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# E-lakat: A Global Positioning System-enabled Tourism Application

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## Abstract

**Objective:** This study aimed to develop a mobile travel application specifically for the province of Eastern Samar, Philippines. This app will enable tourist to locate different tourist attraction in the province through their mobile phone. **Methods:** Rapid Application Development (RAD) model was used to develop the mobile application. In order to evaluate the application, International Business Machine (IBM) Software Usability Satisfaction Tool was adopted. **Findings:** Moreover, the researcher concludes that E-lakat, A Global Positioning System-enabled Tourism Application, was able to meet the objectives and requirements. Based on the result of the system testing, a weighted mean of 4.75 were arrived. The result shows that the application is highly usable and in consonant with the standard set by IBM. **Application:** It is highly recommended that this mobile application be used as a tool to introduce the province to the rest of the world.

**Keywords:** Global Positioning System, GPS Tourism App, GPS Travel Application, Travel App, Tourism Application.

## 1. Introduction

Mobile technologies have a tremendous impact on tourism. The development of mobile phones and software applications affected the number of consumption of tourism services in various places. Tourism is of great relevance to the global economy and the use of mobile phones has been on the rise in this sector in the recent years due to their mobility, portability and availability which has also led them to become the popular platform for ubiquitous computing. The mobile phone has improved regarding battery life and in its abilities to support complex tourists' applications that control information about way-finding functionalities[1].

Mobile tourism is relatively a new trend in tourism. The design and development of a location-based mobile tourism application for cultural tourism is being used in Malaysia via cloud based platform[2]

Mobile guide applications increasingly employed portable devices in a mobile range. A mobile guide taxonomy considering several criteria was provided in their work. The various aspects of the mobile application space including client architectures, mobile user interfaces and context awareness as well as offered functionalities, technological, highlighting functional architectural and implementation issues was also considered in the taxonomy[3]. The mobile technology has changed a lot and in the last few years' people have seen the arrival of various new kinds of gadgets in the form of smart phone, android and tablet phones. Today's most devices are fashionable, innovative, high-performing, durable, stylish and multi-tasking. With the rise of mobile applications, so-called apps, people today are more looking for information. Travelling different places is popular among men and women, young and old with a disability or without a disability. Each individual dreams to go to different interesting places. But can you imagine how the technology changed the way we travel compared to back in the days when people used to travel around the world using guidebooks, maps and printed material, but today it is now portable and always in your pocket in the form of mobile phone. Traveling with mobile phone

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installed with different travel apps will lessen one's efforts in finding tourist attraction and never getting lost in a new place. Along with this, one is always in touch with friends and families through Skype, Face book, Instagram and YouTube. That's how mobile phones have changed the way people have lived their lives. However, a problem is shown that tourists are not able to get travel information correctly when they are on the move. The mobile tourist guide takes advantage of the latest technologies and can take tourism to a new level when it comes to navigation and guidance of tourists. Hence, the researcher conducted a study entitled E-lakat: A Global Positioning System-enabled Tourism Application. It's a travel mapping application design to display information of the tourist attraction and their location.

## 2. Objectives of the Study

This study aimed to develop a GPS-based Tourist Guide Application entitled E-lakat: A Global Positioning System-enabled Tourism Application.

Specifically, the study aimed to:

### 2.1 Develop a Mobile Application with the Following Features:

- Map and Mark where tourism site is located.
- Shows user current location.
- Provide category (Beach, Caves, Falls and Landmarks).
- Display history, description and other information about a specific tourism site.
- Create route on how to go to the selected tourism site.

### 2.2 Evaluate the developed system using IBM Software Usability Satisfaction Tool.

## 3. Methodology

### 3.1 Software Development Methodology

The researcher used Rapid Application Development (RAD) (Figure 1) model in order to develop the system. RAD model also help to identify requirements needed in the application development.

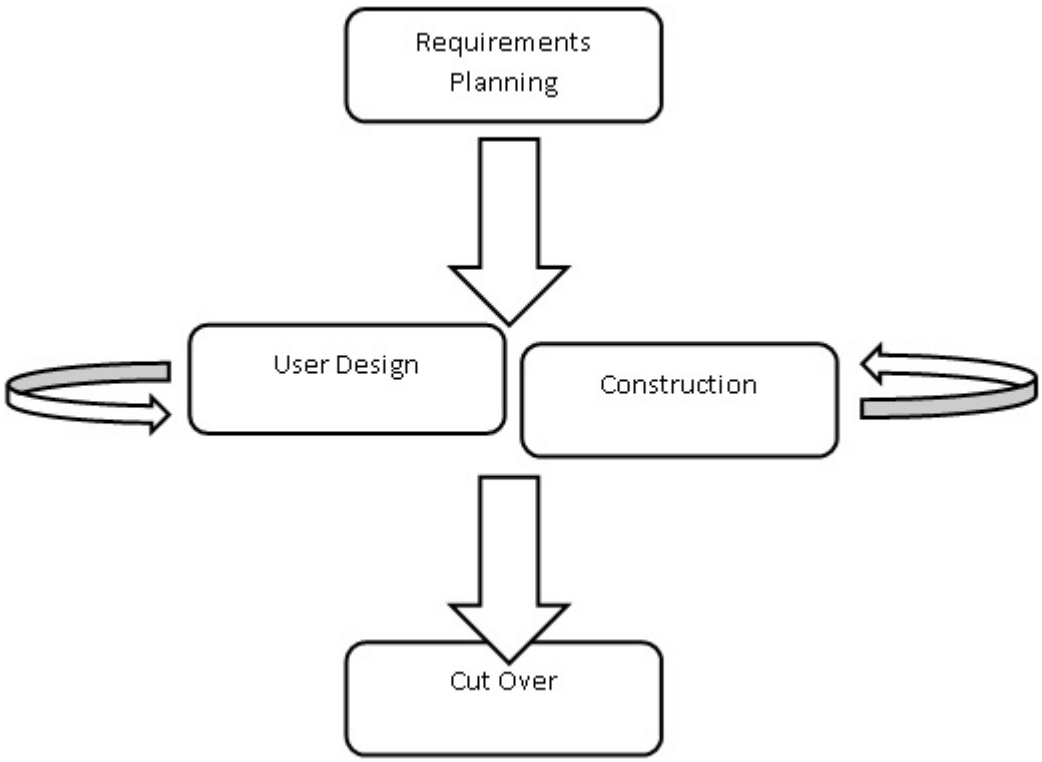


**Figure 1.** Rapid Application Development model.

### 3.2 Requirements Planning

In this phase, the researcher gathered data from the tourism office of Eastern Samar through an interview. Collected data was used as an input in the User Design phase.

### 3.3 User Design

The researcher selected the software that will be used in developing the application and scheming also the output image or the GUI of the system. The researcher starts to build the model/prototype based on the agreed plan by the end-user and the developer which shows the flow of the system. Users respond to the actual working prototypes and the developer defined the modules based on user responses.

## 4. Construction

In this phase, the researcher starts coding each module in the agreed prototype between the developer and the end-user until such time the system meets the requirements.

### 4.1 Cut Over

In this phase, the researcher conducted full-scale testing of the system. The user tested the flow of each refined prototypes and models of the system. If the user is satisfied with the system, the researcher will conduct training to the end-user but, if the user is not satisfied with the system, data conversion will be executed, it will be done by changing the design of the system until it will be fully develop and functional.

### 4.2 System Architecture

System architecture is the conceptual model that defines the structure, behavior and more views of a system. An architecture description is a formal description and representation of a system, organized in a way that supports reasoning about the structures and behaviors of the system.

Figure 2 shows the logical system architecture of the mobile-based tourist guide. The user interacts with the mobile phone. The mobile phone connects to the internet to display the user's current location on the map and other information and the user can also access web services.

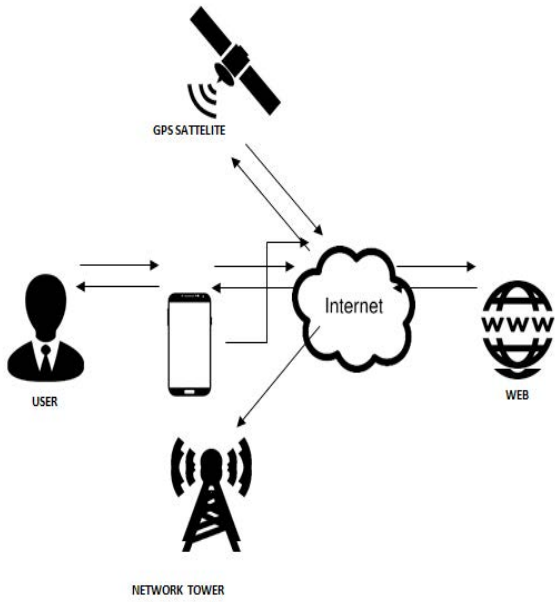


**Figure 2.** System architecture.

### 4.3 Research Design

This study used Developmental research design which is relevant for instructional technology. The Definition and Scope that development research is an organized study of manipulative, developed and estimating instructional programs, processes and products that must encounter criteria of inner consistency and efficiency. It also involved instances wherein the product or the system that has been developed is analyzed and the finished product or system is evaluated.

### 4.4 Instrumentation

The system was evaluated using the Software Quality Evaluation Tool based on IBM Computer System Usability Scale. It consists of questions that measure the user satisfaction with system usability.

### 4.5 Data Analysis

The descriptive statistics uses the means to present the demographic characteristics of the respondents and level of the system effectiveness.

### 4.6 Mean

This is the average of the scores – the mathematical center of a distribution. It is use symmetrical, unimodal distribution of interval or ration scores. The formula for mean is:

Where:

$\Sigma\chi$ = Sum of all scores.

$\bar{\chi} = \Sigma\chi$

$\eta$ $\eta$ = Number of scores.

## 4.7 Frequency Count

Frequency Count allows user to specify the binning parameters "from Minimum to Maximum" and the step by increment or interval number. The tool will provide some reference value of the minimum, maximum, and step.

## 4.8 Coding Scheme

The system was evaluated using the following scheme:

| | | |
|---|---|---|
| 5 | – | Strongly Agree. |
| 4 | – | Agree. |
| 3 | – | Slightly Agree. |
| 2 | – | Disagree. |
| 1 | – | Strongly Disagree. |

The obtain mean was interpreted using the following:

| Numerical Rating Scale | Adjectival Rating |
|---|---|
| 4.20 – 5.00 | Strongly Acceptable. |
| 3.40 – 4.19 | Acceptable. |
| 2.60 – 3.39 | Slightly Acceptable. |
| 1.80 – 2.59 | Unacceptable. |
| 1.00 – 1.79 | Strongly Unacceptable. |

## 4.9 Output and User Interface (GUI)

Figure 3 shows the splash screen of the developed mobile application. Once the user open the application, this splash screen will be flashed on the users mobile screen. Home screen is shown in Figure 4. This will allow the user of the mobile application to choose what specific category he wants to visit. Beach is one of the categories in the application. Figure 5 shows that the user can choose different beaches in the province. Information also is available once a particular beach is chosen. Figure 6 shows the Cave category. Information and pictures about the different caves in the province are all available in this page. Figure 7 is a screenshot of the category called falls. Information and pictures about fall in the province are all available in this category. Different Landmarks in the province are also available in the application. Figure 8 shows a screenshots in which you can select a particular landmark to view its information and pictures. Tourist spots are all marked or tagged in the map of the province. Figure 9 shows the user can select a particular tourist spot by just simply clicking a tag and information and pictures about that spot will be shown.


**Figure 3.** Splash screen.

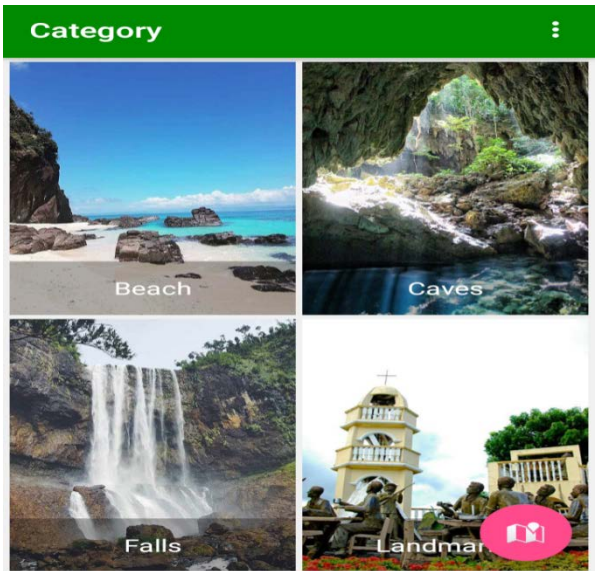


**Figure 4.** Home screen.

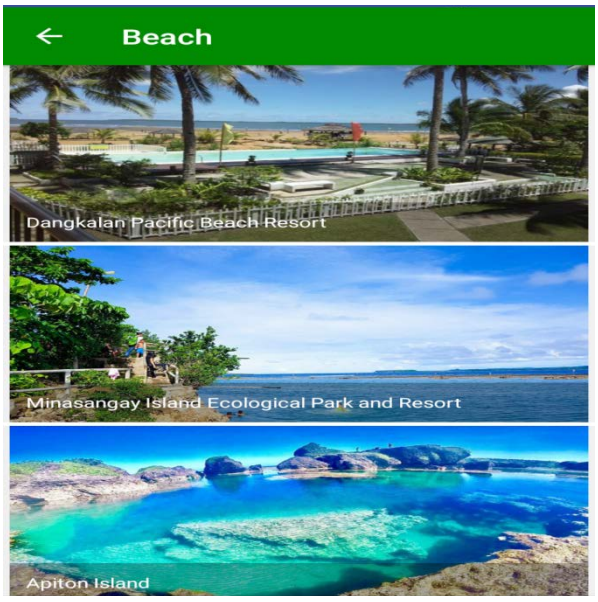


**Figure 5.** Beach category.


**Figure 6.** Cave category.

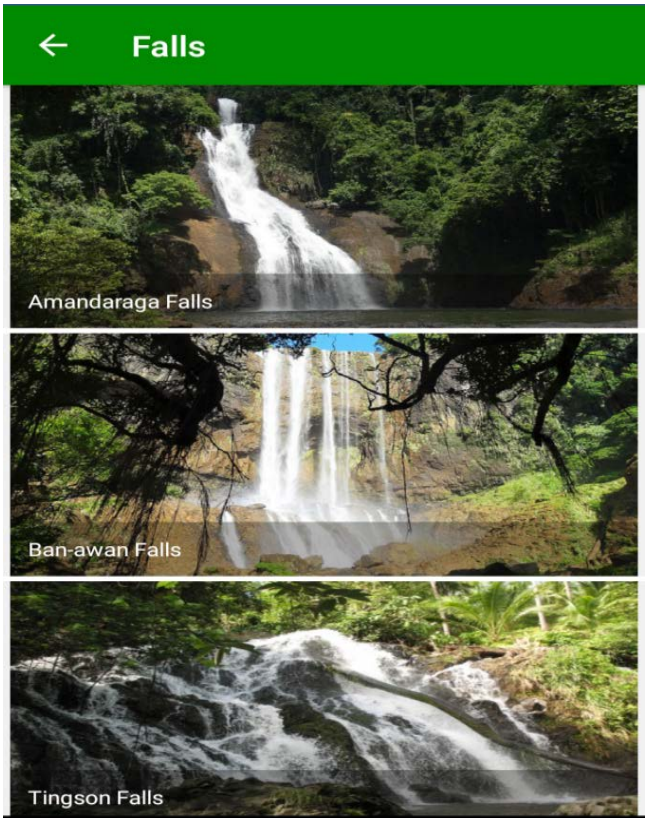


**Figure 7.** Falls category.


**Figure 8.** Landmarks category.

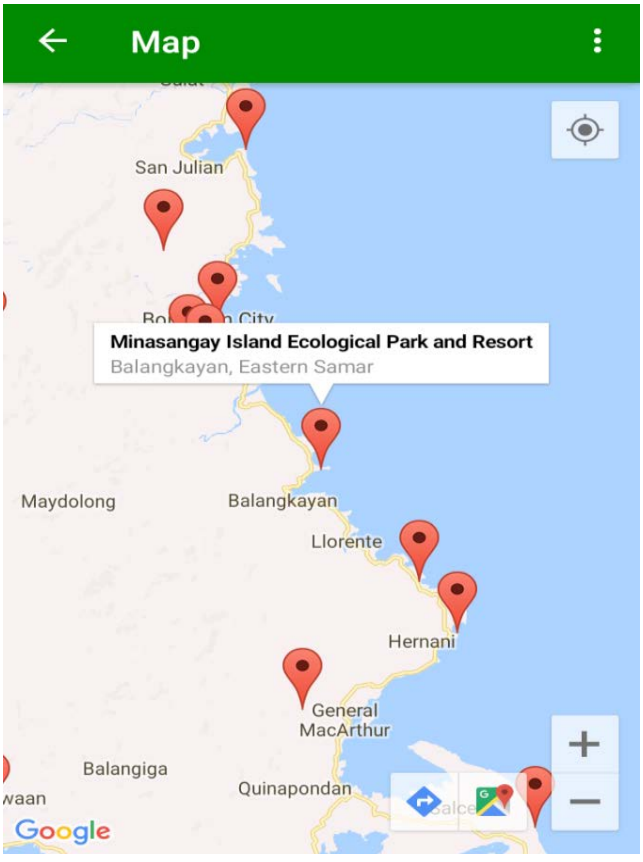


**Figure 9.** Map activity.

**Table 1.** Weighted mean and interpretation of the usability of the application

| Questions | Weighted Mean | Adjectival Interpretation |
|---|---|---|
| Overall, I am satisfied with how easy it is to use this system. | 4.87 | Strongly Acceptable |
| It was simple to use this system. | 4.93 | Strongly Acceptable |
| I could effectively complete the tasks and scenarios using this system. | 4.47 | Strongly Acceptable |
| I was able to complete the tasks and scenarios quickly using this system. | 4.4 | Strongly Acceptable |
| I was able to efficiently complete the tasks and scenarios using this system. | 4.67 | Strongly Acceptable |
| I felt comfortable using this system. | 4.87 | Strongly Acceptable |
| It was easy to learn to use this system. | 4.87 | Strongly Acceptable |
| I believe I could become productive quickly using this system. | 4.87 | Strongly Acceptable |
| The information (such as on-line help, on-screen messages and other documentation) provided with this system was clear. | 4.67 | Strongly Acceptable |
| It was easy to find the information I needed. | 4.93 | Strongly Acceptable |
| The information provided for the system was easy to understand. | 4.87 | Strongly Acceptable |
| The information was effective in helping me complete the tasks and scenarios. | 4.57 | Strongly Acceptable |
| The organization of information on the system screens was clear. | 4.73 | Strongly Acceptable |
| The interface of this system was pleasant. | 4.73 | Strongly Acceptable |
| I liked using the interface of this system. | 4.93 | Strongly Acceptable |
| This system has all the functions and capabilities I expect it to have. | 4.6 | Strongly Acceptable |
| Overall, I am satisfied with this system. | 4.8 | Strongly Acceptable |
| **Overall Weighted Mean** | **4.75** | Strongly Acceptable |

# 5. Results and Discussion

## 5.1 Testing and Evaluation

Table 1 shows the overall weighted mean of 4.75 interpreted as Strongly Acceptable using the IBM computer system usability scale. This result implies that the system is in agreement with the standard set by IBM.

# 6. Conclusion and Recommendation

Based on the findings of the study, the following conclusions were drawn:

- The researcher concluded that E-lakat: A GPS-enabled Tourism Application
- can provide the following features:
- Map and Marker where tourism site located,
- Users with location-based information,
- Category (Beach, Caves, Falls and Landmarks),
- Attraction's detailed information including pictures and
- Route on how to go to the selected tourism site.
- The result of the evaluation of E-lakat: A GPS-enabled Tourism Application Testing has an overall weighted mean of 4.75 interpreted as Strongly Acceptable based on the usability of the system. Based on the result it signifies that the system has passed the Software Quality Evaluation Tool based on IBM Computer System Usability Scale.

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