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Design of Public Service Information System

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Abstract

The design of the Public Service Information System aims to create an integrated platform that can improve the efficiency, transparency, and quality of public services. This system is designed to make it easier for the public to access various services. The system development method uses the Software Development Life Cycle (SDLC) approach with the Waterfall model. The system equipped with an administration module allows officers to manage data, process requests, and monitor service performance. The technology used includes the PHP programming language with the Laravel framework, MySQL database, and a responsive user interface using Bootstrap. The conclusion of this design is that the Public Service Information System can be an effective solution to overcome the problems of slow and less transparent public services. With the implementation of this system, it is expected to create faster, more accurate, and more reliable services, thereby increasing public satisfaction and supporting the realization of better governance.

Keyword: Website, SDLC, Information System, Community Service.

1. Introduction

At this time the development of information technology is running rapidly and encouraging people to create something new, which of course can be used to facilitate work and meet daily needs (Cordella & Iannacci, 2010); (Godfrey & Johnson, 2009). This certainly allows someone to access information quickly and easily which can be done anytime and anywhere. Many people use internet connections as one solution. The internet connection allows many websites that can be explored by users in getting better sources of information or services (Anser et al., 2023); (Khder, 2021). The existence of the internet today provides direct benefits because the internet can facilitate the needs required, for example, the delivery of information or services through sites or websites (Thongpapanl & Ashraf, 2011).

Public service is one of the important aspects of government that aims to meet the needs of the community effectively and efficiently (Aritonang, 2017). However, in practice, many government agencies still face various obstacles in providing optimal services (Kuswati, 2022), such as the length of the administrative process, lack of transparency, and limited access to information (Rose, 2004); (Winters et al., 2014). This often causes public dissatisfaction and hinders the realization of good governance (Rose, 2004).

The development of information and communication technology (ICT) has opened up opportunities to improve the quality of public services through digitalization (Latupeirissa et al., 2024). The public service information system is an innovative solution that can integrate various public services in one centralized platform as expected by the residents of Negeri Agung Prabumulih village, making it easier for the public to

access information and submit applications without having to come directly to the relevant agency office. In addition, this system can also assist officers in managing data, monitoring service processes, and producing accurate reports (Ndou, 2004).

Based on this background, this study aims to design a Public Service Information System that can improve efficiency, transparency, and accountability in the provision of public services (Sofyani et al., 2020). This system is designed by considering the needs of users, both from the community and service officers, and integrating data security aspects to protect sensitive information. Through the design of this system, it is expected to create a platform that can simplify the service process, reduce waiting times, and increase public satisfaction. In addition, this study is also expected to contribute to the development of the latest technology-based information systems that support digital transformation in the public service sector (Budiarto et al., 2024).

2. The Art of Research

Websites, the internet, and public services are interrelated in providing efficient access to information and services to the public (Budiarto et al., 2024). The internet functions as a global network that connects various websites around the world, allowing users to access information and services quickly and easily (Anser et al., 2023). Websites, as digital platforms, provide information needed by the public, such as administrative services, health, education, and government. With a website connected to the internet, public services can be more easily accessed by the public, reducing geographical barriers, and increasing transparency and efficiency of public services (Khder, 2021); (Aritonang, 2017). Good website design is very important to support population-based services because the website is the main platform that connects the government with the public in accessing population data and information (Budiarto et al., 2024). User-friendly and responsive design allows users, both citizens and officers, to easily access services such as registration, data changes, and identity verification online. In addition, a well-designed website can optimize the security system, maintain the confidentiality of personal data, and increase efficiency in managing population data. With the right design, population-based services can be more transparent, easily accessible, and provide convenience for the public in interacting with government services.

3. Method

The research method used by the author is a qualitative descriptive method by analyzing and summarizing various situational conditions and various data collected in the form of interviews and observations regarding the problems studied. Research data was obtained through observation and interviews with research objects and for its development this study uses the prototype method to describe user needs in detail because it is often difficult to determine needs in detail without seeing a clear picture. In this study there are several steps in developing the prototype method (Faiz et al., 2021); (Haliza et al., 2024), namely: One, the communication stage. Two, the quick plan stage. Three, the quick design modeling stage. Four, the construction of prototype stage. Five, the deployment, delivery & feedback stage. Furthermore, in its design this study uses several software (see table 1) to create this website.

Table 1. Software Tools Used

No	Software Analysis	Tools
1	Visualization Design	UML (Unified Modeling Language)
2	Business process analysis	Use case diagram
3	Business process activities	Activity Diagram
4	Business process relationships	Class Diagram

5	System testing	Black box test

4. Result

1. Stages of Communication

At this communication stage, the author conducts a communication stage or collects needs obtained through interviews with staff at the object, namely the Negeri Agung Village office. This stage is carried out to specify the needs of supporting aspects or software such as what is needed so that later the system is expected to run as minimally as possible so that village officials and the community can easily access it. To design and develop this public service system, several software are needed, including Xampp, Sublime Text, Chrome Browser, Bootstrap version 4.

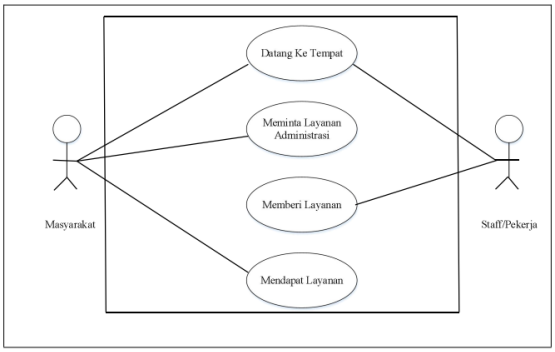

Figure 1. Use Case diagram of the running system

2. Quick Plan Stages

This planning stage is carried out with the aim of connecting user needs with the implementation process by the developer so that it is in accordance with the needs required by the user. At this stage, the planning stage for system design will begin, starting with an analysis of the current running system (see Figure 1) through a use case diagram involving the role of each user in the business process.

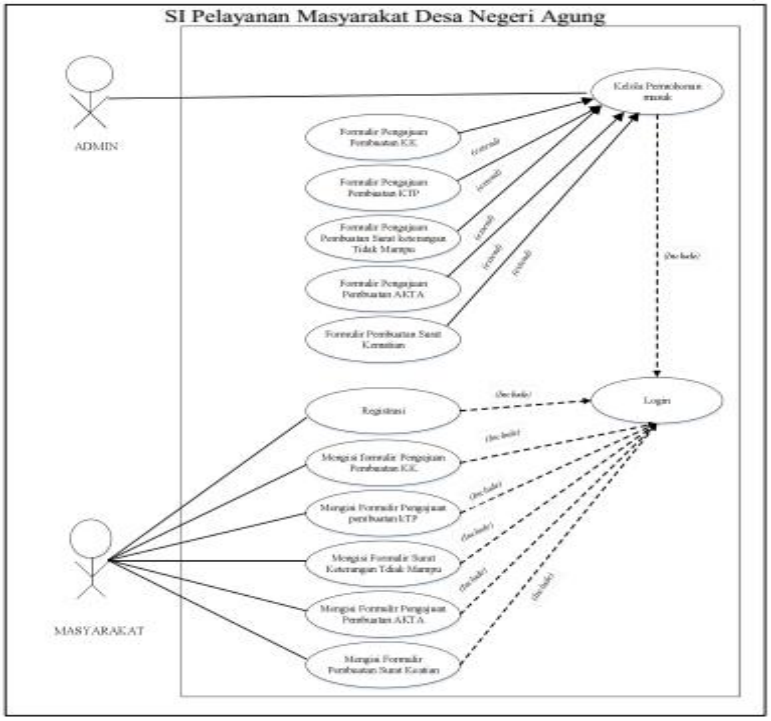

Figure 2. Use Case Diagram of the Developed System

3. Modelling Quick Design Stages

The system design aims to build a public service system at the Negeri Agung Village office. In order to make it easier for staff to provide services and for the community to get the services they need more easily and quickly. Procedure design is the initial stage of the system to be created, looking at the functional needs designed to create this system (See Figure 2).

4. Construction of Prototype Stages

This stage is the stage of developing the prototype design that will be developed, which consists of activity diagram design, class diagram design, database design and system interface design.

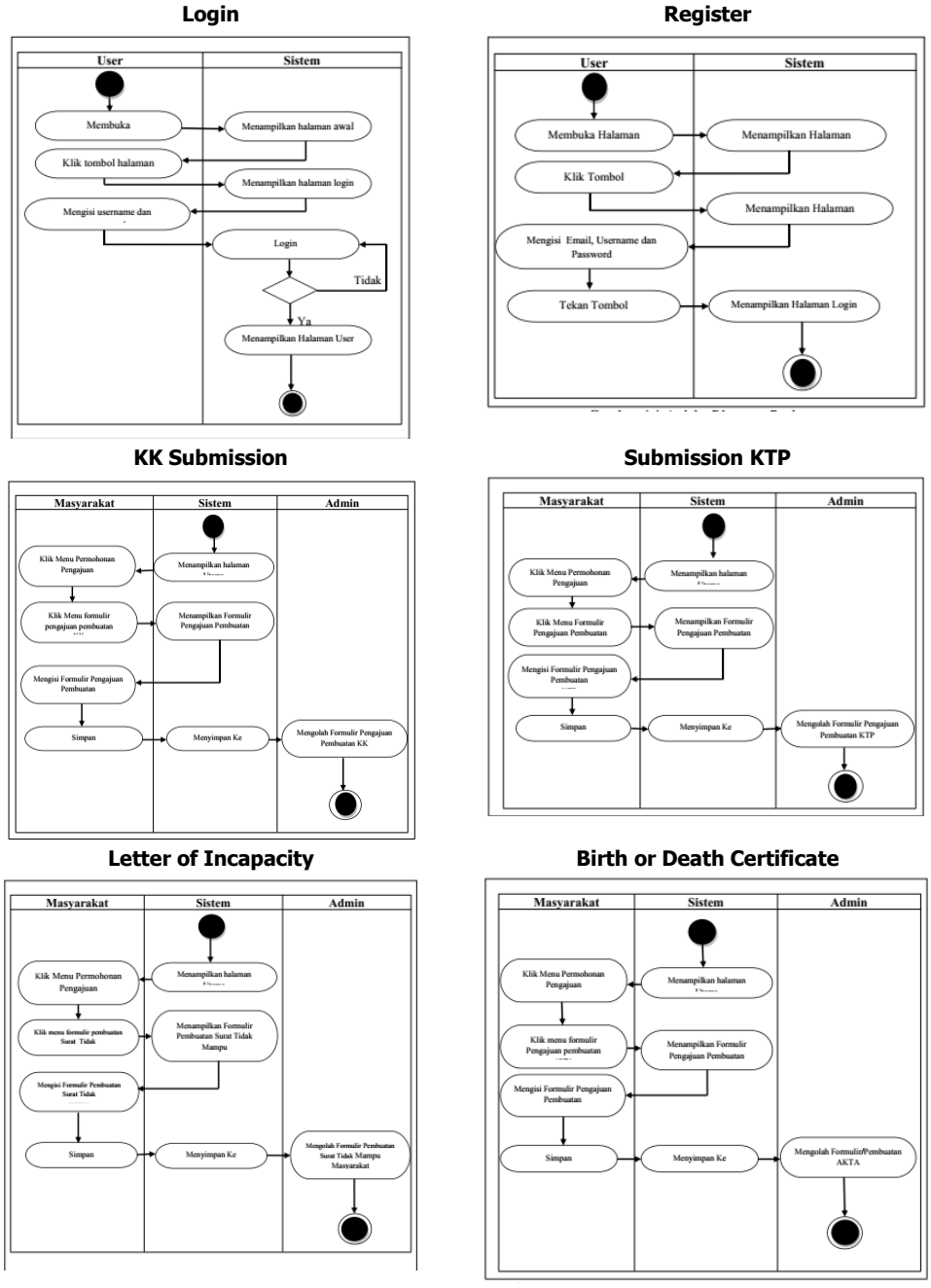

Figure 3. Collection of Community Service System Activity Diagram Designs

a. Activity Diagram

The activity diagram of the actors' activities in the web-based public service system at the Negeri Agung Village Office consists of 6 proposed designs (see Figure 3) according to the needs of the public service system.

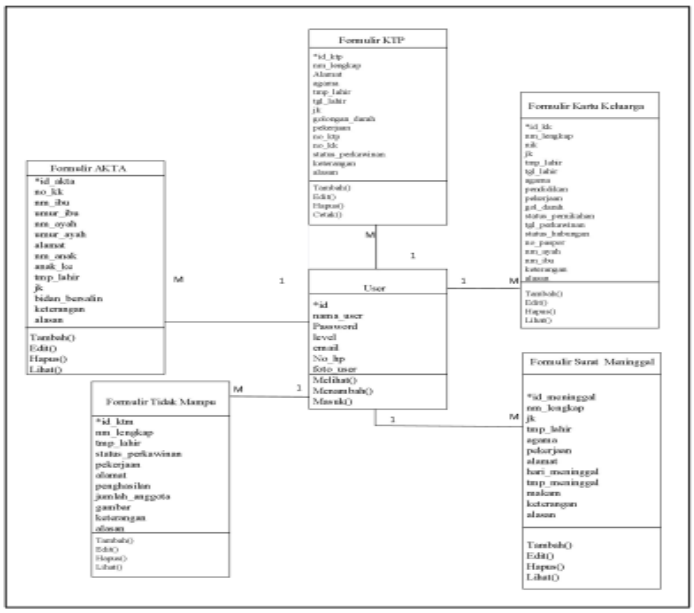

Figure 4. Class Diagram Design

b. Class Diagram

The class diagram in this study describes the relationships and activities that occur in the system design for public services (see Figure 4).

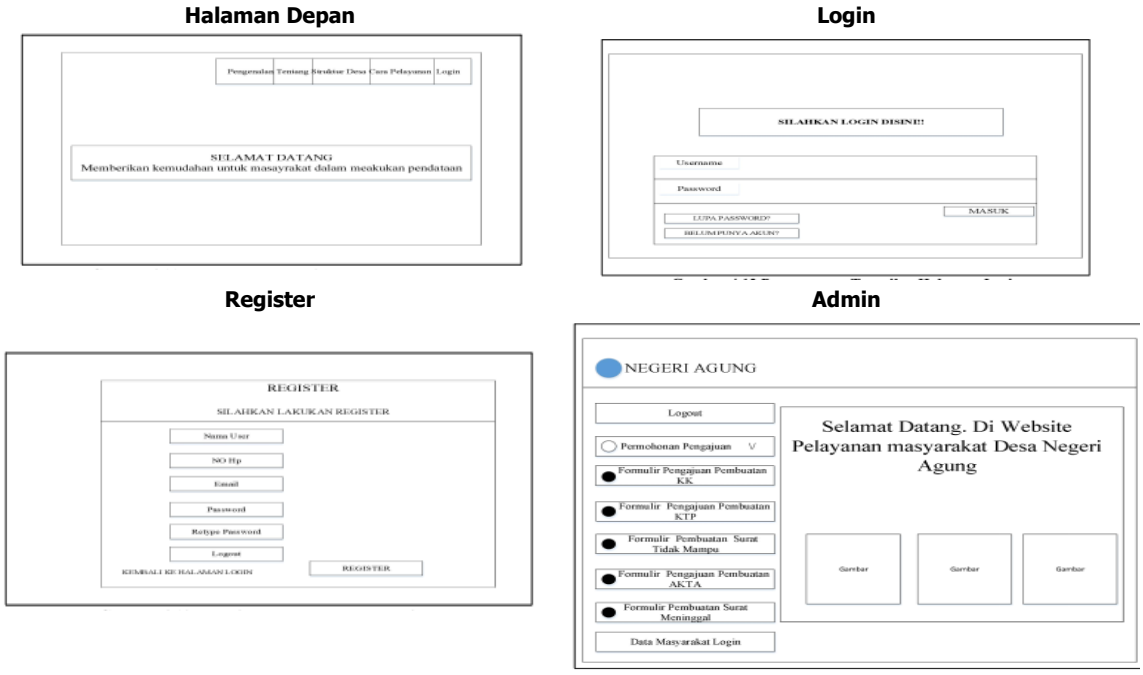

Figure 5. System Interface Prototype Design

c. Database Design

For the database design in this study, we use the php programming language to connect all the table designs in this system design (Database Mysql in PhpMyAdmin). The research design consists of 6 research table designs consisting of a certificate table, a family card table, a poor family information table, a resident identity card table, a death information table and a user table. All table designs in this study are adjusted to the provisions and needs of the research design.

d. Interface Design

There are several initial interface designs in this research (see Figure 5), including the design of the system's frontpage display, login page, register and admin menus.

5. Deployment, Delivery & Feedback Stages

To support the proposed system so that it can run optimally and in a targeted manner, software and data processing are required. The software and hardware used to support the creation of this system will be presented in the following table 2.

Table 2. Hardware and Software Specifications

No	Information	Specification
	Software	
1	Operating system	Windows 10
2	XAMPP	Version 3.3.0
3	Office	2013
4	Subline Text	3
5	Web Browser	Chrome, Mozzila, Firefox
6	Programming Language	HTML, PHP, etc
	Hardware	
7	Laptop	Fujitsu
8	HDD	500 Gb
9	System Type	64-bit
10	Memory (RAM)	8 Gb
11	Processor	Intel Core i3

Next, the interface design will be carried out according to the needs of the organization in providing services to the community. A good interface greatly helps users understand the process being carried out by the system (Haminah & Pakaja, 2024); (Miraz et al., 2021). The interface display begins with the front view of the system design which contains general information about the system website design (see figure 6).

Figure 6. System Front View Interface Page

On this register menu display (see figure 7), people or users who do not yet have an account to log in to the system must first register by entering the specified data.

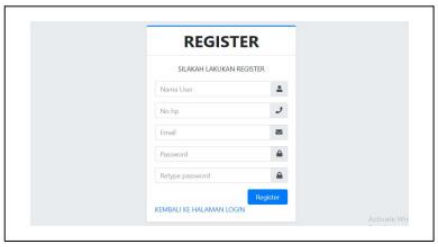

Figure 7. Register Menu Display

On the login page, if the public has registered, the public only needs to log in by entering the data from the previous registration (see figure 8), but if the public or user has not registered, the public cannot log in and must register first.

Figure 8. Login Page View

On the main administration menu page display, this will display the main page that is seen when the admin logs in or enters the system (see figure 9).

Figure 9. Main Menu Display of Admin System

On the main menu page, this user will display a data or information page that can be used by the public (see figure 10).

Figure 10. Main User Menu Display

Next, the design for the display interface of several public services, for example: application for making a family card (KK), making a resident identity card (KTP), information on poor residents, making birth certificates and death certificates. An example of the display interface for the application service for making a family card and resident identity card by the public will be presented in Figure 11 below.

Family Card Submission UI **ID Card Submission UI**

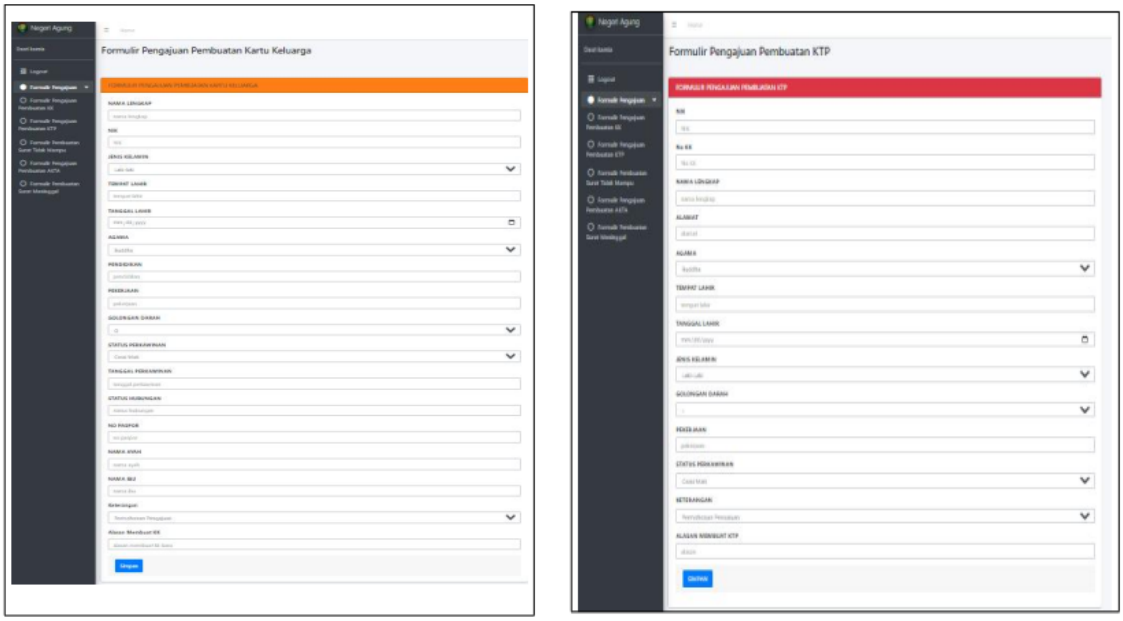

Figure 11. System Interface Display for Creating ID Cards and Family Cards

The last stage is to conduct system testing of the previously designed system. Testing is carried out to ensure quality, as well as to identify weaknesses in the system to be built. This testing aims to determine whether the system built has met the criteria in accordance with the objectives of the system (Prasetyo et al., 2024). The results of system testing using the black box method are carried out on all system interfaces that have been designed (see table 3) and the results of the functional system testing scenario produce results as expected and in accordance with the objectives of creating a service system for the community.

Table 3. Testing of Systems Designed with the Blackbox Method

No	Scenario	Test Item	Expected Results	Conclusion
1	Menu Login	Go to the main menu page	Successfully logged in to the main page	Valid
2	Menu Home	KK application form button, KTP application form, poverty letter application form, AKTA application form, death certificate application form, community data login & logout	Displays the application form for making a family card, application form for making an ID card, certificate of inability to pay, certificate form, death certificate form, & logout	Valid
3	Death Certificate Form Menu	Delete death news button	Executes the delete command	Valid
4	Death Certificate Printing Menu	Death certificate print button	Execute a print order for a death certificate	Valid

5	Death Certificate Edit Menu	Death certificate edit button	Performing the death certificate edit command	Valid

5. Discussion

Website design for public services must prioritize ease of access and navigation for all users, including in the design of services for the people of Negeri Agung Prabumulih Village. Intuitive and responsive design is key to ensuring that information and services can be easily accessed through various devices (Budiarto et al., 2024); (Dong et al., 2024), such as computers, tablets, or smartphones. In addition, the use of simple and clear language is very important so that all groups, including those with limited digital literacy, can understand the content presented. Features such as well-organized menus, clear buttons, and step-by-step guides will help users find the information or services they need without difficulty (Daniel et al., 2023).

In addition to design aspects, user data security and privacy should also be a top priority in designing a public service website. Given that the website will handle sensitive data such as personal information, population documents, or financial transactions, it is important to implement strict security protocols. This includes the use of data encryption, SSL certificates, and strong authentication systems. In addition, the website must be equipped with a transparent privacy policy, explaining how user data will be managed and protected. Thus, the public can feel safe and confident when using the service. Finally, the design of a public service website must consider aspects of inclusivity and accessibility for people with disabilities. This can be achieved by implementing web accessibility standards, such as WCAG (Web Content Accessibility Guidelines), which ensure that the website can be used by individuals with various needs, including those who use assistive devices such as screen readers or special keyboards. For example, the use of alternative text for images, adequate color contrast, and logical content structure will make it easier for users with visual or motor disabilities to access information. Thus, the website is not only an efficient tool for the general public, but also friendly to all groups, reflecting the principles of fair and inclusive service.

6. Conclusion

Website design for public services must be designed with ease of access, data security, and inclusivity in mind. An intuitive and responsive design ensures that all users, regardless of their digital literacy level or the device they use, can access information and services smoothly. Strong security and transparent privacy policies are also important foundations for building public trust. In addition, by implementing accessibility standards, websites can reach all groups, including people with disabilities, so that the services provided are truly equitable and inclusive. By combining these elements, public service websites not only become efficient tools, but also reflect a commitment to providing quality, fair, and friendly services to the entire community. With this design, there are several things that are expected through this research, for example: One, the public can access services anytime and anywhere without having to visit a physical office. This reduces waiting time and transportation costs, while increasing user satisfaction due to a faster and more efficient process. Two, a well-designed website can provide clear and detailed information about service procedures, requirements, and application status. Features such as online tracking and automatic notifications allow the public to monitor the progress of their applications in real-time.

There are several limitations of website design to support services to the community, for example: One. Not all people have stable internet access or adequate devices to access the website. This can be an obstacle for those who live in remote areas or have economic limitations. Two, Another people, especially older people or those who are less familiar with technology, may have difficulty using the website that has been designed. This can hinder the distribution of information or services in question.

Acknowledgments

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