THE INFLUENCE OF CULTURE IN WEBSITE DESIGN AND USERS' PERCEPTIONS: THREE SYSTEMATIC REVIEWS

Francisco Tigre Moura
Department of Business Administration and Economics
IUBH School of Business and Management
Muelheimer Strasse 38, 53604 Bad Honnef, Germany
f.tigre-moura@iubh.de

Nitish Singh
The Boeing Institute of International Business
St. Louis University
1 N Grand Blvd, St. Louis, MO 63103, USA
singhn2@slu.edu

Wootae Chun
School of Business
University of Northern British Columbia
3333 University Way, Prince George, BC V2N 4Z9, Canada
wootae.chun@unbc.ca

ABSTRACT

The role of culture in web design has been increasingly researched. At this juncture, a comprehensive review of research, exploring website cultural localization issues, is overdue. Thus, this study aims to review and synthesize the findings from 90 previous studies in this field and provide implications for building a future research agenda. The paper provides a systematic review of a] The manifestation of cultural values in websites, b] The investigation of cultural markers in websites, and c] Influence of culture on users' perceptions of online stimuli. It elucidates the methods used in the investigations, along with main findings, limitations, and future research directions. The review of previous studies suggests that the web is not a culturally neutral medium, local cultural elements are an important part of web design, and that multinationals are culturally adapting their web content. Finally, the past studies make a compelling case for culturally adapting web content to meet online user expectations.

Keywords: Culture; Web; Cultural values; Localization; Web localization.

1. Introduction

Since the start of global commercialization of the web in the mid-nineties, companies, and users, often from very distinct cultures, have become connected- leading to innumerable business possibilities. However, this new scenario has also led to many communication challenges. Thus, a vast amount of research has addressed the importance and impacts of the localization of web design and online content. Studies have shown that culture acts as a moderating factor influencing both user perception and online experience and that the cultural profiles of target audiences have heavily influenced the development of online strategies of multinational companies and online firms [Baack &Singh 2007; Gevorgyan & Manucharova 2009]. Moreover, studies have shown that failing to address such cultural traits can cause cultural misinterpretations and inaccurate perceptions on a global scale [Singh et al., 2004; Singh et al., 2006]. Finally, they have shown that web design features are impermanent, constantly changing over time [Mushtaha &Troyer 2009]. Thus, their constant investigation is imperative. Vyncke and Brengman [2010] published an insightful review highlighting the effectiveness of cultural localization. However, considering the cultural representations in web design are in constant flux and have direct managerial implications, an updated, comprehensive, and systematic review of research exploring website cultural localization is overdue.

This paper presents such a thorough review, synthesizing findings from 90 previous studies in the field, ranging publications from 2000 until 2015. The authors expect that this article will provide students, researchers, managers and web designers with an up-to-date view of the relationship between culture and web design over the last fifteen years. This review also extends beyond the review of Vyncke and Brengman [2010] by not only discussing the

effectiveness of cultural localization but also the depiction of cultural values and cultural markers on websites. The summary of such vast literature related to the topic will hopefully contribute to the understanding of current scientific findings of the field, influencing the development of future online strategies and identifying gaps which will extend the research agenda on culture and web design.

Literature addressing the cultural impact on web design is mainly categorized under a website design perspective [encompassing cultural values and markers] and the users' perceptions of it through the online experience. Thus, the review comprises the following themes:

a. The manifestation of cultural values in websites [33 studies]: *Cultural values are defined as* "desirable trans-situational goals, varying in importance, that serve as guiding principles in the life of a person or other social entity" [Schwartz 1994 p. 21].

b. The investigation of cultural markers in websites [27 studies*]; Cultural markers are web design features which are more predominant in one market than in others, thus providing a" look and feel" for websites of certain countries* [Cyr & Trevor-Smith 2004; Evers & Day 1997].

c. Influence of culture on users' perceptions of online stimuli [30 studies]: Include works which investigated how users' perceptions of online stimuli differ by country, including the effectiveness of cultural localization.

The systematic review provided in this paper focuses on these three streams for a very clear reason: Cultural markers and cultural values represent concepts which are complementary and interrelated as they, respectively, characterize design and web content elements, thus comprising the overall design of sites. Their combination influences the entire appearance of any website, from a design and content standpoint. As such, they are responsible for creating a country-specific look for websites [Khashman & Large 2011; Okazaki & Rivas 2002].

Finally, in order to provide a holistic understanding of the effectiveness of such localization practices on the user experience, this review includes studies which have investigated the influence of culture on users' perceptions of online stimuli. Previous reviews, for example, Vyncke and Brengman [2010], have only focused on one aspect of the cultural representation of websites. By encompassing these three aspects, this paper addresses this fundamental literature review gap by, not only providing an overview that will support future website development, but also an understanding of online user behavior. Consequently, this paper is expected to provide practical insights for web designers and global web marketers.

2. Methodology

According to Tranfield et al. [2009], "Systematic reviews differ from traditional narrative reviews by adopting a replicable, scientific and transparent process, in other words a detailed methodology, that aims to minimize bias through exhaustive literature searches of published and unpublished studies and by providing an audit trail of the reviewers' decisions, procedures and conclusions" [p.209]. The reviews were conducted initially between January 2013 and February 2014, and later publications were added in February 2016 using the following keywords: website localization, cultural localization [customization] online, website and cultural values, website and cultural markers. The following databases were used: EBSCO Business Source Premier, Elsevier Science Direct, and Emerald. The main inclusion criteria were the publication's suitability to the topic, journal rankings and conferences' appropriateness to the topic. For example, the review includes publications from journals such as Journal of Electronic Research, Journal of Global Information Management, Journal of Advertising Research, Journal of Advertising, Journal of Global Marketing, International Journal of Design, International Business & Economics Research Journal, and others.

The summary of works is presented in Tables 1, 2 and 3. Each study was reviewed according to ten categories of analysis: a. author[s] and date; b. aim of the study; c. types of websites used; d. countries involved; e. sample size [number of sites and/or participants]; f. method; g. techniques applied to analyze the data; h. cultural model adopted to test or explain the phenomena investigated; i. elements of investigation; and j. main findings or differences found among the cultural groups. Next, a critical discussion of each topic of investigation is presented elucidating the methods used in the investigations along with main findings, conclusions, limitations of the studies and future research directions.

3. Manifestation of Cultural Values in Websites

Cultural values can be described as specific mindsets, which underpin individuals' choices and judgments. Values define, for example, what is moral or immoral, acceptable or unacceptable among members of a cultural group [e.g., Hofstede & Hofstede 2005]. The investigation of the representation of cultural values in websites constitutes a step towards a deeper understanding of the web as a platform for cultural manifestation [Zhao et al. 2003]. Moreover, the studies provide insights as to how companies might communicate more appropriately with

target markets by culturally customizing websites [Singh et al. 2004]. Next, a systematic review of 33 studies, which have investigated the depiction of cultural values in websites, is presented. A summary of all studies is presented in Table 1.

3.1 Cultural Frameworks for Websites

Existing cultural frameworks developed to investigate the portrayal of cultural values at a country level cannot be applied to studies involving websites. This is mainly due to the interactivity between users and sites, which distinguishes web research from other communication media studies, including those involving television, newspaper and magazine ads [Cho et al. 1999; Tansey et al. 1990]. Therefore, the development of cultural frameworks, specifically for websites, represented a vital step in the investigation of the depiction of cultural values online. The initial studies adapted and aligned existing cultural models, such as Hofstede's [1980] and Trompenaars and Hampden-Turner's [1998], to website elements in order to identify the values depicted in websites [Gould et al. 2000; Marcus & Gould 2000]. However, according to a recent review [Vyncke & Brengman 2010], the most successful cultural framework to date was developed by Singh et al. [2003]. The framework relates to website elements and contains six cultural dimensions, operationalized through twenty three cultural categories [Singh et al. 2005]. These cultural dimensions are encompassed in widely accepted cultural models to allow cross-cultural comparisons at a country level. The framework of Singh et al. [2003] includes the cultural dimensions of collectivism and individualism, power distance and uncertainty avoidance [Hofstede 1980] and high-low context dimension [Hall 1976].

The validity of the framework in the context of company websites on a country level has been largely verified. In spite of the criticism of Hofstede's model [Baskerville 2003; Fernandez et al. 1997; Nakata 2009], Singh et al.'s [2003], cultural framework has been successfully applied in the investigation of a broad range of company sites [e.g. automotive, electronics and retail] in a wide range of countries including the USA, Japan, Brazil, Hong Kong, Russia, Turkey, Taiwan, Spain, Mexico, Germany, France, China, India, and Arab countries [Baack & Singh 2007; Chang 2011; Chun et al. 2015; Gonzalez-Trejo 2010; Singh et al. 2006; Singh & Matsuo 2004; Singh et al. 2005; Singh et al. 2003; Yalcin et al. 2011].

3.2 Methods and Samples [Cultural values]

Twenty-nine of the thirty-three studies adopted content analysis to investigate cultural values on websites. The studies were conducted for two main exploratory purposes: to identify whether cultures reflected their values on websites [Singh & Matsuo 2004; Singh et al. 2003]; and to identify whether companies adapted values for local markets [Okazaki & Rivas 2002; Singh et al. 2005]. Items of Singh et al.'s [2003] cultural framework are measured on a five point Likert type scale [ranging from 'not depicted' to 'prominently depicted']. As most studies aimed at conducting cross-cultural comparisons, quantitative methods of analysis for mean comparisons such as t-test, ANOVA and MANOVA represented the most common statistical analysis [nine studies]. Twenty-nine of the thirty-three studies adopted Hofstede's [1980] dimensions to investigate and discuss the exposure of cultural values. Hall's dimension of context [1976] was found in nine of the works, while Schwartz's [1994] sets of values was used only once [Baack & Singh 2007]. Finally, the comparison between Asian and western company sites characterized most studies. Overall, the USA and China represented the most common samples.

3.3 Theoretical Contribution of Findings [Cultural Values]

The investigation of the papers provided extremely important theoretical contributions concerning the depiction of cultural values on websites. Such contributions are discussed below regarding two main dimensions covered in the studies: the depiction cultural values and the adaptation of cultural values on the websites.

3.3.1 Depiction of Values on Websites

The investigation of the depiction of cultural values on websites has provided a very important theoretical contribution for several reasons. First, past studies have confirmed that traditional communication media such as print and television advertising is impregnated by cultural values; the depiction of cultural values on websites further confirms that the relevance of culture cannot be discounted even in the new hyper-media environments. Second, we see that the studies supported the direction and magnitude of the cultural scores and classifications proposed by Hofstede [1980] and Hall [1976]. This is also an important finding, especially in the face of much of the criticism often addressed towards cultural models. This reaffirms the relevance and suitability of such models in online cross-cultural studies.

For example, Singh et al. [2003] were the first ones to identify significant differences on all cultural dimensions between American and Chinese company websites. Chinese sites depicted significantly higher collectivism and uncertainty avoidance features, while American websites portrayed low context and masculinity elements. The results support the cultural classification of each country, according to Hofstede [1980] and Hall [1976]. Similar results were found when comparing company websites from the USA and Japan [Singh & Matsuo 2004], from China, India, Japan and the USA [Singh et al. 2005], and from the Arab countries [Chun et al. 2015]. In all of these

works, the findings supported the magnitudes and directions of values, as predicted by the cultural classifications. Using a different framework and comparing a much larger spectrum of countries, similar results were found in a analysis of 234 sites over fifty three countries [Singer et al. 2007]. Significant differences were found in all four cultural dimensions employed: individualism, masculinity, uncertainty avoidance and power distance. More recently, differences were again found when comparing Chinese and British company websites [Chang 2011]. Finally, through a qualitative approach, Ahmed et al. [2008] also confirmed previous research and identified significant differences when comparing the cultural values of Malaysian and British websites.

Furthermore, the review has indicated that even across multi-industries, cultures normally reflect their own values when designing their sites. This is an extremely relevant finding, supported by previous reviews [Tigre Moura et al. 2014] which highlight a phenomenon that must be further researched to understand the underlying intentional and unintentional reasons of it.

3.3.2 Adaptation of cultural values on websites

The investigation of cultural values was also conducted to evaluate the extent to which global companies adapt local websites to meet the values of target markets. Overall the review suggested that companies do indeed localize their sites to reflected local values, as companies adapted their websites in order to reflect values of their target audience in country versions of their site [Singh et al. 2005]. This finding was repeatedly supported, for example, when comparing the German, Indian and Chinese website versions of American companies [Singh et al. 2006]. An investigation of the Russian and Turkish websites of American, European and Asia-Pacific multinational companies indicated that the companies adapted the cultural values portrayed on their local sites [Yalcin et al. 2011]. Exceptions were found in the American sites of Mexican companies which did not adapt their cultural values for the US market [Gonzalez-Trejo 2010]. However, this finding is understandable given the large number of Mexican immigrants in the United States who constitute a relevant segment of consumers in the American market [Peñaloza 1994]. Signs of cultural customization were also not found in the investigation of Chinese and Spanish websites of foreign companies [Ajanee 2008].

The only longitudinal study in the review was conducted by Robbins and Stylianou [2009]. The authors compared the exposure of cultural values in ninety company websites from twenty-two countries in 1998 with similar companies in 2008. This represents the only study in the review able to indicate the direction of possible cultural changes. The study points to a slight movement towards the homogenization of some values across cultures. Results on individualism-collectivism, uncertainty avoidance and long-short term orientation showed a reduction of their significance levels, possibly indicating a movement towards homogenization [Robbins & Stylianou 2009]. However, the differences amongst countries regarding power distance and uncertainty avoidance became even more significant after ten years, suggesting an enhancement of cultural differences in these dimensions.

Thus the review provides an in-depth overview which supports the adoption of cultural localization practices in websites across very distinct markets and industry sectors. This suggests that companies are not only aware of the importance of such practices, but also broadly applying them. The implication of cultural localization of websites on users' online experience is discussed in section 5 of this paper.

4. The Investigation of Cultural Markers

Web design and layout elements form the basis of website structures. They are responsible for providing the look and feel of sites and hence have a great impact on individuals' perceptions of sites [Cyr & Trevor-Smith 2004; Evers & Day 1997; Robbins & Stylianou 2003]. Cross-cultural studies have identified design elements which distinguish the design of sites from different cultures. The term 'cultural markers' was created to denote countries' web design preferences. It refers to interface elements that are most used in some cultures and less in others, such as colors, graphics, layout, multimedia and others [Badre 2000; Barber & Badre 1998; Juric et al. 2003]. Cultural markers are therefore an online cultural trait, creating a country-specific website design. Barber and Badre [1998] developed the term "culturability" to refer to the merging of culture and usability. The term suggests that individuals are expected to prefer, and find it easier to navigate on, websites that have a design that is perceived as familiar to their cultural group [Badre 2000; Barber & Badre 1998; Sun 2001]. Consequently, the investigation and identification of cultural markers has become a relevant research topic for web design studies. A systematic review of 25 studies, which investigated or discussed cultural markers, is now presented. The methodologies employed, samples, findings and conclusions of the studies are detailed. A summary of the studies is presented in Table 2.

4.1 Methods and Samples [Cultural markers]

The investigation of cultural markers in the review summarizes works with one main exploratory objective: to identify web design elements which are more prominently used in some cultures and less in others, therefore identifying cultural markers. Content analysis was the predominant method adopted by the studies to identify the web design elements [all twenty-five studies]. The investigation of cultural markers has focused mainly on eight

categories of evaluation: colors, content-related, graphics, language, layout, multimedia, navigation and symbols. Eleven of the twenty-five studies adopted nominal scales to denote website elements. For this reason, the most common techniques applied to the data to account for significant differences between countries were quantitative methods such as frequency distribution and Chi-square, as shown in Table 2. In addition, seven of the twenty-five studies adopted qualitative methods to interpret the data.

4.2   Theoretical Contribution of Findings [Cultural markers]

The review of cultural markers provided insightful theoretical contributions to the understanding of the field. Overall, the most relevant finding refers to the significant differences found among countries regarding web design elements. This supports that countries do indeed have specific preferences for design elements, resultant from their repetitive exposure. However, the underlying reasons for such patterns still lack understanding, and it was not found in the review a study that addressed such question, thus representing the most important research gap resultant from the investigation of cultural markers.

Cultural markers were identified in all categories of analysis: language [Mushtaha & De Troyer 2009], layout [Snelders et al. 2011], symbols [Cyr & Trevor-Smith 2004], animation [Cyr & Trevor-Smith 2004; Würtz 2005] content and structure, navigation [Juric et al. 2003; Lo & Gong 2005; Robbins & Stylianou 2003], colors [Callahan 2006; Cyr et al. 2010; Lo & Gong 2005], information organization and images [Callahan 2006]. The main cultural dimensions related to cultural markers were uncertainty avoidance and high-low context. Würtz [2005] and Khanum et al. [2012], suggest that high uncertainty avoidance and high context cultures tend to have greater use of animation and easier navigability on the sites. Callahan [2006] also suggests that uncertainty avoidance is correlated with the use of animation and graphical art, and a greater ease of use of the site. The only longitudinal study revealed that cultural markers change over time. A comparison of different versions in time of the same website indicated that the most recent versions of sites presented new cultural markers, while others disappeared and some still remained. Consequently, the study revealed that cultural markers are not static, and change according to new technological development which enables new web design trends [Mushtaha & Troyer 2009]. In contrast with older versions, more recent sites tended to portray more text, fewer colors and more multimedia features such as sound and animation [Mushtaha & Troyer 2009].

Finally, the review also suggests that cultural markers vary not only among cultures but also according to the communication needs and specificities of different industry sectors [Barber & Badre 1998; Mushtaha & Troyer 2009]. As an example, travel websites frequently use heavy graphics and travel icons such as skis and maps while business sites commonly focus on logos with a more conservative design. For this reason, the development of website designs for target audiences should not only be country- or culturally-based, but also industry-specific [Barber & Badre 1998]. Moreover, these findings are also pertinent to the emerging use of emoticons and other cultural markers in social media around the world.

5. Influence of Culture on Users' Perceptions of Online Stimuli

Here a systematic review is presented of 27 studies related to the effectiveness of website localization and the influence of culture on users' perceptions online. A summary of the studies is provided in Table 3.

5.1   Analysis [Perception of web stimuli]

The investigation of the influence of culture on users' perceptions of online stimuli initially started with a focus on web design [Evers & Day 1997; Fink & Laupase 2000; Simon 2001]. Over the years, the scope was extended to encompass users' perceptions of web content [Chau et al. 2002], website quality expectations [Tsikriktsis 2002], usability and performance [Fang & Rau 2003; Hall, Jong & Steehouder 2004], trust, e-loyalty, satisfaction [Cyr et al. 2005], ease of use [Faiola & Matei 2005], attitude toward the site [Singh et al. 2006] and purchase intention [Singh et al. 2004], among other elements of investigation.

5.2   Methodology and Samples [Perception of web stimuli]

The most common methods adopted in the studies were surveys and experiments. The only exception was Cyr et al. [2005] who also conducted interviews. For this reason, statistical techniques to test for significant mean differences across groups, such as Mann-Whitney U test, t-test, ANOVA and MANOVA, were predominant. Student sampling was used in sixteen of the twenty-seven studies, which limits the generalizability of findings. Americans [eleven occurrences] and Chinese [thirteen occurrences] represented the most frequent samples. Only five studies developed experimental websites [Badre 2000; Faiola & Matei 2005; Luna, Peracchio, & Juan 2003; Petrie, Power, & Song 2009; Snelders et al. 2011], and two manipulated existing sites [Baack & Singh 2007; Cyr et al. 2010]. All other studies adopted existing sites. The implications of using existing sites for participant evaluations are discussed in the conclusion of this section.

5.3   Theoretical Contribution of Findings [Perception of web stimuli]

The analysis of the studies suggests two main theoretical contributions, which are complementary. First, culture plays a major role in users' perceptions of web stimuli, and therefore, perceptions tend to be significantly different across cultures of the same stimuli. Second, users tend to generate more positive perceptions towards web content that is tailored to or portrays elements of their own culture, in comparison with websites that are not culturally adapted. This reinforces immensely the importance of cultural adaption of website design elements [cultural markers] and web content [cultural values]. In fact, if companies are looking to make a business case for culturally adapting their digital media, then the studies in this category can provide rich justification.

Overall, the results of the investigation of the effects of website customizations on users' perceptions are very encouraging. Website localization impacted positively users' attitudes towards the site [Singh et al. 2004], purchase intention [Luna et al. 2002], time spent on the site [Barber & Badre 1998], satisfaction [Cyr et al. 2005], trust and e-loyalty [Cyr 2008; Cyr & Bonanni 2005], and intention to revisit the site [Luna et al. 2002]. Due to the complexity of findings, a summary is presented next according to elements of investigation of the studies:

a) Attitude toward the site

In experimental contexts, four different studies involving participants from Italy, the United States, India, China, Germany, the Netherlands, Switzerland, Taiwan and Spain, revealed that subjects had a significantly more positive attitude towards sites that were highly culturally adapted to their culture [Singh et al. 2004; Singh et al. 2006; Baack & Singh 2007; Gevorgyan & Manucharova 2009]. Finally, Snelders et al. [2011] identified that the customization of cultural markers also leads to a participants' greater attitude towards a site. The study was conducted with German and Spanish participants.

b) Cultural adaptation

The investigation of cultural adaptation refers to the extent to which individuals can identify cultural customization in sites. Two papers addressed this issue, with contradictory results: Singh et al. [2006] indicated that respondents from Germany, China and India ranked more highly the cultural adaptation of highly adapted sites; while Baack and Singh [2007], in an experimental context, concluded that Taiwanese participants did not notice the cultural adaptation, but ranked the adapted website more positively.

c) Ease of navigation

Four studies indicated that the cultural localization of websites enhances the participants' ease of navigation. The experiments involved subjects from Italy, India, China, the Netherlands, Switzerland, Spain, the United States, Germany and Taiwan [Baack & Singh 2007; Faiola & Matei 2005; Singh et al. 2004; Singh et al. 2006]. Peikari [2010], however, found no significant difference between Iranians and Malaysians in terms of ease of navigation or ease of use and Cyr et al. [2005] contradicted previous works by indicating that Canadians, Germans and Japanese find it easier to navigate on foreign versions of company websites than on their local version sites. At last, Petrie et al. [2009] revealed that language and culture play a role when it comes to preferences for the navigation layout of websites.

d) Online Trust

Cyr et al. [2005] found no significant difference on the level of online trust of German, Japanese, Canadian and American subjects towards local and foreign versions of a site. However, Cyr [2008] contradicted previous findings and showed that Japanese respondents had the highest trust scores across a sample of eight countries, including low uncertainty countries such as India, Canada, and the USA. Peikari [2010] also identified significant online trust differences, as Iranian subjects had higher trust in security elements of a site than Malaysians. Snelders et al. [2011] concluded, from a comparison of Spanish and German participants, that the localization of cultural markers leads to a greater trust towards the site. Finally, color appeal, vendor familiarity and security signs for the site were identified as key factors affecting online trust [Cyr et al. 2005; Cyr et al. 2010].

e) Presentation of information

Singh et al. [2004], Singh et al. [2006] and Baack and Singh [2007] concluded that, overall, respondents tend to have more positive perceptions of the presentation of information in websites with higher cultural adaptation. However, while comparing the perception of Iranian and Malaysian respondents, Peikari [2010] found no significant difference in their perception of information presentation.

f) Purchase intention

Purchase intention was significantly higher when individuals from India, China, the Netherlands, Switzerland, Spain, Germany, and Taiwan were exposed to highly culturally adapted websites [Singh et al. 2004; Singh et al. 2006; Baack & Singh 2007]. Purchase intention was also revealed to be highly influenced by the information presentation and ease of use of sites [Peikari 2010].

g) Satisfaction

Simon [2001] identified significant differences in satisfaction levels, after individuals from distinct cultures were exposed to similar websites. Comparing the perceptions of German, Canadian and Chinese respondents, Cyr

[2008] also concluded that information design, navigation design, and visual design are significantly related to satisfaction. Cyr et al. [2010] supported this finding, adding that color appeal is also a significant determinant of satisfaction. Cyr et al. [2005], however, found no significant influence of culture on satisfaction, when comparing German, Canadian and American subjects.

h)   Website design

Badre [2000] revealed that the localization of cultural markers led Italian subjects to develop a more positive evaluation of the sites' design and color. Fink and Laupase [2000], however, found that Malaysian and Australian participants rated more positively the design of sites which were incongruent to their culture. Finally, Cyr et al. [2005] found no significant difference in the perception of design amongst Americans, Canadians and Germans concerning local and foreign sites.

i)   Web page viewing patterns

Dong and Lee [2008] investigated the web page viewing patterns of Chinese, Koreans and Americans using eye-tracking techniques. The authors conducted an experiment with eye-tracking devices, and the results indicated significant differences in viewing patterns of a webpage across the cultural groups.

j)   Website quality

Tsikriktsis [2002] conducted a survey and concluded that culture does play a role in website quality expectations. Specifically, the dimensions of masculinity and long-term orientation were shown to impact most significantly on website quality expectation. A limitation of this study, however, is the fact that the analysis combined respondents from different countries in clusters, discarding cultural differences across countries of the same cluster [e.g. North America, South America, Western Europe, Eastern Europe and Southern Europe].

k)   Willingness to travel

Tigre Moura et al. [2014] conducted the only work which has clearly addressed the issue of cultural localization in a context of when users had a hedonic motivation towards the site. Through an experiment and the development of an experimental website with different levels of cultural localization, it was found that the less culturally congruent site triggered a higher willingness to travel to the destination when compared to the culturally localized website. This raised an important debate over the effectiveness of cultural localization in relation to user's motivation towards the site. This issue is further commented on in the conclusion and future research section of this paper.

6.   Discussion and Implications

The systematic review presented in this paper provides an up-to-date insight of over fifteen years of research related to culture, web design and the effects of cultural localization of websites. Overall, the review indicates that cultural values of countries are naturally reflected on websites and that countries have specific web design elements which are particular to these markets. This review also highlights an important transition between traditional media and the digital media. For example, past work on television and print media has highlighted the role of cultural values in advertising [Caillat & Mueler 1996; Cho et al. 1999; Cutler & Javalgi 1992; Mueller 1987]; and this review-piece highlights that that role of culture continues to be important even in the relatively new digital media. In fact, this review of website cultural adaptation can be extended to new forms and interfaces of digital communications such as mobile interfaces, kiosks, and video games. Perhaps both academia and the managerial community may find this review beneficial when exploring how to extrapolate the findings of website cultural adaptation to emerging user interfaces, whether it is the car navigation systems or elaborate video games or mobile applications.   This review could also be a fertile ground for social media researchers to adapt findings to social media messaging and communication style, use of emoticons, and the user-interface design elements that may enhance user engagement on social media channels.

Furthermore, the review supports that the localization of both cultural values and cultural markers enhances the cultural congruity between the website and the users' cultural profile. Consequently, high cultural congruity tends to influence users' perceptions positively, allowing a greater evaluation of multiple aspects of the site, such as the attitude toward the site, navigability, online trust and the overall presentation of information. This reinforces findings from a previous review over a similar topic provided by Vyncke and Brengman, 2010. However, our review also highlights an important gap relating the lack of studies that used simulations or experimental sites, with appropriate controls, to isolate the impact of incremental levels of cultural adaptation on online user's perceptions. Research using experimental websites or simulations can help marketers decide what level of cultural adaptation might be best suited for a specific target market or consumer group. Such investigations can also help marketers optimize their localization budgets and thus effectively allocate their marketing resources. But overall this review highlights the efficiency of the cultural localization of websites and the strategic need for managers to apply cultural localization practices to websites which communicate to specific cultural groups. Despite the time and financial

effort needed to localize a website, the review suggests that, especially in competitive markets, managers must apply such efforts as it leads to an overall enhancement in users' perceptions towards the site and online experience.

However, managers must also be aware of the implications that the users' motivations towards the website may have on the effectiveness of cultural customization. As indicated by the study of Tigre Moura et al. [2014], in industry contexts where users have a hedonic rather than utilitarian motivation, such practices may not be as effective. Thus, it may be beneficial for marketers to first understand their end-user's cultural expectations then leverage those findings to optimize their localization efforts. In fact, Singh [2012] suggest a global online consumer segmentation model that leverages user's global and national identity to optimize localization efforts.

In conclusion, global digital media is constantly evolving and new forms of interfaces and interactive elements are being added. We hope this systematic review would help researchers identify and extrapolate website localization features to emerging digital interfaces. Managers may benefit by understanding how to effectively localize and measure their digital media user interfaces and communications. In the next section we provide several areas for future research and also highlight some limitations of the present studies.

7. Limitations and Future Research Directions

The review has also presented a few limitations and various future research directions. First, the over-use of corporate websites as samples for investigation represents a limitation. Although enhancing the suitability of findings to the industry, future studies should encompass other industry contexts, such as tourism and educational institutions, which trigger a more hedonic motivation from users towards websites. This will extend the understanding of the effects of cultural localization of websites.

Regarding the investigation of cultural markers, future studies could focus on understanding the underlying principles that predispose a culture to choose certain specific design elements more frequently than others, and not only on identifying cultural markers. This will result in direct web design implications. This could include websites from different industries to enlighten the understanding of the signifiers and signified displayed on industry specific websites through the manipulation of cultural markers. Also, future studies could address users' interpretations of the signified induced by such cultural markers; this is vital to avoid cultural misunderstandings.

From a methodological perspective, and concerning the investigation of the users' perceptions of online stimuli, only five studies used experimental sites [Badre 2000; Faiola & Matei 2005; Luna et al. 2003; Petrie et al. 2009; Snelders et al. 2011] and two studies adapted existing sites [Baack & Singh 2007; Cyr et al. 2010]. All other studies used existing sites. Experiments using existing sites must control for a great number of variables which may affect participants' perceptions, including, for example, the respondents' existing perceptions of the company. None of the studies using existing sites did so.

Furthermore, studies failed to measure other variables which could also moderate or mediate the perception of the sites. For example, studies which developed experimental websites did not measure for trust or include it as a covariate to account for unexplained variance. Trust is an important predictor factor for purchase intention [Grabner-Kräuter & Kaluscha 2003; Kim et al. 2008], and must be included in studies in which purchase intention or other behavioral intentions are measured. Another important factor moderating the perception of products, advertising messages, brands and companies is involvement [Petty et al. 1983]. An individual's involvement with a product and message affects their perception and interpretation of a product's image [Johar & Sirgy 1991; Osgood & Tannenbaum 1955].

Another area for future research pertains to the lack of evidence of how website localization actually impacts performance metrics such as number of page views, sales and other financial metrics. One of the likely challenges to associate website localization to performance metrics is that there are several intervening variables [web design, SEO, branding] that have to be controlled to isolate the impact of website localization on actual performance metrics. However, we have seen studies which have used experimental design to assess the impact of website cultural customization on attitudinal measures such as trust, branding and purchase intention [e.g. Bartikowski & Singh 2014]. Perhaps future studies may explore impact of localization on emerging digital media applications where performance metrics can be adequately captured, without controlling for a litany of variables. For example, future studies can assess the impact of culturally consistent versus culturally neutral social media posts and measure the number of views, tweets, retweets and other social media metrics.

Finally, based on our analysis we did not find past studies that have used the GLOBE cultural value framework to guide systematic analysis of website localization. Thus, perhaps it may be fruitful for future researchers to assess the application of GLOBE dimensions to study website localization. It will also help to analyze if the addition of GLOBE dimensions helps to complement or supplement cultural dimensions of Hofstede and others that have been applied in past website localization research.

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Appendix

Table 1: Summary of studies which investigated the depiction of cultural values in websites.

Author and Year	Aim of Study	Type of website	Countries	Sample Size	Method	Techniques to Analyze Data	Cultural Model	Elements of Investigation	Main Findings
[Gould et al. 2000]	Differences in depiction of cultural values	Retail, education and rail transport websites	Malaysia and USA	6 sites	Conceptual paper	-	Hofstede [1980] and Trompenaars [1993]	-	Paper suggests guidelines to portray cultural values through web design.
[Marcus & Gould 2000]	Differences in depiction of cultural values	Companies, search engines, destination, universities	Netherlands, Malaysia, USA, Costa Rica, Japan, Sweden, Belgium, UK, China	13 sites	Conceptual paper	-	Hofstede [1980, 1991]	-	Discusses how Hofstede's [1980, 1991] dimensions can be portrayed on websites and suggests differences among countries.
[Okazaki & Rivas 2002]	Differences in depiction of cultural values, information content and creative strategies	Company websites	Japan, Spain and USA	60 sites	Content analysis	Quantitative: frequency distribution, Chi-square	Hofstede [1980]	Information cues, individualism, emotional appeal	Identified that the local websites were localized for the local market.
[Singh et al. 2003]	Differences in depiction of cultural values	Company websites	USA and China	80 sites	Content analysis	Quantitative: Chi-square, ANOVA	Hofstede [1980] and Hall [1976]	Individualism-collectivism, power distance, masculinity-femininity, uncertainty avoidance, and high-low context	Identified significant differences on the depiction of cultural values in all dimensions.
[Okazaki 2004]	Differences in depiction of cultural values	Company websites	Japan and USA	100 sites	Content analysis	Quantitative: multivariate statistical test	Hall [1976]	Cultural values, information cues, creative strategies	The two market samples were successfully classified according to their cultural affiliations for all the variables examined.

[Singh & Matsuo 2004]	Differences in depiction of cultural values	Company websites	USA and Japan	92 sites	Content analysis	Quantitative: ANOVA	Hofstede [1980] and Hall [1976]	Individualism-collectivism, power distance, masculinity-femininity, uncertainty avoidance, and high-low context	Significant differences found on the depiction of cultural values in all dimensions, except masculinity.
[Hermeking 2005]	Differences in depiction of cultural values	Company websites	USA, Italy, Japan, UK, France, Germany	-	Content analysis	Qualitative	Hofstede [1980] and Hall [1976]	Collectivism, individualism, uncertainty avoidance, power distance, masculinity, high-low context	Identified that countries reflect their values on company websites. In addition, that companies culturally adapt their foreign websites.
[Singh et al. 2005]	Differences in depiction of cultural values	Company websites	USA, France and Germany	98 sites	Content analysis	Quantitative: MANOVA	Hofstede [1980] and Hall [1976]	Individualism-collectivism, power distance, masculinity-femininity, uncertainty avoidance, and high-low context	Identified that countries reflect their values on company websites. In addition, companies culturally adapt their foreign websites.
[Singh et al. 2005]	Differences in depiction of cultural values	Company websites	China, India, Japan and USA	93 sites	Content analysis	Quantitative: MANOVA	Hofstede [1980] and Hall [1976]	Individualism-collectivism, power distance, masculinity-femininity, uncertainty avoidance, and high-low context	Identified that countries reflect their values on company websites.
[Würtz 2005]	Differences in depiction of cultural values	Company websites	Japan, China, Korea, Germany, Denmark, Finland and USA	7 sites	Content analysis	Qualitative	Hall [1976]	Animation, transparency and navigability	Identified that high context cultures depict higher collectivism values. The opposite is also true: LC-IND.
[Burgmann et al. 2006]	Differences in depiction of cultural values	Banking and higher education	Germany, Great Britain, Greece	105 sites	Content analysis	Quantitative: ANOVA	Hofstede [1980]	Uncertain avoidance and power distance	Investigated the role and nature on the graphical user interface [GUI] [i.e. the web page], this paper concludes that culture does influence design, but only to a certain extent.

[Fletcher 2006]	Differences in depiction of cultural values	Company websites	-	-	Conceptual paper	Literature review	Hofstede [1980]	-	Identified that cultural sensitivity is an important factor in communication and must be taken into account if the website is to be effective in a cross-cultural communication.
[Singh et al. 2006] [Study one]	Differences in depiction of cultural values	Company websites	Germany, China and India	34 sites	Content analysis	Quantitative: Descriptive statistics	Hofstede [1980] and Hall [1976]	Individualism-collectivism, power distance, masculinity-femininity, uncertainty avoidance, and high-low context	Found that American companies adapt cultural values on their German, Chinese and Indian sites.
[Baack & Singh 2007] [Study one]	Differences in depiction of cultural values	Portals and Company websites	Arabic countries, Brazil, China, France, Germany, Hong Kong, Italy, Japan, Malaysia, Mexico, Portugal, Spain, Taiwan, Thailand and USA.	274 sites	Content analysis	Quantitative: confirmatory factor analysis	Hofstede [1980] and Schwartz [1994]	25 content items	Identified that the combination of two cultural models is more effective than adopting only one.
[Sinkovics et al. 2007]	Differences in depiction of cultural values	Company websites	USA, UK, Latin America, Germany	100 sites	Content analysis	Quantitative: MANOVA	Hofstede [1980] and Hall [1976]	Collectivism, individualism, uncertainty avoidance, power distance, masculinity, high-low context	Found significant differences in the depiction of cultural values on German MNC's local and international websites.
[Singer et al. 2007]	Differences in depiction of cultural values	Online banking websites	53 countries	234 sites	Content analysis	Quantitative: Correlations, ANOVA, regressions	Hofstede [1980]	Individualism-collectivism, power distance, masculinity-femininity, uncertainty avoidance, and high-low context	Concluded that differences in website design can be explained by Hofstede's cultural model, especially in individualism, masculinity, uncertainty avoidance and power distance.

[Ahmed et al. 2008]	Differences in depiction of cultural values	Banking, education and destination websites	Malaysia and Great Britain	6 sites	Content analysis	Qualitative	Hofstede [1980] and Hall [1976]	Individualism-collectivism, power distance, masculinity-femininity, uncertainty avoidance, and high-low context	Identified that countries reflect their values online.
[Ajanee 2008]	Differences in depiction of cultural values	Company websites	China and Spain	20 sites	Content analysis	Qualitative	Hofstede [1980]	Individualism-collectivism, power distance, masculinity-femininity, uncertainty avoidance	None of the company websites investigated were truly customized for the local market.
[Singh et al. 2008]	Differences in depiction of cultural values	-	USA	-	Focus group	Brain writing technique	Hispanic cultural beliefs and values rooted in Hofstede's [1980] cultural dimensions	-	Identified that, in general, U.S. Hispanic consumers share a set of beliefs and expectations for website design and content that transcends many possible segmentation variables.
[Gong 2009]	Differences in depiction of cultural values	Company websites	58 countries	-	Content analysis	Quantitative: t-test, nonparametric correlation analyses	Hofstede [1980] and Hall [1976]	Collectivism, individualism, uncertainty avoidance, power distance, masculinity, high-low context	Concluded that high-context and polychromic cultures are more conducive to the adoption and diffusion of internet retailing.

[Robbins & Stylianou 2009]	Differences in depiction of cultural values	Company websites	UK, USA, Finland, Netherlands, Norway, Sweden, France, Italy, Venezuela, Germany, Switzerland, India, Korea, Malaysia, Taiwan, Japan, Denmark, Belgium, Brazil, Spain, China, Thailand	90 sites	Content analysis	Quantitative: t-test	Hofstede [1980, 1991]	Individualism-collectivism, power distance, masculinity-femininity, uncertainty avoidance, and high-low context	Found indication of slight movement towards cultural homogenization amongst the researched countries.
[Fu & Wu 2010]	Differences in depiction of cultural values	Company websites	China, Taiwan, India, UK, Canada, USA	217 sites	Content analysis	A means-end comparison procedure	Hall [1976]	High-low context	Concluded that the higher the cultural context, the more complicated the cognitive attribute-consequence-value structure of web ad design.
[Gonzalez-Trejo 2010]	Depiction of cultural values	Company websites	Mexico and USA	52 sites	Content analysis	Quantitative: Mann-Whitney U test	Hofstede [1980] and Hall [1976]	Individualism-collectivism, power distance, masculinity-femininity, uncertainty avoidance, and high-low context	Identified that Mexican companies do not localize cultural values on their American websites.
[Usunier & Roulin 2010]	Differences in depiction of cultural values	Company websites	57 Countries [China, UK, USA, India, etc.]	597 sites	Content analysis	Quantitative: Correlation, regression analysis	Hall [1976]	High-low context communication styles	Concluded that a distinction between explicit-low context and implicit-high context is relevant for Internet-based communication and emphasizes its outcomes for both the content and the design of websites.

[Chang 2011]	Differences in depiction of cultural values	Company websites	Australia, Great Britain, Canada, USA, China and Taiwan.	223 sites	Content analysis	Quantitative: t-tests	Hofstede [1980; 1991]	Individualism-collectivism, power distance, masculinity-femininity, uncertainty avoidance	Identified that Chinese and English-language sites differed in 4 of the 5 cultural dimensions. However, not exactly as predicted by Hofstede's model.
[Yalcin et al. 2011]	Differences in depiction of cultural values	Company websites	Russia and Turkey	115 sites	Content analysis	Quantitative: ANOVA; and qualitative	Hofstede [1980] and Hall [1976]	Individualism-collectivism, power distance, masculinity-femininity, uncertainty avoidance, and high-low context	Concluded that websites depict local values. Multinational company websites adopt a multi-focus strategy on domestic and foreign sites.
[Chiu et al. 2012]	Differences in depiction of cultural values	Company websites	Taiwan and China	-	Content analysis	Qualitative	Hofstede [1980]	Collectivism, individualism, uncertainty avoidance, power distance	Concluded that in comparison with mainland China, Taiwan trading website communities have lower distance and higher uncertainty avoidance.
[Goyal et al. 2012]	Differences in depiction of cultural values	Government websites	Brazil, Russia, India, China, USA	50 sites	Content analysis	Qualitative	Hofstede [1980] and Hall [1976]	Collectivism, individualism, uncertainty avoidance, power distance, masculinity, high-low context	Identified that countries reflect their values on their websites.
[Mousavi & Khajeheian 2012]	Consistency in depiction of cultural values	University websites	Iran	3 sites	Content analysis	Quantitative: t-test method	Hofstede [1980]	Collectivism, individualism, uncertainty avoidance, power distance	Found that the design of Iranian university websites reveals a more collectivistic and masculine culture with higher indices of power distance than what is specified in the Hofstede model.

[Shneor 2012]	Examine the role played by culture, geography and infrastructure on website localization decisions	Company websites	Europe	440 sites	Content analysis	Logistic regression analysis	Hofstede [1980]	Decision whether launch a country-specific website or not	Counter to earlier suggestions, infrastructural conditions and cultural dimensions' levels in target markets do not predict the launch of local sites. Geographical distance influences decisions related to the geography neutral medium of the Internet.
[Alawani 2013]	Differences in depiction of cultural values	E-government interface	Kuwait and UK	2 sites	Content analysis and a survey-based study	Quantitative: MANOVA	Hofstede [1980]	Collectivism, individualism, uncertainty avoidance, power distance, interface quality measurements	Found no significant differences between Kuwaiti and UK users in terms of critical quality features. The results showed significant variations between the two.
[Gong et al. 2014]	Differences in depiction of cultural values	Social networking websites	36 countries	-	Content analysis	Quantitative: Hierarchical regression analysis	Hofstede [1980]	Collectivism, individualism, uncertainty avoidance, power distance, interface quality measurements	Provided supporting evidence linking Hofstede's cultural dimensions to countries' SNW use and access.
[Chun et al. 2015]	Differences in depiction of cultural values	Company websites	Arab countries and USA	207 sites	Content analysis	Quantitative: ANOVA	Hofstede [1980] and Hall [1976]	Collectivism, individualism, uncertainty avoidance, power distance, masculinity, high-low context	Found significant differences found in the depiction of cultural values in all dimensions, except individualism.

Table 2: Summary of studies involving the investigation of cultural markers.

Author and Year	Aim of Study	Type of website	Countries	Sample Size	Method	Techniques to Analyze Data	Cultural Model	Elements of Investigation	Main Findings
[Badre 2000]	Identifying cultural markers	Government, News & Media, Business Education, Travel Society & Culture Health, Science, Art & Humanities	Australia, Andorra, Austria, Italy, France, China, Japan, Iran, Israel, Lebanon, Saudi Arabia, South Africa Canada, United States Mexico, Brazil, Colombia, Venezuela	168 sites	Content analysis	Qualitative	-	HTML specific, icons/metaphors, colors, grouping, flag, language, geography, orientation, sound, font, links, regional, shapes and architecture.	Concluded that website design elements differ across cultures.
[Zahir et al. 2002]	Identifying cultural markers	National portals	26 countries	26 sites	Content analysis	Qualitative	Hofstede [1980]	List of website content, including color and layout	Found that layout seemed fairly similar across cultures. Differences were found in content and color.
[Juric et al. 2003]	Identifying cultural markers	Government, news and media, business and education websites	UK and Korea	40 sites	Content analysis	Qualitative	-	Verbal attributes, visual attributes and audiovisual attributes	Differences were found in all categories of evaluation between the two countries.
[Robbins & Stylianou 2003]	Differences in depiction of cultural markers	Corporate websites	UK, USA, Finland, Netherlands, Norway, Sweden, France, Italy, Venezuela, Germany, Switzerland, India, Korea, Malaysia, Taiwan, Japan	90 sites	Content analysis	Quantitative: cluster analysis, ANOVA	Hofstede [1980]	List of content and design features	Identified that countries varied more evidently in content than in design. Design features seemed to be globally standardized.
[Cyr & Trevor-Smith 2004]	Differences of cultural markers	Municipal government websites	Germany, USA and Japan	90 sites	Content analysis	Quantitative: Chi-square, frequency distribution	Hofstede [1980]	Language, symbols, layout, colors, multimedia, navigation, content and structure	Found that countries varied significantly in the exposure of language, symbols, layout, colors, multimedia, navigation, content and structure.
[Govers & Go 2004]	Identifying cultural markers	Company websites	UAE	20 sites	Content analysis	Quantitative: Frequency distribution, CATPAC	-	Motif, focal theme of images, unique words, central concept of website content	Found considerable discrepancies in the way the private and public players project Dubai's identity.

[Cho & Cheon 2005]	Differences of cultural markers	Corporate websites	USA, UK, Japan and South Korea	200 sites	Content analysis	Quantitative: Chi-square, ANOVA	Hofstede [1980] and Hall [1976]	Interactivity functions	Results indicated that western sites depict more consumer-message and consumer-market interactivity. Eastern cultures emphasize consumer-consumer interactivity.
[Lo & Gong 2005]	Differences of cultural markers	E-commerce websites	USA and China	100 sites	Content analysis	Quantitative: frequency distribution and Chi-square	Hofstede [1980]	Color, page layout, site content and interactivity	Found significant differences in use of colors, and differences found also in layout, content and interactivity.
[Callahan 2006]	Differences of cultural markers	University websites	Malaysia, Austria, USA, Ecuador, Japan, Sweden, Greece and Denmark	160 sites	Content analysis	Quantitative: frequency distribution, correlation	Hofstede [1980]	Organization and graphical design	Differences were found between countries. In addition, the differences in website design can be explained by Hofstede's cultural model.
[Würtz 2005]	Identifying Cultural markers	McDonald's websites	Japan, China, Korea, Germany, Denmark, Finland and USA	7 sites	Content analysis	Qualitative	Hall [1976]	Animation, transparency and navigability	Concluded that the dimension of low-high context influences website design.
[Fraternali & Tisci 2008]	Identifying Cultural markers	E-commerce websites	Chinese and Western	13 sites	Content analysis	Quantitative: frequency distribution	Hofstede [1980] and Hall [1976]	Layout, navigation, links, search functions	Cultural markers were identified in all categories of analysis.
[Lituchy & Barra 2008]	Design and usage of websites	Company websites [airline and hotels]	-	-	Microanalysis of the website	Qualitative case-study design	-	Language and cultural differences	Found support for localization strategy in marketing, communication, and transactions.
[Kim et al. 2009]	Differences of cultural markers	Company websites	USA and South Korea	200 sites	Content analysis	Quantitative: Chi-square, logistic regression	Hall [1976]	Hyperlinks, navigation bars, pop-ups, splash pages, images, animation, videos	Identified that South Korean websites are more likely to portray high-context communication.
[Mushtaha & Troyer 2009]	Differences of cultural markers	Not listed	Malaysia, Greece, UK, Netherlands, USA and Japan.	22 sites	Content analysis	Quantitative: Descriptive tests	Hall [1976], Hofstede [1980], Trompenaars [1993]	Text features, page layout, colors, photos and graphical elements, and interaction and navigation.	Concluded that cultural markers change over time.
[Mushtaha & Troyer 2009]	Differences of cultural markers	Company websites	-	-	Content analysis	Qualitative	Hofstede [1980]	Text on websites, page layout, colors, pictures, graphic elements, sound, cultural dimensions	Identified differences amongst cultural markers and that cultural adaptation of web design is required.

[Usunier et al. 2009]	Differences of cultural markers	Company websites	57 countries	600 sites	Content analysis	Quantitative: factor analysis, correlation	Hofstede [1980] and Hall [1976]	List of web design features	Found that cultural values influence website design features. Dimension of context may be detrimental to web design.
[Khashman & Large 2010]	Differences of cultural markers	Arabic government portals	Algeria, Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, Yemen	15 sites	Content analysis	Quantitative: Chi-square	Hofstede [1980]	Images, page layouts, colors, pictures, menu and links, symmetry	Concluded that Hofstede's cultural dimensions do not fully reflect the design characteristics of Arabic interfaces.
[Kondratova & Goldfarb 2010]	Differences of cultural markers	-	38 countries	900 sites	Content analysis [Automated cultural data mining]	Qualitative	Hofstede [1980]	Color, layout, graphics, typography	Cultural markers were identified in all categories of analysis.
[Khashman & Large 2011]	Differences of cultural markers	Ministry websites	Egypt, Lebanon and Saudi Arabia	30 sites	Content analysis	Quantitative: Frequency distribution, Chi-square	Hofstede [1980; 1991]	Graphical, organizational and navigational elements	Concluded that Marcus and Gould's [2000] interpretation of Hofstede's model does not meet the requirements to interpret design characteristics of Arabic interfaces.
[Nacar & Burnaz 2011]	Differences of cultural markers	Company websites	Turkey	108 sites	Content analysis	Quantitative: Frequency distribution	-	Information-content-related variables, language-related variables, menu-related variables	Found that the face [language] and the way [menu] that data were presented were not adapted as compared to information content on websites.
[Snelders et al. 2011]	Differences of cultural markers	Company websites	Spain and Germany	50 sites	Content analysis	Qualitative	Hofstede [1980]	List of web design features	Found that high UA leads to simpler design, less content, easier navigability, when compared to low UA.
[Chao et al. 2012]	Differences of cultural markers	Company websites	USA and China	100 sites	Content analysis	Quantitative: factor analysis	-	Cultural customization, content localization, translation quality	Concluded that multinational companies are not really adequately localizing their sites for the Chinese market.
[Goyal et al 2012]	Differences of cultural markers	Governmental websites	Brazil, US, China, India and Russia	50 websites	Content analysis	Quantitative: Frequency distribution	Hofstede [1980] and Hall [1976]	Language, layout, symbols, content structure, navigation, links, multimedia and color	Identified greatest differences of website design mainly between US and China.

[Khanum et al. 2012]	Differences of cultural markers	Educational, business and media websites	Saudi Arabia, United Arab Emirates and Kuwait	27 sites	Content analysis	Qualitative	Hofstede [1980; 1991]	Color, layout, text, language and number of links	Found that cultural markers are influenced by culture. Hofstede's cultural scores of Arabic countries are partially supported by website design components.
[Bartikowski & Singh 2014]	Differences of cultural markers	Company websites	France	100 sites		Experimental design	Singh et al. [2006]	Design and color associations	Found that strong brand equity outweighs the impact of website cultural congruity
[Calabrese et al. 2014]	Differences of cultural markers	Company websites	Portugal, Brazil, Angola, Macau	193 sites	Content analysis	Quantitative: cross-tabulation methodology	Hofstede [1980]	Four Hofstede's cultural dimensions [IDV, UAI, OD, MAS] represented by 29 cultural markers.	Brazilian, Portuguese, Angolan, and Macanese websites reveal that companies are aware that cultural background is a necessary success factor to consider for improving cross-cultural web design.
[Punhani & Batra 2014]	Differences of cultural markers	Company websites	Germany, Pakistan, India, USA, Ireland	-	Content analysis	-	-	Image, colors, density of text, advanced features, prominent feature, common feature	Found that users from different countries have contrasting preferences.

Table 3: Systematic review of the influence of culture on the perception of web stimuli.

Author and Year	Aim of Study	Type of website	Countries	Sample Size	Method	Techniques to Analyze Data	Cultural Model	Elements of Investigation	Main Findings
[Evers & Day 1997]	Effects of localizing cultural markers	-	Indonesia, China and Hong Kong	206 University students	Survey	Quantitative: frequency distribution, ANOVA, correlations	Hofstede [1980] and Trompenaars [1993]	System usefulness, ease of use, satisfaction, system use behavior	Concluded that different cultural groups have distinct web design preferences and interface acceptance.
[Badre 2000]	Effects of localizing cultural markers	Hotel website *Experimental site	Italy	24 University students	Experiment Survey	Quantitative: frequency distribution	-	Ease of navigation, color appeal, overall design	Found that the localization of cultural markers led to more positive evaluation of ease of navigation, color appeal, overall design.
[Fink & Laupase 2000]	Perception of website design	Supermarket, virtual shopping, retailer, café store, Business services	Malaysia and Australia	60 University students	Experiment Survey	Quantitative: Mann-Whitney U test,	Hofstede [1980] and Hall [1976]	Atmosphere, news stories, signs and products and services.	Surprisingly, found that culture was not as great a predictor of differences as the authors expected.
[Simon 2001]	Perception of website design	Reebok shoes, British Airways, CapExs Investments, Godiva Chocolates	Asia, Europe, Latin and South America and North America	160 University students	Experiment Survey	Quantitative and qualitative: MANOVA, Q-sort	Hofstede [1980]	Satisfaction and perception	Found that perception and satisfaction differ across cultural groups and gender groups within cultures.
[Chau et al. 2002]	Cultural interpretation and use of web content	Ford Escort, VW Golf and Toyota Corolla	USA and Hong Kong	269 University students	Experiment Survey	Quantitative: t-tests	-	Purpose of internet use and attitude toward the site	Concluded that culture affects users' attitudes towards websites.
[Tsikriktsis 2002]	Relation between culture and website quality expectations	Web banking sites	North America, South America, Western Europe, Eastern Europe, Southern Europe and Australasia	171 University students	Survey	Quantitative: Multiple regression	Hofstede [1980, 1991]	WEBQUAL dimensions	Found that the dimensions of masculinity and long-term orientation influence website quality expectations.
[Fang & Rau 2003]	Effects of cultural differences on usability and search performance	Yahoo site	USA and China	15 University students	Experiment Survey	Quantitative: t-tests	-	Satisfaction, perception and task performance	Found that the cultural background influences user's perception and usage of websites.
[Luna et al. 2002]	Effect of language and graphic congruity on users' navigation	Camera retailer *Experimental website	Spanish and English samples.	Not informed	Experiment Survey	Quantitative ANOVA	-	Attitude toward the site, revisit intention, purchase intention	Concluded that congruity between the website and the user enhances attitude, revisit intention and purchase intention.

[Hall et al. 2004]	Cultural differences on usability evaluation	Web of Science [data base site]	Netherlands, India, Indonesia, China, Turkey and Sudan	38 University students	Experiment Survey	Quantitative: t-test	Hofstede [1980; 1991]	Problems detected using plus-minus method and think-aloud method	Identified that cultural differences affect users' evaluation and perception of usability.
[Singh et al. 2004]	Effectiveness of cultural localization	Business to consumer shopping sites	Italy, India, Netherlands, Spain and Switzerland	627 University students	Survey	Quantitative: MANOVA	-	Purchase intention, attitude toward the site, presentation, navigational ease.	Found that respondents from different cultures prefer localized sites. Respondents differed on all variables.
[Cyr et al. 2005]	Influence of website design	Samsung	Canada, USA, Germany and Japan	114 Company employees	Interview and survey	Qualitative and Quantitative: t-tests	Hofstede [1980]	Trust, satisfaction and e-loyalty	Within cultural groups, satisfaction and loyalty were not more pronounced with regard to the local site.
[Faiola & Matei 2005]	Role of culture on interface acceptance	Business training services *Experimental site	China and USA	53 Participants	Experiment Survey	Quantitative: ANOVA'	-	Ease of use/time to complete tasks	Found that users interact more easily and faster when the site is developed by someone from their own country.
[Singh et al. 2006] [Study two]	Effectiveness of cultural localization	Dell, IBM, HP, Kodak, Microsoft, Sony, Toshiba, Fujitsu and Fujifilm	Germany, China and India	563 Students	Survey	Quantitative: structural equation modeling, MANOVA	-	Attitude toward the site, cultural adaptation, presentation and navigational ease	Identified that respondents from different cultures prefer localized sites. Culture influences beliefs, attitudes and purchase intention on the web.
[Singh et al. 2006] [b]	Effectiveness of cultural localization	Business to consumer shopping sites	Germany, Brazil and Taiwan	250 Respondents	Survey	Quantitative: structural equation modeling	-	Ease of use, perceived usefulness, cultural adaptation, attitude toward the website, purchase intention	Concluded that cultural adaptation is a predicting variable for website usage.
[Baack & Singh 2007] [Study two]	Effectiveness of localization of cultural values	Hui Bao [manufacturing company] *Manipulated site	Taiwan	158 University students	Experiment Survey	Quantitative: Linear regression	Hofstede [1980] and Schwartz [1994]	Presentation of information, cultural adaptation, navigation ease, attitude toward website and purchase intention	Found that respondents prefer culturally adapted websites. Significant effect of cultural localization on all variables, except cultural adaptation.
[Cyr 2008] [a]	Influence of website design	Sony Style	Canada, Germany and China	571 Participants	Survey	Quantitative: structural equation modeling	Hofstede [1980; 1991]	Trust, satisfaction and e-loyalty	Concluded that across cultures, website design influences the perception of trust, satisfaction and e-loyalty.

[Cyr 2008] [b]	Influence of website design	Sony Style	Canada, USA, India, Germany, Japan, Mexico, Chile and China	1,156 Participants	Experiment Survey	Quantitative: ANOVA	Hofstede [1980; 1991]	Trust, website trust and transaction security	Concluded that differences in website design can be explained by Hofstede's cultural model. Germany, Japan and China showed greatest differences.
[Dong & Lee 2008]	Cultural influence on perception of a webpage	Portal website *Experimental site	China, Korea and USA	41 Participants	Experiment Survey	Quantitative: ANOVA	-	Webpage viewing pattern	Found that respondents from different cultures showed different viewing patterns
[Gevorgyan & Manucharova 2009]	Effectiveness of localization of cultural values	Various	USA and China	370 Participants	Survey	Quantitative: t-tests, regression	Hofstede [1980; 1991]	Individualism-collectivism, power distance, attitude towards site	Concluded that the cultural background plays a substantial role in determining web design preferences and attitudes. Cultural customization is especially effective when users have strong ethnic identities.
[Li et al. 2009]	Influence of cultural values on technology acceptance	My Yahoo portal	USA and China	644 University students	Experiment Survey	Quantitative: t-test, partial least square, structural equation modeling	Hofstede [1980; 1991]	Perceived usefulness, ease of use, intention to use, cultural values	Found that the dimensions of time orientation and individualism-collectivism are the most relevant in explaining technology acceptance.
[Petrie et al. 2009]	Cultural influence on navigational layout	University department *Experimental site	USA and China	55 Participants	Experiment Survey	Quantitative: Chi-square	-	Navigability and attractiveness	Concluded that Chinese and Americans have distinct preferences in terms of navigational layout on websites.
[Sia et al. 2009]	Effectiveness of localization of cultural values	Company websites	Australia and Hong Kong	394 University students	Laboratory experiment	Quantitative: Partial least squares [PLS]	Hofstede [1980]	Trusting beliefs, Attitude, Intention to buy, actual buying	Conclusions emphasize the need to consider cultural differences when identifying the mix of web strategy to implement in Internet store websites.
[Cyr et al. 2010]	Influence of website color on perception	Sony Style *Manipulated website	Germany, Japan and Canada	90 Students	Experiment	Quantitative: survey, eye-tracking, interview	Hofstede [1980; 1991]	Trust, satisfaction, el-loyalty	Found that website color appeal is a determinant factor of trust and satisfaction in websites, with differences noted across cultures.

[Peikari 2010]	Influence of culture on perception of web design, security and purchase intention	-	Iran and Malaysia	325 Participants	Survey	Quantitative: t-test, regression	-	Ease of use, information presentation, navigation, security and purchase intention	Identified that cultures differ significantly on the perception of security.
[Faiola et al. 2011]	Cultural influence on perception of a webpage	-	South Korea and USA	54 Participants	Experiment Survey	Quantitative: factor analysis, Chi-square, regression	-	Use of adjectives of emotional dimensions	Found that Americans and South Koreans perceive the aesthetics of websites differently.
[Pollach 2011]	Role of culture in interacting with corporate websites	Company websites	Asians and Europeans	527 University students	Survey	Quantitative: factor analysis, Mann-Whitney U test	-	Trustworthy, predisposition to visit a site, purpose of visiting a website,	Concluded that the cultural background does not seem to be related to the utilitarian use of corporate websites, but is a significant effect on the hedonic use of such sites.
[Snelders et al. 2011]	Effectiveness of localization of cultural markers	Information communication technology companies *Experimental site	Germany and Spain	97 University students	Experiment Survey	Quantitative: ANOVA	Hofstede [1980]	Attitude toward the site and trust	Concluded that users find localized websites more trustworthy and appealing.
[Schneor 2012]	The role of culture, geography, and infrastructure on website localization decisions	Websites of European airline	-	540 export dyads		Logistic regression	Hofstede [1980]	Decision to launch a country-specific website	Found cultural distance between home and target country influences the decision to launch local sites.
[Tigre Moura et al. 2014]	Effectiveness of localization of cultural values	Destination websites *Experimental site	New Zealand	400 University students	Experiment Survey	Quantitative: ANOVA	Hofstede [1980]	Willingness to travel, overall destination image, affective image, infrastructure for tourism	Concluded that cultural incongruity led to more positive image and higher willingness to travel, when compared to the culturally localized sites.
[Ko et al. 2015]	Effectiveness of localization of cultural values	Travel agency websites	South Korea and USA	126 participants from South Korea and USA	Experiment	Content analysis	Hofstede [1980]	Online purchase intention	Found that when Korean consumers experience cultural incongruence, they are likely to exert increased effort to process information.