

The Development of Smart Travel Guide Application in Madura Tourism

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Abstract—The development of technology experienced very rapid growth. One of the benefits of this is the use of smart phones that are widely used by the public in making it easier to carry out daily activities. the purpose of our research is to promote tourism to the outside world by utilizing smart cellphones as a platform for its introduction. The tourism we introduce is Madura Island, which is one of Indonesia's islands. Similar to its island name, Madura is inhabited by Madurese with a population of around 20 million. Madura consists of four districts including Bangkalan, Sampang, Pamekasan, and Sumenep. However, not many Indonesians and foreigners explore this island. This makes tourism in Madura still not widely known and enjoyed. Besides tourism, we also add culinary features in our application so that visitors can enjoy tourism as well as culinary in Madura. We develop smart applications based on mobile with navigation guidance to users. Hopefully, the user is facilitated during a visit to Madura in making traveling easy and fun.

Keywords: *Madura, mobile application, smart tourism, travelling*

I. INTRODUCTION

There is no doubt that we are currently in a very rapid technological development. The rapid development of technology currently has an impact on the ease of community activities more easily and quickly. Based on this, a lot of technology will be built in overcoming problems that arise in people's daily lives. The

technology used by modern society is now more based on smartphone technology. The benefits of smartphones as a communication medium that is easy to use for example smartphones connecting several people, users can watch videos, play games, listen to music, pay online and others [1]. Based on data on the status counter as of March 2020, smartphone operating systems that are widely used by the public namely 92.65% Android, 7.16% iOS, 0.07% Samsung, 0.03% Windows, 0.03% unknown and 0, 02% Tizen [2].The advantages of Android compared to other operating systems include (a) Android is an open source operating system which means that on this platform the process of developing application developers can be free, (b) Android provides complete tools making it easier for developers to build applications, and (c) Android is free where the application development has no restrictions [3].

With current technological developments, technology can be utilized in various sectors of life including the economic, political, tourism, entertainment, education and other sectors. The role of technology and information in the aspect of tourism can be applied in introducing tourism in Indonesia. Tourism is also one aspect of improving the economic sector in Indonesia. In various media reports mention that in 2017, tourism in Indonesia has doubled over the last few years. Foreign exchange income from tourism in 2016 reached \$ 16.3 billion. The lift will

increase if it is accumulated with indirect income and can reach \$ 72.4 billion [4]. This increase is coming from Asian countries such as Chinese tourists who exceed Malaysia, Singapore and Australia [5]. Indonesia has a combination of tropical climate and Indonesia consists of various islands so that makes Indonesia has a diversity of cultures, religions and traditions. Tourism location in Indonesia have characteristics including nature, nature reserves, botanical gardens, marine parks of art, and culture [6]. On the other hand, tourism location are supported by a rich cultural heritage that reflects the history and ethnic diversity of Indonesia. Some of the tourism location that have been known to foreign tourists are in Bali, East Nusa Tenggara, West Sumatra, West Nusa Tenggara, D.I. Yogyakarta, Jakarta, Central Java, West Java, North Sumatra, and East Java [6].

Madura Island is an area in East Java, is also not inferior to other islands where Madura also has a diversity of ethnic cultures that have not yet been explored by Indonesian people and foreign tourists. Based on the lack of understanding of visitors to Madura tourism, these locations are considered not well-known compared to other tourist destinations in Indonesia. One of Madura's original wealth is batik crafts that still retain the uniqueness and nuance of the local culture [7, 8]. The uniqueness found in Madura batik is that there is no twin, the pattern is not monotonous, and the color will not fade. Another wealth owned by Madura is the Karst Bukit Jaddih. The Jaddih Hill Karst is a former limestone quarry location that has turned into a tourist area after it has been managed partially by individuals or community groups [9, 10]. One way to introduce Madura tourism is by using online promotions. Online promotion is done by presenting positive messages to convey a positive image of a tourist attraction [11]. In addition, other promotional strategies are used through social media, the formation of tourist awareness groups and much more. Another obstacle is the lack of understanding of tourists related to Madura and the location of the tourism. Based on the above problems, the authors developed an intelligent travel guide application. The purpose of this research is to promote tourism in Madura and assist travelers in making travel trips on the island of Madura

II. RELATED WORKS

Smart tourism in the last few years has been widely developed. Smart library was published in 2013 to 2019. Library research was published in 2013. In addition, this study also provides a gap for further researchers to make research on smart tourism that does not yet exist [12]. This is very helpful for researchers in taking advantage of existing technology to enrich insights and develop further in this sector. The internet and social media are important channels. The use of these two things is for the purpose of providing company references by way of benchmarking and road mapping. the research results get three dimensions; social media, web-based marketing and mobile-based applications [13]. From both studies, the application of smart phones as a medium to introduce territory to the public. Indonesia should develop smart tourism by utilizing this technology. This research helps tourists visiting Indonesia [14]. This application was built in 2017 and gets pretty good results by 86% of 35 respondents. The results obtained by testing the questionnaire and respondents randomly selected. However, this study only discusses what is well known in Indonesia so that the Madura region is not covered. From the three studies above, researchers also developed an intelligent travel guide application in order to promote the Madura region.

III. SYSTEM OVERVIEW

The development of this smart travel guide application is based on a mobile application where the developer used Android Studio. In the process of developing this application includes several things such as study area and Methodology and Application Description.

1.1. Study Area

Study area is the coverage area that is used as data in building systems. In figure 1, the Madura island region consists of four districts including Bangkalan District, Sampang District, Pamekasan District and Sumenep District. Madura Island has an area of 5,200 km² km² with a total population of nearly 4 million inhabitants. In the data [15], a detailed history, geography, economy, social conditions of society, transportation, art, culture and much more have been described in Madura. However, it still hasn't enticed the wider community to visit Madura.



Figure 1. Madura Island [16];

1.2. Methodology and Application Description

We built this guide application using the Application Development Cycle Model (MADLC) approach. The model is proposed by activating a systematic approach in the development of its application. This is done, looking at smartphone functions that are complex and different from desktop applications [17]. Identification phase by generating a system requirement .Application functional requirements obtained by observation and interviews. The prosses of

elisitacion requirement by observation techniques is done by visiting directly the tourist and culinary locations in four districts. While the interview technique is done by conducting the interview process with several relevant stakeholders. The next phase of application functionality is broken down into modules and prototypes. which later the prototype will be defined into the design phase by building prototyping user interface designs as an easy step for developers in building systems (Figure 2-5). The results of this phase will be documented and passed on to the development team for coding.



Figure 2. Main page

In each district there are 3 features namely district information, tourism and culinary. District information contains the Province, Regent, Deputy Regent and Area Size. In addition to the information, the application also includes a map of the district's location in order to make it easier for users to find out the location of the district (Figure 3). Existing features in the tourism feature can be seen in Figure 4. Information on each tourism place will be described if the user selects one of the many existing touristm . The features provided are related to the description of tourism including photos of tourism, description (name of tourism, opening hours, address and a little information related of tourism), location map and navigation. In addition tourism, one more feature provided is

culinary. Not much different from tourism, this paraoh is affixed with culinary photos, culinary descriptions and navigation (Figure 5). Navigation functions as a guide for users who want to point to locations. Navigation will be directly connected to the Google Maps application. With this navigation features, visitors who have never been in Madura will easily explore the whole island of Madura. The final phase is testing. Testing is one of the phases in the development cycle that serves to find out the

error and quality of the system [18] (discussed in the result). At the testing stage of developing mobile applications for effective quality assurance is needed [19].

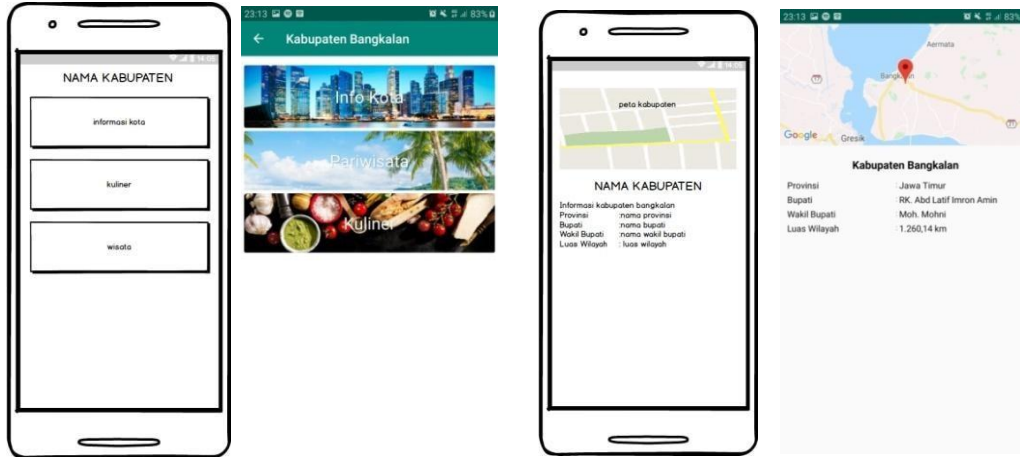


Figure 3. Views on each district



Figure 4. Views tourism



Figure 5. Views Culinary and directions

IV. RESULT

In order to test the success of the smart guide application that we built, researchers conducted functional testing of applications and distributed questionnaires [20].

Respondents were drawn from the Madura community and people outside Madura. Functional testing of the application can be seen in table 1. Based on table 1, all the features in the application can run according to

its function.

Tabel 1. application functionality testing

Fitur	Deskripsi Fungsi	Check
Main page	Displays the main page of the application along with the district logo	√
Menu page	Featuring 3 main features of the application:	√
	Information, Tourism, Culinary	√
	Showing tourism in each district	√
Tourism page	Showing tourism photos	√
	Showing descriptions of tourism	√
	Map of tourism	√
District Information	Navigation	√
	Map display	√
	Showing complete district information	√
Culinary	Showing culinary in each district	√
	Showing culinary photos	√
	Showing the address of culinary places	√
	Navigation	√

Based on the questionnaire that has been deployed, obtained 20 respondents have filled in the questionnaire. As many as 20 respondents who filled out obtained 11 respondents from Madura and 9 others from outside Madura. According to respondents who have filled in, 45% stated that the application that was built was very interesting, 40% was interesting, 10% was quite good and the rest was normal (figure 6). In addition, 80% of those familiar with the features provided and the rest say quite easily (Figure 6). And other important questions are related to the function of an application that has helped in making travel journey in Madura and 95% said the application has helped them (Figure 6).Based on the respondent's statement, the researcher can conclude that the

application that we built is easy to understand, with an attractive appearance, and is very helpful for the respondent in making a tour in Madura. Another question is the writer as an evaluation of the completeness of the application. The results of the respondents' questionnaire said 75% of the applications were complete, 20% were possible and the rest said no (6). The author also provides a comment column for respondents who want to give an idea of what additional features will be added to the application. The author summarizes three important points including adding (1) entrance ticket price information, (2) visitor rush hour chart information, and (3) accommodation information (transportation and hotel)

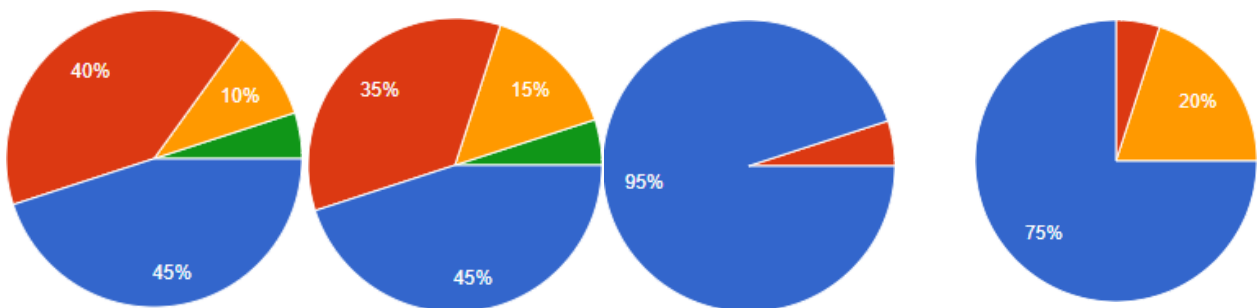


Figure 6. Responder results

V. CONCLUSION AND FUTURE WORKS

The main focus of this research is to develop an intelligent application in helping visitors to travel in Madura. This smart application provides a guide to tourist attractions, culinary, and information to the four districts in Madura. The application has been

integrated with Google Maps so that visitors easily travel. Besides this, with the development of this application the wider community and even foreign tourists can find out the diversity of nature, nature reserves, culture, language, and ethnicity. The results of a survey of 30

respondents application users said that the application is very helpful for them in traveling in Madura. With some idea from respondents, we will make improvements to complete our application. The extras we provide are adding (1) entrance ticket price information, (2) visitor rush hour chart information, and (3) accommodation information (transportation and hotel).

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