

Identifying Cultural Makers and Guidelines for Website Design Targed to a Nigerian Audience

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Abstract

The paper examines theoretically the cultural makers and guidelines for website design targed to a Nigerian audience that influence web design/usability and significance of the influence to the general usability of a website and also establish how culture makers can be utilized to develop more usable website. There have been rapid improvements in the way organizations and institutions in general carry out their activities in recent years. Records of old activities are being revisited and used for making business plans and vital decisions. Business acquisition and merges are transforming various industries and calls for information sharing have vastly increased. The methodology adapted is both qualitative and qualitative methods of data analysis on the designed website. The study determined that a problem exists the way the interface of websites are designed, as they are done with a generic standard ,that is most often than not based on the cultural orientation of the designer. The main contribution of the study is to identify what characterizes usable websites with reference to cultural needs of the user.

Keywords: *Cultural makers, Website design, Nigerian audience*

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Background to the Study

Culture has a big impact on the usability of web application for users. Several researchers have indicated that users are more receptive to culturally friendly web applications than the generic. (Juric et al, 2003, Fraternali & Tisi, 2010, Barber and Barde ,1998), Yoon (2002) and Simon ,2001). As it is on the web today, a very small fraction of information systems exist, that actually put the cultural preferences, of the users into consideration. These few include some government websites, online shopping websites, etc. (Daniel et al, 2011). The consequence of this is difficulty in the use of these information systems, or websites, which in turn will lead to frustration, on the part of the user, disloyalty to the brand and this translates into reduced profit and patronage for the company or information system owners. A considerable increase has been recorded in the level of internet usage across the world (Daniel et al, 2011). This puts globalization of the user interface at the fore front of usability researches. We believe this globalization can be achieved by discovering the design elements that appeal to people of different cultural orientations, and integrating them into the customization of web interfaces targeted at them. This background will attempt to give a working definition of Usability, Culture, Cultivability, Cultural Markers, and the Relevance of this research to the existent body of Knowledge.

Objectives of the Study

The aim of this paper is to identifying cultural makers and guidelines for website design targed to Nigerian Audience.

The specific objectives are as follows:

1. To find the out cultural makers that influences web usability.
2. To establish how culture can be utilized to develop more usable websites.
3. To establish how website can be adapted to meet cultural needs of users.

Relevance of the Study

In a study by Fraternali & Tisi (2010) and Sun (2001), the recommendation for further research, was the extension of their analysis, into the identification of specific cultures cultural markers, as a contribution to a collection of culture dependent guidelines for usability and design patterns in order to improve web application design in this globalized era. Juric et al (2003) have done a research on the development on UK, and Korean cultural markers, Khanum (2012), researched on the development of cultural markers for Arabic Countries. This research is a natural follow on to the respective researches, highlighted above. The purpose of this research is to develop cultural markers, and identify cultural guidelines, that web site interface designers should put into consideration, in the design of websites targeted at Nigeria Audiences. This is to add to the repository of already existent cultural markers for several other countries. The research sits nicely in the scheme of things since according to Jagne et al (2004) the importance of cultural study and its impact on technology design cannot be overemphasized, and also to the best of my knowledge from literature surveys we have carried out, no research relating to the development of cultural markers for Nigerian or any other West African websites have been previously recorded. This is therefore the Justification for embarking on this research.

Methodology

Marcus and Gould, Khanum et al (2012), Daniel et al (2011), developed their cultural markers, based on the cross-cultural theory developed by Hofstede (1980), and Juric et al (2003), based the their own research on a checklist of attributes, namely Verbal Attributes(Language,

Formats), Visual Attributes (Images, colour, text, layout,) and Audio Visual Attributes (Sound, Animation, 3d). At the moment several approaches, have been used for the development of these cultural marker, with some of the researches listed above. For This project, the proposed methodology will bear upon the methods used by Fraternali & Tisi (2010) in the identification of cultural markers for web sites targeted at multi-cultural audiences'. This might be subject to change, if other research methods prove to produce better results.

This methodology primarily involves the.

1. Selection of websites, to represent the different cultural groups being studied
2. Listing of the checkpoints, derived from known and accepted usability guidelines, as there is no official standard.
3. Identification of the candidate cultural markers from the list of checkpoints
4. User based testing via experimental testing, where the cultural markers are either confirmed or rejected by the candidates.

Our paper is going to involve, the selection of Nigerian websites, and an evaluation of the websites, using one of the different approaches for determining of cultural markers, Then Identification of these cultural markers. The experimentation will involve the design of a test site that applies all the culture influenced usability guidelines identified for Nigerian Audiences.

A survey based on a combination of both qualitative and quantitative methods of data analysis on the designed website will then be conducted, to ascertain if the Test website was more culturally suitable, for the Nigerian Audience.

Review of Related Literature

Web Usability

Nielsen (2014) defines usability, as a characteristic, that determines the ease of use, of interfaces to its users. And it's defined by components such as learn ability, Efficiency, Memo ability, Errors and Satisfaction and ISO (1995) as cited in Lee (1999), explains Usability to be the efficiency and satisfaction from completing any given task by a user on the web. Its importance cannot be overemphasized to both the user, and the web application owners, as usability is a key factor to continued use of a web application. Any complexity in the use of a web application invariably leads to customer frustration, and lessened productivity dependent on the context.

Some of the benefits to both user and web application owners attributed to usability include:

1. Ease of use, which leads to the development of simpler projects (Klein, 2006)
Productivity, Klein (2006) which helps to reduce the overhead on support and customer service. (Webnauts, 2014)
2. Customer satisfaction, which leads to increase in patronage or traffic of a web site, or application, improved sales for e-commerce sites. This translates into profitability.
3. Customer retention, this leads to customer loyalty
4. Achievement of website goals effectively, which leads to a massive reduction in user errors, (Webnauts, 2014) and a reduced training time and cost. Klein (2006)
5. Returns on Investment. (Webnauts, 2014)

A usable Products, is always used, recognized, commended and recommended. Therefore it's important to prioritize Usability In the design of Web applications.

Culture

Culture has a myriad of definitions. Hofstede (1982) explains culture to be the configuration of the mind that is a distinct identity for the members of a human group, Hall (1990) as cited in Fraternali & Tisi (2010), also considers culture to be a collection of behavioural patterns, and attitudes, learnt by a group of people, and their way of life. Culture in the context of web usability does not imply the way a group of people dress, act or even their traditions and customs. Sheridan (2003) explains culture with regards to web globalization, as the means of interpretation of images and messages, by people from certain cultures. It identifies the behavioural characteristics of members of a human group, with regards to their interaction with web applications, and its components. Jagne (2004) and Sheridan (2001), is of the opinion that culture is one of the most ignored aspects of website interface design. Erroneously, as it is necessary to localize software products for their targeted markets for maximal market advantage with a global reach. (Bourges-Waldegg and Scrivener, 1998; Del Galdo and Nielsen, 1996; Minocha, French and Dawson, 2003; Sun, 2001; Yeo, 2001) as cited in Jagne (2004).

Culturability

Barber and Barde (1998) Hypothesize that “Cultural markers can directly impact user performance.” This implies that to a certain degree, the usability of a website to a User, is influenced, by how much of his cultural orientation, is integrated into the design of its interface. Sun (2001) explains localization to be the modification of an information product, to improve its usability and accommodate its target market by adjusting some of its features. E.g. translations, dates, punctuations, weights, appeal, images, colours, logic, etc. cultural factors determine the acceptance of the localized product.

Culturability, is defined by IGI-Global (2014), as the amalgamation of usability, and cultural suitability for a target audience. Barber and Barde (1998) use the term to highlight the importance of the inter relationship, between culture, and Usability in the design of a website meaning they denoted culturability to imply Usability, in the presence of cultural factors of influence. This establishes that a relationship exists between Usability, and Culture. It should also be noted that preferences in design conventions differ among cultures and therefore, simply localizing an already existing website does not have a massive impact on the culturability of the website, as Barber and Barde (1998) explained. Culturability has to be factored into the design of a site from an early stage in its life cycle. Research by Juric et al (2003), Yoon (2002) and Simon (2001) have proven that culture has an influence on the acceptability or acceptance of an interface therefore it is established that Culturability, should not be ignored in the design for global, or multi-cultured audiences if optimal usability is the goal. The application of cultivability principles and the Mapping design guidelines to culturability is done through Cultural Markers.

Cultural Markers

Cultural markers refer a cultures interface design elements, and website features. Fraternali and Tisi (2010) and Barber and Badre (1998), define cultural markers as “interface design elements and features that are prevalent, and possibly preferred, within a particular cultural group”. E.g. National symbols, spatial organization, colour, Navigational patterns etc. In a research by Barber and Badre (1998), cultural markers were identified by clustering several websites together, by virtue of their cultural similarities, and manually investigating recurring design preferences among them. Fraternali and Tisi (2010) make us believe that culturability is achieved, if a website contains the cultural markers of its targeted audience. We are of the

opinion that cultural markers identify the specific design attributes, elements, components that are peculiar or preferred by individuals of a certain culture, in which when integrated into the design of a user interface, improves its usability.

Cultural Marker Model Approach

This is a systematic usability model that involves foraging of several websites to discover prevalent web user interface elements in those cultures (cultural markers) i.e. fonts, icons, flags, languages etc. It was first implemented by Barber and Badre (1998) and the procedure for this method involves;

1. **Step 1:** Involves data foraging of the websites from the test countries, classified into categories. (Barber and Badre, 1998)
2. **Step 2:** Involves identification of the prevalent web interface elements from the selected sites that prove to be prevalent in a country or area. (Barber and Badre, 1998)
3. **Step 3:** Involves the discovery of patterns that appear to be culture or genre specific among cultures. (Barber and Badre, 1998)

The cultural marker approach is one of the most popular methods for cross cultural design and has been employed by: Sun (2001), Barber and Badre (1998), Juric et al (2003) in their experiment of developing of UK and Korean cultural markers, Smith et al, (2004) for Taiwan and Indian Cultures. It has the advantages of increasing sensitivity to cultural issues when implemented properly (Sun, 2001) and can lead to the production of more usable websites which comes as no surprise as this method was the forerunner of Culturability studies (Cultural Usability). Fitzgerald (2004) as cited by (Hsieh, 2008) in support of the cultural marker approach states that "cultural markers show the best promise" and one major advantage of the cultural marker model is the ease of mapping directly to culturable design attributes in a websites interface.

Some technique of this method is based on comparison of the websites of two or more different cultures as seen in the research of (Juric et al., 2003) that compared UK and Malaysian cultures to help discover their cultural markers. Gould and Aaron (2001); Cyr & Trevor-Smith 2004; Burgmann et al, 2006; Yalcin et al, 2011 as cited by (Mushtaha, 2012) also conducted notable researches using this method. Some other variation of this method involves the use of comparison of different local websites from the same country or culture. This is the preferred method for web designers and developers, but (Reinecke & Bernstein, 2011) explains that this method will most probably not encompass the different cultures that exist in the world today. On the flipside, this approach stands a risk of stereotyping minority cultures if it is unselectively applied or if just the markers for dominant cultures are identified at the expense of the minority cultures that make up a geographical location. (Hsieh, 2008) This risk is particularly huge with respect to this research as Nigeria is made up of 3 major cultures and a number of minority cultures. This consideration although mentioned is beyond the scope of this paper.

Culture Web Model Approach

This approach is underpinned by existing cultural models e.g. (Hofstede, Hall, Trompnaars) and is seen to have been used by several researchers. (Zahir et al(2002), Gorman(2006), as cited by (Mushtaha, 2012). An example is seen in (Marcus & Gould 2001). They developed differing guidelines for web interface designs, based on Hofstede's (2005) dimensions of culture for

different countries highlighting the influence of these dimensions on web user interface design elements as seen in the Fig below. Sheridan (2003) applied Hofstede's dimensions in determining interface design guidelines to enhance web interface localization. In her study, the patterns of Marcus and Gould (2001) were used to decide the attributes for each dimension of culture. (Hsieh, 2008). And it is noted that no justification was given for the use of Hofstede's model in her research.

Hsieh et al (2009) developed a web localization model based on pre-existing web design models. Uden (2002), Gillham (2004), Jagne & Smith-Atakan (2006) proposed a strategic cross cultural design model based on a combination of the works of Hofstede (2001), Marcus and Gould (2000) and Barber and Badre (2008). However Mushtaha, (2012) notes that these models lack empirical evidences to support them. It is noteworthy that highlighted above is not an exhaustive list as some unconventional methods have been used in cross cultural design studies, and no specific naming convention were used in these researches. Hence the highlighted above is a description of some of the methods used in these studies.

Findings

We have determined that a problem exists with the way the interface of websites are designed, as they are done with a generic standard, that is most often than not based on the cultural orientation of the designer. The importance of web usability has been highlighted, and the need for the development of cultural markers, for different countries, in order to aid designers to target their interface design to suit this target audience has been seen..

Conclusion

Interoperability is supposed to be the solution to multiple database systems, allowing communications among them but it has given rise to different issues – mainly heterogeneity and autonomy. Apparently, these issues have been around for ages and do not seem to be going away soon as improvements are being made in the database technology and pre-existing traditional systems are still in use.

Generally, the integration of multiple heterogeneous database systems require the schemas of the component database systems to be translated into a data model that is common to all databases in the distribution. In the advent of object-oriented database systems, the object-oriented model has been the pivotal model that is being used as the common data model in Multi database Systems. This is due to the richness in its semantics.

This report focused on dealing with the schematic differences in semantically related schema objects of multiple autonomous database systems. It provided an approach which involved creating virtual tables (views), connecting and accessing a remote database using database links. This approach was successfully implemented in a virtual Multi database System environment, effectively resolving the schema conflicts in the system. However, no schema transformation was involved in the implementation process of the approach used. This is because the data model of the prototype database systems was the same.

Recommendation

With the understanding that the issues being faced in achieving interoperability are yet to be fully addressed, then there are areas that should be looked at in the future. Firstly, in resolving schematic conflicts using a similar approach as the one implemented in this report, the

database server should be heterogeneous and not homogeneous as the ones in the virtual solution described in this report. An Oracle Database server and a non-Oracle database server should be deployed. Sample database schemas should include conflicts that arise as a result of attempting to integrate different data models, for example, object-oriented model and relational model. This will increase the complexity of the heterogeneity and would capture more conflicts which will be more similar to a real world environment.

Secondly, as stated in this report, schema discrepancies are only relevant when the semantics of the object(s) they represent are similar or related. Resolving semantic heterogeneity is an area to currently calling for researches. This will help in the resolution of schema conflicts in larger Multi database Systems as semantically related objects can be identified.

References

- Barber, W. & Badre, A. (1998). Culturability: the merging of culture and usability in *proceedings of the 4th conference on human factors and the web* (Basking Ridge NJ, June 1998), Available At: <http://research.microsoft.com/en-us/um/people/marycz/hfweb98/barber/> Accessed on: 24th Nov 2014
- Boor, S. & Russo, P. (1993). *How fluent is your interface?* Designing for international users. INTERCHI '93 (April 24-29) 346. Available At: <http://dl.acm.org/citation.cfm?id=169274> Accessed on: 25th Nov 2014.
- Daniel, A., Oludele, A., & Van der Weide, T., (2011). Cultural issues and their relevance in designing usable websites. *International Journal of Innovative Technology & Creative Engineering* 1. Available At: http://ijitce.co.uk/download/February/IJITCE_Feb5.pdf Accessed on: 26th Nov 2014
- Fraternali, P. & Tisi, M. (2010). *Identifying cultural markers for web application design targeted to a multi-cultural audience*. Web Engineering, 2008. ICWE '08. Eighth International Conference, Yorktown Heights, NJ, Available At: http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=4577887&tag=1 Accessed on: 25th Nov 2014.
- Hofstede, G. (1982). Culture, consequences: international differences in work-related values. *Behavioral Science*, 27(2):195, 1982.
- ISO/DIS 9241-11 (1995). *dra32 international standard. ergonomic requirements for office work with visual display terminals (vdts). part 11: guidance on usability*. International Organization for Standardization. Geneva, Switzerland.
- IGI-Global (2014). *What is culturability?* Available at: <http://www.igi-global.com/dictionary/culturability/6356>, Accessed on: 24th Nov 2014.
- Jansen, B.J., Spink, A., & Saracevic, T. (1998). *DL '98: proceedings of the 3rd acm international conference on digital libraries*, 289-290.
- Jagne, J. (2004). *Integrating cultural and social factors of the shopping metaphor, in the context of indigenous users, into e-commerce interface design*. Interaction Design Center, Available at: <http://www.eis.mdx.ac.uk/research/idc/papers/IDC-TR-2004-004.pdf> Accessed on: 25th Nov 2014

- Jagne, J., Smith, G. Duncker, & ECurzon, P. (2004). *Cross-cultural interface design strategy. interaction design center*. Available at: <http://www.eecs.qmul.ac.uk/~pc/publications/2004/IDC-TR-2004-006.pdf> Accessed on: 25th Nov 2014'
- Juric, R., Kim, I. & Kuljis, J. (2003). *Cross cultural web design: An experiences of developing UK and Korean cultural markers*, in: *Information Technology Interfaces, 2003*. ITI 2003. Proceedings of the 25th International Conference on. IEEE, pp. 309–313. Available At: http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=1225362 Accessed on: 26th Nov 2014.
- Khanum, M.A., Fatima, S. & Chaurasia, M.A., (2012). *Arabic interface analysis based on cultural markers*. arXiv preprint arXiv:1203.3660.
- Klein, H. (2006). *Why usability important / usability ROI Available at*. Accessed on: 24th Nov 2014.
- Lee, T. (1999). *Web Usability: A review of the research*. SIGCHI Bulletin Available At: http://delivery.acm.org/10.1145/330000/329688/p38-lee.pdf?ip=212.219.156.254&id=329688&acc=ACTIVE%20SERVICE&key=BF07A2EE685417C5%2E3459FC42C4D3CA19%2E4D4702B0C3E38B35%2E4D4702B0C3E38B35&CFID=458396785&CFTOKEN=13803106&__acm__=1416847471_2b12fae70cdd4ff8151ae3a6171ec403 Accessed on: 24th Nov 2014.
- Marcus, A., & Gould, E.W., (2001). Crosscurrents: cultural dimensions and global Web user-interface design. *Interactions* 7, 32–46.
- Nielsen, J. (2014). *Usability 101: introduction to usability*. Available At: <http://www.nngroup.com/articles/usability-101-introduction-to-usability/> Accessed: 24th Nov 2014.
- Sheridan, E. F. (2003.) *Cross-cultural web site design*. Considerations for developing and strategies for validating locale appropriate on-line content. *Multilingual Computing & Technology* Available at: http://www.multilingual.com/articleDetail.php?id=595_archives&-format=ad%2fselected%5fresults.html&-lay=cgi&sortfieldmagazine%20number&-sortorder=descend&-op=eq&Ad%20Type=reprint&max=1817529521 &-recid=33326&-token=%5bFMP-currenttoken%5d&-find= Accessed On: 25th Nov 2014.
- Simon, S.J. (2001). The impact of culture and gender on web sites: An empirical study. *The data Base for Advances in Information Systems*, 32(1), 18-37.
- Sun, H. (2001). *Building a culturally-competent corporate web-site: exploratory study of cultural markers in multilingual web design*. SIGDOC '01 Proceedings of the 19th annual international conference on Computer documentation, Available at: <http://dl.acm.org/citation.cfm?id=501536>, Accessed on: 25th Nov 2014.
- Preece, J., Rogers, Y., Sharp, H., Benyon, D., Holland, S. & Carey, T. (1994). *Human-computer interaction*. England: workingham, Addison-Wesley.

Webnauts, N. (2014). *Why usability is important to you*, Available At: <http://www.webnauts.net/usability.html> Accessed On: 24th Nov 2014.

Yoon, S. (2002). The antecedents and consequences of trust in online-purchase decisions. *Journal of Interactive Marketing*, 16(2), 47-63.