Computers in Human Behavior 64 (2016) 472–485

Contents lists available at ScienceDirect

Computers in Human Behavior

journal homepage: www.elsevier.com/locate/comphumbeh

The design of a hybrid cultural model for Arabic gamified systems

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ARTICLE INFO

Article history:
Received 4 March 2016
Received in revised form
19 July 2016
Accepted 22 July 2016

Keywords:
Gamification
Game element
Localisation
Culture
Motivation
Arabic

ABSTRACT

The growing popularity of gamification in the global environment increases the importance of balancing factors that affect user engagement, satisfaction and acceptability in different cultures. While the main motivation behind gamifying software systems is to improve user engagement, an adverse effect might happen if the design and functionality did not consider users' cultural requirements. This paper presents a hybrid cultural design model for localising Arabic systems that takes into consideration the visual elements of user interfaces as well as the functionality and cultural factors of Arabic countries. We start by introducing design guidelines for localising Arabic systems and then evaluate the designed localisation criteria by conducting questionnaires and interviews. We base our studies on the factors that could affect the productivity levels of software engineers who use gamified software project management tools in their workplace. 63 software engineers participated in a mood board based questionnaire composed by different visual elements, rewards and achievements. To validate our findings, seven experts were interviewed. Those were software developers and designers. Based on our results, we propose a hybrid cultural design model, composed of personalised elements, localised elements and non-localised elements. This paper also proposes the first comprehensive model for localising Arabic gamified systems.

1. Introduction

Digital innovation and the Internet allowed people from different geographical locations to access and share different types of contents, shaped by cultural groups and identities. In this scenario, culture can have many effects on people's responses and preferences to communications and interactive systems. The use of properties of a specific culture in a web-based system that is targeting another cultural group might lead to losing business opportunities, which is resulted from users' confusion and frustration (Luna, Peracchio, & de Juan, 2002). The results of the study presented in (Evers & Day, 1997) show that users' acceptance of interfaces can be correlated with their cultural values and therefore variations in their satisfaction criteria might exist depending on the properties of the cultures that they belong to. For example, the satisfaction of a system's interface design of Chinese people is linked to its usefulness while Indonesian users give the ease of use a high priority for accepting a system (Khaslavsky, 1998). This finding can be correlated with Hofstede's value of uncertainty avoidance index in that, the Indonesian culture has higher value than the Chinese culture (Evers & Day, 1997). Therefore, the consideration of culture in the design process of systems should not be overlooked. Innovation and sustainable development are enhanced by the valorisation of local and cultural values (UNESCO., 2013). This means that the consideration of culture is one of the main actors in innovation in different countries. Furthermore, the customization of software products according to specific cultures is continuously gaining more attention by user interface designers. However, there is a lack of studies considering the requirements for Middle Eastern cultures. For this reason, the localisation of software applications for Arabic cultures should be explored and emphasized in global markets contexts, considering cultural requirements and specific features.

In the scenario of interactive systems, it is possible to identify a shift towards design processes that could boost motivation, like gamification or the application of game mechanics into non-game settings (Deterding, Sicart, Nacke, O'Hara, & Dixon, 2011). Considering software engineering, gamification could be applied into agile systems, particularly through the addition of experience points and

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http://dx.doi.org/10.1016/j.chb.2016.07.045
0747-5632/

scores (Zichermann & Cunningham, 2011). In addition, other elements are part of gamification techniques, such as badges and leaderboards, providing a positive feedback to the user (Schrape, 2014). This means that there is a combination of elements that could be used in order to provide incentives and motivational outcomes for the users. However, this may vary according to individuals' backgrounds, their cultural beliefs and preconceived perceptions. Moreover, it is possible that culture could be a strong determinant of positive behaviour change and preferences inside a gamified system. Most of cross-cultural research has been focused on Western-based research (Wagner, Hansen, & Kronberger, 2014); however, cultures with different backgrounds, such as Arabic culture, could be overlooked.

Arabic language takes the fifth place in world's most used languages and each day more people from Arabic cultures interact with interactive systems (Anbar, 2012). This means that it is crucial to think about Arabic cultures in the context of gamified applications. However, there is still a demand for identifying the elements that should be adapted and defining localisation criteria that guide the designers of Arabic gamified systems. Researchers in this domain should also focus on studying the effects of these adaptations on users' acceptability of Arabic systems and on users' behavioural changes (e.g., in their workplaces).

This paper addresses the cultural-specific elements that will compose gamified systems and would have effect on the users' acceptability of Arabic systems. We focus this research effort on the Arabic culture, identifying the specific user interface elements that will compose a gamified system as well as the factors that might intrinsically or extrinsically motivate Arab users to adjust their behaviours. For that, we designed a questionnaire based on visual elements and conducted individual interviews to expand our findings. Our contribution, therefore, is related to the understanding of localisation of cultural elements for Arabic societies as a hybrid design processes. We go beyond the cultural dimensions often utilised in cross-cultural studies and propose an inclusive systematic model through a combination of cultural and visual elements. We frame the research contributions of this paper as follows:

1. Defining criteria for localizing Arabic Gamified Systems that takes into consideration the cultural factors of the Arabic users as well as the factors that affect their engagement, motivation and behaviours.
2. Proposing a hybrid design model for localising Arabic gamified systems that is composed of personalised elements and localised and non-localised elements.

In the following sections, we first provide a background about gamification and the influence of cultural aspects in interactive systems. We, then, open the research for the application in the context of Arabic culture, reinforcing the perspectives for different types of rewards and the characteristics of the localised system. We conduct a questionnaire and interviews with experts, in order to identify the validity of our hypotheses. To conclude, we present a model for localisation of Arabic gamified systems, through a hybrid perspective.

2. Related work

Because the customization of user interfaces to suit the requirements of users who belong to a specific culture is a multidimensional problem that requires taking many aspects into consideration (e.g., cultural factors and visual factors), this section briefly summarizes the research work related to the areas that have to be considered when localising software systems.

2.1. Gamification

By definition, gamification is a design process that involves play, fun and user experience (Werbach & Hunter, 2012, p. 144), particularly through the employment of game design features into non-game settings (Deterding et al., 2011), such as work environment, health and learning. However, it is possible to point out differences on the way people interact with gamified systems. For example, considering health applications, women might have more positive perceptions of the incentives received through the gamified system and social connections, if compared to men (Koivisto & Hamari, 2014). This means that individuals' perspectives might vary and cultural values could be a strong variation to be studied.

Considering cultural influences and gamification (Khaled, 2015, pp. 301–320), have proposed six dynamics of relationships between people in gamified systems, such as competition, information sharing, normative activities, interdependence and sense of community, supported by rewards, points and achievements (Khaled, 2015, pp. 301–320). This means that the manipulation of the elements, together with the culturally-situated strategies could provide better interactions for users. However, little research has been conducted in the area of studying the cultural requirements of Arabic users that influence their engagement in gamified solutions, which opens this study for the analysis of cross-cultural design and HCI.

2.2. Culture, design and HCI

Culture is a system of patterns that differentiates people of one group from the other (G. Hofstede, 1991, p. 29), incorporating traditions and shared meanings (Flores, Dufresne, & Levesque, 2013). Individuals' perceptions might also have significant effect on their acceptance of Web-based systems. Barber and Badre (1998) have argued that culture and usability are affected by each other in designing web interfaces and they suggest merging them into one term, which they refer to as “culturability” (Barber & Badre, 1998). They give an example of how the colours used for different elements of web interfaces (e.g., links, backgrounds and navigation bars) might lead to user satisfaction if these colours are consistent with the expectations of the target users. Kuljis J. et al. have also proposed a categorization of the elements that should be considered when localising a web interface design to a particular culture (Juric, Kim, & Kuljis, 2003). According to their classification, a web interface element might be either a visual, audiovisual or verbal (Juric et al., 2003). Images, icons, symbols are all considered as visual properties of a web interface whereas currency, date formats, time formats and the language of the written text are verbal features. In this study, a criteria for localising Arabic gamified systems is proposed. This criteria takes into consideration all the visual and cultural preferences that might have a significant impact on the acceptability of these systems.

2.3. Human-computer interaction

In a web-based system, the translation of the language of the interface is not enough to provide a successful localisation of the application. In this case, it is important to consider other elements such as colours, the navigational structure, the layout and the perceptions of the targeted countries about the elements of the interface (Collins, 2002). For example, some ideas and images might not be acceptable in all cultures such as using images of women in a system that is used by Saudi Arabian people (Collins, 2002).

Previous studies involving cross-cultural issues in HCI usually consider the discussion about localisation, internationalization and