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DESIGN OF INFORMATION SYSTEM FOR UMRAH AND HAJJ PILGRIMAGE SERVICES PT BARAKAH HAZUL HARAMAIN

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Abstract— *PT. Barakah Hazul Haramain (Hazul Tour & Travel Indramayu) is a company engaged in Umrah and Hajj travel services. Currently, operational processes such as registration, pilgrim information management, payment recording, and report generation are still carried out manually using paper forms and separate Microsoft Excel spreadsheets. This condition leads to various problems, including data duplication, slow information retrieval, payment report discrepancies, and limited access to information for prospective pilgrims and agents. This research aims to design and develop an integrated web-based information system for pilgrim registration and management purposes. The Waterfall method was used in system development, encompassing requirements analysis, design, coding, testing, and support phases. The system was built using PHP (CodeIgniter) and a MySQL database, with access rights divided into four user levels: Owner, Admin, Agent, and Pilgrim. Testing was conducted using User Acceptance Testing (UAT) and Black Box Testing involving users from various levels, including Owner, Admin, Agent, and Pilgrim. The results of User Acceptance Testing (UAT) indicate that the system has been well received and meets user needs. With the implementation of this web-based information system, the processes of registration and pilgrim data management have become significantly more effective, efficient, and accurate, while also enabling real-time access to information, whereas the results of Black Box Testing confirm that all system functions and features operate correctly and as intended.*

Keywords: Information System, Registration, Pilgrim Management, Website, Waterfall.

Intisari— PT. Barakah Hazul Haramain (Hazul Tour & Travel Indramayu) adalah perusahaan yang bergerak di bidang jasa perjalanan Umrah dan Haji. Saat ini, proses operasional seperti pendaftaran, pengelolaan informasi jemaah, pencatatan pembayaran, dan pembuatan laporan masih dilakukan secara manual menggunakan formulir kertas dan lembar kerja Microsoft Excel yang terpisah. Kondisi ini menimbulkan berbagai masalah, termasuk duplikasi data, lambatnya pencarian informasi, ketidaksesuaian laporan pembayaran, serta terbatasnya akses informasi bagi calon jamaah dan agen. Penelitian ini bertujuan untuk merancang dan mengembangkan sistem informasi berbasis web yang terintegrasi untuk keperluan pendaftaran dan pengelolaan jemaah. Metode *Waterfall* digunakan dalam pengembangan sistem, yang mencakup tahapan analisis kebutuhan, perancangan, pemrograman (*coding*), pengujian, dan dukungan. Sistem ini dibangun menggunakan PHP (*CodeIgniter*) dan basis data *MySQL*, dengan hak akses yang terbagi ke dalam empat tingkat pengguna: Pemilik, Admin, Agen, dan Jamaah. Pengujian dilakukan menggunakan *User Acceptance Testing* (UAT) dan *Black Box Testing* yang melibatkan pengguna dari berbagai level, meliputi Pemilik, Admin, Agen, dan Jamaah. Hasil Pengujian *User Acceptance Testing* (UAT) menunjukkan bahwa sistem telah diterima dengan baik dan sesuai dengan kebutuhan pengguna. Dengan diterapkannya sistem informasi berbasis web ini, proses pendaftaran dan pengelolaan data jemaah menjadi jauh lebih efektif, efisien, dan akurat,

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serta memungkinkan akses informasi secara *real-time*, sedangkan hasil pengujian *Black Box Testing* mengonfirmasi bahwa seluruh fungsi dan fitur sistem beroperasi dengan benar dan sesuai tujuan.

Kata Kunci: Sistem Informasi, Pendaftaran, Pengelolaan Jamaah, *Website*, *Waterfall*.

INTRODUCTION

Advancements in information technology have permeated various sectors of life, including the provision of Umrah and Hajj pilgrimage travel services
(Aulia, Rizki, and Prindiyana 2023). Technologies such as the internet, databases, and web-based applications have transformed how many companies operate, shifting them from manual systems to integrated digital ones. In this digital era, easy access to information and rapid service delivery have become key demands for the public when selecting service providers (Ilmu et al. 2025). The pilgrimage travel sector requires transparency, schedule reliability, and streamlined administrative processes. However, not all pilgrimage travel agencies are capable of keeping pace with this rapid digitalization, particularly regarding data management. pilgrims and the provision of adequate access to information for prospective pilgrims and partner agents in the field.

In the sector of religious travel services, digitalization has already begun to be implemented by several major travel agencies in metropolitan cities. Online registration systems, payment status tracking, and departure schedule notifications have become standard service offerings. Pilgrims can register, select packages, and even settle payments without needing to visit an office, thereby enhancing efficiency and convenience for prospective pilgrims. However, this ideal state has not yet been fully realized by travel agencies at the local level, including in the Indramayu region. Limitations regarding human resources, technological infrastructure, and understanding of information systems remain the primary obstacles to digital transformation for small and medium-sized travel agencies.

More specifically, PT Barakah Hazul Haramain known by the brand name Hazul Tour & Travel Indramayu is a travel agency specializing in Umrah and Hajj pilgrimage services in the Indramayu region. The company serves anywhere from dozens to hundreds of prospective pilgrims each season. Its organizational structure comprises an owner responsible for policy and operational oversight, administrative staff who manage day-to-day operations at the head office, and a network of agents distributed across various districts in Indramayu and the surrounding areas. These agents play a crucial role in reaching prospective pilgrims from diverse locations, particularly those situated far from the head office.

However, in its operations both at headquarters and through agents the company still faces various challenges regarding registration and pilgrim management systems that remain conventional in nature (Nufus and Zen 2026). These challenges arise from the lack of an integrated computerized system, meaning that the entire process still relies on manual records. Currently, the pilgrim registration process is conducted manually using paper forms and administrative logbooks. Prospective pilgrims visiting the office or contacting an agent must complete a written registration form. Once the form is filled out, administrative staff at the head office or the agents transcribe the data into administrative ledgers or separate Microsoft Office files.

The lack of system integration among owners, administrators, agents, and prospective pilgrims frequently leads to data inconsistencies. For instance, pilgrims registering through agents in remote districts must wait for manual reports from those agents to be recorded at the head office a process that is time-consuming and carries a risk of data loss. Owners also struggle to monitor registration progress in real-time, as they must first request reports from administrators. This manual workflow gives rise to several operational issues. First, data duplication occurs frequently, with the same pilgrim's details being recorded twice due to clerical errors or staff oversight. Second, recording errors are common such as incorrect phone numbers, addresses, or selected packages. Third, the process of retrieving pilgrim data is slow, particularly when large volumes of data have accumulated.

Fourth, the company also faces difficulties in monitoring the payment and departure status of pilgrims in real-time. Since payment records are separate from registration records, data discrepancies frequently arise between the registration department, the finance department, and agent reports. As the person ultimately responsible, the owner struggles to obtain accurate and timely reports. Fifth, the management of pilgrims' required documents is often disorganized, thereby hindering the document verification process. Items such as ID card photocopies,

passports, and photographs are frequently kept in ordinary folders without a clear labeling system, forcing staff to search for them individually during verification. This inevitably slows down the pilgrims' departure process.

A number of previous studies have examined the development of information systems for pilgrim services and travel reservations. Research by (Khasanah 2024) designing a web-based service system for Hajj and Umrah pilgrims using the Waterfall method; however, that research focused on a single-entry-point system without involving a network of field agents. Another study (Madani 2024) It employs the Extreme Programming method for providing information and booking Umrah packages, yet it does not yet encompass the management of complex multi-level access rights among the owner, central administrator, and regional agents. On the other hand (Aryanto et al. 2024) It emphasizes the importance of analyzing and designing an integrated pilgrim registration information system to enhance operational efficiency and transparency; however, the research is limited to the initial design stage and lacks comprehensive user acceptance testing.

Based on an analysis of these previous studies, it can be concluded that there remains a research gap regarding registration and management information systems for Umrah/Hajj pilgrims that specifically integrate four user roles owner, admin, field agent, and pilgrim into a single system.

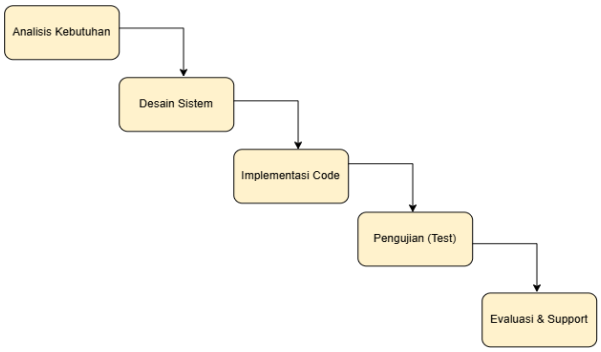
A web platform connected to a centralized database. Therefore, this research was conducted to address these limitations by designing and developing a website-based pilgrim registration and management information system for PT Barakah Hazul Haramain using the Waterfall method (Saputra, Pirera, and Verdana 2024).

The primary contribution of this research lies in the development of an integrated system architecture that unifies self-registration workflows for pilgrims and agents, digital document verification, transparent payment status tracking, and a real-time monitoring dashboard for company owners. The implementation of this system is expected to enhance the effectiveness, efficiency, and accuracy of the company's operations while minimizing the risk of data recording errors.

MATERIALS AND METHODS

This study is classified as applied research aimed at developing a software product—specifically, a website-based information system—for PT Barakah Hazul Haramain. The research data comprises both primary and secondary sources. Primary data was obtained directly through observation of the registration workflow at PT Barakah Hazul Haramain's Indramayu headquarters, as well as through in-depth interviews with the travel agency owner, administrative staff, district agent representatives, and prospective pilgrims. Secondary data was gathered from internal company documents—such as physical registration forms, Umrah/Hajj package details, and payment records—and through a literature review of scientific journals regarding software engineering.

The system was developed using the Waterfall method (Linear Sequential Model). This method was chosen because it has structured and systematic stages that are very suitable for information systems with clearly defined requirements specifications at the initial stage (Wibisono et al. 2025). The stages of implementing the Waterfall method in this study are presented in



Source: (Research Results, 2026)
Figure 1. Waterfall Method Workflow

The development stages are outlined as follows:

1. System Requirements Analysis: This stage identifies the system's functional and non-functional requirements. Functional requirements are mapped based on four user levels (owner, admin, agent, and pilgrim). Non-functional requirements encompass reliability, response time (performance), data security, and interface ease of use (usability) (Widyastuti, Oktiarso, and Putrianto 2024).

2. System Design: Translating requirements into a technical design. Process modeling is represented using Unified Modeling Language (UML) diagrams, specifically Use Case Diagrams and Activity Diagrams. Data modeling is designed using Entity-Relationship Diagrams (ERD) and Logical Record

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Structures (LRS). Additionally, the user interface is designed.

3. Code Generation: Translating the design into a programming language. The system is developed as a web-based application using PHP with the CodeIgniter 4 framework, HTML/CSS/JavaScript for the interface, and a centralized MySQL database.

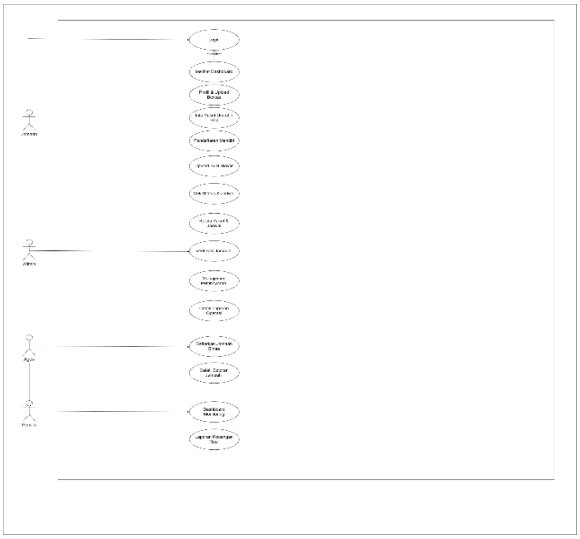
4. System Testing: System functionality is tested using the Black-Box Testing method to ensure there are no logic errors in any features (Maulida et al. 2025), alongside User Acceptance Testing (UAT) to evaluate end-user acceptance of the system. (Hartono et al. 2025).

5. Maintenance and Support: Deploying the application online (web hosting and official domain) to make it accessible to the public, and performing periodic software maintenance.

RESULTS AND DISCUSSION

1. System Design and UML Modeling

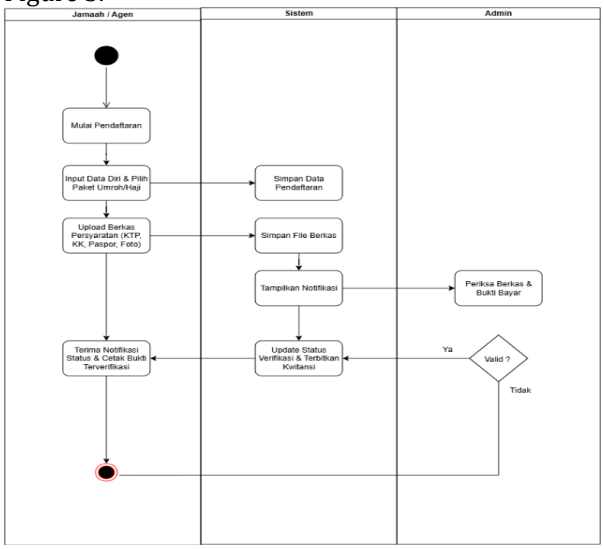
The design of the registration and pilgrim management information system involves the allocation of access rights among four primary actors. The modeling of actor interactions with the system is represented by the Use Case Diagram shown in Figure 2..



Source: (Research Results, 2026)
Figure 2. Use Case Diagram

Based on the Use Case Diagram in Figure 2, pilgrims can register an account, upload required documents, select a package, and upload proof of payment. The administrator is responsible for managing package data and departure schedules, verifying pilgrim documents, and approving payment transactions. Agents are authorized to register the pilgrims they manage and record payment deposits. The travel agency owner has full access rights to monitor pilgrim growth charts and seat occupancy rates, as well as to download financial reports.

Furthermore, the computerized operational workflow for registration and verification is illustrated by the Activity Diagram in Figure 3.

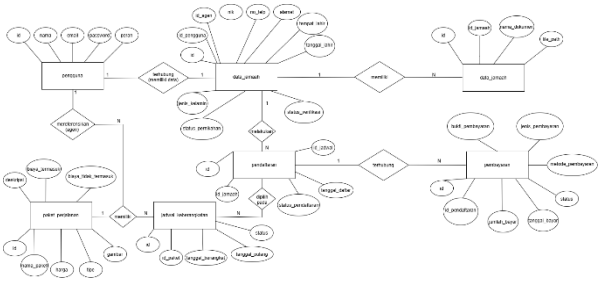


Source: (Research Results, 2026)
Figure 3. Registration and Verification Activity Diagram

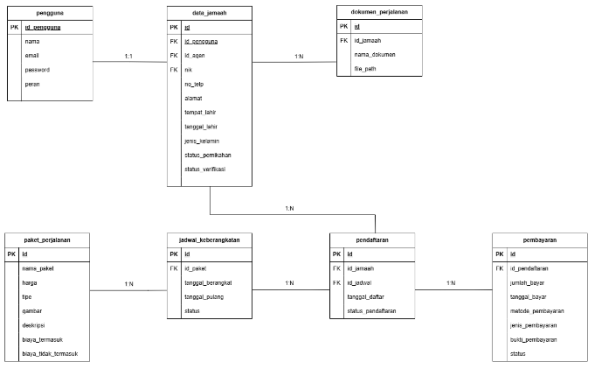
Figure 3 illustrates that the designed transaction workflow eliminates manual bureaucratic steps. Pilgrims or agents input data digitally, the system automatically saves files to a central server, and administrators receive immediate notifications to perform verification. This accelerates the process of validating registration documents and issuing payment receipts.

2. Database Design

The system's database design utilizes ERD and LRS, as illustrated in Figures 4 and 5. The design focuses on integrating user data, pilgrim data, registration details, payment information, and travel documents into a single centralized system. This integrated database design aims to ensure data consistency, accuracy, and ease of management. This approach aligns with research findings (Aryanto et al. 2024) emphasizing that an integrated database is a crucial component in the development of travel registration information systems.



Source: (Research Results, 2026)
Figure 4. Entity Relationship Diagram (ERD)



Source: (Research Results, 2026)

Figure 5. Logical Record Structure (LRS)

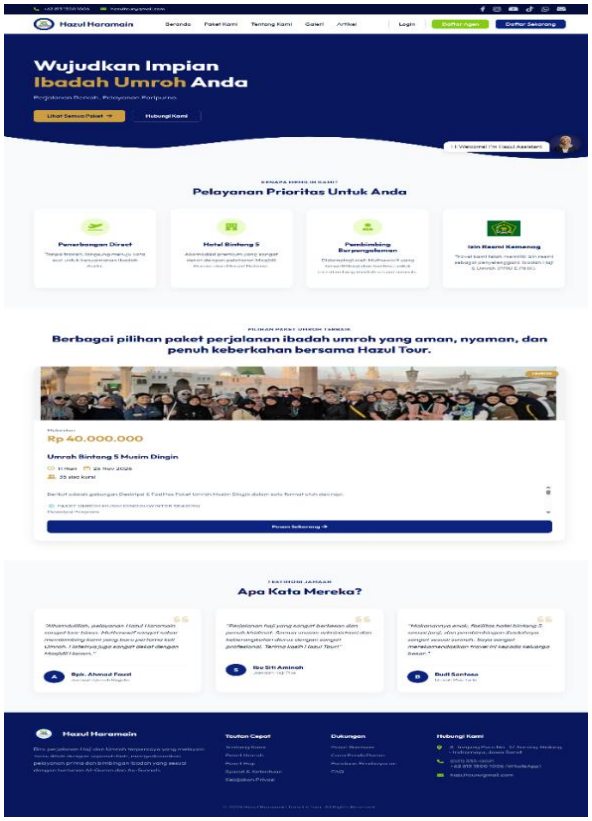
The database relationship flow in Figures 4 and 5 begins with the user entity as the main table that stores account credentials (user_id, name, email, password, phone_no, and role). The user entity has a 1:1 relationship with The `data_jamaah` entity links a single user account to a complete pilgrim profile—including verification history and links to supporting documents. Furthermore, `data_jamaah` maintains a one-to-many (1:M) relationship with `dokumen_perjalanan`, allowing a single pilgrim profile to store multiple digital travel documents (with `id_jamaah` serving as the foreign key).

In the transaction process, the user entity maintains a one-to-one (1:1) relationship with the registration entity, which records the registration number (id_pendaftaran), pilgrim ID (id_jamaah), schedule ID (id_jadwal), registration date, and registration status. Furthermore, the registration entity is linked via a one-to-one (1:1) relationship to the payment entity using the id_pendaftaran foreign key. This structure enables the secure, integrated, and easily verifiable recording of payment transaction details—such as payment amount, payment date, status, payment method, payment type (down payment/full settlement), and proof of payment.

3. System Implementation

The implementation of this website-based information system successfully transformed PT Barakah Hazul Haramain's conventional operational processes into an organized, computerized digital system. The interface was designed to be user-friendly, enabling four distinct user roles owner, admin, agent, and pilgrim to access services in real-time.

As shown in Figure 6, the homepage presents the primary information encountered by visitors or prospective pilgrims upon accessing the Hazul Tour & Travel Indramayu website. The interface features a promotional banner for travel packages, a main navigation menu, and quick access to pages detailing Umrah/Hajj packages, articles and activities, and the company profile. The page design is both attractive and intuitive, conveying a professional image while allowing prospective pilgrims to easily explore service information from the comfort of their homes.



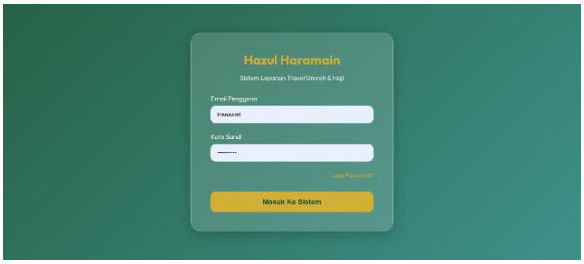
Source: (Research Results, 2026)

Figure 6. Home Page

As shown in Figure 7, the login page features a simple and secure design that verifies credentials—specifically, the username or email and password. The system automatically redirects users to the Dashboard based on their access privileges (Owner, Admin, Agent, or Pilgrim). Prospective pilgrims can register independently via the "Register Now" menu by providing initial details

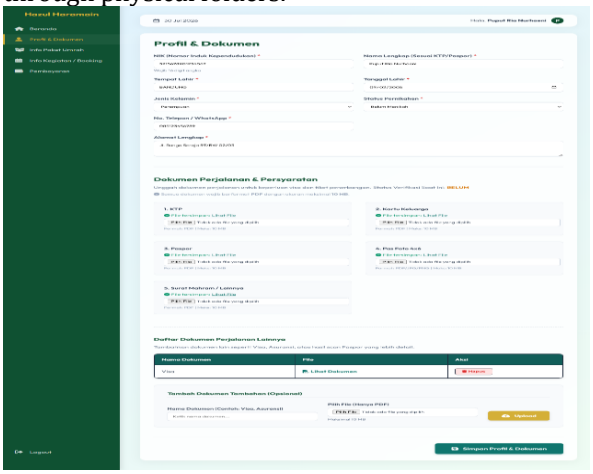
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such as their full name, phone number, and email address.



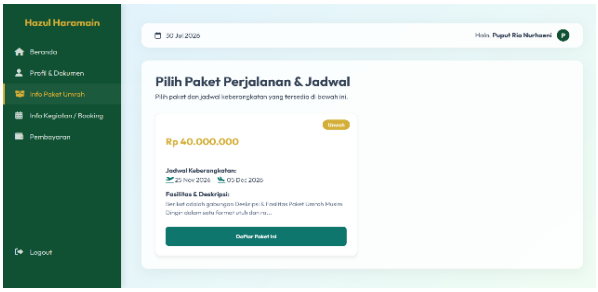
Source: (Research Results, 2026)
Figure 7. Login Page

As shown in Figure 8, the Profile & Document Upload page allows pilgrims to manage their personal data and upload digital copies of required documents—such as scans of their ID card (KTP), passport, family card, and a 4x6 cm photograph. The system stores these digital files in a central server directory, enabling headquarters administrative staff to verify them easily without the need to search through physical folders.



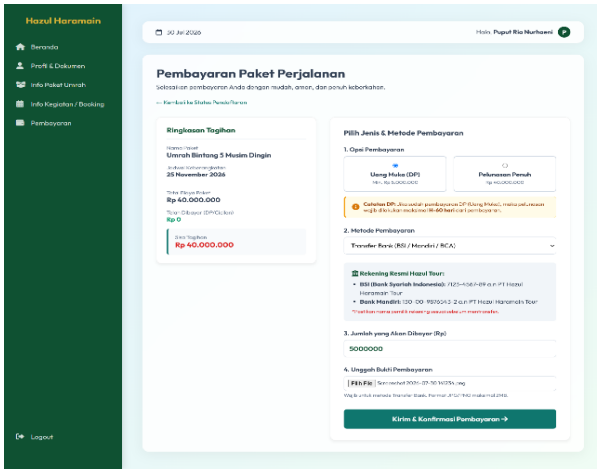
Source: (Research Results, 2026)
Figure 8. Login Page

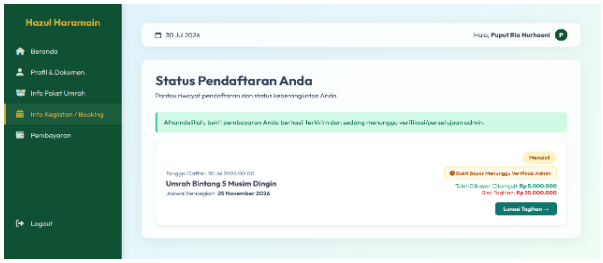
Figure 9 shows the "Package Info & Registration" page, which presents full details regarding the offered Umrah and Hajj packages—including departure schedules, prices, included amenities, and quota availability (20 to 35 pilgrims per package). Pilgrims or agents can select a package and click the registration button directly.

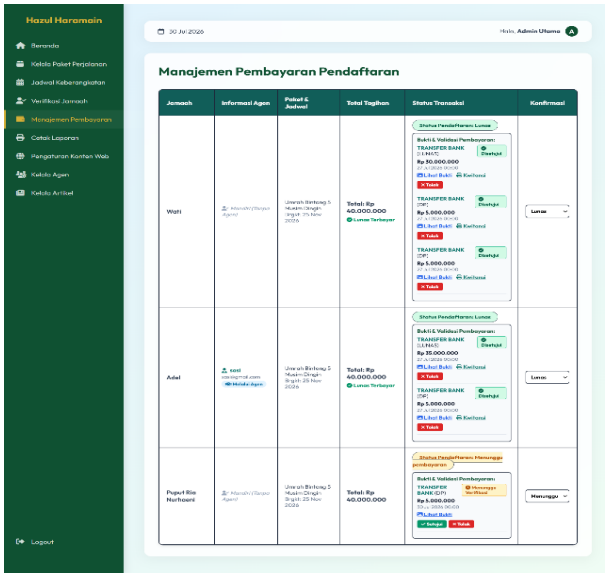


Source: (Research Results, 2026)
Figure 9. Package Info & Registration Page

Figure 10 shows the Verification & Payment page, which pilgrims use to select a deposit scheme (down payment or final payment) and upload proof of bank transfer. On the Admin interface, the Payment Management page displays incoming deposit claims, where the admin can press the "Approve" or "Reject" button based on the validity of the proof of payment. Once approved, the system automatically issues an official digital receipt that the pilgrim can download or print directly.





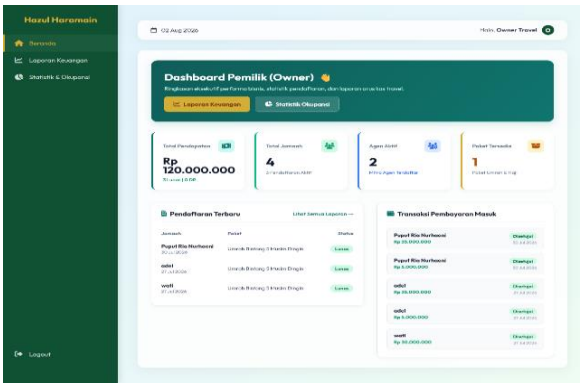


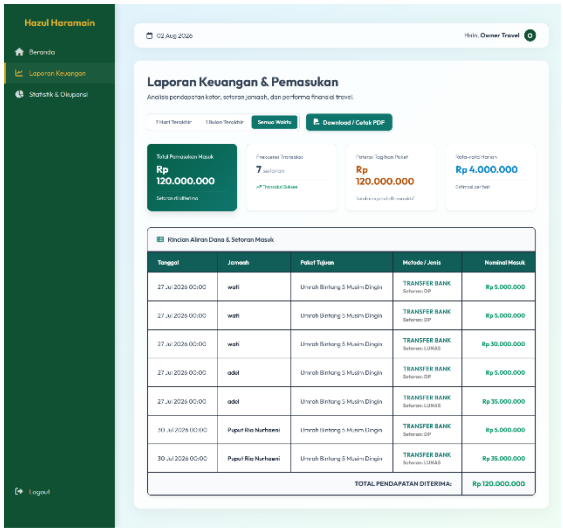


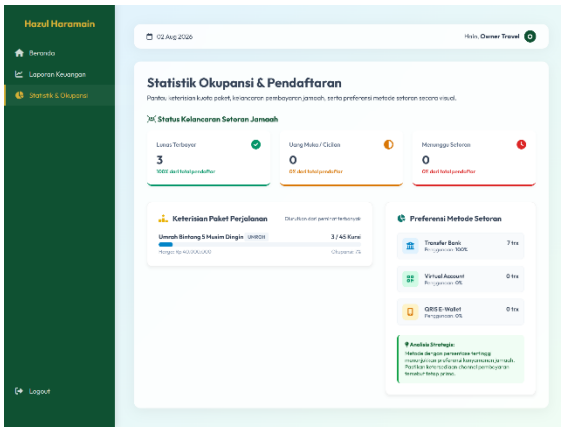
Source: (Research Results, 2026)

Figure 10. Verification & Payment Page

Figure 11, the Owner Monitoring Dashboard page, presents data visualizations including pilgrim growth charts, agent commission summary statistics, departure seat occupancy rates, and real-time financial cash flow details to support strategic decision-making by leadership







Source: (Research Results, 2026)

Figure 11. Owner Monitoring Dashboard Page

4. System Evaluation and Testing

In addition to functionality testing, an evaluation of system satisfaction and reliability conducted as User Acceptance Testing (UAT) was carried out directly with internal stakeholders at PT Barakah Hazul Haramain. The testing involved the President Director, administrative staff, the Marketing Manager, field teams/agents, and prospective pilgrims. All aspects of the UAT ranging from the ease of account creation, interface clarity, and document upload speed to the accuracy of downloaded receipts and financial reports received 100% approval from the users. Details regarding the UAT evaluation, categorized by user role, module, objective, and outcome, are presented in Table 1.

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Table 1. User Acceptance Testing (UAT) results

User	Module Tested	Test Objective	Result
Admin & Congregation	System Login	Testing user login access rights	Successful
Congregation & Field Team	Online Registration	Testing the Congregation registration workflow	Successful
Congregation & Field Team	Upload File	Test file upload & payment	Successful
Admin	Document Verification	Validate documents & make payment	Successful
Admin	Manage Packages	Testing package and schedule management	Successful
Manager Marketing	Agent Management	Testing agent performance monitoring	Successful
Designer	Visual Interface	Testing UI interface responsiveness	Successful
President Director	Print Report	Test real-time report monitoring	Successful

Source: (Research Results, 2026)

Functional feasibility testing of the system was also supported by the Black Box Testing method, which evaluates input and output scenarios. The Black Box test results confirm that all functions, buttons, business process workflows, and access control settings for each user role operate with 100% validity, free from issues or errors (bugs). A comparison of PT Barakah Hazul Haramain's operational conditions before and after the implementation of the information system highlights improvements in registration time efficiency. Manual registration, which previously took 1–2 days (due to the physical transfer of documents from agents to the head office), can now be completed online in a matter of minutes. The risk of data duplication errors is automatically eliminated by the system through National Identity Number (NIK) validation.

CONCLUSION

Based on the analysis, design, implementation, and testing conducted, it is concluded that the Website-Based Umrah and Hajj Pilgrim Registration and Management Information System for PT Barakah Hazul Haramain (Hazul Tour & Travel Indramayu) was successfully developed using the Waterfall method. This integrated web-based system effectively replaces conventional operational processes—which previously relied on paper forms and separate Microsoft Excel spreadsheets—with a structured, computerized system. The system provides distinct access controls for four user levels (multi-level users). Owners can monitor pilgrim statistics, seat occupancy rates, and financial reports in real-time via a monitoring dashboard. Administrators (Admins) are assisted in managing travel package master data and departure schedules, verifying digital documents, approving payment claims, and issuing automated receipts. Regional agents can register their pilgrims and record payment deposits without the need to manually submit physical reports to the head office. Meanwhile, prospective pilgrims enjoy the convenience of viewing package catalogs, registering independently online, uploading required documents (ID card, passport, family card, 4x6 photo), and submitting proof of payment from home. Functional testing using Black Box Testing confirms that all system functions, buttons, and logic operate with 100% validity and without errors. Furthermore, the results of the User Acceptance Testing (UAT) which involved the President Director, administrators, the Marketing Manager, agents, and prospective pilgrims—demonstrate that the system operates efficiently, is user-friendly and secure, and has been successfully implemented via the official domain (https://hazulharamain.online/).

Nevertheless, this study has several limitations, such as a payment confirmation mechanism that still requires manual verification by an administrator based on uploaded proof of payment, and a lack of direct integration with an automated digital payment gateway. System evaluation has also focused primarily on functional testing and acceptance by internal users and a limited group of

pilgrims, meaning it has not yet included server performance testing under higher usage loads. Given these limitations, future system development should prioritize integration with a payment gateway (such as Midtrans or Xendit) to automate the verification of payment transactions whether for down payments or final settlements via Virtual Accounts, QRIS, or e-wallets. Additionally, it is recommended to implement an automated notification gateway (via WhatsApp or Email) to send installment reminders, document verification status updates, and departure schedule announcements directly to the mobile phones of pilgrims and agents. Developing a mobile application (for Android/iOS) is also recommended to provide a more optimal user experience for field agents and prospective pilgrims, alongside routine server maintenance, regular data backups, and enhanced SSL/TLS security to ensure system stability and the confidentiality of pilgrims personal data.

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