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Dianne Cyr
Simon Fraser University, cyr@sfu.ca

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Dianne Cyr
Simon Fraser University
cyr@sfu.ca

ABSTRACT

Website design elements (information design, information content, navigation design, visual design), disposition to trust, website trust, and transaction security are examined for differences in an eight country sample with a total of 1156 participants (including Canada, the United States, India, Germany, Japan, Mexico, Chile, and China). Within Canada, users from English Canada and French Canada were also compared. In a theoretical context that includes cultural differences for uncertainty avoidance (e.g. Hofstede's classification) and the GLOBE study which identifies similar country clusters, overall and as predicted, low uncertainty avoidance countries of French Canada, English Canada, and the United States have the highest scores on the various constructs indicating more favorable reactions by users. Largest differences across most of the constructs occur between Germany, Japan, and China with other countries in the sample.

Keywords

website design, culture

INTRODUCTION

E-business vendors seek to develop websites that are visually pleasing, easy to navigate, rich in information content, and secure. In the current research these topics are examined with global users from Canada, the United States, India, Germany, Japan, Mexico, Chile, and China. Within Canada users for both English Canada and French Canada were included to examine within country differences when two diverse cultures are represented within the same nation state.

This investigation is aimed to achieve the following goals based on user perceptions of the same e-commerce website professionally adapted for the user's local culture in each of the eight countries included in this study.

(1) Examine website design elements for information content, information design, navigation design and visual design to determine user perceptions of each element and how these differ between country groups.
(2) Investigate user disposition to trust, perceptions of website trust and transaction security.

(3) Examine if differences exist for English Canadian and French Canadian participants.
(4) Develop and validate a new construct for Information Content.

CULTURAL CONSIDERATIONS

Researchers have often used Hofstede's classifications to study social psychological phenomena. In this research, one of Hofstede's classifications (for uncertainty avoidance) will be considered for its relevance to website design, as well as to trust and security issues related to e-commerce. Uncertainty avoidance characterizes how societies accommodate high levels of uncertainty and ambiguity in the environment. Members of very high uncertainty avoidance societies such as Japan seek to reduce personal risk and to augment security. Individualism-collectivism is a second dimension that has been previously used to examine user reactions in e-commerce (e.g. Jarvenpaa et al., 1999). Individualistic cultures place greater importance on the needs, values and goals of the individual over those of the group, while in collectivist cultures the needs, values, and goals of the group prevail (Hofstede, 1980). Countries high on individualism are usually low on uncertainty avoidance and countries that are low on individualism are usually high on uncertainty avoidance.

Complementary to the work by Hofstede (1980) and relevant in the current research, House and his colleagues (2002) conducted an extensive study of leadership and organizational effectiveness in 61 nations which they called the GLOBE project. Country clustering was determined based on similarities and differences concerning societal values and beliefs. Of 10 cultural clusters identified in the GLOBE research five are represented in the current study. These are: South Asia (India), North America (Canada, the United States), Germanic Europe (Germany), Confucian Asia (Japan, China), and Latin America (Mexico, Chile) as indicated in Table 1. In alignment with theoretical premises from the GLOBE project, culture is determined not only by commonality among members of the collective based on psychologically based values and beliefs, but also by "commonality of observed and reported practices of entities such as families, schools, work organizations, economic and legal systems, and political institutions"

(House, Javidan, Hanges, and Dorfman, 2002, p.5). This raises the question as addressed in the current study whether in a country like Canada where both English Canadian and French Canadian groups reside, whether or not within country cultural diversity will be a stronger group identifier than country based identifiers such as economic, legal or political systems.

Table 1. Country Classifications

	Uncertainty Avoidance	Individualism-Collectivism
North America		
Canada	48 (L)	80 (H)
United States	46 (L)	91 (H)
Germanic Europe		
Germany	65 (M)	67 (M)
Confucian Asia		
Japan	92 (H)	46 (L)
China	60 (M)	20 (L)
Latin America		
Mexico	82 (H)	30 (L)
Chile	80 (H)	23 (L)
South Asia		
India	40 (L)	48 (L)

Note: L=Low M=Medium H=High
Sources: Hofstede (1980) and House et al. (2002)

CULTURE AND WEBSITE DESIGN

Acceptance of website design features differs among cultures (Cyr and Trevor-Smith, 2004). Both the quality and content of information is important, as well as the design and layout of that information (Garrett, 2003). As defined in this study Information Content refers to information that is complete, sufficient, and effective; Information Design refers to information that is logically presented and organized (Marcus and Gould, 2000). While Information Design has been used previously by Cyr (2008), the separation of information into two separate constructs is new to this project. In one cross-cultural study user design preferences including perceived access and presentation of product information were compared for Canada, the USA, Germany and Japan. Results indicated few significant differences between the USA, Canada, and Germany but significant differences (p<.01) between these countries and Japan (Cyr, Bonanni, Bowes, and Ilsever, 2005). Japanese had a less favorable impression of the local website related to these select information components.

Navigation Design refers to the navigational scheme used to help or hinder users as they access different sections of a website (De Wulf, Schillewaert, Muylle, and Rangarajan, 2006). Preferences for the form of navigational scheme are expected to vary by culture (Marcus and Gould, 2000). In Cyr et al. (2005) noted above, differences were found between the USA, Canada, and Germany with Japan. Japanese had a less favorable impression of navigation of the local website.

Visual Design relates to emotional appeal or aesthetics of the website and may include colors, photographs, shapes, or font type (Garrett, 2003). In a study that compared Canadian, American, German and Japanese users, Japanese participants favored a visual approach which they said appeals to the user's "emotion" (Cyr et al., 2005). With respect to screen design of the local website, Japanese had a less favorable impression compared to Canadians and Germans.

It is expected that information content, information design, navigation design and visual design enable a user to access information regarding online products or services. Further, and based on Hofstede's (1980) research with reference to uncertainty avoidance, it is expected members of high uncertainty avoidance cultures would find these four design elements more important to determine product or service options on a website than members from lower uncertainty avoidance cultures. In turn, the higher the uncertainty avoidance requirements of the user, then a perceived lack of these design elements would result in a less favorable assessment of the design element. In other work, it was expected and confirmed that individuals from high uncertainty avoidance cultures would place less trust in the IT artifact (a mobile device) than individuals from low uncertainty avoidance culture (Vance, Elie-Dit-Cosaque, Straub, 2008).

In addition, and based on the GLOBE studies, we might expect certain cultures to be similar and to cluster together such as Canada and the United States, Japan and China, or Mexico and Chile. Considering the within Canada comparison between French and English Canadians, and based on an institutional perspective as outlined as part of the GLOBE theory, it is proposed that English and French Canadians would be similar in their perceptions. This leads to the following hypotheses:

H1a: Members from low uncertainty avoidance cultures (Canada, the United States, India) will provide higher ratings for information content than members from medium uncertainty avoidance cultures (Germany, China) or high uncertainty avoidance cultures (Chile, Mexico, Japan).

H1b: Members from low uncertainty avoidance cultures (Canada, the United States, India) will provide higher ratings for information design than members from medium uncertainty avoidance cultures (Germany, China) or high uncertainty avoidance cultures (Chile, Mexico, Japan).

H1c: Members from low uncertainty avoidance cultures (Canada, the United States, India) will provide

higher ratings for navigation design than members from medium uncertainty avoidance cultures (Germany, China) or high uncertainty avoidance cultures (Chile, Mexico, Japan).

H1d: *Members from low uncertainty avoidance cultures (Canada, the United States, India) will provide higher ratings for visual design than members from medium uncertainty avoidance cultures (Germany, China) or high uncertainty avoidance cultures (Chile, Mexico, Japan).*

H2a: *User responses for website design features in the North American cluster (Canada and the United States) will be similar compared to users outside the cluster.*

H2b: *User responses for website design features in the in the Asia cluster (Japan and China) will be similar compared to users outside the cluster.*

H2c: *User responses for website design features in the Latin American cluster (Mexico and Chile) will be similar compared to users outside the cluster.*

H3: *User responses for website design features in French Canada and English Canada will be similar.*

DISPOSITION TO TRUST, WEBSITE TRUST, AND TRANSACTION SECURITY ACROSS CULTURES

Disposition to trust and propensity to risk are influenced by culture (Vance et al., 2008). On the Internet when institutional safeguards are not as readily identifiable as in a traditional retail store, individualists with low uncertainty avoidance might be more comfortable shopping online than collectivists with high uncertainty avoidance (Jarvenpaa et al. 1999). Individuals from high uncertainty avoidance cultures exhibit less trust than those from low uncertainty avoidance cultures when using a mobile device (Vance et al., 2008).

Online shopping is deterred by absence of payment security, payment-clearing structures, or privacy policies (Jarvenpaa et al., 1999). In a study of online consumer behavior in which U.S., Brazilian, and Latin American consumers were compared, Latin Americans and Brazilians (both from high uncertainty avoidance cultures) indicated the presence of credit card symbols on websites was more important than Americans who are low on uncertainty avoidance (Cheskin, 2000).

In sum, it appears that trust is influenced by culture although few studies examine this phenomenon. As a baseline measure of trust, in each of the countries in the current investigation data was gathered on general disposition to trust unrelated to the Internet or e-commerce. More specifically, in this research disposition to trust generally refers to an expectation that people are trustworthy and honest. In addition, website trust was examined in terms of whether users feel they can trust the website viewed. Finally, transaction security of the website was considered and whether or not shopping on the website is deemed by the user as secure. It is expected that members of low uncertainty avoidance countries will more likely exhibit higher levels of trust than members from medium or higher uncertainty avoidance countries.

H4a: *Members from low uncertainty avoidance cultures (Canada, the United States, India) will provide higher ratings for disposition to trust than members from medium uncertainty avoidance cultures (Germany, China) or high uncertainty avoidance cultures (Chile, Mexico, Japan).*

H4b: *Members from low uncertainty avoidance cultures (Canada, the United States, India) will provide higher ratings for website trust than members from medium uncertainty avoidance cultures (Germany, China) or high uncertainty avoidance cultures (Chile, Mexico, Japan).*

H4c: *Members from low uncertainty avoidance cultures (Canada, the United States, India) will provide higher ratings for transaction security than members from medium uncertainty avoidance cultures (Germany, China) or high uncertainty avoidance cultures (Chile, Mexico, Japan).*

H5a: *User responses for disposition to trust, website trust, and transaction security in the North American cluster (Canada and the United States) will be similar compared to users outside the cluster.*

H5b: *User responses for disposition to trust, website trust, and transaction security in the in the Asia cluster (Japan and China) will be similar compared to users outside the cluster.*

H5c: *User responses for disposition to trust, website trust, and transaction security in the Latin American cluster (Mexico and Chile) will be similar compared to users outside the cluster.*

H6: *User responses for disposition to trust, website trust, and transaction security in French Canada and English Canada will be similar.*

METHODOLOGY

1156 participants located in English Canada (232), French Canada (80), the United States (197), India (106), Germany (122), Japan (78), Mexico (71), Chile (48), and China (222) completed an experimental task and online survey. Participants were recruited from a wide range of sources including universities, institutes, and companies. Average age across countries is 27.4 years.

Participants responded to the local version of the SonyStyle website represented in their native language. Users were requested to view the home page of the local website, followed by navigation of the website to choose a cell phone they would hypothetically purchase. Once participants concluded this task each completed an online questionnaire. Background information to the study, and

all other written content including the questionnaire were translated and back-translated into each required language.

While details are not provided here due to length limits, the questionnaire utilized in this study exhibited satisfactory content validity (established through literature reviews); satisfactory convergent validity (demonstrated by the principle component factor analysis, α-values and AVE values); and satisfactory discriminant validity (shown from inter-construct correlation analysis). Between country comparisons were conducted using Tukey HSD testing (N=1156).

RESULTS

Design Elements

In H1a it is proposed that Canada, the USA and India will provide higher ratings for information content than the other countries. Overall, this premise is true with mean scores for English Canada (5.1), French Canada (5.3), and the USA (5.4). Significant between country differences occurred between English Canada, French Canada, and the USA with Germany and China ($p = .000$ in all cases). India scored 4.8 but with no significant differences with Japan (4.8), Mexico (4.9) and Chile (5.0). Overall the USA had the highest score for information content (5.4) while Germany had the lowest (4.5).

H1b tests whether Canada, the USA and India have higher ratings for information design than other countries in the sample. H1c examines if Canada, the USA and India have higher ratings for navigation design than other countries. Support for these hypotheses is limited.

In H1d it is proposed that Canada, the USA and India will provide higher ratings for visual design than the other countries. There is support for this hypothesis. English Canada, French Canada, the USA and India have highest scores for visual design (5.5, 6.0, 5.8, 5.5 respectively), although English Canada and India are tied with Mexico (5.5). Significant differences ($p = .000$) exist for English Canada, French Canada, the USA and India with Germany (4.6), China (4.7) and Japan (5.0), with the exception of English Canada and India with Japan with no significant differences. Overall French Canada had the highest score (6.0) while China (4.7); Germany (4.6) had the lowest.

With respect to the GLOBE clusters it was expected and supported in H2a that the North American cluster would be similar compared to other countries. Of 12 comparisons, only one significant difference occurred for information design between the USA and English Canada. In H2b was expected and supported that Japan and China are similar compared to other countries. Again, based on 12 comparisons, the only significant difference was for navigation design. In H2c which was supported, there were no differences between the Latin American countries of Mexico and Chile. Finally, there were no

differences between French Canada and English Canada in support of H3.

Trust and Security

It is expected in H4a that Canada, the USA and India will provide higher ratings for disposition to trust than the other countries. Overall, scores on this dimension are the lowest of all the constructs tested with no country score reaching greater than 5 out of 7. As predicted, scores are highest for English Canada, French Canada, the USA and India (4.6, 4.8, 4.5, 4.8 respectively), although Japan ties for the highest score on disposition to trust (4.8) with French Canada and India. Significant differences occur between French Canada with China (4.4 $p = .045$), Germany (4.3 $p = .041$) and Mexico (4.2 $p = .025$). Significant differences also occur between India with China ($p = .014$), Germany ($p = .015$) and Mexico ($p = .011$). Overall French Canada, India, and Japan had the highest score (4.8) while China (4.4), Germany (4.3) and Mexico (4.2) had the lowest.

H4b tests if Canada, the USA and India have higher ratings for disposition to trust than the other countries. As with the results of other hypotheses, English Canada, French Canada, the USA have the highest scores (5.5, 5.6, 5.6 respectively) with India somewhat lower (5.2) and in the latter case lower than Chile (5.6) and Mexico (5.3). Significant differences ($p = .000$) are exhibited for English Canada, French Canada, the USA, and India with Germany (4.9), China (4.4) and Japan (4.3). Overall, French Canada, the USA and Chile had the highest score (5.6) and Japan (4.3) the lowest.

In H4c it is expected that transaction security will be highest for English Canada, French Canada, the USA and India. This is the case for French Canada (5.4) and the USA (5.3), but English Canada (5.1) and India (5.0) score very close to Mexico (5.0) and Chile (4.9). Further, Japan scores highest of all the countries on transaction security (5.5). Significant differences ($p = .000$) occur between English Canada, French Canada, the USA with China (4.5) and Germany (4.4). India also exhibits significant differences with China ($p = .040$) and Germany ($p = .005$). Japan has the highest score for transaction security and Germany has the lowest score (4.4).

In support of H5a, there are no differences in the three constructs of disposition to trust, website trust, and transaction security within the North American cluster including English Canada, French Canada and the USA. Alternately, H5b is not supported for China and Japan since differences between these two countries occur for both disposition to trust and for transaction security. H5c is supported for Mexico and Chile with no differences between the countries. Similarly, H6 is supported with no differences between French Canada and English Canada.

Summary of Results

(1) The four design constructs show considerable variation across countries with most differences in information design and navigation design.

(2) Scores for disposition to trust are low overall, and unexpectedly high uncertainty avoidance Japanese had the highest scores for website trust and transaction security.

(3) Overall, French Canada, English Canada and the United States have the highest scores on the various constructs over those in other countries.

(4) No differences exist for any of the constructs for French Canada and English Canada, and there is only one difference (for navigation design) between French Canada and English Canada with the USA.

(5) Large numbers of differences on various constructs occurred between Germany, Japan, and China with the other countries in the sample.

(6) As expected, no differences for any constructs exist between Chile and Mexico which are both high uncertainty avoidance cultures. Unexpected, there were no differences between Chile and Mexico with India (low uncertainty avoidance culture) except for disposition to trust between Mexico and India.

(7) China and Japan are similar except for navigation design, disposition to trust and transaction security.

(8) A new construct was successfully developed and validated for Information Content, and serves to confirm the distinctiveness of Information Content from Information Design.

CONCLUSION

Variation in perceptions of design elements exists across cultures, and supports the notion that websites require localization of design content for unique cultural groups (Cyr and Trevor-Smith, 2004). These results represent an extension of Cyr et al. (2005) in which design (although differently construed than here) was studied in Canada, the United States, Germany and Japan regarding user perceptions of a different (Samsung) localized website. In the earlier study, significant differences were found between Canada, the United States, and Germany with Japan. As in this study, the Japanese had the least favorable impression of website design.

Specific to disposition to trust, participants were asked to provide a rating indicating the degree to which people can generally be trusted. Along with low uncertainty avoidance countries (Canada, the United States, and India), Japan (the country highest on uncertainty avoidance) also scored similarly on this construct, although none of the countries scored higher than 5 out of 7. Japan also has the highest score for transaction security, but alternately the lowest for website trust. These findings for Japan are counter to expectations of a country high on uncertainty avoidance and hence risk adverse, and are also counter to Cyr et al. (2005) who found Japanese

to be least trusting over Canadians, Americans or Germans. Equally puzzling, overall Germany and China (both moderate for uncertainty avoidance) score lower than high uncertainty avoidance cultures such as Mexico or Chile. In alignment with Cyr et al., scores for Canada and the United States are similar. The results indicate that it is difficult for users to trust generally, and to trust the website more specifically. This is consistent with other research in which trusting intentions are affected by security, privacy, or perceived risk on the Internet (Jarvenpaa et al., 1999), now extended to eight countries.

A useful addition to the current research is the evaluation of country responses based on the GLOBE study. Based on the GLOBE clusters, results as predicted were obtained. That is, across all seven constructs, for the North America cluster there was only one significant difference and for the Latin American cluster of Mexico and Chile, there were no significant differences. These are remarkable findings given the number of cross-country comparisons involved. In the Confusion Asian cluster Japan and China are likewise very similar. In most cases, Germany stood alone. Finally, India (low uncertainty avoidance) tended to cluster with Mexico and Chile (both high uncertainty avoidance), which based on Hofstede's classifications would be unusual. It appears that the GLOBE clusters afford a useful conceptual classification system for use in future between country research.

A final interesting outcome is the complete commonality in the results between English Canada and French Canada. It appears that in a website context, commonality based on institutions, economics, and societal norms and practices (House et al., 2002) is a stronger predictor of user perceptions than culture.

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