Vol. 7, No. 5, May 2026
E-ISSN:2723 – 6692 P-ISSN:2723– 6595
http://jiss.publikasiindonesia.id/

Design and Development of a Web-Based Tourism Information System for Tolikara Regency Using Codeigniter 4

Moses Kogoya
Universitas Tama Jagakarsa, Indonesia
Email: Kkmhoe@gmail.com

Keywords:
Tourism; Information Systems; Website

Abstract

Trikala is an area with natural and cultural attractions such as waterfalls, agriculture and mountains. Many tourists want to visit these places but are limited by the difficulty of getting clear information such as good places and accommodation. The purpose of this research is to design a tourism system that uses a website to provide visitors, 360-degree panoramas, maps, and detailed descriptions of tourist attractions in Trikala to visitors and future visitors. Data collection methods include observation, interviews, and literature reviews. The method used to design this system is the waterfall method. The system testing method is black box testing. The results of the study concluded that using the Trikara Regional Tourism Information System based on the designed location can help users stay informed about the sights and attractions of Trikara district, as well as visit carefully planned places without fear or disappointment. The study concludes that the web-based tourism information system for Tolikara Regency can effectively help users access accurate and up-to-date information about tourist destinations, enabling them to plan their visits carefully without fear or disappointment. Furthermore, the system contributes to promoting local tourism potential and supporting economic development in the region.

INTRODUCTION

Tourism is one of the strategic industries in the field of economic, social, and cultural development because it creates jobs, increases local income, improves social quality, fosters patriotism and national cultural values, and can be used as a means of environmental protection. According to Tourism Law No. 10 of 2009, tourism refers to various tourism activities supported by various facilities and services provided by local communities, entrepreneurs, and local governments. The development of a suitable and ideal tourism sector will attract domestic and international tourists and enable the utilization of resources for tourism activities. Thanks to improved information accessibility, the standard of living in tourist areas has increased. This is because foreign tourists can earn foreign currency by utilizing the landscape and exchanging their money for rupiah (Haryaningsih & Patriani, 2019; Murni et al., 2021; Safriadi et al., 2021).

Tolikara Regency is an area that offers natural and cultural attractions. The unique terrain of Tolikara allows visitors to explore various interesting natural destinations, such as waterfalls, agricultural areas, and mountains (Katupotha & Sumananarathna, 2020; Pathirana, 2024). Quiet roads and continuously developing public facilities make the region very friendly to both residents and visitors. With the rapid development of technology, information has become a significant necessity in modern society. Especially in the modern era, information is available everywhere and can be accessed in a relatively short time (Baldwin, 2016; Szymkowiak et al., 2021).

Among them is information about destinations and tourist attractions, and Tolikara Regency has become a destination for many people to spend their holidays and weekends. When considering tourism, potential travelers take into account several factors, including which attractive places they want to visit, destinations they have not yet explored, how to get there, what attractions are available, and of course, which destinations best suit their time and preferences. It is recommended to first research information before choosing a tourist destination (Pan et al., 2021). This can be done through various means, such as visiting travel service providers, consulting friends, collecting brochures, or browsing the internet. However, not everyone has sufficient time, and finding clear and reliable sources can be difficult (Mammadova, 2020; Topal & Shargh, 2023).

Tourists also urgently need visual presentations in the form of realistic images related to tourist destinations. The photos and comments displayed in tourism applications reflect perceptions of the landscape (Callau et al., 2019; Yan et al., 2023; Zhou et al., 2023). The system allows tourists to view attractions and routes according to destination directions and the shortest paths, and the information is displayed in the form of digital maps of tourist attractions in Tolikara Regency, including itineraries, complete descriptions, and panoramic photos. The system can be accessed through an internet-connected website (Iqbal et al., 2018; Liang et al., 2019; Na et al., 2018).

With advances in technology and the increasing use of digital devices, the idea emerged to address the challenges faced by tourists visiting destinations in Tolikara Regency. The study was developed. This system aims to present various images and information about tourist attractions so that visitors can obtain complete and accurate details about tourism sites in Tolikara Regency (Alvianna et al., 2020; Karim et al., 2024).

Several previous studies have examined the development of web-based tourism information systems. First, Vitellani et al. (2018) implemented the waterfall method in developing an information system and demonstrated that a structured, sequential approach effectively ensures systematic progress from requirements gathering to maintenance. Second, Hedayat and Amin (2016) designed and built an online student admission information system and found that web-based systems significantly improve information accessibility and reduce administrative delays. Third, Latifah and Amalia (2018) used the Rapid Application Development (RAD) model to design a new student admission information system, concluding that iterative development with user feedback produces more user-friendly interfaces. However, these previous studies have generally focused on educational administration systems rather than tourism information systems, and none have specifically addressed the unique challenges of remote regencies like Tolikara, where geographical isolation and limited infrastructure create distinct information needs for both domestic and international tourists. Furthermore, existing tourism information systems rarely integrate 360-degree panoramic photos, detailed maps, complete descriptions, and accommodation information in a single platform designed for areas with limited internet connectivity.

Based on the background and research gaps identified above, this study aims to design and develop a web-based tourism information system for Tolikara Regency using the CodeIgniter 4 framework. The system is designed to provide visitors with comprehensive information, including 360-degree panoramic views, digital maps, detailed descriptions of tourist attractions, accommodation options, and souvenir shop information. The benefits of this

research are twofold. Theoretically, this study contributes to the development of tourism information system scholarship by applying the waterfall method and the CodeIgniter 4 framework in the under-researched context of remote regencies in eastern Indonesia. Practically, the findings provide a functional website that helps tourists access clear and accurate information about Tolikara's tourist attractions, enabling them to plan their visits effectively and confidently while also supporting local economic development through increased tourism.

METHOD

the author used a qualitative research approach to understand the existing conditions and problems in depth. The study focused on the design and development of a web-based tourism information system for Tolikara Regency and was carried out at the Tolikara Regency Tourism Office. The research adopted a science and technology–based approach. Data were obtained through direct observation of tourist attractions in Tolikara Regency and through interviews with local residents, visitors, and related stakeholders. Additional supporting data were collected from books, articles, and online sources related to system analysis and design.

The data collection methods used in this research included observation, interviews, and literature study. Observation was conducted through field surveys and direct observation of tourist attractions in Tolikara Regency. Interviews were carried out in a structured manner with visitors, local communities, and stakeholders to improve the accuracy and relevance of the collected data. Meanwhile, the literature study involved collecting data from scientific books, journals, articles, and other references related to the research topic.

The data analysis technique used was a combination of qualitative descriptive analysis and black box testing. Qualitative analysis was conducted through data reduction, data presentation, and conclusion drawing to identify user needs and system requirements such as 360-degree panoramas, digital maps, and accommodation information. Black box testing was used to evaluate system functionality by testing each module, including the homepage, tourist attraction menu, accommodation menu, souvenir shop menu, and admin dashboard, by comparing expected and actual outputs and correcting errors until all functions operated properly. To ensure data validity, the research applied source triangulation by comparing data obtained from observations, interviews, and literature studies, as well as cross-checking information from different informants and supporting documentation to ensure consistency and reliability.

RESULTS AND DISCUSSIONS

Continuous system analysis

Continuous systems analysis is defined as breaking down the system into its components and identifying and evaluating the problems that arise. The current system procedure is described in the flowmap below.

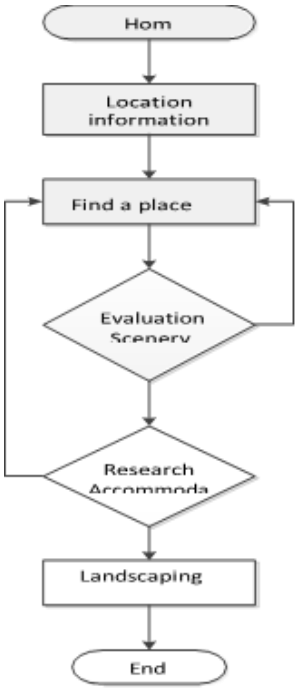

Figure 1. Deployment System Flow Chart
Source: Author's documentation (2025)

Proposed system analysis

Analyzing the proposed system is defined as completely disassembling the system into its components, as well as identifying and evaluating any problems that arise. The proposed system procedure is described in the flowmap below.

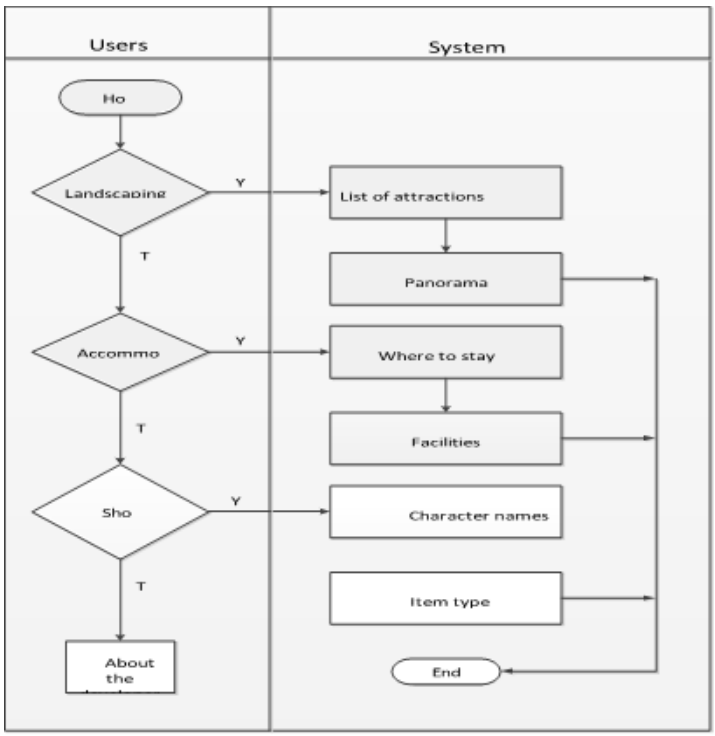

Figure 2. Proposed system flow diagram diagram
Source: Author's documentation (2025)

Develop a complete system as a component that can identify and evaluate problems. The analysis section consists of problem analysis, system requirements analysis, and system weakness analysis.

1. Problem analysis

The problem with tourism in Trikara is that there is very little information about the sights and tourist facilities. Therefore, tourists are confused and tired of the things they need to prepare before going to tourist destinations.

2. System Requirements

1. Interface Requirements

   The requirements to build this system are as follows

   1) The app can display photos of interesting places
   2) This app can view accommodations in tourist areas

2. Required data

   The data processed by this system is as follows:

   1) Tourist information
   2) Property Manager Data
   3) Resources on bespoke souvenir and souvenir sites in Trikala

3. Functional needs

   Functional needs describe the work process in the form of a detailed description of each task used to solve the problem. The system displays the following indicators:

   1) See location information and 360° panoramic photos of the monument
   2) Exhibition Location and Image Baggage Or souvenirs from Trikara

3. Vulnerability analysis

This tourism system runs on a website-based smartphone and requires an internet connection to see tourist sites. The system also provides information about accommodations in tourist destinations that cannot be booked.

System design

System design is a system of activities for designing a system with logically structured action steps, starting with the collection of the data necessary to implement the design. The next step is to analyze the collected data to determine the system boundaries and then move on to the system design. Furthermore, there is a design of a tourism information system in the state of Trikala.

1. Contextual diagram

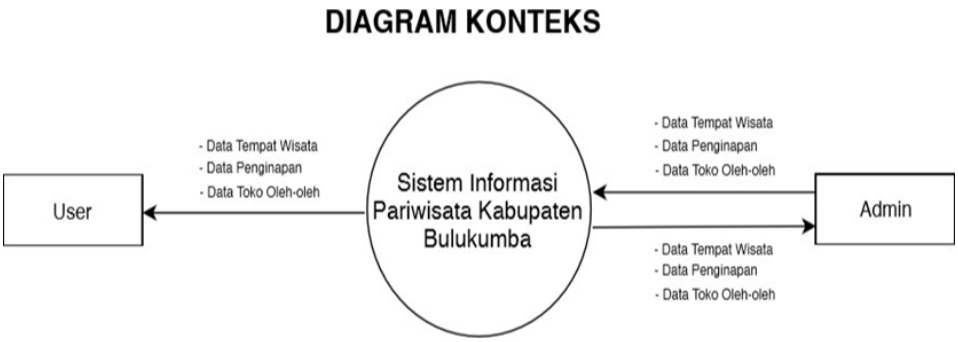

Figure 3. Contextual diagram
Source: Author's documentation (2025)

2. Value Chart

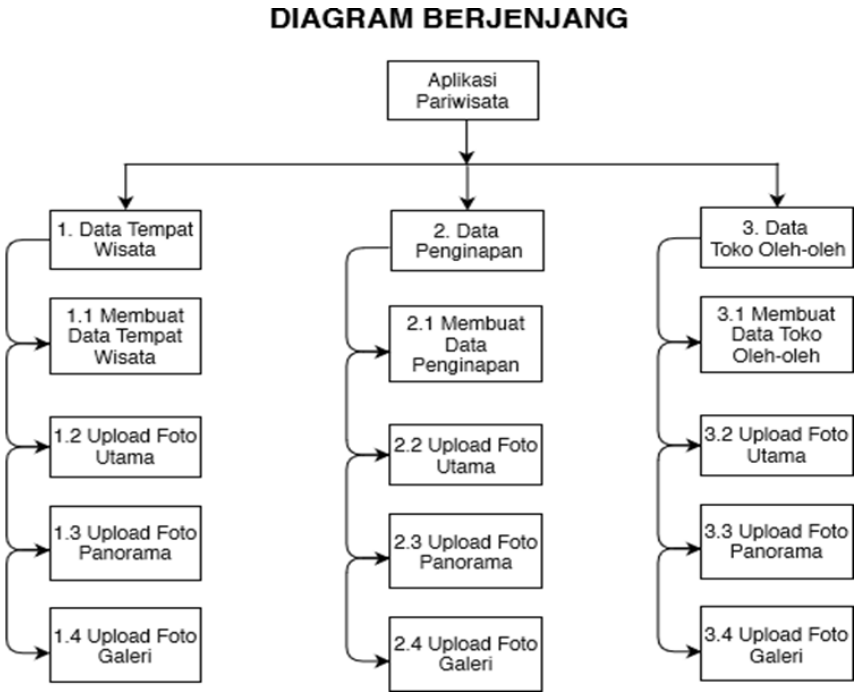

Figure 4. Hierarchical scheme
Source: Author's documentation (2025)

3. Level 0 Songs

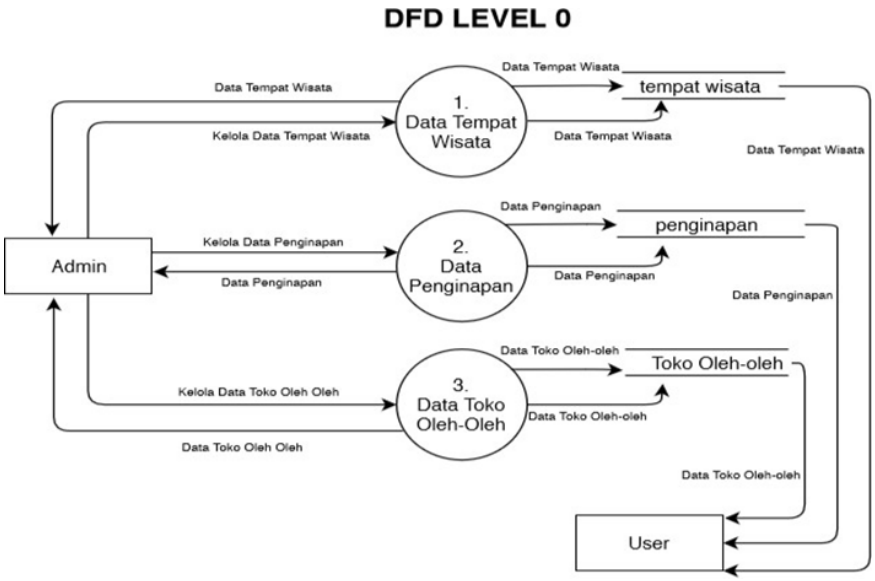

Figure 5. Level 0 Data Flow Diagram
Source: Author's documentation (2025)

4. Step 1: Attraction Data Graph

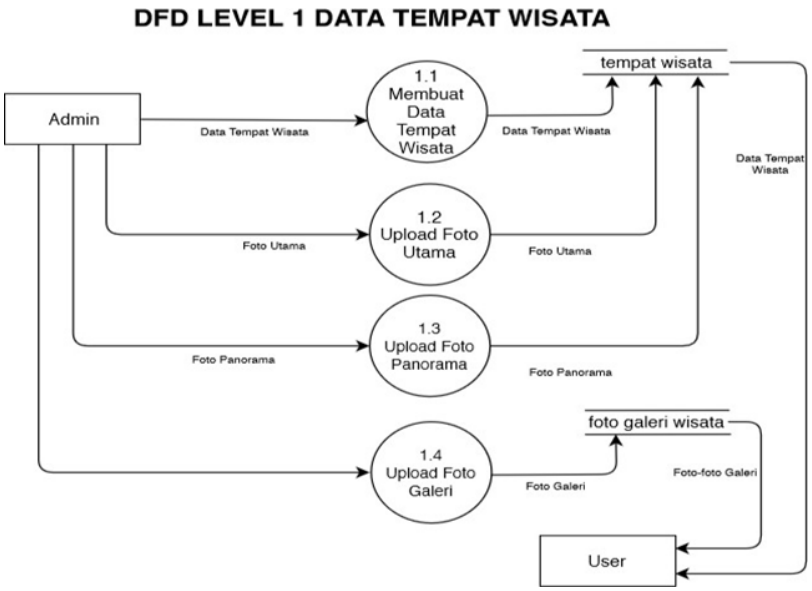

Figure 6. Data flow diagram Phase 1 Data attraction data
Source: Author's documentation (2025)

5. Adaptation data diagram Step 1

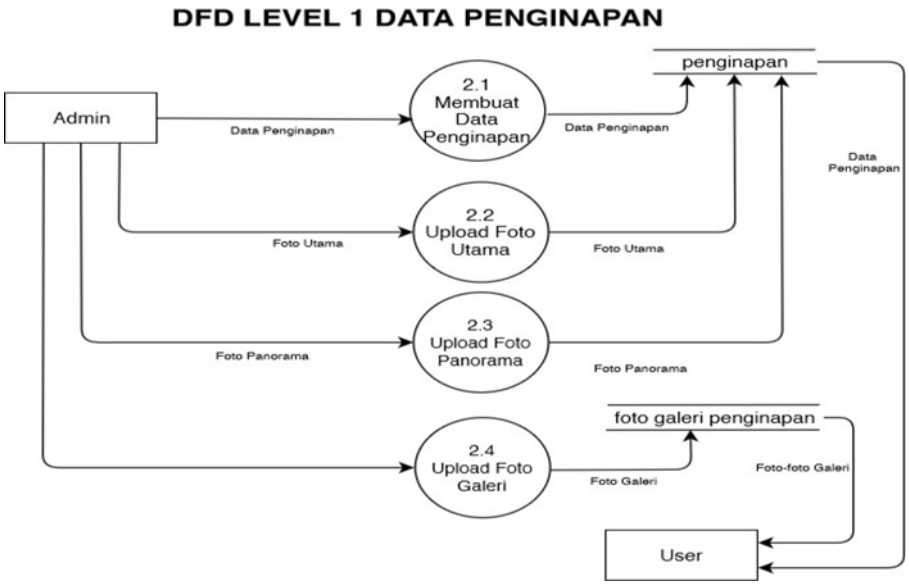

Figure 7. Data flow diagram Step 1 Data logging
Source: Author's documentation (2025)

6. Level 1 Souvenir Shop Data Images

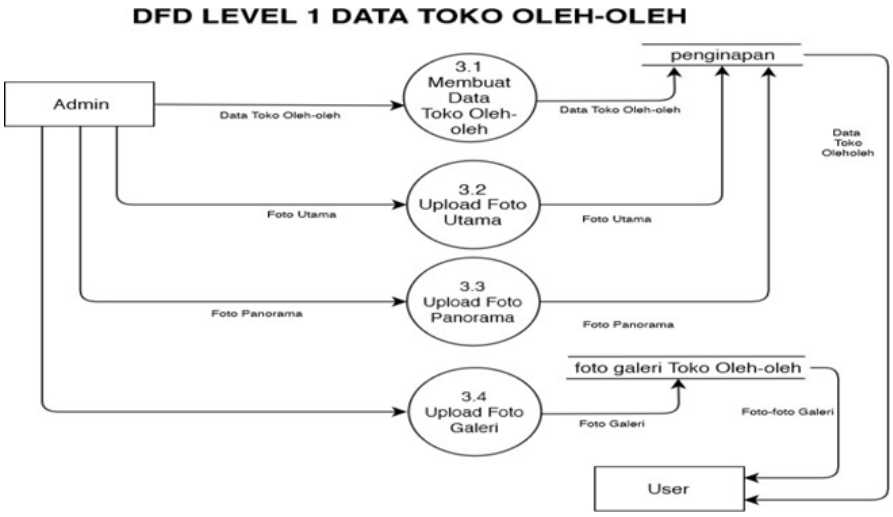

Figure 8. Souvenir Shop Data Level 1 Data Data
Source: Author's documentation (2025)

Data Dictionary

A dataflow-based glossary is created in a data flow diagram (DFD) and shows the detailed structure of the data flow. Data dictionaries are used as a means of communication between system analysts and system users, and in the design of such systems, data dictionaries consist of:

Foto_tempat_wisata ={id, id_parent, file_name_foto, description} Foto_penginapan ={ID, id_parent, file_name_foto, Translation} Tempat_wisata ={ID, name, description, location, file_name_foto, file_name_panorama }
Accommodation ={ ID, Name, Description, Location, file_name_foto, file_name_panorama }
Toko_oleh_oleh ={ID, Name, Description, Location, file_name_foto, file_name_panorama}
Users ={ID, Name, Username, Password}

Table configuration

7. Foto_tempat_wisata

Table Name:
foto_tempat_wisata Master
Key: en
Odd Keys:

Table function: Save photo data for attractions

Table 1. Photographic data table of places of interest

No.	Field name	Types	Offer	Beans
1	The same goes for me.	Information	11	
2	Id_parent	Inner story	11	
3	File_name_foto	This article	-	
4	Kacang	Pacaran	50	

Source: Author's analysis (2025)

8. Foto_penginapan

Table name: foto_penginapan
Key name: id
Odd Keys:

Table Function: Save Image Data

Table 2. Photography Data

No.	Field name	Types	Offer	Beans
1	The same goes for me.	Information	11	
2	Id_parent	Information	11	
3	File_name_foto	This article	-	
4	Kacang	Pacaran	50	

Source: Author's analysis (2025)

9. Tempat_wisata

Table Name: tempat_wisata
Master Key: EN
Odd Keys:

Table function: Saves data from attractions

Table 3. Tourist attraction data

No.	Field name	Types	Offer	Beans
1	The same goes for me.	Information	11	
2	Name	Pacaran	250	
3	Overview	Pacaran	250	
4	Location	Pacaran	250	
5	File_name_foto	This article	-	
6	File_name_panorama	This article	-	

Source: Author's analysis (2025)

10. Accommodation

Table Name: Entry Key: ID
Odd Keys:

Table Function: Facility Data Storage

Table 4. Facility Data

No.	Field name	Types	Offer	Beans
1	The same goes for me.	Information	11	
2	Name	Pacaran	250	
3	Overview	Pacaran	250	
4	Location	Pacaran	250	
5	File_name_foto	This article	-	
6	File_name_panorama	This article	-	

Source: Author's analysis (2025)

11. Toko_oleh_oleh

Table Name:toko_oleh_oleh
Primary Key:id
Odd Keys:

Table function: To store toko_oleh_oleh data

Table 5. Souvenir Warehouse Data Table

No.	Field name	Types	Offer	Beans
1	The same goes for me.	Information	11	
2	Name	Pacaran	250	
3	Overview	Dating	250	
4	Location	Dating	250	
5	File_name_foto	This article	-	
6	File_name_panorama	This article	-	

Source: Author's analysis (2025)

12. Users

Table Name: User
Primary Key: Odd
Key ID:-
Table function: Save photo data for attractions

Interface design

Interface design is an important part of app design, as it ensures a user-friendly look and interaction. The interface design of this system is as follows:

Home Foam Plan

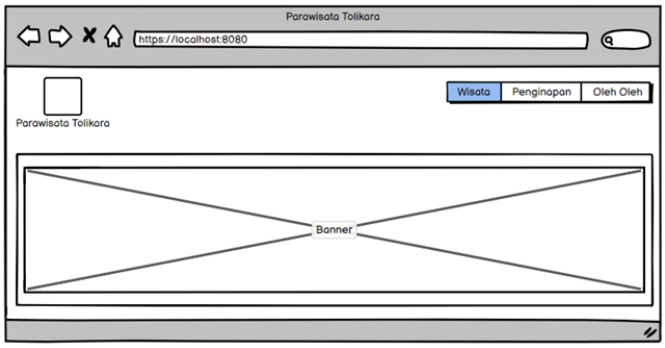

Figure 9. Housing foam
Source: Author's documentation (2025)

Design a menu form

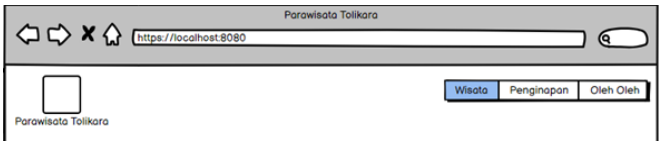

Figure 10. List of models
Source: Author's documentation (2025)

Attraction concept name

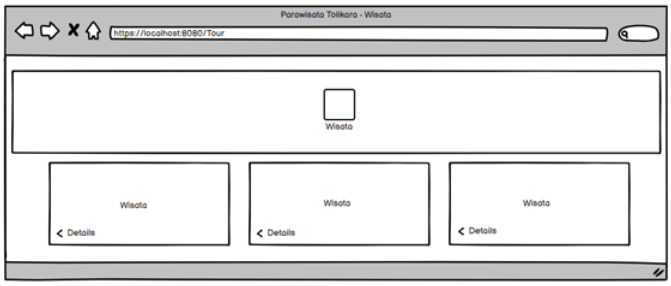

Figure 11. Formula for Tourist Names
Source: Author's documentation (2025)

Draft Modified Form

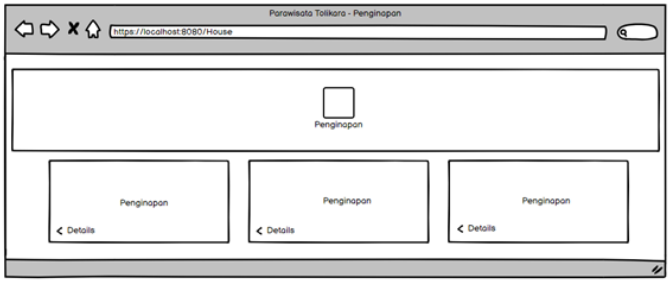

Figure 12. Facilitator Model
Source: Author's documentation (2025)

Form for funeral name

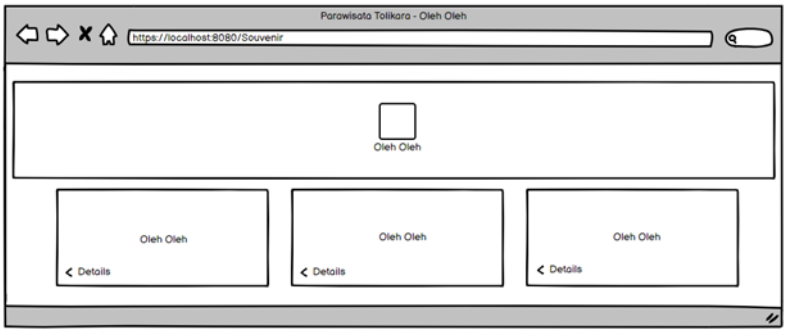

Figure 13. Template for funeral names
Source: Author's documentation (2025)

Model Management Plan

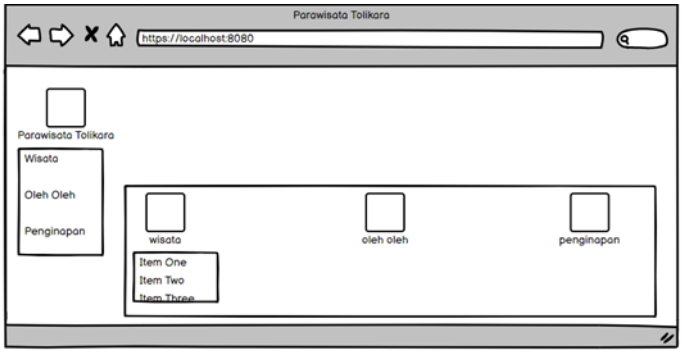

Figure 14. Management model
Source: Author's documentation (2025)

Login Form Package

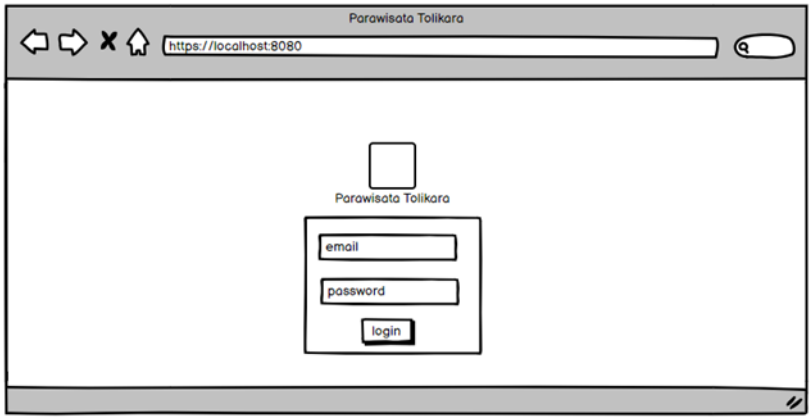

Figure 15. Login form
Source: Author's documentation (2025)

Implementation

Implementation refers to the design or implementation of a design that has been executed so far. The application was developed with PHP as a programming language. This technology allows applications to run in a web browser.

1. Interface Implementation

The software interface has been implemented based on the executed design. Its implementation is shown in the article described in detail in Screenshou7ot, which is used as a research tool, and in Chapter IV.

1. Facades of the house

Figure 16. The main façade of the house
Source: Author's documentation (2025)

2. Main Menu Interface

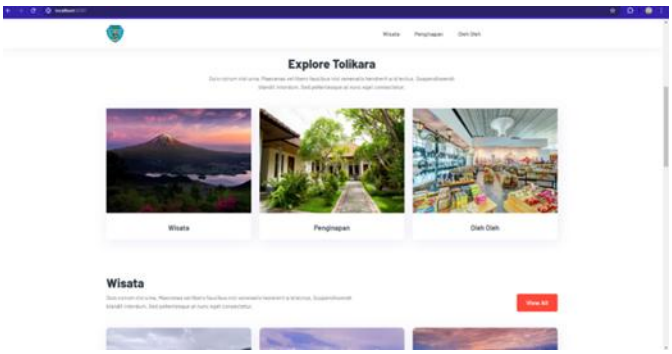

Figure 17. Main menu interface
Source: Author's documentation (2025)

3. Feature List Interface

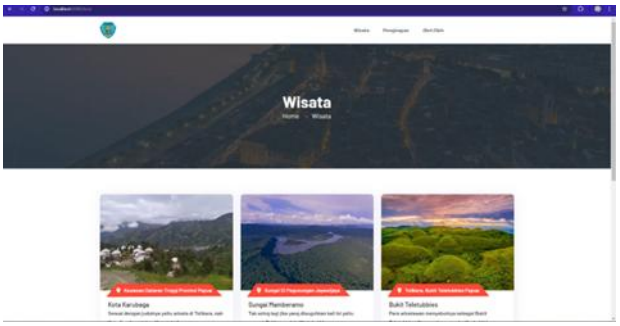

Figure 18. Ruins Page Interface
Source: Author's documentation (2025)

4. Büyük Trikara Lake Tour Page Interface

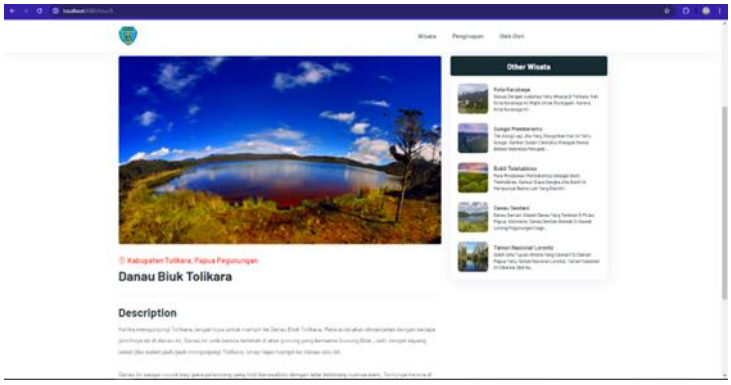

Figure 19. Tanchung Villa Tour Menu
Source: Author's documentation (2025)

5. Hotel Property Page Interface

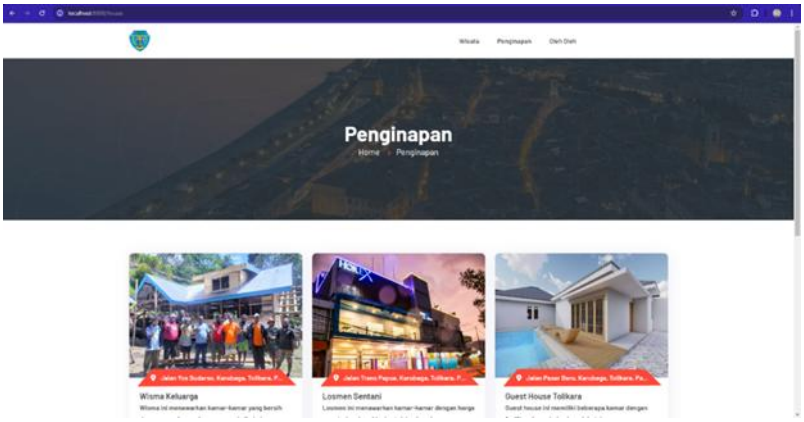

Figure 20. The interface of the hotel accommodation page
Source: Author's documentation (2025)

6. Souvenir shop menu interface

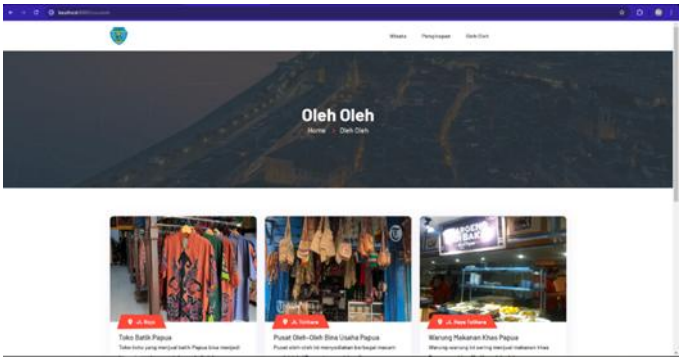

Figure 21. The façade of the souvenir shop menu
Source: Author's documentation (2025)

7. Souvenir Shop Page Interface

Figure 22. Interface of the warning diagram page
Source: Author's documentation (2025)

System testing

1. Black Box Test

1. Test Management Interface System

The test scheme uses the Administrator Interface system to verify that the Administrator Interface included in this application is working correctly. Here is the exam schedule:

Table 6. Test Management Interface System

Test cases and results (accurate data)			
Menu section	Data input	Results Stuttgart	Conclusion
Login page	*Enter your username and password* , as well as a login button	If the text input information matches the login key, the administrator will successfully log in to the Control Panel Mr. President	[√] Accept [Rejection
Main Menu		Information about display systems, attractions, and shopping statistics Goodbye.	[√] Accept [Rejection
Manage your site listing Travel	Job title, location, description, add image, save button, edit button, Release the button.	You can see the names of attractions, descriptions of places, and photos	[√] Accept [Rejection
List of accommodations	You can enter your teacher's name, location, description, and photo, as well as save, edit, and delete buttons.	Hostel name, location description, and photos shown	[√] Accept [Rejection
Souvenir list shop	Name, location, description, add image, save button, Edit and delete buttons.	You can see the name of the souvenir, the description of the place and the photo	[√] Accept [Rejection

Source: Author's analysis based on black box testing (2025)

2. UI System Testing

The UI system test table is used to determine if the admin interface included in this app works as expected. Here is the exam schedule:

Table 7. Testing the UI system

Test cases and results (accurate data)			
Menu section	Data input	Expected results	Conclusion
Home	-	When a user successfully logs in to the dashboard Open the app	[√] Evaluation [Rejection
List of attractions	-	Attraction Information Exhibition	[√] Evaluation [Rejection
List of accommodations	-	View property information	[√] Evaluation [Rejection
List of souvenir shops	-	See information about souvenir shops	[√] Evaluation [Rejection

Source: Author's analysis based on black box testing (2025)

CONCLUSION

After the research was conducted, a web-based tourism information system for Tolikara Regency was developed to provide clear and structured information about tourist attractions, accommodations, and supporting facilities, enabling visitors to plan their trips with greater confidence and reduced uncertainty. The system's functionality was validated through black box testing, which confirmed that all modules—including the homepage, tourist attraction menu, accommodation menu, souvenir shop menu, and admin dashboard—operated correctly and efficiently. In addition, survey results indicated that respondents considered the system important and beneficial for improving access to tourism information in Tolikara Regency. Based on these findings, it is recommended that the Tolikara Regency Tourism Office officially adopt and maintain the system by regularly updating tourism data and promoting it through various media channels. Future improvements should include the development of mobile applications for Android and iOS, integration with real-time navigation services such as Google Maps API, and the addition of features such as online booking and user reviews to increase usability and engagement. Further research is also suggested to evaluate the system's long-term impact on tourist visit growth, conduct broader usability testing with more diverse users, and explore the use of artificial intelligence to provide personalized tourist recommendations based on user preferences.

REFERENCE

Alvianna, S., Earlike, F., Sani, A., Lasarudin, A., & Hidayatullah, S. (2020). The impact of visitor satisfaction mediation from the relationship between marketing information systems, tourist destinations and service quality towards returning interest in Malang Topeng Village tourism destinations. *East African Scholars Multidisciplinary Bulletin, 4*(13), 332–338.

Baldwin, R. (2016). *The great convergence: Information technology and the new globalization*. Harvard University Press.

Callau, A. À., Albert, M. Y. P., Rota, J. J., & Giné, D. S. (2019). Landscape characterization using photographs from crowdsourced platforms: Content analysis of social media photographs. *Open Geosciences, 11*(1), 558–571.

Haryaningsih, S., & Patriani, I. (2019). Rupiah currency strengthening at border area West Kalimantan Province-Gun Tembawang, Suruh Tembawang Village, Entikong District. *African Journal of Hospitality, Tourism and Leisure*, 1–6.

Hedayat, M. K., & Amin, B. E. (2016). Desain dan pembangunan sistem informasi penerimaan siswa baru online pada MAN 02 Model Banjarmasin. *PICASSE, 18*(2), 113–120.

Iqbal, A., Ullah, F., Anwar, H., Kwak, K. S., Imran, M., Jamal, W., & Rahman, A. U. (2018). Interoperable internet-of-things platform for smart home system using web-of-objects and cloud. *Sustainable Cities and Society, 38*, 636–646.

Karim, T. Z., Siregar, H., Mulatsih, S., & Tjahjono, B. (2024). Tourism development in increasing regional original income by paying attention to disaster aspects in Morotai Island Regency. *BIO Web of Conferences, 123*, 3002.

Katupotha, J., & Sumananarathna, R. (2020). *Geotourism and geoheritage potentials: Vistas and unique opportunities of Sri Lanka*.

Liang, F., Qian, C., Hatcher, W. G., & Yu, W. (2019). Search engine for the internet of things: Lessons from web search, vision, and opportunities. *IEEE Access, 7*, 104673–104691.

Mammadova, T. (2020). Writing and information literacy: Major steps to impede the use of unreliable sources for academic purposes. *Azerbaijan Journal of Educational Studies*.

Murni, A., Usman, U., Abubakar, J., & Rahmah, M. (2021). The influence of the number of foreign tourists and foreign debt to foreign exchange reserves in Indonesia. *Journal of Malikussaleh Public Economics, 4*(2), 19–25.

Na, S., Kim, T., & Kim, H. (2018). Service identification of internet-connected devices based on common platform enumeration. *Journal of Information Processing Systems, 14*(3).

Pan, X., Rasouli, S., & Timmermans, H. (2021). Investigating tourist destination choice: Effect of destination image from social network members. *Tourism Management, 83*, 104217.

Pathirana, M. T. (2024). Potentiality of developing mountain tourism in Sri Lanka: Case of Central Province Sri Lanka. *Journal on Tourism & Sustainability, 7*(1–2).

Safriadi, S., Ardi, A., & Yusuf, A. M. (2021). The value of the Ringgit and the Indonesian Rupiah in the sale and purchase transactions of the village community Aji Yellow Sebatik Island borders the Indonesian-Malaysian. *International Journal of Educational Research & Social Sciences, 2*(2), 426–438.

Szymkowiak, A., Melović, B., Dabić, M., Jeganathan, K., & Kundi, G. S. (2021). Information technology and Gen Z: The role of teachers, the internet, and technology in the education of young people. *Technology in Society, 65*, 101565.

Topal, R., & Shargh, F. (2023). Teaching students how to find and identify reliable online sources: A series of exercises. *Journal of Political Science Education, 19*(3), 475–484.

Vitellani, E., et al. (2018). Penerapan model air terjun ke sistem informasi. *15*(2), 137–144.

Yan, J., Yue, J., Zhang, J., & Qin, P. (2023). Research on spatio-temporal characteristics of tourists' landscape perception and emotional experience by using photo data mining. *International Journal of Environmental Research and Public Health, 20*(5), 3843.

Zhou, J., Wu, S., Wu, X., & Xia, X. (2023). Cultural landscape perception of the Chinese traditional settlement: Based on tourists' online comments. *PLoS ONE, 18*(4), e0283335.