
Investigation of Cultural Dependency in Mobile Technology and Older Adults

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Abstract

Studies using different methods have been carried out of older adults' use of mobile technology in Malaysia and the UK. Preliminary results suggest that there are significant differences in the results which are culturally dependent.

Keywords

Older adults, mobile phone, focus group, interview, method, personas

ACM Classification Keywords

H.5.2. Information interfaces and presentation (e.g., HCI): Evaluation/methodology.

General Terms

Human Factors

Introduction

Older adults are a growing percentage of the worldwide population. According to the United Nations, the world population of persons over 60 will increase from about 600 million in 2000 to almost 2 billion in 2050 [6]. In parallel with these demographic changes, technology is also changing and we are interested in the interaction between these developments. In particular, technology which was formerly available only in desktop

computers, is now available in mobile forms. Increasingly the technology is combined on mobile phones, which also offer communication in the form of voice and text.

This research is concerned with the use of mobile technology by older people and the main focus is the appropriate methods for collecting data. There are a number of problems with conventional techniques when using older adults as participants. This is due to the fact that older adults have an extremely wide range of characteristics and impairments compared to other groups. For example, it has been reported [3] that there are difficulties in handling focus groups consisting more than three older people. These difficulties can be associated with hearing impairments, attention problems and the ability to follow a discussion which hinder many participants' contributions. Furthermore, members of large focus group have a tendency to make conversation among themselves. There are also language and cultural differences that tend to make communication between older people and younger people difficult [2].

A main objective of this research was to find the best methods in this context, though it is recognized that there may not be one best method or technique for any given situation; a combination of methods may be most beneficial.

Scope of Study

The research is focused on talking methods, namely interviews and focus groups. In addition, the use of personas as a tool in elicitation has been explored. Personas have become increasingly popular among usability practitioners, but hitherto have been used

mainly as a design tool, and not as much in requirements elicitation [4].

Two studies were carried out, in Malaysia and the United Kingdom (UK). There were two methods involved: focus group and interview.

Both studies endeavored to answer three principal questions:

1. What are the effects of using personas in focus groups?
2. What are the effects of using personas in interviews?
3. How do focus groups and interviews differ between older adults?

The main objectives are two-fold. On the one hand we want to see whether there are differences between the expectations of mobile technology of Malaysian and UK older adults. On the other hand, we also seek to see whether the different combinations of methods have different levels of effectiveness in the two countries, according to the different cultural nuances, or whether there are some universal patterns of mobile device use [1]. In other words, do we get the same answers to the three questions above in both countries – and do we get different answers according to the methods applied?

Participants

Older adults were identified in the two countries according to the respective retirement age. At the start of the study that was 55 in Malaysia (subsequently

raised to 58) and 65 in the UK. An additional requirement was that the participants owned a mobile phone and had some experience using it.

Thirty-six participants, aged from 55 to 78, were involved in the first study conducted in Malaysia. Most of the participants were retirees and members of a Government Retiree Club. Four focus groups with personas and 3 focus groups without personas were formed with a minimum of 3 persons and a maximum of 5 persons in each group. Seven participants were involved in interviews with personas and 5 participants in interviews without personas.

Forty-six participants aged from 65 to 90 were recruited for the second study, in the UK. They were recruited through organizations for older adults such as The University of the Third Age (U3A) and Hackney Silver Surfers. Four focus groups with personas and four without personas were formed with the range of 3 to 5 persons in each group. Fourteen participants were involved in interviews (7 for interviews with personas and the other 7 for interviews without personas).

Personas were created based on the findings of a pilot study and from the literature on other studies of older adults' use of mobile phones. (See Figures 1 and 2 for examples of personas used in Malaysia and the UK respectively). For the groups working with personas, these were introduced at the start of the session.

There were three topics covered in the discussions:

(1) Mobile phone usage

(2) Learning process

(3) Recommended features

Wan Kamaruddin (65)

Retiree

Has been using mobile phone for the last 2 years. Mainly used for voice communication and texting.

Lives all by himself after his wife passed away in Kuala Lumpur.

He has not used computer much except for email.

He has difficulties using the mobile phone because he could not see the numbers clearly on the keypad and also on the screen.

Goal: Can be contacted at any time



Figure 1. One of the examples for Malaysian Personas

Mary (72)

Housewife

Has been using mobile phone for a year.

Mainly used for phone calls.

Tries to carry her mobile phone all the time.

Only knows how to make and receive calls.

Often, she misplaces the phone.

Goal: Able to be contacted at any time by her children



Figure 2. One example UK Persona

The interviews with personas used the same personas that were used in the focus groups and were introduced at the beginning of the conversation. A semi-structured interview was then conducted using open-ended questions.

The interviewees were also asked to perform three tasks during the interview. The tasks were designed to test their familiarity with some functions that are available in their mobile phones because previous HCI studies reported that older people have difficulty in articulating their experience with technologies [5]. It was emphasized that the purpose of all the tasks was to evaluate the design of mobile phones and not a test of the participant's ability to use the phone.

First, in the middle of the interview, participants were asked to perform the task of saving the interviewer's phone number and name into their mobile phone using the phonebook feature. Second, the participants had to check their contact lists and count the total phone numbers in their contact list. The last task involved using the speed dial.

Discussion and Conclusions

Simple data were collected in the form of the number of *problems* identified by the participants. These were divided into two major categories:

- 1) All types of problems related to mobile phone usage in general.

- 2) Design improvements or additional features suggested by the participants.

Univariate analysis of variance was performed in order to explore each variable in a data set separately. In addition, this analysis helps to describe the pattern of response to the variables obtained. Preliminary results show some interesting statistically significant differences.

The analysis shows that there are statistically significant difference results in number of problems reported by both methods (interviews and focus groups) with and without personas in Malaysia and UK and also number of problems reported in both methods with the effect of personas in both countries as illustrated in Figure 3 and 4.

For instance, Figure 3 illustrates that in all cases focus groups yielded more information – *except* with regard to the number of design solutions or recommended features.

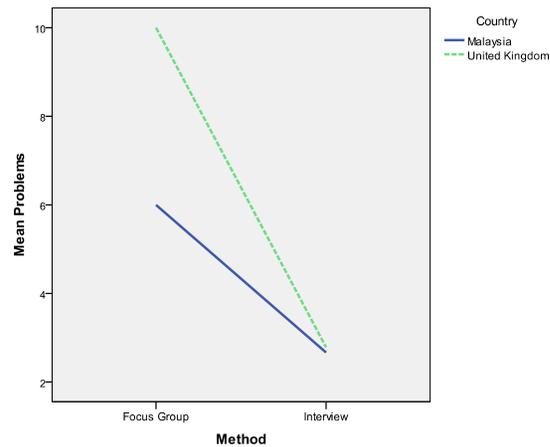


Figure 3. Mean number of problems reported by both methods (with and without personas) in each country

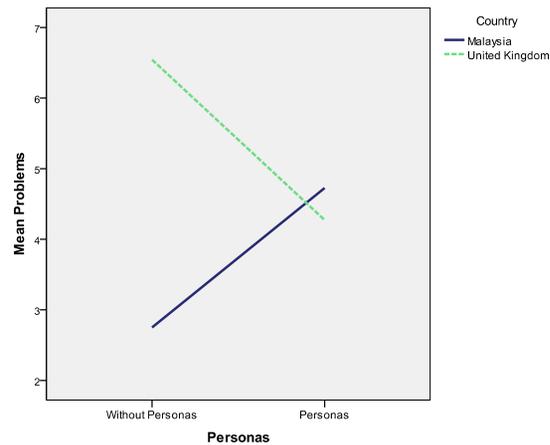


Figure 4. Effects of personas in both methods (interview and focus group).

Figure 4 also illustrates that more problems were reported in the UK through both methods (focus group and interview) without personas. On the contrary, both methods using personas are able to identify more problems in Malaysia. Further analysis is being carried out to ascertain whether this is a real effect that might be due to cultural differences, or whether it may be an unreal effect due to differences in the *kind* of information generated.

The apparent differences in the number of problems identified might simply be an artifact of the method, in that different participants might have used different words to describe what is essentially the same problem.

Therefore in the second stage card sorting was used. Sixteen participants took part in the online sorting study. They were given the raw descriptions of all of the 167 problems identified and asked to group them into categories and to name each category with a word or words that describe the set of items it contains. This is still an ongoing process where we are at the stage of analyzing the categories.

Some of the categories that emerged are:

- Health concerns
- Direct translation and jargon
- Difficulties with manuals
- Battery charging
- Texting complexity
- Problems with predictive text function
- Hearing difficulties

- Visual problems
- Functions complexity
- Cognitive complexity while using mobile phone
- Speed dial complexity
- Learning
- Interface problems

There are also some limitations of the studies. The sample sizes are small. Furthermore, some of the participants are probably not representative of the population at large, being quite educated, middle to upper class and well versed with mobile phones.

Conclusions

This is work in progress and its full implications will not be clear until the statistical analysis of the results are complete. However, the preliminary results suggest that there are cultural differences in the data generated by interviews and focus groups, with and without the use of personas.

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