



The Effect of Culture on Emotions and Trust of Websites

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Abstract

This paper explores the effect of culture on the emotions invoked when different websites are viewed, and the perception of that website's trustworthiness. Traditionally, researchers in the human computer interaction (HCI) field have focused on task-oriented usability, committed to improving efficiency. Eventually, the importance of other aspects of technology use was recognized, one of which were emotions, all grouped under the umbrella term - user experience. Numerous studies show that culture has an influence on the user's perception of usability and interface preferences. Seeing this relationship between culture and usability, one between culture and user experience remains to be explored. A survey was conducted as part of the methodology, where two cultural groups, Bosnians and the Chinese, participated with the aim of capturing differences and similarities in the perceptions of different classes of websites. The different types used are flash-based, text-dominated, combination of text and graphics, graphic-intensive and virtual reality. Two samples are culture-specific and the rest are either Australian or American. The study reveals the similarities and differences between the two cultural groups examined. Each cultural group rendered both positive and negative emotional responses from the survey and their perceptions of trustworthiness also varied.

Keywords: culture, emotion, trust, website.

Introduction

The websites have become an integral part of our daily lives. People from different cultural groups may have varying preferences and interact with websites in different ways. Given that the Internet is made up of users of different cultural backgrounds, it becomes clear that delivering culture-sensitive websites is essential for the overall user satisfaction. In previous studies, researchers focused on exploring the influence of culture on task-oriented usability and how cultural differences are reflected in web design in general. In the literature, more than half the respondents to a survey judged a website's credibility based on its design (Fogg et.al, 2002; Cyr and Trevor-Smith, 2004).

The website is a global medium connecting users from different countries and cultures around the globe and is a driving force of socio-globalization. Since the advent of the Web, the world has shrunk in size as it has become easier to communicate and do business with people regardless of their physical location. A major factor that distinguishes the users online from one another is culture (Noiwan and Norcio 2005), and cultures differ in emotions, thoughts and behaviour.

User experience (UX) is a term that goes beyond the instrumental perspective and entails emotional, hedonic, aesthetic and

experiential aspects of technology use (Hassenzahl and Tractinsky, 2006). Emotions are a vital characteristic of humanity. Since HCI is a study of humans interacting with technology, it is essential to recognize that emotions play a part in the interaction just as much as cognition (Cockton, 2002). Technology can be designed to induce a range of emotional states, such as fun and excitement or enthrallment. Some of the examples are virtual communities and games.

This paper focuses on exploring the influence of culture on user experience and emotions, and how cultural differences are reflected in web design in general. More than half the respondents to a survey judged a website's credibility based on its design from previous studies (Fogg et.al, 2002; Cyr and Trevor-Smith, 2004). Evidently, the task is not the single most important point of Human Computer Interaction (HCI) and aspects that go beyond the instrumental need to be considered. However, the effect of culture on the overall user experience is yet to be explored in depth, particularly in regards to emotional usability. Emotions are an important part of the interaction as well, but no studies have explored how different cultures react emotionally to websites. This has motivated the researchers to start this research in which they endeavour to explore the possible relationship between culture and emotional usability.

Objective

The objective of the study is to explore the similarities and differences in the emotions evoked when different types of websites are viewed by two cultural groups: Balkan or South-East European and Asian; Bosnian and Chinese, and their perception of trust of those websites. It is anticipated that the two cultures are different from each other by being geographically far apart; however, there is no evidence to support this.

The study aims to answer the following research questions:

- a) "Does culture have an influence on emotional usability of web sites?"
- b) "Is there a positive correlation between cultural proximity of audience and website, and emotion or trust?"
- c) "Do different types of website designs cause culture-dependent emotional responses from their audience?"

Broadly speaking, the study endeavors to discover whether culture affects emotional usability and in what ways. To answer this broad question, the study examines whether viewing culture-specific websites invoked positive emotions in members of that culture group and less positive emotions in that of the other group, and whether members of a particular culture group would trust those websites prevalent in their own culture group more than that of the other. Furthermore, the study aims to find out whether the emotions invoked by different types of website designs varied across the two cultural groups. In past years, the majority of studies focused on the influence of culture on traditional task-oriented usability. The relationship between culture and user experience needs to be explored in more depth, particularly in regards to emotional usability. Kim and Moon (1998) analyzed factors affecting emotional usability on Korean subjects. However, this study goes beyond in that two cultures are analyzed instead of one to uncover similarities and differences between them.

Literature Review

Traditionally, researchers in the Human Computer Interaction (HCI) field have focused on cognition and task-oriented usability committed to improving efficiency (Lavie and Tractinsky, 2004). Their efforts revolved around specific outcomes of technology use and performance, thus time to learn, to error rate and time to complete a task were amongst those factors considered important.

Efficiency and ease of use were the central aspects taken into consideration when designing and evaluating a technology. Usability was examined solely from the instrumental perspective (Mahlke, 2005). This narrow view of usability assumed the task to be the focal point of interaction, ignoring any other factors that may also be present. For instance, virtual communities and games are as much about the experience as the outcome (Cockton, 2002). Evidently, the purpose of technology use is much more than mere efficiency and effectiveness of interaction.

Eventually, the importance of other aspects of technology use were recognized, such as emotional, aesthetic, hedonic and the experiential, all grouped under the umbrella term - user experience (UX). Much of the computer artifacts nowadays are designed to induce a particular experience as the outcome, for instance, fun and excitement or any other emotional state. This concept of UX has gained attention in the recent years, but was criticized for being vague and obscure.

User Experience (UX), Emotion and Affect

The lack of empirical research hindered the formation of a specific definition of user experience. Hassenzahl and Tractinsky (2006) summed up the literature on the topic and identified three key perspectives associated with the term user experience. Hassenzahl and Tractinsky (2006) have named them as beyond the instrumental, emotion and affect and the experiential.

Emotions are a significant element of User Experience (UX) to Hassenzahl and Tractinsky (2006). Human emotion influences the intention to interact on the website, how the user interacts with the website and the final outcome of the interaction. A pleasing outcome will have a positive effect on the user, whereas a negative outcome can result in frustration. An emotion can be defined as a state composed of behavioral reactions (e.g. approaching), expressive reactions (e.g.

laughing), mental reactions (e.g. fear) and subjective feelings (e.g. feeling excited) (Desmet and Hekkert, 2002).

An emotionally usable interface is one that induces positive emotions and builds an emotionally engaging experience. An important emotion in human-computer interaction is trust; it refers to the extent to which users trust the system they are using, regardless of what it might be. Kim and Moon (1998) measured the perceived trustworthiness of cyber-banking system by measuring emotional responses of Korean subjects. The scale was made up of emotive terms ranging from awkward to witty. It was found that the main clipart and color layout features of the design contributed the most to the overall impression and a feeling of safety. Interestingly, it was found that sites with no clipart aroused feelings of untrustworthiness, whereas sites with 3D, vibrant clipart taking up half of the screen size were the most trusted. With color layout it was found that cool rather than warm tones were preferred, with the main color being a moderate pastel color. Moreover, symmetric use of color was another design factor that aroused the feeling of trust, as opposed to asymmetric use of color and bright backgrounds, which contributed to a feeling of untrustworthiness.

Cultures and Users

The concept of culture is a complex one. It is often spoken of in HCI, but rarely defined. Matsumoto (1994) defines culture as "the degree that people share attributes, values, beliefs and behaviors", as cited by Hillier (2003). Cultures differ among countries and sometimes even within a country (Marcus and Gould, 2000). Studies show that culture does play a part in human-computer interaction and has an influence on usability as well as general user perceptions and preferences. The influence of culture on web design and usability are discussed below.

Marcus and Gould (2000) provide a detailed description of Hofstede's (1980) renowned

theory of 'cultural dimensions' often used by scholars in this field to analyze the influence of culture on interface design. Designing a website attuned to the individual's cultural identity is essential as it will reflect his/her cultural beliefs, and as a result he/she will have a more positive attitude towards the website. The authors, as presented below, discuss how the five 'cultural dimensions' are reflected in the design of websites from around the globe, by demonstrating two contrasting examples for each 'cultural dimension'. Hofstede's theory (1980) is also supported by Singh, Furrer and Ostinelli, 2004; and Cyr and Trevor-Smith, 2004. Cyr and Trevor-Smith's (2004) study of German, Japanese and American web sites, as discussed later, was based on Hofstede's theory (Hofstede, 1980). These particular cultures were chosen as they showed very different characteristics according to Hofstede (1980). Hofstede (1980) was criticized for this theory that each country or state has a single national culture. This implies that cultures vary by countries and not nations, as in the case of Great Britain. Furthermore, Hofstede's study is restricted to IBM employees, who are not necessarily representatives of a particular culture. It is therefore suggested that his generalizations are not quite valid. The binary opposition of Collectivism vs. individualism was found to be flawed, as the two can coexist and tend to vary in different situations (McSweeney, 2002). Although there are limitations in Hofstede's theory (1980), it gives a good overview of the differences that exist between cultures. A more conclusive theory of cultural differences would make this analysis more feasible.

Cultural Makers

'Cultural markers' theory has been developed in 1998 and can be considered outdated in the sense that technology has changed considerably since then. There are other web interface elements that are now widespread and were in their early stages or non-existent when the theory was first published. One such example is animation. Sun's (2001)

categories of cultural markers are discussed below. The 'other design elements' are a summary of the other important interface components from the literature and how they differ between cultures. Some cultural factors in the study are the following:

• Language

Delivering information in the language of the local user is paramount to a website's usability, as it ensures that users can actually process the content (Cyr and Trevor-Smith, 2004). English language dominates the web, even though the majority of the globe speaks languages other than English. The failure to translate an English website for local audiences makes it accessible only to privileged individuals who can read and understand English (Rau and Liang, 2003). Research shows that most users favour viewing web sites in their own language. For instance, International Data Corporation reveals that millions of Chinese and Koreans preferred web sites in their own language (Singh et al., 2004). Furthermore, Schwartz's (2000) study as cited in Brandon's (2001) found that users spent more time on websites in their native language and were more likely to make a purchase from them.

• Visuals

Selecting appropriate images for the local audience that the user can relate to is important to ensure the user feels comfortable and understands the meaning of the images. A study by Sun (2001) showed that displaying culturally relevant images led to greater user satisfaction. Both the Chinese and the Brazilian users expressed a positive attitude towards the Lotus Notes website, as it displayed a Chinese lotus flower and the Mountain of Sugar Loaf on the localized versions. Another important issue is to ensure that the images are not offensive to the local audience. For instance, Lycos' French version of the website contained a nude image, which although acceptable in France, would be inappropriate in other countries. For this reason, the image was not

used on any of the other localized versions. Also, an image of a boy sticking his tongue out on an international children's digital library was altered after learning that such an image would be offensive for the Chinese audience (Browne-Hutchinson et al, 2005).

• Color

The meaning of colors differs between cultures. For example, Catholic Europe associates purple to death and Middle East sees it as the color of prostitution (Brandon, 2001). Interestingly, it was found that purple was also the least favorite color for both American and Thai users (Noiwan and Norcio, 2006). This clearly shows that purple has negative connotations in certain cultures and should perhaps be avoided. In some instances however, the connotation of a color might vary considerably between cultures. For instance, red can be used to express joy in China but a warning in the United States (Cyr and Trevor-Smith, 2004).

• Layout

Studies show that different cultures organize and structure information differently. Layout of a website refers to the position of banners, menus and search utilities. It is suggested that France has a preference for a centered

orientation. A study also showed that Japanese websites place banners differently to US and Germany (Cyr and Trevor-Smith, 2004). The results of a usability test revealed that Asians would organize and group the information differently on an American website (Rau and Liang, 2003). Low context cultures such as that of Germany prefer a well-structured and logical layout with information arranged alphabetically, whereas high context cultures such as that of Brazil and China prefer visuals (Sun, 2001).

Methodology

The websites listed by the subjects were examined to try and identify any patterns in the preferences between the two culture groups. The results reveal that Bosnians found websites with fewer colors and less graphics more appealing, while the Chinese preferred more colorful and graphic-intensive websites. No patterns were exposed as to what was perceived as exciting by the two culture groups. The researches focused on two cultures Balkan or South-East European (Bosnian) and Asian (Chinese) while the rest of the websites were culture-neutral, either American or Australian. Table1 shows country base, business nature and characteristic features of business for the selected websites.

Table1. Website Information

Website	Country base	Business nature	Characteristic
Balkanmedia	Former Yugoslavia region	Selling digital media products through the online media store	Graphic dominated
Sina	China	Online selling store and information portal site and	Graphic dominated
JamieO	USA	Develop software	Text dominated
PopWebCity	USA	Online shopping mall	Graphic dominated
Sanity	Australia	Selling music CDs and DVDs	Combined text and images
LeafTea	Australia	Selling natural tea products to retailers, cafes, restaurants and public through mail	Combined text and images
AgencyNet	America	Design web pages	Graphic dominated
Centrelink	Australia	The site delivers to the Australian public and providing online service such as social security payments and public services	Text dominated

Conducting a survey, in terms of statistics, is the equivalent of obtaining observations from a random variable. In this case, there are two random variables: the Bosnian population and the Chinese population. The frequency distributions of these random variables reflect the ratio of the population that would give each answer to the survey questions as response. It is the job of the analyst to use the survey responses to understand the structure of these distributions in order to make generalizations about the population at hand, and in the particular case of this investigation to determine differences between the two populations. Sample size consisted of 20 participants (10 Bosnian and 10 Chinese). Random sampling method was used to select the subjects. Pearson's Chi-square tests were used to determine the statistical significance of the survey results and to determine whether actual differences between the Bosnian and Chinese groups were observed. This test is the most commonly used in analyzing categorical data, as is the case here. The participants filled out an online questionnaire of 9 open-ended questions.

Firstly, the participants were asked about their country of birth and their first language to determine their cultural background. The questions that followed asked what websites they found most visually-pleasing, which were the most exciting ones and to state their reasons. URLs to the websites were presented in the questions.

A commonly used threshold for the P-value, which shall be employed in this study, is 0.05 or 5%. A P-value below this threshold is considered enough to accept the data as evidence that a difference exists in the distribution of responses for the two groups. A result that yields such a P-value is called a significant result. In Table1, the dependent and independent variables have been identified in this investigation. The study will focus on two dependent variables which are the emotion and trust perceived and reported by the respondents in relation to each website stimulus. Two cultural groups will be exposed to these stimuli, and variations across these two groups will be analyzed.

Table 2: Dependent and Independent Variables in the Investigation

Independent Variables	Dependent Variables
Audience culture	Reported emotion
Website stimulus	Perception of trust

The website stimulus variable can be further subdivided. The first part of the survey presents culture-dependent website stimuli, one having high cultural proximity to one group and low proximity to the other group, and vice versa. The second part of the survey has six culture-neutral website stimuli that differ in design characteristics well known to polarize cultures in terms of task-oriented usability.

A combination of different types of websites was used, as the pilot study revealed some differences in preferences for the two groups. For instance, the Chinese preferred

graphically rich websites, as opposed to Bosnians who liked fewer colors and simpler designs. The websites were chosen randomly. For each category, around 8 websites were collected, and then the most appropriate one was chosen for each category. The aim of having a variety of designs was to try and identify whether the two cultural groups had different preferences for different types of designs.

Balkanmedia and Sina were chosen as they have cultural relevance to the two groups; Balkan media being an online digital media store for people from former Yugoslavia, and

Sina, a Chinese news and information portal and online store. Both groups of participants viewed these websites in their native language.

For culture neutral sites, the aim was to find examples that were graphics-intensive, text dominated, flash-based, simplistic, and which showed 3D and virtual reality elements. Jamie O Skincare was chosen for its flash-based design, and PopWeb VR City for its 3D, virtual reality characteristics. AgencyNet, an American based digital agency site, met the graphically intensive requirements.

Centrelink, Sanity and Leaf Tea all Australian websites were either text-dominated (Centrelink), a combination of text and graphics (Sanity), or employed a simplistic design (Leaf Tea).

Hofstede's (1980) theory of cultural dimensions and Barber and Badre's (1998) cultural markers were not applied in this study to analyze the cultural differences. The research objective is to identify a relationship between culture and usability, not characterize it within an established framework such as that of Hofstede (1980). Cultural markers were also not relevant to

this study, as they concentrate on analyzing culture within task-oriented usability.

Chi-square tests were employed, as they are a well-known and proved method for statistical analysis. It was appropriate in this case to determine whether the differences in the results obtained were significant. This secure and firm method enables one to identify the very significant trends in the data. To simplify the analysis of the results, the emotive terms were grouped into three groups; namely, positive, negative and neutral or impartial emotions turning them into an easy to measure scale. Positive emotive terms include those such as 'pleasant', 'exciting', 'delightful', whereas negative terms include 'boring', 'unpleasant', 'scary' and neutral emotions are simply characterized by the term 'impartial'.

Results and Analysis

The results were generated from cross-tabulations, and they depict the similarities and differences for both the emotion and trust factors for the two cultural groups studied (see Table 3).

Table 3: Responses for Emotion vs. Trustworthy

Website	Country	Emotion (%)			Trust (%)		
		Positive	Negative	Impartial	Positive	Negative	Impartial
Balkanmedia	Bosnian	76	16	8	76	16	8
	Chinese	12	52	36	8	32	60
Sina	Bosnian	28	48	24	12	56	32
	Chinese	96	0	4	84	16	0
JamieO	Bosnian	32	28	40	44	32	24
	Chinese	29	40	32	72	12	16
PopWeb	Bosnian	64	24	12	44	12	44
	Chinese	40	28	32	28	28	40
Sanity	Bosnian	84	4	12	60	9	32
	Chinese	92	4	4	84	4	12
LeafTea	Bosnian	76	16	8	48	8	44
	Chinese	96	4	0	88	4	8
AgencyNet	Bosnian	84	12	4	20	20	60
	Chinese	76	20	4	32	16	52
Centrelink	Bosnian	48	40	12	88	8	4
	Chinese	56	36	8	80	4	16

In addition, we distributed and generated answers by cross-tabulations in Table 4. To determine whether the differences in the results had any statistical significance, Pearson's Chi-square tests were employed.

Table3 shows the significance of (P) values obtained from the results of this research to three decimal points for each website for both emotion and trust factors.

Table 4: Significance (P-) Values

Website	Significance (P value)	
	Emotion	Trust
Balkanmedia	.000	.151
Sina	.000	.000
JamieO Skincare	.777	.113
PopWeb VR city	.155	.288
LeafTea	.112	.009
Sanity	.580	.165
AgencyNet	.269	.623
Centrelink	.569	.328

For the emotion factor, both Balkanmedia and Sina returned a significance value of .000, but .151 for the trust factor, meaning the difference is only significant for the emotion, but not trust. This provides proof that both cultures feel more positive about the website from their cultural group than that of the other. The same is not true for trust however, as the results show that Chinese participants were a lot more trusting of their website than Bosnian participants were.

JamieO Skincare rendered a very high value of .777 for the emotion factor, but a fairly low value of .113 for the trust factor. This suggests that flash-based, interactive features of the website appealed to both Bosnians and Chinese. The Chinese participants evidently trusted the website more, as the cross-tabulations show; however the significance value is above the 0.05 threshold which makes this result insignificant.

Bosnians found PopWeb VR City more emotionally engaging and trustworthy. The Chinese found the virtual reality components of the demo more 'scary' and 'unpleasant' or were impartial to them, whereas Bosnians exhibited more positive emotions such as 'exciting' and 'delightful'. In spite of this,

being the case, the P values for the emotion and trust factors are still insignificant with .155 and .288, respectively.

LeafTea was more popular amongst the Chinese participants. Chinese participants found the simple structure and design of the text-dominated LeafTea to be emotionally usable with an average of 20% more than Bosnians. However, the P value of .112 is too small to make this difference a significant one. On the other hand, a P value of .009 gives evidence that Chinese trust the website more than the Bosnians, as this value is significant.

For Sanity, the large figure of .580 reflects the similarities in emotions between the two groups. Both Bosnians and Chinese seem to feel positive about the website, designed with a combination of text and graphics, asymmetric structure and few colors. Chinese participants showed more trust in the website by 24%. However, translating this result using the chi-tests generated a P value of .165, which still makes the result insignificant.

The significance values for AgencyNet are high for both emotion and trust factors .269 and .623, respectively. This suggests that the graphic-intensive, highly interactive, flash-

based features of the website appeal to both Bosnians and Chinese. The majority of participants in both groups were not sure whether the website appeared trustworthy, yet the differences are not significant due to the high P value of .623.

The high significance value of .569 gives evidence that there are no significant differences in the emotions invoked for Centrelink between the two groups. This suggests that the simple design of the website, with a limited use of graphics, limited color scheme and symmetric design appealed to both Bosnians and Chinese. The majority of participants in both groups also trusted the website and this is reflected by the significance value of .328.

Discussion and Limitations

Overall culture-specific websites produced positive emotional responses in subjects of that same cultural group. As expected, neutral or negative emotions were invoked in subjects of the different cultural group. The perception of trust varied between the two cultures, but did not follow the correlation structure for emotion. Evidently, there was no significant difference in trust for Balkanmedia, but a marked and significant difference for Sina. The results show that the Chinese are more trusting of their website than Bosnians.

For the culture-neutral websites, there were preferences for certain types of web designs, which were culture dependent. For instance, 64% of Bosnians reacted positively to PopWeb VR City as opposed to 40% of Chinese subjects. The simple text-dominated design of LeafTea was more popular with the Chinese subjects by 20%. In general, the Chinese seemed to trust the websites more than Bosnians. For instance, 72% of the Chinese trusted JamieO Skincare, as opposed to only 44% of Bosnians. However, these trends are not significant given the number of subjects in this study. This is true for both emotion and trust. The only exception here is

the fact that there is evidence that Chinese subjects trust LeafTea more than Bosnians, as the P value rendered is significant.

Contrary to the pilot study findings, graphically intensive and colorful websites appealed to both cultural groups, not just the Chinese. Also, simple websites with minimal use of graphics and colors and a symmetric structure appealed to both Bosnians and the Chinese. These results therefore give evidence that the emotions invoked by culture-neutral websites do not vary for the two groups studied. This is also true for trust, as the overall P values obtained are insignificant.

A major limitation of the study is the fact that a relatively small number of people was attracted to participate in the survey. This small sample may not reveal less obvious relationships. In further research, it would be worthwhile to do a survey with a larger sample, a wider variety of websites and perhaps more cultures. Although the participants were asked to focus on the visual design only, there may have been some inherent culture-bias and familiarity, since the website was in their own language. In further research, to combat culture-bias, the content would be made neutral and the websites would be translated to a neutral English, leaving the original graphic design. Another factor that may have an impact on the results is the fact that participants in both cultural groups live in Australia.

It is also recommended that a qualitative component be added to this study and focus groups and interviews be conducted to reduce the error rate. The emotive terms used in the survey may not mean the same thing to everyone, so getting people to explain what each term mean to them would be beneficial. Talking to people further about the finding in the survey could bring some light to the grey areas of this study, so one can understand more about why people respond in a certain way.

Conclusion

The results of this study give evidence for a positive correlation between cultural proximity of audience and website and emotion. That is, culture-specific websites do invoke positive emotions in members of that same cultural group and less positive emotions in members of the other cultural group. There is also evidence for a relationship between cultural proximity and perception of trust, but no conclusion can be drawn as to the nature of the relationship. This is because as seen in the results, the Chinese are more trusting of their website than Bosnians are. Therefore, whilst the results show there is a link between culture and emotional usability, the research question "Is there a positive correlation between cultural proximity of audience and website, and emotion or trust?" is only partially true.

A relationship between culture and emotional usability was not established for the culture-neutral websites. Those design features, which distinguish the two groups, were not captured. Therefore, evidence suggests that there are no culture-dependent differences in the emotional responses and perceptions of trust caused by specific kinds of website designs. Thus, the answer to the research question "Do different types of website designs cause culture-dependent emotional responses from their audience?" is negative.

It can be concluded that culture-specific websites reveal a relationship between culture and emotion, while the culture-neutral websites do not. For this reason, it cannot be ascertained how culture influences emotional usability. To make this study more complete, a qualitative component would have to be conducted as part of the research to find out whether there are features of websites that cause different emotional reactions in the two cultural groups.

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