HCI OF ARABIA: THE CHALLENGES OF HCI RESEARCH IN EGYPT

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Insights

→ Individuals in Arab culture are generally not accustomed to open feedback and criticism: HCI research methods need to be adapted accordingly.

→ More needs to be done to spread UX awareness and knowledge in Arab technical communities.

→ Significant difficulties in participant recruitment and access to data should be anticipated and planned for early.

The user-centered design and evaluation of technology within an Arab culture such as Egypt presents a unique set of challenges. For example, many designers and users in Egypt are not used to open feedback and dialogue. In addition, finding participants for design evaluation is difficult—particularly for special user groups or for long-term testing. This article draws on the authors' experiences of designing and evaluating systems such as assistive technologies and information systems. It discusses the challenges involved and describes some solutions that were—or could be—usefully applied. It also outlines issues that remain in need of effective solutions.

UXING THE ARAB WORLD

Field experience in human-computer interaction research and practice points to the significant influence of the prevailing user culture on the tools and methods that can be effectively used, with huge impacts on design outcomes. Leena Arhippainen and Marika Tähti proposed a user experience framework that contains cultural factors (gender, fashion, habits, language, symbols, religion, etc.) as a category of factors that affect the user experience [1]. Pieter

Desmet and Paul Hekkert, in their proposed user experience evaluation framework, also listed user culture as one of the elements that affect user-product interaction [2]. However, during design and development, the openness and willingness of individuals (designers, users, and other stakeholders) to participate in the design dialogue and to give and receive feedback are necessary to understand users, their needs, and how the proposed design might fit their needs. Dialogue among designers is also vital to reach a good design that contributes to product success, but our experience suggests that in some Arab cultures, this tends to be a key challenge in designing products with substantial interaction components.

There has been a dearth of studies that attempt to characterize the effect of user culture on interface and user experience design and evaluation processes, especially in Arab countries (e.g., [3,4]). Taking Egypt as an example, this article aims to contribute to the understanding of the effect of a typical Arab culture on such processes by focusing on two categories of issues—cultural and practical—that came up during previous HCI research in the Arab world.

CULTURE IN FIELD RESEARCH

Cultural norms and expectations can affect the degree of openness and participation of user communities in HCI. This has been true in researchers' field experiences while designing and evaluating interactions for products aimed at Arab cultures. User participation in interaction and UX design activities means that users agree to be observed, to be shadowed during their everyday work, to be interviewed, to be asked to comment on design ideas, or to be asked to try to use successive product prototypes. The extent to which users can fully and openly engage in such activities is very often influenced by their context and culture.

Many researchers and scholars have attempted to define culture. One of the best-known definitions was introduced by Geert Hofstede, who stated that culture is "the collective programming of the mind which distinguishes the members of one group of people from another" [5].

Hofstede introduced five main dimensions of culture [5]:

• *Uncertainty avoidance* is "the extent to which a culture programs its members to feel either uncomfortable or comfortable in unstructured situations" which is related to "the level of stress in a society in the face of an unknown future."

• *Individualism versus collectivism* is "the degree to which individuals are supposed to look after themselves or remain integrated into groups, usually around the family."

• *Masculinity versus femininity* refers to "the distribution of emotional roles between the genders," whether such roles focus on work-related goal achievement or more humanistic and community-oriented goals.

• *Power distance* is "the extent to which the less powerful members of organizations and institutions accept and expect that power is distributed unequally."

• *Long-term versus short-term orientation* refers to "the extent to which a culture programs its members to accept delayed gratification of their material, social, and emotional needs."

During various field HCI and UX analyses, we observed design and evaluation tasks in Arab cultures like Egypt and Saudi Arabia. We noticed that the above cultural dimensions can strongly influence the quality and effectiveness of designer-user interaction during the analysis and modeling of user needs and characteristics, especially if a strong participative design process is followed.

FIELD RESEARCH IN THE ARAB WORLD: CULTURAL ISSUES

Culture necessarily influences the range of activities that can be carried out in HCI field research. In the Arab world, there are often unwritten rules influencing mixed-gender interactions, people's attitudes to giving and receiving feedback, group interactions during design and evaluation meetings, and people's reactions to novel ideas. We have identified a number of relevant cultural factors that need to be taken into account:

• There are *cultural norms that govern mixed-gender interactions*, such as the rules that prevent, or at least restrict, a woman from coexisting in the same spatial enclosure with a man who is not a member of her immediate family; the same rule may apply to men shadowing women or stopping them in public spaces for questioning. This issue can be dealt with by forming mixed-gender teams of researchers where possible, so that women are approached by researchers of the same gender. However, there are variations on these rules among different cultures and among some communities within the same country.

• There is a *tendency to agree with the group*. This might be an artifact

of a collectivist culture that values high integration with the group. Since holding a different view can be seen in a negative light, differences in opinions may be seen as threatening. Members of this type of culture therefore tend to avoid dissent (although factors such as power structures and perception of relative status affect this attitude). If most people seem to agree, a view that does not conform to the group's apparent consensus may be suppressed, leading to missed opportunities for design improvement. Designers can deal with this issue using techniques such as oblique questioning, asking stakeholders' comments individually as well as in groups, repeating the same question in different formulations, triangulation, and using indirect solution-rating techniques (see, for example, the techniques suggested by [6]).

• *Blending ideas from multiple sources or different perspectives, treating such sources as equals, can be seen as unusual or even undesirable.* This hierarchical or power-laden valuation of contributions might be a result of a large power gap, where contributions from a perceived higher authority are regarded as more valuable or in some way sacrosanct. In the ideation stages, designers need to encourage contributions that may be at odds with each other due to power imbalances, for example, by sticking to the brainstorming rules of recording all ideas and not criticizing any.

• *Criticism is negative and is taken to signal erroneous decisions, incompetence, or animosity.* This might be an artifact of a masculine, somewhat paternalistic culture where goal achievement is paramount and therefore mistakes are hidden and critique is viewed negatively. This means that design

criticism may be diluted or altogether suppressed to avoid awkward situations. The researcher can stress the fact that critique is an essential ingredient of a good design process and that criticizing a design does not mean criticizing its producer.

• *Spending time on problem understanding and carrying out thorough research (e.g., ethnographic) may be taken to signal a lack of relevant knowledge on the part of the designer.* Acknowledging gaps in user-context knowledge and the need for research may be perceived by the users (and possibly fellow designers) as a sign of incompetence. This may lead to some interaction requirements (explicit or implicit) being poorly understood or missed altogether. The researcher may be able to deal with this by stressing that important factors can be glossed over by superficial investigation, and thus thorough research is necessary for successful designs.

• *Experimentation by the designer-users team can be seen by the sponsor or client as a waste of time or an indication of poor skills.* This may lead to early commitment to a design that's premature or inadequately validated. The researchers can perhaps combat this by telling stories about great innovations that would not have been made unless extensive experimentation had been carried out. Often, we give the examples of Thomas Edison's experiments with hundreds of combinations for bulb-filament materials and his famous quote about how he did not fail 999 times, but rather took that many steps to find the right combination. We also give the example of James Dyson's bagless vacuum cleaner, whose prototypes ran into the thousands.

It is important, in our view, that HCI researchers and practitioners are aware of the above cultural issues and reactions so as to calibrate their field-research plans and tools accordingly. The aim is to adopt measures that help maximize accurate and useful field data acquisition and to allow useful insights to emerge during the process.

FIELD RESEARCH IN EGYPT: SOME PRACTICAL ISSUES

Taking Egypt as an example, one of the main issues facing HCI research and practice there is the technical community's poor awareness of the current body of HCI knowledge [4]. Semi-structured interviews were conducted with some of the pioneers in the HCI field in both academia and industry to discuss and better understand the challenges they face. Participants had different backgrounds and varied in their formal education, typically master's, Ph.D., and MBA holders. All participants agreed that the lack of awareness and knowledge of the field is a significant issue, as very few managers appreciated its importance. They also highlighted the missing role of public and private training bodies in supporting HCI. It is also often hard to get access to needed data. To give one example, one participant reported that during her master's studies, it was hard to get permission to test an intervention within the educational context of a university. Many professors didn't approve of testing or data gathering in their classes, as they thought that the researchers could be spying on them. This may be a reflection of the high "uncertainty avoidance" of the Egyptian culture, whereby people are averse to risk, including the risk of an observer misusing observational data or breaking confidentiality promises.

We also wanted to explore what issues the undergraduate students had with HCI research. Accordingly, a survey was conducted and distributed among students to understand where they may be struggling with their research. They reported that HCI is becoming more visible in their universities and more people are joining the field. However, they confirmed that lab and field studies are the hardest, with a lack of efficient recruitment channels and compensation mechanisms. They also reported that it's harder to recruit participants for long-term testing and evaluation, where they are needed to show up more than once.

We asked participants in both interviews and a survey to recommend solutions for these problems. They reported that raising awareness about the importance of the HCI field is the first step for all other solutions to be effective. This could be done through seminars and workshops in both industry and academia. Also, collaboration between industry and academia would benefit both in terms of creating new recruitment and feedback channels.

Another challenge facing HCI field researchers in Egypt is the recruitment of participants for user studies. This is especially hard in the case of studies for assistive technologies. It is fair to say that the difficulties we encounter in Egypt occur elsewhere around the world. Nevertheless, these challenges are amplified in Egyptian society and similar cultures. The main obstacle we experienced in our studies in this field was the lack of access to people with disabilities or special needs. First, centers and schools for people with special needs in Egypt are scarce and have existed for a relatively short time. Many families would prefer referring their children to more developed centers and treatment methods abroad, where experts have more experience with similar cases—if the parents have the means to do so, of course. Second, because of the lack of education and awareness about special needs in general, many families would not get a diagnosis for their children's cases until very late—or even not at all. For these reasons, there is a limited number of relevant participants who we can recruit to conduct studies with in Egypt.

Even where access is provided, other problems usually arise. For example, Egyptian society is often skeptical about using technologies for

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vulnerable populations. This may exist in other cultures for ethical reasons but is exaggerated in Egypt. Here, technology is entering our everyday lives a bit more slowly than in other parts of the world like Japan, the U.S., and Europe. For instance, virtual reality has existed in some form since the 1960s, and lately it has been used extensively for people with special needs. However, it did not make its way to Egypt until roughly five to 10 years ago, in gaming and educational systems. When it was still emerging in Egypt, members at the centers where we recruited autistic participants for a user study completely rejected the notion of exposing their children (their words) to that newly developed technology. This attitude may, however, change over time through increasing public awareness of the importance of assistive technologies and the contribution of participants to the evaluation of such systems so that those with developmental disorders or special needs may reap their benefits.

CONCLUSION
HCI fieldwork within Egyptian culture has made us aware of a number of challenges that are probably also present elsewhere in the Arab world. Obstacles to free and open communication styles and poor access to data that is necessary for effective interaction design and evaluation processes need to be tackled. The relatively low level of awareness of the role of interaction in product design and its available tools, in both industry and academia, calls for more focused efforts to explain the iterative and feedback-dependent nature of HCI design and to support it better. Awareness would also benefit from increased collaboration between academia and industry, and it would pave the way for greater access to the data needed to characterize user needs and generate better critical insights. Recruitment difficulties need to be anticipated and planned for early, with a balance of appropriate risk mitigation and incentivizing strategies. Combating the reluctance to give and receive feedback freely and the tendency not to express one's true views requires an investigation of techniques that embrace indirect feedback and those that use cross-checking and, possibly, assurances of anonymity, as well as skilled group-session management to protect those who are politically vulnerable.

ENDNOTES
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