ABSTRACT
This study examines selected design characteristics of government Web interfaces from ten Arab countries using Hofstede’s cultural dimensions. Organizational and graphical elements from 100 ministry Web interfaces from Jordan, Syria, Yemen, Sudan, Morocco, Tunisia, Algeria, Bahrain, Qatar, and Oman were examined using content analysis method. The results suggest that Hofstede’s model of culture does not fully reflect the design characteristics of these interfaces.

Keywords
Web design, Arab countries, Culture, Hofstede.

INTRODUCTION
Many researchers (Callahan, 2007; Fernandes, 1995; Marcus & Gould, 2000; Nielsen, 2000; Shneiderman & Plaisant, 2010) have investigated cultural presence on the Web to determine how culture affects website design and usability. The rationale is that by localizing an interface through the incorporation of culturally appropriate design features, an interface becomes both more attractive and more functional for its intended users (Nielsen, 2000). The bulk of the research in this domain has employed Hofstede’s model, based on the interpretations made by, amongst other researchers, Marcus and Gould (2000).

Based on data collected from 40 countries, the cultural anthropologist Geert Hofstede (1980) proposed four dimensions of national culture by which individual countries could be evaluated. These dimensions comprise: Power Distance-the extent to which the less powerful members of societies expect and accept that power is distributed unequally; Individualism-the extent to which individuals are integrated into groups; Masculinity/Femininity-assertiveness and competitiveness versus modesty and caring; and Uncertainty Avoidance-intolerance for uncertainty and ambiguity. A fifth dimension, Long-Term Orientation-the degree of future orientation-was added later in 1982 when Hofstede expanded his model to include 10 more individual countries and three regions. In these three regions Hofstede grouped together several countries based on the assumption of them having identical cultural traits. These regions are East Africa, West Africa, and the Arabic-speaking countries (Hofstede, 2001). The Arabic-speaking countries comprised Egypt, Lebanon, Libya, Kuwait, Iraq, Saudi Arabia and the United Arab Emirates.

Hofstede’s model has been heavily applied in web interface research to determine how culture affects website design and usability. However, in the case of Arab countries, such an analysis can present problems. This is partly because Hofstede did not assign comparative scores to individual countries in the three regions as he had done for the original 40 countries and also because he excluded the remainder of Arab countries, a potential shortcoming followed by other researchers.

Based on Marcus and Gould’s (2000) interpretation of Hofstede’s dimensions on interfaces, websites with a high Power Distance would have restrictions to access information and a strong focus on expertise and authority, and vice versa for low Power Distance. Interfaces with high Collectivism maximize users’ motivation based on group achievement, have privacy policy statements, and prominence is given to leaders who portray tradition and history. Interfaces with Individualism would depict the opposite of Collectivism. Masculinity on interfaces can be reflected through traditional gender and age distinctions between users. Navigation is oriented to exploration and control, and graphics and animation are used for utilitarian purposes. Feminine interfaces on the other hand have blurred gender roles, where tasks are accomplished through mutual cooperation and attention is gained through visual aesthetics. Additionally, interfaces with high Uncertainty Avoidance have a simple design with limited choices and a restricted amount of data, with the opposite in the case of low Uncertainty Avoidance interfaces. Finally, users of Long-term Orientation must have patience in order to achieve results and goals. On the other hand, users of Short-term Orientation have the desire for immediate results and achievements of goals.

Our research investigates whether the design of websites culturally vary across Arab countries, individually and as a
group, using Hofstede’s model based on its interpretation in web design domain made by Marcus and Gould (2000). The results of previous research (Khashman & Large, 2011) suggest that Hofstede’s model of culture did not fully reflect the design characteristics of Arabic Web interfaces from the original set of countries included in the model. This study examined the design characteristics of selected government Web interfaces from the ten Arab countries excluded from Hofstede’s model of culture, and compared them to the characteristics associated with Arab countries on the cultural dimensions (although Hofstede did not assign Arab countries a score on his fifth dimension). Its primary purpose, as part of a larger study, is to investigate whether websites from the Arab countries, individually and as a group, uniformly reflect the interface design characteristics that are inferred from Hofstede’s dimensions.

**METHODOLOGY**

**Country selection**

The group of Arabic-speaking countries excluded from Hofstede’s model comprises Jordan, Syria, Yemen, Sudan, Morocco, Tunisia, Algeria, Bahrain, Qatar, and Oman. Five possible Arab countries were excluded (Comoros, Djibouti, Mauritania, Somalia, and Sudan) because Arabic is not the sole official language in these counties.

**Government genre**

Similar to Barber and Badre (1998), Cyr and Trevor-Smith (2004), and Khashman and Large (2011), websites from the government genre were chosen because they provided enough sample size across countries. In addition, these websites are a means of interaction with the locals; therefore they are presumably intended for a particular culture or nation, rather than the worldwide Internet community. It is expected that designers who belong to the local culture created these websites, consequently reflecting the socio-cultural, technological and economic characteristics of their intended cultures in order to be successful in the services they provide (Zahir, Dobing & Hunter, 2003).

The sample frame was based on the lists of government websites provided on the Web portals of the countries’ governing body. A simple random sampling was conducted to determine the final sample to be included in this study.

**Analysis**

This study employed content analysis method to examine the similarities and differences between Web interfaces from the selected sample. According to Krippendorff (2004), content analysis is a valid method used to describe trends in communication context, allowing researchers to make inferences to the patterns and differences among similar components of that communication context. Content analysis can expose hidden connections among concepts, reveal relationships among ideas that initially seem unconnected, and inform the decision-making processes associated with many technical communication practices (Thayer et al., 2007). The components in this research are the Web design elements which have been argued to be prevalent and possibly preferred within a particular cultural group. At this point in the research, the analysis focused on the graphical, organizational, and navigational elements that consist of: presence of social models, restriction to access, logos description, customization, presence of visitors counter, presence of animated images, page layout, menus, presence of search engines, and links. The description and frequencies of occurrence of each design element were counted, converted, matched, and compared to the score of Arab countries on each cultural dimension.

**FINDINGS**

The results revealed that overall, as a group, there were differences in the depiction of the cultural markers on the design of Arabic government websites from Jordan, Syria, Yemen, Sudan, Morocco, Tunisia, Algeria, Bahrain, Qatar, and Oman based on Hofstede’s model. The sites were analyzed for presence of social models (national and/or religious), restriction to access information, ability to customize the site, visitor counter, page layout (vertical vs. horizontal), menus (simple vs. complex), image animation, search engines, site maps, and frequently asked questions FAQ. The analysis of image depictions (officials vs. citizens, individuals vs. groups, men vs. women vs. mixed) will be reported later. The preliminary results are shown in Table 1.

**DISCUSSION**

We found that Hofstede’s cultural dimensions reflect some of the design characteristics of Arabic government interfaces.

Arab countries have a high score on Hofstede’s Power Distance dimension. Presence of social models and restrictions to access information did not match the description of having such a high score, while the number of images of leaders will be further investigated. These countries scored low on the Individualism dimension; therefore their interfaces would be expected to have no customization options. This assumption was confirmed for this design element.

With a relatively high score on the Masculinity dimension, we would expect Arabic interfaces to have more frequent visitor counters and animated images. This was confirmed for animated images, but not the visitor counter. For a low score on Uncertainty Avoidance, we would expect Arab countries to have interfaces with simple menus and more frequent horizontal pages. The designs had more vertical pages and there was no significant difference between simple and complex menus.
The description of Long-term oriented cultures could be applied to Arab countries, even though they do not have a score on the fifth dimension. Therefore, it was interesting to see that their interfaces frequently had search engines and site maps, while not FAQ.

CONCLUSION

For the design elements that were included in this study, the results suggest that Hofstede’s model of culture did not fully reflect the design characteristics of Arabic Web interfaces from these countries as a group. This has an implication on (i) whether these countries should be treated as one group in cross-cultural interface design research in the future, and (ii) whether they should be treated like the group that was included in the model. The results from this study could also be used to improve the design of Arabic government websites in accordance with the cultural markers associated with their culture.

This study has several limitations. First, the results might be influenced by the type of website chosen for analysis, as noted by Barber and Badre (1998). Second, we conducted a quantitative analysis on the design elements. The research would be more representative when user-centered research is conducted to investigate how people in these countries interpret and respond to the design of their government Web interfaces. Third, a comparison between the included and excluded countries, individually and as a group, is necessary to examine the possibility of clustering them together in cross-cultural interface design analysis.

The study results and limitations imply the need for further research. Future investigation will focus on the remainder of design elements associated with the dimensions, and a comparison between all Arab counties. Additionally, websites from another genre will be included in order to produce valid comparisons across genres.

REFERENCES


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Table 1. Results of Chi-square test for the design elements