

Design and Development of a Mobile-Based E-Tourism Application for Promoting Tourism Destinations in Lombok

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ABSTRACT

The advancement of mobile technology has driven digital transformation in the tourism sector, including Lombok Island, which has high tourism potential but still faces limitations in information access and integrated services. This study aims to design and develop a mobile-based e-tourism application to enhance the promotion and accessibility of tourist destinations in Lombok. The research method employs a software engineering approach using the waterfall model, including requirement analysis, system design, implementation, and testing. Data were collected through literature studies and observation of user needs. The results indicate that the developed application provides features such as GPS-based location search, tourism recommendations, multimedia information, and integration with local services. System testing shows good usability and potential to increase tourist visits. In conclusion, mobile-based e-tourism applications can serve as an effective solution to support digital and sustainable tourism promotion in Lombok.

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PENDAHULUAN

The development of information and communication technology has driven digital transformation across various sectors, including the tourism industry. This transformation is marked by the increasing use of mobile technology as a primary medium for delivering tourism information and services. Mobile-based applications enable tourists to access real-time information, plan their trips, and obtain integrated services within a single platform. In this context, tourism digitalization functions not only as a promotional tool but also as a means to enhance the overall quality of the tourist experience.

Lombok Island, as one of Indonesia's leading tourism destinations, possesses significant potential supported by its natural beauty, cultural richness, and diverse tourist attractions. However, this potential has not been fully optimized through the use of digital technology. One of the main issues is the limited access to integrated and user-friendly tourism information for visitors. Research by Yunianto et al. (2021) indicates that the lack of an integrated transportation and tourism information system hinders the efficiency of tourist mobility in Lombok. This condition highlights the need for technology-based systems capable of connecting various aspects of tourism services.

With the increasing use of mobile devices, the development of Android-based e-tourism applications has become a relevant solution. Mobile applications offer advantages in mobility, flexibility, and integration with various digital services. A study by Ambaradewi et al. (2022) shows that Android-based tourism applications can provide navigation features, location search, and trip planning that help tourists explore destinations more effectively. In addition, mobile applications can also increase tourist interest by providing comprehensive and easily accessible information.

In e-tourism application development, location-based technology plays a crucial role. Location-Based Services enable applications to provide relevant information based on the user's real-time position. Arief et al. (2012) explain that recommendation systems based on collaborative filtering and location-based filtering

can improve the accuracy of destination recommendations according to user preferences. This demonstrates that the integration of location technology enhances service personalization in tourism applications.

Beyond functional aspects, interface design and user experience are also critical factors in the success of e-tourism applications. The use of interactive multimedia elements such as images, videos, and digital maps has been proven to increase user engagement. Bahtiar (2018) emphasizes that multimedia-based tourism information systems can improve the attractiveness and effectiveness of tourism promotion. Therefore, application development must consider visualization aspects and ease of navigation to ensure optimal user experience.

Recent studies also show that feature innovation in e-tourism applications can enhance user interaction. Akbar et al. (2025) state that the implementation of gamification in tourism applications can increase user engagement through search mechanisms and reward systems. This feature not only improves user experience but also has the potential to distribute tourist visits more evenly across destinations, which is important for sustainable tourism development in Lombok.

Several Android-based tourism application implementations have been carried out in various regions, including Lombok. Arwidiyarti and Subki (2025) developed an application for Sesaot Tourism Village that provides comprehensive information on destinations, maps, and local products. The results show that mobile applications can enhance digital promotion and expand tourism marketing reach. However, these applications remain locally focused and have not yet achieved full integration across destinations.

In addition, decision support system approaches have also been applied to assist tourists in selecting destinations. Fauzan and Setiadi (2024) developed a system using the profile matching method to recommend tourist destinations based on criteria such as facilities and comfort. Another approach using the weighted product method has also proven effective in providing recommendations aligned with user preferences (Tefa & Anggraini, 2025). However, most of these studies have not integrated recommendation systems into comprehensive mobile applications.

The development of e-tourism applications in various regions of Indonesia demonstrates that mobile technology can improve tourism promotion effectiveness. Andriyani et al. (2025) emphasize that mobile-based e-tourism platforms enhance information accessibility and provide better user experiences. Similarly, Pamungkas et al. (2024) show that Android-based applications can deliver destination information efficiently and can be accessed anytime. Nevertheless, most existing applications still face limitations in feature integration and geographical coverage.

In the context of tourism development in Lombok, the integration of digital technology and local potential is essential. Putrajip (2025) highlights that sustainable tourism development in Lombok must integrate cultural aspects, creative economy, and community participation. Mobile-based e-tourism applications can serve as effective media to accommodate these needs by providing comprehensive information and supporting the promotion of local products.

Furthermore, tourism destination development strategies require information systems capable of reaching a broad audience of tourists. A study by Sulfardin et al. (2024) shows that digital promotion plays a significant role in increasing the attractiveness of tourism destinations such as Senggigi in Lombok. Therefore, mobile applications can function both as promotional tools and as platforms for interaction between tourists, businesses, and government stakeholders.

Based on these studies, it can be concluded that the development of mobile-based e-tourism applications has strong potential to improve tourism promotion and accessibility. However, there remains a gap in the development of applications that integrate key features such as tourism recommendations, location-based services, interactive multimedia, and local service integration within a single platform.

This study aims to design and develop an integrated mobile-based e-tourism application to support the promotion of tourism destinations in Lombok. The proposed application is expected to provide comprehensive information, enhance user experience, and support sustainable tourism development. The main contribution of this research is the development of an e-tourism application model that combines multiple essential features into a unified system, offering an effective solution for digital tourism development in Lombok.

RESEARCH METHODS

Research Type and Design

This study applies a software engineering approach using the waterfall development model. This model is selected because it provides systematic and structured stages, enabling step-by-step system design and implementation. The waterfall model has been widely used in mobile application development, including in Wali et al. (2019), which demonstrates that this model produces stable systems with well-documented development processes.

The waterfall stages in this study include requirements analysis, system design, implementation, and testing. Each stage is conducted sequentially to ensure that the developed system aligns with user needs and maintains high quality.

Research Location and Timeframe

This research is conducted on Lombok Island, West Nusa Tenggara Province, which offers diverse tourism destinations such as natural, cultural, and marine attractions. The location is selected due to its high tourism potential that has not yet been fully supported by an integrated digital information system. The research is carried out over a six-month period, covering data collection, system design, and application testing.

Data Sources and Data Collection Techniques

The data used in this study consist of secondary data obtained through literature review. The literature review examines previous studies related to e-tourism application development, tourism recommendation systems, and location-based technologies. The references include relevant scientific journals such as Yunianto et al. (2021), Ambaradewi et al. (2022), and Arief et al. (2012).

In addition, user needs analysis is conducted by identifying key features required in the e-tourism application, such as destination search, recommendation systems, multimedia information, and local service integration. This approach aligns with Harits and Zein (2025), which emphasizes the importance of user needs analysis in the development of mobile-based tourism service applications.

System Design

The system design uses the Unified Modeling Language (UML) approach to visualize system structure and workflow. The diagrams used include use case diagrams, activity diagrams, and sequence diagrams. This design aims to describe interactions between users and the system and ensure that all functional requirements are properly accommodated.

Furthermore, the user interface design considers usability and user experience aspects. Visual elements such as digital maps, images, and videos are integrated into the application to improve attractiveness and information delivery effectiveness, as suggested by Bahtiar (2018).

System Implementation

The application is implemented using Android Studio with Java and XML for interface development. The system also integrates the Google Maps API to support GPS-based location search features. This technology enables users to obtain real-time and accurate tourism location information.

In addition, the recommendation system is developed using collaborative filtering and location-based filtering concepts, as described by Arief et al. (2012). This approach is used to generate tourism destination recommendations based on user preferences and location.

System Testing

System testing is conducted using usability testing methods to measure the ease of use of the application. This testing evaluates effectiveness, efficiency, and user satisfaction in using the system.

The indicators used include navigation ease, information clarity, access speed, and interface design quality. This approach is consistent with Andriyani et al. (2025), which emphasizes that usability is a critical factor in the success of mobile-based e-tourism applications.

The test results are analyzed descriptively to assess application performance and identify potential improvements. This ensures that the system not only functions properly but also provides input for further optimization.

RESULTS AND DISCUSSION

The results show that the developed mobile-based e-tourism application successfully integrates several key features, including GPS-based destination search, recommendation systems, multimedia information presentation, and tourism service integration. The implementation of these features is based on user needs identified through literature review, particularly the importance of location-based services in tourism applications (Harits & Zein, 2025). The application can display nearby tourism destinations in real time, improving travel planning efficiency.

Furthermore, the implemented recommendation system adopts collaborative filtering and location-based filtering approaches. This allows the system to recommend destinations based on user preferences and search history. These findings are consistent with Arief et al. (2012), who state that combining both methods improves recommendation relevance. This integration adds value compared to conventional tourism applications that only provide static information.

To evaluate application performance, usability testing was conducted based on several key indicators. The results are summarized in Table 1 below.

Table 1. Usability Testing Results of the Application

No	Testing Indicator	Evaluation Description	Result
1	Navigation Ease	Ease of users in switching between menus	Good
2	Information Clarity	Information is easy to understand	Good
3	Access Speed	Application response during usage	Good
4	Interface Design	Visual design is attractive and interactive	Very Good
5	Location Accuracy	GPS accuracy in determining user location	Good

The results in Table 1 show that the application has a good level of usability, particularly in the interface design aspect, which received a very good rating. This indicates that the integration of multimedia elements such as images and digital maps plays an important role in enhancing user experience, as stated by Bahtiar (2018).

Furthermore, an analysis was conducted on the relationship between application features and user needs based on the literature review. The results of this analysis are presented in Table 2.

Table 2. Alignment of Application Features with User Needs

Application Feature	User Need	Literature Support
GPS-based search	Finding nearby tourist locations	Harits & Zein (2025)
Tourism recommendations	Personal user preferences	Arief et al. (2012)
Multimedia information	Destination visualization	Bahtiar (2018)
Local service integration	Access to supporting services	Andriyani et al. (2025)

Table 2 shows that all developed features are aligned with user needs and supported by previous studies. This indicates that the designed application has a strong conceptual foundation and is relevant to the development of e-tourism technology.



Figure 1. Logical Flow of the E-Tourism Application System

CONCLUSION

This study successfully designed and developed an integrated mobile-based e-tourism application to support the promotion of tourism destinations on Lombok Island. The developed application integrates key features, including GPS-based location search, a tourism recommendation system, multimedia information delivery, and access to supporting tourism services. The integration of these features demonstrates that the application is capable of meeting users' needs in obtaining tourism information quickly, accurately, and relevantly.

The usability testing results indicate that the application has a good level of ease of use in terms of navigation, information clarity, access speed, and interface design. This suggests that the system design is aligned with user experience principles and is able to enhance user interaction with the application. In addition, the implemented recommendation system adds value by helping users discover tourism destinations that match their preferences.

From a practical perspective, this application has the potential to serve as an effective digital promotional medium for local governments and tourism industry stakeholders in increasing the visibility of tourism destinations in Lombok. From a theoretical perspective, this research strengthens the concept of integrated mobile-based e-tourism development. Future research is recommended to develop more adaptive features based on user behavior in order to continuously improve service quality.

REFERENCES

- Akbar, P., Anjani, I. A. D. P., Suparsa, I. F. S., & others. (2025). Lombok tourism information system with gamification-based quest and reward features. *English and Tourism Studies*. <https://doi.org/10.59535/ets.v3i1.381>
- Ambaradewi, N. L. G., Setiawan, G. I., & Apriana, I. G. N. Y. (2022). Rancang Bangun Sistem Informasi Geografis Destinasi Wisata Berbasis Android Pada Desa Wisata Blahbatuh. *Jurnal Manajemen dan Teknologi Informasi*, 12(01), 10-14.
- Andriyani, N., Susilowati, T., & Rinawati. (2025). Web mobile-based e-tourism in Pesisir Barat Regency. *Journal of Artificial Intelligence and Digital Business*. <https://doi.org/10.31004/riggs.v4i2.1797>
- Arief, A. A., Widyawan, & Hantono, B. S. (2012). Development of a mobile tourism recommendation system using collaborative filtering and location-based filtering methods. *JNTETI*. <https://doi.org/10.22146/JNTETI.V1I3.129>
- Arwidiyarti, D., & Subki, A. (2025). Android-based tourism introduction application for Sesaot Tourism Village. *JRIS: Jurnal Rekayasa Informasi Swadharma*. <https://doi.org/10.56486/jris.vol5no2.769>
- Bahtiar, H. (2018). Tourism and cultural information system of Lombok Island using interactive multimedia to increase tourist visits. *Jurnal Informatika Teknologi*. <https://doi.org/10.29408/JIT.V1I1.877>
- Cahyanto, K. A., Mustamiin, M. Z., Suheryadi, A., & others. (2024). Android-based ticket booking application at Pantai Balongan Indah 2 Indramayu. *Media Jurnal Informatika*. <https://doi.org/10.35194/mji.v16i2.4742>
- Fauzan, M., & Setiadi, T. (2024). Decision support system for selecting tourism objects in Lombok Island using the profile matching method. *Jurnal Informatika Teknologi dan Sains*. <https://doi.org/10.51401/jinteks.v6i4.4630>
- Hanum, W. S., & Saifudin, A. (2019). Design and development of an Android-based mobile tourism guide application in Banyuwangi Regency. *Jurnal Teknik Sistem Informasi*. <https://doi.org/10.32493/JTSI.V2I2.2798>
- Harits, A., & Zein, A. (2025). Design of an Android-based tourism location service mobile application. *Sainstech: Jurnal Penelitian dan Pengkajian Sains dan Teknologi*. <https://doi.org/10.37277/stch.v35i1.2305>
- Pamungkas, D. A., Supriyadi, B., & Widyastuti, R. (2024). Development of a tourism destination application program based on Android. *Jurnal Nasional Komputasi dan Teknologi Informasi*. <https://doi.org/10.32672/jnkti.v7i5.8133>
- Putrajip, M. Y. (2025). Integrating cultural heritage and creative economy for sustainable tourism development: A case study of Lombok, Indonesia. *JITours*. 1(1) <https://doi.org/10.71094/jitours.v1i1.34>

- Sulfardin, Fatmawati, & Suheldi, R., & others. (2024). Enhancing Senggigi as a Lombok tourism destination: A development strategy. *Komunitas: Jurnal Pengembangan Masyarakat Islam*. <https://doi.org/10.20414/komunitas.v15i1.9457>
- Swisnandya, I. G. A. J., Putra, I. N. T. A., & Wijaya, G. G. C. (2025). Design of an Android-based mobile application for tourism ticket booking at Taman Edelweis Bali. *JATI*. <https://doi.org/10.36040/jati.v9i4.13942>
- Tefa, S. R., & Anggraini, D. (2025). Development of a mobile application for tourism object selection using the weighted product method. *Jurnal Publikasi Manajemen Informatika*. <https://doi.org/10.55606/jupumi.v4i3.3974>
- Wali, M., Akbar, R., Iqbal, T., & Al-Bahri, F. P. (2019). Development of an android-based tourism guide (A case study: Sabang City, Indonesia). *International Journal of Scientific & Technology Research*, 8(11), 887-893.
- Yunianto, I. T., Wuryaningrum, P., Achmadi, T., & others. (2021). Integrated tourism transportation software design: Case study of Lombok Island. *IOP Conference Series: Earth and Environmental Science*. <https://doi.org/10.1088/1755-1315/649/1/012035>