USER EXPERIENCE EVALUATION OF MOBILE SPIRITUAL APPLICATIONS FOR OLDER PEOPLE: AN INTERVIEW AND OBSERVATION STUDY

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ABSTRACT

Developments in religion and spirituality in the world of mobile technology seem to flourish with the increasing of thousand applications that assisting daily spirituality practices and experience. At the same time, world scenario shows drastically increasing number of older people worldwide. In conjunction with the intertwined scenario between increasing number of elderly and rapid developments of mobile spiritual technology, HCI researchers are urged to design mobile spiritual application tailored to an older people need to ensure the usefulness of the application. This initial study seeks to address on the issue of older peoples' spirituality experiences, whereby the study focused on the use of interviews and observation methods in capturing older people spiritual experience while engaging with mobile spiritual application and secondly, mapping of the spirituality elements with an Emotion Model. This study as well investigates the suitability of using interviews and observation method in evaluation to capture older peoples' experiences. An interview has been conducted with eight older peoples in the field study (home and working place). Interview and observation are good tools in capturing user experience data, however, an improvement on the research method should be done to ensure the results gained is reliable and the questions used while interviewing is easy to understand by older people. The study also indicates that interview activities with older people are a complex task and so it is necessary to be applied in a different and proper way. Therefore, appropriate steps in doing interview study with older people are also suggested in this paper.

Keywords: *Techno Spiritual, Spirituality, Usability Evaluation, Older Adult, Mobile Applications*

1. INTRODUCTION

Nowadays, many countries are aging, including several European states, the USA and Japan due to the changes in the age structure resulting from fertility decline and increased longevity [1]. Ageing population is a universal phenomenon experienced by all countries worldwide, including Malaysia [2]. Parallel with these demographic changes, a significant breakthrough in mobile phone technology also influences to this digital age, including older people [3],[5]. Malaysia's ageing population has entered the national agendas and represents an important group to be included in the technological society. Therefore, the government is looking at alternative ways to equip older people with information so they can live independently and achieving successful ageing. Mobile spiritual apps, for instance, can help in assisting older people to increase spirituality. In Malaysia, particularly, Muslim devotees of all ages, including older people using mobile spiritual apps for reciting Holy Quran through mobile application such as Mobile Quran and in fact, Muslims can simply download M-Umrah mobile application that integrates Global Positioning System (GPS) which provide Location Tracking System in the Holy Land of Mecca [6]. Despite vast mobile spiritual apps in the market, innovation in mobile technologies often ignored needs and limitation of older users that eventually unease older people [7], [8]. Thus, there is need in evaluating mobile spiritual apps from the perspective of older people and outlining the applications that tailored their needs to ensure technology adoption among the elderly generation.

In this study, the aim of qualitative interviewing and observation is to evaluate older people experiences in using mobile spiritual

applications and also to understand older people behavior in exploring a proper and appropriate interviewing technique. The results reported are based on the preliminary study, which aimed to investigate interview and observation experience with the older people and also to hear from small numbers of older people in order to inform the use of mobile spiritual apps for more extensive research particularly in the user experience evaluation.

2. USER EXPERIENCE EVALUATION OF OLDER PEOPLE

2.1 Older People Definitions

According to the United Nations World Assembly on Ageing held in Vienna in 1982, 60 years and over is the cutoff age used for deliberating issues on ageing [10]. In Malaysia, the government came up with the National Policy for older persons that stated older people are defined as those who are 60 years and above [11].

2.2 Role of Spirituality in Successful Aging

Currently, the aging issue and spirituality has been investigated in a number of studies particularly in western countries. Much of the discussions are for older people and spirituality in the healthcare field is around the role to provide physical, mental and social well-being in older age.
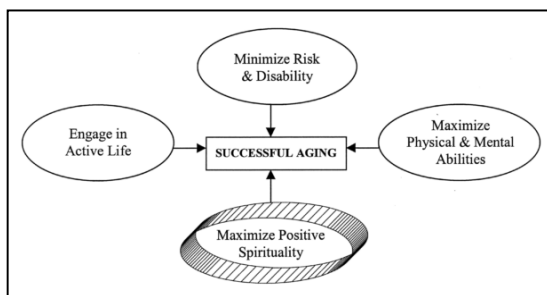

Figure 1: Revised Rowe and Kahn Model of Successful Aging [20]

The role of spirituality in successful ageing has been increasing recognized and accepted [12],[13]. For instance, [14] and [15] in one qualitative studies identified spirituality as a sub element of older people's perspective in successful ageing. In addition, positive spirituality (see Figure 1) has been proposed as the fourth missing element in the Rowe and Kahn's model of successful aging [16]. [13] in the study among Malaysian community, highlights that spirituality is a core factor for successful aging despite of physical, mental and social well-being factor. Another study done by [17] discovers that older people heavily depending on spiritual activities to dedicate last years of their life to God and in doing so bring peace of mind [13]. This relates to

Gerotranscendence (GT) Theory by [18] which states that ageing is characterized by 'a shift from a materialistic and rational view of the world to a more cosmic and transcendent one, normally accompanied by an increase in life satisfaction'. Even though this theory did not address the word spirituality in the definition of GT but the word 'shift' could mean a change towards 'the sacred' [19]. According to [18], each individual moving into living the old age will experience gerotranscendental changes or development, including a redefinition of self, relationship with others and searching for the meaning of life. Besides, older people will often have a feeling of cosmic communion with God and a redefinition of space, time, life and death [18].

2.3 Mobile Spiritual Applications and Older People

In conjunction with the above issue on successful aging and the use of technology to assist older people to be more spirituality incline, the government, public as well as technology developers should focus on spirituality needs of older people at the forefront of societal priorities [20]. Mobile spiritual apps are among vital tools that believes to have a high correlation with positive successful aging [20] in which also known as 'Gerontechnology' that promotes positive effects, longevity and promising the successful ageing of older people [5]. [5] in the study also stressed on spirituality or religious technology as one of the mobile technology needs of older people in ensuring the successful ageing. In fact, there are lots of mobile spiritual apps in the market, especially for Muslims such as mobile Quran, mobile Adhan/Prayer Reminder, Zikr Counter, Islamic Calendar, Qiblat Locater etc. However, innovation in mobile apps often ignored needs and limitation of older users [13],[14] that eventually unease older people from using new technology [21]. Therefore, there is an urge in assessing mobile spiritual applications from the perspective of older people to ensure mobile apps adoption among older people generation.

2.4 User Experience Evaluation and Its Challenges

User experience is defined as a momentary, primarily evaluative feeling while interacting with a product or service [22]. User experience puts focus on humans and feelings instead of product content, functionality, presentation and interaction. In doing user experience evaluation, user aspects such as emotions, values, expectation and prior experiences must be considered. All these aspects influence the experience that the user feels while interacting with products [23].

There are several methods in doing user experience evaluation to capture the experience towards using product, for instance interview, questionnaire, observation, diaries, storytelling and experiments [24],[25]. Subjective user emotions can be measured to some extend by using pictorial methods. There is also sophisticated method used in measuring subjective and expressive experience such as using computer vision and audio analysis [25]. Other aspects that should be taken into consideration while doing user experience evaluation is duration, where methods like diaries and storytelling are normally for long term research. In addition, observation is a suitable method to gather user experience from non-verbal expressions such as user behavior or facial expression. The choice of the method will always depend on the nature of the application and the possibilities to acquire proper data.

In user experience research, conducting interviews is considered as a time-consuming process that requires careful planning and usually conducted on a one-to-one basis [26]. According to [27],[28] agreed that the most preferable method of doing research with older people is by using interview method, which help much to strengthen the ideas or in gathering the unstructured data. However, many designers and researchers have difficulties to communicate effectively with older people, especially in skills of how to speak, communicate and approach older people. Therefore, a proper and appropriate way of interviewing is recommended to be applied to older people [29]. According to Antona et al. [9] have highlighted that a set of alterations of standard interviewing techniques is recommended and clearly point to the need for reconsidering of modifications and adjustments methodologically when applying interviewing technique with older people.

3. METHODS OF USER EXPERIENCE EVALUATION

In this study, firstly researchers investigate in the older person's background in using mobile spiritual apps, secondly in the older people selection of mobile spiritual apps for their daily usage and lastly, exploring older peoples' feelings/experiences of using mobile spiritual apps.

In a previous study [30], researchers have highlighted on two different types of spirituality technology medium consisting of spirituality through websites and mobile phones. However, from the review in [5] reveals that recently older people rely more on mobile phones since it is mobile and easy to carry everywhere. Therefore,

this study concentrates on older people and mobile spiritual apps usage.

3.1 The Participants

Eight older people were selected to participate in this study. Participants' ages were ranged from 60 to 73 years old which were in the Baby Boomers Generation [31], and had been recognized as a young-old and the active group in the use of mobile phones. They were being selected randomly from a rural area in Bestari Jaya, Selangor. Selangor state is being selected as a case study since it has more than five million populations in which the highest population among other countries in Malaysia [2]. Among all participants, two of them are still working as contract lecturer in Universiti Selangor (UNISEL), while others are housewives and retirees. The older people take part as participants after being recommended by students in a class project conducted by researchers.

3.2 User Experience Evaluation

To gain user spirituality experiences for the mobile spiritual apps, the interviews were conducted at the participants' home or place of work with a semi-structured flow. The study consisted of three sessions: Get-to-know, Briefing & Ethical Considerations and Evaluation. The study was conducted by making an appointment to meet with older people in their homes. The study was conducted at home to get natural environment and so that older people feel comfortable. The session began with the researcher get to know the older people and explain the purpose and how the study will be conducted. Older people also briefed on ethical considerations and privacy of the information that they provide. Ethical issues are considered to be essential and important in demonstrating research credibility before, during, and after the research had been conducted and also in maintaining high ethical standards [32]. When working with humans, it is important for this study to highly consider the ethical issues pertaining elderly, which is one of the 'sensitive' contexts. It is important to consider all ethical issues and also how doing a research in an appropriate way of ethical considerations especially in interpretive activities.

3.2.1 Test Scenario

The user experience of using mobile spiritual application's features was evaluated using the following predefined scenario.

- User was being given a tablet with the mobile iQuran application installed in it.

- User was instructed to open the apps and choose the Verses that they wanted to listen.

- User listens to the Quran recitation for about 5 to 10 minutes. The user was also given an opportunity to explore the apps while being assisted by the researcher.

The test scenario was planned so that it enabled researchers to test main features of the spiritual mobile apps. Besides, it made it possible to evaluate user experience while using the real mobile spiritual apps. iQuran was being selected as the probes because it is an open source application for Android, Symbian and IOS devices that provides many features including Quran recitation audio, Quran indexing, 'ayat' bookmark, search, translation and etc. Besides, iQuran is among the highest downloaded applications in mobile phone app store.

Figure 2: Mobile iQuran Applications [https://play.google.com/store/apps/details?id=com.guid edways.iQuranPro].

3.2.2 Test Methods

The study was then divided into two sessions; the first session is interviewing the older people to gather demographic profile such as name, age, status, education level, employment history, education level, type of disabilities and mobile spiritual applications usage experience. The researcher's focus on interviewing method to gather insights into the experiences and perspectives gained from visiting and talking to older people in their own homes or working place during the session.

The second session is the user experience evaluation where the respondent is given a tablet containing mobile spiritual apps to be used. Users were asked to 'think aloud' during the testing sessions and the researchers conduct interviews after the use of the mobile apps to obtain user experiences. Interviews were video recorded for the purpose of doing further observation about user's

emotions and experiences. There are 3 to 5 researchers involved in the sessions where every researcher has a specific role. Video, photos and notes were recorded at each session and researchers also observed the behavior and response of older people. Each interview lasted between 45 and 60 minutes based on pre-prepared questions guideline to provide structure and direction in the interview. Observation was selected as gathering experience method to observe non-verbal expression of older people. Interview and observation method have been analyzed from the view of user experience evaluation, and researcher will discuss on how well these two methods suits user experience evaluation.

Figure 3: Older People Experiencing Mobile spiritual Application

3.2.3 Analysis of Test Methods

An evaluation is being divided into two sessions; whereby, both methods used in this study; interview and observations are among best method to obtain user experience especially when interacting with mobile applications.

Goal Definition: This user experience study is being done by using interviews and observation method to find room for improvement in the further mobile spiritual application testing. It is also important to predefine the test plan because researchers want to ensure type of user experience that wants to be captured in the study.

Interview: Researchers carried out an interview with user to find out their opinions and feelings after using mobile spiritual apps. The questions used to investigate older people experience towards using mobile spiritual apps are "What is the feeling when using the spiritual application? Do you have an amazing feeling while using mobile spiritual application?". However, the answer given by older people several times did not meet the goal or answering the question. The researcher need to ask twice the question by adding some elaboration to make sure the older people giving an answer subjected to their feeling and emotions while using the apps. In addition, the way of asking questions to obtain spiritual experiences seems to be a very sensitive issue among most of older peoples'. Questions should not be too specific on user spirituality daily practices and experiences, for example, the interviewer should not ask, "How often

do you use mobile spiritual apps like iQuran?" or "During free time did you use to recite iQuran?". Based on the observation, older people are sensitive user category, once they feel uneasy with the interviewer's question, it is afraid that the result obtained from the interview is unreliable. This is quite a challenge in running user experience evaluation; especially the subject matter is older people and also spirituality.

From researcher's observation during the evaluation session, there were fewer respondents who recite together verses from Holy Quran while listening to iQuran application's recitation. After using iQuran, researchers describe other functions that available in iQuran to older people such as reading marker, recitation audio, text translation, Tajweed markers and others.

4. RESULTS

In this section, the interview results of the user experience evaluation were reported. The following is five questions used to investigate older people opinion towards using mobile spiritual apps:

- Q1: Did you ever use spirituality application on your mobile phone? Or have ever downloaded spirituality apps into a cell phone?

- Q2: Does spiritual applications is important or not?

- Q3: What are your priorities in the use of mobile technology?

- Q4: What kind of spirituality application that you like most? Please list them in order of priority.

- Q5: What is the feeling when using spirituality application? Do you have an amazing feeling while using the mobile spiritual application?

Participant's background, whether the experience (E) or inexperience (I) in using mobile spiritual apps feedback on Question 1 is included together in Table IV by column entitle E/I. The following tables are the feedback for each of the Question 2, Question 3, Question 4 and Question 5.

Table 1: Older People Feedback for Q2.

Participants	Feedback
P1, P2, P4, P5, P7, P8	Important
P3, P6	Very Important

From Table I, the participants in general found that mobile spiritual applications are important since it is easy to carry everywhere and can be referred at any time. Even though half of the older people do not have any experience on using mobile

spiritual apps previously, but they feel it is an important application for them to have.

Table II: Older People Feedback for Q3.

Participants	Feedback
P1	I use Google to listen to religious lectures, seeking religious doctrine and hadith, reading the news and also find the cooking recipes.
P3	Sometimes I use Mobile Quran when going to the mosque, while waiting for the Adhan, I will read it. Use Google, but rarely.
P6	Find information on the religion, Hadith, etc. from the internet.
P7	Social, for games, searching information, for business matter and spiritual.

Three of the participants in Table II reported that they normally use the Google browser to find for religious information from the internet while the other 4 participants did not give any answer since they are inexperience of using mobile apps that are equipped with internet connection. Among all the participants there is only 1 participant that shows an interest towards entertainment apps such as social networking and games. It generally shows that, older people have a high tendency on searching for religion and spirituality information to equip themselves with religious knowledge during their later life and religion is one of the important elements for older people.

Table III: Older People Feedback for Q4.

Priority Order	Application Name
1	Mobile Quran
2	Adhan/Prayer reminder
3	Zikr Counter
4	Islamic Calendar
5	Qiblat

The order of mobile spiritual apps chosen by older people in Table III was made based on the total frequency of application name answered by participants during the interview. The Mobile Quran as, for example there are 7 participants who agree Mobile Quran is the most important application followed by an Adhan/Prayer reminder with 4 participants agreed on that app. This answer gives an input on the needs and priority of mobile spiritual apps type needed by older people. Mobile Quran and Mobile Adhan/Prayer reminder fall under the category of practical and experiential themes of mobile spiritual apps. According to [33],

there are three types of techno spiritual applications consists of practical, experiential and institutional.

The following Table IV summarizes the participant's feelings and emotions while using mobile spiritual apps from user experience evaluation view.

Table IV: Older People Feedback for Q5.

P	Age	E/I	Gender	User Experience Evaluation feedback
P1	67	I	Female	iQuran is good since it has audio recitation, can help learning Tajweed.
P2	67	I	Male	Same like using manual Quran.
P3	60	E	Male	Easy to carry everywhere. I feel happy and close to God when using the apps.
P4	60	I	Female	Feel calm.
P5	60	I	Female	Calm, free from problem.
P6	73	E	Male	Feel calm, close to God and can still listen to the recitation although we are not reading it, can avoid from evil interference.
P7	68	E	Male	iQuran is good as it can help learning Tajweed. It is easy to carry everywhere. For feeling it depends on the type of Verses.
P8	63	E	Male	Manual Quran is original and there must be different reciting manual Quran compared to Mobile Quran.

Referring to the above Table IV, it can be highlighted that the use of mobile spiritual apps as according to the majority of older peoples can be categorized into two main aspects which are usability and also user experience. Usability focusing on the content, functions, presentation and interaction matter compared to the user experience evaluation that merely focused on the pragmatic and hedonic value. For instance, from the responses, P1 and P7 gives their comment only on app's features such as 'audio recitation', 'audio for learning Tajweed' and also 'apps mobility'. In addition, P2 and P8 did not answer the question from the perspectives of user experience, however, tend to make a judgment between manual versus manual Quran. Even though the main target of this study is actually to dig out user experience aspect

instead of usability however, while doing interview session the user most of the time tend to give comment on apps usability compared to their experience on using that app. This could be because the way of asking the interview question is sometimes indirect and so it is hard for them to understand the questions. Therefore, it is suggested that in an interview, especially with older people, be direct in asking questions.

From the above table, several user experience answer were obtained after asking the same questions for almost two or three times in a session. In terms of user experience, the older people said that they feel happy, close to God and calm while using the mobile spiritual apps. Despite of spiritual experience, some of the participants highlighted on usability issue of the mobile spiritual apps, especially on the functions part, for instance, the apps are easy to use for helping them in correcting their Quran reading, pronunciation and it is easy to memorize al-Quran by using the apps since the apps was equipped with audio recitation. However, there is also a suggestion from the older people (P6) on the use of text translation from Arabic language in the Malay version of Arabic language since there are also older people who are unable to recite Quran in Arabic. The comment is…"*If you can add one more function to the apps which is the Arabic translation in Malaysian language to facilitate those who cannot read Quran*". They also give positive feedback on using mobile apps as it is easy to bring anywhere.

By referring to the above user experience evaluation feedback, we can make initial conclusions that by using mobile spiritual apps obviously contribute towards changes in the emotional state of the older people. Emotion is one of the strongest differentiators in user experience, namely because it triggers unconscious responses to a product. Researchers map the user experience that gathered from the user experience evaluation with Russell's Model of Emotions. From the study, several participants' answered that they feel happy, close to God and calm while using the mobile spiritual apps. The keyword used to describe older peoples' emotions which are circled in A in Figure 3 is happy, serene and calm. This input is going to be used in the next study where researchers are going to confirm on the emotions element gathered from this study and also investigate on the appropriate method to capture these emotions in the next user experience evaluation by using mobile spiritual apps. This is because the initial result gathered from this study discovers that the use of

interviews and observation method in capturing user experience towards using apps of older people is insufficient and the method needs an improvement.
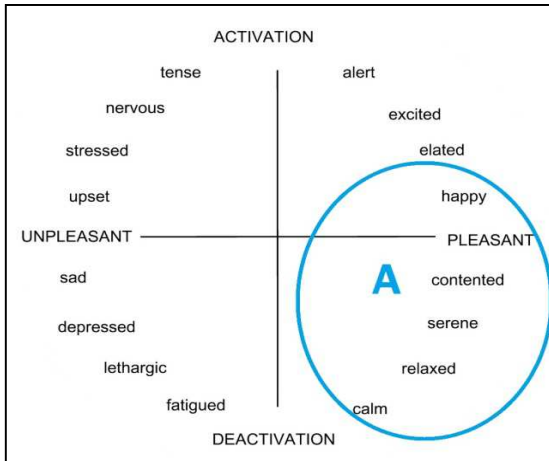

Figure 4: Russell's Circumplex Model of Emotions [http://cs3240team08.weebly.com/11/post/2012/3/seminar-emotion-in-human-computer-interaction.html].

In this preliminary study, researchers try to use interview and observation method to capture user experience, however the selected method are going to be improved with an additional tool as suggested from the review.

5. DISCUSSIONS

In this chapter, researcher will highlight the discussion in two parts; the first part is on the suitability of conducting interviews and observation in obtaining spirituality user experience, the second part is on the appropriate strategy of conducting interview study with sensitive users such as older people.

Firstly, the interview is a good method for conducting user experience evaluation as through interview researcher can ask in detail and respondents can freely give their opinion. In addition, an interview, which involves face to face interaction by seeing facial expressions, gestures of researchers while asking questions makes respondents understand more and feel the connection while answering questions. However, there are few challenges in collecting user experience data by using an interview, especially for spirituality types of experience. Spirituality experience seems to be sometimes private for older people to be discussed in public; therefore interviewing face to face makes it hard to express their real feelings. In addition, the user can easily express their opinion about apps functionality and its characteristics, however, it is difficult to express their feelings verbally in an interview and observation method yet the use of other methods perhaps can complement this issue.

Secondly, the experiences presented in this paper contain information to understand attitudes towards the use of mobile spiritual apps among older people. Based on the study, there are four elders having an experience in downloading and using mobile spiritual apps. However, only two elders are actively in applying mobile spiritual apps in their daily lives and both are still working with a qualification of at least a diploma holder.

Although there is great flexibility in the ways of researchers conduct the qualitative interview [26], we learned some valuable lessons from our preliminary study:

- Focus more on establishing rapport as on gathering data. It is important to consider how best to establish a relationship starts with effective first contact, whether a visit (through word of mouth), or a phoned request. Positive rapport amongst interviewer and interviewee will contribute to an open, trusting and safe relationship with the participant.

- Ethical considered in establishing a relationship. As Patton [34] suggested a list of general ethical issues that have to be considered, such as reciprocity, assessment of risk, confidentiality, informed consent, and data access and ownership. Moncur [35] highlighted that ethical considerations surrounding HCI research in sensitive contexts should be included of reflective of research experience, informed consent, reliability of the research and providing confidentiality when reporting results.

- Being empathic in order to define characteristic of designer-user relationships when the design is concerned with user experience. Even though some form of empathy may appear when designing for older people, it is not a prerequisite for insightful research or design [36].

- Maintain a good relationship required reflection statements on their understanding of what the client has communicated (verbally or non-verbally) and reactions to the responses of the interviewees to highlight a specific point. There is a need to apply reactions to the responses of the interviewee in order to play the role of "active listening".

- Attention needs to be paid to formal and informal ways of using language by avoiding jargon.
- Reacting to any questions from participants and able to manage self-disclosure.
- Consider a culturally sensitive way on the sensitive nature of the research topic, especially when asking questions related to a religion/spirituality and relationship between human and God. E.g.: "How many times will you read Quran per day?".
- Reciprocity is an effective strategy to be applied as a token of appreciation for their time to thank the participants. For this study, all participants were given some food and drinks in the middle session (approximately after the first 30 minutes), and then rewarded with a gift incentive at the end of the interview session

In order to produce an independent and successful older people in Malaysia, they should be enriched with four main elements as discussed earlier, which are positive spirituality, healthy physical/mental, engage in active life and minimize risk and disability. All these activities related to the real-world and end-user experiences will facilitate the researcher in involving further investigation about the use of mobile spiritual apps for older people to support their independence and well-being [37]. As a technological entity, we should play a role to help older people generation to become part of technology user's especially mobile technology by providing usable apps.

6. CONCLUSIONS

This paper reported that the involvement of older people in research is a growing phenomenon: particularly in Malaysia. The study was carried out in a rural area of Selangor, which may limit its applicability to other areas. However, older people and practitioners who participated reflected the socioeconomic diversity of the study sites. This paper has explored the nature of fieldwork from field interviews and observation as a simple starting point for researchers and designers seeking to work with older people. A preliminary study during fieldwork and a more in-depth analysis afterwards may enhance the awareness of appropriate ways in conducting user experience evaluation method with older people who will affect both the research process and outcomes. This paper has only begun to touch on user experience evaluation method in capturing the spiritual experience while using mobile spiritual apps, the issues and the potential usefulness of incorporating them into accounts of

research findings needs further exploration and improvements.

Furthermore, researchers in the area of HCI are currently moving toward the deployment of user centered design where product should be designed align with user behavior in real world and consideration on user experience aspect while using the product is utmost important to confirm on the user satisfaction of the product. Mobile spiritual apps obviously among flourish applications on the mobile app store and these apps provide a subjective spirituality experience that needs to be explored in future. Therefore, in order to produce usable mobile spiritual apps for older people, we need to identify how to evaluate spirituality types of apps to tailor with older people needs. This paper concentrates on the use of interviews and observation method in evaluating older people spirituality experience. It can be concluded that interview and observation are the two best tools in the process of capturing user spirituality experience especially for older people. However, it is most of the time difficult to express user feelings verbally in an interview and observation method yet the use of other methods perhaps can complement this issue. Therefore, in our future research, we plan to improve the method of capturing subjective user spirituality experience data. An initial model will be developed as a guide to evaluate older people experience spirituality. The benefits of future research will accrue to older users through the assistance of usable mobile spiritual apps in fulfilling their quality life and ensuring successful ageing.

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