

## Design And Development of A Web-Based Customer Service Application To Improve Medical Record Information Services At Lapai Public Health Center, Padang City, In 2026

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### ABSTRACT

*The development of information technology requires an improvement in the quality of health service information systems, but the delivery of information on medical record services at the Lapai Health Center in Padang City is still carried out manually, thus hindering the effectiveness of services and increasing the workload of officers. This research aims to design a Web Log-based Customer Service application (Blog) as a media of medical record service information that is easily accessible to the public. The research uses the Research and Development (R&D) method with the Waterfall development model. The research subjects consisted of 18 respondents, namely 1 head of administration, 2 medical record officers, and 15 patients. Data collection was carried out through observation, interviews, documentation studies, and system testing using Black Box Testing. The results of the study show that the application was successfully developed according to the needs of users by providing information on service schedules, doctors' schedules, registration flows, administrative requirements, service rates, health information, live chat, as well as criticism and suggestion features. The validation results obtained a feasibility rate of 95% in the very viable category, while the tests showed that all features worked well and were easy to use. The conclusion of this study is that the application is suitable for use as an information media for medical record services at the Lapai Health Center in Padang City to increase the effectiveness of information delivery. Puskesmas are advised to implement the application on an ongoing basis, update the content periodically, and socialize it to the community so that its use is optimal.*

**Keywords :** *Blog, Customer Service, Medical Record Service, Information System.*



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## INTRODUCTION

Advances in information technology have driven digital transformation in various sectors, including healthcare. The use of information systems can improve the efficiency, effectiveness, and quality of services by providing fast, accurate, and easily accessible information [1]. In primary healthcare facilities, particularly community health centers (Puskesmas), providing service information to the public is a crucial part of supporting medical records services. Initial survey results at the Lapai Community Health Center in Padang City indicate that information is still delivered manually through bulletin boards and direct communication with staff. This situation requires patients to repeatedly inquire about service flows, administrative requirements, and service schedules, increasing staff workloads and reducing the effectiveness of the registration process. The need for technology-based information media is becoming increasingly important to facilitate public access to information while supporting the digital transformation of healthcare services.

Previous research has shown that implementing a web-based information system can improve the quality of healthcare services. Research conducted by Saidy [2] found that the web-based health information system at Turikale Community Health Center successfully increased the efficiency of the service process and data accuracy [2], Research also conducted by Putra and Wisandra [3] stated that the use of web logs (blogs) is an effective communication medium in conveying information about health programs and services to the public [4] Another study conducted by Salsabilah [5] showed that health service websites make it easier for people to obtain information and access services without having to come directly to the community health center.[5].

These studies still focus on the development of health service information systems in general, no research has been found that specifically designs a web-based customer service application log (blog) as a medium for information on medical record services at the Lapai Community Health Center in Padang City that is equipped with service information features, service schedules, administrative requirements, live chat, as well as criticism and suggestions according to user needs. This gap indicates the need for the development of more specific information media to support medical record services and increase ease of access to information for the public.

Based on these conditions, this project aims to design a web log (blog) based customer service application as a media for medical record service information at the Lapai Community Health Center in Padang City and to test the feasibility of its functionality as an effort to increase the effectiveness of the health service information system.

## **RESEARCH METHODS**

This research uses the method Research and Development (R&D) with a waterfall development model to produce a web log (blog) based customer service application as a media for medical record service information at the Lapai Community Health Center in Padang City. The research subjects consisted of 1 head of administration, 2 medical record officers, and 15 patients who were selected purposively based on their involvement in medical record information services. Data collection was carried out through observation, in-depth interviews, documentation and expert validation checklists using a Likert scale questionnaire. Data from observations, interviews, and documentation were analyzed descriptively through the stages of data reduction, data presentation, and conclusion drawing, while the results of expert validation and analysis trials used percentages to determine the level of application feasibility as a media for medical record service information at the Lapai Community Health Center in Padang City.

## **RESULTS AND DISCUSSION**

### **Research result**

#### **1. Problem Identification Results**

The results of direct observation, interviews with 2 medical record officers, and a review of the service flow at the Lapai Community Health Center in Padang City, showed that information services to patients were still carried out conventionally through direct communication at the registration counter and using information boards available in the service room. The use of these information boards was not optimal as a customer service tool because the information presented was limited, not updated regularly, and was less attractive and had not been able to provide convenience for patients in obtaining service information independently.

#### **2. System Requirements Analysis Results**

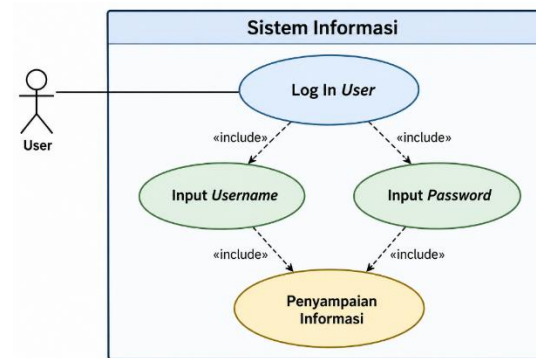
The results of the problem identification resulted in a system requirements analysis as the basis for planning a web-based customer service application for the Lapai Community Health Center (Puskesmas) in Padang City. This requirements analysis covers data and user requirements, functional requirements, and non-functional requirements.

The analysis shows that there are two main user groups: data managers (admins) and the general public. Admins have access to manage all information displayed on the website, while the public only has access to view service information and submit criticism and suggestions.

The functional requirements identified included the system's ability to display health center profile information, service schedules, doctor schedules, administrative requirements, patient registration flow, health information, feedback and suggestions features, and live chat communication. Non-functional requirements included user-friendliness, responsiveness across multiple devices, ease of content management by staff, and internet accessibility.

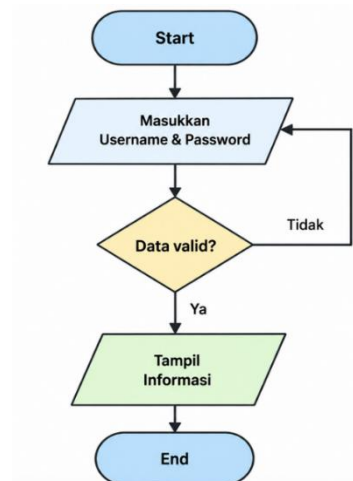
#### **3. Product Design/Prototype**

A product design or prototype was developed as an initial overview of a web-based customer service application system, a blog, that will be developed at the Lapai Community Health Center in Padang City. This design aims to provide a visualization of the system flow, data relationships, and user interface, thereby facilitating the system's development and implementation.



**Figure 1**  
**Use Case Diagram**

*Use Case Diagram* shows the interaction between the user and the system. The user logs in by entering a username and password. After successfully logging in, the user can access the information delivery features within the system.



**Figure 2**  
**Flow chartSystem Flow**

*Flow chart* The system flowchart above illustrates the login process, starting from start, where the user is asked to enter a username and password for authentication. The system then validates the input data, determining whether the data entered is correct or incorrect. If the data is incorrect, the user is redirected to re-enter the username and password. If the data entered is correct, the system displays the main page or dashboard. Once the process is successful and the page is displayed, the flow ends at End, indicating that the user has successfully accessed the system.

#### 4. System Development

Based on the needs analysis, a web-based customer service application was developed using the WordPress platform. The development process included system structure design, interface design, implementation, and testing. The resulting website consists of several integrated main pages to facilitate the public's access to service information.



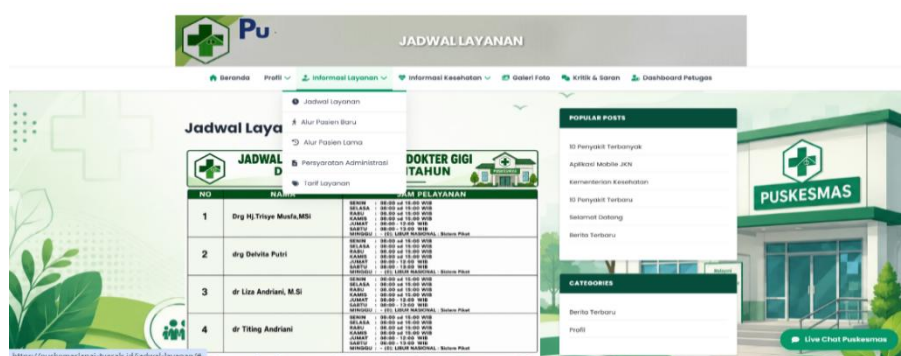
**Figure 3**  
**Admin Login Form View**

The login page is used as access for admins or officers to enter the system by entering a username and password to maintain data security and system management.



**Figure 4**  
**Home Menu View**

The homepage is the main interface of the Lapai Community Health Center's web-based customer service application, a blog (blog) for Padang City, which serves as an information center for users. This page features navigation menus such as the community health center profile, service information, health information, a photo gallery, criticism and suggestions, and an officer dashboard. The homepage also displays general information about the Lapai Community Health Center, Popular Posts, and a live chat feature to facilitate user access to information and communication with the community health center.



**Figure 5**  
**Service Information Menu Display**

On the service information menu on the web log, there are five types of information in the form of service schedules, new patient flow, old patient flow, administrative requirements, and service rates at the Lapai Health Center, Padang City.



Figure 6

### Health Information Menu Display

The health information page displays information in the form of clusters 1 to 6 including management, mothers and children, adults and the elderly, public health, pharmacology, and cross-cluster at the Lapai Community Health Center, Padang City.



Figure 7

### Photo Gallery Menu View

The photo gallery page displays documentation of activities and service activities carried out by officers at the Lapai Health Center as a medium of information and publication to the public.



Figure 8

### Criticism and Suggestions Menu Display

The criticism and suggestions page is used as a medium for patients or visitors to submit input, criticism, and suggestions regarding services at the Lapai Health Center, Padang City.

## 5. Product Validation Results

The developed product is then validated by a validator with expertise in information systems. Validation is conducted on aspects of interface appearance, completeness of materials, system functionality, ease of use, and feasibility of implementation.

**Table 1**  
**Product Validation Results**

| No     | Assessment Aspects       | Maximum Score | Score Obtained | Percentage | Category    |
|--------|--------------------------|---------------|----------------|------------|-------------|
| 1      | Material Suitability     | 15            | 14             | 93.3%      | Very good   |
| 2      | Display (User Interface) | 15            | 13             | 86.7%      | Good        |
| 3      | Functionality            | 15            | 13             | 86.7%      | Good        |
| 4      | Product Eligibility      | 15            | 14             | 93.3%      | Very good   |
| Amount | 12 questions             | 60            | 54             | 90%        | Very Worthy |

The calculation results show that the product's feasibility percentage is 90%. Based on the feasibility percentage scale table, this value is in the range of 76%-100%, qualifying as "Very Feasible."

## 6. User Test Results

The results of a limited field trial were conducted on one administrative head, two medical records officers, and fifteen patients at the Lapai Community Health Center in Padang City. The trial was conducted to determine user feedback on the developed application. The trial results showed that the majority of respondents could use the website easily without encountering any significant issues. They found the information easy to understand, the website's layout attractive, navigation easy to use, and information retrieval faster than with conventional methods. A small number of older respondents still required assistance when accessing the website for the first time.

## Discussion

### 1. Patient Information Needs Related to Medical Record Services at Lapai Community Health Center

The research results indicate that the public's need for information on medical records services at the Lapai Community Health Center remains high. Prior to the development of a web-based customer service application, information was obtained through medical records officers and notice boards, requiring patients to visit the community health center in person to obtain information on service schedules, administrative requirements, registration processes, and other healthcare services. This situation indicates that the information delivery medium used is not yet capable of meeting the public's need for fast and easy access to information. These findings support the health information systems theory, which states that information quality is determined by accuracy, speed, and ease of access for users. In healthcare, information systems serve as a communication medium connecting healthcare facilities with the public, thereby making the service process more effective and efficient. Therefore, the public's need for digital information media is a consequence of the transformation of healthcare services, which increasingly utilize information technology.[6].

The results of this study are in line with Hendriani's research [7] which states that health services at community health centers are still mostly carried out manually, resulting in delays in services and difficulties in obtaining health service information [8]. This research is also supported by research conducted by Awal [9] which explains that the use of health service websites can make it easier for the public to obtain service information without having to come directly to the community health center. [9] The similarity of these results reinforces the idea that digitalizing information media is one solution to increasing the effectiveness of primary healthcare services.

This research contributes to the identification of patient information needs, which serves as the basis for developing a web-based customer service application. This approach produces information media tailored to the actual needs of users, enabling the application to function not only as a means of publishing information but also as a means of communication between the community health center and the community.

### 2. Design of a Web Log (Blog) Based Customer Service Application at Lapai Community Health Center

The design of a web-based customer service application log (blog) was carried out based on the results of user needs identification so that the features developed are in accordance with the service

needs at the Lapai Community Health Center. The website is equipped with information on service schedules, doctor schedules, administrative requirements, registration flow, service rates, health information, criticism and suggestions features, and a live chat service. The completeness of these features shows that the system development process has been oriented towards user needs rather than only the technical aspects of software development. From the perspective of usability theory, an information system is said to be good if it is easy to learn, easy to use, has clear navigation, and is able to help users meet their needs efficiently. The simple website appearance and systematically arranged menus indicate that the application has met the principles of ease of use.[10].

The results of this study are also in accordance with research by Alvinto & Utomo [11] which states that web-based information systems can increase the speed of service and support the digitalization of health services. [12] Andiani & Anwar's research also shows that the implementation of a web-based information system can increase the effectiveness and quality of services at community health centers.[13] This similarity shows that developing a healthcare website has become an effective strategy for improving the quality of public services.

### **3. Trial of a Web Log (Blog)-Based Customer Service Application at the Lapai Community Health Center**

The trial results showed that the web-based customer service application, a log (blog), was usable well by both staff and patients. Most users stated that the website was easy to understand, provided comprehensive information, and performed its intended functions. These conditions indicate that the application is capable of meeting user needs for digital healthcare information. These findings support the theory of system testing, which states that an application is considered successful if it meets user needs, functions as designed, and provides benefits to the organization's work processes.[10].

The results of this study are in accordance with the research of Ridhatullah & Bestandri (2023) which states that web-based information systems are able to run according to their function and obtain positive responses from users.[14] Jayanti's research also shows that web-based information systems can increase the speed and accuracy of patient services. [15] The similarity of these results reinforces the idea that utilizing information technology is an effective approach to improving the quality of healthcare services in primary care facilities.

This research contributes by developing a web log (blog)-based customer service model focused on medical record information services in community health centers. Unlike previous studies that generally developed general service information systems, this study integrates the delivery of service information, two-way communication through live chat and feedback, and the provision of administrative information in a single platform. This contribution demonstrates that web logs (blogs) function not only as a medium for information publication but also as a means of improving the quality of medical record information services, making them faster, more accessible, and more community-oriented.

## **CONCLUSION**

This research successfully designed a web log (blog)-based customer service application as a medium for medical record service information at the Lapai Community Health Center in Padang City that meets user needs. The developed application provides service information, service schedules, administrative requirements, registration flow, criticism and suggestions features, and live chat, making it easier for the public to obtain information quickly and easily. Validation results indicate that the application is in the very feasible category, while trials prove that the application can be used well by both staff and patients. Thus, the web log (blog)-based customer service application can be an alternative in improving the medical record service information system while supporting the digital transformation of services at the community health center.

Further research is expected to develop more comprehensive application features and conduct testing on a wider scale so that the benefits and effectiveness of the application can be known more comprehensively.

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