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Web-Based Ticket Purchase Information System in Bena Village

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Abstract

Bena Village is one of the cultural tourism destinations located in Tiworiwu Village, Jerebu'u District, Ngada Regency, East Nusa Tenggara. As a traditional village rich in historical and megalithic cultural values, Bena Village attracts many domestic and foreign tourists. However, the manual ticket purchase system that has been used so far has caused various obstacles, such as long queues, potential ticket loss, and difficulties in financial reporting. This study aims to design and build a web-based ticket purchase information system that can be accessed by visitors online. The method used in developing this system is the waterfall method. The result of this development is a website that supports the ticket purchase process efficiently and transparently

Keywords: *Bena Village, Information System, Sustainable Tourism, Ticket Purchasing, Tourists, Website.*

1. Introduction

Bena Village, located in Tiworiwu Village, Jerebu'u District, Ngada Regency, East Nusa Tenggara, is one of the most renowned cultural tourism destinations in Indonesia [1]. Known for its distinctive traditional houses and megalithic culture, Bena Village attracts many tourists, both domestic and international. In addition to its cultural tourism appeal, Bena also offers natural attractions with scenic views from the hilltop, and is home to nine indigenous clans, 45 traditional houses, and numerous megalithic stones.

As a popular and increasingly visited destination, Bena Village recorded 11,261 visitors in the last quarter, indicating strong tourist interest in its unique cultural attractions. However, the existing ticketing system, which is still manual, creates various problems that affect both the visitor experience and operational efficiency [2]. Currently, tickets can only be purchased directly at the site, often resulting in long, disorganized queues—especially during holidays or peak seasons. This unstructured process not only reduces visitor comfort but also opens up opportunities for fraud, either by staff or visitors, as discrepancies often occur between the number of tickets sold and the recorded visitor count. Such issues can harm the credibility of tourism management at Bena Village. Therefore, a system is needed to simplify the ticket purchasing process and minimize fraudulent practices [3].

With the advancement of technology, web-based systems have become increasingly common and accessible from anywhere [4]. Thus, Bena Village tourism can utilize a web-based system to streamline ticket purchases and provide real-time information. Through such a system, visitors can order tickets online without the need to be physically present, avoiding long queues and discomfort during busy periods, while also reducing the potential for misuse or fraud by irresponsible individuals. A web-based ticketing information system not only simplifies the ticket purchasing process but also allows tourism staff to manage data more effectively and efficiently.
The implementation of a web-based ticketing information system also aligns with government efforts to support sustainable and technology-based tourism, as stated in Law No. 10 of 2009 on Tourism. This regulation emphasizes the importance of utilizing technology to improve efficiency and promote positive impacts in the tourism sector [5]. A related study by Suryatama [6], titled *Design and Development of a Web-Based E-Ticketing Information System (Case Study: Batoe 54 Swimming Pool, Jayakarsa)*, aimed to build a web-based e-ticketing platform to ease ticket transactions and avoid queues at the facility. The system provided visitors with the convenience of purchasing tickets online and enhanced their overall experience.

Based on the above background, the author has chosen this topic for the final project titled "Web-Based Ticketing Information System for Tourist Visits in Bena Village", with the goal of assisting tourists in booking entrance tickets online without needing to queue at the location, and helping tourism administrators manage visitor data more easily and efficiently.

2. Methodology

Research procedures are systematic steps taken to achieve research objectives, by obtaining relevant and accountable data and information. In this study, the procedures used refer to the Waterfall system development model, which is one of the methods in software engineering that is linear and sequential. This model was chosen because it is in accordance with the characteristics of the final assignment which focuses on the development of information systems, where the stages of work can be planned and implemented systematically.

3. Result and Discussion

3.1. Design

3.2.1. Use case diagram

There are 2 Use case diagrams in the research, namely the admin Use case diagram and the visitor Use case diagram. The following are the admin and visitor Use case diagrams:

a. Admin use case diagram

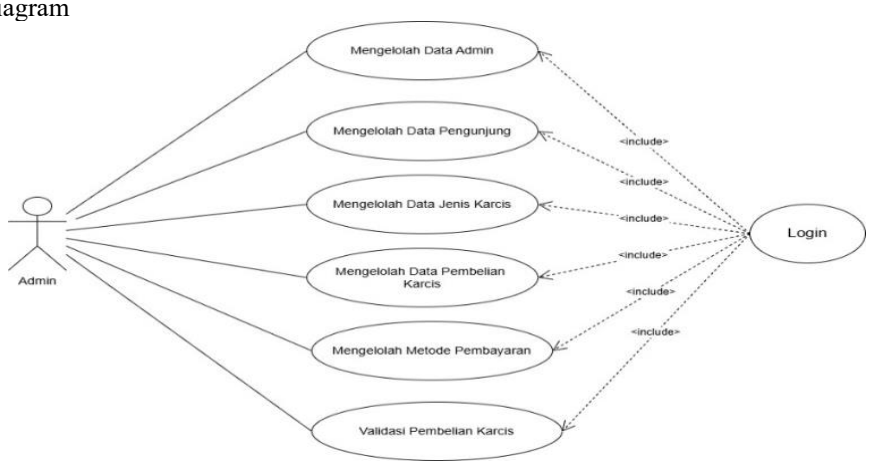

Fig. 1: Admin use case diagram

a. Visitor use case diagram

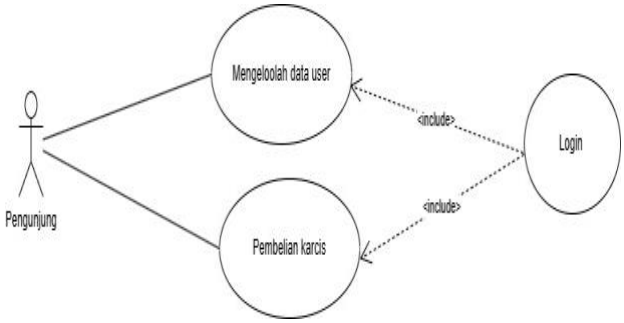

Fig. 2: Visitor use case diagram

3.2.2. Entity relation diagram

This entity relationship diagram illustrates the relationship between four main entities: admin, visitor, purchase, and payment method. Admin manages the system, while Visitors can make Purchases that are connected to Payment Methods. Each Purchase is recorded with attributes such as payment status and visitor details, while Payment Method includes payment type and account details. The relationships show that one Visitor can make many Purchases, and one Payment Method can be used for multiple transactions. This diagram models the system data structure clearly and organized.

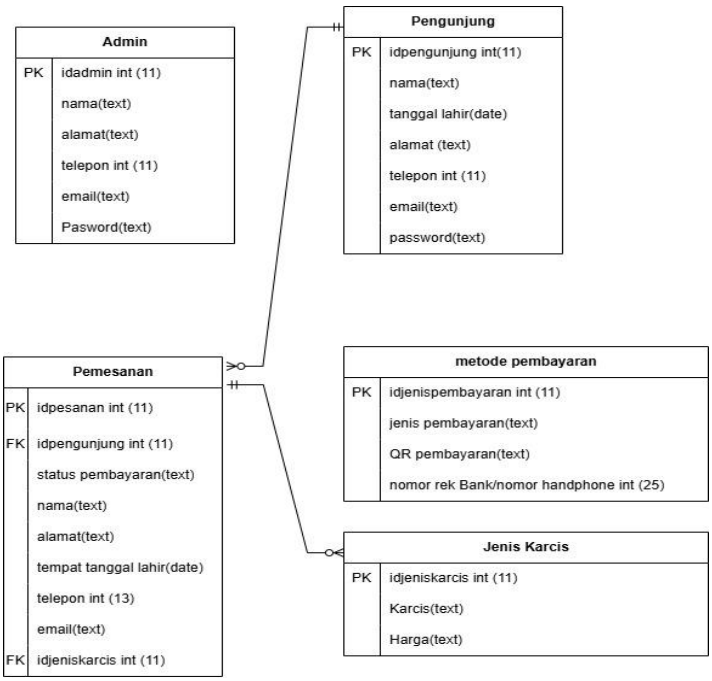

Fig. 3: Entity relation diagram

3.3. System Implementation

This system was developed to provide convenience for tourists in purchasing entrance tickets to Kampung Bena. In addition, this system also aims to support the performance of Kampung Bena management officers so that they can carry out their duties in a more efficient, accurate, and transparent manner in managing visit and transaction data.

1. Home page display
   This homepage is the main page displayed on the website when visitors log in.

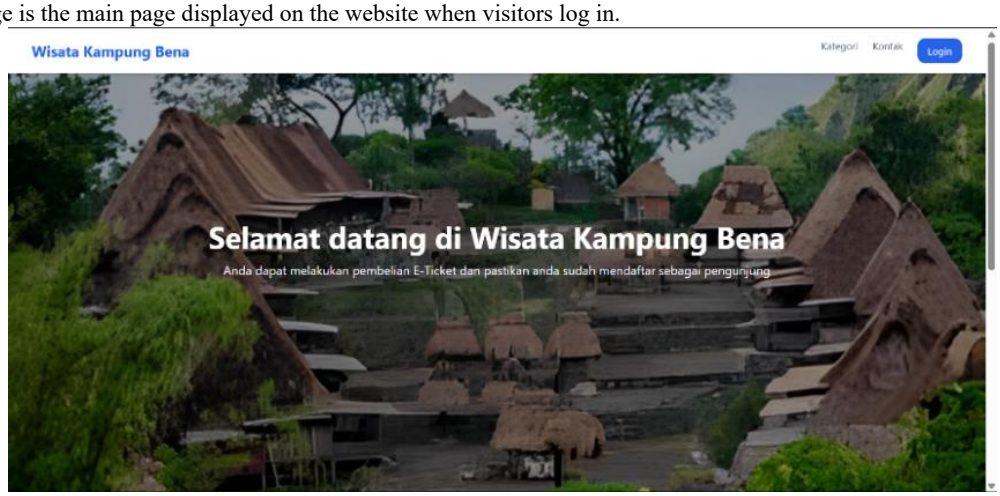

Fig. 4: home page display

2. Admin login form page view
   This interface is an admin login page with a simple and modern design. In the middle of the screen there is a white form with the title Admin Login, two inputs for email and password, and the Login and Back buttons. The background uses a purple to blue gradient, giving a clean and professional impression.

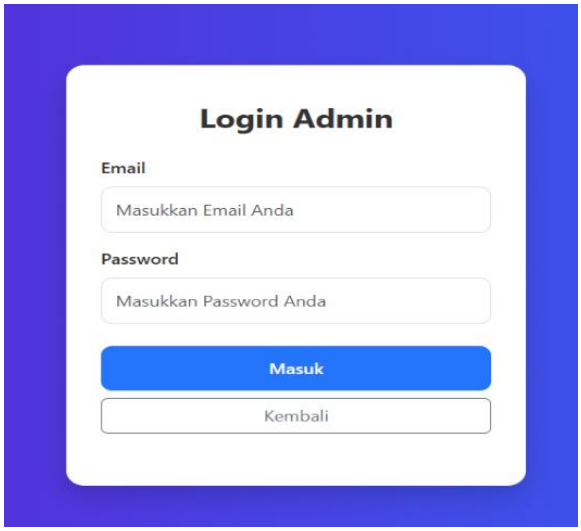

Fig. 5: Admin login form page view

3. Admin home form display

The Kampung Bena admin dashboard page displays a summary of visits this year and month as well as a line graph of visits. Admins can filter data by date, and navigation is available on the left sidebar. The display is designed neatly and informatively to facilitate monitoring.

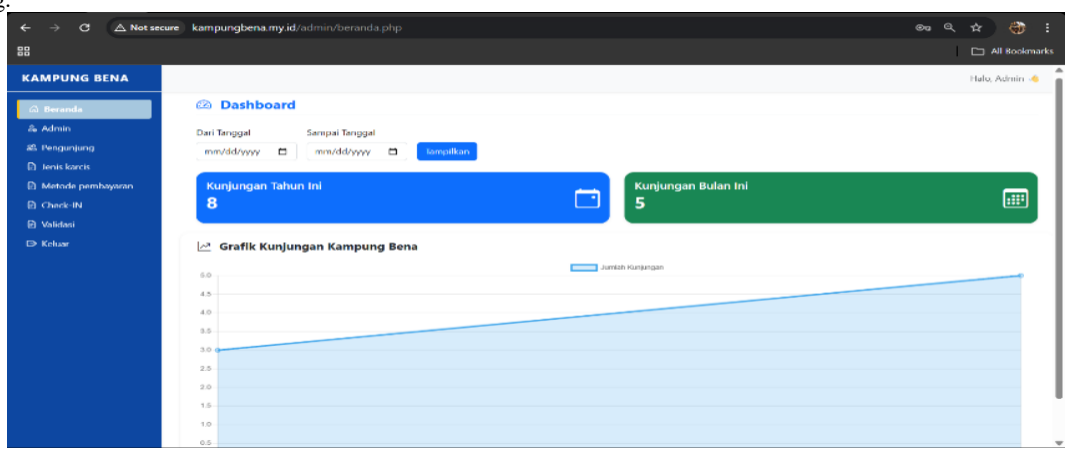

Fig. 6: Admin home form display

4. View the admin data add form

This add admin data view is displayed when the admin wants to add admin data, A modal (popup) with the title "Add Admin Data" appears in the middle of the screen, containing an input form to add new admin data, such as Name, Address, Phone, Email, and Password. At the bottom of the form there are two buttons, namely "Save" in green and "Cancel" in gray, which are used to save data or cancel input..

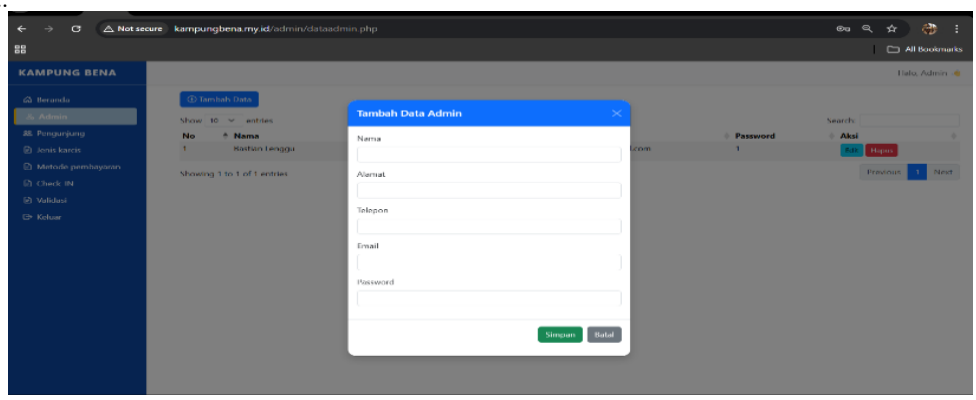

Fig. 7: View the admin data add form

5. View the visitor management page

The visitor management page display is displayed when the admin wants to add data and delete visitor data. In the main part of the page, there is a table that displays a list of visitors with columns such as no, name, date of birth, address, telephone, email, password, and action. Each row of data has a red "delete" button in the action column to delete visitor data.

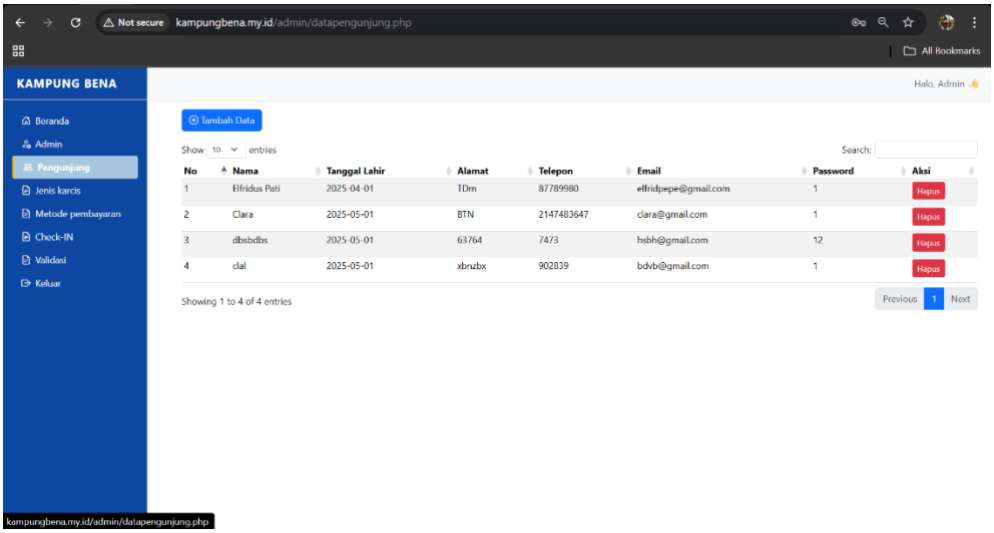

Fig. 8: View the visitor management page

6. View visitor data add form

The display of the visitor data add form is displayed when the admin chooses to add data. In this section, the admin will fill in the add data form with the name, date of birth, address, telephone, email and password columns. After adding visitor data, the admin can click the save button if the added data is correct and if it is not correct, click the cancel button.

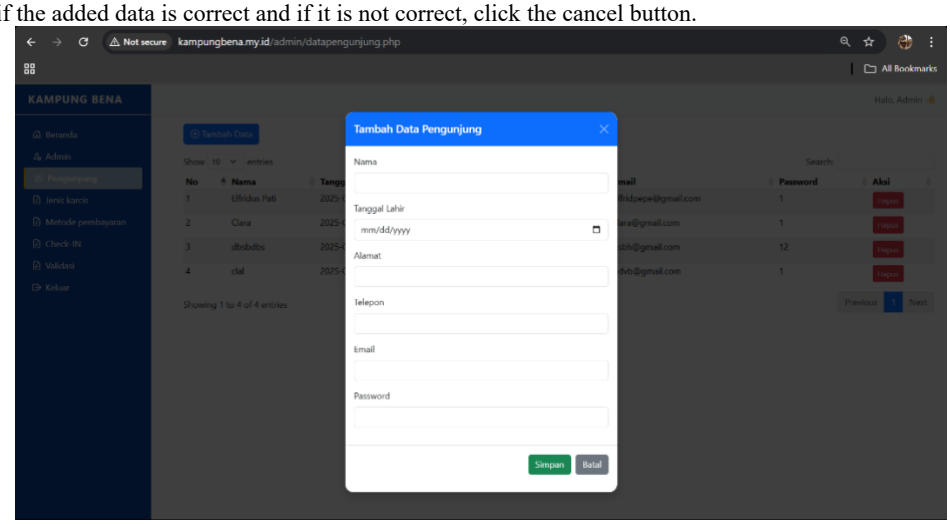

Fig. 9: View visitor data add form

7. View page for managing ticket type data

The ticket type data management page display is displayed when the admin wants to manage ticket type data. In this display, the admin edits ticket type data and deletes ticket types when needed.

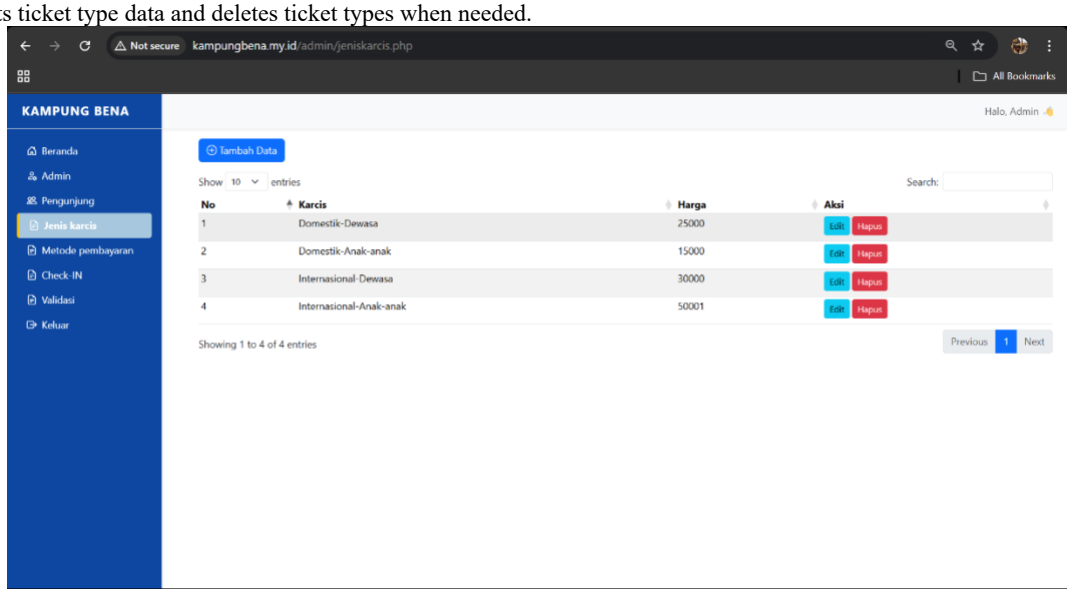

Fig. 10: View page for managing ticket type data

8. View the form to add ticket type
The display of the form for adding ticket type data is displayed when the admin wants to add a type of tourist entrance ticket in Kampung Bena. In this form, the admin will fill in the type of ticket and the ticket price to be added. After filling in the form for adding ticket type, the admin will click the save button when the type of ticket added is correct, while the type of ticket is wrong or not needed to be added, then the cancel button will be clicked.

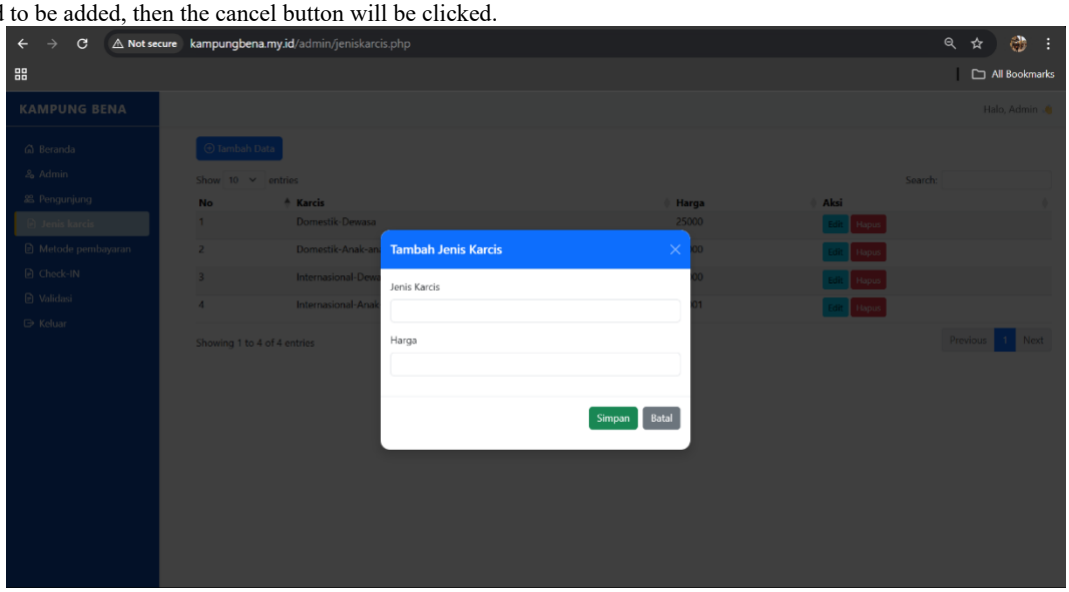

Fig. 11: View the form to add ticket type

9. View the page managing payment methods
On the payment method page display is displayed when the admin wants to manage the payment method. In this payment method the admin can add various types of payments so that they can be in accordance with consumer desires.

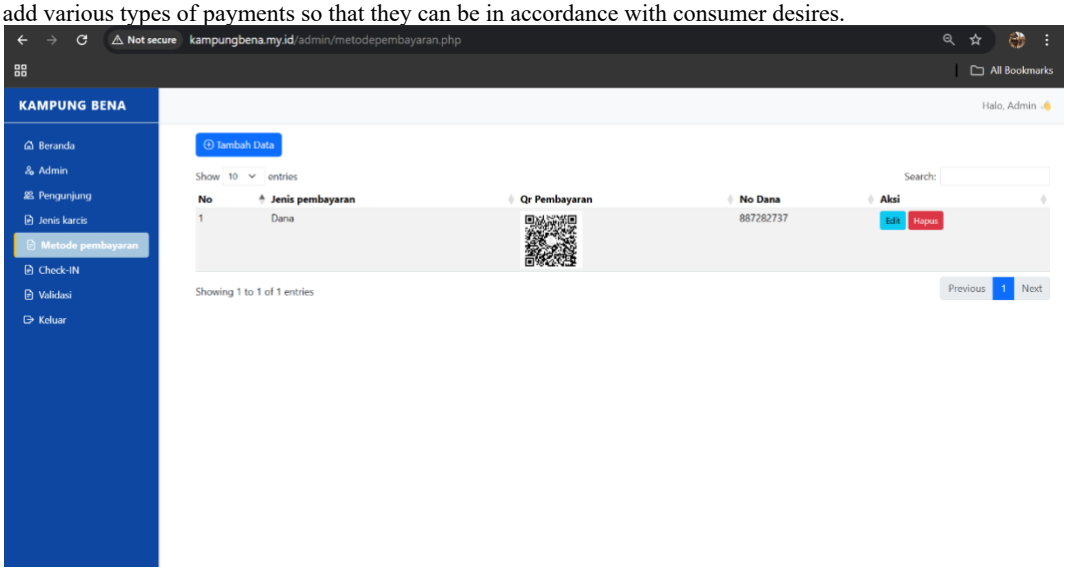

Fig. 12: View the page managing payment methods

10. View the add payment method form
On the display of the add payment method form is displayed when the admin wants to add a payment method. The admin can click the add data button in blue above the payment type table, then the add payment method form will be displayed. The admin can add payment methods as needed by filling in the add data form according to the display as shown in the image below.

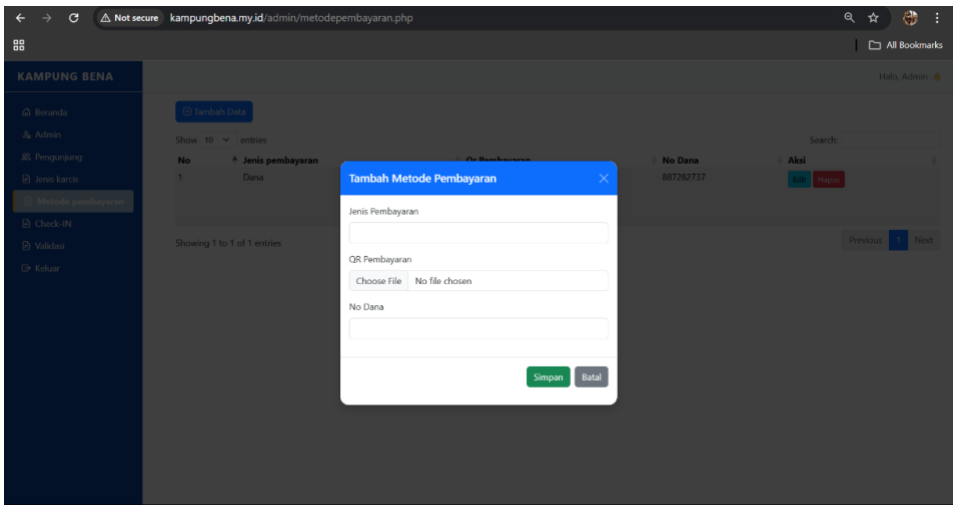

Fig. 15: View the add payment method form

11. Display validation page
    The validation page display is displayed when the admin validates the ticket purchase. The main table displays a list of ticket bookers along with details such as ticket type, transaction status, proof of payment, visitor personal data, and entry schedule. In the "Action" column, there is a button to validate the ticket purchase..

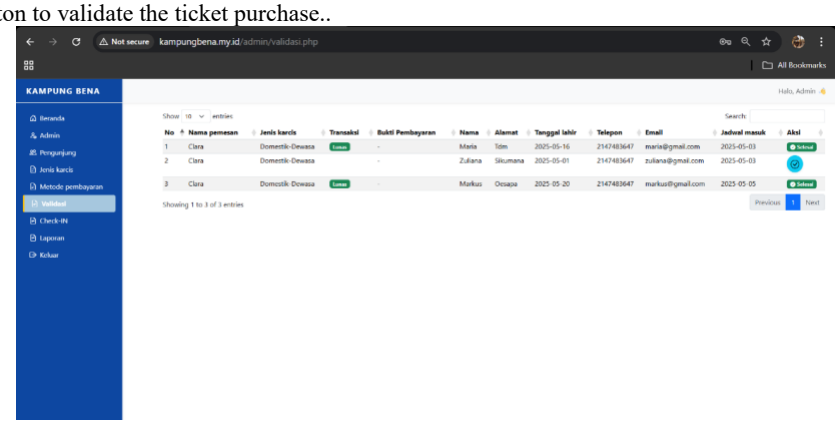

Fig. 16: Display validation page

4. Conclusion

The results of the study show that the web-based ticket purchase information system in Bena Village is able to overcome various obstacles faced in the manual ticket purchase process, such as long queues, the risk of losing tickets, and the inconsistency of sales data with the number of visitors. With features such as user login, visitor data management, online ticket purchases, transaction validation, and payment method management, this system can improve the efficiency, convenience, and accuracy of tourism management. The implementation of this system also supports digital-based tourism management that is in line with the sustainable tourism policy set by the government.

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References

[1] R. F. Osin, I. R. W. Kusuma, and D. A. Suryawati, "Strategi Pengembangan Objek Wisata Kampung Tradisional Bena Kabupaten Ngada-Flores Nusa Tenggara Timur (NTT)," *J. Ekon. dan Pariwisata*, vol. 14, no. 1, pp. 60–65, 2019.

[2] K. S. Fatmala, *Pemanfaatan Website Sebagai Strategi Promosi Destinasi Wisata Kampung Adat Bena Di Kabupaten Ngada Nusa Tenggara Timur Dalam Upaya Meningkatkan Kunjungan Wisatawan*. Sekolah Tinggi Pariwisata AMPTA Yogyakarta, 2023.

[3] A. Pariddudin and F. Syauqi, "Penerapan Algoritma AES pada QR CODE untuk Keamanan Verifikasi Tiket," *Teknois J. Ilm. Teknol. Inf. dan Sains*, vol. 10, no. 2, pp. 43–52, 2020, doi: 10.36350/jbs.v10i2.87.

[4] Y. Yusman, N. Siregar, R. R. Putra, and S. Nadriati, "Sistem Informasi Perangkat Desa (SINPERDES) Berbasis Website Dengan Metode Waterfall Dalam Pelaksanaan Pembangunan Desa," *Bull. Comput. Sci. Res.*, vol. 3, no. 6, pp. 408–412, 2023, doi: 10.47065/bulletincsr.v3i6.274.

[5] A. M. Purnomo and D. E. Waluyo, "The Influence of Workload and Job Stress on the Performance of Online Motorcycle Taxi Drivers (Grab, Maxim, and Gojek) in the Semarang City Area," *ProBisnis J. Manaj.*, vol. 14, no. 6, pp. 498–506, 2023.

[6] M. R. R. Suryatama, *Rancang Bangun Sistem Informasi E-Ticket Berbasis Web pada Kolam Renang Batoe 54 Jagakarsa*. Politeknik Negeri Jakarta, 2023.