

# The Effect of Culture on User Interface Design of Social Media - A Case Study on Preferences of Saudi Arabians on the Arabic User Interface of Facebook

Hana Almakky, Reza Sahandi, Jacqui Taylor

**Abstract**—Social media continues to grow, and user interfaces may become more appealing if cultural characteristics are incorporated into their design.

Facebook was designed in the west, and the original language was English. Subsequently, the words in the user interface were translated to other languages, including Arabic.

Arabic words are written from right to left, and English is written from left to right. The translated version may misrepresent the original design and users' preferences may be influenced by their culture, which should be considered in the user interface design.

Previous research indicates that users are more comfortable when interacting with a user interface, which relates to their own culture. Therefore, this paper, using a survey, investigates the preferences of Saudi Arabians on the Arabic version of the user interface of Facebook.

**Keywords**—Culture, Facebook, Saudi Arabia, Social media, User Interface Design.

## I. INTRODUCTION

FACEBOOK brought about a revolution in online social networking, which was created in English in February 2004 [1]. In 2009, Facebook developers discovered most of its users came from outside the USA and they introduced 37 different languages to the interface [2] that included Arabic. This resulted in a considerable increase in the number of Saudi Arabian users reaching 7.8 million by 2013 [3]. Also it is now the fact that Saudi Arabia's Facebook community is ranked the highest amongst the Gulf Cooperation Council (GCC) countries and they are the second highest in Middle Eastern and North African countries.

There are a number of factors that should be considered when translating the language of a user interface to prevent misunderstanding or possible confusion. Further, the English language is written from left to right, and the Arabic from right to left. Therefore, during translation, the layout and position of words within Facebook require careful consideration (for example position, layout, navigation preference and image used in icons).

Culture is another important aspect that should be considered when designing a user interface. To help users to interact better with the interface, the overall design should

relate to their culture. It is essential that the necessary cultural characteristics be reflected in the interface design [4]. Understanding cultural differences and preferences should be strongly considered when designing an interface for users with a different culture [5]-[7].

Marcus [8] states that user interfaces have basic components, which are mapped on to the factors of the cultural dimensions. He concluded that this should be taken into consideration when developing a user according to different culture. Hofstede [9] proposed a study of five cross-cultural dimensions, which are most widely used in the design of user interfaces. He conducted a study on IBM employees from 70 different countries, over 40 years, including Saudi Arabia and America. In his results he came to the conclusion that Eastern culture including Saudi Arabia is different to the west [4].

The main objective of this paper is to explore the views of Saudi Arabian's on the user interface of the Arabic version of Facebook. This is carried out by conducting a questionnaire-based survey of Saudi Arabians. This paper is organized as follows. Section II provides discussions on social media and Facebook. Section III provides discussions on the cultural factors/dimensions and their impact on the design of the user interface. Section IV discusses the implementation of the survey and the outcome. Section V the conclusions.

## II. SOCIAL MEDIA AND FACEBOOK

Social networking sites (SNS) have gained huge popularity over the past few decades and they have contributed to globalization by making communication easier and more effective. SNS serve multiple purposes, such as the sharing of ideas, events, news updates, activities and individual networks.

Facebook now has millions of users all over the world [10]. In 2013, Saudi Arabian Facebook users grew in number to approximately 6 million and they are ranked the largest group in the Middle East [11], whereas, users from the United States were 128 million [12].

## III. CULTURE AND USER INTERFACE

User interfaces and culture are key aspects that need to be considered when producing a design to suit users internationally [13]. People feel more comfortable when interacting with user interfaces that suit their culture [14], [15].

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Barber and Badre [16] suggested the term “Culturability” which is defined as merging culture and usability in an interface. It represents the relationship between the elements in the interface and human culture. Marcus and Gould [17] support the conclusions drawn by Barber and Badre [16], stating that in the future, user interface design will be more and more culture-centric. User interfaces have basic components, which can be mapped to cultural dimensions in order to develop a design that can meet the norms and trends of different cultures [18].

Researchers have explored a variety of cultural factors that impact the design of user interfaces such as icons, colours, symbols and language, which are essential elements to be considered while designing a user interface [19]-[24]. Symbols and the language are essential elements to be considered whilst designing a user interface [19]-[24].

#### A. Cultural Dimension

Marcus [25], [26] states that user interfaces have basic components like metaphors, mental models, navigation, appearance, and interactions, which are mapped on to the culture dimensions. He concluded that this should be taken

into consideration when developing the product according to different cultures. Evers and Day [27] have also emphasised the importance of cultural adaptation for the user interface.

Hofstede [4] argues that what might be acceptable in one culture might not be welcome in another. In his study, he defined five dimensions of cultures as the main causal factors of differences and he argued that cultures in the Middle East and Western states are found to be significantly different from each other. He used his argument based upon five dimensions 1) Power Distance 2) Individualism 3) Uncertainty Avoidance 4) Masculinity 5) Long Term Orientation. According to his research, Saudi Arabian culture scored high in power distance, uncertainty avoidance, and masculinity [28] and low on Individualism [29]. Whereas, the Western culture scored high in Individualism and low in Power Distance, Uncertainty Avoidance and Masculinity [28].

This means that based on his results, the Saudi Arabian culture is very different to Western culture. The key is not to create stereotypes; instead it is important that these differences are taken into account when designing user interfaces.

TABLE I  
ADAPTED RULES FROM RELATED RESEARCH WORK ON THE EFFECT OF HOFSTEDÉ DIMENSIONS [30]

Hofstede Dimension	Eastern Culture (including Saudi Arabia)	Western Culture	References
<b>Power Distance</b>	Linear navigation, few links, minimize navigation possibilities	Different access and navigation possibilities; nonlinear	[17], [30]-[33]
	Structured data	Data does not have to be structured	[17]
	Reduced choice of functionalities	Many functionalities	[32]
	Little information at first level	Most information at interface level, hierarchy of information less deep	[17], [33]
<b>Individualism/Collectivism</b>	Traditional colours and images	Use colours to encode information	[17]
	High image-to-text ratio	High text-to-image ratio	[34]
	High multimodality	Low multimodality	[35]
	Colourful interface	Monotonously coloured interface	[36]
<b>Uncertainty Avoidance</b>	Organize information hierarchically	Most information at interface level, complex interfaces	[8], [37]-[40]
	Linear navigation paths/show the position of the user	Non-linear navigation	[8], [32]-[33], [37], [40]-[42]
	Use redundant cues to reduce ambiguity	Code colours, typography and sound to maximize information	[8]
<b>Masculinity</b>	Highly contrasting, bright colours	Little saturation, pastel colours	[31]-[43]
	Restrict navigation possibilities	Allow for exploration and different paths to navigate	[44]
	Use encouraging words to communicate	Personal presentation of content and friendly communication with the user	[32], [43], [45]

Researchers have used Hofstede’s dimensions to observe different features of a user interface design and explored how cultures scoring high are different to cultures that score low on each dimension.

Table I provides a summary of related research, which adapted Hofstede’s proposed dimensions. It can be seen in the table that preferences of Middle Eastern people, including Saudi Arabians on the user interface, are different to those from the west [30].

In respect of the Facebook user interface, it is important to keep cultural aspects in mind while making design decisions to ensure better usability for different cultures. To explore this further, a survey of Saudi Arabian participants was conducted to help us understand their views of the existing Arabic

version of Facebook user interface.

#### IV. SURVEY

A survey was conducted to explore the views of Saudi Arabian participants on the existing Arabic version of Facebook. The reason for this survey was to explore their opinions on what they “like” and “dislike” of the Arabic version of the Facebook user interface. The survey investigated the features that the users did not like. The survey was conducted by questionnaire 200 people participated, aged between 26 and 34. These were composed of:

- 100 Saudi Arabians, 50 male and 50 female, all living in Saudi Arabia.

- 100 Saudi Arabians, 50 male and 50 female, all living in the UK.

The two groups were chosen to ascertain whether living in the west could affect their views. The participants were active Facebook users who had used it at least once every day for more than 4 years. The survey was based on seventeen-structured questions that took approximately 15 minutes to complete.

The questionnaire was administered through an online social media site. Table II shows the elements of the user interface that were considered in the questionnaire.

TABLE II  
FACEBOOK ELEMENTS THAT WERE EXPLORED IN THE QUESTIONNAIRE

Layout design (navigation, icon, colour, text and image)	Organizing friends	News feed	Application	Advertisement
Account settings	Statuses	Groups and events	Notes	Pages
Security settings	Communicating	Photos	Notification	Privacy settings
Timeline	Video and music	Locations		

*A. Outcome*

1. Differences between Views of the Participants

Comparing the views of the two groups, there were no major differences. This means that the cultural characteristics of those people who participated in the survey had not been affected by living in a Western country. Table III shows the views of both the groups on some of the questions, which provided high scores.

TABLE III  
OVERALL OBSERVATION OF FACEBOOK FEATURES FROM BOTH SAUDIS LIVING IN SAUDI AND SAUDIS LIVING IN UK

Facebook Dislike Features	Saudis Living in Saudi	Saudis Living in UK
Arabic version of Facebook.	89%	83%
Overall navigation within the settings page.	65%	79%
Images used in icons are hard to understand.	70%	82%
Text used in the icons is irrelevant.	71%	83%
Translation issues from English to Arabic and its text position on the page.	49%	57%

*B. Overall Results*

The participants' views of the Arabic version of the user interface were mixed. The two groups had similar views with regard to the Arabic version of the user interface. A number of issues which scored high by the participants, such as the overall design of the Arabic user interface, the images used for the icons, navigation, and translation are discussed below:

As it is shown in Fig. 1, 59% of the participants dislike the overall design of the Arabic version, which means that there are issues related to the design preferences, which may be incompatible with the Saudi Arabian culture.

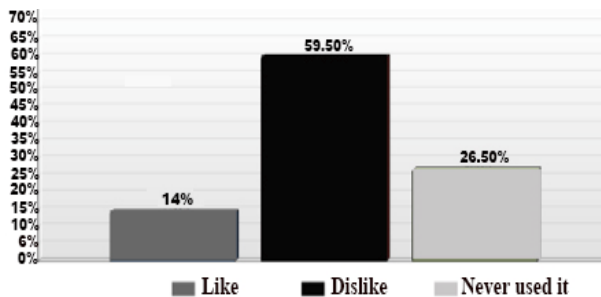


Fig. 1 Liking the Arabic layout of Facebook

Figs. 2 and 3 show that 73.5% of the participants have problems with the overall navigation process. Also, 71% disagree that the privacy settings is easy to follow.

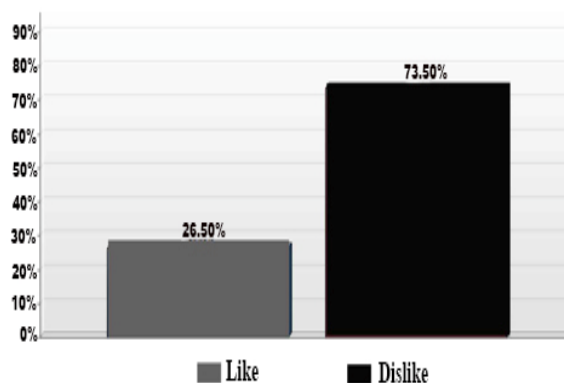


Fig. 2 Overall navigation design

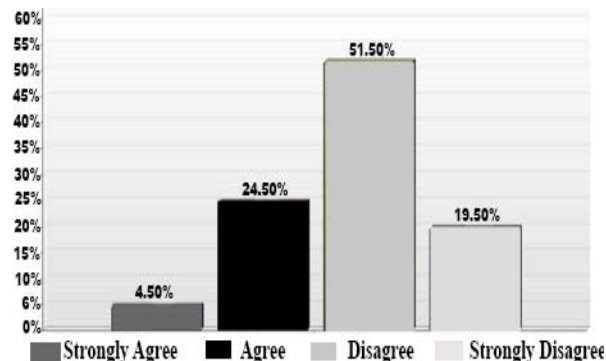


Fig. 3 Privacy settings are easy to follow

Fig. 4 illustrates that 71% of the participants found that images used for icons were not relevant for the purpose of the page, and 75% of them found the images were not relevant to the text.

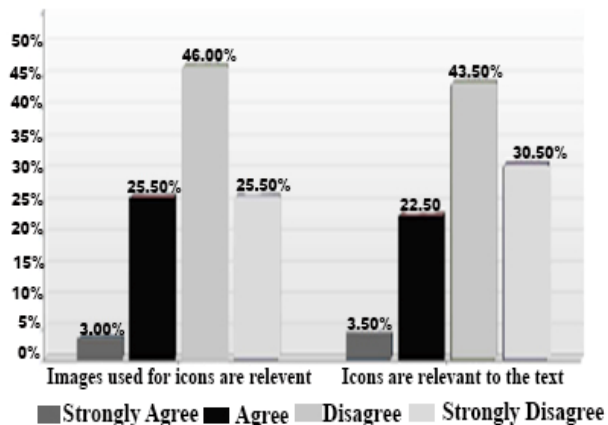


Fig. 4 Understanding the images used for the icons

Figs. 5 and 6 illustrate that 53% of the participants did not like the notification settings and 68% did not like the advertisement pages. They felt that, the position of text on the settings and advertisement pages were confusing, hard to follow and navigating through them was difficult.

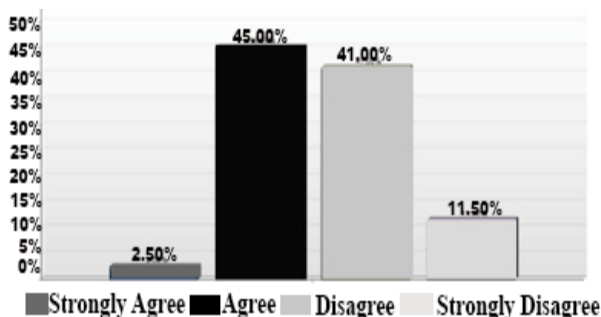


Fig. 5 Text position on the page

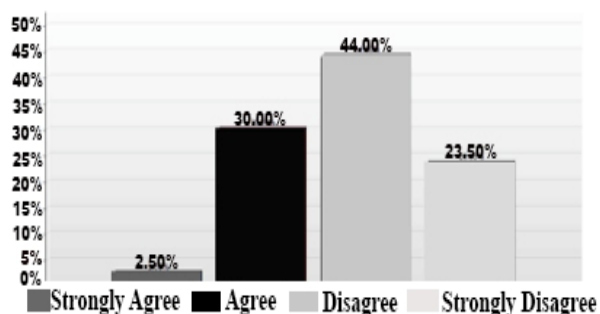


Fig. 6 Advertisement page

C. Overall Observation

To summarize, the participants have identified that navigation, icons and positioning have issues in the overall design of the Arabic version of the user interface. This confirms the views in the literature [28] that the preferences of the Saudi Arabians for the user interface are different to those with the Western culture. Table IV provides guidelines on aspects that should be considered when designing a user interface for Facebook to suit the Saudi Arabian culture.

TABLE IV

A COMPARISON OF PREFERENCES BETWEEN WESTERNERS AND SAUDI ARABIANS ON THE FEATURES IN THE ARABIC VERSION OF FACEBOOK

Current design of the Arabic user interface	How westerners prefer according to literature	What Saudi prefer according to literature
There are too many different ways to access different pages and navigation possibilities.	<ul style="list-style-type: none"> <li>Different ways to access and navigate through the page.</li> <li>More Complex interface.</li> <li>Different paths to navigate</li> </ul>	<ul style="list-style-type: none"> <li>Few links and minimize the navigation possibilities.</li> <li>More organized information</li> <li>Reduced choices of functionalities</li> </ul>
The menus and pages are all listed at once in the first level (home page).	Most information at first level.	Little information at first level.
The text used for the icons explains more than the images used for the icons.	High text to image ratio.	High image to text ratio.

V.CONCLUSION

Social media, such as Facebook, is continuing to grow significantly. The majority of users would be more satisfied if the user interfaces of social media relate to their cultures and it is important to keep cultural aspects in mind when designing it.

Facebook was designed in the West, and the user interface of its Arabic version has many deficiencies. A survey conducted to explore the views of Saudi Arabian users on the Arabic version of Facebook shows that many of them were not satisfied with aspects of the interface. It is vitally important that designers of user interfaces of social media pay particular attention to cultural differences. This is also confirmed by the work of many researchers, including Hofstede [4].

REFERENCES

- [1] Ellison N. B., Steinfield C., and Lampe, C., The Benefits of Facebook "Friends:" Social Capital and College Students' Use of Online Social Network Sites. *Journal of Computer-Mediated Communication*, 2007, pp.1143-1168.
- [2] Mehta G., Infinite Ripple - The Social Media Revolution. United State of America. P33. <http://books.google.co.uk/books?id=ppxzMg2PH60C&pg=PA33&lpg=PA33&dq=most+Facebook+users+are+from+outside+North+America&source=bl&ots=IEzpdVRerH&sig=9DAvWT4VU4WDrN-yVHCkEWy-ikc&hl=en&sa=X&ei=DUK2UcnuOK620QWgy1CoBg&ved=0CFUQ6AEwBA#v=onepage&q&f=false>, 2013 (Access 1 Sept. 2014).
- [3] English.arabiya.net, (online) Available at <http://english.arabiya.net/en/media/digital/2014/01/09/use-of-mobiles-in-social-media-on-the-rise-in-saudi-arabia.html>, 2014. (Access 10 Oct. 2014).
- [4] Hofstede G., Culture's Consequences: Comparing Values, Behaviours and Organisations across nations. Sage Publications, 2003
- [5] Luna D., Peracchio L. A., and de Juan M. D., Cross-cultural and cognitive aspects of web site navigation. *Journal of the Academy of Marketing Science*, 2002, pp. 397-410.
- [6] Simon S. J., The Impact of Culture and Gender on Web Sites: An Empirical Study. *Data Base for Advances in Information Systems*, 2001, pp.18-37.
- [7] Tsikriktsis N., Does Culture Influence Web Site Quality Expectations?: An Empirical Study. *Journal of Service Research*, 2002. pp.101-112.
- [8] Marcus A., Gould E. W., Crosscurrents: Cultural Dimensions and Global Web User- Interface Design. *ACM Interactions*, 2000, pp.32-46.
- [9] Hofstede G., Culture's consequences, international differences in work-related values. Beverly Hills, CA: Sage. 1980.
- [10] Protalinski E., "Facebook passes 1.9 billion monthly active users, 874 million mobile users, and 728 million daily users." *The Next Web* at <http://thenextweb.com/facebook/2013/10/30/facebook-passes-1-19->

- billion-monthly-active-users-874-million-mobile-users-728-million-daily-users/\_2013 (Access 5 Aug. 2014).
- [11] Brussels Diplomatic. Saudi Arabia, one of the world's fastest growing zone, Daily News. <http://brusselsdiplomatic.com/2013/03/18/saudi-arabia-one-of-the-world-fastets-growing-zone/>, 2013, (Accessed 14 Sept. 2014).
- [12] Google Books, Infinite Ripple - The Social Media Revolution. (online) Available at: <http://books.google.co.uk/books?id=ppxzMg2PH60C&pg=PA33&lpg=PA33&dq=most+Facebook+users+are+from+outsid+North+America&source=bl&ots=IEzpdVRerH&sig=9DAvWT4VU4WDrN-yVHckEWy-ikc&hl=en&sa=X&ei=DUK2UcnuOK620QWgyI CoBg&ved=0CFUQ6AEwBA#v=onepage&q&f=false> (Access September 13, 2014).
- [13] Dunckley L., Smith A., A Cultural dichotomies in User Evaluation of International Software. In *Designing for Global Markets 2*, IWIPS'00, Baltimore, MD, Backhouse Press, 2000.
- [14] Carley J. M., *Creating global software: a conspectus and review. Interacting with Computers*, 1998, pp.449-465.
- [15] Russo P., Boor, S., How Fluent is your Interface? Designing for International Users. In *Proc INTERCHI'93 Conference on Human Factors in Computing Systems: INTERACT '93 and CHI'93*. ACM Press, 1993, pp.342-347.
- [16] Barber W., Badre, A.N., *Culturability: The merging of culture and usability*. 4th Conference on Human Factors and the Web. Basking Ridge, New Jersey, USA Conference Proceedings, 2001.
- [17] Marcus A., Gould, E. W., *Crosscurrents: Cultural Dimensions and Global Web User- Interface Design*. ACM Interactions, 2000, pp.32-46.
- [18] Reinecke K., *Culturally adaptive user interface*. Phd Thesis, University of Zurich, 2010.
- [19] Kersten G. E., Kersten M. A., and Rakowski W. M., *Software and Culture: Beyond the Internationalization of the Interface*. Journal of Global Information Management, 10(4), 2002, pp.86-101
- [20] Marcus A., Baumgartner, V., and Chen, E., *User-Interface Design vs. Culture*. Paper presented at the *Designing for Global Markets 5*, Proceedings of the Fifth International Workshop for Internationalisation of Products and Systems, Berlin, Germany: University of Kaiserslautern. Marcus, 2003.
- [21] Smith A., Dunckley L., French T., Minocha S., and Chang Y., *A process model for developing usable cross-cultural websites*. Special issue of *Interacting with Computers - Global Human-Computer Systems: Cultural Determinants of Usability 2004*, pp. 63-91.
- [22] Yeo A., *Cultural User Interfaces: A Silver Lining in Cultural Diversity*. SIGCHI Bulletin, 1996, pp.4-7.
- [23] Zhang G., Herring S. C., *Globalization or Localization? A longitudinal study of successful American and Chinese online store websites*. Paper presented at the *Proceedings of Cultural Attitudes Towards Communication and Technology*, Murdoch University, 2012.
- [24] Cyr D., *Website design, trust and culture: An eight country investigation*. Electronic Commerce Research and Applications, 2013.
- [25] Marcus A., *Human communication issues in advanced UIS*. Communications of the ACM, 36(4) 1993. 101-109.
- [26] Marcus A., *Principles of effective visual communication for graphical user interface design*. In R. Baecker, J. Grudi, W. Buxton, and S. Greenberg (Eds), *Readings in human- computer interaction 2nd ed.*, 1995, pp. 425-441.
- [27] Evers V., Day, D., *The role of culture in interface acceptance*. In: Howard, S. (ed.) *Human Computer Interaction Interact'97*. London: Kluwer Academic Publishers, 1997.
- [28] Hofstede G., Geert Hofstede. *Intercultural Management and Organisational Culture: National Culture*. Itim International, 2012.
- [29] Khashman N., Large A., *Measuring Cultural Markers in Arabic Government Websites Using Hofstede's Cultural Dimensions*. Lecture Notes in Computer Science. Berlin, Heidelberg: Springer, Vol .6770, 2011.
- [30] Reinecke, K., *Culturally adaptive user interface*. Phd Thesis, University of Zurich, 2010.
- [31] Voehringer-Kuhn T., *Kulturelle Einflüsse auf die Gestaltung von Mensch-Maschine Systemen*. GRIN Verlag, 2002.
- [32] Hofstede G., *Cultural Differences in Teaching and Learning*. International Journal of Intercultural Relations, vol10, 1986. pp. 301-320.
- [33] Burgmann I., Kitchen, P. and Williams R., *Does Culture Matter on the Web? Marketing Intelligence & Planning*, 2006, 24(1): pp.62-73.
- [34] Gould E., Zakaria N., and Yusof S., *Applying Culture to Website Design: A Comparison of Malaysian and US Websites*. In *Joint IEEE International and 18th Annual Conference on Computer Documentation*, 2000, pp.161-171.
- [35] Hermeking M., *Culture and Internet consumption: Contributions from cross-cultural marketing and advertising research*. Journal of Computer-Mediated Communication, 2005. 11(1).
- [36] Barber W., Badre A., *Culturability: The Merging of Culture and Usability*. In *Conference on Human Factors & the Web*, 1998.
- [37] Marcus A., *International and Intercultural User Interfaces*. In *User Interfaces for All*, Lawrence Erlbaum Associates, New York. 2000, pp. 47-63.
- [38] Zahed F., van Pelt W., and Song J., *Crosscurrents: Cultural Dimensions and Global Web User- Interface Design*. IEEE Professional Communication, 2001, 44(2): pp.83-103.
- [39] Hodemacher D., Jarman F., and Mandl, T. *Kultur und Web-Design: Einempirischer Vergleich zwischen Grossbritannien und Deutschland*. In *Mensch und Computer: Kunst und Wissenschaft - Grenz überschreitungen der in-teraktiven Art*, 2005, pp. 93-101.
- [40] Baumgartner V. J., *A Practical Set of Cultural Dimensions for Global User-Interface Analysis and Design*. Master's thesis, Fachhochschule Joanneum, Austria, 2003.
- [41] Kamentz E., Womser-Hacker C., G.Szwilius, and Ziegler J. *Lerntheorie und Kultureine Voruntersuchung für die Entwicklung von Lernsystemen für internationale Zielgruppen*. In Conference "Mensch und Computer", 2003, pp 349-358.
- [42] Corbitt B., Thanasankit T., and Haynes J., *A Model for Culturally-Informed Web Interfaces*. In *Inter-net Management Issues: A Global Perspective*, 2002. pp 1-26. IGI Global.
- [43] Dormann C., Chisalita C., *Cultural Values in Web Site Design*. In *European Conference on Cognitive Ergonomics*, 2002.
- [44] Ackerman S., *Mapping User Interface Design to Culture Dimensions*. In *International Workshop on Internationalization of Products and Systems (IWIPS'02)*, 2002.
- [45] Callahan E., *Cultural Similarities and Differences in the Design of University Websites*. Journal of Computer-Mediated Communication, 11(1), 2005.