Arabic Website Design: User Evaluation from a Cultural Perspective

Nouf Khashman and Andrew Large

Shool of Information Studies, McGill University
3661 Peel, Montreal, QC. H3A 1X1, Canada
`nouf.khashman@mail.mcgill.ca, andrew.large@mcgill.ca`

Abstract. The cultural background of web users may play a key role in the way they interact with and perceive the usability and usefulness of websites. Twenty Arab participants evaluated and compared 2 websites from 2 countries within their culture to identify their preferences and expectations of the design of Arabic websites in order to examine whether these preferences are consistent with their cultural-specific attributes as described and predicted by Hofstede's model of cultural dimensions. The results suggest that these participants showed an overall preference for one website over the other.

Keywords: Web design, User Evaluation, Arab countries, Culture, Hofstede.

1 Introduction

One of the key objectives for any website is to enable its users to experience success and satisfaction [3, 10]. As such, it is argued that the accommodation of users' attributes into the design process is essential for the usability and usefulness of the web [11]. The cultural background of users is considered one of the attributes that might affect users' performance and satisfaction while interacting with websites [12]. The bulk of the research investigating this domain has employed Geert Hofstede's cultural model [4, 5], based mainly on the interpretation of Marcus and Gould [8]. In his model, Hofstede assigned comparative scores for 50 individual countries and three regions on five cultural dimensions. In the case of the three regions, one of which is the Arabic-speaking region, several countries had been grouped together based on the assumption of having similar cultural traits. The Arabic-speaking region comprised Egypt, Lebanon, Libya, Kuwait, Iraq, Saudi Arabia and the United Arab Emirates. This group has been frequently applied in cross-cultural interface design studies to different extents [1, 2, 13]. However, assuming Arab users have similar needs, expectations, and preferences on the web, without acknowledging possible individual differences across countries, can create potential problems in Arabic interface localization. In this study, we investigate how web users from an Arabic country that is excluded from Hofstede's model of culture perceive and evaluate two websites, one from their own country and the second from an Arabic country that is included in the model. This is one part of a larger study that aims to investigate whether users' expectations and preferences match those described for Arab countries in Hofstede's cultural dimensions.

2   Arab Countries in Cultural Design Studies

Cultural similarities and differences in web design have been discussed at length in the literature. However, Arab countries have received limited attention in this research area, despite the fact that 19% of the overall Arab population uses the internet and therefore could potentially benefit from this research. Some studies that did opt to include web pages from Arab countries limited their country choices to as few as two countries. For example, in a study that included systematic inspection of design elements that are possibly preferred within a particular cultural group, Barber and Badre [1] selected websites only from Lebanon and Saudi Arabia, which were initially chosen by Hofstede himself. Their findings indicate that these websites had a high frequency of right-to-left orientation and high frequency of flags in the government genre, relating to Uncertainty Avoidance and Long-Term Orientation dimensions respectively.

Zahir, Dobbing, and Hunter [13] selected national web portals also from two countries, Egypt and Morocco. Their results showed that websites from Egypt had a strong focus on the Egyptian culture, reflecting a high Power Distance characteristic. While websites from Morocco had a good presentation of women's issues and non-Islamic reference, relating to the Masculinity and Power Distance dimensions respectively.

Callahan [2], on the other hand, analyzed a total of 20 interfaces from the group of seven Arab countries included in Hofstede's model in her study of cross-cultural differences in the design of university websites. Although the number of websites from each country was not specified, the results pertaining to the Arab countries overall suggest that most of the design elements on their interfaces match their description on Hofstede's cultural dimensions.

In a study conducted by Marcus and Hamoodi [9], the researchers analyzed Arabic educational websites from Jordan, Egypt, and the United Arab Emirates aiming to determine whether or not the websites reflect Arabic culture. The results of this study show again that most of the design elements on these interfaces correspond to their characteristics on Hofstede's cultural dimensions.

As can be noted from the studies mentioned here, the methodology focused on conducting content analysis of Arabic websites, but did not involve actual users. Involving users and understanding their preferences and expectations could be incorporated in the design process that could potentially lead to design improvements for all users.

3   Methodology

3.1   Participants

Arab internet users living in Jordan are the population for this study, where 20 native-Arabic speakers ranging from 20-65 years old took part in evaluating the design of two Arabic websites. These participants were recruited by one of the researchers through personal contacts in Amman and Al-Salt cities in Jordan. During the first meeting, each participant was given a brief description of the purpose of the study and was asked to set a preferred date and venue for the evaluation to take place. In the second meeting, each participant conducted the evaluation, completed two questionnaires, and received a small financial compensation for taking part in the study. The study was in compliance with all ethical guidelines used by the researchers' university.

3.2   Tasks and Websites

The main objective of this study is to investigate how people from an Arabic country that is excluded from Hofstede's model of culture compare and evaluate a website from their own country with another from an Arabic country that is included in the model. Therefore, we randomly chose one government website from Jordan and matched it with the equivalent website from Lebanon. Using the Ministry of Health's websites in these two countries (see figures 1 and 2), each participant was handed a paper with questions asking her/him to find a list of public hospitals and contact information for each ministry.

These tasks were chosen for the evaluation because they were consistent across the two websites, and because they require the participants to perform some searching and/or browsing through the websites to find the answers, especially for finding the lists of public hospitals.

The main difference that was initially noticed between the two websites is that the Jordanian website is provided entirely in Arabic supported by a separate English version, while the Lebanese website is provided solely in English with some content in Arabic.

There were 80 tasks in total on both websites, 40 for each. The main objective of these search tasks was to expose the participants to the website, therefore there was no time limit to finish the tasks and they were encouraged to review the websites while answering the post-task questionnaire if needed. The start time for each task was noted when the participant read the question aloud and started navigating through the website. The end time was noted when the participant opened the page that included the right answer to the question. At that point, she/he was asked to write down the answer to each question. In one instance, a participant self-reported the time it took him to finish each task as he preferred to perform the evaluation at his convenience.

Fig. 1. Ministry of Health, Jordan

Fig. 2. Ministry of Public Health, Lebanon

3.3   Analysis

A post-task questionnaire inquired about what the participant thought of the design of these two websites. The general questions included in this questionnaire were adapted from Marcus and Alexander [7]; for example, how would the participants describe the imagery of the websites, would these websites appeal to people from their country, and what content is missing. The more specific questions that aimed to discover the relationship between the design elements and Hofstede's cultural dimensions based on the interpretation by Marcus and Gould [8] were derived by the researchers based on our previous work [6].

Statistical analyses were performed using SPSS program based on the specific level of measurement for each variable for the quantitative aspect of this study. Descriptive statistics were used to describe continuous variables such as time for searching and completing tasks. Chi-square test was used for categorical variables, while T-test was used for continuous variables.

4   Results

The participants of our study are all native-Arabic speakers living in Jordan, 55% of which are females and 45% are males. With regards to age, 60% were between 20-30 years old, gradually decreasing the percentage up to age 60. The educational level also varied between participants as 10% hold a diploma, 60% a bachelor degree, and 30% a graduate degree. 20% of them have been using the computer between 4 and 8 years, 55% between 9 and 15 years, and 25% for more than 16 years.

Of the 80 tasks that were undertaken, four (5%) were unsuccessful, divided equally between the two websites. Two tasks were not completed while searching for the list of public hospitals in Jordan, and another two while searching for the list on the

Lebanese website. The overall average time for searching both websites was 74.4 seconds (SD=90.9). While the mean time for the searches on the Jordanian website was less than the mean time recorded for the Lebanese website, the T test (t(74)= -1.29, ns) indicates no statistically significant difference between the two times.

The mean time for the 18 completed tasks for finding the list of public hospitals on the Jordanian website was lower than the one for the Lebanese website, but the difference was not statistically significant (t(34)= -1.62, ns). The mean time for searching the contact information on the Jordanian website was also lower than its counterpart on the Lebanese website, but again the difference was not significant (t(38)=-0.27, ns).

The participants were asked to rate how much they liked the design of each website on a 5-point Likert scale, 1 being the lowest and 5 the highest. The mean score for Jordan's website was slightly higher than that of Lebanon's website with 3.60 and 3.25 respectively. This result is consistent with how these participants felt about which website they found easier to use and prefer to use, as a significant majority preferred to use Jordan's website (χ^2(1)=5.00, p=.025) and found it easier to use (χ^2(1)=9.80, p=.002), but they did not think it was much faster to use (χ^2(1)=3.20, ns) which was confirmed by the actual results of search times.

Among the reasons why these participants thought Jordan's website was easier to use are "the easy access to information", "the simple design", and "because it is provided in Arabic". The participants who favored the Lebanese website credited it to "better information mapping", "intuitive menus", and one participant mentioned "being offered in English".

The Arabic interface and easy access to information were also mentioned as reasons for preferring to use Jordan's website, besides providing more relevant information for them as Jordanians. On the other hand, those who preferred Lebanon's website said "it has more visually appealing design" and "more comprehensive and informative content". Although there was no significant difference in terms of search times on both websites, those who thought they were faster on Jordan's website also credited it to its simple design and language, while those in favor of Lebanon's website said it has better design for menus, a search box for faster searching, and the learning curve from searching the previous website helped them find the information.

When asked what they thought of the imagery on both websites, some participants described the images on Jordan's websites as "expressive", "reflecting the purpose of the website", "clear", "normal", "very formal", "traditional", to "boring and poorly designed". The description for the images on Lebanon's website varied as well from "expressive", "eye-catching and beautiful", "better than those on Jordan's website", "good quality", to "not truly reflecting the Lebanese society", and "not culturally appropriate" for one image in particular that was used for a breast cancer campaign.

Overall, the participants thought that both websites would appeal to people from their country as Jordan's website got 84% positive responses out of possible 19 answers, while Lebanon's website got 83% out of possible 18.

The second part of the post-task questionnaire asked the participants to rank on a 5-point Likert scale, 1 being the lowest and 5 the highest, how important was it for them to have specific design elements on any website, these elements were previously

identified as culturally specific markers [1]. As shown in Table 1, participants thought it was very important to have keyword searching, a supporting second language version of the website, and site map, while customization and animated images were slightly less important.

Table 1. Importance of specific design elements

Element	N	Mean	SD	Min.	Max.
Customization	20	3.70	1.34	1.00	5.00
Second Language	20	4.60	.99	1.00	5.00
Keyword Searching	20	4.75	.72	2.00	5.00
Site Map	20	4.25	1.16	1.00	5.00
Animated Images	20	3.25	1.45	1.00	5.00

They were also asked about their general preference for simple vs. complex menus, where a simple menu does not contain any submenus while the complex one opens up submenus when the user selects a choice. Even though 55% of the participants preferred simple menus, the difference between the two choices was not statistically significant ($\chi^2(1)=.20$, ns).

5   Discussion and Conclusion

The 20 participants compared and evaluated two websites from two Arab countries, Jordan and Lebanon. Our main objective of this study was to explore how people from a country that is excluded from Hofstede's model (i.e. Jordan) perceive and compare a website from their country with another one from a country that is included in the model (i.e. Lebanon). This is one part of a larger study that aims to explore whether users expectations and preferences of Arabic web design match the Arabic cultural-specific attributes which are described and predicted by Hofstede's model of culture.

The participants of this study performed the tasks and found the answers relatively faster on the Jordanian website, although the difference between the two websites was not statistically significant. The participants themselves thought that their performance on both websites did not differ much, even though they preferred to use Jordan's website which they also found much easier to use. When asked about the reasons why they preferred the Jordanian website, they said it was more relevant to them as citizens of the country, had a simpler design with easier access to information, and most importantly it was offered in Arabic, even though the majority of them stated that they have no problem searching for information on the internet in English. Marcus and Gould [8] associated the simple design with limited choices in the country's native language to Hofstede's fourth dimension high Uncertainty Avoidance. This association will be further investigated in relation to Arabic web design for these two countries.

As to the images, the ones used on Jordan's website were described as expressive, reflective of the society, clear, very formal, traditional, and sometimes poorly designed. On the other hand, the images on Lebanon's website were described as eye-catching and beautiful, good quality, yet not truly reflecting the Lebanese society and unacceptable for the conservative Arabic culture, for one breast cancer campaign image in particular. This description for images could be explained by two of Hofstede's dimensions, Power Distance and Masculinity. Images depicting high Power-er distance would include more images of authority figures, while those depicting Masculinity would portray more traditional gender roles [8].This association will also be further investigated in relation to Arabic web design for these two countries.

Enforcing some restrictions on information access is something expected on websites with high Power Distance; even though a few participants favored such restrictions considering the type of website used, the majority of the participants preferred more freedom to roam and navigate websites without any restrictions. Websites with high Individualism (i.e. low Collectivism) are more likely to offer the user the ability to customize the interface in terms of font size or background color. Our participants did not think that customization is an essential component of a website, which was also the case for the presence of animated images that are an indicator of Masculine websites. Yet they highly favored websites with intuitive design, clear and simple menus that expected to be provided in Arabic language supported by a second language, which matches the description of Arabic culture on Hofstede's Uncertainty Avoidance dimension.

Arabic-speaking group in Hofstede's model did not have a score on the fifth dimension, Long- vs. Short-Term orientation which is reflected in the presence of search engines and site maps [5]. Yet, the participants thought that site-searching tools which help speed up the search process are very important on any website, even though only three participants actually used them while undertaking the tasks. Once again, these associations need to be further investigated and validated in relation to Arabic web design based on the interpretation of Hofsted'e model made by Marcus and Gould [8].

This study poses a number of limitations that might have affected the results and should be taken into consideration for future research. First, there were only 20 participants who took part in the evaluation process of the two websites; a higher number is needed to calculate significant statistical differences. Second, the participants were recruited solely in Jordan, whereas the study might be more representative if users from other Arab countries participated, particularly in this case from Lebanon. Finally, the evaluation involved just two government websites, which could have influenced the design of the website [1], and hence users' perception of this design. Future research will take these limitation into consideration and investigate users' preferences and expectations in regards to Hofstede's model.

References

1. Barber, W., Badre, A.: Culturability: the merging of culture and usability. In: 4th Conference on Huamn Factors and the Web (1998),
http://research.microsoft.com/users/marycz/hfweb98/barber/

2. Callahan, E.: Cultural Differences in the Design of Human-Computer Interfaces: A Multi-national Study of University Websites. Published thesis, Indiana University (2007)
3. Fernandes, T.: Global interface design: A guide to designing international user interfaces. AP Professional, Boston (1995)
4. Hofstede, G.: Culture's Consequences: International Differences in Work-Related Values. Sage Publications, Beverly Hills (1980)
5. Hofstede, G.: Culture's Consequences: Comparing Values, Behaviors, Institutions, and Organizations Across Nations. Sage Publications, Thousand Oaks (2001)
6. Khashman, N., Large, A.: Measuring cultural markers in Arabic government websites using Hofstede's cultural dimensions. In: Marcus, A. (ed.) HCII 2011 and DUXU 2011, Part II. LNCS, vol. 6770, pp. 431–439. Springer, Heidelberg (2011)
7. Marcus, A., Alexander, C.: User validation of cultural dimensions of a website design. In: Aykin, N. (ed.) HCII 2007. LNCS, vol. 4560, pp. 160–167. Springer, Heidelberg (2007)
8. Marcus, A., Gould, E.: Cultural Dimensions and Global Web User-Interface Design: What? So What? Now What? In: Proceedings of the 6th Conference on Human Factors and the Web (June 2000),
   `http://www.amanda.com/resources/hfweb2000/`
   `hfweb00.marcus.html` (retrieved September 25, 2008)
9. Marcus, A., Hamoodi, S.: The Impact of Culture on the Design of Arabic Websites. In: Aykin, N. (ed.) IDGD 2009. LNCS, vol. 5623, pp. 386–394. Springer, Heidelberg (2009)
10. Nielsen, J.: International Use: Serving a Global Audience. In: Designing Web Usability, pp. 315–344. New Riders, Indianapolis (2000)
11. O'Connell, T., Murphy, E.: The usability engineering behind user-centered processes for website development lifecycles. In: Zaphiris, P., Kurniawan, S. (eds.) Human Computer Interaction Research in Web Design and Evaluation, Idea Group Pub., Hershey (2007)
12. Shneiderman, B.: Universal usability: Pushing human-computer interaction research to empower every citizen. Communications of the ACM 43(5), 84–91 (2000)
13. Zahir, S., Dobing, B., Hunter, G.: Cross-Cultural Dimensions of Internet Portals. Internet Research 12(3), 210–220 (2002)