 female and 6 male, aged between 19 and 24.

2.2 Method

Each of the four dimensions was examined by 4 students. Within one dimension, each student examined 10 university homepages. They were asked to make a random selection of 5 universities from at least three of the seven highest ranked countries, and 5 universities from at least three of the nine lowest ranked countries (from the university portal site at <http://univ.cc>). In total, 40 homepages were analyzed per dimension, 20 homepages representing each pole of the dimension. (The list of analyzed homepages is available from the first author).

For each homepage, students were asked to fill out a questionnaire, which offered them a recapitulation of the dimension they had to analyze as well as a number of questions.

1. First, students were asked to give their general impression of the homepage.
2. Secondly, students were given a concise list of various subjective adjectives, which could be reflective of cultural trends, and were asked to check the ones they felt to be relevant to the homepage. The list included the following options: *attractive, bright, cheerful, dull, formal, informal, artistic, personal, impersonal, distant, concise, clear, simple, modern, old fashioned, busy, complex, nice, innovative, showy* and *dark*.
3. Afterwards, the students were asked to rate from 1 to 5 the extent to which value orientations were expressed in the homepages by means of auxiliary criteria representing the cultural values extracted from Hofstede's theory (listed below for each dimension separately). The rating scale was as follows: 1 = not applicable, 2 = hardly applicable, 3 = applicable to some extent, 4 = clearly applicable and 5 = strongly applicable. For a score higher than three, participants had to clarify from which elements in the page they perceived the given value.
4. Finally, students had to rate from 1 to 5 the extent to which they had found that the homepage reflected the high or low score of its country of origin for the dimension

analyzed. Here the rating scale was: 1 = not perceptible, 2 = hardly perceptible, 3 = perceptible to some extent, 4 = clearly perceptible and 5 = strongly perceptible. We shall call this the *general perceptibility rating*.

5. After the analysis of the 10 homepages, the student was asked to describe the main differences in design between the 5 high-score homepages and the 5 low-score homepages.

The questionnaires were identical across the four dimensions, except for the auxiliary criteria representing the value orientations.

Power Distance. The power distance dimension bears on the extent to which unequal power distribution within a culture is expected and accepted. Based on Hofstede's writings, we gathered the following criteria:

- *Focus on hierarchy*
- *Focus on teaching/management staff*
- *Healthy respect/obedience of inferiors towards superiors*
- *Focus on tradition and/or religion*

- *Focus on equality between teacher and student*
- *Focus on student*
- *Mutual respect between inferiors and superiors*
- *Focus on personal development*

Collectivism-Individualism. This dimension refers to the degree of integration of individuals within groups and the extent to which individual concerns precede the interests of the group, and vice versa. These are the criteria we retained for rating:

- *Individual interests prevail over collective interests*
- *Focus on personal development and self-realization*
- *Focus on freedom*

- *Collective interests prevail over individual interests*
- *Focus on tradition and/or religion*
- *Focus on consensus*

Masculinity-Femininity. Masculinity and femininity refers to differences in the social roles of women versus men. Whereas in feminine countries gender roles overlap, in masculine countries gender roles are clearly distinct. Students were requested to rate the following criteria:

- *Boys and girls are addressed separately*
- *Focus on ambition/competition and/or (material) success*
- *Women should be tender and modest and/or men should be hard, ambitious and assertive*

- *Boys and girls are addressed indiscriminately*
- *Focus on equality, solidarity and/or quality of life*
- *Men may be tender and modest and/or women may be hard, ambitious and assertive*

Uncertainty Avoidance. Cultures have a different attitude towards uncertain or unknown matters. The tolerance for ambiguity is expressed through the extent to which a culture resorts to written or unwritten rules to maintain predictability. The value orientations to be rated for this dimension included:

- *Rigid rules*
- *Focus on formality*
- *Great precision or punctuality*
- *Focus on tradition and/or religion*

- *Flexible rules*
- *Tolerance for informality*
- *Tolerance for ambiguity or vagueness*
- *Tolerance for evolution/change*

2.3 Quantitative Results

Students' reports contained two sets of quantifiable data: (i) the number of times they had ticked given adjectives in the list, and (ii) the scores (from one to five) on the auxiliary criteria they had given to the homepages. To check whether students' perceptions of the homepages differed significantly along with the host countries' positions on Hofstede's dimensions, we applied a chi square test to the former set of data and a Mann-Whitney U-test to the latter. In keeping with standard scientific practice we set significance levels at $p < .05$ (two-tailed). The results will be reported for each dimension separately.

Power Distance

- None of the adjectives in the list of descriptors was ticked significantly more often with regard to homepages from high power distance countries than with regard to homepages from low power distance countries.
- The scores on the auxiliary criteria didn't reveal any significant difference between homepages from high power distance countries and those from low power distance countries.
- The average score given for the general perceptibility rating (on a 1 to 5 scale) of the power distance dimension was 2.5 for homepages from high power distance countries and 3.4 for homepages from low power distance countries. It is conceivable, of course, that low power distance indicators may have been more perceptible to our students than high power distance indicators.

Collectivism-Individualism

- We found no difference in the incidence of the adjectives ticked for homepages taken from countries positioned at opposite ends of the collectivism-individualism dimension.
- However, the Mann-Whitney U-test showed that two auxiliary criteria were significantly more likely ($p < .05$) to be perceived in the homepages from individualistic countries than in the homepages from collectivist countries, namely ‘individual interests prevail over collective interests’ and ‘focus on freedom’. In homepages from collectivist countries, the statement ‘collective interests prevail over individual interests’ was rated significantly ($p < .05$) higher than in individualistic homepages.
- Based on the scores of the general perceptibility rating both poles were perceived to some extent: 2.95 for individualistic and 3.05 for collectivist countries (on a scale from 1 to 5).

Masculinity-Femininity

- One adjective was ticked significantly more often in response to homepages from feminine countries, i.e. the adjective *nice* ($p < .01$).
- However, no significant differences were found between students’ assessments of the homepages’ masculine and feminine value orientations. Students did observe that feminine values were slightly more strongly expressed in homepages from feminine countries, but web sites from masculine countries were also characterized as displaying some feminine values.
- In fact, the homepages from masculine countries were hardly found to reflect masculinity at all, with an average general perceptibility rating of 1.45. In feminine countries, femininity was found to be expressed to some extent in the homepages, with an average rating of 3.25 (on a scale from 1 to 5).

Uncertainty Avoidance

- The chosen adjectives did not reveal any significant variation in participants’ descriptions of homepages from countries representing contrasting poles of the uncertainty avoidance dimension.
- Participants did not observe any clear differences between the given auxiliary criteria either. In other words, the analyzed homepages displayed values applying to both poles.
- The average score given for general perceptibility was 2.6 for homepages from high uncertainty avoidance countries and 3 for homepages from low uncertainty avoidance countries.

2.4 Qualitative Results

At the end of the questionnaire, students were asked to sum up how (if at all) they had perceived the expected cross-cultural differences between the samples of homepages. From their observations, we can distil the following trends:

- In most cases, participants based their evaluation on the homepage's pictures and graphical representations, and their size and position in the homepage (central, in a corner, etc). To some extent, the page's colors and its cheerful or formal appearance were decisive.
- With reference to all four dimensions, most students reported that sometimes, huge design differences existed among homepages from one single country. The university homepages for a given country could be extremely simple or complex, very dull or very interactive, innovative or very formal, etc.
- For the power distance dimension, the visual representations appeared to have been the main criterion of evaluation. Did pictures represent buildings, professors, and religious symbols or did students hold a prominent place? Eight of the 20 university homepages from high power distance countries actually portrayed students, usually laughing.
- The most perceptible value orientation differences were found in the dimension collectivism-individualism. In 'collectivist' homepages, pictures of buildings or groups were found more prominently than in 'individualistic' homepages, which generally depicted smaller groups or individual students, often with smiling faces. Collectivism was strongly expressed in homepages from Latin American countries, and to a lesser extent in other collectivist countries.
- According to the participants, masculine homepages proved to display some feminine values. Pictures of girls appeared on 10 of the 20 masculine homepages. In their comments, the majority of the participants found the feminine homepages more aesthetically appealing, which explains the significant incidence of the adjective *nice*. In feminine countries, representations of people are more numerous than in masculine countries. Students also reported that they had been struck by the prominence of pictures of women in Scandinavian homepages.
- The homepages in low uncertainty avoidance countries were not found to be more complex or innovative than in high uncertainty avoidance countries. One student remarked that innovation and complexity are not reliable criteria, as they depend on the extent to which a country has been exposed to the web, and not only on the country's uncertainty avoidance.

3 Discussion of the Pilot Experiment

The results of the study show that, except for the dimension collectivism-individualism, value orientations were not clearly ascertained by the students in the analyzed homepages. In view of the literature on cross-cultural issues in web site design (see above), we were surprised that our action research had generated so little corroboration of the hypotheses. Moreover, given their knowledge of the homepages' countries of origin and those countries' scores on Hofstede's cultural dimensions, we may assume that our participants were actually biased towards 'finding' cross-cultural differences. Because of the surprising results, we first examined whether the way the experiment was conducted could have influenced the results.

It needs to be acknowledged that, as a consequence of the participants' random selections, some homepages were just too plain to extract any information and thus

got a very low rating. Nevertheless, none of the average general perceptibility ratings was ≥ 4 (i.e. clearly visible), which implies that no dimension was distinctly perceived. Moreover, responding to a 'random' sample of university homepages may more closely resemble authentic web browsing than responding to a pre-selection of homepages chosen by a researcher with a view to demonstrating 'culture-typical' designs.

We also wondered whether our participants' findings could be ascribed to their own cultural background. Since they were all Belgians, perhaps they were more / less likely to perceive things which were affinitive to their culture? However, a comparison between Belgium's score for the four cultural dimensions and our students' reports shows that they had not observed their own cultural value orientations any better or worse.

It is also possible that the fact that the students only focused on the visual elements (since they did not always master the language) had an influence on the results. Maybe, if they had been able to read the content of the homepages, the results would have been different.

Moreover, it is also possible that the selected domain, university websites, had an impact on the result. University web sites are mostly aimed at young people, which could also imply that these sites display less traditional features. Since some universities aim to display an international character, they might also deliberately veil certain cultural traits.

On the basis of the pilot study' results we set up two new hypotheses: (i) either our students were unable to recognize culture-specific characteristics due to the setting of the experiment, and/or (ii) the evaluated local homepages did not actually reflect local culture, as Hofstede's theory would predict.

In order to estimate the degree of cultural identity of university web sites, we decided to query the webmasters of these sites about their methods when designing or redesigning the web site.

4 Webmaster Survey

At the end of December 2003, an email requesting to complete an online survey was sent to 223 webmasters of university web sites, among which the web sites analyzed by the students and more sites originating from countries with an extreme score for any of the four cultural dimensions. The survey's main goal aimed at finding out the extent to which webmasters or web development teams draw inspiration from other existing web sites when (re)designing the university web site. In order to mask our primary objective, we addressed several issues through questions of various types: multiple choice, multiple answer and open-ended. We obtained 45 responses, which was more than we had hoped for.

To the question whether they happen to be inspired by the design or architecture of other existing web sites, 36% of the respondents answered that this was 'often' the case, 58% said 'occasionally' and only 6% answered 'never'. Of the 94% declaring that they were indeed receptive to external influences, a modest majority (54%) claimed that they looked at in-country web sites, while the others (46%) checked web

sites of various origins. From the latter group's specifications, it appeared that most webmasters do not have a preference for specific countries, but they often also visit same language countries. According to both groups of respondents' open-ended answers, they mainly look at other university web sites.

5 Discussion & Further Research

We realize that our study has a limited scope, as we only concentrated on visual parameters in a confined number of university homepages. Our approach involved a comparison of two opposite poles of countries, but not of countries individually. We also restricted our study to four of the five dimensions of Hofstede. Moreover, an in-depth investigation of the web sites' content and navigation systems might have disclosed preferences associated with prevailing cultural value orientations. However, the data obtained through our small-scale study and webmaster survey led us to formulate a number of explanatory hypotheses.

The webmaster survey revealed that, when developing a site, 94% of the respondents happen to be inspired by other web sites. Almost half (46%) of them declare to prospect web sites of various origins, while 54% look at in-country web sites. However, these in-country sites could on their turn have been designed on the basis of foreign web sites. As one webmaster put it, the web is 'an international medium and inspiration comes from all over'. Moreover it appears that, within the same domain, web developers tend to mutually keep an eye on each other. This could explain why we had difficulties detecting the expected value orientations in the university homepages. It would also imply a certain homogenization of cyberspace. At the same time, we should bear in mind that Hofstede's theory is more than 30 years old and that some shifts might have taken place, if only through the advent of revolutionary communications media.

Our findings might be inconsistent with previous research findings, but then again the Web is highly dynamic, ever changing and quickly evolving. It seems that, rather than being a forum for different cultures, the Web has promoted the emergence of a cosmopolitan online culture, a hybrid culture which does not have the same characteristics as traditional cultures, as it is the outcome of the communication and interaction between people from different cultural backgrounds. Western values such as liberty, individualism, equality and democracy, are acknowledged to dominate this online culture. (According to our experiment, high power distance and masculinity were indeed less perceptible in the analyzed homepages.) On the other hand, collectivist homepages proved to express collectivist value orientations.

If we posit that the online culture is an intermediate culture in which traditional cultural differences are fuzzy, perhaps then the value of cross-cultural theories for the localization of online systems is overrated? Would web sites really better fit users' preferences and expectations if web developers took these cultural dimensions into account? These questions call for more research in order to revise the methods and guidelines for classical software localization before applying them to web sites. Different aspects should be taken into consideration when doing this. Internet users are typically young and innovative; they represent a less traditional or conservative

audience. It is also plausible to assume that, even if people were to have clear cultural preferences, they will become more flexible and ‘acclimatize’ to the online culture as they continue to surf the Web’s cultural melting pot. However, some domains will be more sensitive to cultural difference than others. University web sites are mostly aimed at a young and sometimes international audience, while commercial web sites or news sites may have more benefit from addressing cultural issues.

Acknowledgements

We would like to express our gratitude to the 16 students who eagerly participated in the experiment and to the 45 webmasters who kindly took the time to complete our online survey. Also many thanks to Arnout Horemans for this help and advice.

References

1. Barber, W. and Badre, A. Culturability: The Merging of Culture and Usability. In: Proceedings of the 4th Conference on Human Factors and the Web, at <http://www.research.att.com/conf/hfweb/proceedings/barber/> (1998)
2. Del Galdo, E. M. and Nielsen, J. (Eds.) International User Interfaces. John Wiley & Sons, New York (1996)
3. Dormann, C. and Chisalita, C.: Cultural Values in Web Site Design. In: Proceedings of the 11th European Conference on Cognitive Ergonomics ECCE11 (2002)
4. Evers, V. and Day, D.: The Role of Culture in Interface Acceptance, In: Proceedings of Human Computer Interaction, Interact’97. Chapman & Hall: London, (1997) 260-267
5. Globalization, Localization, Internationalization and Translation (GLIT), at <http://philip.pristine.net/glit/> (accessed date: January 2004)
6. Hofstede, G.: Cultures and Organizations: Software of the Mind. McGraw-Hill, New York (1997)
7. Localization Industry Standards Association (LISA), at <http://www.lisa.org> (accessed date: January 2004)
8. Marcus, A. and West Gould, E.: Crosscurrents: Cultural Dimensions and Global Web User-Interface Design. ACM Interactions 2 (4) (2000) 32 – 46
9. Sheppard, C. and Scholtz, J.: The Effects of Cultural Markers on Web Site. In: Proceedings of the 5th Conference on Human Factors and the Web (1999)
10. Sun, H.: Building a Culturally Competent Corporate Web Site: An Exploratory Study of Cultural Markers in Multilingual Web Design. In: Proceedings of the 19th Annual International Conference on Computer Documentation. ACM Press: New York (2001) 95-102.