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RESEARCH ARTICLE

Android-Based Health Service Center Search Application in Tasikmalaya City Using Location Based Service (LBS) Method

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Abstract
Health Service is a place to organize health efforts. Not all health service locations are known to the public, both those from Tasikmalaya City and those from outside the city. This is due to a lack of information about health services in the City of Tasikmalaya. Progress and development of the times, as currently the use of technology is needed to be able to provide information quickly, where the use of technology can be accessed anytime and wherever the user is. The use of Information Technology such as using an Android-based Smartphone Application can be used to help citizens to find a location and find out the route to the desired health service. This study aims to build an Android-based Health Service Search application as a source of information to find out the location and routes to service locations. health services in Tasikmalaya City. The research method used is the waterfall process model. Implementation of health service applications using Javascript programming with Android Studio, Location Based Service, and maps sourced from the Google Maps API. The results of the research are in the form of Android-based Tasikmalaya City health service applications that help make it easier for Tasikmalaya City residents and outside the region to obtain information about Health Services and routes from the user's location to the desired Health Service location in Tasikmalaya City with the help of GPS.

Keywords
Search for Health Service Center; Android Studio; Location-Based Service (LBS); Waterfall Method.

1 | INTRODUCTION

The health service center is a premier human need, which allows humans to carry out activities actively and productively [1]. However, humans are not immune from illness, whether mild, moderate or severe. At this time almost all Android mobile phones are equipped with the Global Positioning System feature or abbreviated as GPS Information [2][3], which is used in the search system for health service centers in this study including location and distance to services or practices. The location of health services is identified based on data on location based services. To support the search for effective and efficient health services, it is necessary to design a health service search system in Tasikmalaya City that provides geographic information and information about the health service itself.

In a health emergency situation, it is important to be able to find the right health service center closest to our location. Currently, location-based service technology (Location Based Service or LBS) is growing rapidly and can be utilized to create effective and efficient health service center search applications. Therefore, this study aims to develop an Android-based health service center search application using the LBS method. Widodo and (2016) explain that the Android-based health service center search application using the LBS method developed in this study can help users find the right health service center closest to the user's location. This application has succeeded in meeting user needs with a search feature for health service centers based on location, service category, and distance. This application was also successfully tested and obtained good results in testing its functionality. This application can be a solution to improve the accessibility and quality of health services in Indonesia [4]. Agus Pranoto, Rokhman, & Adi Wibowo (2018) conducted research to develop a website-based mapping application that can assist the community in finding and finding community health centers (Puskesmas) in the Malang Regency area which can be a solution to improve accessibility and quality of health services for the community in the region [5]. Sodani & Fanida (2020) evaluated the implementation of E-SIKLA as an electronic service innovation in improving health services at the Kedungpring Health Center, Lamongan Regency. This research uses a qualitative approach with a case study method. Data obtained from interviews with related parties, field observations, and documentation. The results of the study show that the implementation of E-SIKLA has succeeded in improving health services at the Kedungpring Health Center, especially in terms of efficiency, effectiveness and accountability. The implementation of E-SIKLA has succeeded in accelerating and facilitating the patient registration process, managing data and health services, as well as increasing transparency and accountability. This can contribute to improving the quality of health services at the Puskesmas and can be adopted by other Puskesmas to improve the quality of health services in Indonesia [6].

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Although the research mentioned above focuses more on the use of electronic service innovations in improving health services at Puskesmas, there are some similarities and relationships with the nearest health service search application in Tasikmalaya City which uses the Location Based Service (LBS) method and is based on Android. First, both focus on increasing access to health services for the community. The application for finding the nearest health service in Tasikmalaya City with LBS aims to make it easier for people to find the nearest health service from their location, while the implementation of electronic service innovations such as E-SIKLA aims to improve health services at Puskesmas and facilitate public access to health services. Second, both use technology and information to facilitate and improve health services. The application for finding the nearest health service in Tasikmalaya City uses LBS technology and information about the location and information related to health services, while the implementation of E-SIKLA uses information technology to facilitate the management of patient data and health services. Third, both emphasize the importance of efficiency and effectiveness in health services. The application for finding the nearest health service in Tasikmalaya City aims to make it easier for people to find the right health service and reduce waiting time, while the implementation of E-SIKLA aims to increase efficiency and effectiveness in managing patient data and health services at the Puskesmas. Thus, it can be concluded that although there are some differences, there are relationships and similarities between the research mentioned above and the nearest health service search application in Tasikmalaya City that uses the LBS method and is based on Android. Both aim to increase access to and quality of health services by utilizing technology and information.

Based on the background that has been explained, the authors formulate the problem, namely; Can this health service center search application help and facilitate the search for health service locations? Can this health service search application be used on smartphones with a minimum operating system version 4.4 (kitkat)? Is the health service search application safe and easy to use? and Can the health service search application find out the location of the nearest health service and the distance traveled?. So that the discussion of this problem does not extend from the goal, the authors limit the problem are; Discusses the search for the nearest health service location in the Tasikmalaya City, Using a computer device as a server and an Android device as a user, Location based service system, using e-mail and own password by the user, On the server, using an Android-based location with a programming language java and uses location based services, and the minimum operating system on mobile devices needed to run this application is using Android Version 4.4 and

above. Researchers hope that this research can be achieved as expected, namely; to help and facilitate the community in the process of finding a health service center by using a Health service application, Create a health service center application so that it can be used on an Android-based smartphone, at least version 4.4 (kitkat), and Make it comfortable and easy for people to find health service locations.

2 | BACKGROUND THEORY

LBS is a technology that utilizes a user's location (either via GPS or cellular network) to provide information relevant to that location. In the context of searching for health service centers, LBS can be used to display the location and important information about the health service center closest to the user. GIS is a system that utilizes geographic technology to collect, process and display location-related information. In the context of an Android-based health service center search application using the LBS method, GIS can be used to display geographic and spatial information related to the location of a health service center. User Experience (UX) is an approach that focuses on the user experience in using a product or application. In the context of an Android-based health service center search application using the LBS method, UX is important to ensure that users can easily use the application and get the information they need quickly and effectively. Human-Computer Interaction (HCI) is a field of study that studies interactions between humans and computers. In the context of an Android-based health service center search application using the LBS method, HCI is important to ensure that the application interface is easy for users to use and allows for effective interaction between users and applications. Based on this theory, an Android-based health service center search application using the LBS method can be designed and developed by taking into account the important factors that influence the user experience and application effectiveness.

Research using LBS generally focuses on developing applications and technologies that can utilize location information to make it easier for users to perform certain activities [7], such as searching for services, navigating, or monitoring. Research using LBS can be carried out in various fields, such as health, tourism, transportation, or security [8][9]. In the health sector, for example, research can be conducted to develop applications for finding the nearest health service or monitoring patients by utilizing location information [10][11]. Research using LBS can also involve developing algorithms and methods to process location data and improve the accuracy and speed in determining the user's location [12]. Based on this connection, the researcher whose profile is given may have conducted research related to the development of applications and technologies that utilize location information, including the use of LBS. Such research may also have been conducted in various fields, such as health, tourism, or transportation. However, without more specific information, it is difficult to provide a more detailed link between the studies that have been conducted and studies using LBS.

3 | METHOD

This research was conducted by researchers in the Tasikmalaya City to the parties involved in this research. The reason researchers conducted research in the Tasikmalaya City was with the consideration that in the Tasikmalaya City there was no health service search application yet. This research is planned for the even semester of 2020/2021. The data collection methods are; the data to be collected becomes so important during the research process, because the collection method determines the quality and accuracy of the data during the research. In collecting data, the researcher used the method of collecting data by means of:

a) Interviews
   Data obtained from research results through interviews conducted in the Tasikmalaya City, West Java, directly to the community concerned in order to obtain related data and supporting data to complete the research in making Applications for Searching Health Service Centers and Location Trackers. The author collects data and information by means of interviews with parties who are domiciled in Tasikmalaya City.
b) Observation
   The research conducted direct observations or observations in April 2021 for the people of Tasikmalaya City to obtain data, in order to see and know for sure how useful and important it is to seek health services in Tasikmalaya City, West Java. Below are the results of direct observations made by researchers:
   1) There is no electronic search system that can assist in finding the location of health services quickly and accurately.
   2) There is no Health Service Search Application yet in Tasikmalaya City, West Java
   3) There is no electronic search system in Search for the nearest health service

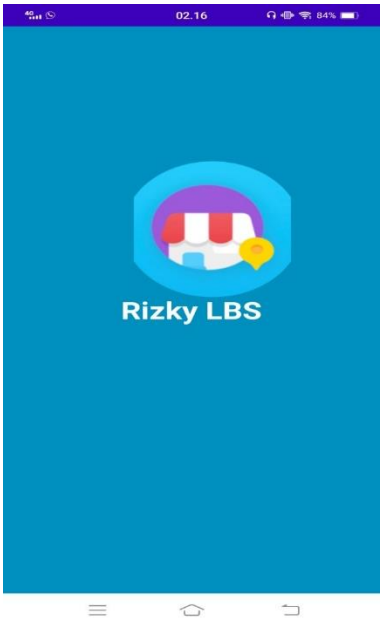
The method for developing the Health Service Search Application system in Tasikmalaya City uses the waterfall method and the design model uses the Unified Modeling Language (UML). Waterfall and Unified Modeling Language (UML) are two concepts that are interrelated in the software development process. Waterfall is a linear and sequential software development model consisting of a series of phases that are carried out sequentially, from requirements analysis to maintenance. Each phase in the waterfall must be completed before entering the next phase, and there is no possibility to return to the previous phase after completion [13]. UML, on the other hand, is a visual modeling language that is used to model the structure, behavior and interactions in software. UML consists of various types of diagrams, such as use case diagrams, class diagrams, and sequential diagrams, which can be used to represent various aspects of software. In practice, UML can be used to support the waterfall model in software development. For example, in the needs analysis phase of the waterfall model, UML can be used to create a use case diagram that describes the interaction between the user and the system. In the design phase, UML can be used to create class diagrams that represent class structures in the system and sequential diagrams that describe interactions between objects in the system. By using UML, software developers can clarify the purpose and function of each phase in the waterfall model, as well as facilitate collaboration and communication between members of the development team. UML can also help in identifying and addressing problems in software more effectively. In all, UML and the waterfall model are interrelated and can support each other in software development [14]. The use of UML can help in making the waterfall model clearer and more structured, thereby accelerating and improving the quality of software development. The use of UML can be very useful in software development, both in modeling analysis and design, and in considering quality factors in software product architectures. UML can be used as a tool to assist in the software development process, especially in the analysis and design phase, so as to accelerate and improve the quality of software development.

4 | RESULT

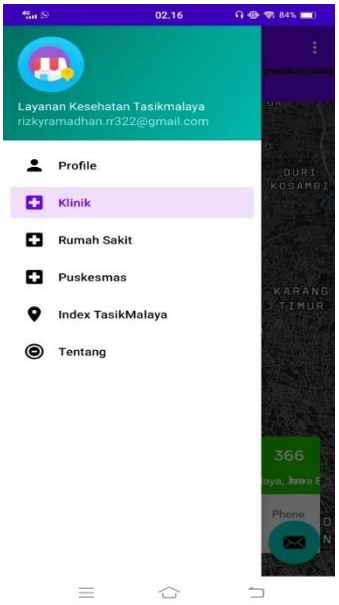
Activity diagram use cese location search action the first thing the user does is select the menu to get the health service place that you want to go to or the closest location in Tasikmalaya City.

Figure 1. Activity Diagram

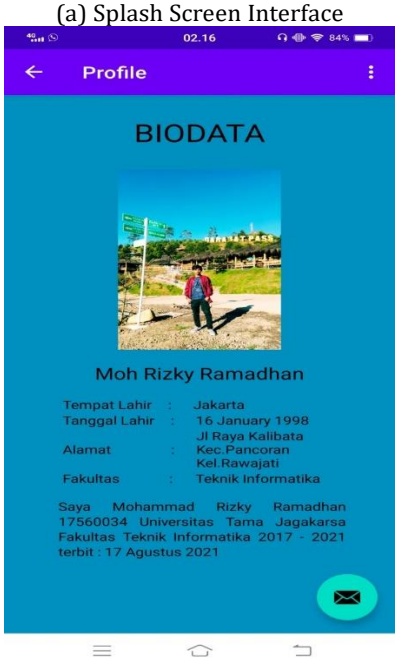
The following display is the initial display before the user enters the application and can be used (figure 2.a). The main menu display after the user enters from the initial view. In this menu there are 5 menus, namely, the location mapping menu, my profile menu, the menu giving suggestions, the application sharing menu and the application menu. If the location mapping menu is selected it will go to the location mapping page, if my profile menu is selected it will go to my profile page, if the give suggestions menu is selected it will go to the give suggestions page, if the share application menu is selected then it will go to the share application page and if the menu about the application is selected, it will enter the page about the application (figure 2.b). The profile page is a display of the author's biodata (figure 2.c). GetLocation display to display User Position on android users (figure 2.d).



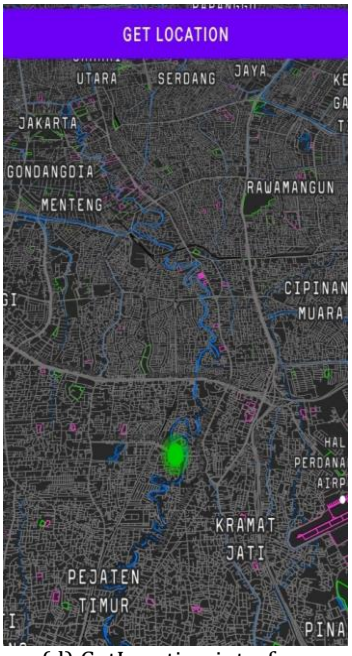
(a) Splash Screen Interface



(b) Menu Interface



(c) Profile interface



(d) GetLocation interface

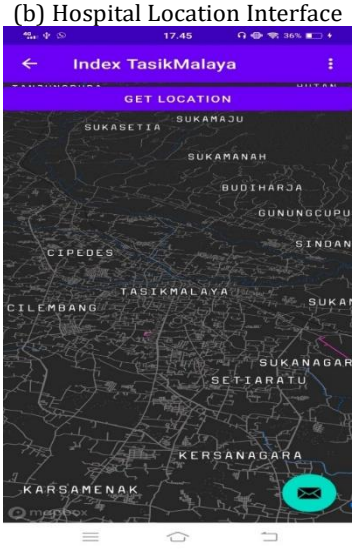
Figure 2. Application View

Display the Clinic Menu to display the Clinic Location and show the Route to the Clinic (figure 3.a). Display the Hospital Menu to display the Hospital Location and show the Route to the Hospital (figure 3.b). Display the Health Center Menu to display the Location of the Health Center and show the route to the Health Center (figure 3.c). Display the Tasikmalaya Index Menu to display the location map for the Tasikmalaya City (figure 3.d). The menu display about the application is a display that displays a general explanation of the Health Service application (figure 3.e).

(a) Clinic Location Interface

(b) Hospital Location Interface

(c) Health Center Location Interface



(d) Tasikmalaya Map Index Interface

(e) Interface About Application

Figure 3. Advanced Application View

5 | CONCLUSIONS AND FUTURE WORK

Based on the results of the design and discussion on the design of the search application for health service centers in the Tasikmalaya City, it can be concluded that; The search application for health service centers in the Tasikmalaya City can help people find health services, the application for searching health service centers in the Tasikmalaya City can help show the direction to go, this application provides information about opening/closing hours and the number of these health services, the LBS method is applied in this application for more accurate coordinates, this application can be used anywhere and anytime by the public and is easy to understand. Android-based search for health service centers using the LBS method developed in this study has succeeded in meeting user needs with the search feature for health service centers based on location, service category, and distance. This application was also successfully tested and obtained good results in testing its functionality. The Android-based health service center search application using the LBS method developed in this study can assist users in finding the right health service center closest to the user's location. This application can be a solution to improve accessibility and quality of health services in the Tasikmalaya City.

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