THE DEVELOPMENT OF A MOBILE APPLICATION FOR FRUIT GARDEN TOURISM INFORMATION SYSTEM IN SIDOARJO USING FLUTTER

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Abstract: This research highlights the significance of information technology in producing relevant, accurate, and timely information as the foundation for strategic knowledge in decision-making. Applications, as software, play a vital role in presenting information tailored to user needs, based on provided input data. Flutter, serving as an SDK for mobile app development, brings superior capabilities in cross-platform application development. The development of a mobile application for Fruit Garden Tourism Information System in Sidoarjo using Flutter aims to facilitate the search for fruit garden tourism spots based on user preferences and provide detailed information about those locations. The objective is to assist the community in discovering and enjoying fruit garden tourism in Sidoarjo. In the testing process, the black-box method is utilized to identify system weaknesses, validate the congruence of executed data with inputs, and prevent potential deficiencies and errors in the application before user deployment. In the testing process, the application has successfully passed tests for its interface and all provided features with success.

Keywords: application; flutter; fruit garden tourism; information technology.

Abstrak: Penelitian ini menggambarkan pentingnya teknologi informasi dalam menghasilkan informasi yang relevan, akurat, dan waktu tepat sebagai dasar pengetahuan strategis untuk pengambilan keputusan. Aplikasi, sebagai perangkat lunak, memiliki peran vital dalam menyajikan informasi sesuai dengan kebutuhan pengguna, berlandaskan pada data masukan yang diberikan. Flutter, sebagai SDK untuk pembuatan aplikasi mobile, menghadirkan kemampuan unggul dalam pengembangan aplikasi lintas platform. Pengembangan aplikasi mobile untuk Sistem Informasi Wisata Kebun Buah di Sidoarjo menggunakan Flutter bertujuan memudahkan pencarian tempat wisata kebun buah sesuai preferensi pengguna dan menyediakan informasi yang terperinci tentang lokasi tersebut. Tujuannya adalah memfasilitasi masyarakat dalam menemukan dan menikmati wisata kebun buah di Sidoarjo. Dalam proses pengujian, metode black box digunakan untuk mengidentifikasi kelemahan sistem, memvalidasi kesesuaian data yang dieksekusi dengan yang dimasukkan, serta mencegah potensi kekurangan dan kesalahan dalam aplikasi sebelum digunakan oleh pengguna. Pada proses pengujian, aplikasi telah berhasil melewati pengujian untuk aspek tampilan dan seluruh fitur yang disediakan dengan sukses.

Kata kunci: aplikasi; flutter; teknologi informasi; wisata kebun buah.

INTRODUCTION

Information Technology refers to the form of technology used in the execution, acquisition, management, storage, and transformation of data through various methods to generate high-quality information. [1] This information needs to be relevant, accurate, presented in a timely manner, and transformed into strategic knowledge for the decision-making process. The evolution of information technology has become a vital element in the evolution of time. Fundamentally, the primary goal of technology is to simplify human tasks. Presently, technology has transformed into a primary necessity for humans and has been implemented in various aspects of human life. [2]

Based on the explanation provided, it can be concluded that an application refers to a form of software installed on a computer containing a series of instructions crafted to execute specific tasks based on given guidelines. [3] Applications are software designed with diverse attribute elements in line with their intended purposes. Their primary aim is to assist users in organizing data to achieve anticipated output, based on the provided input data. [4]

Flutter is a development toolkit (SDK) that enables the creation of high-performance mobile applications for both iOS and Android platforms. Created by Google, it's released as an open-source project. Its aim is to empower developers to build applications with superior performance by using a single codebase that can be applied to both platforms. [5]

In recent years, several studies have been conducted to develop information systems related to the tourism sector in a certain region. [6] In this context, there is an issue regarding the lack of applications that can facilitate guidance to religious tourist destinations in Pekalongan Regency. When in a new place, many people struggle to find information about specific locations, both visitors from outside the area and local residents. People often find it challenging to determine where or whom to ask. If there were an application that could provide information on the address of tourist spots and offer details about these places, people would find it easier to discover and enjoy the beauty of the tourist spots according to their preferences. [7]

Several previous studies were used to explain the novelty of this research. The article titled Design and Development of the Tourism System for Kuantan Singingi Regency based on Android. [8] This information system has a very good goal of boosting the promotion of the tourism sector in Kuantan Singingi Regency. By incorporating text and image elements, this application has the potential to present visual appeal and ease of understanding for users.

Tourism Information System Based on a Website at Mount Ciremai National Park, West Java. [9] The focus of this research aims to enhance the tourism sector at Mount Ciremai National Park, West Java, by utilizing a website as a tool to promote these tourist destinations. The website is anticipated to serve as an effective platform in introducing the beauty, uniqueness, and various information regarding tourist attractions within Mount Ciremai National Park.

Web-Based Tourism Information System in Minahasa Regency. [10] The website created within the Web-Based Tourism Information System in

Minahasa Regency aims to develop and enhance the tourism sector in the Minahasa region. Through this platform, the goal is to promote tourism potential, natural beauty, attractive destinations, as well as various activities and services available to tourists visiting Minahasa Regency. It is hoped that this website will serve as an effective tool to attract tourist interest, increase visits, and raise awareness about the tourism potential in Minahasa Regency.

The Web-Based Tourism Information System for the Case Study of Sindangbarang, South Cianjur. [11] The Web-Based Tourism Information System for the Case Study of Sindangbarang, South Cianjur, is a digital platform designed to promote and provide information about the tourist destinations in Sindangbarang, South Cianjur. This system aims to facilitate users in understanding, exploring, and planning visits to the tourist spots in that area through the provided website.

Designing a Web-Based Tourism Information System in Sukabumi Regency. [12] The Web-Based Tourism Information System in Sukabumi Regency aims to enhance and advance the tourism sector in that area by presenting a comprehensive and informative digital platform for users. This website provides an interactive map that facilitates tourists in locating tourist spots, finding the best routes, and accessing other navigation information necessary for exploring Sukabumi Regency.

Design and Development of a Tourism Guide Application for Banyuwangi Regency Based on Android Mobile Platform. [13] The Android application developed by the Government of Banyuwangi Regency provides comprehensive information about tourist attractions in the area. With visual features such as photos and videos, along with Google Maps integration, users can easily locate places and access up-to-date information about events in Banyuwangi Regency. This application offers reviews and ratings from visitors, as well as a search feature, facilitating access for both residents and tourists using Android smartphones.

The Android-Based Culinary and Recreation Tourism Application for Nanggulan Subdistrict. [14] This study aims to develop an Android application using the Location Based Service (LBS) method to support tourism in Nanggulan, Kulon Progo Regency. Data was gathered through direct interviews at the tourist sites. The application is built with Kotlin and utilizes Laravel as the database server. Its objective is to facilitate tourists in finding information and routes to tourist destinations. The application was tested using the black-box method, which involves direct testing of the application.

Designing an Android-Based Cultural and Tourism Introduction Application for Cianjur Regency. [15] This Android application for cultural introduction and tourism aims to introduce and preserve the rich cultural heritage of Cianjur Regency while providing tourism information about the region. Through this application, it is hoped that the people of Cianjur and tourists can easily access crucial information about local culture and tourist destinations in the region. The application enables users to conveniently carry this information wherever they go, facilitating knowledge and appreciation for the cultural richness and tourist attractions in the area.

Development of West Sulawesi Tourism Application Based on Android.

[16] This application is designed to provide information about available tourist destinations in West Sulawesi. The aim of this research is to develop an Android-based tourism application presenting information about various tourist destinations in the West Sulawesi Province. Additionally, another objective is to evaluate user responses to the West Sulawesi Tourism application.

Design And Development Of The Tourism Information System Application For Tanah Karo Regency Using Android-Based Google Maps Api. [17] This application utilizes Google Maps API technology to provide directions to tourist destinations in Tanah Karo Regency. With the integration of Google Maps, users can easily find these destinations. Furthermore, the app also offers references to tourist spots, including information like photos, history, articles, entrance fees, reviews, and comments from previous visitors. Designed for smartphones, this app aims to increase the number of tourists visiting Tanah Karo Regency by providing easy access to information.

METHOD

In the development of the mobile-based fruit garden tourism information system, the Waterfall method is utilized. The Waterfall method is an approach in software development that mandates sequential and phased stages. This approach consists of a series of steps that must be fulfilled progressively, where each step relies on the completion of the preceding one.
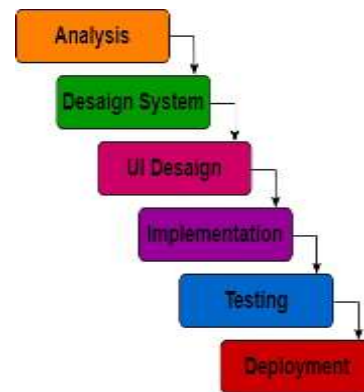

Image 1. Waterfall Method

Analysis

Analysis plays a crucial role in the problem-solving approach, involving the breakdown of components into separate elements to delve into their operational mechanisms and the interaction relationships among these components. The primary aim is to achieve predefined objectives. [18] In the development process of the Android-based Fruit Garden Tourism Application, the analytical step plays a pivotal role in comprehending, planning, and intricately designing the application before entering the technical implementation phase.

Desaign System

In the System Design phase, this process involves applying the results of the earlier needs analysis, followed by the creation of a design utilizing both hardware and software components in computer devices. [18] Software design will be presented using flowchart diagrams. A flowchart is a visual representation illustrating the sequence of steps or instructions of a program or procedure within the system under development. [19]
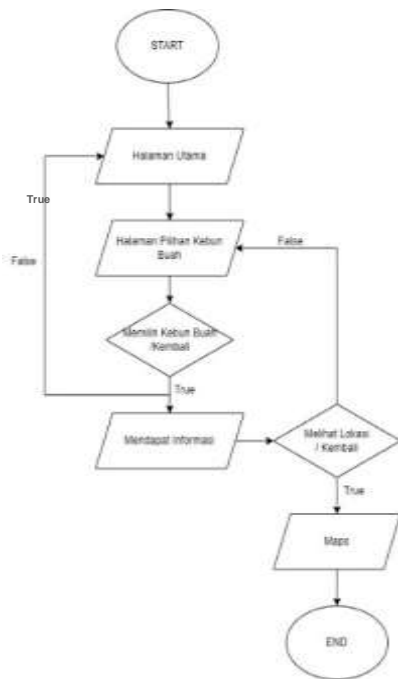
Image 2. Application Flowchart

The image above is a Use Case Diagram of the fruit garden tourism application. In this diagram, users can select a fruit garden, view fruit garden information, and access maps to obtain information about which fruit garden aligns with the user's preferences.

UI Design

After creating the system design, the next step is to develop the User Interface (UI) design for the application. The UI serves as the connection between the system and the user in a product. It presents an attractive visual display on the mobile application, using a mix of colors, shapes, and engaging text to facilitate interaction and enhance the user experience. [20] In this case, the author utilizes Figma as a tool to create the interface design. Figma is a program used for designing, employed in digital projects. [21]

Implementation

The next step after completing the User Interface (UI) design is the implementation phase. The implementation process is the stage where the previous design and analysis are translated into a series of programming code. In this study, the code is written using the Dart programming language, assisted by the compilation tool from Visual Studio Code. [22] The application development process will utilize Flutter, which is a development toolkit (SDK) enabling the creation of high-performance mobile applications for both iOS and Android platforms.

Testing

This testing phase aims to validate the compliance of all implementations, user interface (UI) designs, and system designs with the predefined expectations while uncovering potential weaknesses. The method applied in this testing is Black Box testing. The primary goal of Black Box testing is to recognize functions that don't perform as intended, identify flaws in the interface, data structure issues, performance problems, and errors in the initialization and completion stages of the system. [23]

Deployment

This section is a segment of system maintenance activities, involving actions to rectify undetected errors from the previous stages, enhancements in system unit implementations, and improvements in system services to meet emerging new requirements. [24]

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RESULT AND DISCUSSION

In the results and discussion section, I will outline the implementation of the fruit garden tourism application in Sidoarjo and conduct testing on the system's functionality using the black box method.

Implementation

After designing the application's user interface, we proceeded with implementing the application program according to the previously prepared design. Here is the final result of the program we built using the Flutter framework:

1. Splash Screen

The Splash Screen is the first screen that appears when opening an Android application. When initially opening the fruit garden tourism application in Sidoarjo, the splash screen will appear as shown in Image 4. After a few seconds, it will automatically switch to the main page of the application or the home screen.

Image 4. Splash Screen

2. Main Screen

The main page of the application, referred to as the Main Screen, serves as the starting point after the splash screen. Here, there's a 'Start' button that directs users to the fruit garden information page, where users can select which fruit garden's information to view. This is illustrated in Image 5.

Image 5. Main Screen

3. Home Screen

The Home screen is the page or display within the fruit garden tourism application in Sidoarjo that presents a list of options or choices of available fruit garden tourism spots for users. This Home screen is used to provide convenience to users, making it easier for them to select which fruit garden's information they wish to access. The Menu Screen will appear as shown in Image 6.

Image 6. Home Screen

4. Information Screen

The Information Screen is a page or section of the fruit garden tourism application in Sidoarjo designed to provide detailed information about the fruit gardens. The provided information includes videos, brief explanations accompanied by audio, and the location of the fruit garden. This information encompasses an overview of a particular fruit garden. The Information Screen can be seen in Image 7.

Gambar 7. Information Screen

Testing

In the testing phase, the black box testing method will be utilized. Testing the system using the Black Box method is conducted to identify weaknesses within the system, ensure that the executed data matches the input, and prevent deficiencies and errors in the application before it's used by users. [25] Here is the black box testing for the fruit garden tourism application:

Table 1. Blackbox Testing

No	Description	Target	Results
1.	Splash Screen	Displays Splash Screen	Success
2.	On Boarding Screen	Displays the On Boarding Screen	Success
3.	Klik Button Start	Display Home Screen	Success
4.	Klik Button Informasi	Display Informasi	Success
5.	Klik Button Voice	Plays Information Sounds	Success
6.	Klik Button Video	Playing Videos	Success
7.	Klik Button Maps	Menampilkan Google Maps	Sukses

CONCLUSION

This study aims to develop a mobile application using Flutter that facilitates the search for fruit garden tourist spots in Sidoarjo, focusing on presenting detailed information based on user preferences. The research demonstrates that leveraging information technology in the form of a mobile application has significant potential to enhance the tourism experience and broaden access to information about local tourist destinations. The implementation of information technology in local tourism, such as in the Fruit Garden Tourist Information System in Sidoarjo, has extensive implications. This application can effectively serve as a means to

promote local tourist destinations, enhance user experience, and support the growth of the tourism sector.

For future research, continuous monitoring of this application after its widespread launch is necessary. Collecting user feedback will provide valuable insights into areas that need improvement. Additionally, further research could consider integrating additional features, such as virtual tour guides or connections to social media platforms, to enhance overall user interaction and experience. Thus, this research demonstrates that the implementation of information technology in the form of a mobile application can advance the tourism experience and significantly contribute to facilitating access to information for the community, with the potential for continuous improvement and development towards broader and more beneficial outcomes.

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