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DESIGNING A WEB-BASED TICKET SALES SYSTEM: CASE STUDY OF TEMESI WATERFALL, GIANYAR BALI

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Abstract

Rural tourism destinations in Bali, such as Temesi Waterfall in Temesi Village, Gianyar Regency, possess significant development potential but are constrained by inefficient manual management systems. This study aims to design and implement a web-based ticketing information system to address operational limitations. Utilizing a qualitative descriptive methodology, the research resulted in the development of Postrack, a digital system incorporating features such as transaction management, a digital guestbook, dynamic ticket pricing, financial reporting, expense monitoring, and user activity tracking. Implementation of the system demonstrated improved operational efficiency, enhanced accountability, and increased financial transparency. The findings suggest that digitalization through systems like Postrack can significantly optimize tourism management in rural areas. Furthermore, this model can be replicated across similar destinations to support broader efforts in technology-based rural tourism development and sustainable management practices.

Keywords: ***Digitalization, Information System, Point of Sale, Tourism Village, Waterfall.***

INTRODUCTION

Tourism plays a significant role in building a country's brand value, image, and regional identity (Dangi & Petrick, 2021; Nafisa, 2024). It also contributes greatly to Indonesia's economy by generating foreign exchange and creating job opportunities (Purwono et al., 2024). Tourism participates in a country's growth and development, primarily by bringing in multiple economic values and benefits, and secondly, by helping to build brand value, image, and identification in the region (Naseem, 2021). For many countries that have lower competitiveness in the export of other goods and services, tourism provides an opportunity to reduce their trade deficit (Bhattarai & Karmacharya, 2022). The development of the tourism sector today is not only focused on urban areas, but also extended to rural regions (Ariyani & Fauzi, 2024; Rachmadhani & Alfaqi, 2022; Utami et al., 2023). Bali is an island with promising potential for rural tourism development due to its rich cultural heritage, customs, and natural beauty (Mbadhi et al., 2023; Rosalina et al., 2023). Tourism development is directed at community-based tourism (Wiryanata, 2022) and increasing digitalization in operations (Susanti & Wiryanata, 2024).

Temesi Village, located in Gianyar Regency, Bali, is one of the villages currently in the process of being developed into a tourism village. According to an initial interview with the head of Temesi Village, this transformation aims to change the village's image, which was previously known as a final waste disposal site, into a more positive and attractive destination. In 2023, Temesi Village began developing a waterfall tourist attraction named Temesi Waterfall. This tourist attraction consists of a trekking path, a waterfall, and a natural river, which have become increasingly popular among tourists due to their unspoiled and scenic nature. Temesi Waterfall was officially opened in February 2024 and has attracted many visitors, both domestic and international. The entrance ticket prices are relatively affordable and divided into three categories, namely local tickets at IDR 10,000, domestic tickets at IDR 20,000, and international tickets at IDR 30,000. The following is a chart of tourist visits to Temesi Waterfall from November 2024 to February 2025.

Based on the chart above, it can be seen that the number of tourists visiting Temesi Waterfall from November 2024 to February 2025 was 1,551 people, with a daily average of 13 visitors. Temesi Waterfall has also received positive reviews on Google search. As of April 30, 2025, a total of 298 users had submitted reviews, with an average rating of 4.9 out of 5 stars. Most users mentioned that Temesi Waterfall is clean, beautiful, close to the city center, and offers affordable entrance ticket prices.

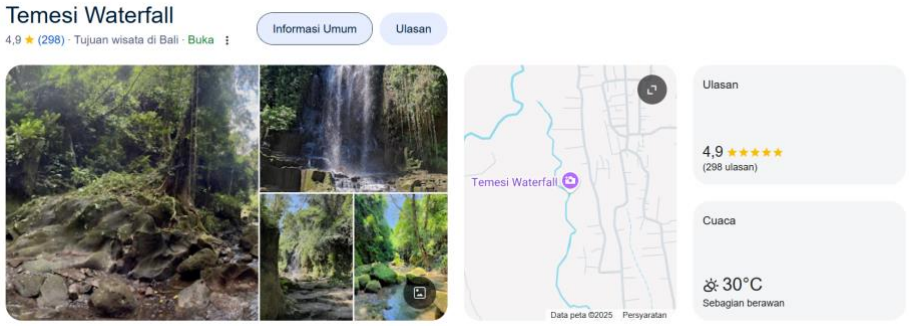


Figure 1.1 Reviews of Temesi Waterfall on Google Search

Based on the graph of tourist visits and reviews on Google search, it can be said that the Temesi Waterfall tourist attraction has the potential to be visited by more tourists in the future. However, according to initial observations conducted by the author, the Temesi Waterfall tourist attraction still records and reports daily sales manually. Manual recording and reporting can result in less than optimal performance (Anwar et al., 2024; Felia Putri & Nurlaila, 2022; Patience Okpeke Paul et al., 2024). In addition, manual systems are considered not environmentally friendly because they consume paper (Rabe et al., 2023; Septiana et al., 2023). Manual recording and reporting are also less efficient in terms of time and carry a high risk of errors due to human mistakes (Mares et al., 2023; Putra et al., 2022; Shaik, 2022). Therefore, a transition from manual to digital systems is necessary to mitigate these risks.

METHOD

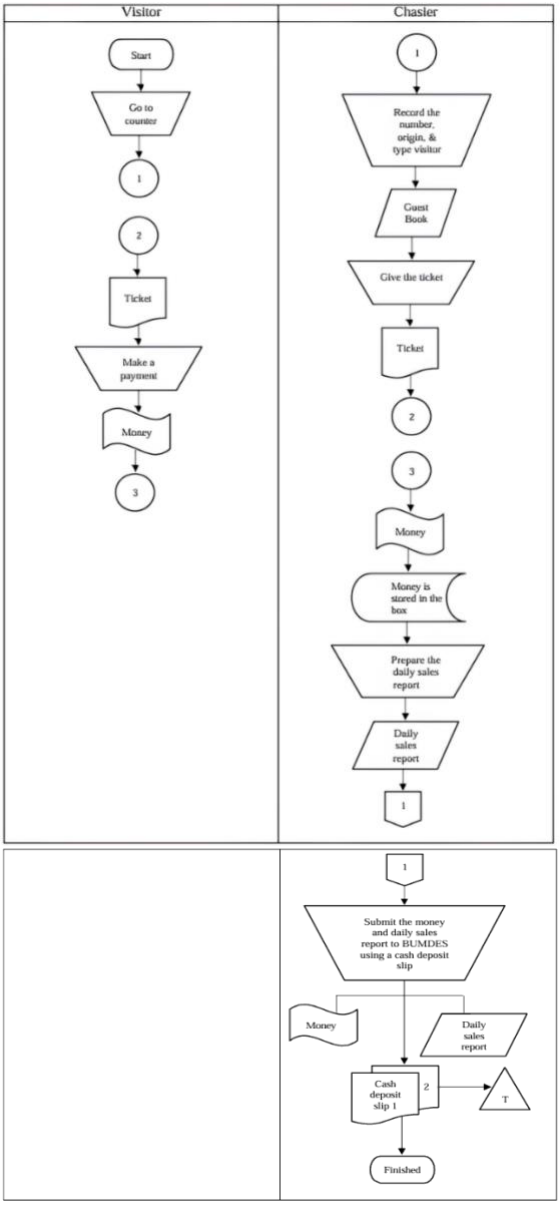
In this study, the author collected data through in-depth interviews with informants, observation, and document analysis. The informants interviewed included a representative of the management who also serves as a cashier, the head of Temesi Village, the treasurer of the Village-Owned Enterprise (BUMDes), and a sanitation worker. A total of four informants were selected based on the following considerations: the management representative is directly involved in the daily operations of the tourist site; the village head holds overall responsibility for the site's governance; the treasurer oversees financial matters; and the sanitation worker, as a local resident and staff member, provides insights from both community and employee perspectives. These informants were chosen to ensure the data collected would be unbiased and more accurate. The collected data were analyzed using a qualitative descriptive analysis technique. This approach involves describing the data in narrative form rather than through statistical testing (Creswell & David Creswell, 2018). The analysis was conducted through three

stages of qualitative data analysis: data condensation, data display, and conclusion drawing/verification (Miles et al., 2014).

RESULTS AND DISCUSSION

As a result, here are the flowcharts of a web-based ticket sales system that has been made. This transition from a manual system to a digital one is significant to enhance the effectiveness and efficiency of the Temesi Waterfall's operation.

1. Flowchart of Ticket Sales at Temesi Waterfall Tourist Attraction

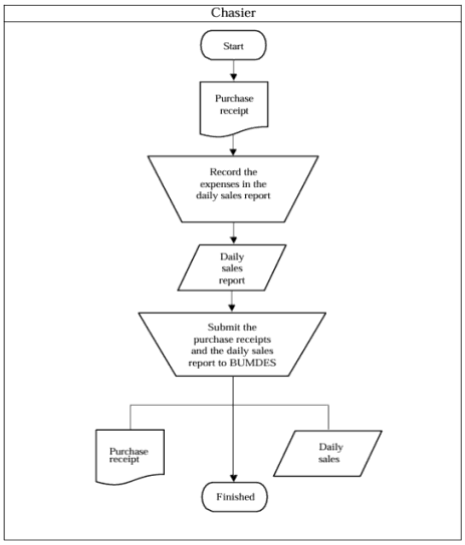


1) Start
2) The visitors come to the ticket counter to purchase the tickets
3) The cashier will record the number of visitors, origin, and type of visitors in the guest book
4) The cashier gives the tickets to visitors
5) The visitors receive the tickets and settle the payment in cash
6) Receives the payment from the visitors and stores it into the cash box
7) The visitors enter Temesi Waterfall using the tickets they received
8) The cashier prepares the daily sales report

9) The cashier hands over the cash and daily sales report to BUMDES accounting section using a cash deposit slip, which the original copy is going to be archived by the accounting section and its carbon copy will be archived as document for the cashier
10) End

2. Flowchart of Cash Expenditure for Temesi Waterfall Tourist Attraction

In addition to the ticket sales report, the cashier at Temesi Waterfall is also responsible for preparing the daily cash expenditure report at the end of each shift. The cash expenditure flowchart for Temesi Waterfall is as follows.



1) Start
2) The cashier after making purchases and receiving the receipts will record those expenses in the daily report
3) The cashier will submit the receipts and daily report to BUMDES accounting section
4) Finish

3. Design of the Point of Sale System (POS)

The Point of Sale (POS) system in this study is designed to align with the previously implemented manual system, to ease user adaptation while ensuring that the system fully accommodates user needs in a digital format. This POS system is named Postrack, a combination of two words: POS, which stands for Point of Sale (a sales information system), and track, reflecting the system's core function—to track user transactions. The name signifies the system's capability not only to record sales but also to monitor them in real time for better transparency and control.

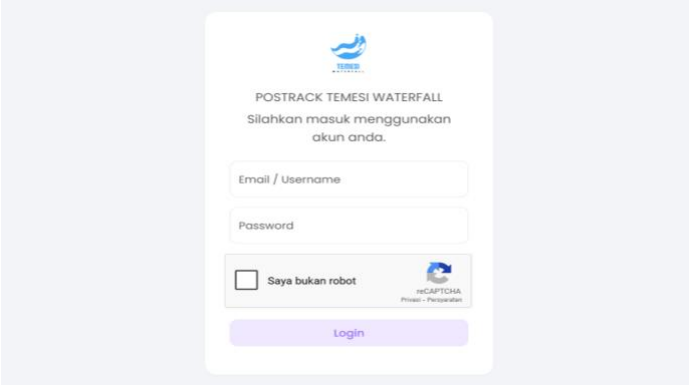


Figure 1 Postrack System

Below are the pages and menus available in the Postrack system:

a. Login Page

The login page of the Postrack Temesi Waterfall system serves as the initial gateway to access the internal management system of the Temesi Waterfall tourist attraction. This page is designed to restrict access exclusively to registered users to safeguard data security and maintain the integrity of operational

information. In terms of appearance, the login page features a simple and responsive interface, consisting of:

- Input fields for username/email and password, which serve as the primary user credentials. Users are expected to enter their registered username/email and password.
- A mandatory reCAPTCHA checkbox to prevent system misuse.
- A "Login" button to process the authentication.

The main function of this login page is to act as an access control mechanism to ensure that only authorized personnel can access and manage critical data within the system. This helps enhance professionalism and accountability in managing village-based tourist destinations.

b. Main Page

On the main page, after successfully logging in, users are greeted with an interface displaying several primary menus that can be accessed. The first and most essential menu is the Edit Profile menu. This feature allows users to update their personal information to ensure accuracy and relevance. The available features within this menu include editing the name, username, email, and changing the password. To enhance security, the system also provides a password confirmation field to ensure that the entered password is correct and consistent. Through this menu, users have full control over their account data and can independently perform updates as needed.

c. Dasboard Menu

The next main menu accessible to users after logging in is the Dashboard. This menu functions as an information center that displays key data related to system activities. Within the Dashboard, users can view the number of available tickets, which, according to information from the informants, currently consists of three ticket types. Additionally, the Dashboard presents data on sales transactions, total income, and expenditures, all of which are useful for monitoring overall financial activities. All of this data is presented in a user-friendly summary format, accompanied by annual graphs that visualize transaction trends over the course of a full year.

To view data by annual period, users can follow these steps:

- Select the Dashboard menu from the main page.
- Navigate to the year filter section available on the dashboard display.
- Select the desired year, for example, 2025.

Once a year is selected, the system will automatically display transaction, income, and expenditure data for the chosen year, complete with supporting graphs. This feature allows users to monitor and analyze data more specifically according to the selected time period.

d. Ticket Sales Menu

The next main menu after the Dashboard is the Ticket Sales menu, which functions as a feature to record and input ticket sales transactions to visitors. Through this menu, users can enter sales data by following several steps. First, the user may optionally fill in the customer's email, and then is required to input the visitor's name and nationality. After that, the user proceeds to the Add Purchase section, where they input the number of tickets purchased, the ticket number corresponding to the physical ticket, and select the type of ticket. Based on current information, there are three types of tickets available:

- Local at IDR10,000,
- Domestic at IDR20,000, and
- International at IDR30,000.

Once the ticket type is selected, the system automatically displays the unit price and calculates the total price based on the quantity of tickets purchased. The entered purchase data will be immediately recorded in the Purchase List. If there is an input error, users can easily edit the data and re-enter it to ensure that the transaction remains accurate and consistent.

This menu is designed to facilitate ticket sales recording through a systematic and efficient workflow.

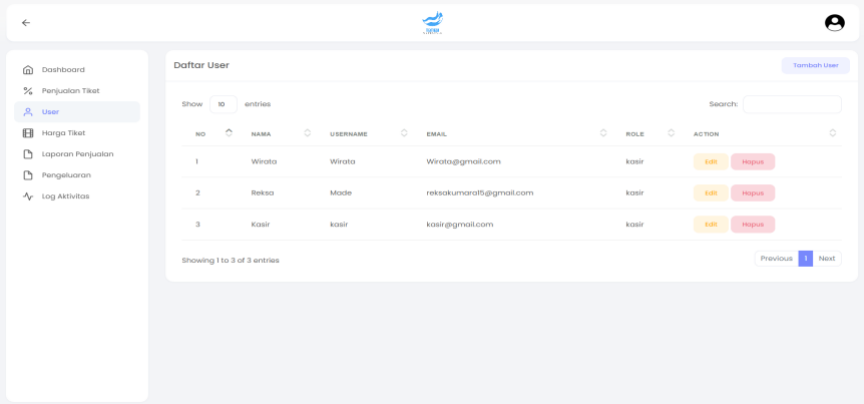


Figure 2 User Menu

e. User Menu
The User menu functions to manage user accounts within the system. Through this menu, users can add new accounts for login by clicking the Add User button. Subsequently, users are required to fill in data such as name, username, email, password, and password confirmation. Once all the data are correctly entered, users simply click the Save button, and the new account will immediately appear in the user list. In addition to adding accounts, users can also edit the information of existing accounts if there are errors or necessary changes, thereby making account management easier and more organized.

f. Ticket Price Menu
The next menu is the Ticket Price menu. The primary function of this menu is to add new ticket types into the system. Users can add a new ticket by clicking the Add Ticket button located at the top right corner. After that, users are prompted to enter data such as the ticket name, ticket category, and ticket price. Once all data is correctly filled in, users simply press the Save button to store the new ticket. The newly added ticket will then immediately appear in the list of available tickets. In addition to adding tickets, users can also edit existing tickets if there are errors or data changes, ensuring that ticket information remains accurate and up-to-date.

g. Sales Report Menu
The Sales Report menu functions as a feature that allows users to view detailed sales reports within the system according to a desired time range. Users can utilize the filter feature by selecting a start date and an end date in the filter menu, then clicking the Filter button to display the sales report for the specified period. Additionally, users can print the sales report as a PDF file by clicking the Export PDF button or view the report in Excel format by clicking Export Excel. This menu also includes a Guest Book feature that enables users to view visitor data for a certain time period, as well as a Cash Deposit Receipt feature to view proof of cash deposit transactions. Each purchase transaction is automatically recorded and directly entered into the sales report, ensuring that the report is always updated and accurate.

Figure 3 Tiket Sale Report

h. Expense Menu

This menu functions to record and monitor expenses within the system. Users can add expense data by clicking the Add Expense button, then filling in the required information such as account type, quantity, and expense amount. Once all the data is completed, users can click the Save button, and the entry will automatically appear in the list of expenses. To facilitate monitoring, users can also view expense reports based on a specific time range. This is done by using the filter feature, where users select the start date (from date) and the end date (to date), then click the Filter button to display the expense data according to the selected period. In addition, the system provides options to print the expense report in PDF format by clicking the Export PDF button, and to view or download the report in Excel format by clicking the Export Excel button. This feature helps users perform expense recording and reporting in a practical and well-structured manner.

i. Activity Log Menu
The final menu available on the main page is the Activity Log menu. This menu serves to display the history of user activities while using the system. Through this menu, users can view who has accessed the system, what activities were performed, and the exact time or period when those activities occurred. The information displayed includes details such as the user's name, type of activity (e.g., login, data modification, expense entry, and so on), as well as the date and time the activity took place. This feature is highly useful for monitoring system usage, maintaining transparency, and facilitating audit processes or tracing in the event of errors or unauthorized data changes.

4. Benefits of the Point of Sales (Postrack) System

a. Enhancing Transaction Efficiency
With a POS system, transaction processes become faster and more accurate. Users can directly record sales or expenses digitally, minimizing the risk of manual entry errors.

b. Structured Recording of Sales and Expenses
Postrack enables users to systematically record detailed income and expenditure data. Information such as account types, quantities, and amounts is neatly documented and easily accessible at any time.

c. Comprehensive and Accessible Reporting
The system provides features to view sales and expense reports based on specific time periods. Reports can be easily filtered and exported into PDF or Excel formats, which is particularly useful for reporting and accounting purposes.

d. Improved Data Security and Transparency
With centralized data storage, the risk of data loss or manipulation is significantly reduced. Furthermore, all user activities are logged, ensuring greater transparency and accountability.

CONCLUSION

The web-based Point of Sale (POS) system in this study is designed as an alternative solution to improve the operational effectiveness and efficiency of the Temesi Waterfall tourist attraction, especially in sales recording and reporting. This system is designed to replace the previously manual system because the manual system has the potential to cause suboptimal performance, time inefficiency, and a high potential for human error. The Point of Sales (Postrack) system enhances transaction efficiency, ensures structured financial recording, and provides comprehensive, exportable reports to support operational and accounting needs. It also improves data security and transparency through centralized storage and detailed user activity logs. With this digitalization, it is hoped that Temesi Waterfall can continue to operate smoothly and be sustainable.

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