

# Web-based information system for optimizing non-medical goods requisition

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## Abstract

The effectiveness of information systems plays a crucial role in enhancing organizational operations, particularly in the management of non-medical goods requisitions in healthcare institutions. At Haji Jakarta Hospital, the previous manual method of managing requisitions led to inefficiencies such as processing delays, data inaccuracies, and difficulties in tracking inventory. This study aims to design and develop a web-based information system to optimize the requisition process for non-medical goods. The research applies the Rapid Application Development (RAD) methodology, which includes requirements planning, design workshop, and implementation phases. Data were gathered through interviews, observations, and document analysis, followed by system modeling using Unified Modeling Language (UML). The system was developed using PHP as the programming language, MySQL as the database, and XAMPP as the development platform. To ensure the functionality of the application, black box testing was conducted, focusing on validating input, process, and output functions. The resulting system provides key features such as real-time requisition tracking, inventory monitoring, and automated reporting. Compared to the previous manual system, the new application enabled hospital staff to process requisitions more quickly and with greater accuracy, reducing average processing time from approximately two days to just a few hours, and minimizing errors caused by repeated manual data entry. All tested system functions performed successfully, improving transparency and documentation in the requisition process. In conclusion, the developed system significantly improves the accuracy, speed, and traceability of requisition processes and can serve as a reference for similar digital transformation initiatives in other healthcare institutions.

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## Introduction

Organizations have undergone substantial transformations influenced by societal and technological modernization. This fundamental shift underscores the recognition of technology as a continuously evolving and adaptive force. In the healthcare sector, such advancements have profoundly affected

hospital information management, where integrated information systems are now essential for addressing operational inefficiencies and enhancing the quality of healthcare delivery (Alenezi *et al.*, 2023). In the healthcare field, technological advancements have significantly influenced the management of hospital information systems, making integrated systems essential for addressing operational challenges and improving service quality. Hospitals play a central role in patient care, recovery, and the education of health professionals (Irawan & Lestari, 2024). To fulfill these responsibilities effectively, they must not only ensure high service quality but also balance operational efficiency with social responsibility. This requires the implementation of strategic policies in internal management, human resources, and decision-making processes to sustain competitiveness and improve overall healthcare outcomes (Marbella *et al.*, 2024).

Haji Jakarta Hospital, established in 1994, is one such institution that focuses on providing high-quality healthcare services, particularly to Muslims undertaking the Hajj pilgrimage. To support its services, the hospital manages a variety of operational requirements, including both medical and non-medical supplies. The non-medical item requisition process at Haji Jakarta Hospital is an essential administrative function that ensures the availability of various items such as office supplies, IT equipment, and cleaning tools. This process is crucial for maintaining the smooth operation of the hospital's daily activities (Anfal, 2020).

However, despite its importance, the current requisition system is still manual, involving handwritten forms that must be re-entered by administrative staff. This method introduces delays, increases the potential for data entry errors, and hinders documentation, ultimately affecting the overall operational efficiency of the hospital. The lack of an integrated system to automate the requisition process has further compounded these issues. Without real-time monitoring and tracking features, the hospital faces difficulties in managing the inventory process effectively.

To address these challenges, this study proposes the design and development of a web-based information system using the Rapid Application Development (RAD) methodology. RAD is known for its flexibility, speed, and user-centered approach, making it an ideal model for developing systems that need to be quickly adapted and refined based on user feedback (Hidayati & Hati, 2021). By utilizing RAD, this system aims to replace the manual requisition process with a streamlined, automated digital solution that reduces errors, accelerates processing time, and improves documentation and inventory tracking.

This study aims to develop a web-based non-medical item requisition information system for Haji Jakarta Hospital. The system will use PHP for development, MySQL for data storage, and XAMPP as a local server environment, tools that are reliable, flexible, and well-suited for dynamic web application development (Alviano *et al.*, 2023; Apandi & Istini, 2023; Fajri & Hardiani, 2023). The expected result of this research is an operational system that significantly improves the efficiency of the non-medical requisition process, reduces the administrative workload, and supports better inventory management. Furthermore, the successful implementation of this system can serve as a model for other healthcare institutions facing similar operational challenges.

Prior research has demonstrated the success of RAD in similar healthcare settings. For example, the implementation of an electronic medical record system at RS Wijaya Kusuma Lumajang improved data accuracy and patient management (Amin *et al.*, 2020). Another study at Bidan Leni Karlina Clinic applied RAD to build a web-based patient service system that improved data recording, referrals, and reporting (Ajis *et al.*, 2022). Additionally, Ahnafyusi & Malau (2024) developed a medical record information system at Klinik Pratama BP Cilandak to replace manual paper-based records. The system integrated features like patient registration, record management, medication, cashier, and reporting modules, enhancing service efficiency and reducing administrative errors.

Although previous studies have shown the success of information systems in clinical settings, there is still a significant research gap concerning digital solutions specifically for non-medical goods requisition in government or special-purpose hospitals like Haji Jakarta. Most prior works focus on electronic medical records or patient-related services, overlooking the administrative backbone that supports hospital logistics. This study seeks to fill that gap by focusing on a domain that has received little attention but is essential for ensuring hospital operations run smoothly.

The novelty of this research lies in three aspects: (1) the development of a requisition system tailored to the needs of a government religious hospital; (2) the incorporation of real-time request tracking, inventory monitoring, and automated documentation in one unified platform; and (3) the use of RAD with active user collaboration to ensure the system addresses contextual and organizational needs. These contributions are not only technical but also strategic in supporting hospital administration and logistics. Compared to existing manual processes at Haji Jakarta Hospital, the proposed system is expected to reduce processing time, improve data accuracy, and enhance inventory transparency—an advancement not yet addressed by prior implementations in similar healthcare settings.

Based on the context above, the explicit research problem can be formulated as: "How can a web-based information system be developed using the RAD methodology to optimize the non-medical goods requisition process at Haji Jakarta Hospital?" The expected outcome is a system that not only improves internal hospital operations but also serves as a scalable model for similar institutions aiming to digitize their logistical workflows using adaptive and collaborative methodologies such as RAD.

## Methods

In this study, the researcher employed a qualitative research method, which is commonly used to gather in-depth data and insights through various techniques, including interviews, observations, and literature review (Hamilton & Finley, 2020). This research utilized two main approaches: the system development approach and the data collection approach (Ruhayat & Nurfalah, 2025). Each of these techniques was carefully selected to support the understanding of the non-medical item requisition system at Haji Jakarta Hospital.

### Observation

Observation is a data collection method that involves directly observing (Niarman, 2022). In this study, observation was conducted on the non-medical item requisition system at Haji Jakarta Hospital. This allowed the researcher to gather real-time data and firsthand insights into the process, identifying inefficiencies and challenges in the existing manual system.

### Interview

Interview is a data collection method conducted through interpersonal communication involving a question-and-answer interaction between two individuals (Prasetya *et al.*, 2025). In this study, interviews with Haji Jakarta Hospital staff involved in the requisition process were conducted to identify challenges and gather input for system improvement.

### Literature Review

The literature study is a data collection method that involves reviewing relevant references, including books, scholarly journals, and prior research, to support the understanding of the research subject (Handayani *et al.*, 2022). The literature review was used to understand existing solutions and methodologies for similar requisition systems.

### Data Development Method

During the development phase, the Rapid Application Development (RAD) methodology was employed as an approach to efficiently build a web-based information system, with the research conducted using the action research method (Atmaja *et al.*, 2023; Zalukhu *et al.*, 2023).

This approach consists of three main phases: requirements planning, design workshop, and implementation, involving close collaboration between analysts and users throughout the process (Arrohimi *et al.*, 2023). These phases are illustrated in Figure 1 (Hardiyanti *et al.*, 2024).

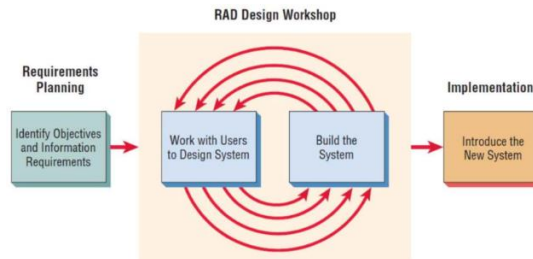


Figure 1. Rapid Application Development (RAD) Phases

**Requirements Planning Phase:** In this phase, system analysts collaborated with hospital staff to identify the system's core objectives. Data on requisition workflows, item categories, and approval processes were collected to ensure the system meets the hospital's operational needs. **Design Workshop Phase:** This phase involved designing the system's process and interface. UML diagrams, such as use case and class diagrams, were used to outline system functions and user interactions. Interface design focused on creating a user-friendly web interface for hospital staff. **Implementation Phase:** In this final phase, the design was translated into a functional application using suitable programming languages and frameworks. The system was developed, followed by extensive testing to evaluate its performance. Feedback from stakeholders was used to refine the system iteratively. The objective of this phase was to ensure the developed system effectively supports the efficient recording, tracking, and management of non-medical goods requisitions.

## Result and Discussion

### Requirement Planning

#### 1. Current System Analysis

The current process for non-medical goods requisition at RS Haji Jakarta is still manual. This approach causes several inefficiencies, including slow processing times, difficulty in tracking requests, and high potential for recording errors. These weaknesses were identified through observation and interview data collected from hospital staff. Before proposing a new system, an analysis of the existing system is necessary to compare its performance with the designed system (Sekali & Sopiah, 2023).

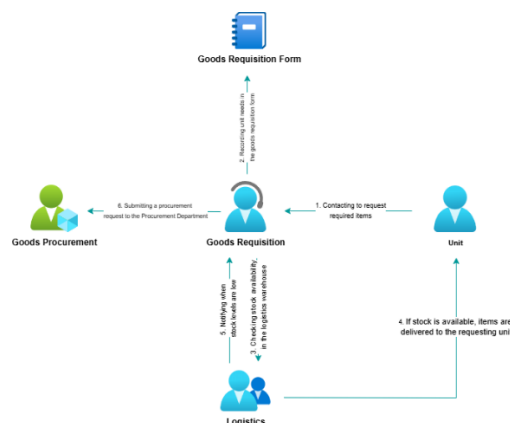


Figure 2. Rich Picture of the Current System

Figure 2 illustrates the Rich Picture of the Current System, which visually represents the workflow issues and inefficiencies, helping to guide the planning for a more structured digital system.

## 2. Proposed System Analysis

The proposed system is a web-based application designed to resolve the issues identified in the manual process. It includes functionalities such as online requisition submission, real-time inventory checking, and automated reporting. The proposed system is expected to reduce errors, shorten processing times, and improve monitoring and documentation.



Figure 3. Proposed System Rich Picture

Figure 3, Proposed System Rich Picture, provides a conceptual overview of how the digital system is intended to function, highlighting the streamlined workflow and enhanced communication between units and administrators.

## Design Workshop

### 1. Use Case Diagram

A use case diagram is a visual representation that depicts the interactions between actors and the designed system (Reza & Nulhakim, 2021). The relationship between the administrator and units within the system is illustrated by the use case diagram shown in Figure 5.

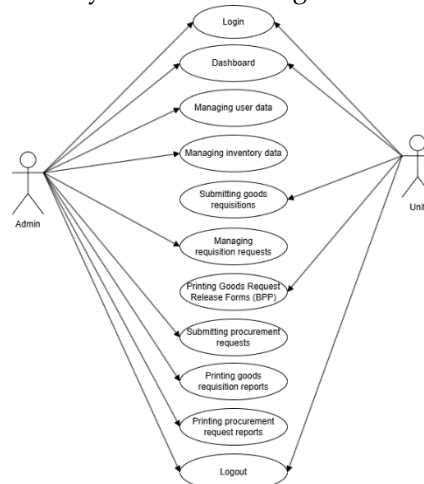


Figure 4. Use Case Diagram

This diagram highlights how each actor interacts with various system functions, offering a clear overview of the workflow in the goods requisition information system at Haji Jakarta Hospital.

### 2. Class Diagram

Figure 5 displays the class diagram of the goods requisition system. It outlines the relationships between system classes, including their attributes and methods. The diagram shows how users submit requisitions and how procurement is initiated when stock is unavailable (Rohman & Bhakti, 2023).

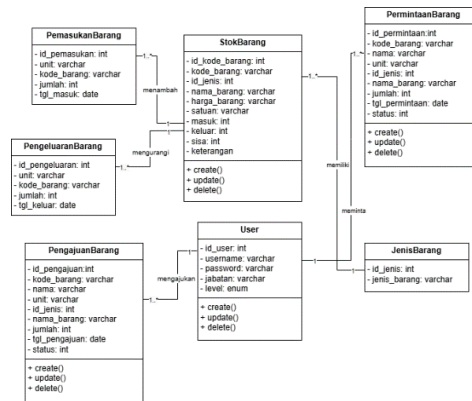


Figure 5. Class Diagram

### Implementation

The implementation phase transforms the system design into a working product through coding and interface development. It includes role-based access, feature testing, and system validation before deployment (Aini *et al.*, 2019). The figures below show key user interfaces that support the non-medical goods requisition process.

Access begins with a login page for both admin and unit users, as shown in Figure 6.



Figure 6. Login Page

The login interface consists of input fields for a username level and password, with a role validation system that redirects users to their respective dashboards. This ensures secure and controlled access to the system based on user roles.

Figure 7 present the dashboards for the administrator and the unit users. Each dashboard offers role-specific functionality tailored to the user’s responsibilities in the requisition process.

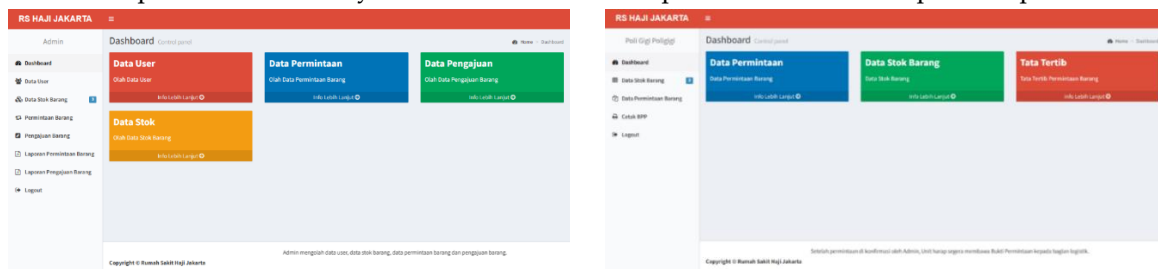


Figure 7. Dashboard View for Admin & Unit

The admin dashboard includes features such as inventory monitoring, request approval, and procurement handling. In contrast, the unit dashboard focuses on submitting requisitions and checking stock levels. These dashboards improve usability by providing intuitive navigation and quick access to essential features.

Figure 8 display the inventory data pages for administrators and units, respectively. These pages provide role-based access to stock data, ensuring accurate inventory control.

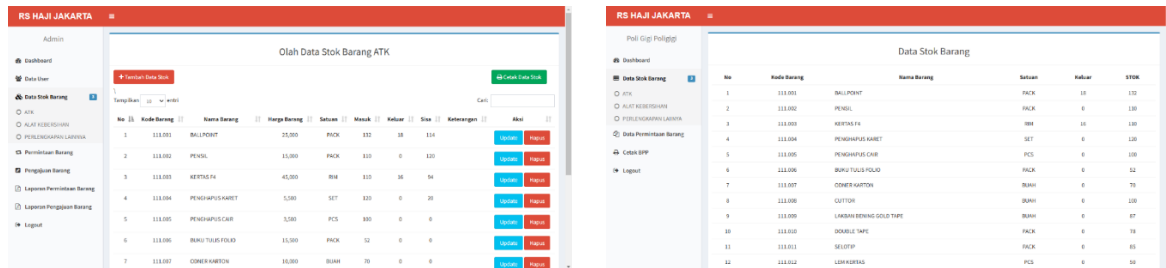


Figure 8. Inventory Data Page for Admin & Unit

Figure 9 displays the goods requisition form used by unit users to submit item requests based on their operational needs.

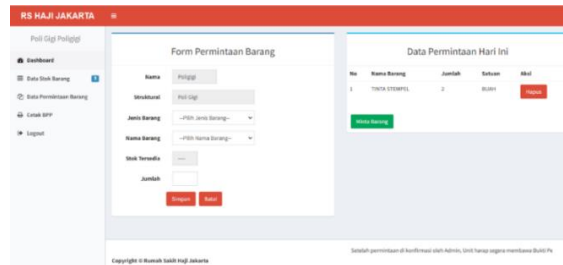


Figure 9. Goods Requisition Form Page for Unit

This form captures necessary requisition data, such as item name, and quantity for the request. Submitted data is stored in the system for administrator review.

Figure 10 present the pages where unit-submitted requests are processed and reviewed by administrators.

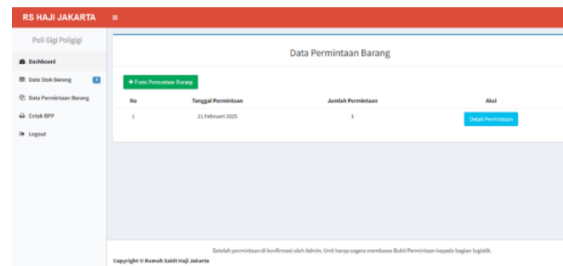


Figure 10. Request Data Page for Unit

The unit view allows users to track the status of submitted requests, while the administrator view consolidates all incoming requests for review. This two-way visibility supports transparency and efficient request handling.

Figure 11 illustrates the admin interface for approving or rejecting submitted requests, based on stock availability.

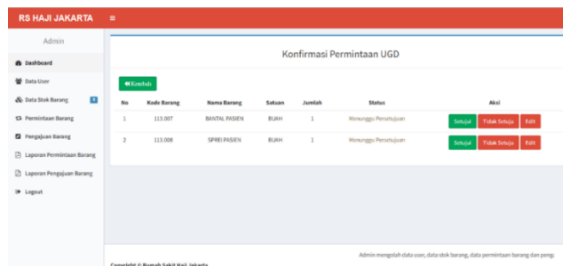


Figure 11. Item Request Approval Page for Admin

Here, the administrator assesses each request and makes decisions based on inventory levels and usage priorities. This process ensures that goods are allocated efficiently and that stock usage is properly managed.

Figure 12 shows the print page for the Goods Request Release Form (BPP), which is accessible after admin approval.



Figure 12. BPP Print Page for Unit

The BPP document acts as formal evidence of request approval and is used to retrieve the requested items from the logistics department. This functionality enhances documentation accuracy and administrative accountability.

Figure 13 displays the procurement request page used by the administrator to request new stock items when inventory levels are low.

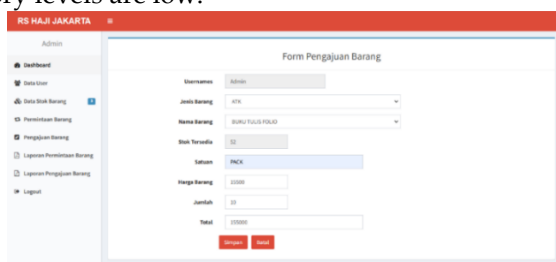


Figure 13. Admin Procurement Request Page

The form includes fields for item name, quantity, and procurement reason. This process helps ensure stock availability and supports continuous operational readiness in the hospital.

Figures 14 illustrate the item request and procurement report pages, which allow administrators to generate printed recaps for documentation and analysis purposes.

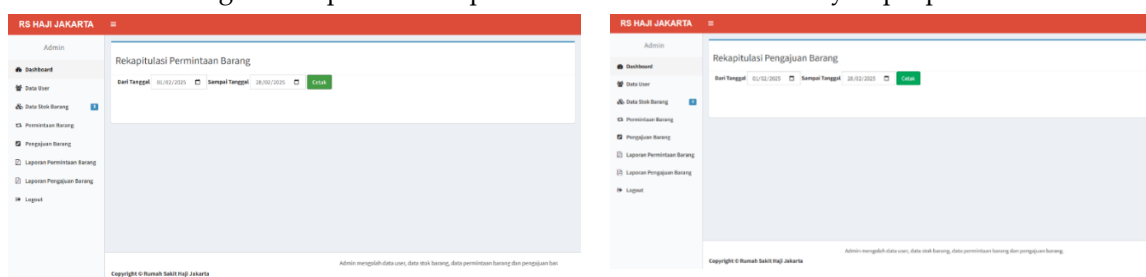


Figure 14. Item Request Recap Print Page for Admin & Unit

These reports support periodic evaluations of item usage and procurement trends. They also serve as official documentation for inventory audits and decision-making processes related to hospital logistics and supply chain management.

## Testing

System functionality is validated using the Black Box Testing method, focusing on ensuring each interface behaves as expected without considering internal code structure (Febriyanti *et al.*, 2021). The test scenarios and results are presented in Table 1, which evaluates each page based on user actions and expected outcomes.

Table 1. Blackbox Testing Result

No	Tasted Page	Process	Expected Result	Description
1	Login Page	User logs in with role-based access	Redirects to correct dashboard	Successful
2	Dashboard Page	Access and navigation	Displays user-specific dashboard	Successful
3	Item Stock Data Page	Admin manages stock, unit views stock	Functionality based on access rights	Successful
4	Unit Item Request Page	Unit submits request	Request recorded and status displayed	Successful
5	Admin Item Request Page	Admin approves/rejects request	Status updated accordingly	Successful
6	Unit BPP Print Page	Unit prints approved request	Printable BPP generated	Successful
7	Admin Item Procurement Request Page	Admin submits procurement request	Request saved	Successful
8	Item Request Report Page	Admin reviews and prints request data	Report displayed and printable	Successful
9	Item Procurement Report Page	Admin reviews procurement data	Report displayed and printable	Successful

The results from Table 1 indicate that all components of the system function as expected, confirming that the system's operational workflows have been correctly implemented and tested.

## Conclusion

This study successfully achieved its primary objective of designing a web-based information system to optimize the non-medical goods requisition process within a hospital setting. It advances the field of healthcare logistics by demonstrating that user-centered rapid prototyping, implemented through the RAD methodology, can effectively address inefficiencies in administrative workflows. The system developed provides a replicable and adaptable model for similar healthcare institutions seeking to streamline their operational processes. Scientifically, this work establishes a methodological foundation for the integration of agile development practices in hospital environments, bridging the gap between manual procedures and digital solutions. Future work will focus on conducting ongoing usability testing with a broader user base, performing comprehensive system performance evaluations, and exploring the development of mobile platforms and integrated financial modules to further enhance system scalability and overall impact.

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