Development of Website-Based Thousand Island Tour Package Booking Application Using Waterfall Method

Nurhaliza¹, Nurullah Husufa²

¹Jurusan Sistem Informasi, Universitas Mercu Buana, Jakarta, Idnonesia
Email: ¹icaaci36@gmail.com, ²nurul_husufa@mercubuana.ac.id

Abstract

PT. Khatulistiwa Global Wisata is a company engaged in tourism and offers a Tour and Travel service called Explore Thousand Islands. Currently, the process of booking Pulau Seribu tour packages at Explore Seribu Pulau Tour and Travel is still done manually, causing visitor data, bookings, payments, and visitor reviews to not be recorded properly. This website-based thousand island tour package online booking application is designed using the Waterfall method, CodeIgniter as a framework, PHP for designing the web, and MySQL as a database storage. Research has been conducted to overcome problems by creating features such as tour package list features, tour package bookings, tour package payments, manage payments, approve payments, manage assignment trips, complete trip assignments, and give trip reviews. The features developed make it easier for visitors to find information on tour packages, book, pay, and review tour trips that have been carried out. In addition, the existence of the report feature can improve performance and make it easier for tourism agents to record reports from booking thousand island tour packages through the website.

Keywords: Website Tour Packages, Thousand Island Trips, Waterfall, PHP, CodeIgniter

1. INTRODUCTION

Kepulauan Seribu is an administrative district in the Special Capital Region of Jakarta, Indonesia. Its territory includes a cluster of islands in Jakarta Bay. The County Seat of Government is located on Pramuka Island. There are two sub-districts in the Thousand Islands Administration Regency, namely the South Thousand Islands District and the North Thousand Islands District. The location of the Thousand Islands, which is not far from the capital, makes this destination often the target of a momentary escape from the hustle and bustle on weekends[1].

524

Pt. Khatulistiwa Global Wisata is a company engaged in tourism and offers a Tour and Travel service called Explore Thousand Islands. As the name suggests, Explore Seribu Pulau Tour and Travel serves tour products and tour packages with a special destination, namely Pulau Seribu. Visitors who want to see information on schedules, prices, locations, and facilities offered by Explore Seribu Pulau Tour and Travel must first access the Instagram application. If visitors want to book the desired tour package, visitors can only consult via Whatsapp message. Visitors will determine the desired tour package, then make a payment through the bank by sending proof of payment also via Whatsapp message. The process of ordering and paying for tour packages in such a way causes the order and payment data of visitors to be not properly recorded. Another problem faced is the report of tour packages that still use Excel. In addition, for visitors to convey their experience while using the package, visitors who have completed the trip will be asked to fill out a review form using paper.

CodeIgniter is a powerful PHP-based framework with a very small footprint, built for developers who need a simple and elegant toolkit to create full-featured website applications[2]. By default, CodeIgniter has provided a library that can be used directly. The libraries that are already available include Config, Cart, Benchmarking, Encryption, Email, Database, File Uploading, and User Agent [3]. Theuse of the CodeIgniter framework is quite helpful in the reservation process to be more effective and can provide a fairly clear description for guests[4]. CodeIgniter also has many features that can make it easier to develop a website[5]. The Pieces Analysis method (Performance, Information, Economic, Control, Efficiency, Service) is used toidentify several main problems. This is important because usually what comes to the fore is not the main problem, but only the symptoms of the main problem[4].

Reference [7] masalah faced in the study is that there is not enough adequate information about tourist attractions in Tebo Regency so that not many tourists and also the public know enough potential tourist attractions. The difference between the design of this system and the developmentof our application is found in the order form and payment form. Where in the design of the tourism information system in Tebo Regency only displays information related to tourism without the process of ordering and paying for tour packages. References [8], [9],but what the two studies faced was that the sale of tour packages was still done manually. If the customer wants to book a tour service, the customer must come to the service office. The difference between the two system designs above and our application development is found in the payment form. Where in the design of the tourism information system on Awan Tour Travel and the design of the information system for services tour and travel

Smart Tour services there is no function of uploading proof of payment to make it easier for the admin to check the payments made by customers.
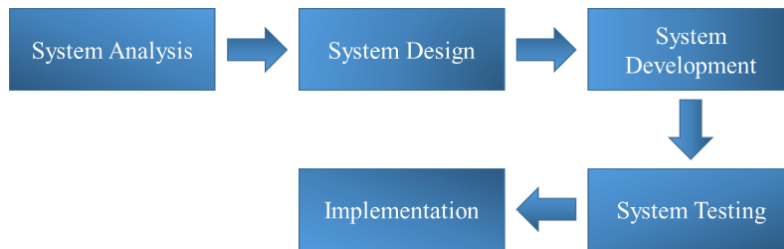
Reference [10], masalah faced in this study is the *website* of the thousand islands ecotourism agency in general and Pulau Harapan in particular does not provide an online order form, some offer online ordering through *live chat* and social networking sites. The difference between this system design and our application development is in the features that can be accessed by customers. Where in the E-Commerce Application Online Ekowisata Reservation System on Harapn Island, customer users only have access to register an account and place an order. Meanwhile, in our system design, in addition to being able to register an account and place an order, customer users can also make changes to profile data and provide a review of tour packages that have been booked. Reference [11], the reasonfaced in the study is that this ordering process cannot be applied in real *time*. The difference between the design of this systemand the development of our application is in the programming language used. Where the Thousand Islands Jakarta Geographic Information System Application is designed and built using the Java programming language and can be accessed via Android. While our application development uses php codeigniter programming language and can be accessed via the web.

2. METHOD

Waterfall is a cycle used in the creation or development of information systems aimed at effectively solving problems. The waterfall contains stages that are developed for a specific purpose. The stages of system development can be seen in figure 1. Here are five stages that must be passed [12]:

1. Stages of System Analysis, the first stage, which is the analysis of the system. At this stage, the system will be analyzed how it will be run later. The results of the analysis are in the form of advantages and disadvantages of the system, system functions, to updates that can be applied. The system analysis stage can be done with the PIECES method. This method is carried out to evaluate the Performance, Information, Economics, Control, Efficiency, and Service of the system processes to be created.

2. Stages of System Design, this stage is referred to as blueprint, where the system is ready to be developed starting from the implementation, system analysis, to the support personnel of the system to be developed. Inthis stage, there is a UML design which includes use case diagrams and class diagrams, as well as table design and GUI page design.

3. System Development Phase, Application development uses the CodeIgniter framework, php programming language, and MySQL database. The output produced at this stage is software that has been functioned and is ready to be tested

4. System Testing Phase, the system testing stage should be run to try whether the developed system can work optimally or not. Testing is carried out by the black box method, which is a test carried out to observe the input and output results of the software without knowing the code structure of the software[13].

5. Implementation and maintenance are the final stages in creating Waterfall. At this stage, the system has been created, tested, and ensured that it can work optimally. After the creation stage is completed, implementation is carried out.

Figure 1. Stages of System Development Using the Waterfall Method

3. RESULT AND DISCUSSION

Analysis of the running system for the process of booking a Thousand Island tour package can be seen in Figure 2. The booking process begins with visitors seeing information on the Thousand Island tour package which contains information on schedules, prices, locations, and facilities through the Instagram application. The next step is for visitors to contact the Explore Seribu Pulau Tour and Travel agent to consult about the desired tour package through the Whatsapp application. If the visitor has determined the desired tour package, the visitor will book a thousand island tour package by filling out the booking form sent through the Whatsapp application. The Explore Thousand Islands Tour and Travel agent will add up the total cost that must be paid, then visitors make payments according to the tour package that has been booked. Proof of payment is sent via Whatsapp message. The Agent of Explore Thousand Islands Tour and Travel will check the visitor's proof of payment. If the proof of payment is correct, the travel agent will record the booking data report and payment data into Excel.
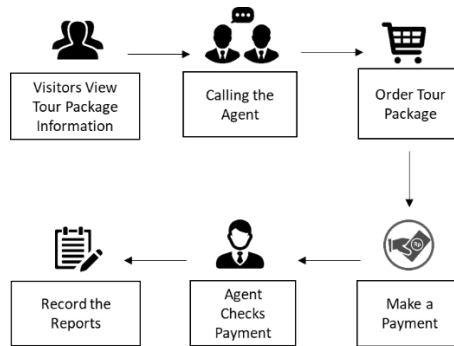
Figure 2. Running System Analysis – Ordering

The process of providing a review form for the Thousand Island tour package can be seen in Figure 3. This process begins with the visitor completing the tour. The next step is to explore thousand island tour and travel agents will provide a paper containing a service assessment form that must be filled out by visitors. After visitors fill out the assessment form, the Explore Seribu Pulau Tour and Travel agent will record reviews from visitors into the report as a performance reference to improve service.

Figure 3. Running System Analysis – Filling Out the Review Form

ThePIECES M etode used to identify problems in the development of application is seen in table 1:

Table 1 PIECES Analysis

PIECES Framework	Constraints	Solution
Perfomance	The process of booking and paying for tour packages is still through the Whatsapp application, so it takes a long time to consult regarding the tour package to be booked because the communication is only through the Whatsapp application.	Create an application so that visitors can place orders and payments just by accessing the website.

Information	In promoting its products, Explore Seribu Pulau Tour and Travel still relies on the Instagram application so that the information obtained is not flexible.	Create an application containing information about tour packages that are easy to access at any time and update.
Economics	Printing review forms of visitors who still use paper relatively costs more.	Create a review form on the website so that data can be automatically saved into the database. So that operational costs are more efficient and can avoid excessive paper use.
Control	In the process of ordering and paying tour packages through the Whatsapp application, it is still difficult to control so there is a possibility of data loss.	Create an application that can control the ordering and sales process so that the possibility of errors is only small.
Efficiency	Manually recording reports one by one into Excel is inefficient.	Create an app that can automatically output reports by simply downloading them.
Service	Communication that is still through the Whatsapp application allows admins to be less quick to respond to visitor orders, so it will cause the issue that the service seems slow and not good	Create an application that can be accessed quickly and in real-time on the visitor side.

Rancangan Use case diagram is depicted in Figure 4. In the use case diagram, the use of the system by actors, consisting of Visitors, Employees, and Admins. Actors Visitors must log in to do activities to see list paket wisata, pemesanan paket wisata, payment paket wisata, memberi review trip, and ubah data profil. Actors Employees must log in to do activities ubah data profil and msee assignment trip. Actor Admin harus login to do activities managing data user, mengelola data paket wisata, mengelola data pembayaran, mengelola assignment trip, mencetak laporan pengunjung, mencetak laporan pemesanan, mencetak laporan pembayaran, mencetak laporan assignment trip, and m dilute laporan review trip.
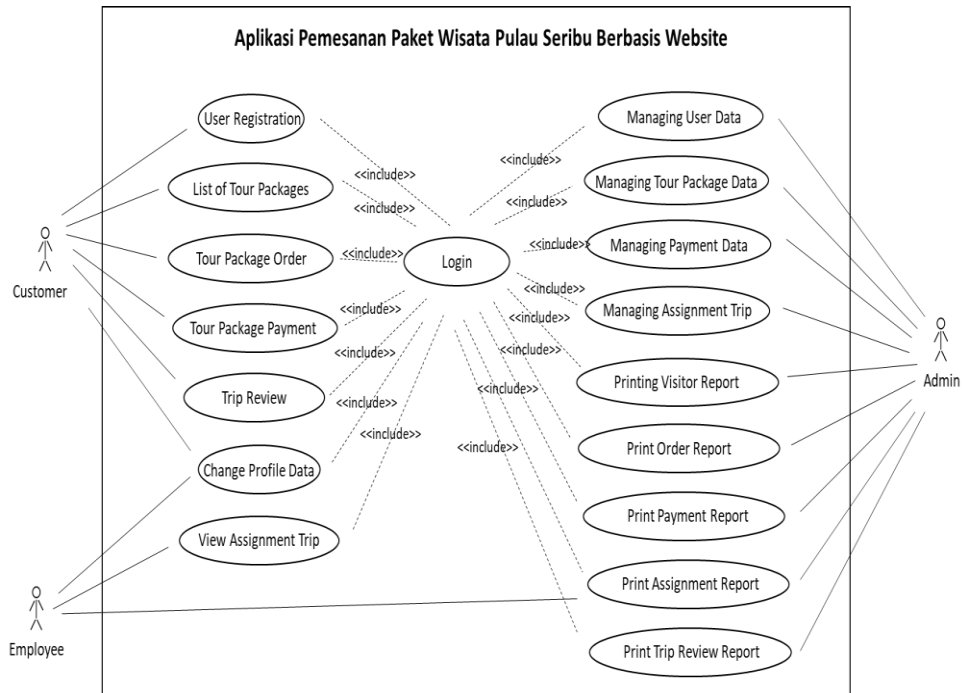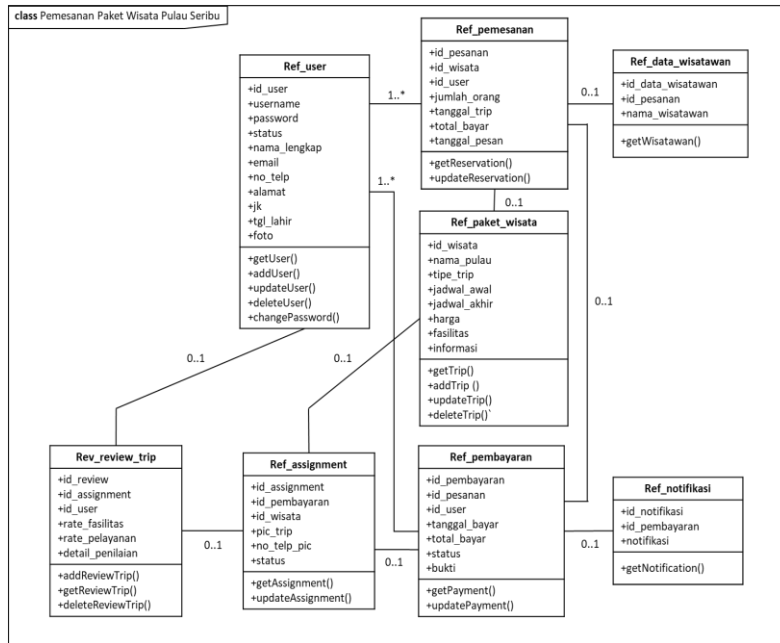
Figure 4. Use Case Diagrams

The class design diagram is depicted in Figure 5. Class Diagram on the Pulau Seribu Tour Package Booking Application consists of Ref_user, Ref_pemesanan, Ref_data_wisatawan, Ref_paket_wisata, Ref_pembayaran, Ref_notifikasi, Ref_assignment, dan Ref_review_trip. Ref_user needed by class Ref_pemesanan, Ref_review_trip, dan Ref_pembayaran. Ref_pemesanan membutuhkan class Ref_user and Ref_paket_wisata. Ref_data_wisatawan deed class Ref_pemesanan. Ref_paket_wisata needed by class Ref_pemesanan and Ref_assignment. Ref_pembayaran need class Ref_user and Ref_pemesanan. Ref_notifikasi need class Ref_pembayaran. Ref_assignment membutuhkan class Ref_pembayaran and Ref_paket_wisata. Ref_review_trip need class Ref_user and class Ref_assignment.

Gambar 5. Class Diagram

The "Tour Package List" display can be seen in figure 6. On the "Tour Package List" page, visitors can see information on the schedule, price, location, and facilities of the tour packages offered by filtering by type. After visitors filter by type, the system will display filter results that can make it easier for visitors to choose the desired tour package.
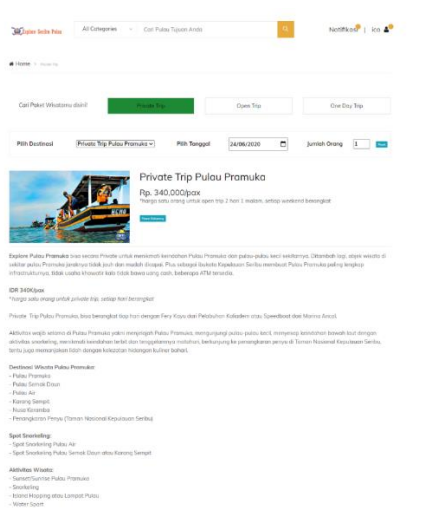

Figure 6. Implementation of Tour Package List Page Output

The "Tour Package Booking" display can be seen in figure 7. On the "Tour Package Booking" page, visitors are required to fill in their personal data and details of tourists who will take part in the tour. After that click Submit and the system saves the data of the order made.
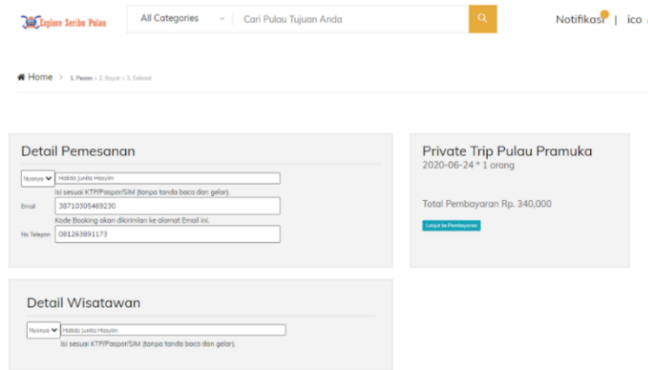

Figure 7. Implementation of Tour Package Booking Page Output

The display of "Tour Package Payment" can be seen in figure 8. On the "Tour Package Payment" page, the system will display instructions and payment confirmation to visitors. Visitors must make payment as stated in the payment details. After that, visitors must upload proof of payment which will be stored in the database to be checked by the admin.
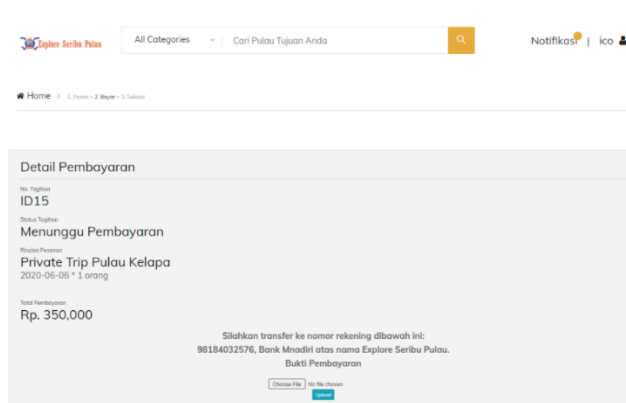

Figure 8. Implementation of Tour Package Payment Page Output

The "Manage Payment Data" view can be seen in figure 9. On the "Manage Payment Data" page, admins can see the proof of payment uploaded by visitors to check whether the payment made by the visitor is in accordance with the conditions or not.
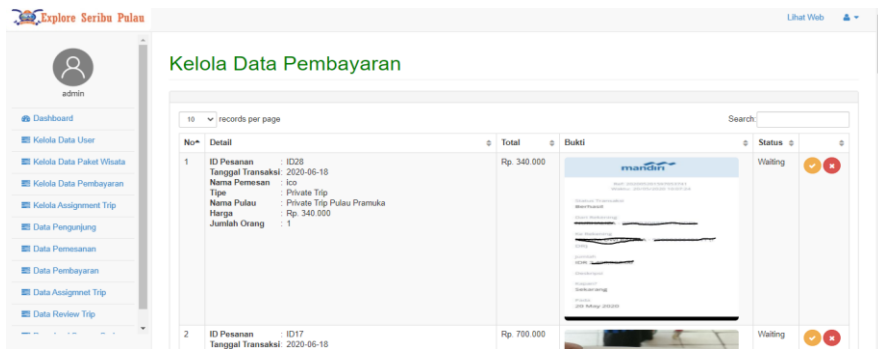
Figure 9. Implementation of Manage Payments Page Output

The "Approve Payment" display can be seen in figure 10. If the payment is correct, the admin will click the approve button.
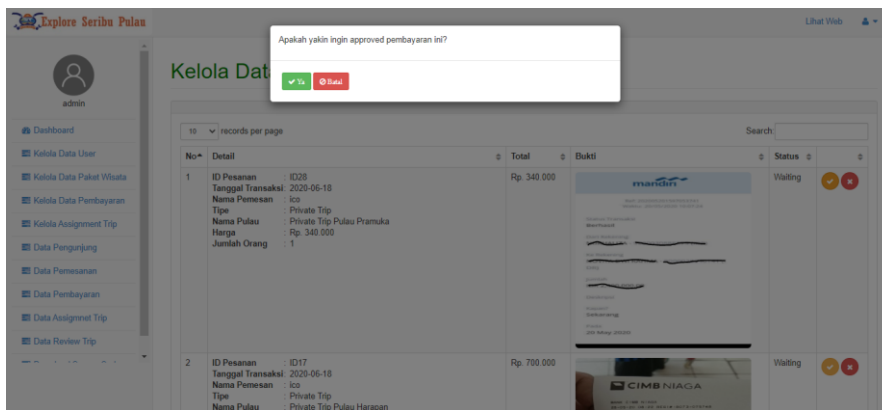

Figure 10. Implementation of Approve Payment Page Output

The "Manage Assignment Trip" view can be seen in figure 11. On the "Manage Assignment Trips" page, admins can specify a PIC trip to guide visitors to travel activities. The appointed PIC is an employee with idle status and is not currently being another PIC trip on the same schedule.
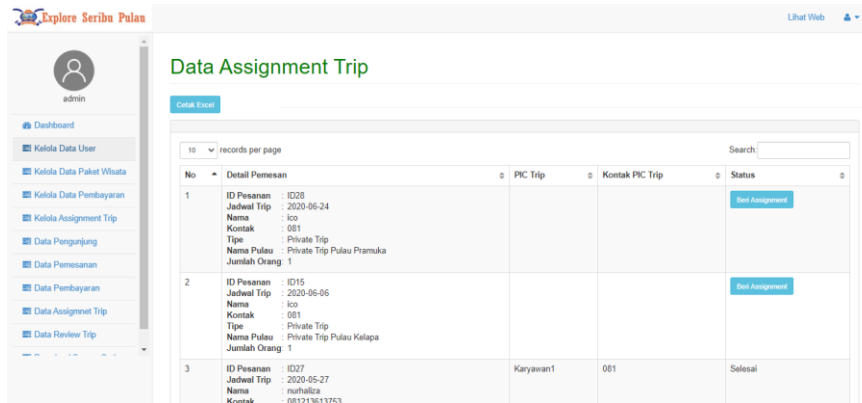
Figure 11. Implementation of Manage Assignment Trip Page Output

The "Complete Assignment Trip" display can be seen in figure 12. On the "Complete Assignment Trip" page, employees can complete the guided trip by clicking on the button provided. If the trip has been completed, a pop up will appear informing that the status has beenupdated and the trip status will change to "completed".
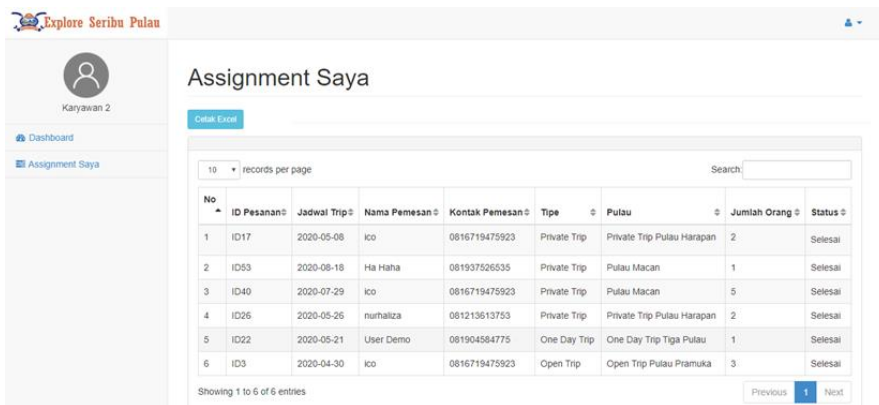

Figure 12. Implementation of Page Output Complete Assignment Trip

The "Give a Review Trip" view can be seen in figure 13. If the visitor has completed the trip, visitors can access the trip history menu and be directed to the "Give a Trip Review" page. Visitors can rate and review the services provided by Explore Seribu Pulau Tour and Travel. Reviews that have beensubmitted by visitors will be saved by the database.
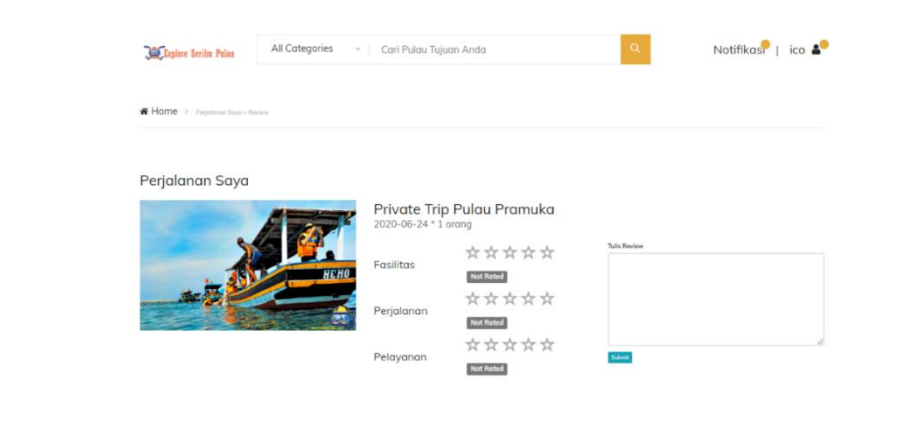
Figure 13. Implementation of Page Output Give Review Trip

Theblack box method testing can be seen in Table 2:

Table 2. Black Box Testing

No.	Interface	Test Scenarios	Expected Results	Test Results
1.	User Registration	Visitors can fill in their personal data on the user registration page to get a username.	User data is successfully added to the visitor data.	Succeed
2.	Tour Package Booking	Visitors can fill in their personal data and tourist data on the tour package booking page with the details of the tour package to be booked.	The booking record was successfully added to the booking record.	Succeed
3	Tour Package Payment	Visitors upload proof of payment.	Proof of successful payment is added to the payment data.	Succeed
4	Assignment Trip	The admin assigns employees as PIC trips.	The assignment was successfully added to the Assignment Trip record.	Succeed

5	Giving a Review Trip	Visitors fill out a review of the trip that has been done.	Review Trips are successfully added to the Review trips data.	Succeed

4. CONCLUSION

Thedevelopment of a Website-Based Thousand Island Tour Package Booking Application Using the *Waterfall* Method can make it easier for visitors to find information on Thousand Island tours that include schedules, prices, locations, and facilities through the *website*. This application makes the process of booking and paying tour packages more effective and efficient. Some of the features developed such as booking *forms* and online payments can minimize the time needed by visitors when ordering and paying for the Thousand Island tour package. With this application, visitors are also facilitated in reviewing the tourist trips that have been carried out. In addition, the report feature can improve performance and make it easier for tourism agents to record reports from booking thousand island tour packages through the *website*.

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