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Design of Reservation and Customer Management Information System at Polka Barbershop Using Laravel Framework

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ABSTRACT

The advancement of digital technology has driven service-based businesses, including barbershops, to implement information systems to enhance operational efficiency. Polka Barbershop, located in Serang City, still utilizes manual methods for managing reservations and customer data, leading to disorganized queues, limited access to digital transactions, and challenges in generating reports. This study aims to design a web-based reservation and customer management information system using the Laravel framework. The system was developed following the waterfall model, encompassing stages such as requirements analysis, system design with UML diagrams, implementation, and testing through Blackbox and User Acceptance Testing (UAT). Key features of the system include online booking, real-time queue management, Midtrans payment gateway integration, and automated report generation. Testing results indicate that the system meets user requirements, improves service speed, and enhances the accuracy of customer data. The findings suggest that implementing a web-based information system can substantially improve service quality and operational efficiency in barbershops, offering a scalable solution for similar businesses.

INTRODUCTION

The swift progression of information technology has compelled businesses to adopt digital systems to stay competitive. Within the service industry, barbershops are increasingly expected to implement digital solutions, particularly in handling customer reservations and streamlining service operations. Nevertheless, Polka Barbershop in Ciracas, Serang City, continues to rely on manual processes, which leads to various operational inefficiencies such as disorganized queues, inaccurate customer data management, and the absence of computerized reporting.

This gap between the current state (*Das Sein*) and the desired ideal state (*Das Sollen*) reflects a significant disparity in service quality. Modern consumers demand swift, efficient, and digitally accessible services (Kivania et al., 2023). Manual systems not only limit operational productivity but also hinder customer satisfaction and the potential for business scalability.

Prior research has demonstrated the benefits of implementing web-based systems in service-focused enterprises. (Trianasari & Debataraja, 2020) found that introducing an online reservation system helped reduce queue times and enhanced service convenience. Likewise, (Syah Putri, 2024) emphasized how digital systems contribute to improved customer data management and operational performance in barbershops. Supporting this, Herdiansah et al. (2023) noted that digital platforms foster greater transparency, better data accessibility, and enable real-time monitoring.

From the customer experience standpoint, (Saputra & Naufal Wala, 2025) reported that well-implemented digital systems enhance user trust and loyalty by delivering services that are fast, personalized, and accurate. (Rahayu & Veri, 2025) further noted that integrated customer management platforms empower small and medium enterprises (SMEs) to better understand customer preferences and tailor their services more effectively.

Despite these advancements, there remains a lack of comprehensive systems designed specifically for small barbershops that integrate core functionalities such as online reservations, real-time queue monitoring, digital payments, and automated reporting into a single cohesive platform. Most existing studies have only explored individual components or limited prototypes without achieving full operational integration.

To overcome these challenges, this study proposes the design of a web-based customer reservation and management system for Polka Barbershop using the Laravel framework. Laravel was selected for its robust Model-View-Controller (MVC) structure, strong security features, and compatibility with third-party service integrations such as payment gateways (Jales et al., 2024).

This research aims to provide a comprehensive solution by developing a unified system that incorporates key features—reservation management, queue monitoring, digital payment integration, and automated reporting—into a centralized and user-oriented platform. The system is intended to serve as a scalable reference model for other small-scale service businesses undergoing digital transformation.

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LITERATURE REVIEW

The adoption of information systems in barbershop service operations has become increasingly important in the context of digital transformation. Numerous studies have examined system components, reservation processes, customer management, and supporting technologies like the Laravel framework.

Generally, a system refers to a set of interconnected procedures designed to achieve specific objectives (Trianasari & Debataraja, 2020) Within a business framework, (Trihapningsari & Putri, 2024) described systems as a combination of individuals, tools, technology, and processes that enable communication and decision-making within organizations. (Jales et al., 2024) further noted that developing a web-based reservation system using Laravel simplifies service bookings and transaction handling, reinforcing the importance of integrated systems in streamlining business processes.

Web-based reservation platforms play a crucial role in enhancing customer convenience. According to (Kivania et al., 2023), such systems allow users to book services in advance, minimizing congestion and increasing service predictability. (Dwi Fahriza, 2023) and (Hidayat Taufik, 2023) also found that web-based reservation applications significantly boost operational efficiency and user satisfaction.

Equally important is customer management, which is essential to modern service businesses. (Saputra & Naufal Wala, 2025) stated that effective customer management involves identifying user needs and delivering tailored solutions. (Rahayu & Veri, 2025) observed that digital customer management tools enable small and medium enterprises (SMEs) to customize services, build customer loyalty, and support long-term growth. (Mustakar et al., 2023) emphasized that customer satisfaction and loyalty are critical to service-based business strategies, highlighting the need for data-driven and structured management systems that provide actionable insights.

Information forms the foundation of any information system. (Afrizal & Nursahara, 2024) and (Maharesi, 2023) described information as refined and meaningful data that assists in reducing uncertainty in decision-making. (Wildah et al., 2023) added that accurate and relevant information enhances transparency and supports better managerial decisions. In practice, this is implemented through system modules that gather, store, process, and distribute data to aid daily operations.

From a technological standpoint, Laravel has become a widely adopted PHP-based open-source framework for developing dynamic web applications. Research by (Herdiansah et al., 2023), (Manalu et al., 2023), and (Aipina & Witriyono, 2022) highlighted Laravel's structured architecture, expressive syntax, and robust features, including routing, templating, and modular design—making it suitable for building secure and scalable web platforms.

While these prior studies examine individual aspects such as system design, reservation workflows, customer data handling, and Laravel's development advantages, few provide an integrated solution specifically tailored to small-scale barbershops. This study seeks to bridge that gap by designing a centralized web-based platform that unifies online reservations, real-time queue tracking, digital payment integration, and automated reporting through Laravel. The result is a practical, scalable solution that can serve as a reference model for other service-oriented SMEs undergoing digital transformation.

METHOD

This study adopts a software engineering approach using the Research and Development (R&D) methodology, combined with the Waterfall development model. The R&D method was chosen to design and develop a functional prototype of a web-based information system to address operational challenges faced by Polka Barbershop. The Waterfall model provides a linear and structured sequence of development stages—starting from requirements analysis, system design, implementation, to testing—which is considered effective for projects with clearly defined scopes and objectives (Syah Putri, 2024)& (Herdiansah et al., 2023). These studies support the suitability of the Waterfall approach in developing service-oriented digital systems with high reliability and organized workflows.

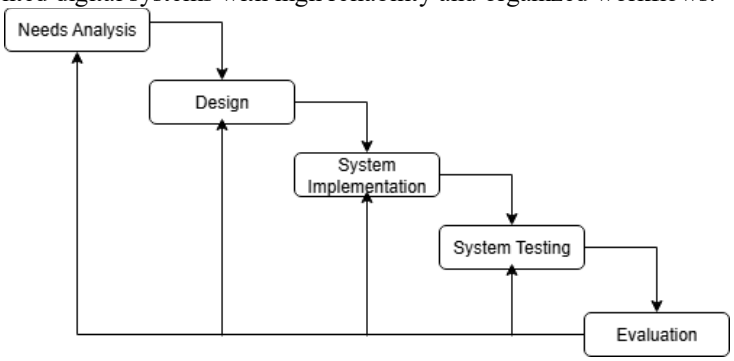

Figure 1. Research Framework

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Requirement Analysis

The requirements analysis phase involved conducting interviews, direct observations, and reviewing existing documents to gain a comprehensive understanding of business workflows and to determine the system's functional specifications.

System Design

The system architecture was designed using Unified Modeling Language (UML), which included Use Case Diagrams, Activity Diagrams, and Class Diagrams to illustrate system interactions, process flows, and structural components. This approach aligns with the findings of (Syah Putri, 2024), who emphasized that system implementation can be effectively represented through these diagrammatic models.

Implementation

Development of the system utilized the Laravel framework, with MySQL as the database engine and Visual Studio Code as the integrated development environment. Laravel was chosen due to its clean syntax, structured Model-View-Controller (MVC) architecture, and ease of integration with third-party services such as the Midtrans payment gateway.

System Testing

Testing was performed using the Black-box method, which focuses on verifying system outputs based on given inputs without examining internal code logic. Furthermore, User Acceptance Testing (UAT) was carried out involving real users to evaluate the system's usability, functionality, and deployment readiness.

Evaluation and Maintenance

After deployment, the system underwent evaluation based on end-user feedback. Maintenance procedures, including bug fixes and incremental feature updates, were conducted iteratively. The system's performance was assessed using simulated reservation and payment transactions, with success criteria based on the completion of all test cases and positive UAT results.

RESULT

This study resulted in the development of a web-based information system for barbershop reservations and customer management, built using the Laravel framework. The system was created based on a comprehensive analysis of user requirements, gathered through observations, interviews, and document reviews, and further refined through a system design process utilizing the UML methodology.

The implemented system features three primary user roles: customers, barbermen, and administrators. Each role is supported by a dedicated interface, tailored with specific functionalities to meet the operational needs and responsibilities of its respective users.

System Architecture and Design

The system was designed using a structured approach to ensure optimal interaction between all components. Informed by the requirements analysis, the architecture was developed to support three primary user roles: Administrator, Barber (Capster), and Customer, each with tailored access and functionality to meet their specific operational tasks.

Usecase Diagram System

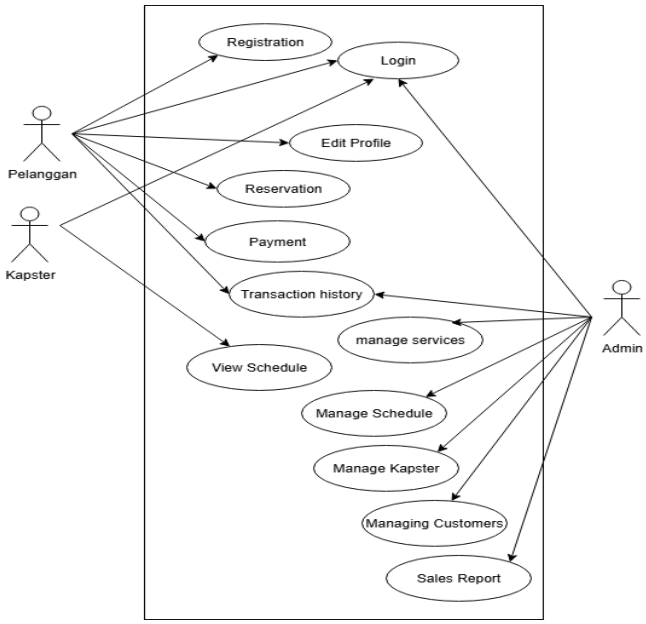

Figure 2. Usecase Diagram

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The use case diagram visualizes the interactions among the three primary actors within the Polka Barbershop system: Customer, Barber (Capster), and Administrator. Customers are able to perform actions such as registration, login, making reservations and payments, managing their profiles, and viewing transaction history. Barbers access their service schedules and customer details to facilitate service delivery. Administrators are responsible for managing user accounts, service offerings, scheduling, website content, and generating sales reports. This role-based mapping enhances operational efficiency and simplifies the process of making digital service reservations.

Activity Diagram System Registration

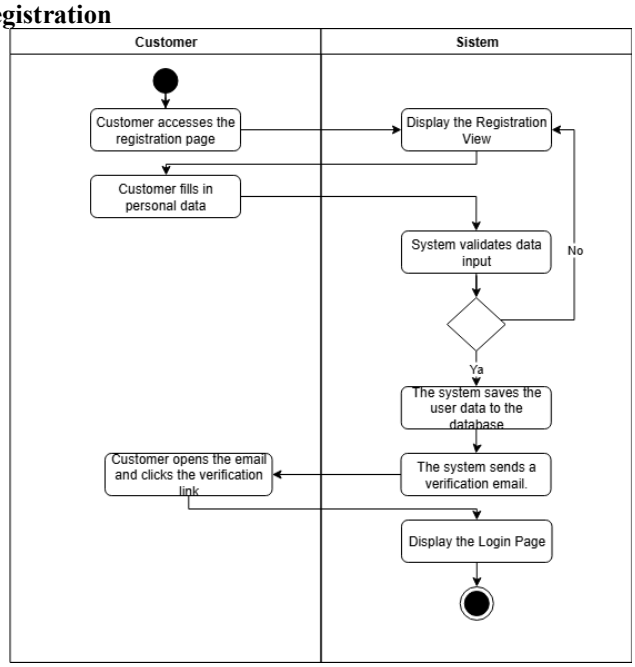

Figure 3. Activity Diagram Registration

This activity diagram illustrates the customer account registration process, beginning with the input of personal data and followed by system validation. Upon successful validation, the system sends a verification link to the customer's email address. Once the customer clicks the link, the account is activated, allowing the customer to log in and access the system.

Activity Diagram System Login

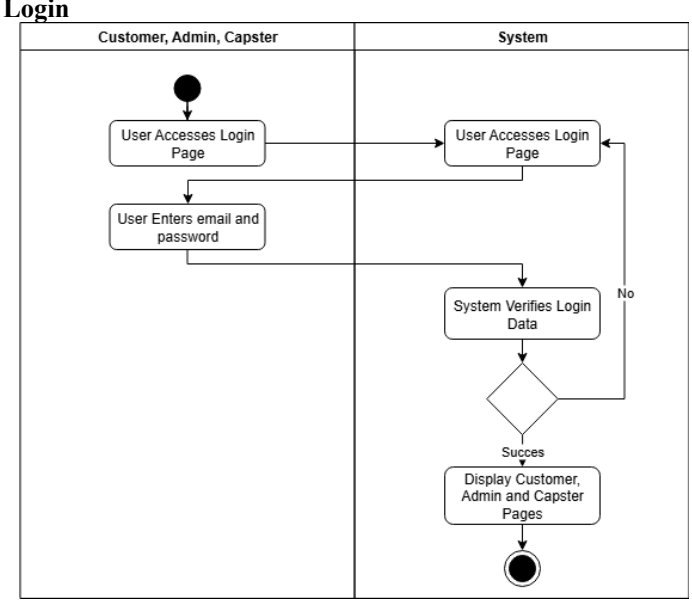

Figure 4. Activity Diagram Login

This activity diagram depicts the user login process. Users begin by entering their email and password, which are then validated by the system. If the credentials are correct, the user is granted access and redirected to the Home page. If the login data is invalid, the system prompts the user to re-enter their credentials.

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Activity Diagram System Reservation

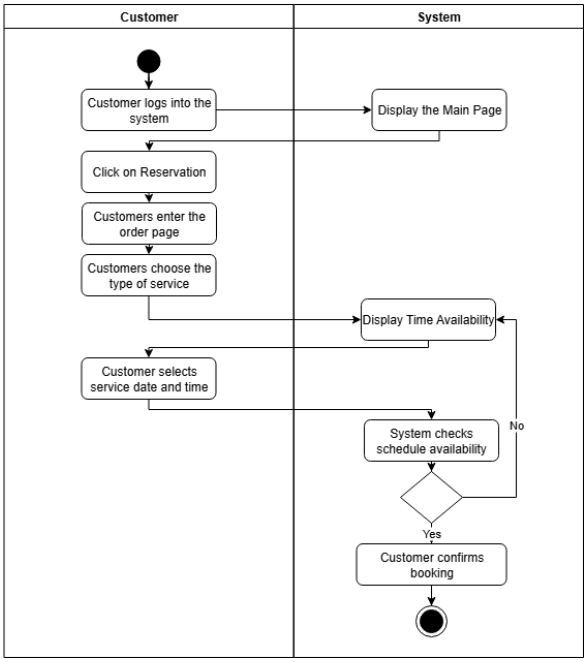

Figure 5.Activity Diagram Reservation

This activity diagram outlines the process a customer follows to make a service reservation. After logging into the system, the customer navigates to the reservation menu and accesses the booking page. The customer then selects the desired service type, date, and time. The system checks the availability of the selected schedule. If the chosen slot is available, the customer can proceed to confirm the reservation. If not, the system will present alternative time options.

Activity Diagram System Payment

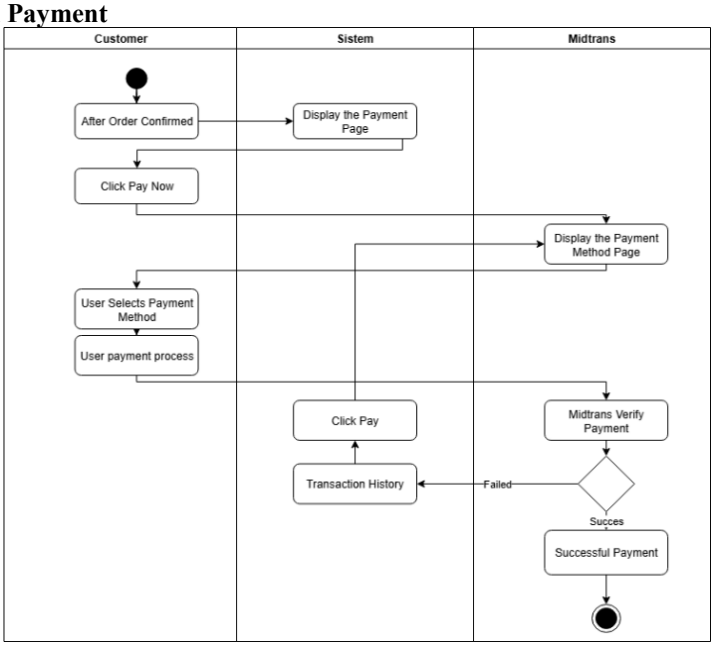

Figure 6. Activity Diagram Payment

This activity diagram illustrates the end-to-end flow of the payment process following a confirmed reservation. The process begins when the customer clicks the "Pay Now" button. The system then presents a payment interface displaying multiple available payment options. Once the customer selects a preferred method, the system forwards the transaction to Midtrans, which then displays the corresponding payment details for completion.

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DISCUSSION

Implementation and Testing

Main View

The Main View serves as the landing page of the Polka Barbershop information system, presented upon the user's initial access to the site. It is designed with a clear and informative layout, featuring intuitive navigation to enable users to easily explore the available services within the system.



Figure 7. Main view

Login and Register Account

The Register page allows customers to create a new account within the Polka Barbershop system. This page contains an input form that requires users to provide their full name, email address, password, phone number, and home address. Completing all fields is mandatory in order to gain access to the reservation services offered by the system.

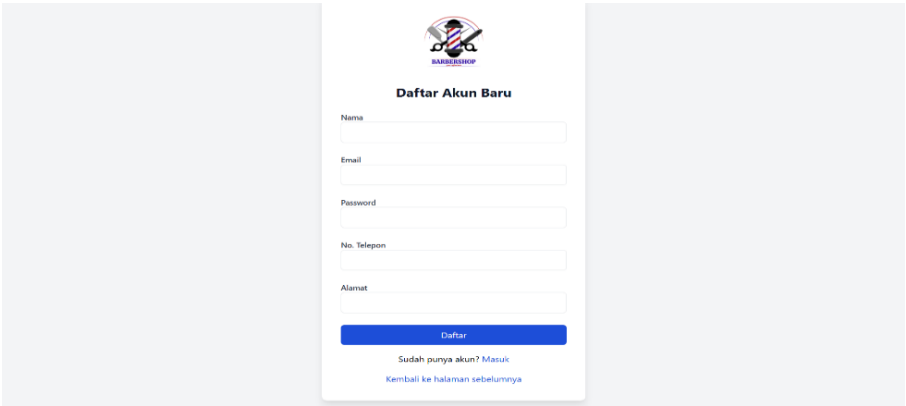

Figure 8. Registration View

If the entered credentials are valid, the system will authenticate the user and redirect them to the homepage, granting access to available features based on their role. In the event of invalid input, the system will display an error message and prompt the user to re-enter the correct login information. This mechanism ensures secure access control and protects user data within the system.

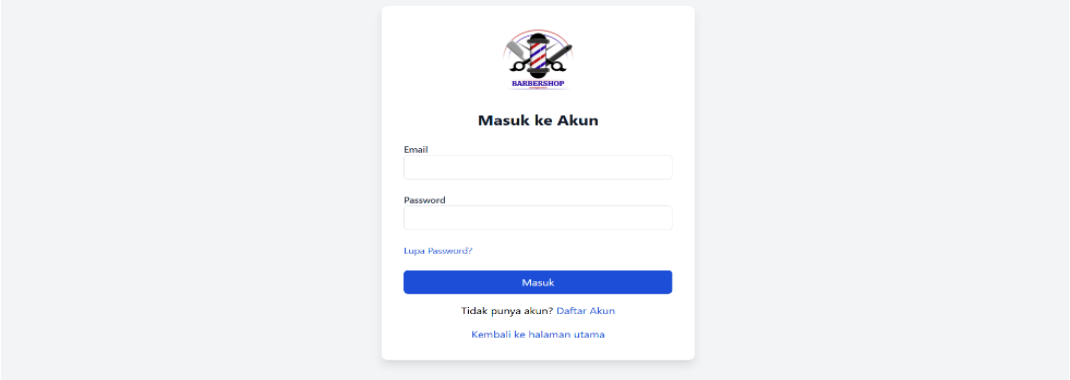

Figure 9. Login View

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Customer View

Customers can select the type of service, preferred barber, date, and time slot directly from this interface. The system automatically checks the availability of the selected schedule in real-time to prevent double bookings. If the chosen time slot is available, the customer can proceed to confirm the reservation. Otherwise, the system suggests alternative time options. This feature ensures an efficient booking process while enhancing customer convenience and service accuracy.

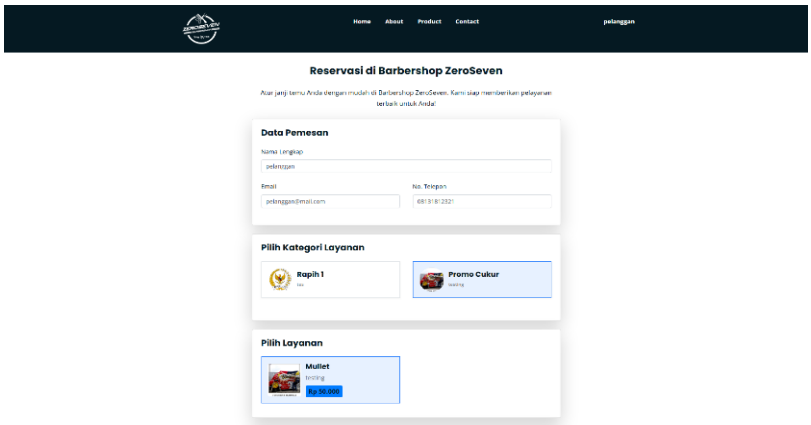

Figure 10. Reservation View

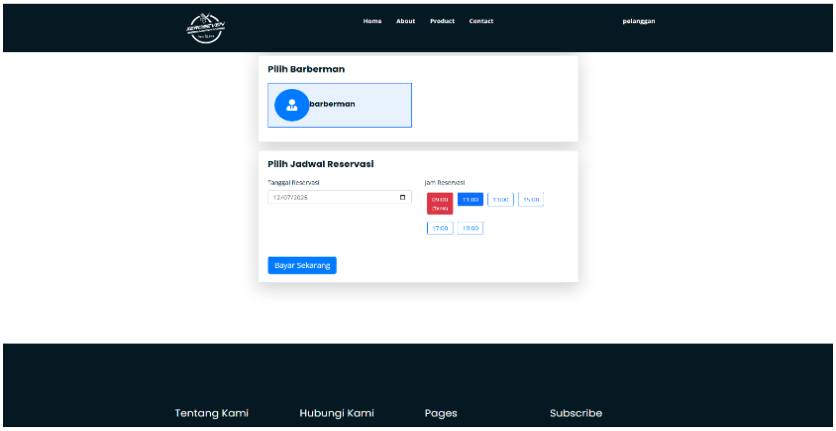

Figure 11. Reservation View

The Reservation History page enables customers to review a record of their past service bookings. This page presents the complete transaction history in a clear, structured, and easily readable format. Each reservation entry typically includes details such as the type of service, date, time, assigned barber, and reservation status. This feature helps users keep track of their appointment history and serves as a reference for future bookings or service evaluations.

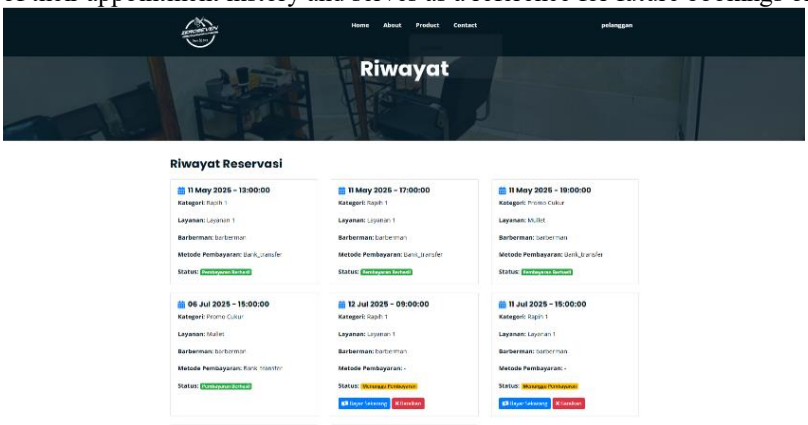

Figure 12. Reservation History

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Barberman View

The Capster Dashboard serves as the primary interface for users assigned the capster role upon successful login to the Polka Barbershop system. This page is specifically designed to display concise, role-specific information relevant to the capster's daily tasks, including upcoming appointments, assigned customers, and service schedules. The dashboard streamlines the capster's workflow by presenting essential operational data in a clear and accessible format, thereby supporting efficient and organized service delivery.

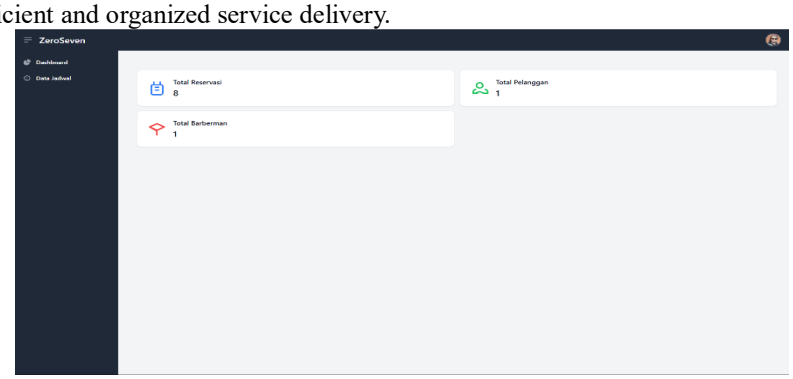

Figure 13. Kapster View

Admin View

The Admin Dashboard functions as the central interface for administrators upon successful login to the system. It is designed to deliver a quick and efficient overview of key operational metrics and information related to Polka Barbershop's activities. This includes summaries of reservations, customer data, service schedules, and system usage statistics, enabling the admin to monitor and manage business operations effectively in real time.

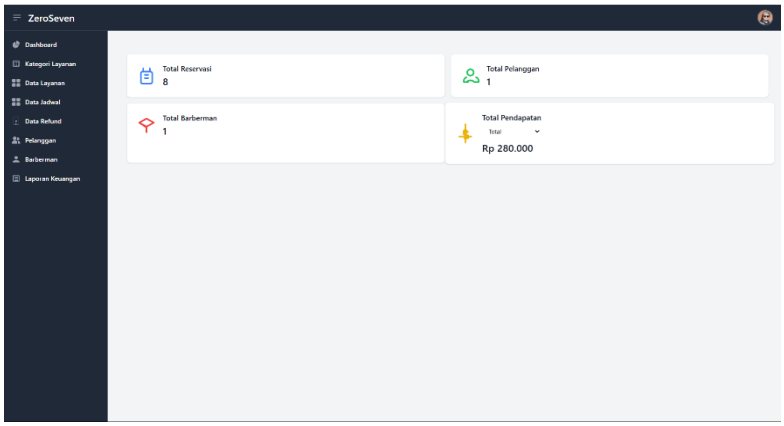

Figure 14. Admin View

Testing Results

After completing the design and implementation stages, the next phase involves system testing to ensure that all functionalities operate as intended and are free of errors. The testing process was conducted using two methods, one of which is Black Box Testing, which focuses on validating system behavior based on input and expected output without examining internal code structures.

The following table summarizes the test results for key features:

Table 1. Testing Result

Tested Features	Input	Expected Output	Status
Login	Valid username and password	User successfully accesses the dashboard page	Success
Account Registration	Valid customer data	Customer account is created and redirected to the login page	Success
Create Reservation	Selected service, barber, date, and time	Reservation is successfully created and listed in the user's reservation history	Success
Payment for Reservation	Chosen payment method and payment confirmation	Payment status updates to "completed"	Success
Refund Request	Reason for refund and	Refund status changes to "pending" and	Success

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	uploaded supporting evidence	appears on the admin dashboard	
View Barberman Schedule	Logged-in barber accesses the schedule page	Displays a list of work schedules specific to the logged-in barberman	Success
Service List Access	Customer clicks on the "Service" menu	Displays a complete list of available services along with their details and prices	Success

CONCLUSION

The implementation of a web-based reservation and customer management system at Polka Barbershop has effectively addressed the inefficiencies of the previous manual approach, including disorganized queues, imprecise recordkeeping, and the lack of automated reporting. Developed using the Laravel framework, the system streamlines reservation processes and incorporates features such as QRIS-based online payments, reservation history tracking, and a data-rich administrative dashboard.

These integrated functionalities have demonstrably enhanced operational workflows, customer experience, and managerial control, aligning with the initial research goal of building a structured, user-friendly, and modern service management platform. Furthermore, the system showcases the potential for broader adoption among micro, small, and medium-sized enterprises (MSMEs) within the service industry that seek to digitize customer and booking processes.

Nonetheless, this study is not without its limitations. The system was tested in a simulated environment and does not yet support features such as customer loyalty programs or mobile app accessibility. Future work could focus on these areas, as well as more extensive user testing, security analysis, and integration with third-party communication platforms like WhatsApp.

In conclusion, the research demonstrates that digital transformation at the MSME level can significantly improve service delivery and operational efficiency.

REFERENCES

Afrizal, S., & Nursahara, A. (2024). Sistem Antrian Online Pelayanan Jasa Pada Don Jon's Babershop Berbasis Web. *Technologia : Jurnal Ilmiah*, *15*(4), 742. https://doi.org/10.31602/tji.v15i4.16189

Aipina, D., & Witriyono, H. (2022). PEMANFAATAN FRAMEWORK LARAVEL DAN FRAMEWORK BOOTSTRAP PADA PEMBANGUNAN APLIKASI PENJUALAN HIJAB BERBASIS WEB. *Jurnal Media Infotama*, *18*(1), 2022.

Dwi Fahriza. (2023). *PERANCANGAN SISTEM RESERVASI SERVICE PERBAIKAN MOTOR MENGGUNAKAN METODE RAPID APPLICATION DEVELOPMENT (RAD)*.

Herdiansah, A., Indra Borman, R., & Maylinda, S. (2023). *Sistem Informasi Monitoring dan Reporting Quality Control Proses Laminating Berbasis Web Framework Laravel*. *15*(2).

Hidayat Taufik. (2023). *SISTEM INFORMASI RESERVASI DAN PEMESANAN PENGINAPAN PADA WISMA SYARIAH LAMBHUK KOTA BANDA ACEH* (Vol. 3).

Jales, A., Bagaskara, P., & Fauzi, A. (2024). *PERANCANGAN SISTEM INFORMASI BOOKING BARBER SHOP BERBASIS WEBSITE MENGGUNAKAN FRAMEWORK LARAVEL*.

Kivania, R., Novianti, A., & Firmansyah, R. (2023). Analisis Implementasi Peranan Sistem Reservasi Pada Bisnis Di Sektor Industri. *Sosial Dan Humaniora*, *1*(1).

Maharesi, R. (2023). Penerapan Metode RUP Untuk Sistem Informasi Reservasi Pada Pahlevi Tour & Travel Menggunakan Payment Gateway Application of RUP Method for Reservation Information System on Pahlevi Tour & Travel Using a Payment Gateway. In *JTSI* (Vol. 4, Issue 2).

Manalu, W. U. S., Hakim, L., & Wulandari, C. (2023). Sistem Informasi Pengaduan Siswa Berbasis Website Dengan Framework Laravel. *Journal of Information System Research (JOSH)*, *4*(3), 1005–1013. https://doi.org/10.47065/josh.v4i3.3368

Mustakar, Ashari Azlan, & Badaruddin. (2023). *PENGARUH MANAJEMEN HUBUNGAN PELANGGAN, CITRA PERUSAHAAN DAN TARIF PELAYANAN JASA TERHADAP LOYALITAS PELANGGAN PADA PT PELINDO JASA MARITIM*. https://e-jurnal.nobel.ac.id/index.php/NMaR

Rahayu, W., & Veri, J. (2025). Penerapan Sistem Informasi Manajemen Berbasis Digital dalam UMKM: Sebuah Kajian Literatur. *Journal of Human And Education*, *5*(2), 267–272.

Saputra, R., & Naufal Wala, G. (2025). *Pengaruh Kualitas Pelayanan dan Kepercayaan Pelanggan terhadap Loyalitas Konsumen dalam Industri Jasa (Study Literature Review)*. https://doi.org/10.38035/jgsp.v2i2

Syah Putri, S. (2024). *Manajeman Proyek Sistem Informasi Barbershop Rama Berbasis Web Dengan Menggunakan Metode Waterfall* (Vol. 1, Issue 2).

Trianasari, A., & Debataraja, B. F. (2020). Sistem Reservasi pada Mores Barbershop berbasis Web di Jatiwarna-Bekasi. In *Jurnal Esensi Infokom* (Vol. 4, Issue 1).

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Trihapningsari, D., & Putri, M. A. (2024). Perancangan Basis Data Sistem Reservasi Wisma Universitas Terbuka dengan Metode Database Life Cycle. *Jurnal Teknologi Sistem Informasi Dan Aplikasi*, *7*(4), 1638–1646. https://doi.org/10.32493/jtsi.v7i4.45421

Wildah, S. K., Wajhillah, R., Latif, A., Agustiani, S., & Mustopa, A. (2023). VISUALISASI KETERSEDIAAN JADWAL PADA WEBSITE SISTEM RESERVASI FOTOGRAFI (STUDI KASUS: FIDZPHOTOGRAPHY SUKABUMI). In *Jurnal Mahasiswa Teknik Informatika* (Vol. 7, Issue 1).

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