

Development of a Laravel-Based RSVP and QR Code Menu System for Atap LangitPutri Elok Nazwah Azzurra¹¹Sekolah Tinggi Ilmu Komputer Banyuwangi, Indonesia**Article Info****Article history:**

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Atap Langit is a culinary business where reservation (RSVP) and menu services play a vital role. However, managing customer data, reservation schedules, and physical menus manually has led to recording errors, scheduling irregularities, delayed service, and inefficient data management. To solve these issues, this study proposes a web-based RSVP and QR Code Menu system built with the Laravel framework. The system digitizes and integrates reservation recording, customer management, and menu presentation, allowing customers to book online and view menus via mobile devices for a more practical and efficient experience. The research aims to improve reservation efficiency, minimize errors, speed up information delivery, and enhance overall service quality and customer satisfaction. Adopting a Waterfall development methodology (requirements analysis, system design, implementation, testing, and maintenance), data was gathered through observation, interviews, and documentation. The study hypothesizes that this Laravel-based system significantly improves work efficiency, data accuracy, and service quality.

Corresponding Author:Putri Elok Nazwah Azzurra,
zoraaaja14@gmail.com**INTRODUCTION**

The rapid development of information technology has significantly transformed various industries, including the food service sector. Web-based information systems enable faster, more accurate, and integrated data processing, improving operational efficiency and service quality. These systems also simplify data access and support reservation management and information delivery more effectively than conventional manual methods (Firdaus et al., 2024). Atap Langit is a culinary business that provides reservation (RSVP) services and food and beverage offerings. However, its reservation process is still largely managed manually through handwritten customer records, manual scheduling, and printed menus. These practices increase the risk of data entry errors, reservation conflicts, and delays in providing information to customers, ultimately affecting service quality (Dedi Fransisko S et al., 2025). Previous studies have explored the development of web-based reservation systems and digital menus to improve service efficiency in the restaurant industry. The findings indicate that web-based solutions enhance data accuracy, accelerate reservation and ordering processes, and provide customers with easier access to menu information. In addition, QR Code technology has been shown to be an effective approach for delivering digital menu information in a practical and real-time manner (Hakim et al., 2024).

Despite these developments, most existing studies focus on reservation systems or digital menu applications as separate solutions. Moreover, many of them employ different technologies that do not fully support the integration of both functions into a single platform (Adrianta et al.,

2025). Therefore, there is a need to develop an integrated web-based RSVP and QR Code Menu system using the Laravel framework, which provides a structured and efficient environment for application development (Noor Hisyam et al., 2022). Laravel offers several advantages for web application development, including efficient data management, enhanced system security, and flexible feature development. Its framework also supports the integration of reservation management and digital menu services within a single application, allowing customers to access services more quickly and conveniently (Dewi et al., 2022).

METHOD

The Waterfall method is a software development approach that follows a sequential and systematic process, where each phase must be completed before proceeding to the next stage (Prajaputra & Rahman, 2025).

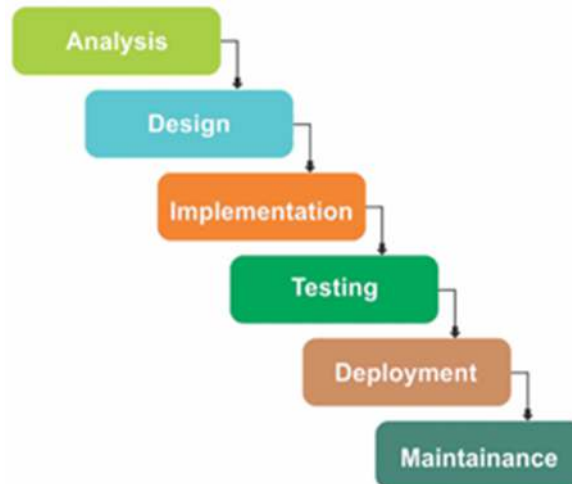


Figure 1. Waterfall Method

The Waterfall method consists of the following phases:

At this stage, the system requirements are identified and analyzed based on the results of observations and interviews conducted with the relevant stakeholders at Atap Langit.

Interviews were conducted with the management and operational staff of Atap Langit who are directly involved in reservation management and customer service. The interviews aimed to collect information regarding the existing reservation workflow, menu management practices, operational challenges, and system requirements needed to improve service efficiency and overall service quality (Putri et al., 2025). The interview results revealed that the reservation process at Atap Langit is still performed manually. Customer information is recorded through messaging applications or reservation books, while reservation schedules are managed without a structured system. In addition, menu information is provided using printed menus, making updates less practical and time-consuming.

Several issues were identified during the interviews, including the risk of reservation data entry errors, difficulties in organizing customer reservation schedules, and inefficient delivery of menu information. Furthermore, the absence of an integrated information system makes it difficult for management to monitor reservation data in real time. Therefore, this study proposes the development of a web-based RSVP and QR Code Menu system using the Laravel framework to integrate reservation management and digital menu services into a single platform, thereby improving operational efficiency and service quality (Purnama et al., 2021).

Observations were conducted through direct monitoring of the service operations at Atap Langit. The purpose of this activity was to examine the existing reservation workflow and customer service processes in order to identify the operational procedures and system requirements (Nusi et al., 2025). The observation results indicated that the reservation process is still performed manually through messaging applications or simple handwritten records, while reservation schedules are managed manually by the staff. Upon arrival, customers are provided with printed menus, resulting in slower information delivery and making menu updates less efficient (Yaqin & Syafiih, 2024). Several operational issues were identified during the observation, including delays in recording reservation data, difficulties in managing customer reservation schedules, and ineffective delivery of menu information. In addition, reservation and menu data are managed separately rather than within an integrated information system, making it difficult for management to monitor operational activities comprehensively.

The findings obtained from the observation provided a clear understanding of the existing reservation and customer service processes at Atap Langit. These findings served as the basis for designing and implementing a web-based RSVP and QR Code Menu system using the Laravel framework. The proposed system is expected to improve operational efficiency, data accuracy, and the overall quality of customer service (Bororing & Gunawan, 2024).

RESULTS AND ANALYSIS

This stage focuses on designing the system architecture, business processes, and user interface of the proposed application (Sinaga & Samsudin, 2021). The objective is to ensure that the developed system operates efficiently while meeting the functional requirements of its users. The system design phase consists of the following components. The business process of the RSVP and QR Code Menu system at Atap Langit begins when a customer makes a reservation. Customers who choose to make a reservation (RSVP) are required to enter reservation details, including their name, number of guests, and preferred visit time through the system. Alternatively, if a customer does not make a reservation in advance, the staff records the customer's visit information directly into the system upon arrival (Cania & Jehwae, 2025).

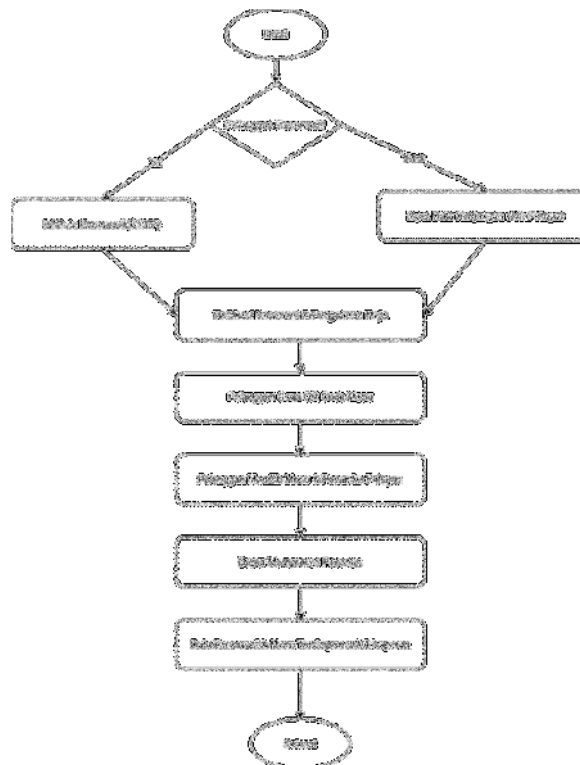


Figure 2. Business Process

After the reservation or visit information has been recorded, the staff verifies the reservation and assigns a table based on availability. Customers can then scan the QR Code provided at their table to access the digital menu. Once an order is submitted, it is forwarded to the kitchen for processing. Meanwhile, all reservation and order data are stored in the system to support reporting and performance evaluation.

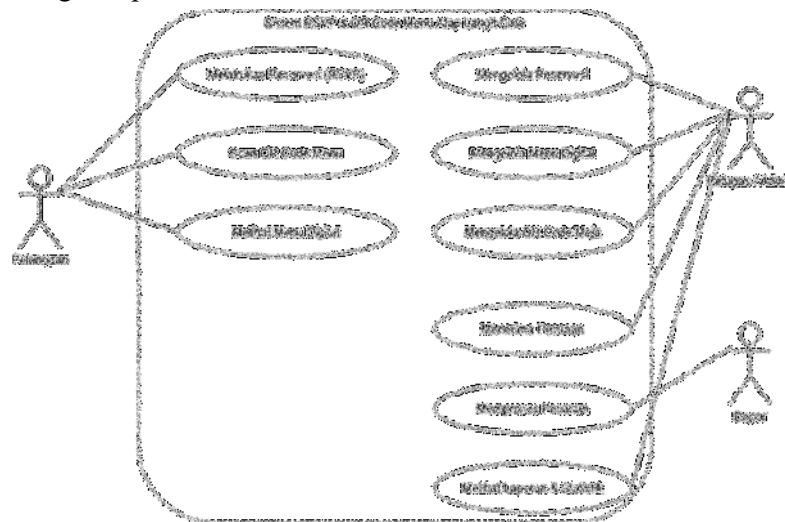


Figure 3. Use Case Diagram

The use case diagram of the Atap Langit RSVP and QR Code Menu system illustrates the interactions between the primary actors and the system functionalities. The primary actors include customers, administrators/staff, and the kitchen. Customers are able to perform several key functions, including making reservations (RSVP), scanning the QR Code to access the digital menu, and viewing menu information. Administrators and staff are responsible for managing reservations, maintaining the digital menu, and managing table QR Codes. The kitchen is responsible for processing customer orders, while administrators and staff can access operational reports and statistical information through the system.



Figure 1.4 Activity Diagram

The activity diagram of the RSVP and QR Code Menu system illustrates the workflow involving customers, administrators/staff, and the kitchen. The process begins when a customer accesses the system to make a reservation. The submitted reservation information is verified by the staff, after which a table is assigned based on availability. Upon the customer's arrival, the staff verifies the reservation. The customer then scans the QR Code to access the digital menu, selects menu items, and places an order. The order is forwarded to the kitchen for processing, while all reservation and order data are stored in the system.

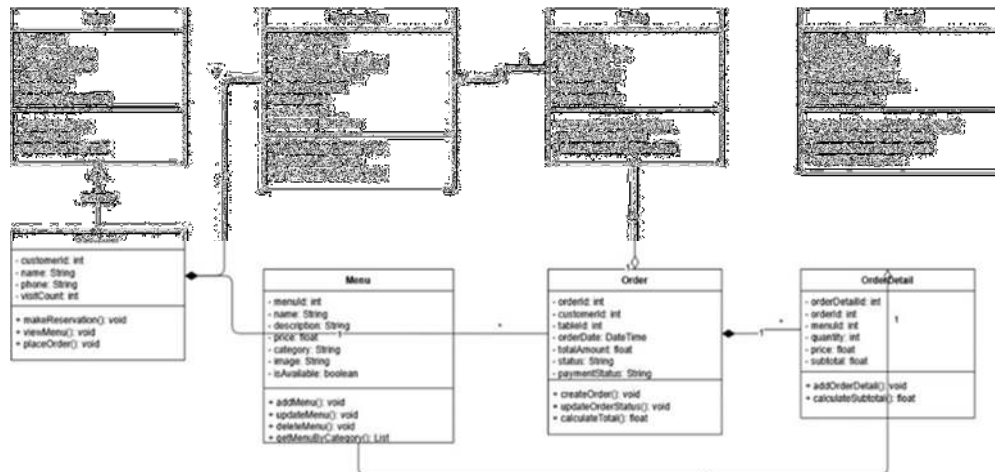


Figure 1.5 Class Diagram

The class diagram of the Atap Langit RSVP and QR Code Menu system consists of several core classes that represent the entities involved in reservation management, order processing, and menu management. These classes include User, Customer, Reservation, Table, Menu, Order, OrderDetail, and Report. The User class is responsible for user authentication and contains the attributes `userId`, `username`, `password`, `email`, `role`, and `createdAt`. It also provides the operations `login()`, `logout()`, and `update Profile()`. The Customer class inherits from the User class and extends it with additional attributes, including `name`, `phone`, and `visitCount`.

The Reservation class stores customer reservation information, including `reservationId`, `customerId`, `reservationDate`, `numberOfGuests`, `tableNumber`, `status`, and `notes`. This class has a many-to-one relationship with the Customer class, allowing a customer to have multiple reservations, and a one-to-one relationship with the Table class, where each reservation is assigned to a specific table.

The Table class manages information about available tables through the attributes `tableId`, `tableNumber`, `capacity`, `qrCode`, `status`, and `location`. It provides the operations `generateQRCode()` and `checkAvailability()`. The relationship between the Table and Order classes is one-to-many, allowing a single table to be associated with multiple orders.

The Menu class stores information about food and beverage items through the attributes `menuId`, `name`, `description`, `price`, `category`, and `isAvailable`. This class has a one-to-many relationship with the OrderDetail class. The Order class manages customer order transactions, whereas the OrderDetail class records detailed information for each ordered item. Finally, the Report class is responsible for generating operational reports and statistical summaries that can be accessed and exported by administrators.

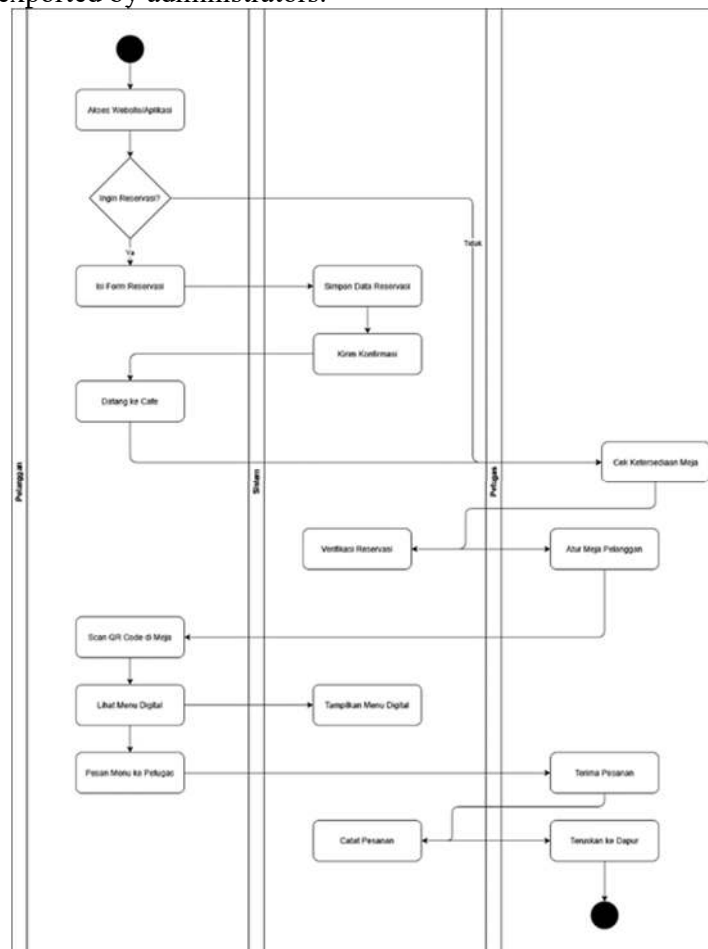


Figure 1.6 Sequence Diagram

The sequence diagram illustrates the sequential interactions among the components of the RSVP and QR Code Menu system, including the customer, web interface, controller, database,

administrator/staff, QR system, and kitchen system.

The first process is the reservation process. Customers access the reservation form through the web interface and enter the required information, including their name, number of guests, and preferred visit time. The submitted data are sent to the controller for validation. The controller then checks table availability by querying the database. If a table is available, the system stores the reservation data and sends a confirmation to the customer.

The second process is reservation verification upon customer arrival. When the customer arrives, the administrator or staff retrieves the corresponding reservation data from the database, verifies the reservation, and assigns a table based on the recorded information.

The third process involves QR Code scanning and menu ordering. Customers scan the QR Code provided at the table to access the digital menu through the QR system. The controller retrieves the menu data from the database and displays the available menu items to the customer. After the customer selects the desired items and submits the order, the order information is transmitted to the controller, stored in the database, and forwarded to the kitchen system for order preparation.

The implementation phase involves translating the system design of the RSVP and QR Code Menu application into executable program code, enabling it to function as a web-based application. During this phase, the previously designed system was implemented using the PHP programming language with the Laravel framework, supported by frontend technologies including HTML, CSS, JavaScript, and Bootstrap. The development process was carried out using Visual Studio Code as the primary code editor.

The system uses MySQL as the database management system, integrated with Laravel through the Eloquent Object-Relational Mapping (ORM) framework. The implementation is divided into two main components: the backend and the frontend. The backend is responsible for managing the application's business logic, user authentication, and database interactions. Its main features include:

- a. User Authentication (Login): Verifies the identity of administrators and staff by validating their email address and password. Upon successful authentication, users are redirected to the dashboard; otherwise, an error message is displayed.
- b. Logout: Terminates the active user session to maintain system security.
- c. Data Management (CRUD): Supports Create, Read, Update, and Delete (CRUD) operations for reservation, menu, table, and order data.
- d. Reservation Management: Manages customer reservation records, including reservation verification, status updates, and table assignment.
- e. QR Code Management: Generates a unique QR Code for each table, providing customers with access to the digital menu.

The frontend serves as the user interface, providing a responsive and interactive environment for both customers and administrators. It includes the online reservation form, QR Code-based digital menu, ordering page, administrator dashboard, and reporting page. The interface is designed to ensure ease of use and accessibility across different devices. Its main features include:

- a. Reservation (RSVP) Form: Allows customers to submit online reservations by entering their name, number of guests, and preferred visit time.
- b. Digital Menu (QR Code Menu): Enables customers to access the digital menu by scanning the QR Code provided at each table. The menu is displayed in real time.
- c. Ordering Page: Allows customers to select menu items and submit orders through the system.
- d. Administrator Dashboard: Provides administrators with tools to manage reservations, menus, tables, and monitor order status.
- e. Reporting Page: Displays reservation and transaction data to support operational monitoring, evaluation, and decision-making.
- f. Navigation Bar: Facilitates navigation between the main system modules, including

reservations, digital menus, reports, and user logout.

The testing phase aims to ensure that the RSVP and QR Code Menu application functions in accordance with the predefined functional requirements. This study employs the **Black Box Testing** method, which evaluates the functionality of the system without considering the internal structure or source code of the application. The testing process is performed by providing predefined input data and verifying whether the generated outputs correspond to the expected results.

The testing covers all major functionalities of the application, including the reservation process, reservation verification upon customer arrival, QR Code scanning, menu ordering, and order processing. The results of the testing are used to verify that each feature operates correctly and that the system performs as intended under normal operating conditions.

No	Skenario Pengujian	Input	Output Diharapkan	Hasil Aktual	Status
1	Login Admin	Email & password valid	Masuk ke dashboard	Sesuai	Berhasil
2	Login gagal	Email/password salah	Pesan error	Sesuai	Berhasil
3	Input Reservasi	Data valid	Tersimpan	Sesuai	Berhasil
4	Reservasi kosong	Field kosong	Validasi error	Sesuai	Berhasil
5	Cek Meja	Tanggal & tamu	Status meja	Sesuai	Berhasil
6	Scan QR	Scan QR	Menu tampil	Sesuai	Berhasil
7	Tampilkan Menu	Request	Menu muncul	Sesuai	Berhasil
8	Tambah Menu	Data baru	Tersimpan	Sesuai	Berhasil
9	Edit Menu	Update data	Berubah	Sesuai	Berhasil
10	Hapus Menu	Delete	Terhapus	Sesuai	Berhasil
11	Order	Pilih item	Tersimpan	Sesuai	Berhasil
12	Order kosong	Tidak pilih	Error	Sesuai	Berhasil
13	Kirim ke dapur	Submit	Masuk dapur	Sesuai	Berhasil
14	Update Status	Ubah status	Berubah	Sesuai	Berhasil
15	Laporan	Filter	Tampil	Sesuai	Berhasil
16	Export	Klik export	Download	Sesuai	Berhasil
17	Logout	Klik	Kembali login	Sesuai	Berhasil

Figure 1.7. Black Box Testing of the RSVP and QR Code Menu System

The maintenance phase aims to ensure that the RSVP and QR Code Menu system continues to operate reliably, stably, and efficiently after deployment. Maintenance activities are performed periodically to preserve system quality and to accommodate evolving operational requirements. This phase includes identifying and resolving software defects (bugs) discovered during system operation, such as issues related to the reservation process, digital menu display, and order data processing. In addition, system updates and feature enhancements are implemented to improve application functionality, including the development of reporting features, system performance optimization, and enhanced security for the web-based application. The maintenance process also involves evaluating the system based on feedback collected from both customers and staff. The evaluation results serve as the basis for further system improvements to ensure that the application remains relevant and continues to meet user requirements. Through continuous maintenance and improvement, the system is expected to provide long-term operational stability, maintain reliable performance, and contribute to improving operational efficiency and the overall quality of customer service at Atap Langit.

RESULTS AND SUGGESTIONS

This study successfully developed a Laravel-based RSVP and QR Code Menu system that integrates reservation management and digital menu services at Atap Langit. The developed system improves the efficiency of reservation management, reduces data entry errors, accelerates the delivery of menu information, and enhances both service quality and customer experience. The implemented system enables customers to make online reservations and access the digital menu by scanning a QR Code using their mobile devices. As a result, the overall service process becomes more convenient, efficient, and user-friendly. The results of the Black Box Testing indicate that all system functionalities perform as expected and satisfy the predefined functional requirements. Although the developed system has achieved its intended objectives, several improvements can be considered for future work. These include the implementation of an automatic customer notification feature, integration with digital payment

systems, and the development of a dedicated mobile application to improve system accessibility and provide a more flexible user experience.

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