

Web-Based Tourism Geographic Information System in Banggai Laut Regency

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Abstract

Banggai Laut Regency has abundant natural resources, both in the form of marine resources and from various produce. abundant resources in Banggai Laut Regency, making this district one of the places that have tourist destinations. Some of the tourist attractions that can be found in Banggai Laut Regency are very diverse including natural tourism, cultural tourism and tourist villages. Limited information about the types of tourism, the distribution of tourist locations, tourist maps are the causes of the undeveloped tourist attractions in the Banggai Laut Regency area. This research raises the issue of how to create a web-based tourism geographic information system in Banggai Laut Regency. The purpose of this study is to create a web-based tourism geographic information system. The method used in this study is the prototyping system development method. This research produces a web-based tourism geographic information system in Banggai Laut Regency. With the existence of a geographic information system, it can help tourists to be able to find out how the description of tourist attractions, tourist maps, and information about tourist attractions to be visited, so that tourists get detailed information in traveling and visiting tourist destinations and help the local government, especially the Tourism Office in promoting tourist attractions in Banggai Laut Regency.

Keywords : GIS, Tourism, Prototyping, Website

I. INTRODUCTION

Tourism can be interpreted as a full journey, that is, departing from a place, to the original place of origin [1]. Tourism is an activity and a process of taking time, away from home in an effort to do activities (travel), recreation, relaxation, and fun, while utilizing the provision of commercial services [2]. The development of tourism in an area will bring many benefits to the community, both economically, socially and culturally. Banggai Laut Regency is one of the regencies in Central Sulawesi Province. This area has abundant natural resources, both in the form of marine resources and from various produce. The tourist attractions that can be found in Banggai Laut Regency are very diverse including natural tourism, cultural tourism and tourist villages.

Unfortunately, the Tourism Office in the Banggai Laut Regency area only uses pamphlets, brochures and Facebook media as a forum to disseminate information about existing tourism. Therefore, a new system is needed that can be easily and quickly known and accessed by prospective tourists who want to end up in tourist attractions. Based on these problems, making a mapping of tourist location maps or Geographic Information Systems is the right solution to disseminate tourism location information and make it easier for tourists to find out tourism destinations in Banggai Laut Regency.

This research focuses on how to create a Web-Based Tourism Geographic Information System. Information System is a medium to develop and disseminate information to information users quickly and precisely [3]. Information Systems is an orderly combination of people's hardware, software, network communications and data resources that collect, transform, and

disseminate information in an organization [4]. Geographic Information System is a component consisting of hardware, software, geographic data, and human resources that work together to insert, store, repair, manage, manipulate, integrate, analyze, and display data in a geographic-based information [5]. Geographic Information System is a computerized system that has the ability to build, manage, analyze, store and display geographic information in the form of mapping where the user who builds the data and operates it is also included in the system section [6]. A website is one of the applications that contains multimedia documents (text, images, sounds, animations, videos) in it that use the HTTP protocol (hypertext transfer protocol) and to access using software called a browser [7]. A website is a whole web page contained in a domain that contains information [8].

The purpose of this study is to create a Web-Based Tourism Mapping Geographic Information System. The function of the Geographic Information System in this study is to provide information and explanations related to tourist attractions, information on the distribution of tourist attractions from tourist locations, types of tourism, tourist maps, and information that can help tourists get detailed information in traveling and visiting tourist destinations and assisting local governments, especially the Tourism Office in promoting tourist attractions in Banggai Laut Regency.

II. RESEARCH METHOD

The method used in this study is the prototyping method. Prototypes are early versions of software systems used to demonstrate concepts, design experiments, and discover more possible problems and solutions [9]. Prototyping is a process used to assist software development in forming a model of the software to be created [10]. Prototyping this as a software development method [11]. Some of the stages to be passed can be seen in Figure 1

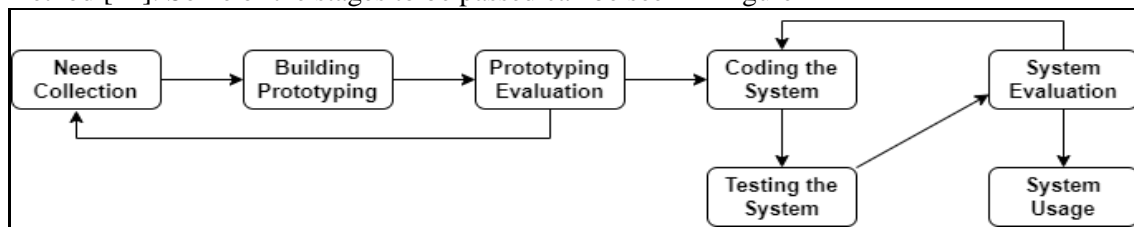


Fig. 1. Prototyping model

The following explanation of the stages of Prototyping is as follows:

1. Needs Collection
This stage is carried out the collection of all data on the needs of the system to be created. The necessary needs are in the form of general information data and tourist attraction data. In addition, data were obtained from literature studies and interviews of informants of tourism managers and staff of the Banggai Laut Regency tourism office.
2. Building Prototyping
Build prototyping by creating user-focused temporary designing by creating inputs and output results. Prototyping will be created using Justinmind software. Design of data flow charts and databases.
3. Prototyping Evaluation
This evaluation is carried out to find out whether prototyping is in accordance with user needs. After the prototype has been in accordance with the user's wishes, then proceed with the system coding.
4. Coding the System
At this stage the approved prototyping will be converted into program code using text editor visual code, PHP and database using MySQL.
5. Testing the System

At this stage a system that has become software that is ready to use. Before the software is ready for use, the system must first test the system using the black box testing method to minimize errors.

6. System Evaluation

At this stage, the finished software will be evaluated with the system user.

7. System Usage

This stage is the final stage of making a system with the prototype method. At this stage the resulting system is the final product where the system is ready to operate in accordance with the functions that have been made.

III. RESULTS AND DISCUSSION

A. Prototyping Design

1) Context Diagram

The context diagram of the Web-Based Tourism Geographic Information System is arranged according to the external identification of the entity. Where there are 3 entities that play a role in the designed system, namely admin, service chiefs and visitors. It can be seen in Figure 2.

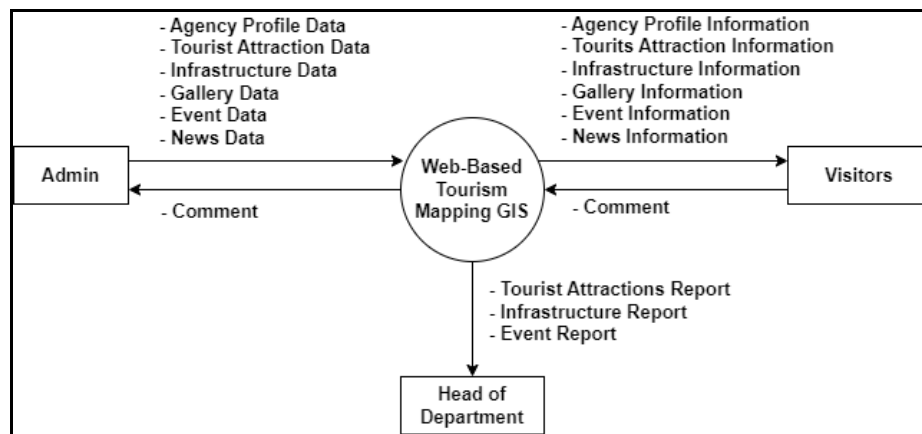


Fig. 2. Context diagram

2) Level 0 Data Flow Chart

The level 0 data flow chart consists of 3 system flows that describe the general system flow, namely the data input needed by the system, transactions that occur after the data input is carried out, and the output of processed data in the system. The following picture of DAD Level 0 can be seen in Figure 3.

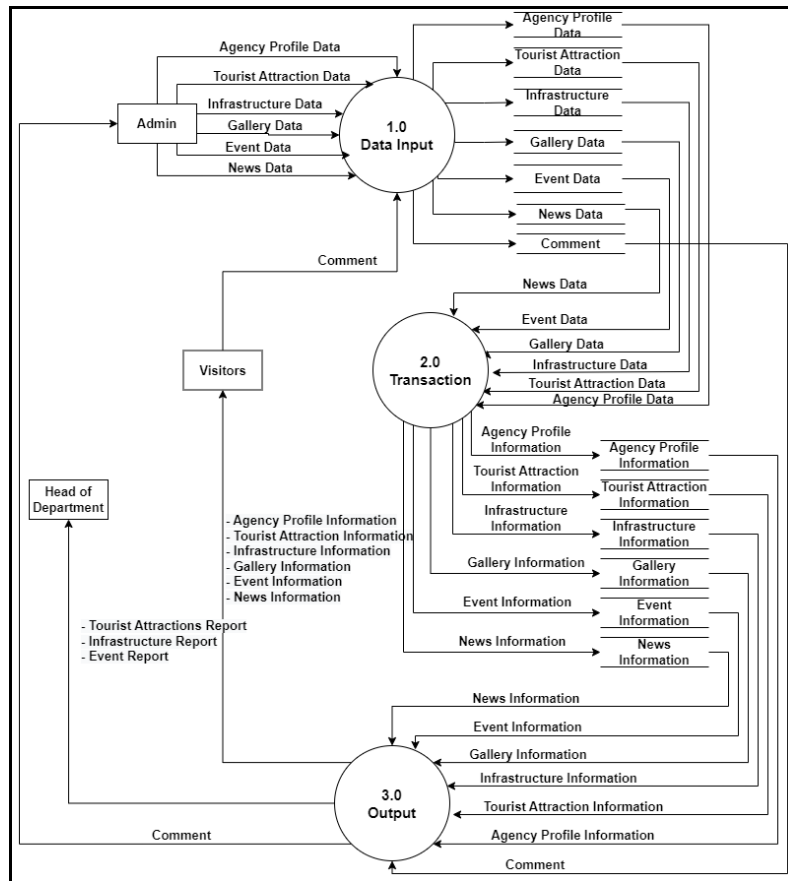


Fig. 3. Level 0 data flow chart

3) Database Relationships

Database Relationships are relationships that occur in one transaction with another that serves to regulate the operation of a database. Figure 4 shows the database relationships in the developed application system.

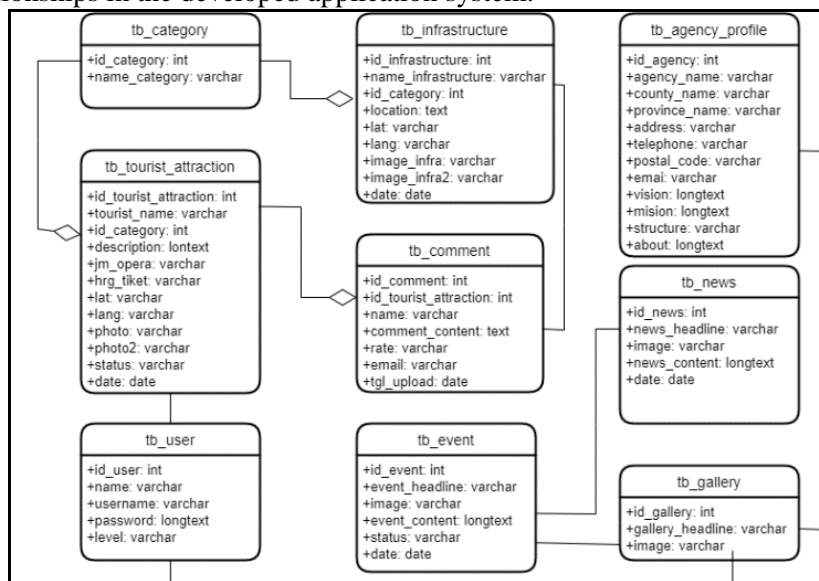


Fig. 4. Database relationships

B. System Evaluation

1) Visitor Page

a) Home Page

The home page has 7 menus, namely the home menu, profile, tourist attractions, infrastructure, news, maps and login can be seen in figure 5. The login menu can only be accessed by admin and service heads who already have access rights to log in to the administrator page and the service head page.

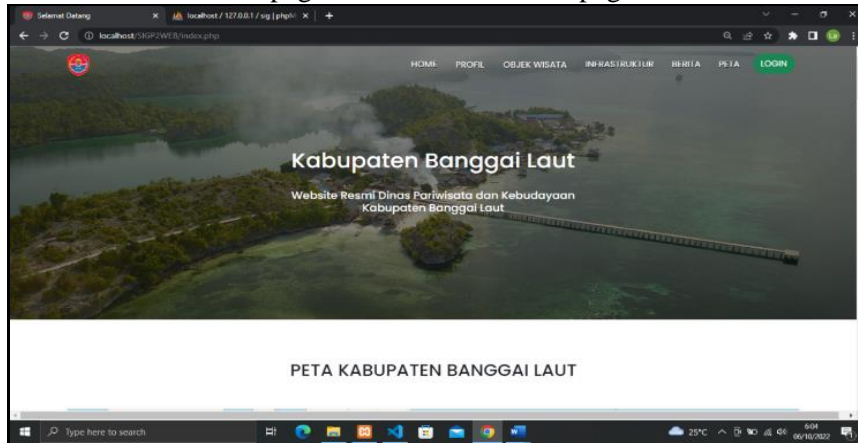


Fig. 5. Home page.

b) Map Page

The visitor map page contains map legends, map information and there is a distribution of tourist attraction locations and infrastructure. It can be seen in figure 6.

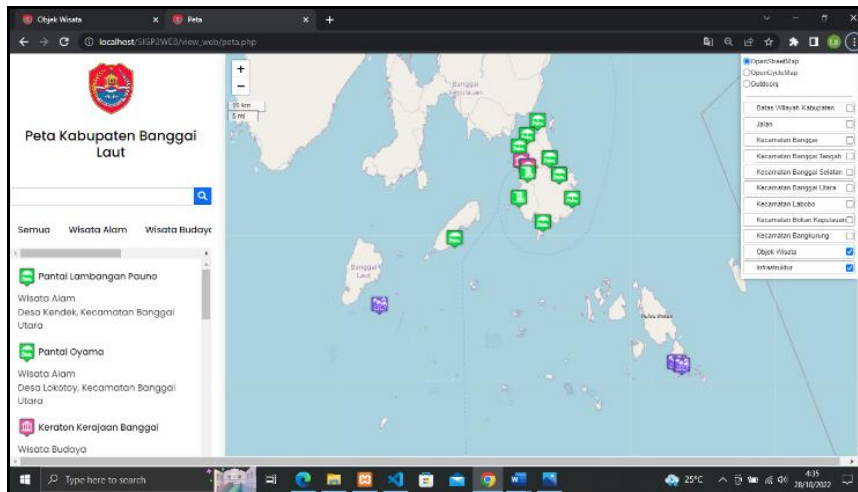


Fig. 6. Map page

To see the details of the tour, visitors can choose one of the information contained on the map or can choose one of the markers of the tourist attraction contained on the map, then the system will direct to the tourist detail page. Meanwhile, to see the details of the infrastructure, the end can also choose one of the information contained on the map or you can choose the infrastructure marker on the map.

c) Login Page

This page is used to go to the administration and service chiefs page. On the login page the user will enter the username and password which then press the login

button, and the admin and head of the service will enter their respective pages. Shown in figure 7.

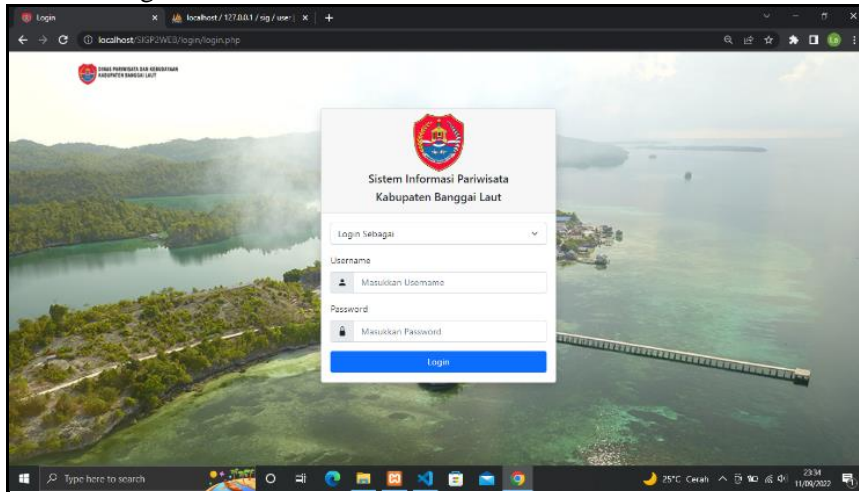


Fig. 7. Login page

2) Admin Page

a) Dashboard Page

The admin dashboard page consists of a dashboard menu, agency profile menu, attractions menu, infrastructure menu, category menu, gallery menu, event menu, news menu, comments menu, user data menu, map menu. It is shown in figure 8.

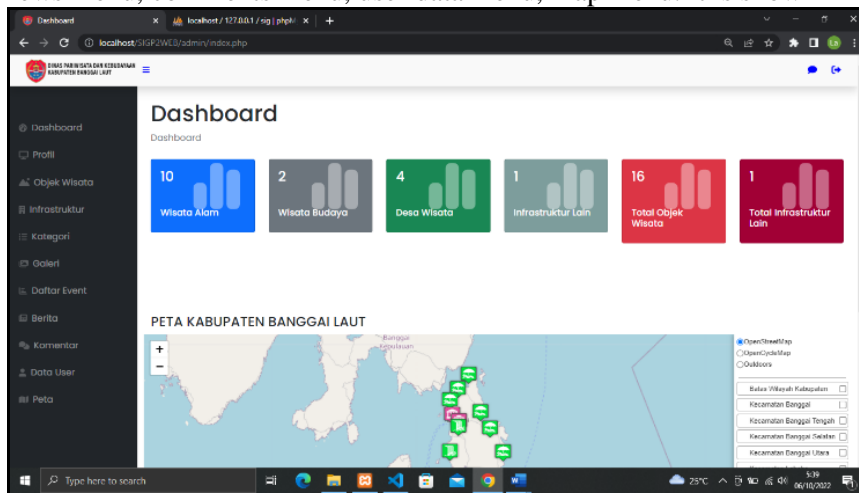


Fig. 8. Dashboard page

To input data, the admin can choose one of the menus from the available menu. Then to exit the administrator page then the admin can select the exit button.

b) Tourist Attractions Page

The attractions page serves to display a list of attractions. There are add data button, comment button, view tour details button, delete and change attraction data button. To add tourist attraction data, select the add data menu found on the attraction page in figure 9.

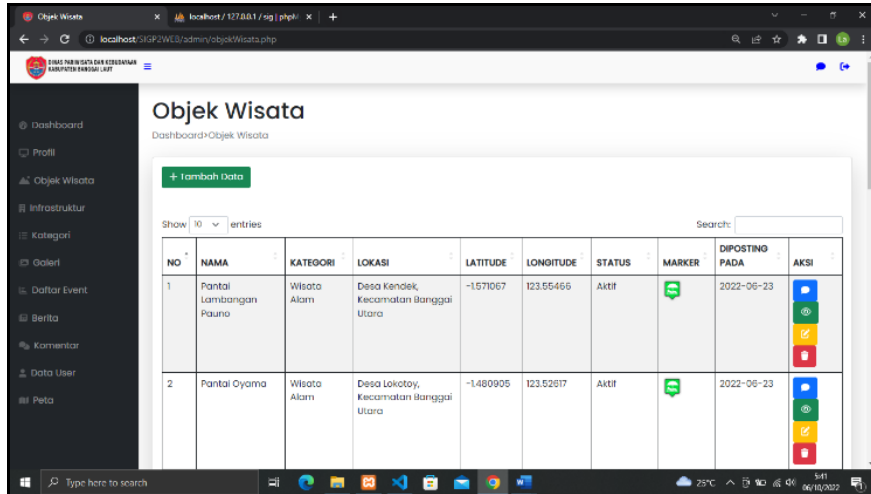


Fig. 9. Tourist attractions page

To change the data, choose the change data button, then to see the comments of the attraction then choose the comment button, then to see the tourist details select the tourist details button, while to delete the attraction data then choose the delete button.

c) *Infrastructure Page*

The Infrastructure page serves to display a list of infrastructures. There is an add data button, a change button, a delete button. To change the infrastructure data, choose the add data button on the infrastructure page, while to change the data, choose the change button, then to delete the infrastructure data choose the delete button, which can be seen in figure 10.

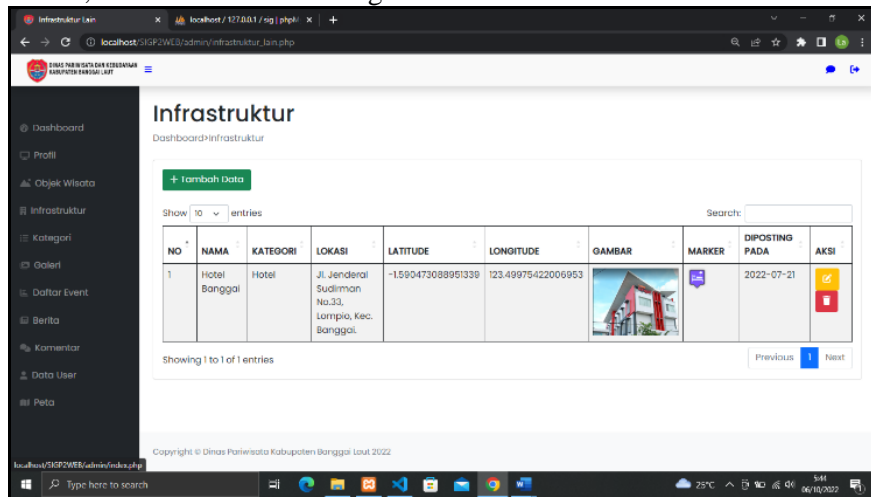


Fig. 10. Infrastructure page

d) *Map Page*

The map page serves to display the distribution of tourist attraction locations and infrastructure. There are map legends and information on attractions and infrastructure, there is a map print button can be seen in figure 11.

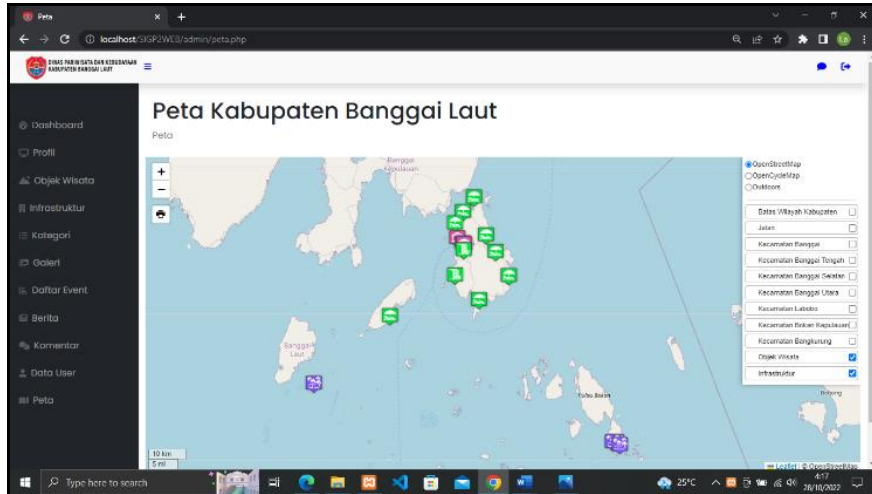


Fig. 11. Map page

To find out the tourist attraction information, choose one of the markers on the map, then to print the map, choose the print button on the map.

3) Head of Service Page

a) Tourist Attractions Page

The tourist attraction page located at the head of the service serves to provide a report to the head of the service. There is a print attraction button and a view tour details button. It can be seen in figure 12.

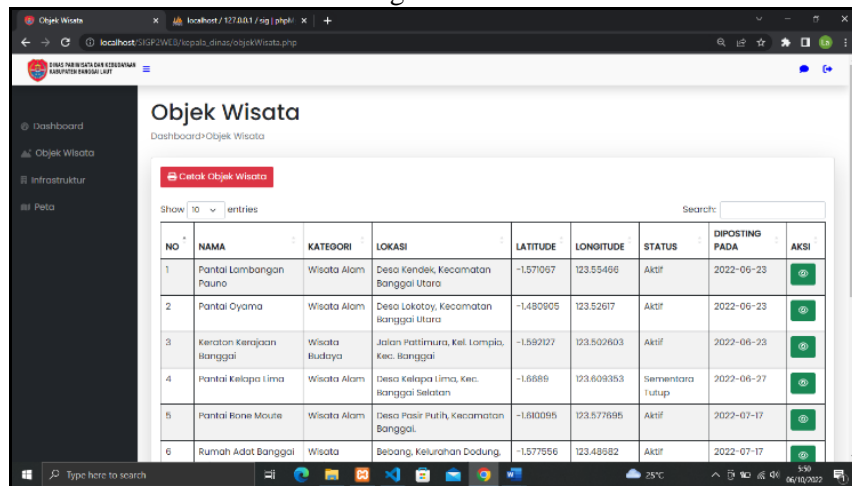


Fig. 12. Tourist attractions page

To print the tourist attraction report, choose to print the tourist attraction on the official head of the tourist attraction page, while to see the tourist details, choose the view tour details button.

b) Infrastructure Page

The infrastructure page contained in the head of the service serves to provide reports to the head of the service. There is an infrastructure print button. To print the infrastructure report choose the print infrastructure button. Shown in figure 13.

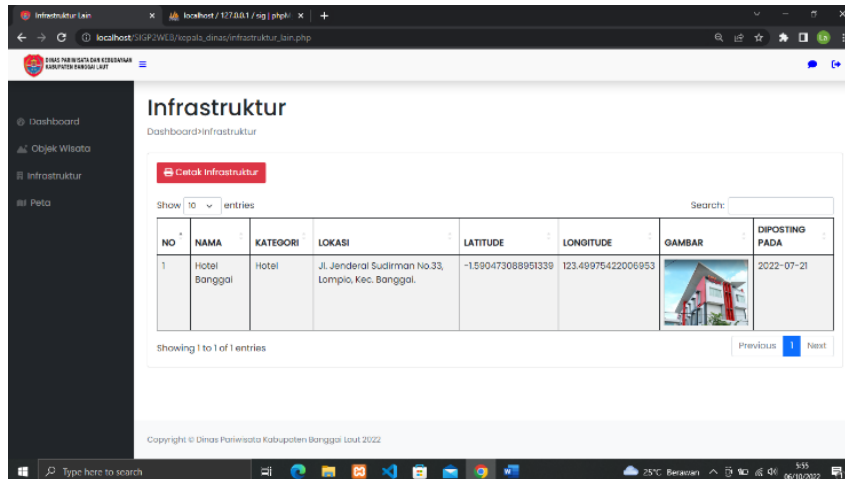


Fig. 13. Infrastructure page

C. System Testing

Tests were performed during application system testing using black box testing in tables 1, 2, and 3. Black box testing is a software testing method that focuses on the functional specifications of software [12]. Black box testing, also known as behavioral testing, focuses on the functional requirements of the software [13]. In this phase, the application system is developed and tested using unit, end-to-end testing or black box usability to ensure that the application logic and Application algorithms work as expected.

TABLE 1. BLACK BOX TESTING ADMIN

No	Feature	Results	Description
1	Login	In accordance	The system can run properly and may display incorrect username and password messages
2	Profile Features	In accordance	The system keeps the agency profile
3	Tourist attraction input	In accordance	The system can add tourist attraction data
4	Input infrastructure	In accordance	Systems can add infrastructure data
5	Category input	In accordance	System can add category data
6	Input gallery	In accordance	The system can add gallery data
7	Event input	In accordance	The system can add event data
8	News input	In accordance	The system can add news data
9	Comments features	In accordance	The system can display comment data
10	Data user	In accordance	The system can add user data according to access rights
11	Map features	In accordance	The system can display a map

TABLE 2. BLACK BOX TESTING HEAD OF SERVICE

No	Feature	Results	Description
1	Login	In accordance	The system can run properly and can display incorrect username and password messages
2	Tourist attractions report	In accordance	The system can print tourist attraction reports
3	Infrastructure report	In accordance	The system can print infrastructure reports
4	Event report	In accordance	The system can add event data
5	Map features	In accordance	The system can display a map pages

TABLE 3. BLACK BOX TESTING VISITORS

No	Feature	Results	Description
1	Home features	In accordance	The system can display the initial page of website visitors
2	Profile features About Agencies	In accordance	The system can display a profile page about the agency
3	Features Profile Vision Mission	In accordance	The system can display the vision and mission profile page
4	Features of Agency Structure Profile	In accordance	The system can display the prfil page of the instance structure
5	Nature Tourism Features	In accordance	The system can display the nature tourism page
6	Cultural Tourism Features	In accordance	The system can display cultural tourism pages
7	Tourist Village Features	In accordance	The system can display the pages of tourist villages
8	Infrastructure Features	In accordance	The system can display the infrastructure page
9	Attraction comment feature	In accordance	The system can comment on attractions
10	News features	In accordance	The system can display news pages
11	Map features	In accordance	The system can display a map pages

IV. CONCLUSIONS

Based on the research that has been carried out, it can be concluded that how to create a web-based tourism geographic information system in Banggai Laut Regency can be done by carrying out the stages of collecting needs, building prototyping, prototyping evaluation, coding the system, testing the system and evaluating the system. So as to produce a Web-Based Tourism Geographic Information System in Banggai Laut Regency that can help tourists get information related to tourist attractions, be it the distribution of tourist locations, tourist details and other information and help the Banggai Laut Regency government promote tourism in Banggai Laut Regency to domestic and foreign tourists effectively and efficiently.

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