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# Considering the Cultural Issues of Web Design in Implementing Web-Based E-Commerce for International Customers

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**Abstract:** The web design for international e-commerce sites is becoming an increasingly important issue. This paper addresses issues about cultural differences in web design and designers' views. The summary of research work includes understanding of designers' attitudes and approaches in designing web sites for different countries. Some suggestions about important aspect of localized design are made from case studies conducted during this research.

## I. Introduction

Web design for international customers is one of growing issues in web based e-commerce. This research focused on issues in the design web pages for customers in different countries, particularly in business-to-customer (BtoC) e-commerce, including an understanding of designers' approaches in different countries. This paper begins with an overview of current approaches in the global e-commerce design, and follow on to present a case study about comparisons between Singaporean and Australian web design practices. This study investigation attempts to search for an understanding of the barriers in designing e-commerce on a global level.

Web design and user interaction are increasingly important for e-commerce for information presentation to the customer, and a high-quality web design increases customers' interests and interactivity [1-3]. However web design is only on a small part of e-commerce service function provided to the customer. Most likely, cultural differences reflect in user-service provider relationships, communication channels and user expectation levels of information service functions. E-commerce service providers including web designers are stepping up their use of new technology to achieve their goals, i.e. customers get products and services that they desire and the providers provide these with efficiency. The web developers have realized the importance of providing right information for target customers so that e-commerce companies can succeed in conducting business through the Internet. There are great opportunities in different countries for niche products and services to become a part of the multinational e-commerce. It is expected that such an expansion in electronic business will support economies of several nations and create new opportunities in and around their physical locations. The

issues of suitable web design for international customers are significant factors in global business implementation. Hence the need to study web-site design practices for international appeal in electronic commerce.

## II. Web Design Issues and Challenges

### II.1 Current e-commerce Service and Design

E-commerce services and design, like any other product, are not only conveyed with web providers' perspectives but also with customers' perception of choices through the communication channel of the Internet. To be precise, information on the web relies on both groups forming a common perception. In a global context, most web interfaces do not support effective usage due to use of unsuitable tool for conveying information in a global context, as most of the information is presented on the web by icons, metaphors, shapes, colors of text and background, frame/text locations on screen, etc. which may be relevant to the culture of origin but may be misinterpreted by the global audience.

Normally, web design features are directly translated into different languages at most and distributed to users internationally. In an international context, the web content features employed makes a somewhat lesser impact in the variety of contexts it is supposed to be effective in, although they may be clear to a minor proportion of the population. Thus a consideration of human factors in the design of web for an international user base is an important factor in promoting effective usage of information presentation.

Challenges of web design are how to provide appropriate information to satisfy users, and give benefits to business providers. From the designer's view, providing a good interface possibly start with an understanding of customers' interests. The following two sections describe two aspects of web design that are important for customers.

### II.2 Information on the Web

Generally, customers are interested in information, representing style and interaction with web usage, depending on the quality of information. Sometimes, the amount of graphical components supports customers' understanding. Visual information on the web is increasingly important to support information as well as interaction between customers and business providers. Visual information promotes customer understanding, acceptance and determination to purchase products from the web. In global

markets, users are sensitive to interaction with product information on the e-commerce sites.

Del Galdo and Nielson [4] demonstrated that color and web page design directions have different psychological and social associations in different cultures. More importantly, different users have different concepts of web page usage. Design of web sites normally need to consider Latin-based screen design starting from the top left-hand corner or a Chinese language style starting from top right-hand to bottom left-hand. In such difference in script writing concepts, it is very difficult to provide localized screen designs if they are not included in the original design. Resources are currently available for web designers who wish to maximize the usability of a web site including usability guidelines. Collections of human factor references, web sites intended as a gateway to human factors resources and companies offering web-focused human factors consultancy. Also Human Computer Interaction (HCI) theories, methods, techniques and tools may be applied to the study of computer-mediated communication (CMC) in general, and web sites in particular [5] [6].

### III. Web Design and National Cultural Characteristics

Web design is concerned with what a web site will look like and how it will communicate with the customer [5]. The issue for Information Technology professionals and researchers, business developers is to develop sufficient theories and models to describe behavior of humans who use information systems, with the aim of designing systems more effectively. Cultural factors in information systems are likely to impact on effectiveness through web design. This study brings up web design issues in two different countries, but could be easily extended to a much broader scope. There is some literature on national culture that provides different perspectives in successful business practices or best practices, but lack depth of perspectives for e-commerce. One of the most widely used set of national cultural characteristics in business is a study by Hofstede [7]. Hofstede found that national cultures differ in five dimensions: individualism vs. collectivism, femininity vs. masculinity, long term vs. short term orientation in life, power distance, and uncertainty avoidance[7]. The dimension of individualism vs. collectivism is a suitable aspect to explore the differences between Asian and Australian web designers' attitudes. Some selected key differences between individualist and collectivist countries are described in table 1.

Individualist	Collectivist
Everyone grows up to look after him/herself and his/her immediate family only	People are born into extended families or other in groups which continue to protect them in exchange for loyalty

Identity is based in the individual	Identity is based in the social network to which one belongs
low-context communication	high-context communication
employee-employer relationship is a contract supposed to be based on mutual advantage	employee-employer relationship is received in moral term, like a family link
management is management of individuals	management is management of groups

Table1. Differences between individualist and collectivist (source from Hofstede's study [7])

Australia belongs to a high individualistic group, whereas Singapore belongs to a collectivistic group. From this fact, the study of web designers' approach and their attitudes can be a basis for comparison that might help e-commerce practitioners in developing successful applications. Particularly it will help in creating a basis for designers' preferences and attitudes that cater to the requirements for web design in different cultures.

In general, a good web interface provides user satisfaction and conveys trust, such that a user can easily find general bearings of the information presentation scheme and retrieve the information they need. Design of web sites for effective performance is a complex and highly creative process. It combines intuition, experience, and careful consideration of numerous technical issues and investigations [8]. Moreover without proper consideration of cultural factors in design, the impact of culture is undermined and certainly does not position as an important issue. Culture influences certain methods of performing tasks, even common tasks in certain ways. Practices result from life long training of human and set rules and circumstances. Hence, localized e-commerce site deal with how differences between people from different cultures impact their behavior in specific circumstances. History and values can also impact on user's perception. E-commerce advocates have substantial claims made for the web's effectiveness as a tool in the sales process to customers. However, little real research has addressed these factors that will make customers buy, when in electronic shopping malls. Findings from cultural factors research for e-commerce could be beneficial for web developers catering for a domestic customer base, as well as for an international market with the specific understanding of their culture and the human behavior it promotes. Particularly, understanding of designers' aspects from different countries through this study may add more value to web design in e-commerce sites for the benefit of providers as well as customers.

## IV. THE CASE STUDY

### IV.1 Study objective and Approach

The objective of this research was to find out web designers'

preferences when they design web sites, and determine their approach in different countries. Generally, web designers apply their knowledge and ideas while designing web sites, negotiating the final content with businesses so that both have a common understanding of the information being offered to the community. In this paper we investigated designers based in two different countries, Australia and Singapore to study their approach to web design for e-commerce. There are many ways that culture can be reflected in the web design and this influences their way of presenting information on the web. This research seeks differences in designers' aspects through cases, such that the outcome may provide some benefits to web providers and global e-commerce companies.

The research method that was used in this study was exploratory case study. The case study approach was utilized as outlined by Yin (1994). The qualitative research method was used to answer questions about the people's behavior towards effective web design. Yin (1994) defines case studies as "an empirical enquiry that investigates a contemporary phenomenon within its real life context, especially when the boundaries between a phenomenon and context are not clearly evident". Case studies are especially effective for studying the subtle nuances of attitudes and behaviors, and for examining the web design processes and implementation. The case study was the preferred method used in this research, since what this research sought to obtain was the depth of understanding of the designer's attitude and behavior within a particular setting or context.

The process involved interviews of participants and also studying the web sites developed by these participants. This meant that more than one research method had to be used for data collection. However this approach was beneficial to confirm the generalizations and to test the impact of cultural differences on web design. This research attempted to formulate more precise objectives for further research.

The research approach used a qualitative approach, which involved the use of interviews, documents and participant observation to understand the social and cultural phenomena. For this research, although cultural generalizations needed to be confirmed, it was realised that cultural differences cannot be revealed directly. The research method that was used in this study was exploratory case study [9]. The process involved interviewing participants and also studying the web sites developed by the participants. This meant that more than one research method had to be used for data collection. However this approach was beneficial to confirm the generalizations and to test the impact of cultural differences on interface design. This study attempted to formulate more precise ideas for further research.

There was a study based on the Hofstede's dimensions (1997) of collectivism and individualism on web design by del Galdo and Nielson (1996), comparing Japan and the United States. They mentioned that collectivist-type users would like to have common behaviour as a group at an organizational level, and under individualist users want to

have control over their surrounding environment. Singapore and Australia are similar to the example presented by del Galdo and Nielson's comparison of Japan and the United States, Singapore being the collectivist culture and Australia being the individualist culture. Hence these characteristics can be reflected in typical attitudes used in e-commerce. Singapore is a collectivist society as identified by Hofstede (1997), while Australia has an individualistic culture. Based on Hofstede's findings, we decided to select companies from two countries; Singapore as for a collectivist society, and Australia as for an individualistic society. Ten cases were reviewed with over ten web designers/developers from five companies each in Australia and Singapore. These case studies were conducted through a combination of face-to-face interview, email and on-line interview. The data were used from selected participants to draw conclusions about the impact of cultural differences on the interface design. The case study used interviewing as a primary method for gathering data from each of the cases. An informal, semi structured, interview style was used. This style of interview allowed participants to express their own views freely and allow participants to feel comfortable during the interviews. The interviewer conducted the interviews using a set of open-ended questions, and built up the case.

The focus on data analysis was on findings patterns and regularities within the data. The analysis included data reduction, display and verification. The data were used from selected participants to draw conclusions about the impact of cultural differences on the interface design. In this research, web design components were divided into six attributes of display colors, image representations, symbols, animations, pictures and functionality (see table 2). Then web designers' preferences and attitudes were observed in creating new web page designs.

<b>Web design components</b>
Use of display colors
Image representation
Use of symbols
Use of animations
Use of pictures
Functionality of the web site

Table 2: Web design components divided into attributes

## V Findings

In general, Australian designers preferred to have more functional websites such as ordering and search options. In contrast Singaporean designers preferred to display information on images rather than focus on text information. Singapore designers maintain and change information on web site more frequently than Australian. Australian customers preferred more direct and open communications, content oriented web sites and did not importance on picture

information. For instance, Australian web developers and companies had no particular preference of colours, animations, pictures and symbols. However company prestige was considered to be more important than image, and mainly used text based information. Australian designers feel that they have right to contribute own opinions to build up a web site. Also customer reaction was considered as the major influence on design, so that, they provided information with images, animations and company logos as per companies' requirements. Australian companies did not perceive signs and symbols to convey meaning. Australians believe in doing things to build trust.

Those interviewed Australian web designers mentioned that web sites could be created not only depending on clients' requirements but also generating their own ideas. Web designers emphasized that web design was a collaborative processes between clients and designers. Company managers were a part of the web design team. A new application was used only when it integrated into the design and they felt comfortable with using the concept. Some findings are summarized in Table 3.

Table 3: Web designers' preferences in two countries

Singaporean Designers	Australian Designers
-Use particular color scheme (depends on companies preference)	-No color preference from companies
-Company logo is important	-Company prestige is more important than image
-Not prefer any particular symbol	-Not prefer any particular symbol
-Prefer to put many animations	-Consider to use animations but not many
-Large and many numbers of pictures	-Not to put pictures, and prefer to put text-based information
-Customers are not main consideration	-Customer reactions are major influence on design

In case of web site maintenance and changes designers were able to manage or easily update public information if designers thought it was appropriate, another reflection of individualism. Australian designers applied more individual opinions, and were less sensitive to the use of graphic images on web sites compared to Singaporean designers. Besides the above case study, we examined ten selected IT global sites based in USA. Apparently there were no different web design features for different countries in international Electronic Business. Most of international e-commerce sites from an additional investigation concluded that sites use similar image design for international users as for home-based users. This indicates that international market providers (mainly USA based) use the same pattern

of colors, symbols, and images on the web in different countries.

## VI Discussion

The study result demonstrates that, designers from different countries have different approaches, and provide different web features. Also visual-information is an important source of communication between business providers and customers on the web. Designers and developers need to be aware of their customers in different countries. Currently there are many different approaches to dealing with cultural issues, as applied to the problem of how to support customer goals using the e-commerce site; two dominant approaches are discussed below.

### Cultural aspects

Cultural aspects' impact on globalization of web design in web-based E-Commerce is essential. Web developers need to consider that the users are located in different geographical locations and belong to different culture backgrounds. The significance of web design is usually directed to the management while leaving the user out of consideration, unless specific problems arise and are addressed. Turk and Trees [10] mentioned that global Information Systems on the web should be developed in such way as to localize information and design for different culture background users. Web applications could be adopted for local users rather than be internationalized to produce a cultural relevant user interface. Information presentation on the web needs to be considered in localized web design context with globalized information.

### VI.1 Working relationships

The result indicates that designers and company managers are also from different culture backgrounds in terms of belonging to sub-cultures, and may have different goals to provide information presentation on the web. Their relationship is critical to provide the right information presentation to customers at the right time. Web design in approach should be a collaborative process, where establishment of a working relationship between companies and web designers is a major starting point in the design process. This promotes a common perspective to information presentation for the customers and further if target customer's cultural dimension is taken into consideration then it is likely to promote business objectives of trust and effective information delivery.

### VI.2 Conclusion

The case studies as described in the previous sections, although the cultural background of customers and designers that is very important for web design, current design practice takes minor account of cultural issues. Many global business web sites have been designed and developed with absence of understanding of customers and their cultural differences on the global scale. Customers' expectations are not taken into

consideration in designing the functionality of web sites in global business companies. Apparently Australian web designers are more customer-oriented in web design, in comparison to general global business web designers though they appear to be less sensitive to the use of graphics on the web. The web sites of leading Information Technology companies studied in this research did not have their interface to account for different user cultures. This research found that designers' approach from the two different countries were dissimilar for web design in electronic business applications. This study also concluded that there is a need for localized web interface design to transmit the meaning of a business concept on web sites in various locations.

In addition, there is increasing attention to investigate ways to develop e-commerce sites for different countries. Future Electronic Business technologies will definitely introduce more attractive and convenient tools for the customers from different countries. Moreover, web image components are better suited to be used in certain ways to improve web based e-commerce. Not surprisingly web

images are being used a lot to attract customers and increase company's presence in the global e-commerce.

## References

- [1] Nielson, J, "International Web Usability," USA, 1996.
- [2] O'Keefe, R.M and McEachern, T, "Web-based customer decision support systems," *Communication of ACM*, vol. 41, 1988, 71-78.
- [3] Shneiderman, B, *Designing the User Interface: Strategies for Effective Human-Computer Interaction*. MA: Addison-Wesley, 1997.
- [4] del Galdo, E and Nielson, J, *International User Interface*. USA: Katherine Schowalter, 1996.
- [5] Nielson, J, "International Web Usability," USA 1996.
- [6] Shneiderman, B, "Designing information-abundant web sites: issues and recommendations," *International Journal of Society*, vol. 47, 1997, 5-29.
- [7] Hofstede, G, *Cultures and Organisations: Software of the mind*. UK: McGraw-Hill International Ltd, 1997.
- [8] Nielson, J, *Designing Usability*. USA: New Riders Press, 2000.
- [9] Yin, R. K, *Case study research: Design and methods*. Calif: Thousand Oaks, Sage, 1994.
- [10] Turk, A. G and A. Trees, K, "Cultural appropriate computer mediated communication: An Australian indigenous information system case study," in *AI and Society*, vol. 13, 1999.