SAUDI ARABIAN CULTURAL FACTORS AND PERSONALISED ELEARNING

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Abstract

With the support of the internet, many institutes in various countries have adopted the idea of introducing a web-based education system. In many countries, the government implements initiatives pushing eLearning solutions forward, such as in Europe (e.g, the UK, Malaysia and Singapore, but also in the Arab world (e.g., in Saudi Arabia and Kuwaiti). However, as a late comer to eLearning, Saudi Arabia still has to find the right balance between this globalisation of learning, and its cultural values. This study thus looks into the specific case of Saudi Arabia, to identify the *cultural factors* that influence acceptance of eLearning, including the more recently developed area of *personalised* e-learning. This research identifies *Saudi Arabian users' cultural* characteristics, by analysing Hofstede's cultural value dimensions, and their appropriateness for Saudi Arabian eLearning. Additionally, the study analyses how these factors influence higher education students' acceptance of the eLearning. The quantitative data from the students was collected by using an online questionnaire. In this study, the findings demonstrate that Saudi Arabian users' cultural characteristics are *similar to Hofstede's 1980 analysis for the Arab world and can be specifically applied for Saudi personalised eLearning*. In addition, *the factors of Individualism vs. Collectivism and Uncertainty Avoidance were found to have a significant influence on a student's* perception of education. Hence, implementers of eLearning in Saudi Arabia need to be aware of these strongly influential factors and implement them in their learning solution.

Keywords: Saudi Culture, online learning, web Design.

1 INTRODUCTION

There is a global movement in institution of higher education to present e-learning in various countries, including Saudi Arabia. This has caused a new phase in the globalisation of education [1], [2]. The majority of education software companies localize their products to the local preferences of their target countries. The process of localization adapts user interfaces to local languages, date and time formats [3]. This has caused problems for web based education in that its content is local but the instructional model is international, without the model of education being adapted to fit the learning style or the culture [1].

According to Hofstede [4], national culture refers to "the collective programming of the mind which distinguishes the members of one human group from another". He also stated that the cultural environment of an individual has an impact on the person's thinking, feeling and working style. As culture affects the manner in which people interact in general, culture will also impact on the way in which people will interact with computers [5]. The communication between the system and the user is required to be interactive in order to achieve tasks. However, web-based education is an activity greatly affected by cultural factors, such as the content and the presentation style of the teaching curriculum, or the education style of an individual, the relationship between student and teacher, collaborative learning, social presence and interaction [6]. Education in Saudi Arabia is strongly affected by Islam religious and culture traditions, such as separation of the genders. Imitation web-based education styles from overseas countries might not be appropriate to Saudi students. Therefore, the user's cultural perspective should be taken into account when designing eLearning to be more attractive and to retain more users [7]. Web-based education localization is the process of adapting a website to make it accessible, usable, understandable, and culturally suitable for target

audiences. Web-based education can be designed for a particular culture to serve the needs of a particular audience, or specifically for cross-cultural participation, to serve the needs of an international audience. This study will attempt to design personalised web-based education targeted at Saudi culture. Therefore, understanding Saudi cultural issues that affect learning can simplify the design of more acceptable personalised web-based educational systems targeted at Saudi Arabia society. The aims of this research are:

- *to investigate Saudi Arabia users' cultural factors, by using the Hofstede cultural value dimensions, and*
- *to investigate the cultural factors that influence the students' acceptance of personalised web-based education.*

The questions posed in this study are:

- *Are Saudi Arabia users' cultural characteristics similar to Hofstede's 1980 analysis for the Arab world and can they be used to identify design features into eLearning to meet the Saudi cultural requirements?*
- *Can cultural factors affect the student's acceptance of web-based education system in the Saudi Arabian context?*

The main contributions of this paper are:

- Identifying Hofstede's analysis is an appropriate tool to define *cultural factors* influencing eLearning in general, and *personalised* eLearning in particular, for Saudi Arabian higher education students.
- Finding the main factors that influence acceptance of eLearning and personalised eLearning, which are: *Individualism vs. Collectivism* and *Uncertainty Avoidance*.
- Giving implementers of eLearning in Saudi Arabia the main principles to guide their introduction of eLearning at university level.

2 RELATED WORK

There is a great deal of research related to culture [8], [9], [4]. Hofstede emphasised his model as defining the patterns of thinking, feeling and acting that form a culture's mental programming. Much of the research has confirmed that Hofstede's theory has the power to gain a suitable understanding of a culture in a particular country of the world [10], [11], [7]. Hofstede [4] introduced a useful classification system to understand the influence of national culture on people's behaviour. This entailed four dimensions: *Power Distance, Individualism vs. Collectivism, Masculinity vs. Femininity and Uncertainty Avoidance*. These dimensions were considered following the outcomes of an attitude investigation administered to IBM employees in seventy-one different countries, out of which also some Arabic countries (Egypt, Iraq, Kuwait, Libya, UAE and Lebanon) and he generalized outcomes achieved in all Arab countries, including Saudi Arabia. These were rated for each dimension, usually on a scale from 0 to 100 [4]. Several studied reported that Hofstede findings do not characterise a true generalization for example, Rasha H. O. Tolba [7] studied the Jordanians users' culture characteristics and the link between cultural dimensions and user interface acceptance. She found that users in Jordan are high power distance, collectivistic, feministic, high uncertainty avoidance, and time orientation which are close to Hofestede analysis for Arab world. She also found that user interface acceptance with ease of use, there were significant relationship between cultural dimensions and user interface acceptance for dimensions (Power Distance, Individualism, Uncertainty). Furthermore, user interface acceptance with usefulness, there were significant link between cultural dimensions and user interface acceptance for factors Power Distance and Individualism whereas the factors Masculinity, and Uncertainty they were not significant. Moreover, Twai [12] studied the Libyan users' culture characteristics and the relationship between cultural dimensions and the adoption of IS. His study showed that Libya is high on the power distance dimension, high on uncertainty avoidance, more feminine culture. Additionally, the results presented that there is a direct positive link between

Hofstede's (1980) societal culture dimensions and the adoption of IS. Aust. J et al [13] examined Hofstede's (1980) theory on national culture dimensions to explore the national values of Qatar. His results showed that the score of Qatar national culture were different from the score of Arabic Countries which measured by Hofstede 1980.

Researches have used Hofstede's model in Human-Computer Interaction (HCI) to investigate differences and similarities in the design of Web sites in different cultures. Marcus and Gould [14] endeavoured to use those dimensions for global web interface design, by mapping Hofestede dimensions to metaphors, mental model, navigation, interaction, and appearance. They propose that Web sites in high PD cultures will have highly structured access to information, on security and limitations of access, and on the prominence given to leaders. On the other hand, Web sites in countries with low PD will have less structured access to information, low hierarchies and fewer access barriers. Frequent pictures of achievement and the presence of personal information will be characteristic of highly individualistic countries. In contrast, websites in collectivist countries will present group achievements and emphasize experience. Masculine interfaces will emphasis on tasks and the efficiency of their completion, navigation will be oriented toward exploration and control and interactive. Feminine interfaces will support cooperation and exchange of information. In the uncertainty avoidance dimension, interfaces in countries with a high UA index will be simple with clear metaphors and limited choices; low UA Web sites will be more complex.

There have been few researches addressing culture in learning. Emmanuel Blanchard [15] used Hofstede's Individualism/Collectivism dimension in future culturally aware e-Learning systems. He introduces a Culturally AWAre System (CAWAS). This system test learner preference for individual or collaborative work. Additionally, FM Eboa, et al [16] presented Cultural Adaptation Methodology for Pedagogical Resources in E-learning (CAMPERE). They suggest a cultural adaptation approach by using a two- phase method: a) A cultural background about the student (the environment, religion, language, countries of residence, etc.) is collected to initialize the adaptation process b) A collaborative filtering method is applied to adapt educational resources using the student's cultural profile. Furthermore, Welzer et al [17] conducted research on cultural awareness in e-learning. They introduced the project ELLEIEC (Enhancing Lifelong Learning for the Electrical and Information Engineering Community). They integrated the importance of culture in a Virtual Centre of Entrepreneurship (VEC) to offer e-learning courses (in foreign languages) for developing entrepreneurial skills and competencies. It has a special course (Cross Cultural Communication) to help students to understand the importance of the topic and make them aware about the importance of culture in information society and global communication. Moreover, in 2012, Stewart [10] looked at how the adaptive interfaces can cater for cultural diversity in Education. His research provides a framework for cultural adaptation, CAE (Cultural Artefacts in Education), based on Marcus & Gould's web model, as well as its source, Hofstede's indexes. The CAE questionnaire findings are used to create two cultural ontologies for use in educational settings (CAE-f ontology and CAE-I ontology). The CAE-F ontology describes in detail of an adaptive cultural stereotype. This study evidenced the validation of the Marcus and Gould extension of Hofstede's Cultural Indices into the field of web design.

3 CONNECTING HOFTEDE'S DIMENSIONS TO ELEARNING

The cultural dimensions impact on the construction of educational situations, the learning process, the content and presentation style of teaching and the interaction between lecturer and learner. The designing educational software should be considered variety of cultural factors [18]. Therefore, our study will use these cultural dimensions as follows:

3.1 Power distance

Power distance refers to "the extent to which the less powerful members of organizations and institutions (like the family) accept and expect that power is distributed unequally" [4]. In other words, cultural dimension looks at how much a society does or does not value hierarchical relationships and respect for authority. In the web-based education context, in high power distance cultures, the relationship between teachers/leaders and students is hardly close/personal. Students are not trusted and they need clear guidance from teacher/leader and class divisions within society are

accepted. On the other hand, in a low power distance culture teachers may often socialise with students and students are trusted with important assignments, and cultures are leaning more towards equality [18].

3.2 Uncertainty avoidance

Uncertainty avoidance refers to "the extent to which the members of a culture feel threatened by ambiguous or unknown situations" [19]. This dimension of culture has the power to measure the degree of acceptance or rejection of ambiguity or unknown situations in the future. In the web-based education context, this dimension of culture is associated with the students' behaviour towards the construction of their education. In high Uncertainty avoidance, students want to know about their future in their studies, and prefer simple designs with clear descriptions and limited amounts of data while in low Uncertainty avoidance the students accept the unknown, as well as more complex designs and variety of choices [18].

3.3 Femininity vs. masculinity index (MAS)

Hofstede [19] defined the *Masculinity vs. femininity* dimension in that "a society is called masculine when emotional gender roles are clearly distinct: men are supposed to be assertive, tough, and focused on material success, whereas women are supposed to be more modest, tender, and concerned with quality of life". This dimension of culture relates to gender roles in societies and the expected behaviour of the two genders. In low masculinity (feminine) men and women accept collaboration and exchange of information whereas in high masculinity collaboration between men and women is refused.

3.4 Individualism vs. collectivism

According to Hostede [20], *Individualism vs. Collectivism* cultural orientation refers to "the degree to which people in a country prefer to act as individuals rather than as members of groups". In web-based education, this dimension can explain a student's preference to be a part of a student group, rather than having just a traditional relationship with the tutor [10].

4 RESEARCH MODEL AND HYPOTHESES

According to Hofstede [4], the Arab countries were classified as having high power distance (80), high uncertainty avoidance (68), and a collectivist culture (91 on Individualism), and a masculine culture (52). This study investigate that Saudi Arabia users' cultural characteristics are similar to Hofstede's 1980 analysis for the Arab world and can they be used to identify design features into eLearning to meet the Saudi cultural requirements. Therefore, it is suggesting the following hypotheses:

H1: Saudi Arabia users' cultural characteristics are similar to Hofstede's 1980 analysis for the Arab world and can be applied for Saudi eLearning.

H1-1: Hofstede's High Power Distance can be applied onto Saudi eLearning.

H1-2: Hofstede's Masculinity Index characteristics can be applied onto Saudi eLearning.

H1-3: Hofstede's high Uncertainty Avoidance Index characteristics can be applied onto Saudi eLearning.

H1-4: Hofstede's Collectivism Index characteristics can be applied onto Saudi eLearning.

H2: Cultural factors will affect the student's acceptance of a web-based education system in the Saudi Arabian context.

H2-1: The individualism vs. collectivism will influence a student's behavioural intention to use a personalised web-based education.

H2-2: The masculinity vs. femininity dimension will influence a student's behavioural intention to use a personalised web-based education.

H2-3: The uncertainty avoidance will influence a student's behavioural intention to use a personalised web-based education.

H2-4: The power distance will influence a student's behavioural intention to use the personalised web based education.

5 CASE STUDY

In this study, quantitative data was chosen to collect data and the questions in the questionnaire were developed by using measures that had previously been validated [14], [10]. The experiment was conducted over two phases, as follows.

In the first experiment, a questionnaire-based experiment was conducted, to study Saudi Arabia users' cultural characteristics. The population was students from Saudi Arabia. A deliberate effort was made to include students from various universities in Saudi Arabia to cover the students' different opinions. As a result, we chose websites that were affiliated with King Faisal University, Qassim University, Taibah University and the University of Tabuk, where students from these universities were subscribers and contributors to the sites. The questionnaire was distributed online using one of the websites designated for research purposes; specifically the survey gizmo (http://www.surveygizmo.com). A link to the questionnaire was provided on the introductory post to the websites. The questionnaire items (individualism vs. collectivism, power distance, uncertainty avoidance, masculinity vs. femininity), were measured on a five-point Likert-scale anchored at both extremes to 1 (strongly agree) and 5(strongly disagree).

In the second experiment, an experiment was carried out to investigate the cultural factors which influence the students' acceptance of web-based education in Saudi educational institutions. The sample was taken from students from the University of Taibah, the city of Medina, Saudi Arabia. Survey items were behavioural intention, individualism vs. collectivism, power distance, uncertainty avoidance, and masculinity vs. femininity and were measured on a three-point system; effective, uncertain and ineffective. The questionnaire answers were analysed by using SPSS programme.

5.1 The results of first experiment

The online questionnaire was replied by 175 responses from various Saudi Arabian universities. There were 68.4% female students and 31.6% male students as illustration in Table 1. This is probably due to the fact that Saudi women students do not allowed staying in the campus after 4 clocks. Therefore, they use university's forum more than men.

Table 1 Gender of the students

Gender	N	Percent
Male	55	31.6%
Female	119	68.4%

Based on the level of study, most of the respondents were at BSc level as these were the main target of our investigation, as they would be the first to be exposed to eLearning, as introduced in Saudi Arabia. However, other types of learners were also considered, as the table 2 shows.

Table 2 Students' level of study

level	N	Percent
PhD	1	0.6%
MSc	13	7.4%
BSc	145	82.9%
Other	16	9.1%

Saudi Arabian higher education takes five years in total. In this case study, 25.6% students were from the First Year, whereas 21.5% students were in the Second Year. 12.8% students were from the Third Year, whereas 18% students were from the Fourth year. 22% students were from the Fifth Year.

The Power Distance Index for Saudi Arabia is a score of 61.86 versus Arabic countries (80) which is considered a high Power Distance (See Table 5). This result is not significantly lower than the Hofstede score, indicating that it shares Arabic countries' characteristics by accepting and expecting that power is distributed unequally. Hence, H1-1 was supported.

When examining the Femininity vs. masculinity index, Table 4 demonstrates that there are no significant differences between Saudi Arabia's score (66.96) and Arabic countries scores (52) and is therefore a masculine society. This outcome indicates that the people will be focused by competition, achievement and success and Saudi society does not accept the collaboration between men and women. Hence, H1-2 was supported.

Furthermore, this study revealed that Saudi students score 73 versus Arabic countries (68) on Uncertainty avoidance dimension as shown in Table 1. This result is not much higher than the Hofstede score which implies that the Saudi Arabia society does not readily accept change; security is an important part in personal motivation; ambiguity or unknown situations in future is rejected. Hence, H1-3 was supported.

Moreover, this study shown that Saudi students score 27.72 on Individualism vs. Collectivism dimension versus Arabic countries (38) as revealed in Table1. This result is not much different to the Hofstede score to Arabic countries which means that people in Saudi Arabia are closed and prefer to act as members of groups than as individuals. Therefore, H1-4 was supported.

Table 3: Results of Hypothesis 1

Hypothesis	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree	Average	Hofstede score to Arabic world

H1-1: PD	18.5	29.48	8.75	5.12	0	61.86	80
H:1-2 Masculinity	33.4	21.56	8.57	3.42	0	66.96	52
H:1-3 Uncertainty	34.4	30.78	5.77	2.23	0	73.19	68
H:1-4 Collectivism	4.35	7.875	5.385	10.11	0	27.72	38

5.2 The results of second experiment

300 questionnaires were distributed to students from different colleges, in order to cover the students' different opinions. From the 300 questionnaires distributed, 214 were returned. The overall response rate for this study is 71.3. 96 were males and 118 were females, as presented in Table 4. Furthermore, In this case study, 38 students were from the First year, whereas 54 students were in their Second year. 46 students were from the Third year, whereas 25 students were from the Fourth year. 51 students were from the Fifth year.

Table 5 illustrates that the four factors suggested by Hofstede: power distance, uncertainty avoidance, masculinity vs. femininity and individualism vs. collectivism contributed significantly to the explanation of intention R2 of .333, $p < .001$. In addition, Table 5 shows that the highest beta weight was for uncertainty avoidance (β=.473) and individualism vs. collectivism (β=.202) whereas factors such as masculinity vs. femininity and power distance, were not significant and did not contribute to the explanation of intention. Therefore, hypothesis H1-1 and H1-3 were supported whereas hypotheses H1-2 and H1-4 were not supported.

Table 4: Results of Hypothesis 2

R Square .333				
	Power distance	**Uncertainty avoidance**	**Masculinity vs. femininity**	**Individualism vs. collectivism**
Beta	097	.473	.046	202
Sig	.091	.000	424	.001

6 DISCUSSION AND CONCLUSION

This study was designed to investigate *Saudi cultural values* and identify the cultural factors that have an effect on a student's education. The study adopted Hofstede cultural value dimensions as a theoretical framework. Hofstede's national culture dimensions were considered as a base for understanding the influence of national culture on people's behaviour.

In this study, the findings showed that *Saudi users' cultural characteristics* are similar to Hofstede's 1980 [4] analysis for the Arab world and can be applied into Saudi *personalised* eLearning. In addition, *Individualism vs. collectivism and Uncertainty avoidance* factors have a significant influence on a student's education.

However, this study poses limitations that might have influenced the results and should be taken into consideration for future research. The study has focused on a few factors mainly derived from one theory. Future research may explore other cultural variables that could have an impact on the intent to use a particular web-based system. This may be achieved by integrating other well-established cultural models theories such as Hall [8] and Trompenaars [9].

This research has contributed to our understanding of the link between culture and education in Saudi Arabia and issues linked to the acceptance of a system. Its findings encourage an understanding of what factors might help an effective web-based education implementation.

However, the results indicate the following points that development of *personalised* e-learning intended for Saudi Students should be aware of:

Saudi Culture has a *high Power Distance dimension*, Students respect their teachers and they prefer to listen and get feedback from their instructors. That means students should be divided according to their knowledge and they need more support from teachers/leaders.

Saudi Culture is a *collectivist culture*. This implies that Saudi students desire to study collaboratively in a group rather than work individually, and they accept the recommendations from their peers to enhance their education. This result indicates that a personalised e-learning system supports social interaction and teamwork in coursework such as discussion forums, chat and email, the student is more likely to have positive intentions towards using it.

Saudi Culture is a *masculine society*. Indeed, Saudi Arabia is strongly affected by cultural traditions and religious Islam. The separation of the genders is obligatory in Saudi cultures and societal norms impact on all sides of life, including educational environment. The classes for each gender are in separate buildings. Communication between females and males is not allowed, except for close relatives and in special situations. This point to the personalised e-learning system that offers social interaction with separation of the genders, the Saudi student is more likely to have positive intentions towards using it.

Saudi culture shows a *high Uncertainty avoidance*. Thus Uncertainty and ambiguity are not acceptable for the majority of students. This might be because students' experience with internet are limited, especially with regards to personalised eLearning; they need more guidance with help in the lesson, simple designs with clear descriptions and limited amounts of data to decrease ambiguity and uncertainty.

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