Journal of Artificial Intelligence and Engineering Applications

Website: https://ioinformatic.org/

June 2026. Vol. 5. No. 3; e-ISSN: 2808-4519

Web-Based Operational Management Information System for Prospective Indonesian Migrant Employees Using Agile Method (Case Study: PT. Bahana Mega Prestasi Bekasi)

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Abstract

PT. Bahana Mega Prestasi, an Indonesian Migrant Worker Placement Company (IMWPC), faces challenges in managing operational data for Prospective Indonesian Migrant Workers (PIMW). This is due to the lack of integration of registration, attendance, and eligibility assessment processes within a single information system. This situation increases the administrative burden and the potential for data inconsistencies. This research aims to design and implement a web-based PIMW Operational Management Information System capable of centrally integrating all administrative processes. The system was developed using Agile methods with an iterative approach to ensure the system meets user needs. The system was built using the PHP programming language with the Laravel framework and a MySQL database. Implementation results indicate that the developed system is able to support the PIMW registration process, attendance monitoring, and candidate eligibility evaluation in a more structured and real-time manner. The implementation of this system contributes to improving the orderliness of data management, supporting managerial decision-making, and increasing operational efficiency at PT. Bahana Mega Prestasi.

Keywords: *Management Information System, Operational, PIMW, Agile, Website*

1. Introduction

In the era of the Industrial Revolution 4.0, the integration of information technology into business processes has become a necessity for organizations seeking to maintain a competitive advantage [1]. The employment sector, particularly in the realm of international workforce placement, faces high demands for transparency, data accuracy, and speed of service [2]. The Indonesian Migrant Worker Placement Company (P3MI) plays a strategic role as a bridge between domestic labor supply and global market demand. The operational complexity of P3MI management, from recruitment and competency training to departure administration, demands a data management infrastructure [3]. Digital transformation in human resource management is key to handling the enormous volume of workforce data. In the context of P3MI, data management is not only limited to candidate biodata, but also includes monitoring through registration, attendance recording, and eligibility (attendance) [4]. PT. Bahana Mega Prestasi is an Indonesian Migrant Worker Placement Company (P3MI) which, since its founding in 2007, has built a reputation as a pioneer in workforce empowerment in countries such as Taiwan and Dominica. However, as activity volume increases, companies face operational challenges due to an unintegrated information governance system. The use of conventional recording media for PIMW registration slows down the data verification process, thus hampering placement mobility. Furthermore, an unautomated attendance system results in inaccurate discipline monitoring, leading to a decline in the quality of candidate supervision. The lack of a unified database for the eligibility process leads to inconsistent evaluation standards, which risks reducing the quality of the workforce sent. All of these irregular data collection issues ultimately lead to an accumulation of administrative burdens that directly reduce operational efficiency and the company's competitiveness in the international market. To address these operational challenges, digital transformation is required through the development of a website-based information system capable of integrating all administrative processes into a single, unified platform. Implementation of this web-based system facilitates system maintenance and updates, as changes can be made to the web server without requiring reinstallation on each client computer [5]. Furthermore, web-based system implementation also offers advantages in terms of accessibility and real-time data centralization, which has proven effective in minimizing data errors and accelerating the administrative decision-making process. In the development process, the Agile method was chosen as a strategic approach because it generally provides higher effectiveness in the context of modern software projects that are dynamic and demand speed and user involvement [6].

2. Research Methods

The Agile method is a group of software development methodologies that share the same basic principles [7]. In the context of this research, the Agile approach is used as a framework for developing a website-based operational management information system that integrates the processes of needs analysis, design, development, testing, and evaluation of the system iteratively. Each stage is designed to ensure that the development of an information system for managing data related to PIMW registration data, absences, and departures of PIMW candidates at PT. Bahana Mega Prestasi can be carried out in a structured and efficient manner. The following are some of the steps involved in creating or developing a project. In order for the work program for implementing information technology management to run smoothly and in accordance with stakeholder expectations, a cycle is created that can be used in all industries. The Project Management Life Cycle that is created is:

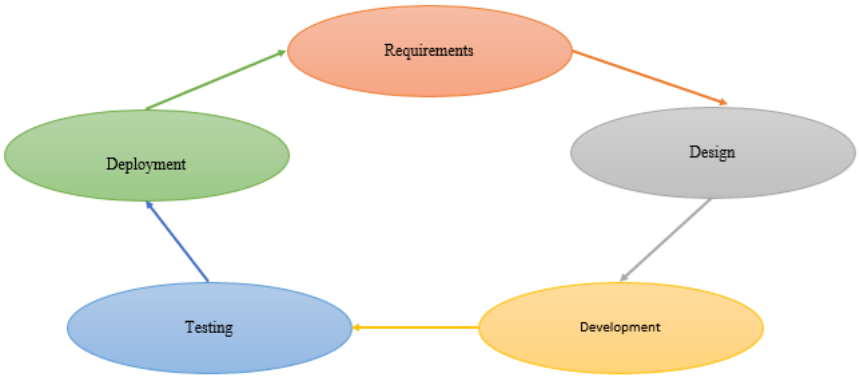

Fig. 1: Project Management Life Cycle

1. Requirements
   In this process, we analyze the problems of the operational management information system currently running at PT. Bahana Mega Prestasi and determine the system requirements to be built.
2. Design
   The management system analysis needs of PT. Bahana Mega Prestasi have been determined, then a visual design based on structured modeling is created using the Usecase Diagram, Activity Diagram, and Entity Relationship Diagram (ERD) tools.
3. Development
   After the system modeling was conducted, the next step was for the author to implement the management information system design for PT. Bahana Mega Prestasi using the PHP programming language and MySQL as the database.
4. Testing
   The next step is to conduct system testing. In this case, the author used a black-box testing method, which aims to verify the designed system interface.
5. Deployment
   The results of the design and system plan that have been created, implemented, resulting in an operational management information system that can be used by PT. Bahana Mega Prestasi.

3. Results and Discussion

The results of this research include the development of a website-based operational management information system as a solution to the problems of recording PIMW registration data, attendance, and real-time candidate eligibility assessments. Implementation of this system is expected to improve data accuracy, accelerate administrative processes, and support the effectiveness of PIMW data management at PT. Bahana Mega Prestasi.

3.1 Needs Analysis

Based on the use case diagram design, the functional requirements analysis of the system identified three main actors: Admin, Operational Staff, and Leaders who interact within the Prospective Indonesian Migrant Worker (PIMW) data management ecosystem. This system is specified to handle core business processes including user authentication (login) for data security, user master data management, and digitization of candidate registration and filing processes. Specifically, the system's requirements require features that enable Operational Staff to input biodata, upload complete administrative documents, and manage PIMW attendance data and activity schedules in a structured manner, replaces error-prone manual recording mechanisms. In addition to operational functions, the system must also meet managerial needs through monitoring and reporting features accessible to management actors. These requirements include the system's ability to aggregate daily data into automatic reports summarizing departure status and evaluating candidate eligibility. Therefore, the interaction flow depicted in the diagram ensures that the system is able to integrate all stages of the operational process, from recruitment to placement, into a single, centralized database, thereby ensuring information validity and accelerating the company's strategic decision-making.

3.2 Usecase Diagram Modeling

Usecase Diagram is a diagram that functions to describe an interaction scenario between users (actors) and the system, where this diagram helps developers to understand the scope of the system and what features must be available to users. The use of this diagram aims to ensure that every business need has been accommodated in the system design before moving on to a more in-depth technical design stage [8]. The following shows the usecase diagram modeling on the system being designed, this usecase diagram describes the interaction between users and the operational management information system, which involves Admin, Teacher, and PIMW actors. This diagram shows the main functions of the system, such as managing PIMW registration data, attendance, and candidate eligibility assessment according to the access rights of each user.

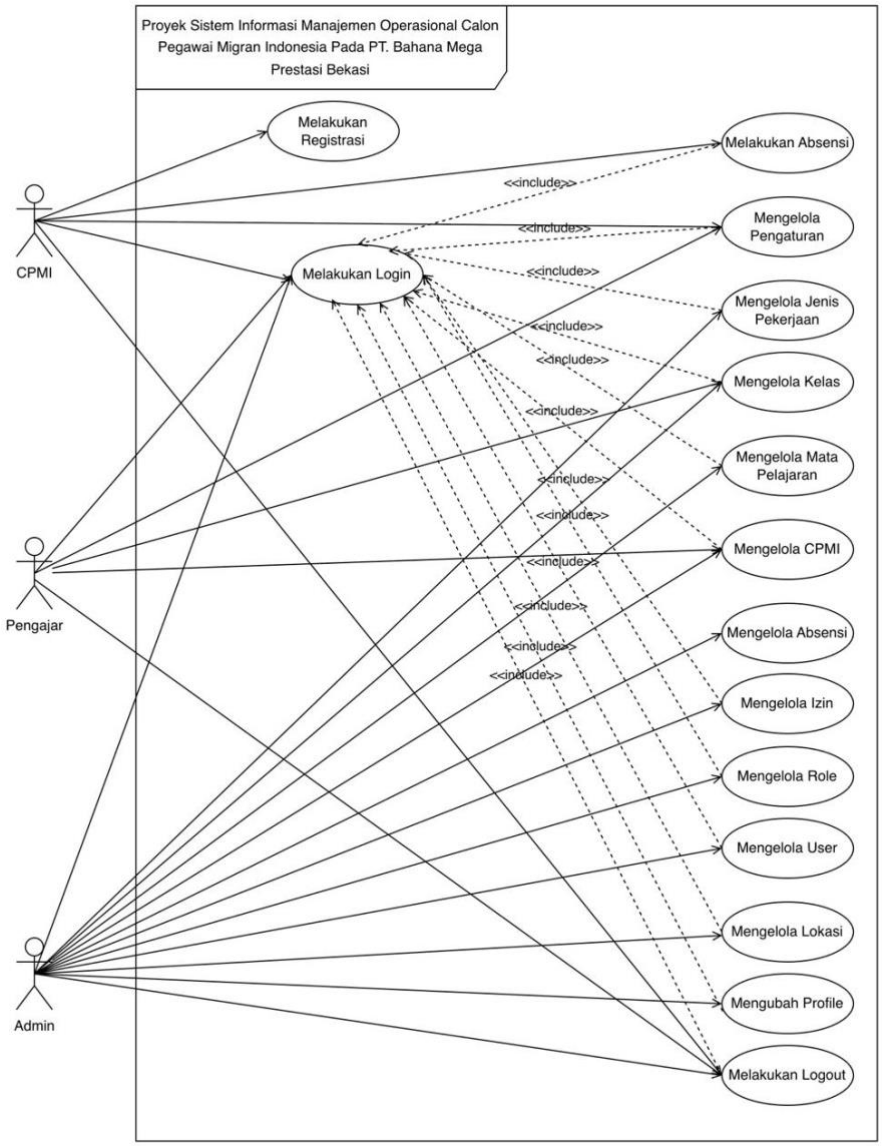

Fig. 2: Usecase Diagram

3.3 Activity Diagram Modeling

Activity diagrams are diagrams used to document the narrative logic of business processes, procedural steps, and control flow within a system. These diagrams were chosen because they are able to visualize how the system responds to user actions sequentially, from process initialization to task completion, which cannot be depicted in detail using Use Case Diagrams alone [9]. Activity diagrams are used as a visual representation to map the workflow and series of activities occurring within the Indonesian Migrant Worker Candidate Operational Management Information System (PIMW), both user-initiated and automatically processed by the system.

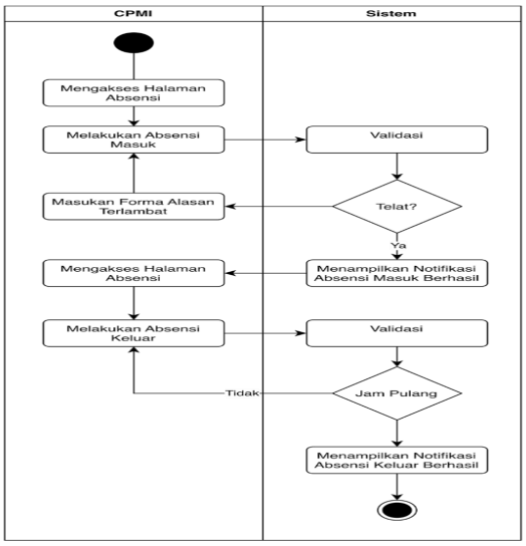

Fig. 3: Attendance Activity Diagram

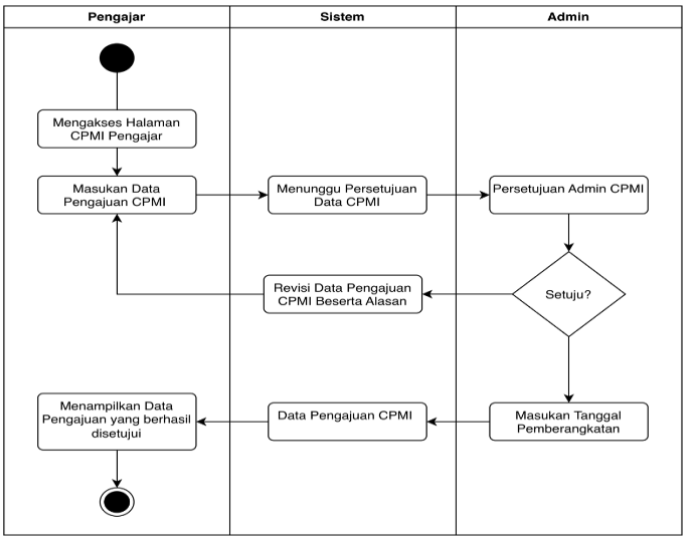

Fig. 4: Activity Diagram for Departure Eligibility Submission

3.4 Sequence Diagram Modeling

Sequence diagrams are crucial tools in software development that document the logic of a complex use case, making the process flow easier to understand visually. Through these diagrams, developers can conduct in-depth design analysis to see how the relationships between supporting objects, such as the interaction between the user interface and the database [10]. This sequence diagram illustrates the digital flow at PT. Bahana Mega Prestasi, which begins with the registration of prospective workers through the system, followed by an internal selection process and the signing of a placement agreement. During this process, the company acts as the primary liaison between PIMW and the SISKOP2MI system to manage the necessary data. All of these interactions are designed to ensure that every stage of the worker's departure to the destination country (such as Taiwan or Dominica) is recorded legally, transparently, and protected by government regulations.

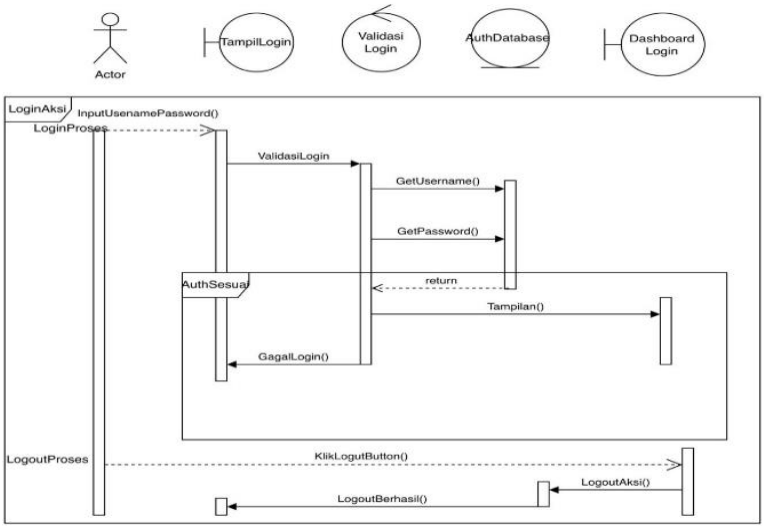

Fig. 5: Login Sequence Diagram

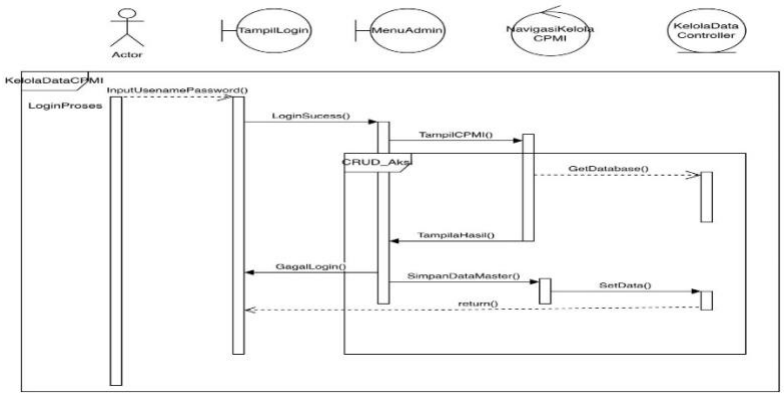

Fig. 6: PIMW Sequence Diagram

3.5 Entity Relationship Diagram (ERD)

Entity Relationship Diagram (ERD) is a form of database modeling used to visualize data structures and relationships between data using graphical notations. This diagram serves to identify the main entities involved in the system along with their attributes, and illustrates how these entities relate to each other before being implemented into a physical table structure [11]. This Entity Relationship Diagram (ERD) describes the database structure in the Operational Management Information System for Prospective Indonesian Migrant Employees (PIMW) at PT. Bahana Mega Prestasi. The system consists of several main entities, namely Users, PIMW Data, Attendance Data, and Activity Schedules. The User entity plays a role in the process of inputting PIMW Data, Attendance Data, and PIMW Activity Schedules in a structured and accurate manner.

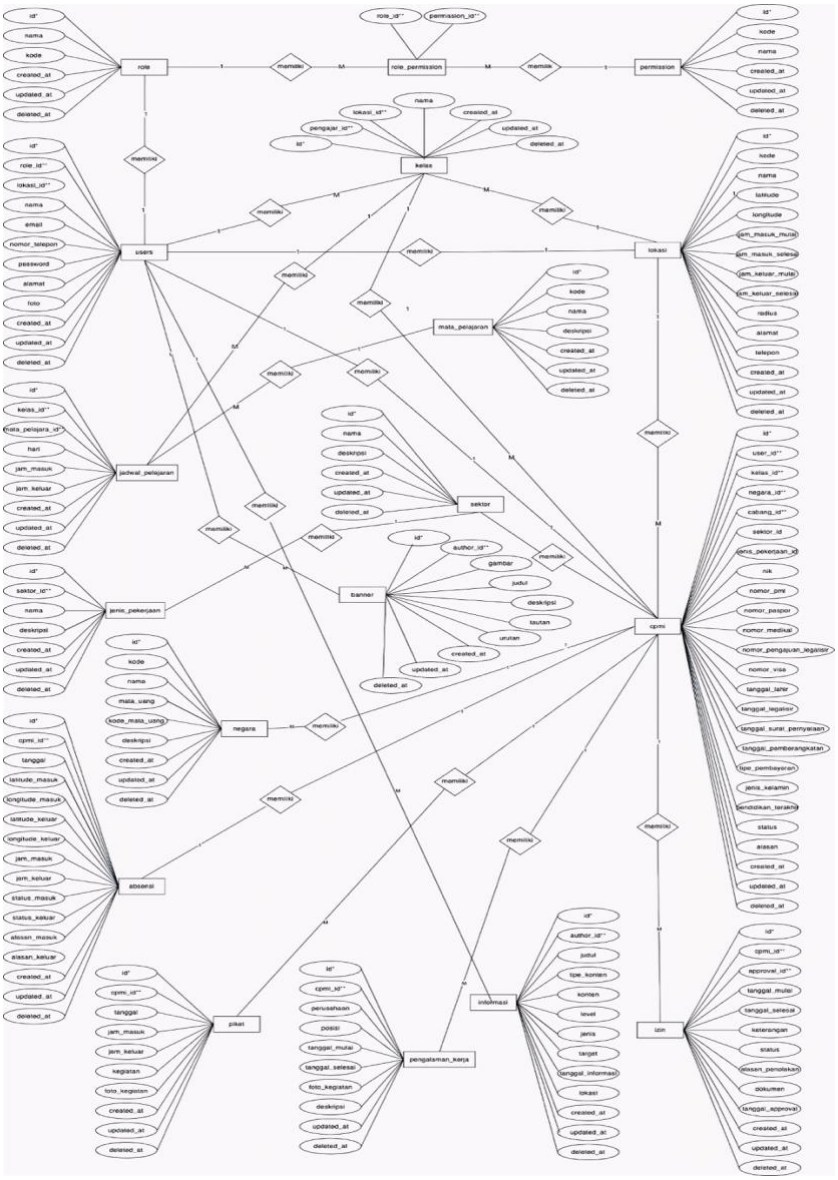

Fig. 7: Entity Relationship Diagram (ERD)

3.6 System Implementation Results

The Indonesian Migrant Worker Candidate Operational Management Information System (PIMW) is designed to provide ease of use for all users. The interface is designed with ease of access, consistent display, and feature customization based on user access rights. The system has three main user types: Admin, Teacher, and PIMW, each with a different appearance and functionality according to their role and operational needs. The following is a visual representation of the PIMW operational management system interface:

1. Login and Register Page Display
   This is the initial page used by all users to log into the system. On this page, users enter their account credentials, including their registered email address and password.

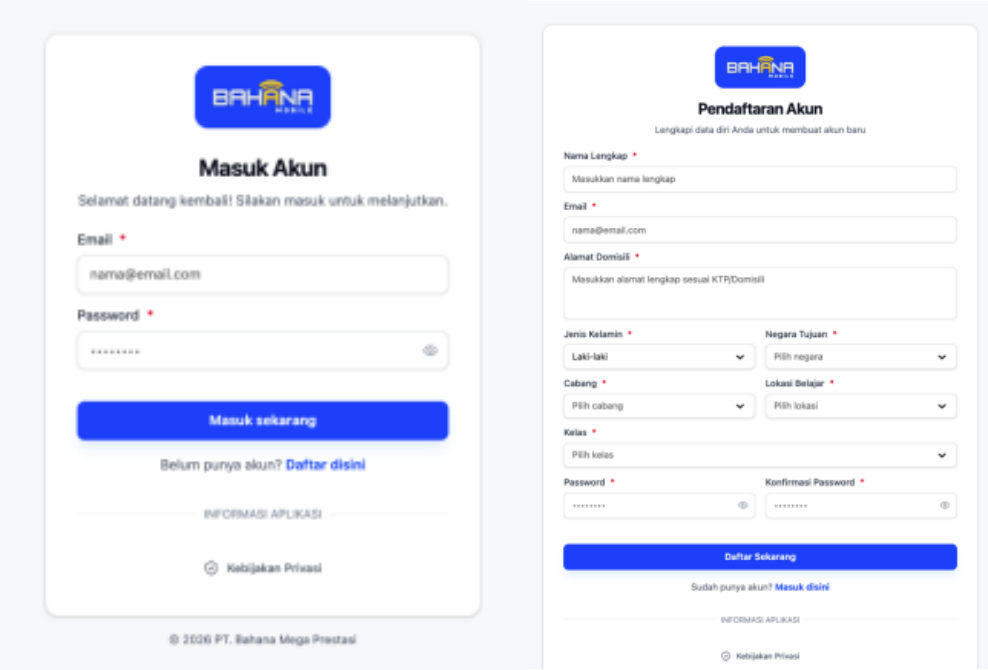

Fig. 8: Login and Register Page

2. Dashboard Page View
   Displays Total PIMW, Active Users, Permits, PIMW Status, Daily Performance, and the Types of Jobs PIMW are interested in.

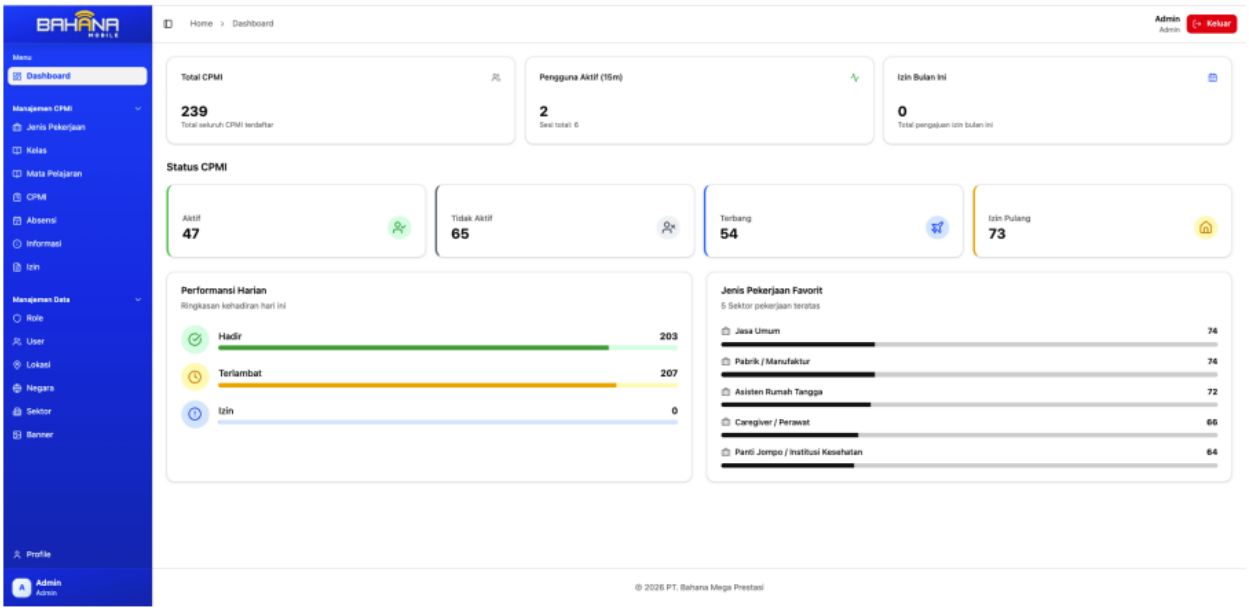

Fig. 9: Dashboard Page View

3. Job Type Admin Page Display
   Job Type data management module. Admins can add, edit, and delete data.

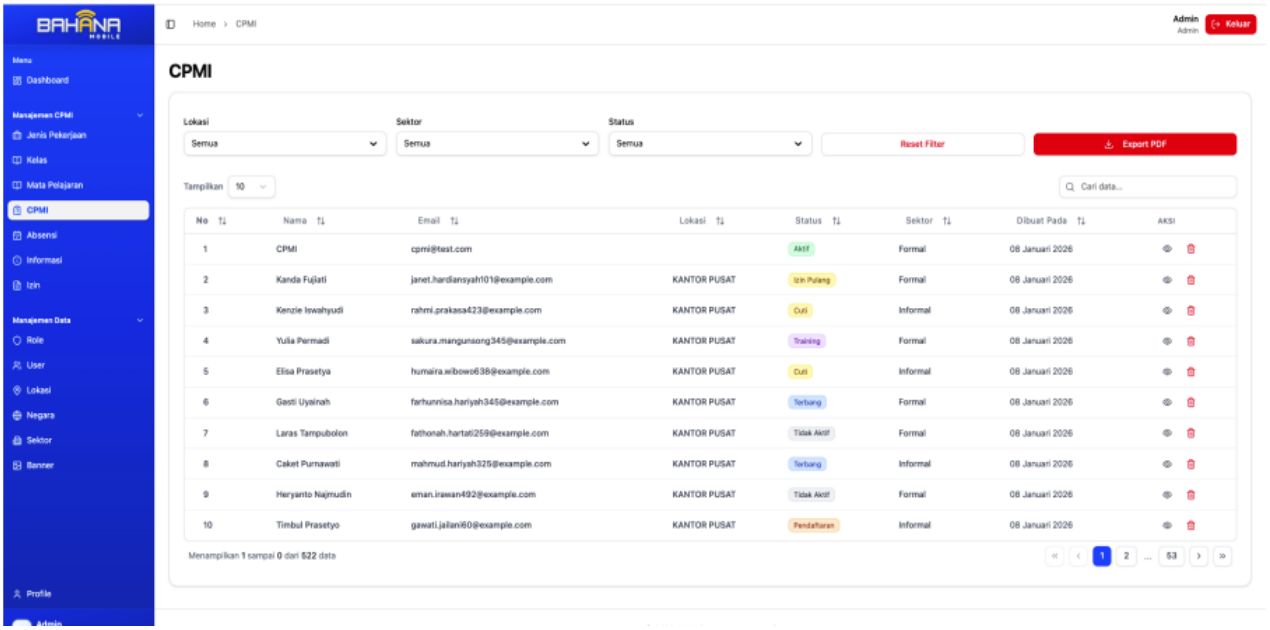

Fig. 10: Admin Page

4. Attendance Admin Page View
PIMW attendance data management module. Displays a summary of attendance, tardiness, and permission, and allows report export.

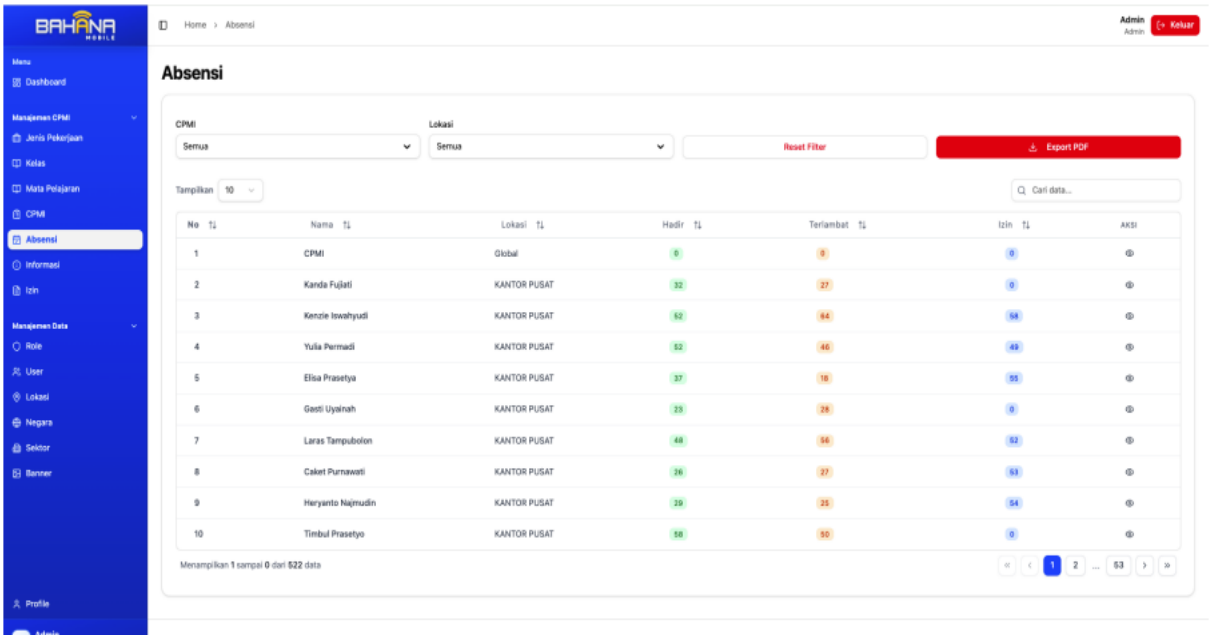

Fig. 11: Attendance Page View

5. Dashboard and Attendance Page Display
   Displays general information and the PIMW location, as well as attendance navigation used to record attendance within a specified location radius.

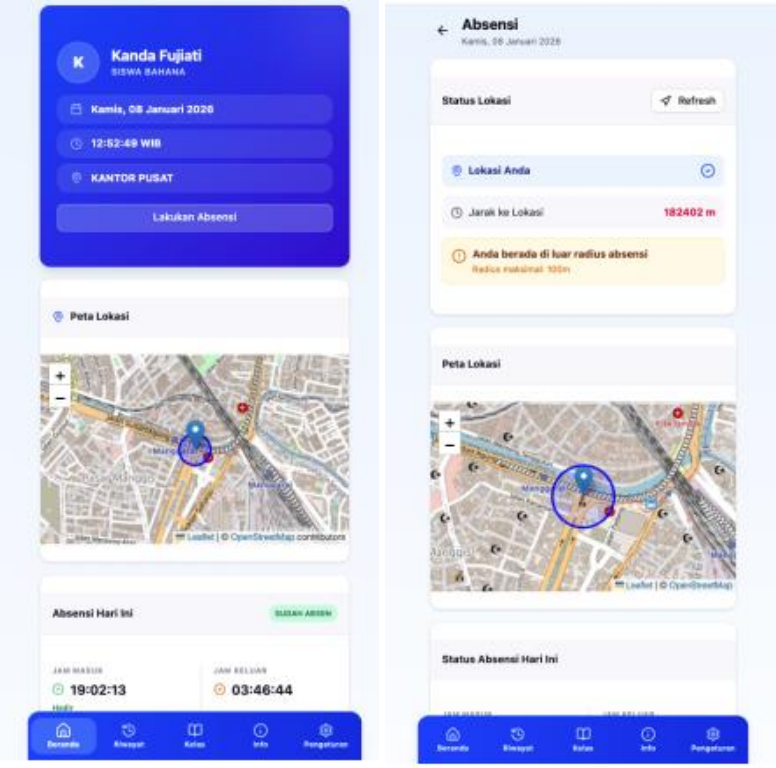

Fig. 12: Dashboard and Attendance Page Display

6. PIMW Attendance History Display
   Displays the absence history of the PIMW during the activity period.

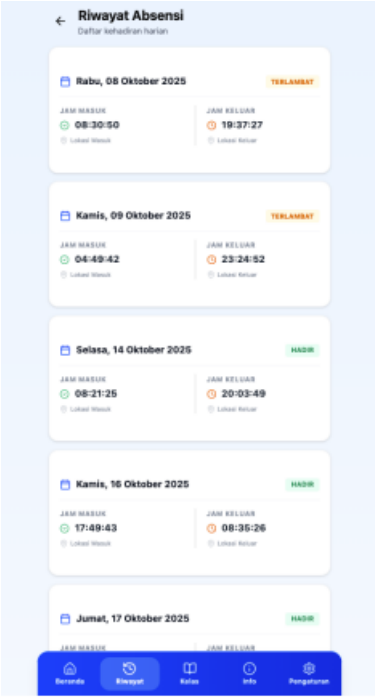

Fig. 13: PIMW Attendance History Display

4. Conclusion

This research successfully designed and implemented a web-based Operational Management Information System for Prospective Indonesian Migrant Employees (PIMW) at PT. Bahana Mega Prestasi using the Laravel framework and MySQL database. The system was developed using Agile methods to iteratively accommodate user needs and support the digital transformation process in the company's operational management. The developed system is able to integrate the PIMW registration process, digital document management, activity scheduling, and attendance monitoring into a single, centralized platform. The results of functional testing through unit testing indicate that all key system modules operate according to established requirements. The implementation of this system contributes to improving data management order, reducing the potential for recording errors, and supporting the availability of more accurate and easily accessible information. Furthermore, the availability of centralized and structured data assists management in operational monitoring and more effective decision-making. Therefore the developed information system can be a supporting solution for improving operational efficiency and the quality of PIMW data management at PT. Bahana Mega Prestasi.

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