Web-Based System Information Certificate Services at Klamono District Offices

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Abstract

Klamono District Office still relies on manual procedures for delivering certificates to residents, involving steps such as direct submission of certificate requests at the village office, form filling, and physical submission of supporting documents. To overcome this challenge, the proposal of implementing a dedicated information system tailored to streamline the certificate issuance process has emerged. This study proposes a Certificate Service Information System to elevate operational efficiency at the Klamono District Office. The Extreme Programming system development method is utilized, along with testing through Blackbox Testing and Usability Testing. This research indicates that the developed application can improve the effectiveness and efficiency of services in the certificate issuance process. The Blackbox testing results show a system success rate of 100%, while the usability testing report records a user satisfaction level of 93.1%.

INTRODUCTION

Service is a process or activities carried out by a person, organization or institution to satisfy the needs, hopes or needs of a party, individual, group or society (Shofi et al., 2022). Service can cover various activities like giving information, providing products or goods, delivering help or support, and doing actions or procedures based on the needs users accept service (Ulfah & Sayekti, 2021). District Office of Klamono, located in South Sorong Regency, Southwest Papua, Indonesia, is one of the areas needing efficient and effective administration. District Office Klamono on duty give service administration to the public like publishing certificate, registering residents, and tasks administration other related things with the population. During this time, the District Office Klamono is still relying on manual processes to carry out the giving process service certification to society. This manual process covers the delivery of certificate directly to the office village, charging forms, and submission document supporters (Desmasari et al., 2022).

However, this manual process often needs help, such as time travel to offices, long queues, and possible error administration and storage (Suminten et al., 2021). Besides, the public must often visit the office regency to review required documents. This thing can give rise to difficulty for people living in the area isolated or with limited mobility (Agustriadi et al., 2023). With the development of technology information, utilization system information has become a solution for increasing the efficiency and effectiveness of service administration. System This uses technology and digital platforms to automate administrative processes, manage data, and create condition profitable work for society (Afandi et al., 2022). System information Service Certificate possible public submit application certificate via online platforms. Organizations can fill in the form electronically in the system, upload vouchers, and track application status in real-time (Syaebani et al., 2021).

A study with the same topic created by (Nurqolbiaha et al., 2023) focuses on a system of information service for registration documents commercial in the District Karangpawitan to make it easier to deliver service. Document business made use of the waterfall method. Research results system constructed information expected can make making certificate company for society easier. In another study conducted by Desy, Oktaviyani, and Sylviana (2020), they made a system information service public web-based in the District Panarung with the waterfall method and black box testing to test the system. Results obtained from system

information can use in activity devotion to the community in Panarung Village to produce four types of certificate: a Statement Certificate of Land Ownership (SPPT), Land Certificate, Certificate of Land Ownership, Death Certificate and Heir Certificate. Another study by (Umami et al., 2022), examined planning system information web-based email management in Sumberkarang villages. Research results This shows that the planning system applied information _ Already effective and easy in management certificate entering and exiting Sumberkarang Village. Research conducted by (Ilham & Purnamasari, 2021) involved the development of system information for service internal and external communications with the use of prototypes. Research results This shows success in making system information because system information services have seven possible functions used.

The purpose of the study is to make a system of postal information at Klamono District Offices that can help the public prepare certificates. This web-based system uses Extreme Programming methodology for the development system and black box and usability testing for the test.

RESEARCH METHODS

Data Collection

In this research, uses three methods of data collection, namely: (a) Literature study: The implementation of this stage by collecting information from original texts or digital publications, such as magazines, e-books, etc., available via the Internet. (b) Observation: In this study, the researcher directly observes the issues related to the issuance of certificates at Klamono District Offices. (c) Interview: Activities done in the office district Klamono with Head District Klamono, Mr. Oktofianus Kolin, S.Pd.K, about some problems faced in service making certificate information for society.

System Development

In this research making a system using a development model from Extreme Programming (Setyawan, 2023) consisting of some stages. Stages from Extreme Programming can be seen in Figure 1.
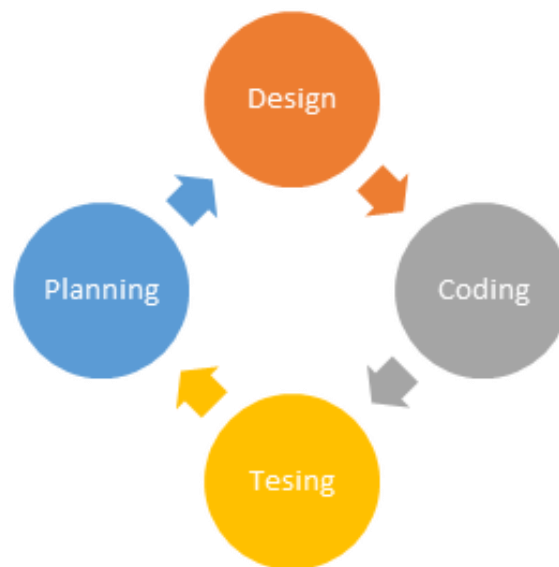
Figure 1. Extreme Programming Method Phases

As for explanation related stages from method extreme programming as follows:

Planning: This analysis needs natural system functional and non-functional requirements in this stage.

Design: In this progress, we design System Flowchars, use case Diagrams, ERD, and Interface Design from the system will be developed.

Coding: In this stage, we build the system following the existing plans arranged before.

Testing: In this stage, we perform testing using black box testing and usability testing methods.

RESULTS AND DISCUSSION

The results and discussion following stages from Extreme Programming are as follows:

Planning

In this stages planning, it was carried out an analysis to encompass system functional and non-functional requirements.

Functional Requirements

Functional requirements are a Suite service or process that the system must provide and part of the system is a must-respond input or situation specific. In context office district Klamono, analysis needs a functional approach based on proper access owned by Admin, Head District, and Users (citizens): a) Admin can add, edit, and delete resident data. b) Admin can verify submission mail and print certificate that has verified. c) Admin and Head District can print report submission certificate. d) Users (Citizens) can register and log in to the website. e) Users (Citizens) can make certificate descriptions and view history submission certificate. f) The user (Citizen), Admin, and Head District can change the password.

Non-Functional Requirements

The representative necessary needs in designing and building the system information service certificate. Non-functional requirements in the study is in Table 1.

Table 1. Hardware and software requirements

| No	Name	Description
1.	Asus laptop brand model A46CB	Hardware
2.	System Windows 10 Operation	Software
3.	MySQL	Software
4.	PhpMyAdmin	Software
5.	Web browser: Chrome	Software
6.	Figma	Software
7.	Code editor: Visual Studio Code	Software

Design

In this phase, we conduct the creation of the system's flowchart, Use Case Diagram, and ERD. Flowchart system for Users (Citizens) and Heads The districts can be seen in Figure 2.

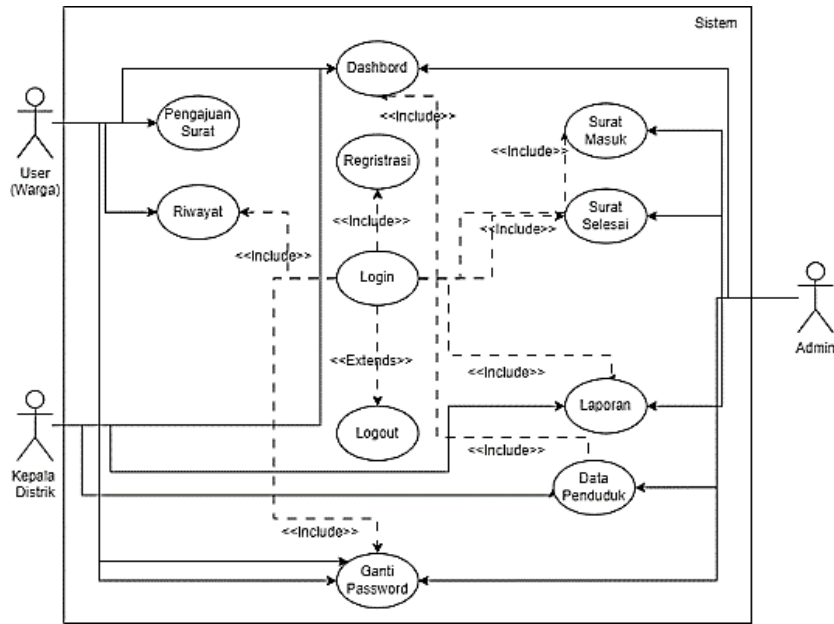(a) User (Resident)   (b) District Head
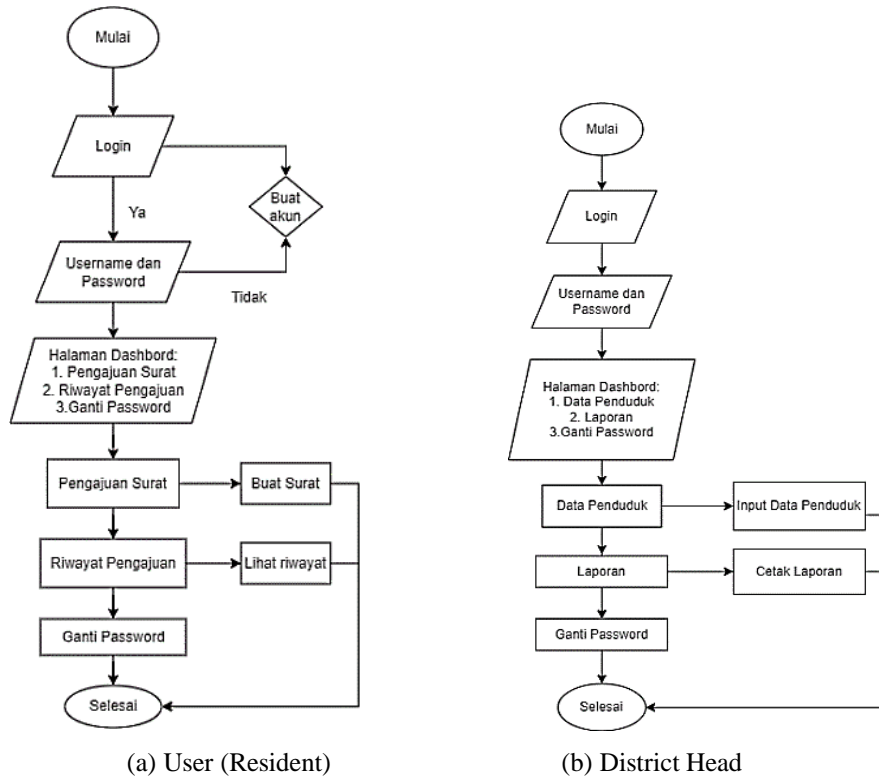
Figure 2. User and District Head Flowchart

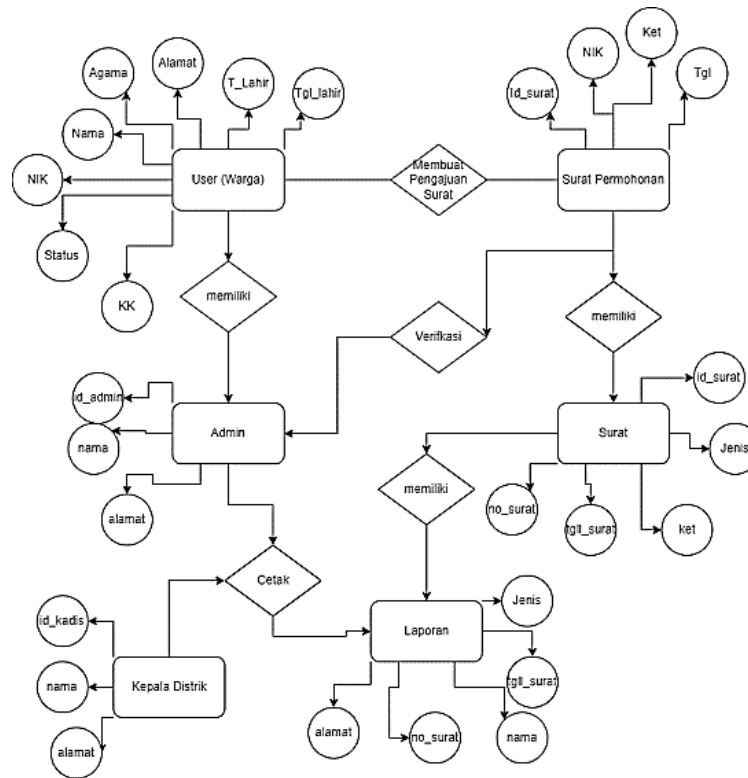Whereas The system flowchart for Admin is in Figure 3.
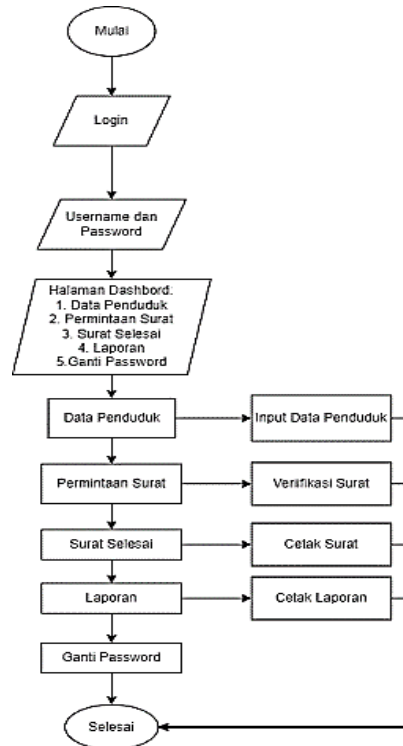
Figure 3. Admin Flowchart

Figure 4 is a Use case diagram that illustrates the system information service certificate.

Figure 4. System Use Case

Furthermore, ERD from the system information service certificate can be seen in Figure 5.

Figure 5. ERD

Implementation of Design and Coding

At this stage, we will create interface design and system information certificate service.

Home Page

The home page on the system information service certificate District Klamono is the first to appear when accessing the website. Figure 6 shows the home page's appearance in the system information certificate service.
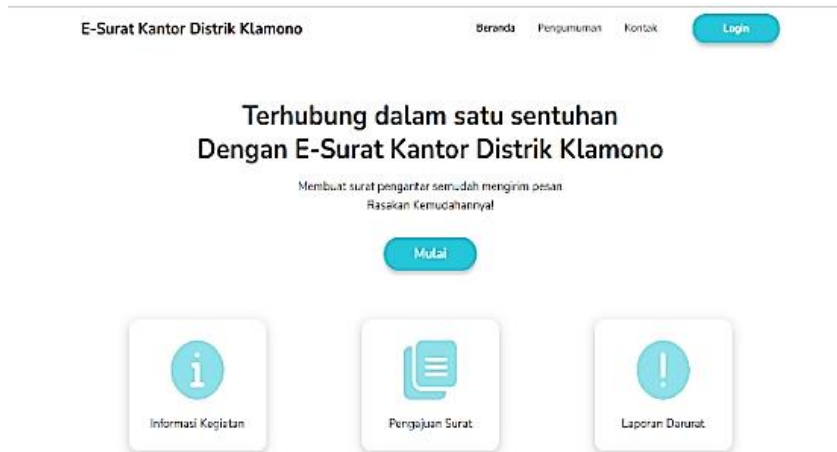

Figure 6. Home Page

Login Page and Registration Page

The login page shown in Figure 7 is displayed on the interface at the time the user wants to access and log in to the dashboard. In Figure 8, registration page, residents without an account can also register by filling in their NIK, full name, email, username, password and confirm password.
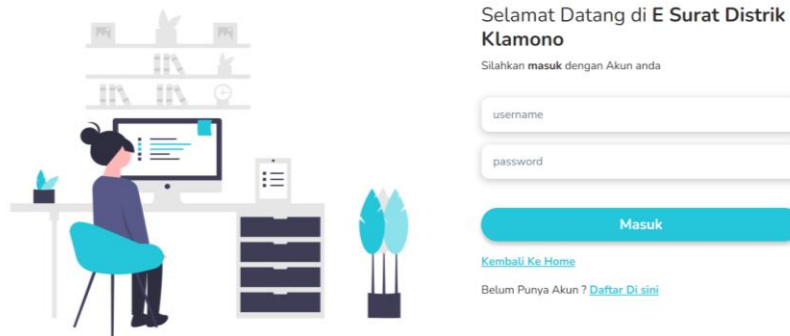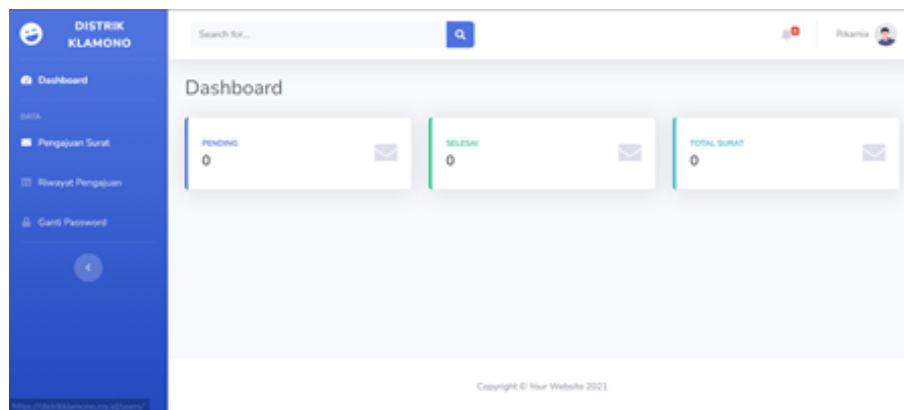

Figure 7. Login Page and Registration Page

Figure 8. Registration Page

User Dashboard Page

The user dashboard page is a page Where the inhabitant login is successful. Dashboard page in Figure 9, containing submission certificate, history submission, and change password.


Figure 9. User Dashboard Page

Certificate Submission Page and Certificate Submission Detail Page

The submission page certificate is a place where residents can submit certificates. On the page, residents can make seven types of notes: certificate information, certificate information no capable, certificate information domicile, certificate information business, certificate information expert heir, certificate information behave OK, certificate report celebration, certificate recommendations and certificate introduction SKCK. The appearance page for the certificate can be seen in Figure 10. After choosing the wanted certificate submitted, the user will be directed to the appropriate page with the desired certificate submitted. Details from the appearance Application page certificate that is page certificate information business can be seen in Figure 11.
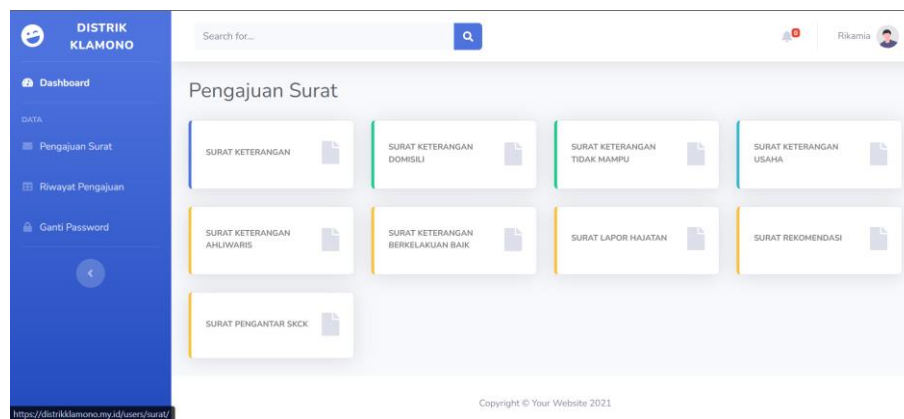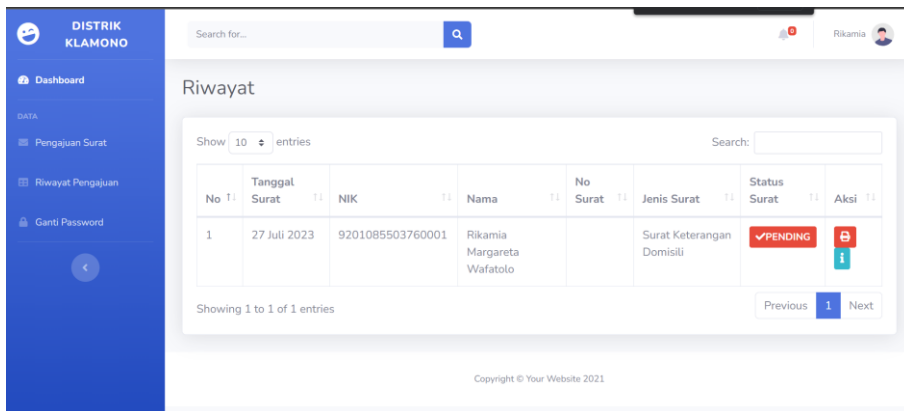

Figure 10. Certificate Submission Page
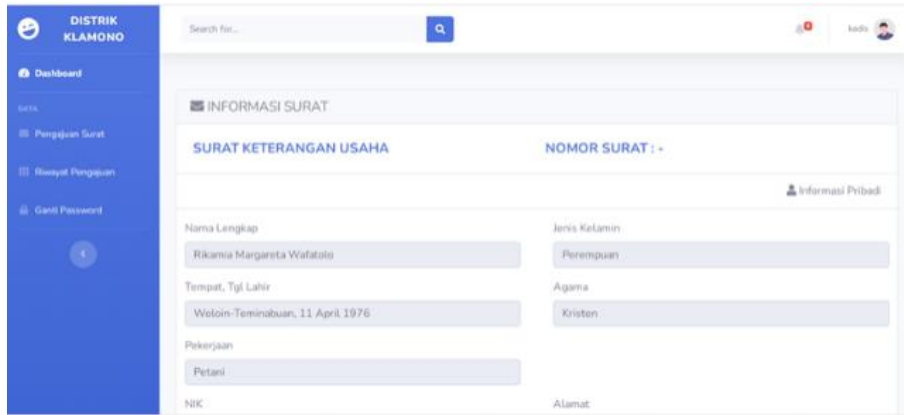
**Figure 11.** Certificate Submission Detail Page

Submission History Page

The submission history in Figure 12 is a loading page for various types of certificates submitted. On the page, it is possible to know the proposed certificate, and the Admin has confirmed it.

Figure 12. Submission History Page

Admin Dashboard Page

The admin dashboard page in Figure 13 contains population data, requests certificate, certificate finished, reports and password changes.
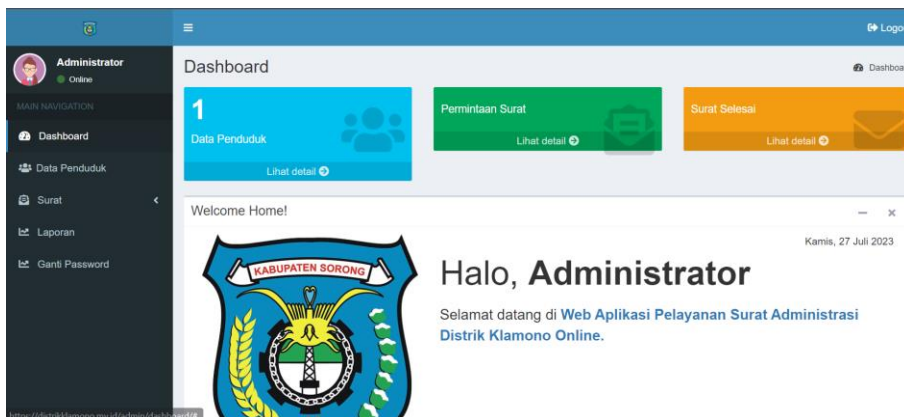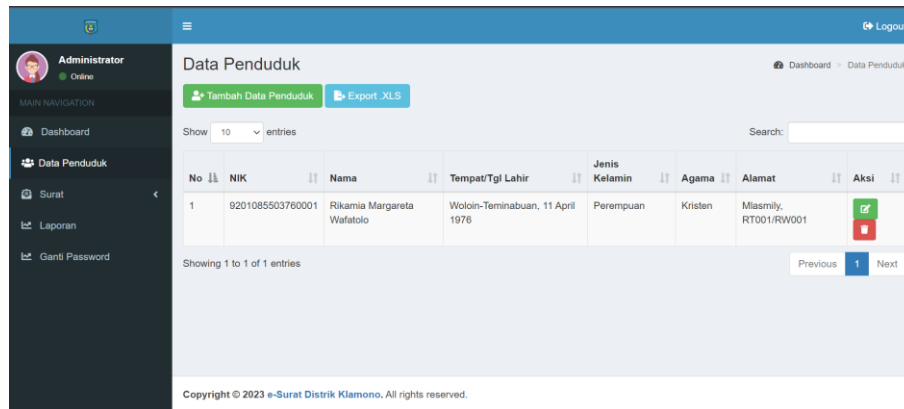

Figure 13. Admin Dashboard Page

Resident Data Page

This Resident Data Page system allows administrators to manage, add, edit, and delete resident data when necessary. The Resident Data Page can be seen in Figure 14.

Figure 14. Population Data Page

Certificate Request Page

Certificate request page is a place where residents submitting certificate will get verification from Admin. The appearance page request certificate can be seen in Figure 15.

Figure 15. Certificate Request Page

Completed Certificate Page

The page appears completed, i.e. after the administrator successfully processes their sign-in request message, the administrator prints a completed certificate. The complete page certificate appearance can be seen in Figure 16.
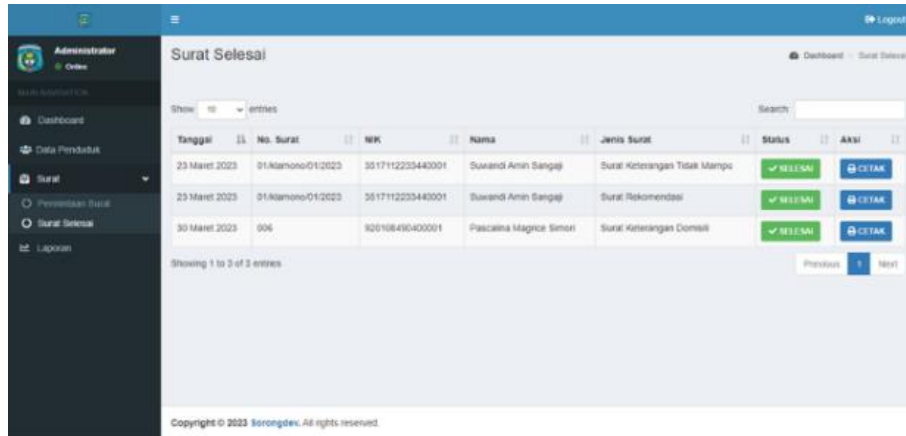
Figure 16. Completed Certificate Page

Report Page

The interface page report is the interface in which the generated certificates will be summarized, generated, and printed. The page report that appears can be seen in Figure 17.
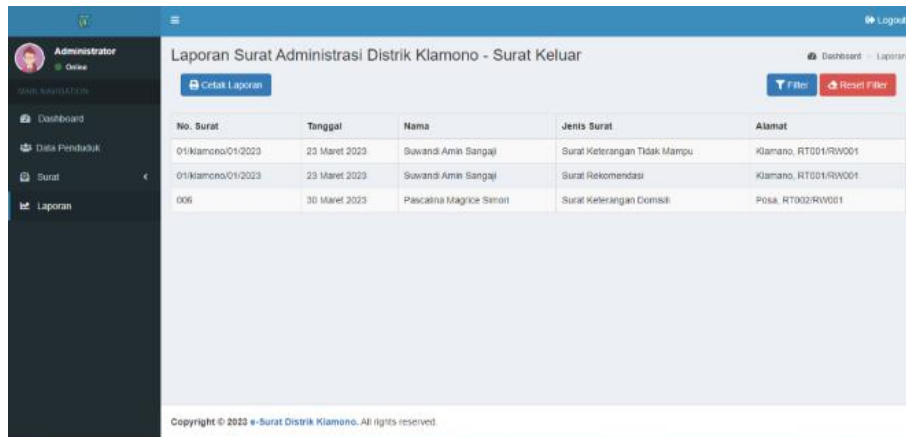
Figure 17. Report Page

District Head Dashboard Page

The district head dashboard page contains population data, reports, and password changes. The district head dashboard page appearance can be seen in Figure 18.

Figure 18. District Head Dashboard Page

Testing

The System Information service certificate web-based test using method black box and usability testing. The result of the black box testing can be seen in Table 2.

Table 2. Black box testing results

No.	Tested function	How to test	Expected results	Test result
1	Login Admin , Head of District and Residents	Admins, District Heads and Residents log in according to the username and passwords	Admin, District Head and Residents have successfully entered the admin home page	In accordance
	Wrong Login	1. Admin, District Head and Residents log in by entering wrong email and correct password	Admin and user cannot successfully enter the admin home page	In accordance
		2. Admins, District Heads and Residents log in by entering the correct email and wrong password	Admin and user cannot successfully enter the admin home page	In accordance
		3. Admin and use Admin, the head logs in by entering the wrong email and wrong password	Admin and user cannot successfully enter the admin home page	In accordance
2	Population Data	Admin click resident data to input, and delete resident data	Admin can add, edit, and delete data on population data	In accordance
3	Certificate Request	Admin click certificate request to confirm	Admin verifies mail request data	In accordance
4	Completed Certificate	Admin click the certificate is complete	Admin can print certificate that have been made	In accordance
5	Report	Admin and District Head click Report	Admin and District Head can print reports regarding the certificate that have been made	In accordance
6	Submission of Certificate	Residents click submit a certificate to make a certificate	Residents can make certificate as needed	In accordance
7	Submission History	Residents click on the submission history page	Residents can see the history of certificate submissions and the progress of submissions	In accordance
8	Change Password	Admin, District Head and Residents click on the change password page	Admins, District Heads and Residents can change passwords	In accordance

Meanwhile, the results of the conducted usability testing, as elaborated in Table 3.

Table 3. Usability testing results

Code	Testing Aspect *learnbility*	Mark %
P1	This application has a level of simplicity in learning and use.	95
P2	This application provides significant assistance.	95
P3	The icon button on this application makes it easy to use.	90
P4	The typeface used in this application is easy to identify and read.	95
P5	The language used in this application is easy to understand.	95
	Testing Aspect *Effectiveness*	
P6	No need time long for fill in Personal Data for making certificate	95
Q7	Response application to user	90

	Testing Aspect *attitude*	
Q8	This application has a strong appeal.	95
Q9	The use of color composition in the system has been very well done.	90
P10	This application provides complete information about the process of making certificate at the Klamono district office.	90
P11	I am interested in becoming a user in this application.	95
Q12	I will recommend to others to use this app.	95

The researcher successfully calculated the average of each aspect of usability by dividing the total value of each aspect as measured by the number of statements. The results of the average presentation in Table 4 are as follows.

Table 4. The average results for each aspect.

Learbility	*Effectiveness*	*attitude*
94	92.5	93

The usability value is calculated from the results of the average value above to obtain the following values:

$$Usability(\%) = \frac{94 + 92.5 + 93}{3} \, x \, 100\% = \, 93{,}1\% \qquad (1)$$

Based on the calculation of the usability level, we found that the usability level reached 93.1%, indicating a high level of usability.

Comparing the results of this study with the previous research conducted by (Nurqolbiaha et al., 2023) we can see that their previous study used the waterfall system development method and could only perform one type of certificate creation, which was the business certificate certificate . In another study conducted by Desy, Oktaviyani, and Sylviana (2020) they also employed the waterfall system development method and discussed four types of certificate creation: land ownership statement certificate (SPPT), land certificate certificate, death certificate certificate, and inheritance certificate certificate .

In contrast, in this study used the Extreme Programming system development method and could facilitate the creation of seven types of certificate: regular certificate certificate, domicile certificate certificate, indigency certificate certificate, business certificate certificate, inheritance certificate certificate, good conduct certificate certificate, celebration notification certificate, recommendation certificate, and police clearance certificate.

CONCLUSION

From the research results, we conclude that implementing the Information system information of service certificate at the District Office Klamono benefit inhabitant in the manufacturing process certificate. Application This expectation can increase effectiveness and efficiency in service-making certificate and produce a report automatically. The result of black box testing shows that the developed system walks with 100% success. Additionally, results from usability testing show that the user's satisfaction level reached 93.1%, confirming that the system has reached set goals.

ACKNOWLEDGMENT

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