

# Cross-Cultural Web Design and Education: A Comparison Between Arab Universities and US Universities Based on Hofstede Cultural Dimensions

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## Abstract

There have been many studies in the last few years which have conducted the link between culture and web design. A few of the studies which were undertaken specifically focused on the effect of culture on educational websites, however very few have studied the differences between Arabic culture and Western culture and the effect each culture has on educational websites.

The main objective of this paper is to overlay the differences between two cultures and examine the impact of culture based on Hofstede cultural dimensions on educational websites. For a conclusion to be made, the investigation must include three university websites from the two different areas in the world selected, which have a significant difference in culture according to Hofstede's dimension culture. The universities that were chosen in this investigation are from the USA and Arab countries which include Harvard University, Stanford University and Columbia University, the universities from the Arab world includes Cairo University, Algiers University I and King Fahd University of Petroleum and Minerals.

The results show that Arab university websites are more concerned about the amount of information that the website holds and the number of images it contains even if the images are of small sizes, unlike the English university websites which contain less images but larger in dimensions.

The experts found themselves more comfortable surfing the Arab university websites due to the images barely containing any women. This is due to the masculinity of this culture, unlike the American culture which accepts women on images. This opposes Hofstede's findings that the masculinity in the USA is higher than the masculinity in the Arab culture. The Arabic culture has more collectivism and uncertainty than the American culture; the Arabic culture is also short-term orientated compared to the American culture which is long-term orientated.

## Key words:

*Culture, Hofstede, Web design, Education.*

## 1. Introduction

In modern society, locally made websites are out of date due to the high increase in globalisation, students from many different backgrounds may come to a certain university, therefore websites must be made with due respect to each and every culture. The most successful web designs tend to attract the user due to its consideration towards their culture therefore the user feels

more welcome, this leads us to a clear conclusion that ultimately the satisfaction of the user should be the main aim of any web designer as it almost guarantees success.

## 2. Related Work

Previous studies have presented that many factors can attract users to a website. One of them is the use of cultural features. An additional aspect is religion which causes a difference to the interface design and content elements of the application [1].

[2] Concluded that it doesn't matter which country you live in, there will always be differences, however the one and most important factor is culture. Web designers should consider the environment and culture of the countries that are bound to use the website [3] [4][5].

During a study conducted by [6] which compared the USA and South Korean websites, they found out that the dissimilarities in both cultures influenced the user's assessment towards the design of the websites.

However, the culture doesn't only affect the websites but also the e-business sector and the communication between users from different backgrounds who are using the same website. Different cultures mean different views towards things that are around you for example, colour, symbols, words and so on. There are three major factors that must be taken into consideration when assembling a website. Firstly, the sections on the web interface must be very clear to the user in order for him surf the website comfortably. The colour of the text must be clear, not too bright and not too dark to avoid damaging the user's eyes. Information should be clearly displayed and simple for the user to find, it should also be up to date in order for the user to trust the website. [7]

Authors in [8] discuss how to maximise the benefits of e-government portals for individuals from various cultural backgrounds. The authors proposed a new analysis technique which incorporated various factors such as content analysis, user perception and persuasive quality gap. They evaluated the experience of Kuwaiti and British users and found that both sets of users were similar in terms of important quality features; however, they differ

for the factor of perceived performance of quality features. The authors argue that their suggested approach provides an estimation method to measure the contribution of e-government quality attribute to cross-cultural quality gap. The potential commercial benefits of websites have been explored in relation to the cultural localisation of the websites in [9]. The authors conducted an extensive analytical survey of more than 80 studies related to culturally sensitive media. They also proposed a new holistic framework that they claim connects more than 150 cultural features and they argue that their proposed framework could be proved helpful for cultural localisation of the websites.

Authors in [10] talk about the potential impact of cultural values on international websites. Their focus was to particularly analyse the websites for their cultural neutrality. They deployed various methods for analysis such as Singh and Mastsuo's conceptual framework and other content analysis methods. They claim that the international websites present a significant element of the cultural values of the country of origin. They also argue that those websites vary from each other greatly in terms of depicted cultural values. They believe that their study could potentially help the designers and marketers of websites to design the websites with the relevant cultural values.

Interface design elements in Arabic and their relationship with the cultural values have been explored in [11]. The authors performed a comprehensive survey on the websites of various institutions and organisations in the sector of business, education and media. Authors conclude that there exists various cultural markers for Arabic websites. Their analysis was based on Geert Hofstede's cultural dimensions.

Authors in [12] utilise Hofstede's cultural dimension to analyse the design characteristics of the website interfaces. They particularly target government websites from ten Arab countries to perform this analysis. After performing comprehensive analysis on various elements of interfaces, authors conclude that the Hofstede's cultural dimension is not a suitable method to represent characteristics of Arabic web interfaces. They also claim that their research and results could be used to improve the designs of the Arabic website interfaces in regards to their cultural markers.

[13] talks about the problems that the companies might have to face to provide their services to the user on the world wide web. The main reason of this potential difficulty is that WWW consists of a versatile set of users and their requirements and needs can vary significantly depending upon their culture. In their study, authors propose an algorithm and associated set of tools that could help to extract information related to colours of images that are used on the websites. They also make use of the source code to collect the required information related to

colours. Authors claim that their proposed algorithm and tools would be helpful to design a cross cultural website.

Author in [14] talks about the difference in the Middle Eastern and western cultures and compares these two cultures in various aspects. The author argues that individuals from different backgrounds can perceive many things differently. Individuals with a cross cultural background and experience are generally preferred by companies for their overseas assignments and projects since that would be helpful to get adjusted to new cultures. Author in particular talks about the experience of American expatriates in Saudi Arabia.

Authors in [15] analyse the web-based learning systems and compare them by considering students from diverse cultural backgrounds. The aim of the study is to observe the impact of these learning systems and technology on the perception and learning of the students coming from different cultural backgrounds. They deployed the Technology Acceptance Model (TAM) to measure the user acceptance and they also used Hofstede's dimension to gauge the cultural diversity of those web-based learning systems. Authors conclude that although the user acceptance ratio is generally the same as of the global acceptance rate, however, in regards to Hofstede's dimension, students were found to be culturally different.

The impact of culture and national context on location based social networking (LBSN) has been studied in [16]. Authors propose a unique concept model mobile LBSN adoption and usage. Their concept utilises three base models including Triand's, TAM and Hofstede's. They argue that their proposed model would help to identify contextual factors in individual level adoption of LBSN. Moreover, they claim that their model will help service providers to get a deeper and better understanding of the impact of user characteristics on the LBSN usage on mobile phones. Authors in [17] perform an analysis on the social media usage and attitude towards social media. Their analysis is based on American and Chinese students in one of the US universities. The main motivation behind their research was to figure out the perception and motivation behind the use of social media and they also explore the relationship between cultural values of students and their participation in the Social Media. They conclude that there is a significant difference in the social media participation based on the country of origin of the students.

The effect of inequality on happiness in both Europe and the United States is explored in [18]. There is a direct and negative correlation between inequality and happiness; however there are multiple ways in which happiness is affected by inequality. This correlation is stronger in Europe than in the USA where the rich are affected more by inequality rather than the poor and left-wing, however in Europe it is the opposite. This is because in Europe, the

poor and the left-wing are more concerned about inequality than the poor and left-wing in the US.

Cross cultural websites are very important. Authors in [19] propose a tool that they claim will help in the development of user interfaces for the cross-cultural websites. The authors explore the Culture-Centered Design (CCD) method. The authors explored the design of websites from cross cultures including Kuwait, Egypt and the UK. The authors claim that their developed design patterns will help web developers to create such a website that would fit a particular cultural context.

Authors in [20] conduct a case study on cultural adaptation in cross-border e-commerce. Authors explored about 100 German companies and performed an analysis on their websites to collect information related to cultural values. They deploy Hofstede's and Hall's cultural framework to perform their analysis. They claim that some German companies have a different version of website, representing different cultural values, for local and international websites. They also argue that the use of cultural framework can be beneficial beyond the mere operationalisation of cultural value depiction.

Another study elaborates on the link between religiosity and the diversity and broadness in happiness [21] The results of this study show that the economic factor is less influential on the happiness of religious people than non-religious people, therefore religious people value money less than non-religious people.

### 3. Hofstede dimensions

The most popular and widely used model by researchers in the field of culture studies is Hofstede dimensions. Hofstede divided his model into five dimensions;

1. High/Low power distance (the extent to which the less powerful members of institutions and organisations within a country expect and accept that power is distributed unequally. [22])

2. Masculinity / Femininity ('The dominant values in a masculine society are achievement and success; the dominant values in a feminine society are caring for others and quality of life.' [22])

3. Individualism and Collectivism ('people looking after themselves and their immediate family only, versus people belonging to in-groups that look after them in exchange for loyalty. [22])

4. High/Low Uncertainty Avoidance ('the extent to which people feel threatened by uncertainty and ambiguity and try to avoid these situations'.) [22])

5. long/short- term orientation ('the extent to which a society exhibits a pragmatic future-orientated perspective rather than a conventional historic or short-term point of view'.) [22])

More than 75 countries were examined by Hofstede's study to differentiate between culture in these countries and every country has a position on the Hofstede scale starting from 0 to a hundred [23] [24] Also de Mooij and Hofstede distinguish in their study between social processes and mental processes. Social processes are linked to the relationship with others which include many values like emotions, while mental processes are usually related to the way of how a human is thinking, learning and how they categorise and process information.

### 4. Methodology

Three universities from Arab countries were chosen and another three university websites from the USA were chosen. All user interfaces were in English due to the globalisation of the English language; all websites provide an English version. In addition, this decision was made in order to make a fair comparison between university websites, thus exploring the differences between two cultures and how the universities can achieve their goals while respecting all cultures. Ten experts from Arab countries were involved in this study. The main method used to collect data, analyse and evaluate the results is the observational method. This method can only be used by experts, the benefit of using this method is that the experts are able to identify specific details within the field which the general public may not be aware of.

### 5. Procedure

This study examines two different design types including images and colour. The following table (table 1) elaborates on the two main design types. The first attribute (images) reflects on the type of society, the satisfaction of use of pictures reflects the level of acceptance or rejection of any culture to the content of images. In this study background colour, text colour and main colours were judged by the experts. The second attribute that is analysed in this study is colour, which has a great influence on human behaviour, emotions and relationships. However, colour has a different and specific meaning differing from a culture to another. For example, the colour red in Africa can resemble death, while the same colour in Europe can resemble love. The meaning of each colour often comes from a spiritual, social and religious aspect.

Table 1: Colours on each homepage &amp; Hofstede dimensions relationship

Attribute	Colour Location	CU	AU	KFUP M	SU	HU	CU (US)	Hofstede dimensions relationship
Colour	Background	White/Blue/White			White/White/White			Masculinity / Femininity White was most often chosen as a background colour. Minimal and essential sounds, images and languages (Short-Term Orientation) [25]
	Text Colour	Grey/Black/Black			Black/Charcoal/Grey			
	Main Colour	Blue/Blue/Green			Red/Red/Blue			

## 6. Results

The results of collecting data from American universities (Harvard University, Stanford University and Colombia University) and Arab universities (Algiers University I, Cairo University and King Fahd University of Petroleum and Minerals) were analysed.

### 6.1 Expert review on images

Ten Arab experts were asked to examine all the websites selected during this study using observational methods. The experts recorded the following comments: Algiers University I (Fig 1) uses a very cultural and symbolic logo. The logo consists of an Islamic crest, the sunset at the sea and a palm tree which represents the university as a very conscious university towards its culture and history, the name of the university was in black font. The same concept applies to Cairo University (Fig 2), as a pharaoh is the university logo. The official logo for King Fahd University of Petroleum and Minerals (Fig 3) consists of an Islamic Quranic verse, a symbol of the Quran, Georgian and Islamic date of establishment, a water tower and finally, the name of the university in Arabic and English in green font. This also shows that the Arab culture is more concerned about their tradition and history, therefore they believe it is a vital factor that they should never forget as it made them who they are today. On the other hand, the US universities very rarely show any sign of history on their university logo but usually just the name of the university, for this reason they are trying to imply that the future is more important than the past. The Stanford University (Fig 5) logo consists of only the name of the university in white font, the logo of Columbia University (Fig 6) is made up of the name of the university in white font and a crown, the logo of Harvard University (Fig 4) is the name of the university in black font and the word “Veritas” which signifies truth in Roman mythology. The clear distinction between the two sets of logos clearly separates both cultures and shows us that the Arab world is short term orientated, whereas the US is long term orientated. This is because the Arabic universities are more focused on the past rather than the future, unlike the American universities which are more concerned about the future.



Fig. 1 Algiers University logo

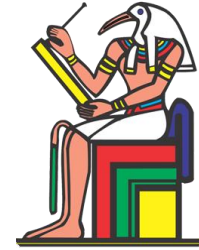


Fig. 2 Cairo University logo



Fig. 3 KFUPM logo



Fig. 4 Harvard University logo



Fig. 5 Stanford University logo



Fig. 6 Columbia University logo

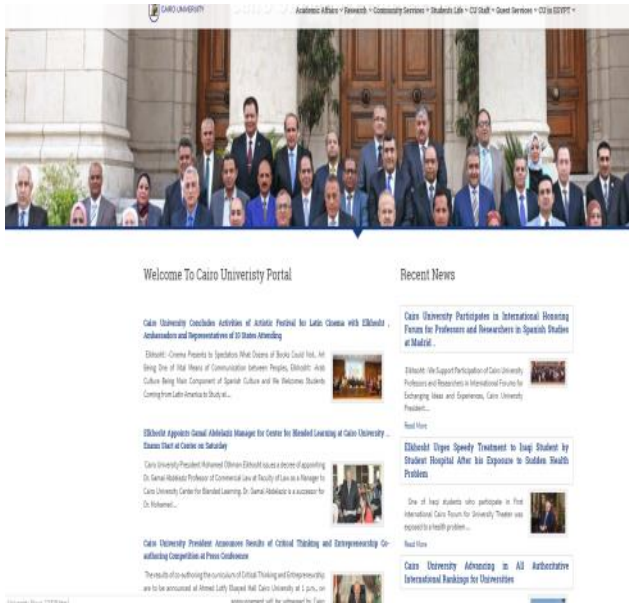


Fig. 7 Small sized images on Cairo University Homepage

The number of images on the homepage of each university was collected using an image and link analysing website (internetmarketingninja.com) [26] and was recorded in table 2. The average number of images on the homepage of the American university websites is 28, whereas, the average number of images on the homepage of the Arabic university websites is 42.

The experts realised that on the Arab university websites, most images were group images, hence implying that the society is a collective society which does not promote individualism. However, in the rare case of an image with one individual, the person in the photo would usually be of high status therefore at the top of the hierarchy. Another observation marked by the experts was that many pictures were of people of high status within the university and there were rarely any images of students on the website. They also realised that the images on the Arab university websites were very small and hard to depict unless you were to click on the specific photo or zoom in into it (Fig 8), so there was more space to fit more photos, for this reason there were more photos on the Arabic university websites than on the American university websites. This is backed by the results gathered in table 2. The table shows that the total average number of images on the Arabic university websites is 42, whereas the average number of images on the American websites is 28. The experts also realised that the American university websites had more images of individuals than the Arab university websites. In the American university websites,

the majority of the photos are of individuals except in the non-regularly occurring case of a group achievement etc. This portrays the American society as a more individualistic society than the Arab society. However, on the American university websites, it is very unusual to see an image of a higher authority person since most images are of students and university teachers. The numbers of women in the images on the Arabic university websites are kept to a minimum or zero (Fig 7). On the other hand the number of women in images on the American university websites is approximately equal to the number of men in the images also.



Fig. 8 Homepage of KFUPM. No women on the website

Table 2: Number of images on each university homepage

Attribute	CU	AUI	KFUPM	SU	HU	CU (US)
Images	39	52	36	40	19	26

## 6.2 Expert review on colour

In this study, colour is split into three categories which include, background colour, text colour and main colour. The experts' results were recorded in the table below (table 3). Ten experts were asked to comment on the colours used in the website and the most common answer was taken and noted. All websites in both Arabic universities and American universities used white as their background colour. There was a 50% split in the colour used for text, half of the universities used black as the main colour for their text and the other half used grey as the main colour for their text. However the similarity is that all websites used a dark colour for their text. Since the background is white, it only makes sense for the websites to use a dark colour for its text in order to make it readable for the user, because if a light colour is used with white, the text will not be clear and would make it harder for the user to read, if not impossible. Finally, the main colour used by the website is the colour that stood out when the experts first seen the website. Most Arab university

websites used blue as their main colour, whereas, most American university websites used red as their main colour. The experts carefully pointed out that in most Arab university websites, the font colour of the university name on the website matched main colour of the website which they believed made the website consistent in its choice of colour. For example, King Fahd University of Petroleum and Minerals used green as the font colour for their university name and this was their main colour. However, the American universities used either white or black for their university name on the website, while the main colour used on the website did not match the colour used for their university name. For instance, Harvard University used black as their font colour for their university name on the website, nevertheless, red was their main colour on the website.

## 7. Discussion

The influence of Arabic culture on web design is still in the first stages of research, thus more studies are required in order to evaluate the impact of emotions, behavior and religion [27] This study uses Hofstede culture dimensions, which is one of the most used cultural measurements to compare the differences between two cultures in websites. The following section discusses the impact of images and colours on the selected web sites by using Hofstede culture dimensions.

### 7.1 Images and Hofstede Dimensions

Based on Hofstede, a collective society is one that prioritises a group over an individual, even if the individual has a high status. Although they prioritise a group over an individual, they will hide their personal lives and information in order for the society to remain as one. Also, the relationship between people is the key to harmony within the society even if the truth is not shared. The experienced people are valued more than the youth with potential which leads on to the next point that tradition and culture is more important to a collectivist society, rather than modern innovations. On the other hand, a person in an individualistic society values their own self and nuclear family rather than the society they live in, therefore they are highly motivated and more motivated than an individual that is part of a collective society. They also expect to be given more freedom and a free expression of opinion; in return they are expected to convey the truth at all times. Short-term orientation shares similar features with collectivism, for example an older member in society or in a family has higher authority due to the fact that they have more experience which is one of the indicators of a collective society. On the other hand, there are similarities between a long-term orientated society and an individualistic society since both regard

truth as a major factor for success. The logos of the Arab universities show more uncertainty than the American universities because the logos consist of traditions or past cultures. The pictures on both Arab university and American university websites show us what type of society they come from. Almost all the images on the Arab university websites involved more than one person which infers that the society promotes collectivism over individualism, unlike the American universities which is more of an individualistic society as seen in the indexical pictures provided on their university website which tend to have only one person per image except when a group project or event has taken place. The experts also pointed out that in the Arabic university websites the ratio of male to female in the images on the webpage is very high. In fact, in one of the university websites (King Fahd University of Petroleum and Minerals) there are no pictures of women at all. In the other two Arab university websites, the only time there is a woman in the picture is during a group photo. Conversely, on the American university websites the ratio of male to female per image is almost equal. This shows that the Arabic society is more masculine than the American society. The images on the Arabic university websites mostly show their leaders within the university or country, whereas in the American university websites the images mostly consist of students rather than leaders within the university. This shows that the power distance within the Arab university is a lot more apparent than in the USA. Table 3 shows the data collected by Hofstede and stored on the website "Hofstede Insights" which is then compared by our results and whether or not it matches our findings. The website did not have the Arab countries as one unit to choose from, but instead it had ten Arab countries, for this reason we decided to gather an average for all the Hofstede cultural dimensions for the Arab countries.



Table 3: Hofstede cultural dimensions scores and our study evidences

Hofstede Cultural Dimensions	Arab Culture	American Culture	Our study evidences
<b>Power Distance</b>	82	40	Images of leaders on Arab university websites
<b>Individualism</b>	32	91	Images of individuals on American university websites
<b>Masculinity</b>	53	62	Our study shows that masculinity is higher in the Arab university websites since there were considerably less women on the images in the Arab university websites, hence this needs more investigation
<b>Uncertainty Avoidance</b>	72	46	Arab university logos show history and old tradition which means they are less open to modern innovation
<b>Long-Term Orientation</b>	21	26	Logos of Arab universities show historic figures and old tradition

## 7.2 Colour and Hofstede Dimensions

Colour plays a major role in the emotions and can directly affect the reactions of different people and every culture has a different meaning and understanding of each and every colour. [28] The red colour in the American culture resembles love, passion and trust (table 4); whereas in the Arabic culture red has a negative meaning and can mean death or blood.[29] There is a similarity of choice for background colour where the Arab university websites and American university websites all selected white. White in the Arabic culture illustrates peace and purity; this is the exact same in the American culture, hence both sets of parties used white as their background colour. [30] There is also a similarity in choice for the font colour between both Arab and American university websites where all universities selected a dark font to use as their main text colour. The colour black indicates evil and death (table 4) in both the American and Arabic culture, however in this case, the experts believe that the universities are not using this font to indicate evil or death, but instead to make the text clear to the reader amidst the white background because if a bright colour is used, for example yellow, it will be very difficult for the reader to read the text.

Finally, the difference between the colours used between the two universities is in the main colour of the websites.

Most of the Arabic university websites chose blue as the main colour of their website. In the Arabic culture, the colour blue indicates tranquillity and calmness [31]. This meaning originates from the colour of the clear sky in the Arab world and the calm sea which also relates to nature, is why the blue colour is associated with tranquillity. However, most American university websites used red as their main colour, this represents trust and passion in the American culture, therefore the university wants the students to trust the university during their visit on the website and remain passionate.

Table 4: The meaning of colours in Arabic university websites and American university websites

Colour	Arabic University Websites	American University Websites
<b>White</b>	Purity/Peace	Purity/Peace
<b>Black/Grey</b>	Evil/Death	Evil/Death
<b>Red</b>	Danger/Hardship	Trust/Passion
<b>Blue</b>	Calmness/Tranquility	Trust/Legitimate

## 8. Conclusion

In summary, individualism within the American culture is higher than individualism within the Arab culture and this supports Hofstede's cultural dimension (individualism/collectivism). In addition, this study shows that the American culture is less masculine than the Arabic culture as shown on Hofstede Insights website where Lebanon and Iraq are shown on the graph to be more masculine than the American culture. However, Hofstede Insights also shows that some countries (for example Libya and UAE) are less masculine than America, for this reason further research needs to be conducted to establish a concrete outcome. Furthermore, this study also shows that the power distance in the American university websites is lower than in the Arab university websites. This supports the results found on Hofstede cultural dimension "power distance" where it shows that the Arab society has a greater power distance than the American culture. There is a greater amount of uncertainty in the Arabic university websites compared to the American university websites; this is because the logos on the Arabic university websites are always relating to the history, whereas the American university websites are using modernised logos. This is the same reason as to why Arab university websites are short term orientated and American university websites are long term orientated. In conclusion, the Arabic culture and the American culture are vastly different even though there are some similarities, therefore when designing a web site, the web designer must respect all cultures and the differences in them in order to make the website friendly to all users from different cultures.

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