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Android-Based Smart Tourism Application Design In Dangiang Cibeger Natural Tourism, Garut Regency

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Abstrak

Dangiang Cibeger Nature Tourism, situated in Samida Village, Garut Regency, boasts significant natural and cultural assets, encompassing educational bamboo tourism, rice planting tourism, plowing tourism, fish farming tourism, homestays, villas, camping grounds, glamping, swimming pool tourism, and outbound activities. Nonetheless, these resources remain suboptimally utilized. To improve competitiveness and the quality of tourism services, extensive planning and design are essential through the use of a Smart Tourism application. This project seeks to provide a design for a Smart Tourism application for Dangiang Cibeger Nature Tourism in Garut Regency. The application design incorporates several key features, including tourism village information, virtual tours, a reservation system, online payment options, electronic tickets, navigation systems, and augmented reality experiences. The deployment of the Smart Tourism application is expected to enhance operational efficiency, improve tourist experiences, and empower local communities through technology.

Keyword: *Smart Tourism, Application, Design, Android*

INTRODUCTION

Smart Tourism is a strategic planning and design methodology for tourist sites that employs Information and Communication Technology to enhance the efficiency of services offered to tourists. The advancement of Smart Tourism is anticipated to enhance tourist arrivals to these areas substantially. Developing an application rooted in the Smart Tourism idea represents an innovation intended to enhance the competitiveness of the tourism experience. The use of Smart Tourism can stimulate economic development, alleviate poverty, and diminish unemployment. Smart tourism can enhance local tourism and boost the economy in villages by emphasizing infrastructure relevant to tourism potential, culture, and the arts.

The digitalization of the tourism sector is essential for meeting the requirements of digitally inclined rural populations in tourism. One initiative to implement digital tourism in villages is the application of ICT (Information and Communication Technology). Digital tourism will provide travelers with diverse tourism services, facilitating enhanced accessibility for marketing purposes.

A. Smart Tourism Concept

Smart tourism, as an emerging ecosystem, may foster and enable the generation of novel technologies, particularly concerning the utilization of technology and the advancement of intelligent tourism experiences. The notion of smart tourism emerges from the examination of the interplay between technology and the tourism industry. Smart tourism represents the optimal approach for thriving in the face of challenging technological advancements and information as the physical aspects and governance of tourism transition to a digital framework, fostering a new, more modern generation aligned with contemporary progress. The core of smart tourism is to enhance visitor experiences, provide an intelligent platform for consolidating and disseminating information

within destinations, facilitate more efficient resource allocation, and integrate tourism suppliers at both macro and micro levels to ensure benefits for local communities.

Smart tourism is a tourism platform that utilizes integrated information and communication technology. It incorporates the function of information and communication technology in the provision and administration of efficient information and services for tourists, enhancing usability. To achieve smart tourism, essential components include the establishment of a database about tourism resources facilitated by the Internet of Things (IoT) and Cloud Computing technologies. Secondly, formulating tourism destination strategies that incorporate creative activities for promotion, service improvement, and effective tourism management. Third, broadening the tourism sector through real-time information systems that integrate service providers and local communities.

The realization of smart tourism has three primary components: (1) Intelligent experience, delivering remarkable encounters for visitors through real-time information updates and expedited location searches; (2) Intelligent business ecosystem, fostering a congenial and appealing commercial environment for investors and entrepreneurs; (3) Intelligent destination, providing a tourist experience that elevates satisfaction levels relative to competing destinations. These three components employ structured data, encompassing collection, interchange, and processing. Widodo and Dasiah, 2021

A smart tourism location can be categorized into two types: Soft Smart and Hard Smart. Soft smart refers to the human resources that propel the current systems inside a tourism destination, including innovation, personnel, collaboration, and knowledge. Conversely, a smart destination is hard smart, referring to the elements that underpin the system, including the provision of Wi-Fi, software, hardware, and networks. A smart destination is defined as a location that utilizes available tools and technology to facilitate the collaborative creation of value, enjoyment, and experiences for tourists, alongside benefits, profits, and advantages for organizations and destinations. Masturi et al. (2021)

B. Tourism Concept

Tourism entails the act of traveling by one or more individuals to a location beyond their place of residence. It centers on comfort and pleasure, as individuals relish attending locations and events that provide relaxation and enjoyment. Noteworthy locations and occurrences may encompass natural wonders, cultural landmarks, or anthropogenic settings (circumstances and events devised by humans). Tourism is a recreational pursuit undertaken away from one's residence to evade routine labor or to experience an alternative environment. Tourism is characterized as a transient journey undertaken by one or more individuals to a destination beyond their residence. The impetus for this separation arises from a multitude of interests, encompassing economic, social, cultural, political, religious, health-related, and additional factors. (Mustar Syamsuddin, Farid Yusuf Nur Achmad, 2023)

C. Tourism Area Law

Law No. 10 of 2009, Article 1, Paragraph 10 defines a strategic tourism area as a region

primarily designated for tourism that significantly impacts one or more dimensions, including economic growth, social and cultural advancement, natural resource enhancement, environmental sustainability, and defense and security. According to Law No. 10 of 2009, Samida Village qualifies as a tourism village in Indonesia due to its utilization of natural resources, environmental advantages, social and cultural characteristics, and natural wealth that can be developed into tourist attractions to enhance economic growth in the Samida region. Consequently, a tourism region must fulfill specific criteria, including attractions, amenities, infrastructure, transportation, and hospitality services.

D. Tourist Attractions

Tourist attractions are integral elements of the tourism framework that establish a link to attract visitors to specific destinations. The factor that draws numerous travelers is the enchanting tourist attraction. Tourist attractions typically have interconnected elements referred to as the 4A: attractions, amenities, accessibility, and ancillary services. Anggraeni et al. (2022)

"Tourist attractions generally pertain to natural and artificial resources that exhibit distinctive value and aesthetic appeal, thereby enticing and motivating tourists to visit." Specifically, an attraction may be a divine creation, such as flora and fauna, or a human-made construct, including museums, historical artifacts, cultural arts, and entertainment places. In essence, any entity capable of engaging the interest of prospective visitors is deemed an attraction. Andreani, 2022

Attractions include locations that exhibit distinctiveness, aesthetic appeal, accessibility, and significance, showcasing the variety of both natural and artificial resources that are enticing and worthy of visitation. Attractions are a crucial determinant that incentivizes travelers to visit a particular location. Consequently, attractions significantly influence tourists' decisions about which tourist sites to visit. If a site's attractions are exceptional and fulfill visitors' desires, it might be construed as enhancing the probability of their choosing to attend. Conversely, if the attractions are subpar and fail to meet tourists' expectations, a decrease in the decision to visit can be anticipated. Susianto et al. (2022)

E. System Design

System design entails the application of several methodologies and principles to meticulously define a piece of equipment, a process, or a system, facilitating its physical realization. The objective of system design is to fulfill user requirements and deliver a comprehensive overview, culminating in a detailed design blueprint for computer programmers and other engineering professionals engaged in the system's development or creation. Adiyanti et al. (2021)

The definition of system design is the identification of the processes and data necessary for a new system. System design aims to meet the requirements of users and to deliver a comprehensive overview and detailed design blueprint. The system design provides a comprehensive overview of the constructed system by amalgamating many discrete components into a unified and complete entity for computer programmers and technical

professionals engaged in the project. (Fitriana & Kristania, 2021)

F. Applications

"An application is the utilization of instructions or statements organized in a manner that enables a computer to convert input into output." (Eko, 2022)

Software applications tailored for specific functions can be classified into two categories:

1. Specialised software applications, which are programs with integrated documentation designed to execute certain activities.
2. Package software applications, which are programs accompanied by integrated documentation tailored for specific problem types.

An application is a software program designed to perform specific tasks on a computer system. The term 'application' originates from the English word 'Application,' which can be understood as implementation or utilization. An application is a software program designed to execute specified functions. Hawari Nasution and colleagues, 2023

Applications can be classified into three categories during their development.

1. Desktop applications, which operate exclusively on personal computer (PC) or laptop devices.
2. Web applications, operate on a personal computer and necessitate an internet connection.
3. Mobile applications, operate on mobile devices, such as smartphones, and are widely accessible.

G. Mobile Android

Android is a software platform utilized on mobile devices, comprising the operating system, middleware, and essential apps. The Android SDK (Software Development Kit) supplies the necessary tools and Application Programming Interfaces (APIs) for initiating application development on the Android platform utilizing the Java programming language. This entails aggregating Java code alongside requisite resources and files, which are amalgamated by AAPT tools into an Android package. Romadhon et al. (2021)

Android is a Linux-based operating system for mobile devices that encompasses the operating system, middleware, and apps. Android offers an open platform for developers to construct their applications. Its expansion is largely attributable to Android's status as a comprehensive platform, encompassing the operating system, developer tools, the Android app marketplace, and robust backing from the worldwide open-source community. The early history of Android originates from a small software company established in October 2003 in Palo Alto, California, by several senior professionals from various IT and communication firms, including Andy Rubin, Rich Miner, Nick Sears, and Chris White. The notion of Android Inc. captivated the attention of the major corporation Google, which procured Android in August 2005 by acquiring all its shares. Gunawan et al., 2023

Android is the inaugural open platform for mobile devices, enabling all existing software to operate on mobile devices without the limitations of ownership constraints that impede innovation in mobile technology. Android is defined as a collection of software for mobile

devices, encompassing the operating system, middleware, and essential applications developed by Google. The SDK (Software Development Kit) supplies the tools and APIs for application development on the Android platform, utilizing the Java programming language. The advancement of Android transpires in conjunction with Google, Intel, Qualcomm, NVIDIA, HTC, and T-Mobile, all members of the Open Handset Alliance (OHA), which seeks to create an open standard for mobile devices. (Eko, 2022)

The digitalization of tourism villages can enhance tourists' access to information on places and undoubtedly decrease expenses for both managers and tourists. This research aims to develop an innovative Android-based tourism application that facilitates travelers in obtaining information about sites in Dangiang Cibeger. This program aims to streamline travel preparation for tourists, enhance interactivity, and boost tourist visitation to Dangiang Cibeger.

METHOD

The research employs the Waterfall technique for system development. This approach is a universal framework in software engineering, extensively employed in a linear design process that must be adhered to in sequence. (Fernandy & Arifin A Abd Karim, 2022). The Waterfall model is the predominant framework for developmental phases. This model is sometimes referred to as the traditional or classic model. The Waterfall model is commonly known as a sequential linear model or classic cycle. This model offers a sequential life cycle approach to software development, commencing with analysis, followed by Design, coding, testing, and support stages. (Supiyandi et al., 2022).

The phases of the Waterfall methodology are enumerated as follows:

1. Requirement At this stage, developers must collect comprehensive information about the software needs, including the intended functionality and constraints of the product. Interviews, surveys, or discussions can be used to gather this information. Subsequently, the information is scrutinized to obtain comprehensive data regarding user requirements for the product to be produced.
2. Design: The subsequent phase is Design. This transpires prior to the initiation of the coding process to deliver a comprehensive overview of the necessary tasks and the anticipated Design of the system. This outlines the hardware and system prerequisites and describes the comprehensive architecture of the system to be developed.
3. Development: This step involves the coding procedure. The software development is segmented into smaller parts that will subsequently be integrated into the next phase. This phase entails a comprehensive evaluation of the developed modules to confirm that their functionality meets the specified requirements.
4. Testing: In this fourth phase, the previously developed modules are integrated. Subsequent testing is performed to ascertain if the software

aligns with the specified Design and to identify any problems.

5. Maintenance: Maintenance constitutes the concluding phase of the Waterfall development methodology. Users will utilize the completed program. Furthermore, maintenance tasks encompass error rectification, system unit implementation enhancements, and upgrades to system services in response to emerging requirements.

Figure 1. Waterfall Method

RESULTS AND DISCUSSION

a. Usecase Diagram

A Use Case Diagram illustrates the interactions between actors and the system. It can delineate an interaction between one or more actors and the system to be created. The Use Case Diagram serves to delineate the functions within a system and illustrate the interactions between actors and the system. The following is the Use Case Diagram for the Android application at Dangiang Cibeger Nature Tourism:

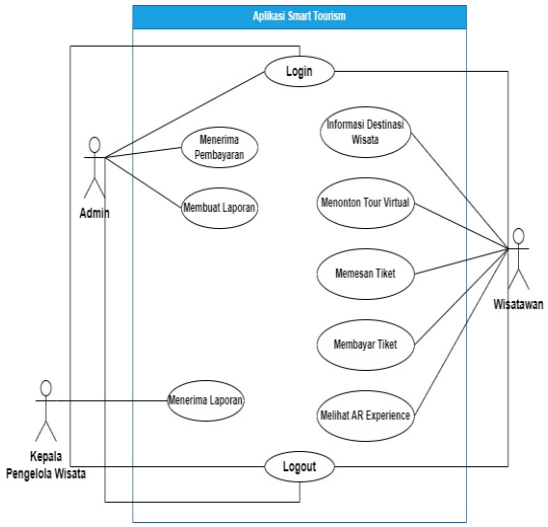

Figure 2. Usecase Diagram

b. Activity Diagram

An Activity Diagram depicts the transition from one activity to another inside a system. The user's action will access the system's main interface. The following is the Activity Diagram for data report management within the Android application at Dangiang Cibeger Nature Tourism:

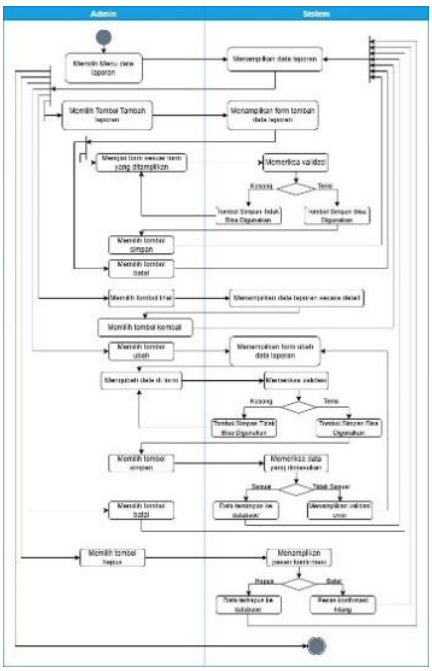

Figure 3. Activity Diagram

c. Sequence Diagram

A Sequence Diagram models the interactions of objects in a system according to the temporal order. It demonstrates the interaction of objects via messages over time to perform a process or scenario within the system. The following is the Sequence Diagram for data report handling within the Android application at Dangiang Cibeger Nature Tourism:

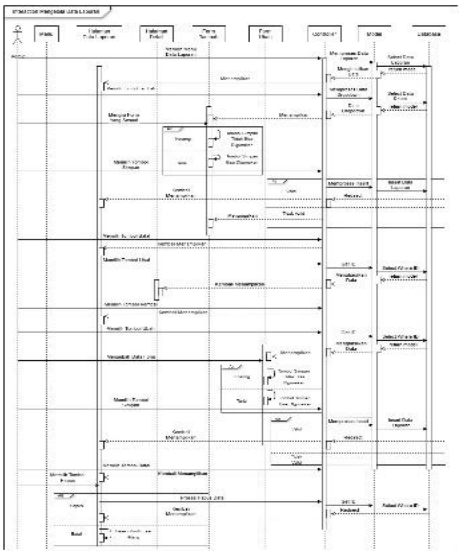

Figure 4. Sequence Diagram

d. d. Application Display Results

The subsequent output of the Android application for Dangiang Cibeger nature tourism is as follows:

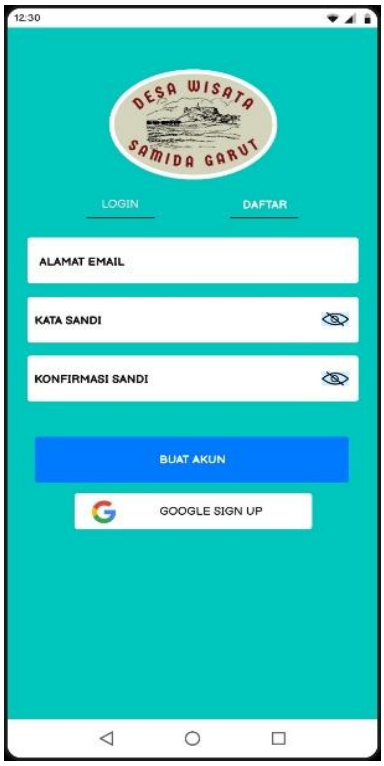

Figure 5. Login View

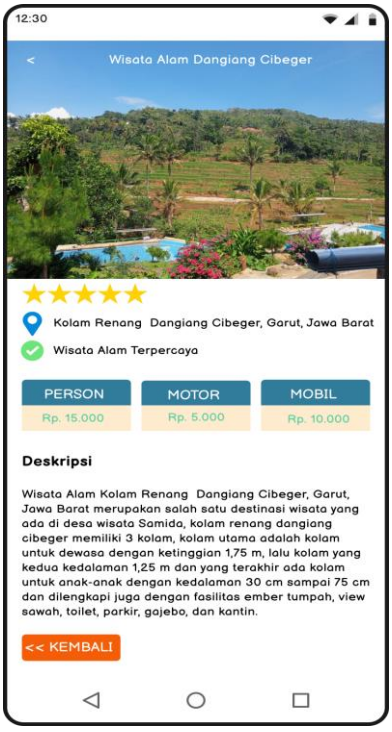

Figure 6. Destination Information Display

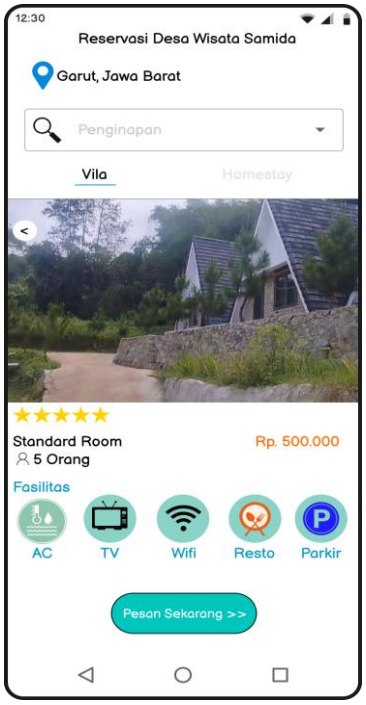

Figure 7. Reservation System View

Figure 8. Online Payment View

Figure 9. Electronic Ticket Display

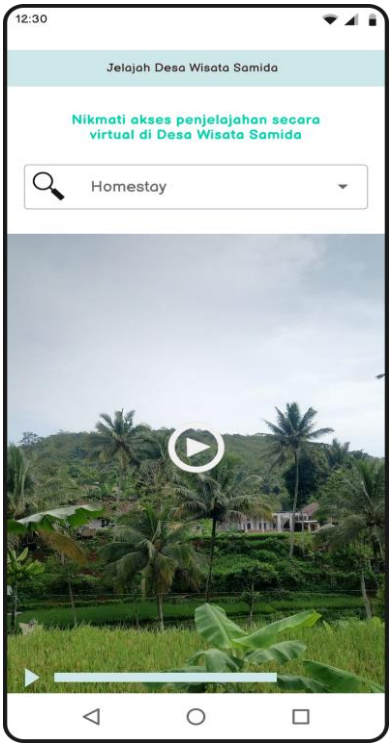

Figure 10. Visual Browse View

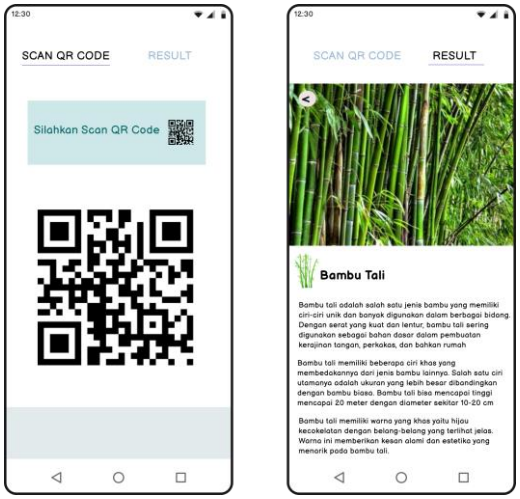

Figure 11. QR Scan Information Display

CONCLUSION

The research findings indicate that the design of the Android-based Smart Tourism application at Dangiang Cibeger Nature Tourism, Garut Regency, aims to enhance the quality of tourism services through digital technology. In the contemporary digital age, mobile applications serve as a valuable means of disseminating information, promoting tourism, and facilitating the efficient and modern management of tourism locations.

The findings of this study demonstrate that the deployment of the Smart Tourism application offers substantial benefits for both travelers and tourism management. This program provides tourists with access to information, aids in travel planning, and enhances the overall tourism experience. Simultaneously, for tourism administrators, the application serves as a potent promotional tool, enhancing tourist attendance and providing data for assessment and future tourism development.

This research illustrates that the Smart Tourism application can serve as an innovative solution for technology-driven tourism management and development. With effective execution, this application can enhance the allure of Dangiang Cibeger, draw more tourists, and promote the sustainability of tourism in the Garut Regency. Consequently, the evolution and upkeep of this application must continue to align with technological progress and the future requirements of travelers.

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