Fuzzy Delphi Method Application In The Development Of I-Tourism In Arabic For Specific Purpose

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Abstract
A study on the development of the i-Tourism smartphone application needs to be carried out to meet the needs of the Islamic and Shariah related tourism sector in Malaysia as well as enhancing the Arabic language as the learning medium and practical use in daily life. This study is conducted to examine the i-Tourism application, whose effectiveness is assessed by experts from the aspects of usability, ease of use, user satisfaction, and the technology of this application by using Fuzzy Delphi method (FDM) analysis. The research findings show that the experts rejected most of the items found in the four aspects, namely application usability, ease of use, user satisfaction, and application techniques. According to experts, the application developed is not too unique, and the information provided can still be accessed through a Google search. Some experts stated that the developed application seems to be still at an early stage because it does not have a lot of information and functions. As for the relation to learning and teaching Arabic, this mobile application is an output product based on research-based analysis which was enhanced and developed from theoretical aspects and phases of Arabic for specific purpose (ASP).
Keywords: Islamic Tourism; I-Tourism; Fuzzy Delphi Method; Arabic for Specific Purpose (ASP)

INTRODUCTION

Tourism Malaysia Statistics show that 21.75 percent of the 25 million foreign tourists who visited Malaysia in 2012 were Muslim tourists. The Middle East country shows the highest number of Muslim tourists, followed by Indonesia and Singapore, which total up to 138,869 tourists. They are from the United Arab Emirates, Saudi Arabia, Bahrain, Syria, Lebanon, Egypt, Yemen, Oman, Qatar, Iraq, Kuwait, Jordan, Morocco, Algeria, Libya, Tunisia, Sudan, Ethiopia, Djibouti, and Mauritania. Looking at the number of tourist arrivals, average accommodation income, and per capita in 2011, the main country of the Middle East, namely Saudi Arabia recorded an increase in the number of tourist arrivals, namely 86,771 (2010) to 87,693 (2011). Their average stay was between 9.3 days to 9.6 days, while their average per capita expenditure increased from RM8047.10 (2010) to RM8154.80 (2011). Total revenue from tourism activities recorded an increase from RM698.3 million (2010) to RM717.1 million (2011). (Council of Culture, 2013).

There are limited numbers of studies on Islamic tourism, especially on the development of smartphone applications. Yet, there is a proliferation of applications with 5-star testimonials that have been developed, downloaded, and used. Researchers found

that these applications focus only on world cities in western countries, such as England and European countries and does not focus on Malaysia. In addition, there are applications which their contents are incomplete, such as 'MyRating' Application, which does not meet the components of Islamic Tourism outlined by the Organization of Islamic Cooperation (OIC), namely Halal Hotels, Halal Transportation, Halal Food Premises, Tourism Packages Halal and Halal Finance. (Akyol & Kilinc, 2014). The study conducted by Abdul Halim Salleh (2005) in his MA thesis formulated an Arabic language curriculum for pilgrims for Hajj and Umrah. This study however touches only on visits to places of Hajj & Umrah in Haramain and not tourist spots available in Malaysia.

Meanwhile, the study of the Arabic Language Needs Analysis Model for Islamic Tourism through Naqli and Aqli Integration by Mohammad Najib Jaffar (2018) can be the basis for the content development of smartphone applications. The main findings of this study can be seen from various aspects. Among them are the main factors attracting Arab tourists to Malaysia, which are halal food and shariah-compliant hotel services. From the aspect of needs analysis, improvements were made in the apps content, such as identifying tourist attractions that do not provide information in Arabic language. From the aspect of the information deemed important by tourists, several suggestions have been identified. Among them are the topics selected in the module that should cover the field of educational tourism, business tourism, and health tourism. From the aspect of necessities, Arabic language android application in Islamic Tourism is significantly needed to be developed.

In formulating smartphone applications that require positive attitudes and motivation, Anzaruddin Ahmad's study found that over 70% of 80 respondents had less encouraging attitude towards the importance and the need to master Arabic for Religious Purposes (BAUTA), and were less motivated to learn it. What was more unfortunate is that all respondents did not study Islam directly from its main sources, namely Al-Quran and Al-Sunnah but instead through works translated or written in Indonesian and English. He also suggested that further research be done to further strengthen the findings that attitude and motivation among professionals is a determining factor in the success of a student in mastering the Arabic language. Therefore, a study on the development of i-Tourism smartphone applications needs to be conducted to meet the needs of the Islamic Tourism sector in Malaysia in particular.

METHOD

This study, using meta-analysis, employed questionnaire as instrument. Furthermore, documentation analysis and Fuzzy Delphi method were used to obtain secondary and primary data. The development of i-Tourism applications also employed the Design, Development & Research (DDR) approach. The three phases were needs analysis, design and development, as well as usability assessment.

Analysis Phase

Analytical study of android and IOS-based travel applications was used to get a more in-depth picture of the study to be conducted. An analytical study on the materials of the travel applications based on android and IOS is required to develop the i-Tourism smartphone application.
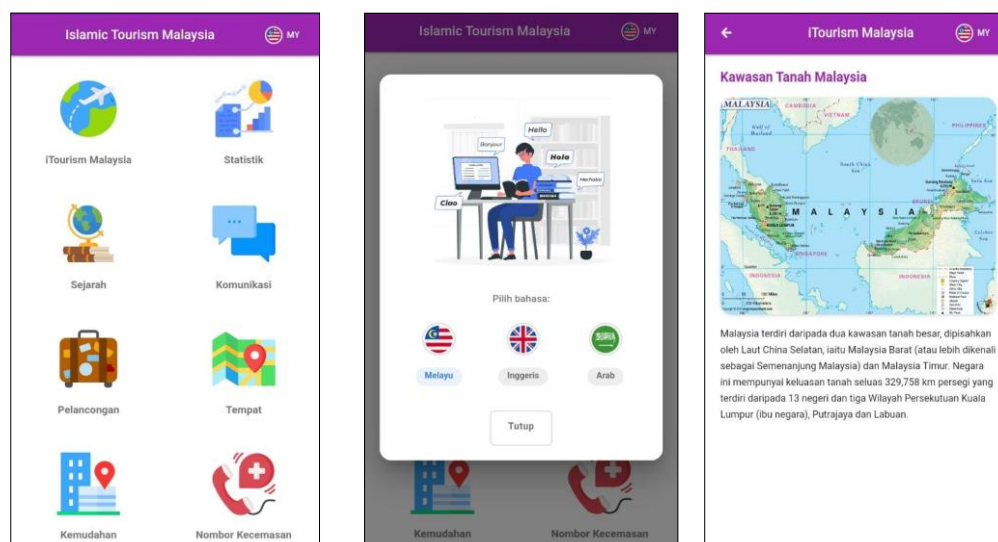
The needs analysis phase in this study employed the literature review method that focuses on needs, lacks and wants. In this phase, the researchers gather all the information that is appropriate and relevant to the analysis of the needs of Islamic tourism applications. This information can be obtained from scientific books, research results, research reports, encyclopedias, facts, yearbooks, and written or electronic sources. The literature review shows that there is a need for the development of the i-Tourism application for Islamic tourism in Malaysia.

Design and Development Phase

All inputs, processes, and outputs related to the design of the study that is required must be identified during this phase, so that the smartphone application development process runs smoothly without any problems and can meet the needs of users. This i-Tourism application is developed with trilingual function that includes Malay, English, and Arabic language to make it easier for users to use this application. The app is also developed with several functions that feature important information, such as Malaysian land area, population statistics, Malaysian history, Islamic tourism terms or short Arabic conversations, and tourist attractions that include places such as mosques, museums, recreational places, and universities. In addition, the application also offers information on food and beverages, accommodation, and specialist hospitals. There is also feature that provide a list of emergency numbers that can be called if there are any problems.
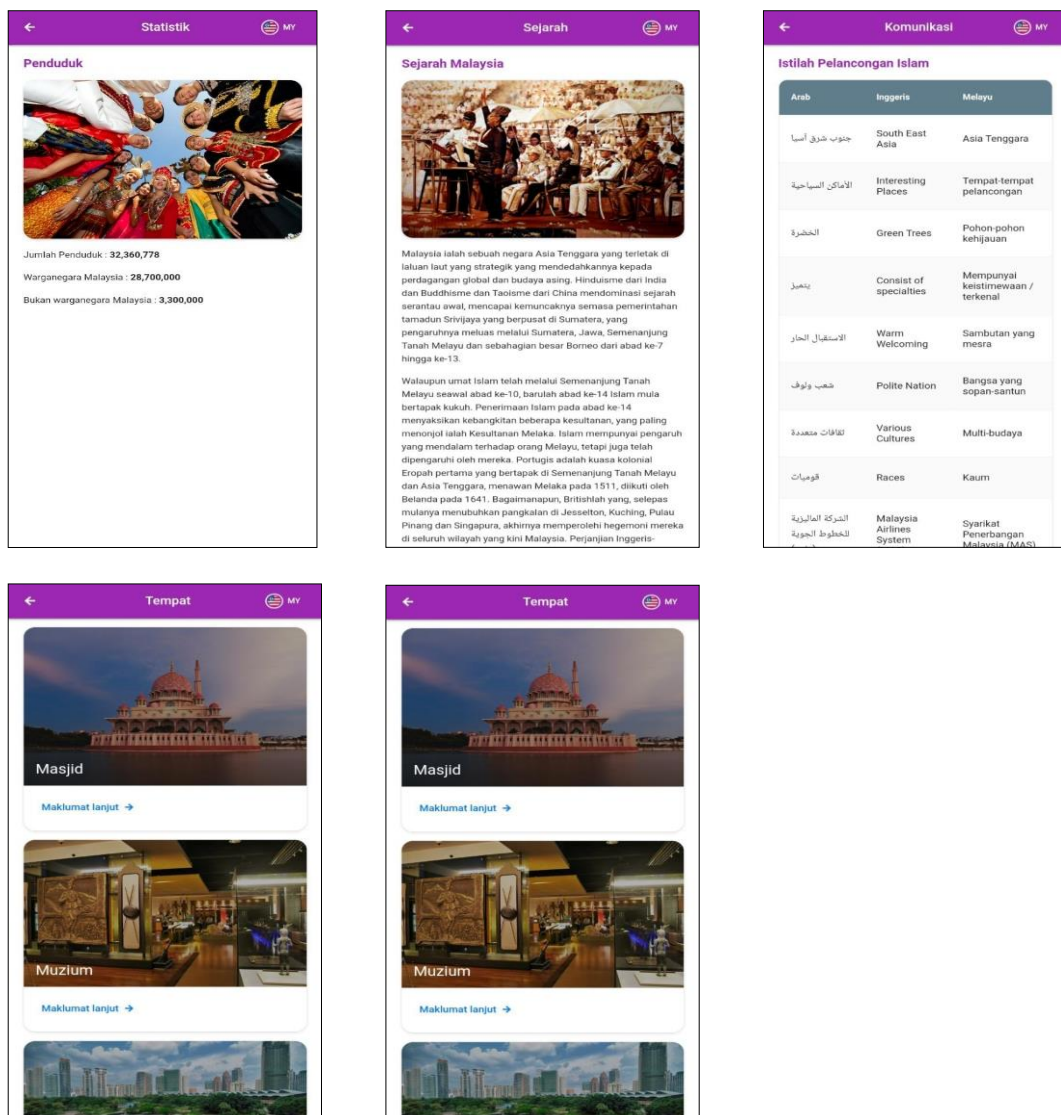
Implementation and Evaluation Phase

The procedure in this phase began with programming, followed by testing, documenting and finally leading to the operation on the server. In the evaluation phase, the effectiveness of feature and functions of i-Tourism smartphone application will be validated by nine experts. Rosnaini (2006) in Mohd Ridhuan (2016) states that five is the minimum number of experts for the Delphi technique. This is in line with Rowe and Wright's (2001) argument that the number of experts can range from 5 to 20 people based on their area of expertise.

The background of the experts, who are also the subjects of this study, is very much relevant to the context of the study as it involves the fields of academia, innovation, technology, and tourism. This selection is also based on a group of scholars who assert that experts are those who are highly skilled and experienced in the field under study (Swanson & Falkman, 1997; Dalkey & Helmer, 1963).

Thus, based on the discussion on the selection of experts for the design and development phase of this application, the researchers have identified several criteria taken as experts and the criteria are as follows:

1. Field Specialist at Public University
2. Industry Representative (Islamic Tourism Center)
3. Expert in the field of smartphone application development

The application evaluation process in this phase is through the distribution of questionnaires and application links to be downloaded by the experts involved online. Face-to-face meetings could not be conducted due to Covid-19. The purpose of the questionnaire is to obtain experts' validation on the i-Tourism application developed. The approach used was the *Fuzzy* Delphi Method (FDM). This questionnaire contains 5 sections; Section 1: Demographics; Section 2: Application Usability - 10 questions; Section 3: Easy to Use - 12 questions; Section 4: User Satisfaction - 7 questions, and Section 5: Application Techniques - 6 questions.

Prior to the validation, the experts were given tutorials and explanations on the functions and features in the application by the authors. The usability evaluation phase involved the 9 experts comprising members of academia, tourism, innovation, technology, and application developers. Using the Fuzzy Delphi (FDM) method, the experts were to identify errors in the apps and make improvements. The experts' validation is significant before the app is ready for the target users.

RESULT AND DISCUSSION

The results were analyzed by evaluators, who are skilled in various fields, using the *Fuzzy* Delphi (FDM) Method that evaluates the usability of the i-Tourism application. This method is used to obtain experts' consensus on the effectiveness of the developed application.

Through this method, three conditions must be complied with. The conditions are: Threshold value (d) $\leq$ 0.2. Expert Agreement Percentage $\geq$ 75%. Score Fuzzy (A) $\geq$ value $\alpha - cut$ = 0.5

1. Usability Aspect

Based on the summary of FDM analysis which shows the calculated threshold values, the percentages of experts' agreement, and Fuzzy score (A) value, is illustrated in the following table of analysis.

Table 1: Application usability aspects based on Fuzzy Delphi (FDM) analysis and expert panel recommendations

Item / Element	*The threshold* value, d	Expert Group Agreement Percentage, %	*Fuzzy* Score (A)	Expert Agreement
This application can be used as specified.	0.251	66.7%	0.585	REJECT
This application can be used comfortably.	0.275	55.6%	0.604	REJECT
All information is well presented and easily accessible.	0.288	55.6%	0.563	REJECT
The information is comprehensive enough for tourists to explore Malaysia.	0.263	77.78%	0.515	ACCEPT

The content is very useful for the target audience; Arab tourists.	0.287	66.67%	0.589	REJECT
The text is readable.	0.256	88.89%	0.789	ACCEPT
The main menu is presented for users to explore the content.	0.251	77.78%	0.678	ACCEPT
Content delivery is highly interactive.	0.270	66.67%	0.544	REJECT
The application displays information immediately.	0.317	55.56%	0.619	REJECT
This application takes a short time to master.	0.324	55.56%	0.596	REJECT

Table 1 above shows the findings for the usability aspects of the application that has gone through the agreement and recommendations by the panel of experts.

2. Ease-of-use Aspect

Based on the summary of FDM analysis which shows the calculated threshold values, the percentages of experts' agreement, and Fuzzy score (A) value, is illustrated in the following table of analysis.

Table 2: Ease-of-use aspects based on Fuzzy Delphi (FDM) analysis and expert panel recommendations

Item / Element	*The threshold* value, d	Expert Group Agreement Percentage, %	*Fuzzy* Score (A)	Expert Agreement
This application is easy to use.	0.275	55.6%	0.604	REJECT
The interface of this application is user friendly.	0.288	55.6%	0.563	REJECT
Consistent app performance.	0.313	44.4%	0.581	REJECT
This application can be used without the help of others.	0.266	66.67%	0.752	REJECT
Easy to find the necessary information about Islamic tourism in Malaysia.	0.336	55.56%	0.574	REJECT
Basic communication guide Arabic - Malay is easy to follow.	0.201	88.89%	0.689	ACCEPT
The interface layout is well arranged.	0.419	44.44%	0.526	REJECT
The overall shape is simple and practical.	0.309	44.44%	0.604	REJECT
Users can access any sub-topic at any time.	0.336	44.44%	0.637	REJECT
Users are free to explore information.	0.313	66.67%	0.674	REJECT
Users are free to exit the application at any time.	0.290	55.56%	0.711	REJECT
The application via mobile phone is easy to use.	0.292	55.56%	0.659	REJECT

Table 2 above shows the findings for the ease-of-use aspect that has gone through the agreement and recommendations by the panel of experts.

3. User's Satisfaction Aspect

Based on the summary of FDM analysis which shows the calculated threshold values, the percentages of experts' agreement, and Fuzzy score (A) value, is illustrated in the following table of analysis.

Table 3: Aspects of User's Satisfaction based on Fuzzy Delphi (FDM) analysis and expert panel recommendations

Item / Element	*The threshold* value, d	Expert Group Agreement Percentage, %	*Fuzzy* Score (A)	Expert Agreement
I am satisfied with the functionality available on this app.	0.267	33.3%	0.500	REJECT
This application has all the useful functions.	0.332	22.2%	0.504	REJECT
This app is fun.	0.359	55.6%	0.526	REJECT
Islamic tourism info available in this application attracts tourists to visit the place.	0.267	33.33%	0.500	REJECT
The colour is attractive and soothing to the eyes.	0.382	44.44%	0.552	REJECT
Users can distinguish between displays and interactive images.	0.239	66.67%	0.522	REJECT
Users can easily log out of the application.	0.440	22.22%	0.615	REJECT

Table 3 above shows the findings for user's satisfaction that has gone through the agreement and recommendations by the panel of experts.

4. Technical Aspect

Based on the summary of FDM analysis which shows the calculated threshold values, the percentages of experts' agreement, and Fuzzy score (A) value, is illustrated in the following table of analysis.

Table 4: Technical aspects of the application based on Fuzzy Delphi (FDM) analysis and expert panel recommendations

Item / Element	*The threshold* value, d	Expert Group Agreement Percentage, %	*Fuzzy* Score (A)	Expert Agreement
The buttons in this app work well.	0.328	77.8%	0.696	ACCEPT
A hierarchy of information is used in the application.	0.216	77.8%	0.544	ACCEPT
The concept of graphic design is appropriate.	0.421	33.3%	0.522	REJECT
The icons used are easy to understand.	0.326	44.44%	0.593	REJECT
The navigation structure is well designed.	0.309	44.44%	0.604	REJECT
Smooth interaction without technical glitches.	0.387	22.22%	0.622	REJECT

Table 4 above shows the findings for the technical aspects of the application that have gone through the agreement and recommendations by the panel of experts.

The majority of items found in all four aspects namely *application usability, ease-of-use, user satisfaction and application technical were rejected. There were only a few items accepted by experts, namely the information is comprehensive enough for tourists to explore Malaysia, the text is readable, the main menu is presented for users to explore the content, the basic communication guide Arabic - Malay is easy to follow, the buttons in this application work well and Hierarchy of information is used in the application.*

CONCLUSION

In conclusion, the majority of the functions and features of this app is not found to be effective by the experts. The majority of items found in all four aspects, namely application usability, ease of use, user satisfaction and application technique were rejected. According to the experts the application developed is not very unique as the information provided can still be accessed through Google search. Some experts state that the application developed seems to be still at the initial phase because it does not have much information and functions.

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