DEVELOPMENT OF THE LEGAL DOCUMENTATION AND INFORMATION NETWORK (JDIH) INFORMATION SYSTEM AT THE DEPARTMENT OF COMMUNICATION AND INFORMATICS (DISKOMINFO) OF BATU CITY

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ABSTRAK

The Batu City Government has various regional legal products such as regional regulations, mayoral decrees, and other policies that need to be documented and disseminated transparently to the public. However, the process of disseminating and accessing this legal information still faces obstacles, such as limited publication media, lack of data integration, and low ease of access for the general public. Most legal documents are still stored in physical form or scattered across various work units, making the process of searching and updating data difficult. This condition hinders the realization of the principles of good governance that emphasize transparency, accountability, and openness of public information. To address these problems, the Legal Documentation and Information Network (JDIH) website was developed based on the Laravel framework and MySQL database, with the application of the Extreme Programming (XP) methodology so that its development is iterative and adaptive to user needs. Through this system, it is hoped that the public can access legal information quickly and accurately, and support digital transformation within the Batu City Government, particularly the Communication and Informatics Office (Diskominfo).

Keyword : *Information System, JDIH, Laravel, PHP, Diskominfo, Government Website, Extreme Programming.*

1. INTRODUCTION

The continuous advancement of information technology has transformed the way government institutions manage, store, and distribute public information. The Department of Communication and Informatics (Diskominfo) of Batu City plays a central role in promoting digital transformation and ensuring that public services remain transparent, efficient, and easily accessible. One of the government's strategic initiatives to enhance legal transparency and access to information is the Legal Documentation and Information Network (JDIH), which serves as a digital platform for sharing legal documents and resources with the public.

Previous research has explored the importance of web-based systems in improving data management and operational efficiency. For example, the development of a web-based registration system at Posyandu demonstrated that digital applications can reduce the risk of data loss and accelerate the reporting process [1]. Likewise, other studies highlight the benefits of using the Laravel framework in building web systems, which include enhanced efficiency, scalability, and data security. These studies provide a strong foundation for adopting Laravel in developing government web applications to ensure structured, reliable, and sustainable system performance [2][3].

This research focuses on the development of a web-based JDIH information system at Diskominfo Batu City using PHP, the Laravel framework, and MySQL as the database management system. The system was developed based on the Extreme Programming (XP) methodology, emphasizing iterative development, user involvement, and continuous evaluation to achieve optimal functionality. The resulting JDIH website acts as an integrated platform that enables the public to access legal documents, news, and other related information efficiently.

Through the implementation of this project, the transparency and accessibility of legal information in Batu City are expected to improve, supporting the broader digital transformation initiative carried out by Diskominfo. In addition, this project provided students with valuable professional experience in applying information system development concepts to real-world challenges within public sector environments.

2. LITERATURE REVIEW

2.1. Website

A website is composed of multiple interconnected pages that present various forms of digital content, including text, images, audio, video, and animations, which can be accessed via the internet. By using a web browser and an internet connection, users can easily obtain relevant and useful digital information. Essentially, a website serves as a structured digital platform designed to organize and deliver information in an accessible and interactive format [4].

The function of websites today extends far beyond the field of information technology. During the COVID-19 pandemic, websites played a crucial role in supporting business operations and

continuity. As society transitions into the post-pandemic or "new normal" era, the reliance on websites continues to increase alongside evolving user needs and digital transformation trends. This condition encourages businesses and industries in Indonesia to adopt more strategic and adaptive decisions to remain competitive in the digital landscape [5].

2.2. PHP

PHP is a server-side scripting language primarily designed for web development but has evolved to support general-purpose programming as well. It was first introduced by Rasmus Lerdorf in 1994 and has since become one of the most widely used languages for building dynamic and interactive web applications. The term PHP stands for "PHP: Hypertext Preprocessor," which is a recursive acronym. As an open-source language, PHP is freely available for public use and distributed under the PHP License, which differs in certain aspects from the more common GNU General Public License (GPL) used in other open-source projects [6].

2.3. Laravel

Laravel is an open-source framework that provides a structured foundation for developing web applications efficiently. It is designed to simplify complex programming tasks by offering a clear architectural structure and built-in development tools. By utilizing Laravel, developers can significantly reduce development time while improving the process of website maintenance and enhancement [7].

Laravel is built on the PHP programming language and adopts the Model–View–Controller (MVC) architectural pattern, which separates the application's logic, user interface, and data components. This separation enables cleaner, more modular, and maintainable code management. Additionally, Laravel integrates the Blade templating engine, which allows developers to create dynamic and reusable views using a simple syntax similar to native PHP, enhancing both development efficiency and readability [8].

2.4. Database MySQL

MySQL is an open-source database management system designed to store, organize, and manage data efficiently. It is capable of processing and delivering data at high speed while supporting simultaneous access by multiple users. MySQL operates using Structured Query Language (SQL) as the standard language for data definition, manipulation, and control [9].

Developed by Michael Widenius, MySQL is freely available for both personal and commercial use without any licensing fees, making it one of the most widely adopted relational database systems globally. In addition to serving as a robust database server, MySQL can also be utilized to manage and access databases hosted on remote servers, offering flexibility, scalability, and reliability for various types of web-based applications [10].

2.5. Blackbox Testing

Black Box is a software testing approach in which the tester does not have access to the internal structure or source code of the application being tested. Often referred to as functional testing or input–output testing, this method focuses on assessing whether the system functions as expected by analyzing the relationship between given inputs and the resulting outputs. Several techniques are commonly applied within this method, including equivalence partitioning, boundary value analysis, cause–effect graphing, fuzzy testing, and model-based testing [11].

In practice, Black Box Testing offers both strengths and limitations. Its primary advantage lies in its ability to verify that the software meets user and functional requirements without the need for internal code knowledge. However, a notable drawback is that the tester's lack of visibility into the internal logic of the application can lead to incomplete coverage and the potential for undetected internal errors [12].

2.6. Diskominfo of Batu City

The Department of Communication and Informatics (Diskominfo) of Batu City is a government institution responsible for managing public information, communication technology, and digital-based public services. The office is located at Jl. Panglima Sudirman No. 507, Pesanggrahan, Batu District, Batu City, East Java 65313. Diskominfo Batu plays a vital role in promoting transparency and efficiency in public information dissemination, managing information technology infrastructure, and developing digital systems to enhance the performance of local government services.

3. METHOD

3.1. Development Method

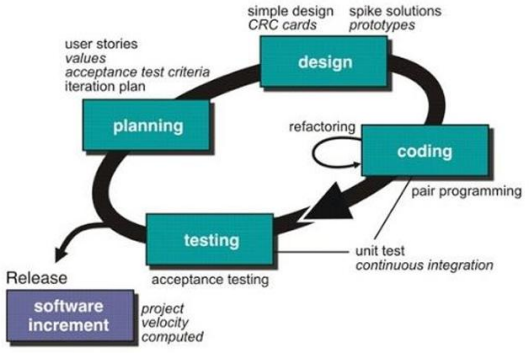

figure 1. Development Method

The development approach applied in this study is Extreme Programming (XP), an agile

software development and project management methodology designed to produce high-quality software. XP emphasizes flexibility and collaboration, enabling teams to adapt quickly to changing user requirements. This method operates through short and iterative development cycles, ensuring that the software evolves continuously in response to user feedback [13].

The Extreme Programming framework consists of five main stages in its development process: Planning (requirement analysis), Designing (system design), Coding (implementation), Testing (evaluation and debugging), and Listening (user review and feedback). These stages are carried out iteratively to ensure that the final product meets user needs effectively while maintaining system quality and performance [14].

3.2. Admin Menu Structure

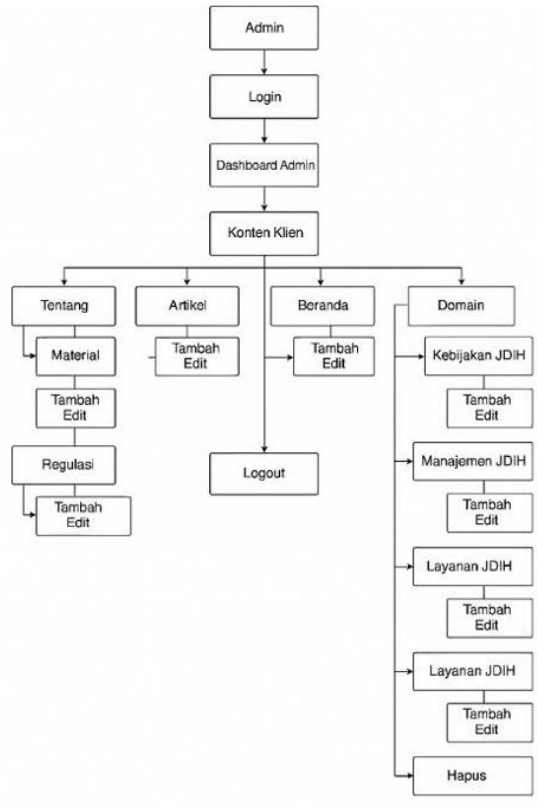

figure 2. Admin Menu Structure

The Admin Menu Structure represents the hierarchical navigation of the administrative interface in the JDIH information system. The workflow begins when the admin logs in and is directed to the Admin Dashboard, which serves as the main control center for managing system content. From this dashboard, the admin can access four primary modules—About (Tentang), Articles (Artikel), Home (Beranda), and Domain. The About module contains subsections for Material and Regulation, both allowing content addition and modification. The Articles and Home modules enable the admin to create and edit related content. The Domain module includes subsections such as JDIH Policy, JDIH Management, and JDIH Services, each equipped with Add, Edit, and Delete functions for data management. The structure concludes with the Logout option, ensuring secure termination of the admin session. This hierarchical arrangement allows for efficient, organized, and systematic control over JDIH content within the administrative interface.

3.3. User Menu Structure

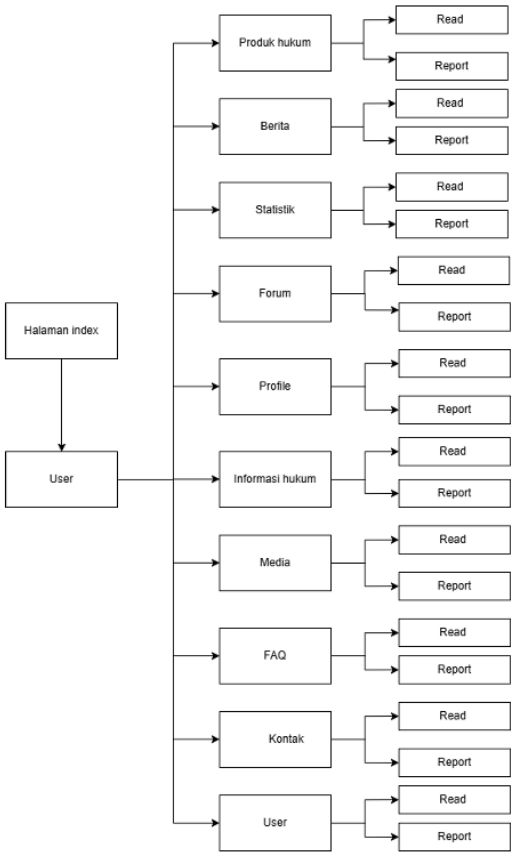

figure 3. User Menu Structur

The User Menu Structure illustrates the navigation flow from the index page to the main features available to users, including Legal Products, News, Statistics, Forum, Profile, Legal Information, Media, FAQ, Contact, and User. Each feature provides two access options: “Read”, which allows users to view or explore the available information, and “Report”, which enables access to related reports or statistical data. This structure is designed to ensure user convenience in navigating, accessing, and utilizing all content and services provided by the system efficiently and intuitively.

3.4. Admin System Flowchart

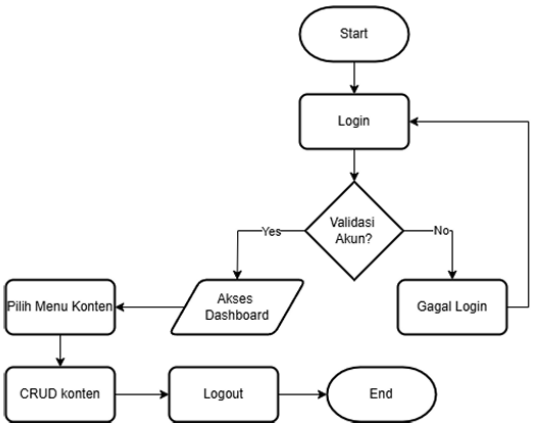

figure 4. Admin System Flowchart

The flowchart illustrates the authentication and content management process carried out by the administrator within the system. The process begins at the Start point, where the admin logs in by entering their credentials. The system then performs account validation; if the credentials are verified successfully, the admin gains access to the Dashboard. From the dashboard, the admin can navigate through the content menu and perform CRUD operations (Create, Read, Update, Delete) on various content elements. Once all tasks are completed, the admin can log out, which ends the session and directs the flow to the End point. If the account validation fails, the system displays a "Login Failed" message and redirects the admin back to the login process. This flowchart represents the basic structure of access control and content management within a role-based system.

3.5. User System Flowchart

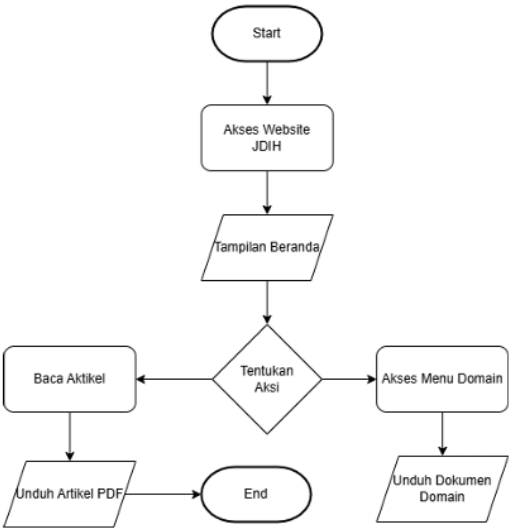

figure 5. User System Flowchart

The flowchart illustrates the sequence of actions performed by users when accessing the JDIH website. The process begins when the user opens the site and views the homepage interface, where they can decide which action to take next. Users may choose to read articles and download them in PDF format, or access the domain menu to download domain-related documents. Once the selected action is completed, the process concludes, marking the end of user interaction within the system.

4. RESULT AND DISCUSSION

After completing the planning and design stages, which included defining user requirements, outlining system architecture, and creating interface layouts such as menu structures and flowcharts, the development process proceeded to the coding phase. In this stage, the design concepts were translated into executable code using PHP, the Laravel framework, and MySQL as the database management system. The coding process followed the principles of the Extreme Programming (XP) methodology, emphasizing collaboration, iterative development, and continuous feedback to ensure that the system functioned according to the planned specifications.

4.1. Home Page

figure 1. Landing Page

The development of the JDIH (Legal Documentation and Information Network) system aims to ensure the availability of comprehensive, accurate, easily accessible, and promptly retrievable legal documentation and information for various stakeholders. This system also seeks to support legal development, enhance public understanding of the law, and simplify the search and retrieval of legal regulations and statutes.

4.2. Login Page

figure 2. Login Page

The admin login page of the JDIH system consists of input forms for email and password, which can be used by all available user roles to gain

access to their designated dashboards within the system.

4.3. Dashboard Page

figure 3. Dashboard Page

On the admin dashboard page, the "Add User" button can be clicked to create a new account with a specific role. This action displays a form interface where the administrator can input the necessary information to add a new user account.

4.4. Edit Data Page

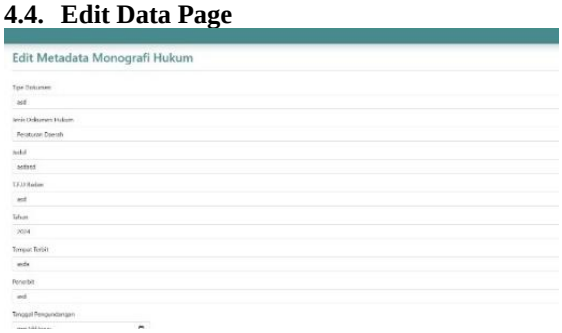

figure 4. Employee Data Page

On the monograph data edit page, the existing data to be modified is displayed, along with an "Update" button that allows the administrator to apply and save the changes made to the data.

4.5. Add Data Page

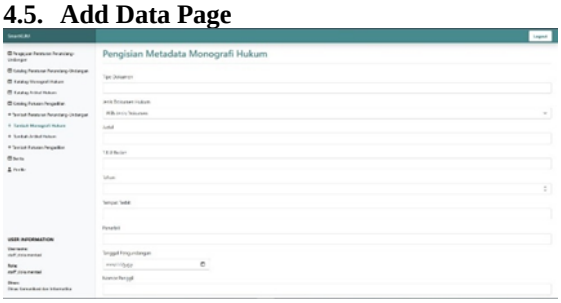

figure 5. Report Page

On this page, a form is provided to add new legal monographs, with input fields tailored to the corresponding metadata. A "Process" button is available, which, when clicked, saves the entered data and redirects the user to the legal monograph catalog page.

4.6. Blackbox Testing

After completing the coding (implementation) phase, the development process proceeded to the testing stage. This phase aimed to ensure that all system features and functionalities operated according to the specified requirements and design objectives. The testing was conducted using the Black-box Testing method, which focuses on evaluating the system's functionality based on input and output without examining the internal code structure. Through this stage, the system was tested to verify its reliability, accuracy, and overall performance before being deployed for user access.

Table 1. Blackbox Testing

No	Feature	Testing Scenarios	Input	Expected Results
1	Login	The user enters a valid email and password	Valid email and password	Successfully logged in and redirected to the dashboard
2	Add Data	The admin fills out the add data form completely	Input according to metadata	Data is saved and appears in the catalog list
3	Edit Data	The admin edits one of the data entries.	Modified metadata input	Changes are successfully updated and visible in the catalog list.
4	Admin Dashboard Page Display	Test the functionality of the admin dashboard page to ensure it runs properly	Access via Google Chrome, Mozilla Firefox, and Microsoft Edge	Successfully displayed and functions correctly across all browsers.
5	JDIH Website Homepage Display	Test the functionality of the JDIH website homepage to ensure proper operation	Access via Google Chrome, Mozilla Firefox, and Microsoft Edge	Successfully displayed and operates properly across all browsers

Based on the functional testing conducted and presented in Table 1, the system has been proven to perform its main features correctly. The login feature works as intended in verifying user credentials, allowing only valid users to access the dashboard. The add data function performs properly, where administrators can successfully input complete data according to metadata, and the new entries are stored and displayed in the legal catalog. Similarly, the edit data feature functions well, enabling administrators to update existing entries, with the changes accurately reflected in the catalog list.

Additionally, testing on multiple browsers—Google Chrome, Mozilla Firefox, and Microsoft Edge—shows that both the admin dashboard page and the JDIH website homepage display and operate successfully across all tested platforms. Page

layouts, navigation buttons, and content visibility worked without any issues. Overall, the testing results indicate that the JDIH system runs effectively and consistently, with no major errors or functional problems found during the evaluation process.

5. CONCLUSION

Based on the functional testing conducted and presented in Table 1, it can be concluded that the JDIH (Legal Documentation and Information Network) system operates properly and meets its intended objectives. All key features, including login, data management (add, edit, and update), content display, and interface functionality, performed successfully without any significant bugs or errors. Additionally, browser compatibility testing on Google Chrome, Mozilla Firefox, and Microsoft Edge showed that the system functions consistently and displays correctly across all platforms.

This application effectively supports the Department of Communication and Informatics (Diskominfo) of Batu City in managing and disseminating legal information in a more structured and efficient manner. With its available features, the system enables easier access to legal documents, enhances administrative efficiency, and promotes transparency in public information services. Therefore, the developed JDIH system serves as an effective solution to support the digital transformation and legal information management within Diskominfo Batu City.

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