

Online focus groups for the development of a usability evaluation tool: Lessons learned

Zahra Galavi¹, Reza Khajouei^{1*}

¹Department of Health Information Sciences, Faculty of Management and Medical Information Sciences, Kerman University of Medical Sciences, Kerman, Iran

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*** Corresponding author:**
Reza Khajouei

Department of Health Information
Sciences, Faculty of Management
and Medical Information Sciences,
Kerman University of Medical
Sciences, Kerman, Iran

Email: r.khajouei@kmu.ac.ir

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ABSTRACT

Introduction: Focus group discussions are a well-established method for acquiring insights from experts in different fields. This method requires special amendments when it is used for the development of different tools in the healthcare domain. The objective of this paper is to present the lessons learned from online focus group sessions held for the development of a heuristic usability evaluation tool for mobile health applications.

Material and Methods: Two online focus group sessions were conducted with the participation of ten medical informatics experts to develop the tool. The sessions were recorded using screen recording software. The comments provided by the experts were categorized, and the lessons learned from these sessions were identified and reported.

Results: The experiences achieved from the online focus group sessions were categorized into the following ten lessons: 1) Engage the participants fully in online session discussions; 2) Use an appropriate and interesting format; 3) Select an appropriate number of people for online sessions; 4) Invite people having the closest expertise related to the research topic; 5) Employ a technical support technician in addition to the coordinator; 6) Prevent the emergence of a new topic in sessions; 7) Arrange the required hardware and software facilities before the session; 8) Prepare the content in an appropriate language; 9) Use online tools to schedule sessions; 10) Use screen-recording software.

Conclusion: This paper reports the lessons learned from holding online focus group sessions in the process of developing a heuristic usability evaluation tool for mobile health applications. Although these lessons were learned in a study focusing on the development of a usability tool, they can also be used to improve the results of focus group sessions in other fields of medical informatics.

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INTRODUCTION

Focus group is a research technique that collects data through group discussions on a topic determined by researchers. This definition has three basic components. First, the focus group is a research method dedicated to data collection. Second, participants' interaction in a group discussion is a source of data. Third, researchers have active roles in running group discussions for data collection [1].

Today, due to the widespread use of the Internet, researchers have a strong interest in using it for research. It plays a key role in holding focus groups and people use it to substitute face-to-face focus

group discussions with online sessions [2]. An online focus group is defined as "the participation of a selected group of people in a structured, online discussion to investigate a specific topic for research purposes [3]".

Online focus groups can help reduce costs and eliminate limitations associated with time and location, as participants can enter the online platform at convenient pre-determined times. It also provides an alternative method for conducting research with individuals who are unable or unwilling to participate in traditional face-to-face focused groups [4]. However, the most common and significant

criticism of online methods is that they omit vital non-verbal communication and responses from participants, which negatively affects data quality and depth [5]. Nevertheless, the significant improvement of hardware and software capabilities in recent decades has helped to resolve some of these concerns. On the other hand, proper management of these online sessions can improve their quality and efficiency.

One of the areas in which focus groups are used is usability. Sometimes these groups are used to evaluate usability. One prominent use of them is during the development of tools and questionnaires. Participants with different backgrounds and varying perspectives take part in these focus groups, and the information gathered from them provides challenges and valuable lessons. The objective of this study was to provide the lessons we learned from online focus groups conducted for the development of evaluation tools for mobile health applications (m-Health apps). These lessons help to better manage online sessions.

MATERIAL AND METHODS

Two online focus group sessions were held to develop a tool for evaluating the usability of m-Health apps. The final version of the tool comprised a questionnaire with various questions related to usability evaluation. The tool was developed in three phases. In the first phase, heuristics were extracted based on a literature review. This phase aimed to systematically review studies and collect heuristics for the usability evaluation of health apps. In the second phase, the extracted heuristics were categorized and discussed in the focus group meetings. After determining the main categories, the questions for the questionnaire were developed and discussed in the third focus group session.

Before the meeting, twenty medical informatics experts with at least five years of research and teaching experience in usability were invited. Invitation emails with relevant explanations about the study and suggested timing were sent to them. Those who agreed with the proposed timings sent an affirmative email to the researcher. In the second phase of the study, an email containing the categorized heuristics was sent to the individuals a week before the meeting. In the third stage, the questions that were derived from the studies and categorized into heuristics were sent to the same individuals a week before the meeting. The experts had the opportunity to express their questions and concerns to the researcher and receive responses. In both phases, to prevent the experts from forgetting to participate in the meetings, email reminders along with the meeting links were sent to them one day before the meetings.

The focus of the meeting discussions was on

modifying the heuristics and the questions of the tool. The meetings were recorded using desktop recording software, and notes were taken simultaneously. All participants expressed their opinions concerning all categories and questions.

The coordinator of the meetings implicitly noted all the positive and negative points encountered during the sessions. These points were classified as observations and lessons learned. The positives were opportunities that helped to make the sessions smoother. The negatives were challenges that slowed down the sessions. The comments provided in the meetings were also noted and later categorized by the research team. The titles of the categories were selected based on the given comments. These categories include Language-related comments, Duplicate-related comments, Specialty-related comments, and General comments. The comments were also grouped into related and unrelated categories.

RESULTS

Out of the twenty people invited to participate in the meeting, only ten specialists whose schedules met the proposed time frames were willing to participate. These specialists had Ph.D. degrees in medical informatics. All of them were faculty members of medical sciences universities throughout Iran, and they had the experience of designing, developing, and evaluating health information systems and applications. Their experience in the field of usability was between five and twenty years. Six participants were male and the rest were female.

Two online focus group meetings were held according to plan. In the first meeting, the focus of the discussion was on the main categories of heuristics. This meeting lasted for one hour and forty-five minutes. At the beginning of the meeting, the researcher explained the purpose of the meeting to the participants. The participants were also introduced. In addition, the initial model, which was developed in previous phases, was briefly explained. Individuals expressed their opinions and reasons on the appropriateness of the heuristics for evaluating the usability of mobile health apps. In the second meeting, the specialists provided their opinions on all the tool questions and their relationship with the corresponding categories of heuristics. The second meeting was held with the participation of previous experts. This meeting lasted for two hours and fifteen minutes.

The results of categorizing the comments are shown in Table 1. In the first session of the focus group 62, and in the second session 130 comments were reported. Since in the second session the comments were submitted on all questions, more comments were submitted in this session, and it took longer

than the first session. As shown in the table, most comments in the first session were related to language (n=14), because the content was presented in Persian. However, in the second session, in which the content was presented in English, there were fewer language-related comments.

Table 1: Categories of comments collected in online focus group sessions

Comment categories	Count (%)	
	Session 1 (N=62)	Session 2 (N=130)
Language-related comments	14 (22)	10 (0.07)
Duplicate-related comments	7 (11)	30 (23)
Specialty-related comments	9 (14)	22 (0.16)
General comments	10 (16)	24 (18)

The number of comments that were common among the specialists was higher in the second session. Fig 1 shows the relevance and non-relevant of the

Table 2: Observations based on positive and negative points and comments provided in the sessions

Topics	Description
Engaging the participants	One significant challenge and observation was encouraging people to participate in the sessions. Some people would turn on their mic and give their opinion. Others would use the "raise hand" icon and wait for confirmation before giving their opinion, or had to be called by name to provide their opinion.
Using an interesting format.	We used a Word file and presented the heuristics in a table format. This format was not conducive to discussion, since the whole table was presented instead of only the relevant information for the topic under discussion.
Number of experts	Around half of the individuals, we invited to the online focus group meetings accepted our invitation or their schedule matched our meeting's timing.
Expertise of experts	In terms of expertise, individuals who had expertise in usability provided more to-the-point comments.
Technical support technician	The presence of a technical support person, alongside the coordinator, aids in preventing meeting interruptions.
No new topic	The use of examples and anecdotes to explain a concept can divert participants from the main topic. It is important to manage the participants and direct them back to the topic at hand.
Required facilities	The selection of software that everyone can access or have experience using is critical in online sessions.
Language of content	Although the native language is understandable to everyone, it is preferable to use the original language for technical materials in focus group meetings involving specialists.
Scheduling sessions	Due to the large workload and tight schedules of specialists, organizing a joint meeting among them is usually a difficult task.
Screen recorder	The use of various tools for recording audio, video, and screen images can be beneficial in capturing all the details.

comments. As shown in the figure, in both sessions, the number of relevant and applicable comments was higher.

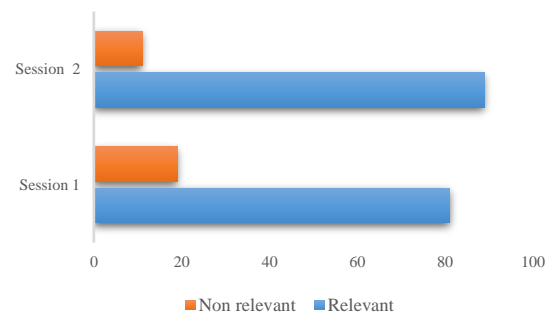


Fig 1: Categorization of comments based on their relevance

Observations and practical lessons learned from the online focus group are described below (Table 2).

DISCUSSION

Engage the participants fully in online session discussions

Since in online meetings like face-to-face sessions, people cannot express their opinions using body language or other methods, it is advisable to select a method that encourages greater participation. For

instance, choose an online environment that allows individuals to turn their microphone and camera off and on when necessary. Additionally, use a rotational method for expressing opinions, which allows all participants equal opportunities to express their thoughts [6]. To encourage conversation and deliberation on opinions, request that individuals convey their comments on each opinion presented. If a participant has no opinion, ask them to type "I have

no opinion" in the text message box to preserve the meeting time. Additionally, people may utilize time-specific typing that allows concise opinions. Also, people can use the typing feature when they have a short comment.

Use an appropriate and interesting format

In presenting information during online focus group meetings, use file formats appropriate for the session. For instance, presenting materials via PowerPoint, with each slide dedicated to a specific topic, helps the participants remember the content [7]. Given the absence of face-to-face meetings in online sessions, utilizing engaging formats for presenting materials can promote participation and reduce fatigue during these meetings.

Select an appropriate number of people for online sessions

Due to the significant rate of dropout amongst attendees of online focus groups, it is recommended to invite twice as many people as intended to guarantee adequate participation. In this study, ten out of twenty individuals accepted our invitation. The number of participants in online meetings is an important factor that can influence the quality of the meeting. With a limited number of participants, the presented information may not carry the necessary depth, and subsequently productive discussion will not be formed. Conversely, an excessive number of participants may also be unsuitable due to management issues and limited time, which prevent collecting the opinion of all participants. Similar to in-person meetups, attendance of 6 to 8 participants is recommended for online meetings [8, 9].

Invite people having the closest expertise related to the research topic

The expertise of participants in both online and in-person focus group sessions should be relevant to the topic of discussion. Individuals with more specialized knowledge related to the topic typically provide more specific, relevant, and helpful comments. On the other hand, individuals with limited knowledge may offer general comments and views. If only individuals with specialized knowledge are invited to participate, there is a possibility of losing different perspectives of other disciplines.

Employ a technical support technician in addition to the coordinator

In addition to a coordinator, a technical support employer plays a very crucial role in managing the session [10]. In the presence of a technical support person, the coordinator can focus on the content and points raised in the session. The coordinator manages the conversation; ensuring people have enough time to take part in the discussion. If needed, the coordinator can interrupt the

discussion and prevent it from deviating from the topic. The technical support person ensures that the meeting is being recorded, that all participants are present in the virtual room, and assists those with connection issues.

Prevent the emergence of a new topic in sessions

Be sure to discuss the materials that were already emailed to participants and they have a mental preparation for them. There is no room to raise a new topic in the meeting, as attendees would not have sufficient time to think about them and provide meaningful insights. Occasionally, participants might utilize examples to clarify a concept, but if not managed correctly, this can take time and waste the valuable time of the participants in the meeting. Therefore, the coordinator should manage this issue and maintain a smooth flow of the session.

Arrange the required hardware and software facilities before the session

One of the vital prerequisites for the smooth running and effectiveness of an online focus group session is ensuring that participants access the necessary hardware and software resources. Before the meeting, it is important to verify the internet connection, the software essential for the meeting, and the fitness of the laptop's microphone and webcam. If a particular software or website is needed for the meeting, make sure to inform the participants and provide them with the link to save time and effort during the meeting [11].

Prepare the content in an appropriate language

The language of content is an important factor in focus group sessions. It is not always appropriate to present information using the language of the participants. In our study, the provision of content in English improved the understanding and effective transfer of usability concepts. By sharing translated versions of the content, the discussion averted from the main topic, and participants instead focused on the translation and writing aspect of the presented material rather than providing scientific or evidence-based comments.

Use online tools to schedule sessions

Another challenge is coordinating meetings between people with expertise, as any failure in this regard can lead to a significant drop in attendees [12]. Using scheduling tools like Doodle and Google Calendar to manage and coordinate meetings can be very helpful. Both tools are online calendars that provide options for planning and managing meetings, and offer additional options for attendees to jointly schedule meetings. These tools are available on desktop and mobile platforms.

Use screen-recording software

Capturing screens during focus group meetings using screen-recording software eliminates concerns about losing content [13]. This allows users to simultaneously take notes and review the content later.

CONCLUSION

This study highlights lessons learned from holding focus group meetings to develop a heuristic usability evaluation tool for health applications. While this study was focused on developing a specific tool for usability evaluation, the lessons learned in this study can be used to develop tools for other domains of medical informatics. Adherence to these lessons enhances the quality of focus group meetings. The use of information technology and online meetings reduces constraints associated with location and time and increases access to researchers and specialists from various locations.

AUTHOR'S CONTRIBUTION

RKh and ZG contributed to the conception and design of the study, acquisition and interpretation of the data, and drafting of the manuscript. All authors contributed to the literature review, design, data collection and analysis, drafting the manuscript, reading, and approval of the final manuscript.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest regarding the publication of this study.

FINANCIAL DISCLOSURE

No financial interests related to the material of this manuscript have been declared.

ETHICS APPROVAL

The ethics committee of Kerman University of Medical Sciences (IR.KMU.REC.1402.075) approves this work.

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