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Web-Based Public Service Information System for the Economic and Development Sector

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Abstract

Tanah Merah is a sub-district located at Jl. G. Siinabung No.1, Tanah Merah, South Binjai District, Binjai City. This paper discusses a web-based information system for economic and development services (Ekobang) in Tanah Merah sub-district, Binjai City. From the research conducted, it is concluded that the current data processing system still utilizes Microsoft Word and Microsoft Excel, which, as we know, lack integrated databases, thus leading to potential data redundancy. To address this issue, a web-based Ekobang service information system was designed to facilitate residents in applying for IMB (Building Construction Permit) and SKU (Certificate of Business Domicile) recommendations quickly and easily. The developed system includes data input modules for IMB recommendations, SKU data, EKOBANG data, and user data. This service system was built using PHP and JavaScript programming languages with MySQL as the database. The testing results indicate that the system helps reduce the risk of data duplication.

Keywords— *Information System, JavaScript, PHP, MySQL Database*

1. INTRODUCTION

The increasing need for information systems and information technology has made the development of such systems crucial, especially in creating advanced technologies in the field of computer science. Government organizations, particularly at the sub-district level, are directly involved in providing public services. This shift greatly influences daily life, especially in professional environments. In the context of the sub-district administration, the use of computers in data processing has become increasingly prevalent. Computer support can significantly enhance the efficiency and effectiveness of administrative tasks.

In the current state of public service in Indonesia, there are still numerous complaints from citizens regarding the quality of service, whether in face-to-face interactions or web-based platforms. With the widespread use of the internet and web applications, the delivery, reception, and communication of information have become faster and more efficient. Evaluating the performance of local government offices is essential to measure their service quality. In the case of the Economic and Development Affairs (EKOBANG) unit at Tanah Merah Sub-district, Binjai City, although data processing is already computerized, it remains inefficient. Reports are still being generated using Microsoft Word and Excel, which lack a centralized database system, thus increasing the risk of data redundancy. In addition, document filing is not systematic, causing delays in retrieving files when needed. To address these challenges, the au-

thor proposes the development of a web-based information system for EKOBANG services in Tanah Merah Sub-district, Binjai City.

2. RESEARCH METHODS

2.1 Research Location and Object

This research was conducted at the Tanah Merah Sub-district Office, South Binjai District, Binjai City, located at Jl. G. Sinabung No.1, Sumatera Utara 20725, Indonesia. The research focuses on developing a web-based information system to improve public services in the economic and development sector.

2.2 Data Collection Methods

The research used both primary and secondary data.

- **Primary Data**
  were obtained through direct observations, interviews with staff, and documentation of ongoing processes within the sub-district office.
- **Secondary Data**
  were sourced from literature reviews, such as previous research, books, academic journals, and related documents that support the system development.

Techniques used:

- **Observation**
  Direct observation of how EKOBANG services are handled manually, particularly IMB and SKU document processing.
- **Interview**
  Structured interviews with the head of the sub-district and staff involved in EKOBANG services.
- **LiteratureStudy**
  Reviewing previous systems developed in similar environments and referencing frameworks, including CodeIgniter and MySQL.
- **Documentation**
  Reviewing archived data such as forms, reports, and workflows used in the old system.

2.3 System Development Method

This study employed the *Rapid Application Development (RAD)* model. *RAD* is chosen for its efficiency in developing software within a short period, with active user participation. The development process consists of three main phases:

1. **Requirement Planning:** Analysts and users identify the system's objectives and functional requirements together.
2. **Design Workshop:** Both parties participate in the iterative design process, reviewing and improving the prototype in real-time.
3. **Implementation:** Developers create the system based on approved designs. Testing and feedback are done rapidly to ensure the system meets user needs.

2.4 Data Analysis

1. **Input Analysis:** Examined the current use of Word and Excel for recording IMB and SKU applications and identified issues such as data redundancy and retrieval delays.
2. **Output Analysis:** Reviewed the expected outputs including IMB and SKU letters, and reports that must be generated efficiently and systematically.

3. **System Design:** Included use-case diagrams, class diagrams, sequence diagrams, activity diagrams, flowcharts, and ERD to support the design of the web-based system.

2.5 System Architecture Design

The system is designed using PHP and JavaScript as programming languages, with **MySQL** as the database. The front-end interface supports form submissions, data entry, and report generation, while the back-end processes user input and ensures data integrity. Diagram representations include:

1. Use Case Diagrams (User and Admin interactions)
2. Class and Sequence Diagrams
3. Activity Diagrams (login, form submission, admin report generation)
4. System Flowcharts (data flow, control structure)

2.6 Timeline

A Gantt chart outlines the research schedule from March to August 2024, covering:

- Early observation
- Design and analysis
- Development and implementation
- Final testing and reporting

3. RESULTS AND DISCUSSION

3.1 System Overview

The web-based Economic and Development (EKOBANG) Service Information System at Tanah Merah Sub-district, Binjai City, is developed to address inefficiencies in the previous manual process. The system provides an integrated solution for the management of IMB (Building Permit) and SKU (Business Certificate) recommendation requests.

3.2 Functional System Description

The system consists of two user roles: *Admin* and ***User (citizens)***. Each has specific access and responsibilities:

- **Admin:** Responsible for inputting recommendation data, verifying documents, managing user records, and generating reports.
- **User:** Citizens can register accounts, submit recommendation requests, view the status of submissions, and print results.

The system supports the following features:

- User registration and login
- Online form submission for IMB and SKU
- Automated document generation and printing
- Real-time status tracking
- Admin dashboard for report management

3.3 System Design Output

The system development includes several visual models:

- **Use Case Diagram:** Describes the interaction between users and the system for IMB and SKU services.
- **Class Diagram:** Displays the object-oriented structure including classes like Admin, User, IMB, SKU, and Reports.
- **Sequence Diagram:** Shows the process flow of interactions between users and the system, especially how admins manage requests.

- **Activity Diagram:** Illustrates user actions such as login, registration, form input, verification, and document printing.
- **Flowcharts:** Visual representation of logic flow for login, registration, form processing, and report generation.

These design outputs ensure a clear structure and improve developer-user communication during implementation.

3.4 Analysis of Existing vs. Proposed System

The prior system relied heavily on manual procedures using Microsoft Word and Excel, resulting in:

- Slow data processing
- High risk of duplication
- Difficulty in data retrieval
- Lack of a centralized and secure database

By contrast, the newly proposed web-based system significantly enhances:

- Efficiency in service processing
- Real-time data access
- Document traceability and report accuracy
- Service transparency and user satisfaction

3.5 System Implementation

The system was built using:

1. **Programming languages:** PHP and JavaScript
2. **Database:** MySQL
3. **Platform:**Web-based with browser accessibility Testing confirms that the system successfully streamlines the workflow and supports the sub-district's need for fast, transparent, and secure services.

4. CONCLUSION

Based on the results and discussion explained in the previous sections, the following conclusions can be drawn:

1. The design of a web-based information system provides an effective solution to increase accuracy and efficiency in administrative tasks. The system is structured to be user-friendly for administrators, and the printed formats for letters and reports are tailored to the service needs.
2. The implementation of a web-based system for the Economic and Development (EKOBANG) services simplifies the process for residents applying for IMB (Building Permit) and SKU (Business Certificate) recommendations.

5. SUGGESTIONS

The system developed in this research has several advantages:

It features an attractive user interface

- The database is built with MySQL, providing a secure and scalable data storage solution.
- The system is user-friendly and accessible to the general public.

However, it also has some limitations:

The system is still local and not yet deployed online.

- Security mechanisms are not fully implemented.
- User documentation and guidance are incomplete.

- The website interface is still basic and needs improvements in visual appeal.
- There is no user role management or access rights control, and overall system logic is still relatively simple.

Recommendations:

1. A stable internet connection is required to support the deployment and use of this system.
2. Administrators must be meticulous in validating user data, as it significantly affects the accuracy of IMB and SKU processing.

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