Management Information System for Human Resources at the Operational Bureau of the DIY Regional Police using Agile Development Method

Bayu Saputro[1]
Program Studi Informatika,
Universitas PGRI Yogyakarta,
Yogyakarta, Indonesia
email:
19111100013.bayu.saputro@gmail.com

Aditya Wahana
Program Studi Informatika,
Universitas PGRI Yogyakarta,
Yogyakarta, Indonesia
email: aditya@upy.ac.id

Rianto
Program Studi Informatika,
Universitas PGRI Yogyakarta,
Yogyakarta, Indonesia
email: rianto@upy.ac.id

This research develops Agile Development, particularly Extreme Programming (XP), to create a web-based Human Resource Management Information System for the DIY Regional Police's Operational Bureau. Addressing challenges in personnel data management, the objective is to enhance efficiency and effectiveness. The study involves system needs analysis, design, implementation, and testing. Initial development includes interfaces for employees, administrators, and leaders, featuring personnel data management, leave requests, and announcements. Testing involves White Box, Black Box, and alpha testing by 25 Operational Bureau respondents. Alpha test results reveal high satisfaction with efficiency, data accuracy, and administrative process acceleration. The system effectively reduces human errors in personnel data management. The research concludes that the web-based system is a successful, computerized, organized solution for personnel data management in the Operational Bureau of DIY Regional Police.

***KeyWords**: JPersonnel Information System, DIY Regional Police Operational Bureau, Agile Development Method, Extreme Programming, Efficiency*

1 Introduction

The rapid development of technology has had a positive impact on easing various work aspects. The use of computers and information systems is crucial in enhancing the efficiency and effectiveness of an institution [1]. Human Resource Management (HRM), especially the Human Resource Department (HRD), plays a central role as a vital asset in achieving institutional goals. Focusing on good human resource management is crucial to support the overall activities of the institution. The Operational Bureau of the DIY Regional Police, as a supervisory and assisting element at the regional police level, has a strategic role in managing police operations. Challenges such as slow data collection and employee data duplication can be addressed through technology implementation. Therefore, this research aims to develop a web-based Human Resource Management Information System using the Agile Development Method to improve the efficiency and effectiveness of personnel data management at the Operational Bureau of the Special Region of Yogyakarta (DIY) Regional Police.

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[1]Corresponding Author.

2 Theoretical Framework

2.1 Operational Bureau of the DIY Regional Police. The Operational Bureau of the DIY Regional Police serves as a supervisory and assisting element at the regional police level. Its focus includes strategic assessment, planning, organizing, implementing, and controlling police operational management [2]. Its main tasks include preparing and formulating operational plans, appointing and placing personnel in guarding and securing, as well as fostering integrated police operational management and cross-sectoral coordination. The transformation of the Operational Bureau's tasks, especially in preparing operational plans and personnel placement, supports the Chief of Police's program.

2.2 Management Information System.

2.2.1 Definition of Management. According to Farida [3], management is the art and science of planning, organizing, arranging, directing, and supervising human resources to achieve predetermined goals.

2.2.2 Management Information System (MIS). According [4], MIS is a computer-based system that makes information available to users with similar needs. It aids in planning, organizing, and supervising human resources to achieve goals.

2.3 MySQL. MySQL is relational database management software used for managing table-shaped data [5]. Its advantages include concurrent user capabilities, open-source database management, and various data types.

2.4 HTML (Hypertext Markup Language). HTML is the basic language for creating a website [6]. It is used to mark text sections and create links within web documents.

2.5 PHP (Hypertext Preprocessor). PHP is external application software used by web servers [7]. It receives input from the database or other data sources to create HTML documents, supporting dynamic web development.

2.6 CSS (Cascading Style Sheets). As per [6], CSS is a script used to design websites, providing comprehensive settings for a tidy and attractive website structure.

2.7 Web Browser. Web browsers are used to display website results [8], examples include Mozilla Firefox, Google Chrome, and Safari.

2.8 Bootstrap. Bootstrap is a popular CSS framework for website design [9], facilitating design processes with responsive features for orderly displays on various devices.

2.9 Database. A database is a collection of interrelated data files [10], used in various sectors such as banking, insurance, hospitals, manufacturers, manufacturing industries, education/schools, and telecommunications.

2.10 Agile Software Development. According to [8], Agile is a fast, lightweight, and adaptive software development approach. It involves client satisfaction, accepting changing needs, periodic result delivery, close collaboration between business and developers, and a focus on responsive development to change.

2.11 Extreme Programming Model (XP). XP is a software development model emphasizing simplicity, adaptability, and user involvement [10]. Some XP principles involve client satisfaction, accepting changing needs, delivering results quickly, intensive communication, and continuous improvement.

3 Research Methodology

3.1 Literature Review. The study [11] titled "Design and Build WAN Technology Learning Module Application Based on Android" aimed to develop an Android-based learning module application for the WAN Technology subject in class XI TKJ. The development method used a prototyping model approach with Java programming language through Android Studio IDE. The final result was an application providing learning materials, practice questions, and menus such as syllabus, lesson plans, modules, tutorial videos, exercises, search, and application information.

The research [12] described the Employee Information System at SMA Negeri 01 Seputih Banyak using the SDLC method. The employee proposal submission process was still done directly, and this research aimed to design an employee information system to assist employees in applying for promotions, periodic salary increases, and pensions.

The study by Santoso and Nurjaya [13] titled "Design of Web-Based Employee Information System at PT. Business Solution Pranata" also created an information system for each employee, including salary info, warning info, loan info, leave info, and employee data info, making it easier for employees to obtain personnel information.

Research [14] titled "Web-Based Employee Information System at CV. Next Chapter" aimed to improve the efficiency of personnel activities at CV. Next Chapter by managing employee data, attendance, and payroll. The research method used a descriptive approach with direct interview case study at CV. Next Chapter. The results showed that computerized employee information systems simplified work activities, saved time, and made them more efficient. The conclusion emphasized that the implementation of employee information systems could simplify data collection and better organize activities related to employees, attendance, and payroll at CV. Next Chapter.

The research [15] discussed the design of an Employee Information System at the Office of Administration and Development of the Regional Secretariat of Karimun Regency based on a website. The development method used the Waterfall development method. The expected result of this research was to produce an employee information system that not only provided solutions to existing problems but also facilitated overall personnel tasks, increased productivity, and contributed positively to personnel performance in the field of administration and development.

3.2 Research Tools. The research tools include a laptop with specific specifications, Microsoft Word for report compilation, Visual Studio Code, MySQL, Balsamiq Mockups 3, Enterprise Architect, and XAMPP as a supporting system.

3.3 Data Collection. Data collection involves direct interviews and face-to-face meetings with relevant respondents, as well as a literature review to support the theoretical aspects of data collection.
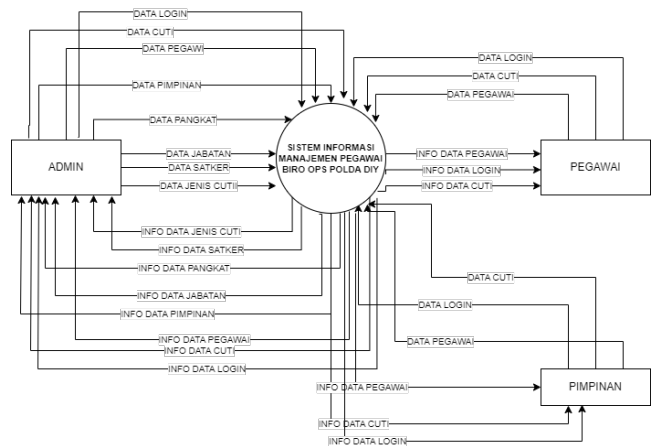

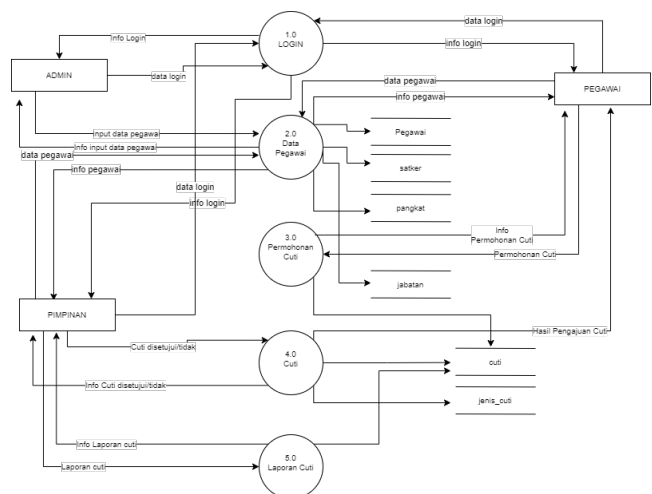**Fig. 1   Context Diagram**

3.4   Context Diagram.

Fig. 2   Data Flow Diagram Level 0
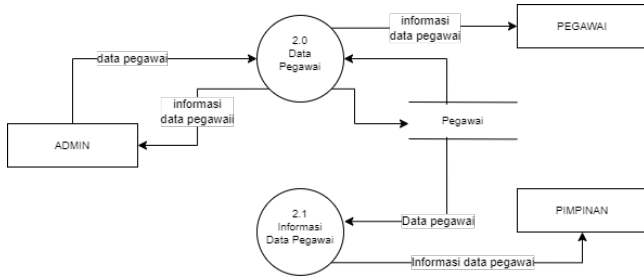
3.5   Data Flow Diagram Level 0 .

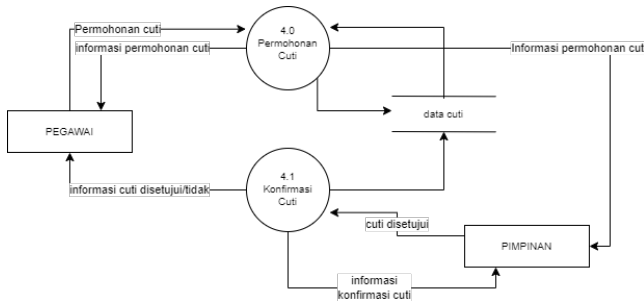Fig. 3   Data Flow Diagram Level 1

3.6   Data Flow Diagram Level 1 .

Fig. 6   Main Page

Fig. 4   Data Flow Diagram Level 2

3.7   Data Flow Diagram Level 2 .

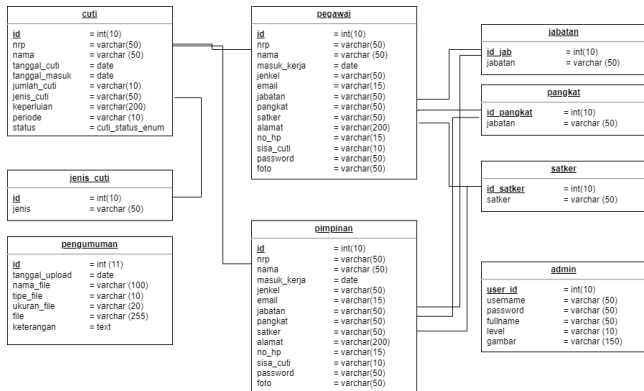Fig. 7   Login Page

Fig. 5   Database Design

Fig. 8   Admin Page

3.8   Database Design.

4   Implementation

Programming languages PHP, HTML, CSS, Java Script and others. The following is the appearance of home page on the web Management Information System for Human Resources at the Operational Bureau of the DIY Regional Police using Agile Development Method.
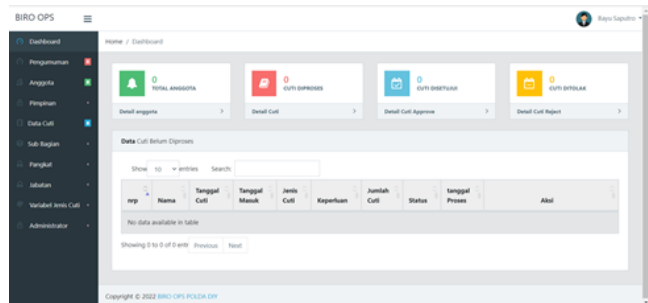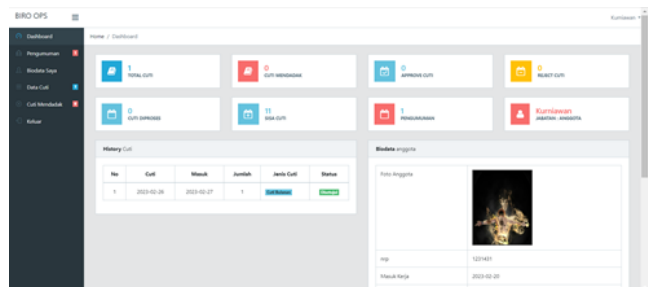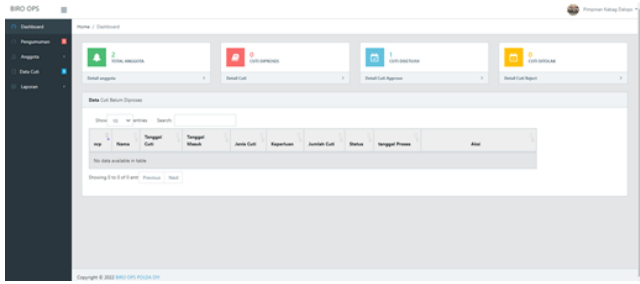

Fig. 9   Employee Page
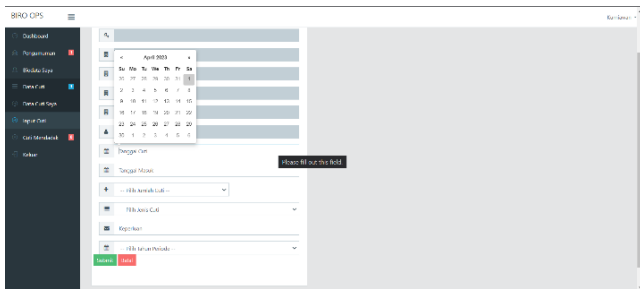
Fig. 10   Leadership Page

Fig. 11   Leave Request

5   Conclusions

Based on the results of the initial product development and comprehensive system testing, it can be concluded that the web-based Human Resource Management Information System at the Operational Bureau of the DIY Regional Police has been successfully implemented. This system involves various interfaces tailored to the needs of users, such as employees, administrators, and leaders. These pages include relevant features such as dashboards, announcements, biodata, leave data, and leave requests. Thus, the author concludes that this Human Resource Management Information System is a solution that meets the needs and is effective in managing employee data at the Operational Bureau of the DIY Regional Police in a computerized, organized, and efficient manner. This conclusion aligns with the expectations expressed in the "Introduction" chapter and demonstrates the congruence between the initial objectives and the final outcomes. As a suggestion for further development, periodic evaluations and improvements based on user feedback can be conducted, and exploration of the prospects for implementing a similar system in other units within the organizational environment.

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