IJISSE International Journal of Information Systems and Software Engineering

Journal home page: https://ijisse.org/index.php/journal

Development of a Web-Based Hospital Human Resource and Activity Management at RSKM Regina Eye Center

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ARTICLE INFO

Article History:
Received: 26 May 2026
Final Revision: 30 June 2026
Accepted: 01 June 2026
Online Publication: 02 June 2026

KEYWORDS

Information System, Personnel Management, Hospital, Laravel, SIM-KARS, Employee Activities, Web-Based System

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A B S T R A C T

Information systems have an important role in improving operational effectiveness and service quality in hospitals. At RSKM Regina Eye Center, several personnel administration processes, such as employee activity recording, leave and overtime management, and doctor scheduling, are still handled separately and manually, resulting in administrative inefficiencies, data redundancy, delays in information processing, and difficulties in generating accurate reports. This research aims to develop a web-based Hospital Personnel and Activity Information System (SIM-KARS) to support integrated personnel and operational activity management. The system was developed using the Laravel framework with PHP, JavaScript, and MySQL technologies. SIM-KARS provides features for managing employee daily activity reports, online leave and overtime submissions with approval workflows, and integrated doctor scheduling. The implementation results show that the system improves administrative efficiency, facilitates faster access to information, increases data accuracy, and supports decision-making processes for hospital management and the human resources department. Therefore, the system is expected to contribute to the digital transformation of personnel and operational management at RSKM Regina Eye Center.

Contribution to Sustainable Development Goals (SDGs):

SDG 9: Industry, Innovation and Infrastructur
SDG 11: Sustainable Cities and Communities
SDG 16: Peace, Justice, and Strong Institutions

1. INTRODUCTION

1.1. Research Background

The rapid development of information technology has driven digital transformation across sectors, including healthcare. Hospitals, as healthcare service institutions, have a high level of organizational complexity because they involve numerous administrative and operational activities that must be managed accurately, efficiently, and in an integrated manner. Information systems play a crucial role in supporting the effectiveness of hospital management, particularly in managing personnel data and internal activities that directly affect service quality and organizational performance [1].

Personnel management in hospitals includes recording employees' daily activities, managing work schedules, and handling administrative processes such as leave and overtime applications. However, in many hospitals, these processes are still carried out manually or semi-manually using physical documents and spreadsheet-based records. This condition often leads to various problems, including data duplication, administrative delays, low transparency, and difficulties in generating reports and monitoring employee activities [2][3].

Along with the increasing demand for fast and efficient healthcare services, the implementation of web-based information systems has become a widely adopted solution. Several previous studies indicate that web-based personnel information systems can improve administrative efficiency, data accuracy, and ease of information access for hospital

management [4][5]. The use of the Laravel framework in information system development has also been proven to enhance system security, maintainability, and application development flexibility [6][7]. Nevertheless, there is still a need for system development that not only focuses on personnel data but also integrates daily activity recording, leave and overtime management, and doctor scheduling within a single integrated platform.

RSKM Regina Eye Center, as a specialized eye hospital, faces similar challenges in managing personnel and operational activities. The processes of recording daily activity logbooks, submitting leave and overtime requests, and managing doctor schedules are still performed manually and separately. This situation can lead to administrative delays, data inaccuracies, and limited access to real-time information. These conditions indicate the need for an integrated information system capable of supporting work efficiency and managerial decision-making.

Although previous studies have explored web-based personnel systems or hospital information systems, most focus on isolated administrative functions such as leave management or performance evaluation. Limited studies address the integration of daily activity logging, overtime, leave management, and doctor scheduling within a single unified platform, particularly in specialized hospitals.

Based on these issues, this study aims to design and develop a web-based Hospital Personnel and Activity Management Information System (SIM-KARS) using the Laravel framework, PHP, JavaScript, and MySQL. The developed system is expected to improve administrative efficiency, data accuracy, transparency in managing employee activities, and support decision-making by the human resources department and hospital management

1.2. Literature Review

The literature review aims to provide a theoretical overview and summarize previous studies relevant to the development of hospital personnel and activity management information systems. Several prior studies serve as the foundation for designing the system developed in this research.

A study examined the development of a personnel leave information system in a regional public hospital using the Waterfall method [3]. The results showed that the developed leave information system accelerated the leave application and approval process and minimised the risk of losing personnel administrative data. This study highlights the importance of using information systems to manage hospital personnel administration.

Furthermore, a study evaluated the implementation of a web-based hospital information system to improve human resource performance [7]. The study demonstrated that the use of web-based information systems can increase employee efficiency, improve administrative workflows, and support faster and more accurate managerial decision-making.

Another relevant study discussed the implementation of the Balanced Scorecard as a tool for measuring hospital performance [1]. The findings indicated that the Balanced Scorecard can be used to assess the effectiveness of information systems in supporting employee performance improvement and achieving hospital organisational objectives.

Based on these previous studies, it can be concluded that information systems play a significant role in enhancing the effectiveness of hospital administrative management and human resource performance. However, prior research has primarily focused on specific aspects, such as personnel leave management or performance evaluation, in a fragmented manner.

These studies demonstrate the effectiveness of web-based hospital systems; however, they tend to address administrative functions separately rather than offering a fully integrated personnel and activity management approach.

Therefore, this study focuses on developing a web-based Hospital Personnel and Activity Management Information System (SIM-KARS) at RSKM Regina Eye Centre that integrates personnel data management, leave and permit management, daily activities, and overtime into a single unified system. The developed system is expected to improve efficiency, accuracy, and transparency in hospital personnel administration

1.3. Objective

The objective of this study is to design and develop a web-based Hospital Personnel and Activity Management Information System (SIM-KARS) for RSKM Regina Eye Centre that integrates personnel data management, daily activity recording, leave and overtime submission, and doctor scheduling into a single, centralised platform. The system aims to improve administrative efficiency, data accuracy, transparency, and ease of information access, as well as to support effective decision-making for the human resources department and hospital management through real-time and reliable personnel activity information.

2. RESEARCH METHODOLOGY

This study employs a software engineering approach to design and develop a web-based Hospital Personnel and Activity Management Information System (SIM-KARS). The research is conducted as a case study at RSKM Regina Eye Centre, focusing on personnel data management and hospital operational activities.

Figure 1 presents the research methodology used in this study, which follows a sequential process. The methodology starts with requirements definition, followed by system and software design. The next stages include implementation and unit testing, integration and system testing, and concludes with system operation and maintenance. This structured approach ensures systematic development and reliable system performance.

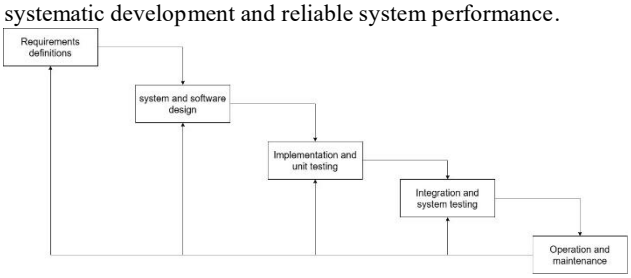

Figure 1. Research Methodology

2.1. Data Collection Technique

Data collection was conducted to obtain system requirements that reflect actual conditions in the field. The methods used in this study include:

1. Observation which involved direct monitoring of personnel management processes, daily activity logging, leave and overtime submission, as well as doctor scheduling at RSKM Regina Eye Center.pengaturan jadwal dokter di RSKM Regina Eye Center.

2. Interviews conducted with relevant stakeholders such as the Human Resources Department (HRD), the head of administration, and IT staff to identify system requirements, workflow processes, and existing constraints
3. Literature Review which involved collecting references from scientific journals, books, and other relevant sources related to personnel management information systems, hospital information systems, and system development methodologies.
4. Documentation which included the collection of personnel administrative data and records used as references in the system design process

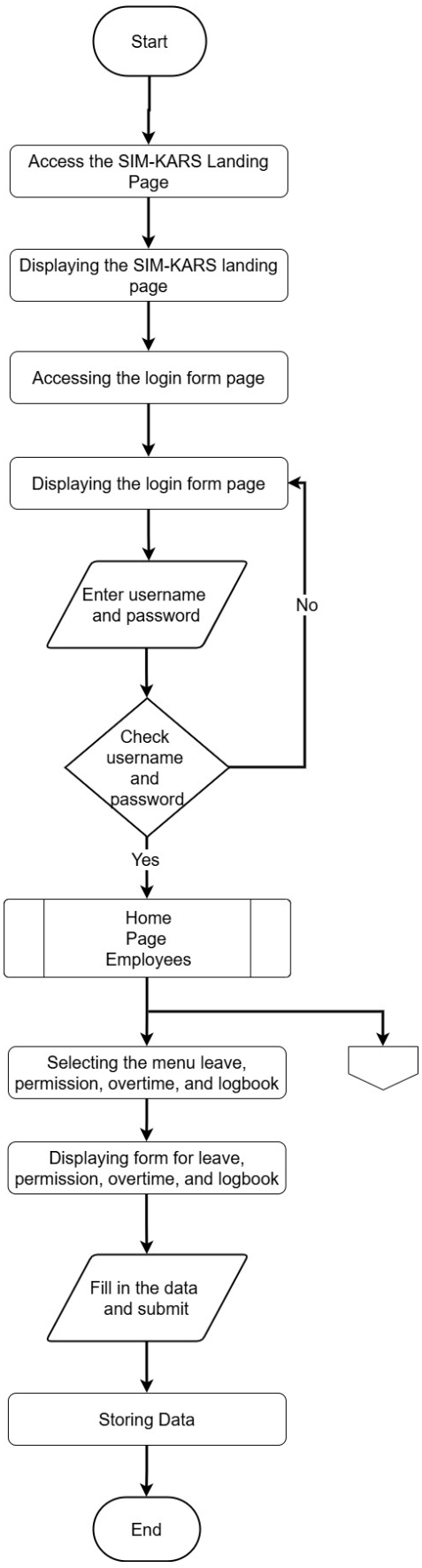

Figure 2. Flowchart

2.2. System Development Method

The system development method used in this study is the Waterfall model, which is one of the System Development Life

Cycle (SDLC) models that applies a sequential and systematic development approach. This method was selected because it is suitable for systems with relatively clear and well-structured requirements. The stages of system development include:

1. Analysis, which involves identifying the functional and non-functional requirements of the system based on the data collection results.
2. *System Design, which includes database design, user interface design, and system process flow modeling using UML diagrams*
3. Implementation, which involves system development using the Laravel framework, PHP programming language, JavaScript, and MySQL database
4. Testing, which is conducted using the black-box testing method to ensure that all system functionalities operate according to user requirements
5. Maintenance, which includes error correction and system adjustments based on the evaluation results during system usage.

3. RESULT AND DISCUSSION

3.1. System Requirements Analysis

Based on observations, interviews, and documentation studies conducted at RSKM Regina Eye Centre, it was identified that personnel management and employee activity recording were still carried out manually and separately. Daily activity logbooks, leave and overtime submissions, and doctor scheduling were managed using paper-based documents or non-integrated spreadsheet files. This condition led to administrative delays, difficulties in data retrieval, low transparency in approval processes, and a high risk of data inconsistency and loss.

The requirements analysis indicated that the required system must centralise personnel data, support the digital recording of daily activities, facilitate online submission and approval of leave and overtime, manage doctor schedules, and generate real-time reports. In addition, the system must implement role-based access control to ensure data security and proper authorisation based on user roles.

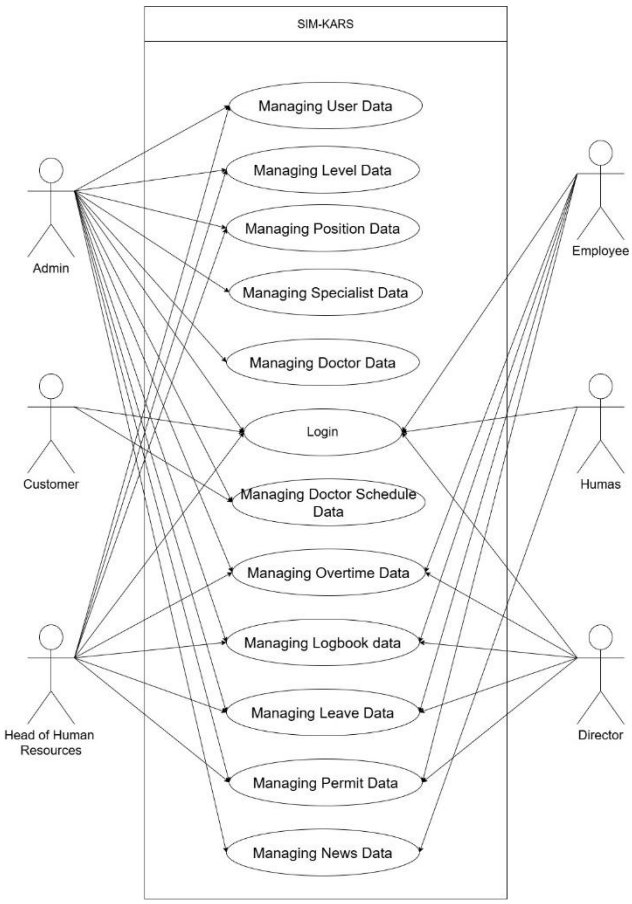

Figure 3. Use case diagram representing the functional requirements of the SIM-KARS system

3.2. System Design and Implementation

To address the identified requirements, a web-based Hospital Personnel and Activity Management Information System (SIM-KARS) was designed and developed. The system was implemented using the Laravel framework with PHP as the backend programming language, JavaScript for client-side interaction, and MySQL as the database management system. Laravel was selected for its support for the MVC architecture, built-in security features, and ease of system maintenance.

SIM-KARS integrates several core modules, including personnel data management, daily activity logging, digital submission and approval of leave and overtime, doctor scheduling management, and automated report generation. All data is stored in a centralized database, minimizing data duplication and ensuring consistency across system functions. User authentication and role-based access control were implemented to ensure that system access and functionality align with user responsibilities.

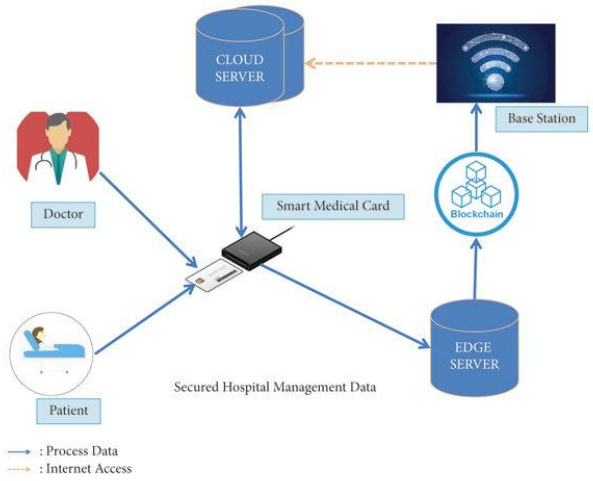

Figure 4. Architecture of SIM-KARS for personnel and doctor scheduling management

3.3. *System Testing*

System testing was conducted using the black-box testing method to verify that each system function operated as specified. The testing process covered personnel data input and management, daily activity logging, leave and overtime submission and approval processes, doctor scheduling, and report generation.

The testing results indicate that all core system functionalities operated correctly and met user requirements. No critical functional errors were identified during testing, demonstrating that the system is technically feasible and reliable for operational use.

3.4. *System Output and Reporting*

The results of the implementation and testing of SIM-KARS indicate that the system is able to improve the efficiency of personnel administration processes at RSKM Regina Eye Center. The digitalization of activity logging as well as leave and overtime processes accelerates workflow, enhances transparency, and facilitates the monitoring of employee activities by the HR department and hospital management.

SIM-KARS provides various recapitulation reports that support managerial evaluation and decision-making. The system generates structured reports on daily activities, leave and permission records, overtime activities, personnel data, and doctor schedules. Reports can be filtered by specific time periods and user categories, enabling flexible data analysis without manual data compilation.

The availability of real-time, automatically generated reports enhances the ability of the human resources department and hospital management to efficiently monitor personnel performance, workload distribution, and administrative compliance.

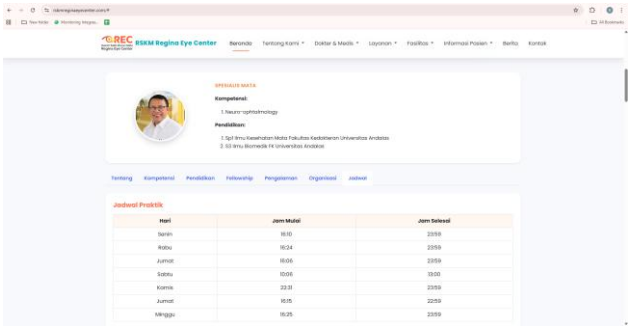

Figure 5. System architecture of SIM-KARS supporting personnel management and doctor scheduling display

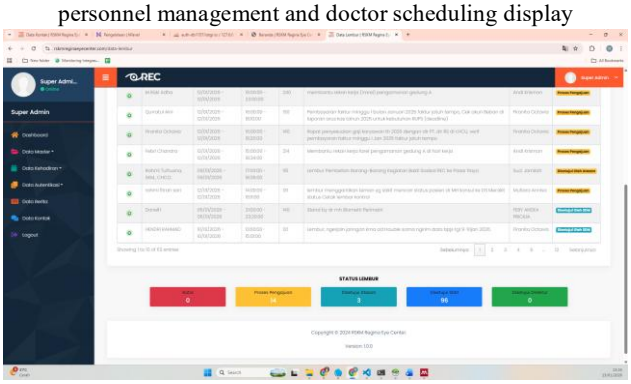

Figure 6. SIM-KARS reporting architecture for personnel attendance data

3.5. *User Evaluation and Satisfaction Analysis*

In addition to functional testing, system evaluation was conducted by measuring user satisfaction through a questionnaire distributed via Google Forms. The evaluation focused on system usability, usefulness, and effectiveness in supporting daily administrative tasks. The respondents were employees who actively used SIM-KARS in their daily work.

The evaluation results show a user satisfaction rate of 90%, indicating strong user acceptance. Most users perceived the system as easy to use, helpful in recording personnel activities, and effective in improving work efficiency. This finding suggests that the system design aligns well with user needs and operational workflows.

4. CONCLUSION

Based on the results of the design, implementation, and testing of the web-based Hospital Personnel and Activity Management Information System (SIM-KARS) at RSKM Regina Eye Centre, it can be concluded that the developed system integrates personnel administration processes previously carried out manually into a single centralised system. SIM-KARS provides structured, well-documented features for recording daily activities, managing leave, permits, and overtime, and scheduling doctors. The digitalisation of these processes reduces issues such as data duplication, document loss, and administrative delays. Implementing a system-based submission and approval workflow enhances transparency and efficiency for employees, supervisors, and the human resources department. In addition, the system can generate personnel reports automatically, quickly, and accurately, thereby supporting data-driven decision-making. Overall, the implementation of SIM-KARS contributes to improving efficiency, effectiveness, transparency, and accountability in personnel management at RSKM Regina Eye Centre and serves

as an initial step toward the digitalisation of hospital administrative processes.

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