



Design of RT/RW Portal Public Service Applications to Build a Technology Literate Society in the Era of Society 5.0

Febri Dolis Herdiani^{1,*}

¹Institut Teknologi Al-Muhajirin, Purwakarta, Indonesia

Article Information

Article History:

Accepted by the Editor: June 29, 2022

Final Revision: June 26, 2022

Published Online: June 30, 2022

Keyword

Application Portal Rw

API

SDLC

Society 5.0

Correspondence

E-mail: dolsfebri@gmail.com*

A B S T R A C T

The role of RT/RW administrators is not only as administrative public servants but also as a servant to the interests of the wider community. Therefore, their role needs to be optimized so that the aspirations of the citizens can be accommodated. However, the large area and dense population often make RT/RW administrators constrained in accelerating access to services and increasing the effectiveness of their activities. The role of information technology is very important, considering that the use of technology has been proven to be successful in improving public services. The utilization of an existing information system is not necessarily in accordance with the needs and related regional policies. In this study, the development of a system adapted to the needs and regional policies, especially in Sekeloa Village, Coblong District, Bandung City was carried out. An RT/RW Portal application was produced which has five main features, namely reporting events, invitations to activities, voting, transparency of funds, and printing reports. This application development method uses the SDLC (Software Development Life Cycle) method with stages of data requirements analysis, software design and design, application development (programming) and application testing before being implemented in RT-RW. The results obtained are in the form of an RW portal application that can assist the function and role of the RT/RW both in administrative management, as well as the dissemination of information in the form of news on activities surrounding the RT/RW. The conclusion is that the API of this application can be developed to build mobile.

This is an open access article under the CC-BY-SA license



1. Introduction

Good public services to the community need to be carried out by all levels of government apparatus, both at the Central, Provincial, City/Regency, District, Village, or Urban village. Public services from the government are required to be faster, transparent, and easier, in order to increase the sense of trust and comfort of citizens [1]. In Law (UU) Number 25 of 2009 it is explained that public services are a series of activities to meet service needs in accordance with the provisions of the Law for every citizen and resident of goods, services, or services administrative provided/ by the service [2]. Public services that are directly related to the interests of the community and the most basic are the Rukun Tetangga or Rukun Warga (RT/RW). With a large area and a fairly dense population, RT is generally divided into more than three, so the existence of RW is important and necessary in order to accelerate service access and the effectiveness of implementing activities in the RW area [3]. The RT/RW plays a vital role in the creation of good public

services. The existence of RT/RW is very much needed in all community activities because RT/RW are the foremost public servants for community members. RT/RW functions to coordinate and facilitate certain civic activities in addition to providing public services to them. However, public services are still less than optimal given the lack of communication or reciprocity in two directions between the head of the RT/RW and community members. Such recording mutations, roles as population, their role is considered to be limited to carrying out administrative making certificates making in Identity Cards other correspondence (KTP). This is important to note because the head of the RT/RW can serve the interests of the citizens more broadly, for example, receiving aspirations or complaints from residents, detecting social problems early (cases of theft, drugs, covid-19, malnutrition, damage to embankments, and other problems). In addition, the role of the head of the RT/RW can help make the atmosphere of election day (PEMILU) more conducive. In order for this to be achieved, the head of the RT/RW needs to coordinate with the residents in their environment, as well as bridge the relationship between residents in helping to deal with the problems they face. Several previous studies have been conducted to help improve public services[1],[4],[5],[6],[7].

These studies generally take advantage of the role of information technology in improving services. technology data processing (the process of obtaining, compiling, storing, and manipulating) can be carried out quickly and accurately, producing information that can be used for decision making. Internet media has also become an inseparable entity, allowing public servants to interact with community members without any limitations of space and time [4] However, the products of previous research may not necessarily be implemented for other regions due to differences in needs and related regional policies. In this study, observations were made in one area in the city of Bandung, precisely in Sekeloa Village, Coblong District. Based on the results of interviews with the head of RT/RW 04/05 found five main problems in public services to its citizens, namely transparency of funds, notification of information (invitations) of activities, voting, incident reports, and printing of reports. Based on the explanation of these problems, research development proposes this the information technology products, Smart RT/RW applications. It is hoped that this application can help the role chairman or administrator of the RT/RW in Sekeloa Village, Coblong District. The improvements made in this study are the use of mobile platforms and in sending data by the community because citizens tend to have high mobility and demand the use of compact applications. In addition, this application can select community report data that is indicated to be duplicate, send notifications every time there is an invitation or opinion poll from the head RT/RW, and provide feature fund transparency.

Indonesia is entering the era of society 5.0, which is a human-centered and technology-based society. For the record, the era of society 5.0 was preceded by the era of hunting (society 1.0), agriculture (society 2.0), industry (society 3.0), and information technology (society 4.0) [1]. The Rukun Tetangga (RT) and the Rukun Warga (RW) are descriptions of the smallest presidential system of government cycles that exist in our society (Indonesia). RT/RW is one of the main components in the concept of community-centered local government [2]. The RT has the task of being an extension of the local government such as helping carry out service tasks to the community, absorbing community aspirations, assisting population data collection and government administration, helping to create peace, order, and harmony among citizens, and mobilizing community self-help through mutual cooperation and community empowerment to create an environment that safe, clean, orderly and sustainable [4]. As the smallest form of government, RT/RW performs the various functions mentioned above, such as administrative services in the form of a cover letter, RT-RW. Collect community aspirations in the form of reports which are then submitted directly to the headman for follow-up. Support activities, whether encouraged by the village head or community initiatives related to self-help in maintaining cleanliness and environmental sustainability. Apart from RT, RW and community participation also play a very important role in the success of the proposed development project funds based on real needs [4]. Every citizen certainly expects a RT/RW cover letter service to be fast and precise. However, not all expectations cannot be realized properly [5]. This is because apart from being an RT/RW, usually the head of the RT/RW works as an office/private worker [5]. So that the correspondence service

takes several days. This does not mean that the RT/RW is incompetent, but that the RT/RW administrators need supplements to make it easier for them to provide services. Entering this era of information disclosure, it is necessary to support the performance of RT-RW based on information technology, especially now that Indonesia is facing the COVID-19 pandemic since it was announced in mid-March 2020 until now Restrictions on mobility (social distancing) through face-to-face in order to prevent the spread of COVID-19 [6] have become an obstacle in itself to an interaction between residents and RT. Therefore, it is necessary to develop an application that can support the performance of the RT/RW as part of the smallest government. The goal is that the application developed can be useful for the community, especially in RT-RW management, and become the basis for further research in developing applications to support society 5.0 and Smart City. By developing an RT-based citizen information system, all needs related to residents can be accommodated online, especially in the most basic case, namely managing citizen data [7].

The benefits of this research are: (1) producing a Portal RT/RW application dashboard that can support RT/RW performance, (2) making it easier for residents to communicate with RT-RW and get cover letter services from RT/RW without having to meet face to face first. formerly. The urgency or priority in this research are: (1) Can support government programs in developing Smart City and support Indonesia in facing society 5.0. (2) Facilitate RT-RW in carrying out administrative management and publication of activities as well as handling citizen reports. (3) Can improve the quality of RT services to residents and support the process of society 5.0, because all information is obtained in the palm of the hand, and is easily monitored by the RW and the Headman.

2. Method

This RT/RW Portal application was developed using the waterfall method [8], namely implementing system design through the stages of the System Development Life Cycle (SDLC). The characteristics of the support model the development of software with requirements that are not dynamic [8],[9]. This is in line Portal Application RT/RW The development is carried out sequentially or sequentially from the analysis, requirements, design, generation code program testing, deployment, to maintenance stages.

The stages are as follows: (1) Stages of analyzing the needs of the research object: At this stage, research members one and research members two conduct surveys to collect data and conduct interviews with respondents, namely the head of the RT. 01 to RT.06 Sekeloa Urban Village of RW.005 Sekeloa Urban Village regarding RT/RW management procedures, such as procedures for reporting community activities, procedures for reporting residents' aspirations, community contributions, reports on the use of community contributions, and correspondence services to RT/RW, in Sekeloa, especially RW. 05 Bandung. After the data is collected, the data is analyzed and submitted to the lead researcher. The survey was conducted before the covid 19 pandemic. (2) Stages of system design or design: The lead researcher then carried out a system design based on the results of the needs analysis stage of the research object by research members one and research members two. This stage determines the possible requirements in the RT/RW Portal Application. The form of analysis process is in the form of a documentation system that is used to design the UML system, as the basis for application development. Unified Modeling Language (UML) is a system development technique that using a graphical language as a tool for documentation and system specifications [9]. At this stage, the RT/RW Portal application is structured with an object-oriented approach. In addition, database design is also carried out according to application needs. (3) Stage of program code creation: At this stage, coding is carried out based on needs such as frontend and backend from using the RW Portal Application. The coding is done by programmers using the Yii framework, so that it is easy, fast, and, from a security point of view, guaranteed. Yii is a component-based, high-performance PHP framework for large-scale Web application development [10]. (4) Testing and evaluation stages: All researchers, both the chairperson and members, tested the black box testing method, namely testing by looking at the input, processes, outputs, and conclusions that will be generated [11]. The results are stated in

the research results document and continue to evaluate if there is a discrepancy between the system design and the resulting application. Figure 1 is the SDLC stage.

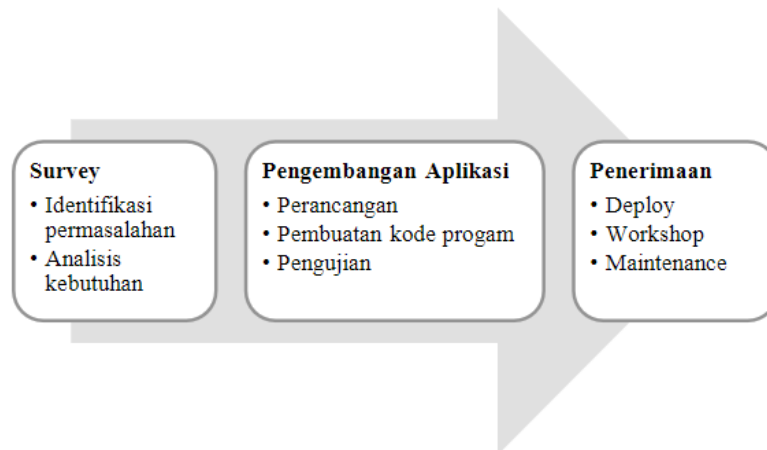


Figure 1. SDLC-Waterfall Model [8]

3. Results and Discussion

The research stages in the development of the RT/RW Portal Application are starting with needs analysis, design, code generation, testing, and implementation. (1) Needs analysis: Needs analysis process in the RT/RW Portal Application, namely who is the actor or user in the RT/RW Portal Application. The users who manage and access the RT/RW Portal Application are residents who are registered in the RT-RW, the treasurer of the RT-RW, the Head of the RT-RW and the Headman. The data needed in making this application is data for submitting letters to the RT-RW by residents. (2) Design: Design Analysis or Analysis of software requirements on the RT/RW Portal Application explains what can be done by the application so that it can meet user needs.

User needs: (1) Citizens: login, accessing news data accessing , information, data accessing contribution, data accessing cash data accessing citizen report data, letter data, logout. (2) Treasurer: login , manages citizen dues data, manage cash data RT-RW , news data, information data, logout. (3) Headman: login, access news, data access citizen data, access resident report data, log out. (4) RT-RW: login, manage information, data manage contribution, data manage data types of letters, manage cash, data manage citizen report data manage data , submissions , manage officer data, manage residents, logout.

System requirements: (1) Users are required to login first by filling in a username and password, if login is successful then each user can access according to the specified access. (2) Submission of letter data can be done by resident users and the submission will be verified by the RT-RW section. (3) The search process can be done based on the existing fields. RT-RW can verify the submission of the letter. (4) Users must log out when they are finished using the application.

Use case diagrams are models for the behavior of the information system to be constructed. A use case describes an interaction between one or more actors and the information system that will be created [9]. Figure 2 is a use case diagram for the RT/RW Portal application, which shows the behavior of the actors.

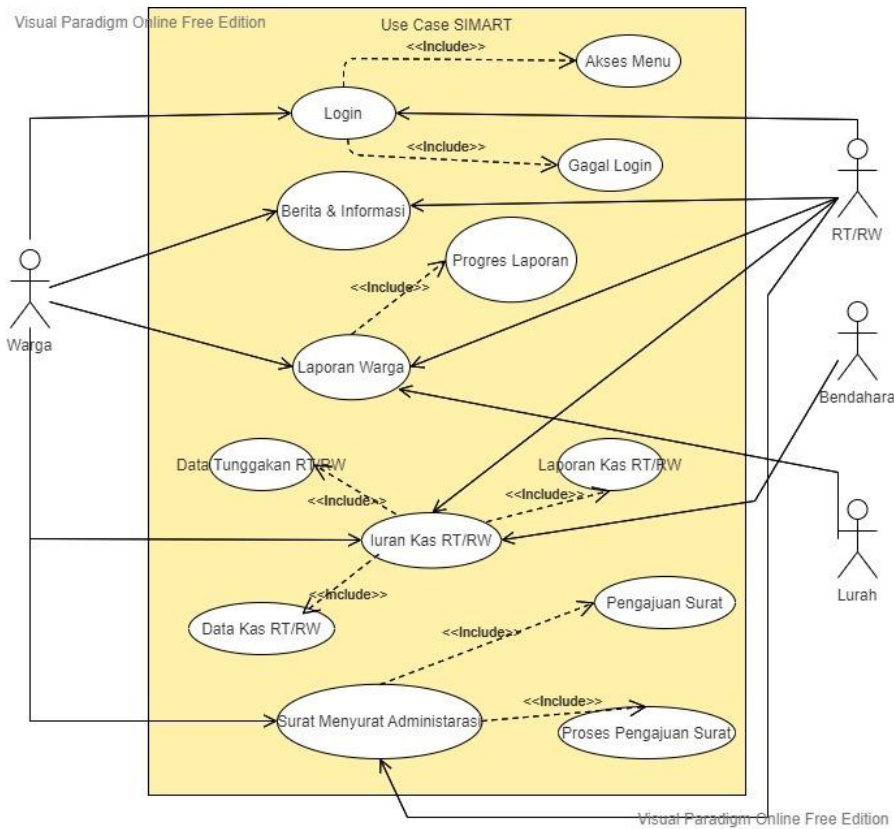


Figure 2. Use Case Diagram

The database is a collection of logically related data and is designed to obtain the data needed by an organization [9]. The RT/RW Portal application database uses MySQL and is implemented using LRS (Logical Record Structure). MySQL is included in the category of database management systems, a structured database in processing and displaying data [12]. The logical record structure (LRS) is the result of the transformation of ERD to LRS which goes through a cardinality process and produces attributes that are mutually related [13]. Figure 3 is the LRS (Logical Record Structure) on the RT/RW Portal application.

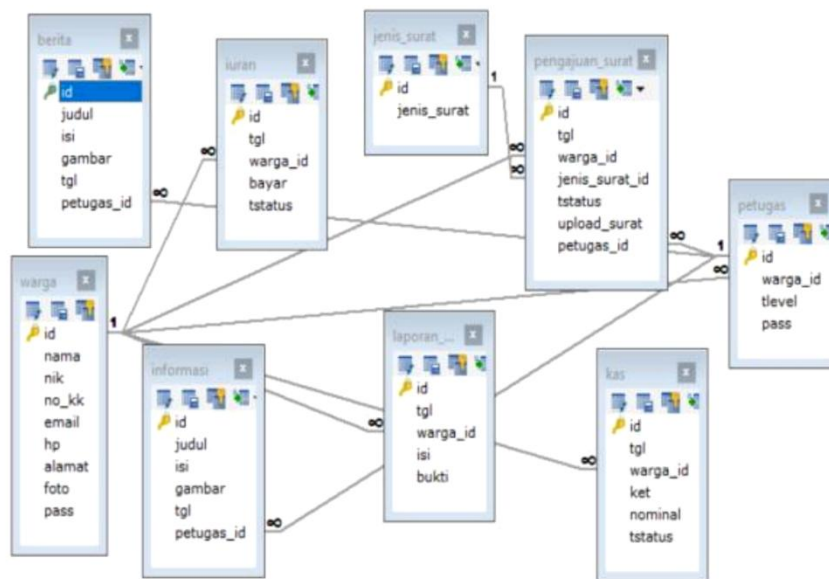


Figure 3. Logical Record Structure

This research produces an application called Portal RT/RW and will be applied to the object of research, especially in RT/RW. The RT/RW Portal application can be used by RT/RW administrators and residents in the process of recording and processing data such as filing letters and RT/RW cash reports. In addition, this application also produces information data related to activities carried out in RT/RW, such as mutual cooperation activities and so on. The RT/RW Portal application also makes it easier for residents to report sudden events in the RTRW quickly and easily.

Figure 4 is the user interface for the login page.

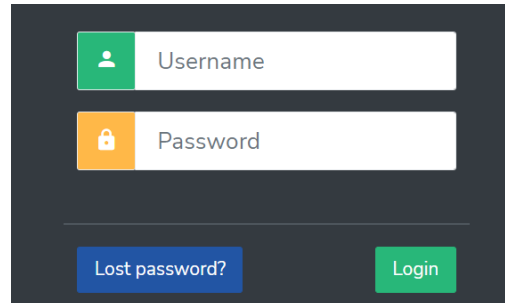


Figure 4. User Interface for User Login

It is a menu display for user login that functions as data security. Because this application is made with login authentication using a username and password, interested users cannot easily access it.

Figure 5 is the user interface for dashboard menu. This dashboard display menu shows information in the form of the most recent news that can be accessed quickly, ensuring that residents do not miss any important information or news.

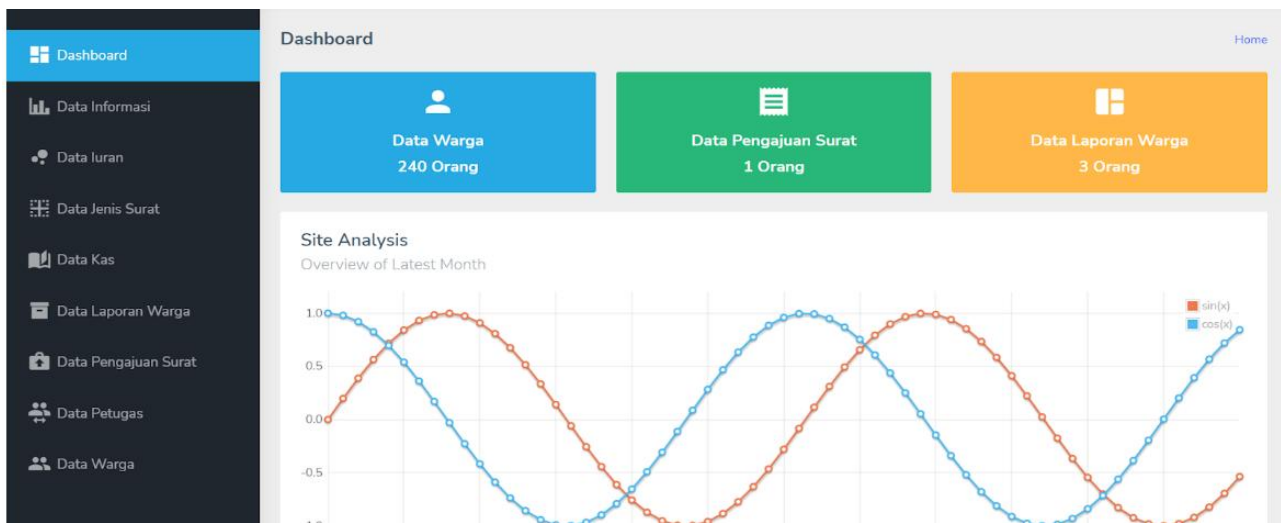


Figure 5. User interface of Citizen

Figure 6 is the user interface for information data menu. This Information data menu is a menu for uploading and updating all data and information that will be submitted to RT/RW residents.

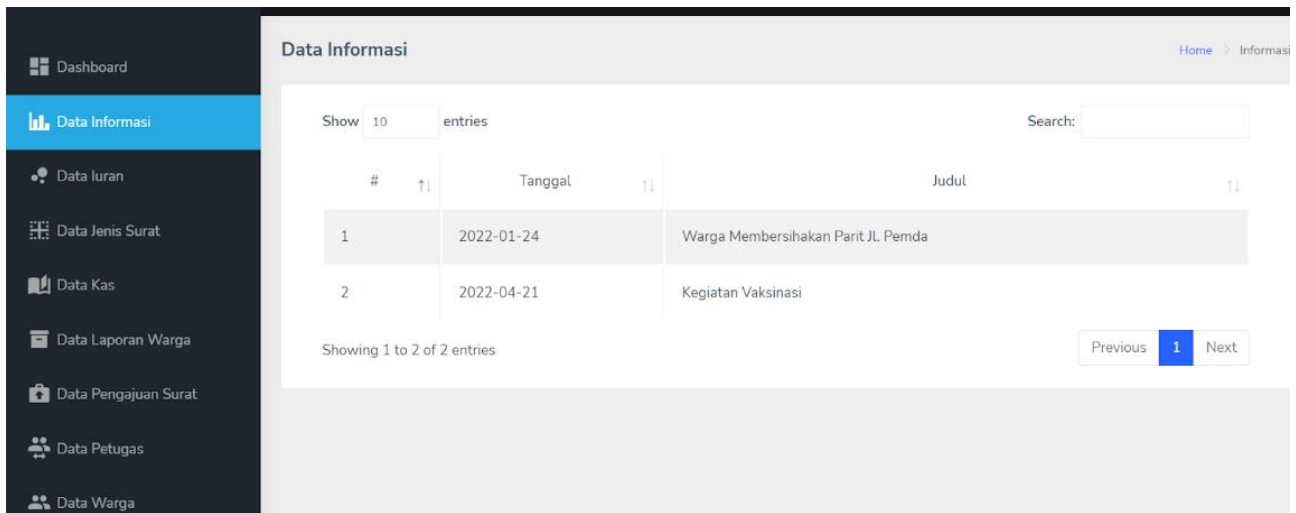


Figure 6. Information Data Menu

Figure 7 is the user interface for contribution data menu. The data functions to carry out financial transactions such as collecting RT/RW cash payments, managing RT/RW financial reports, and display reports on the use of RT/RW cash funds.

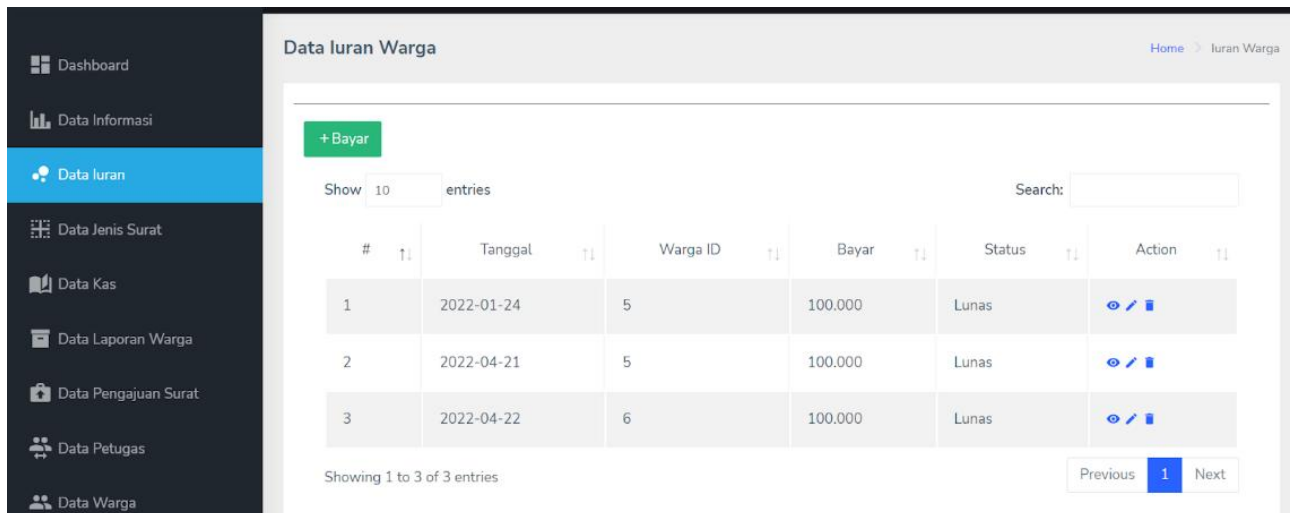


Figure 7. User Interface of Citizen Contribution

Figure 8 is the user interface for menu data types of letters. The letter type data menu serves to display the type of letter for the benefit of residents and RW administrators. Can add, edit and delete by the RW administrator.

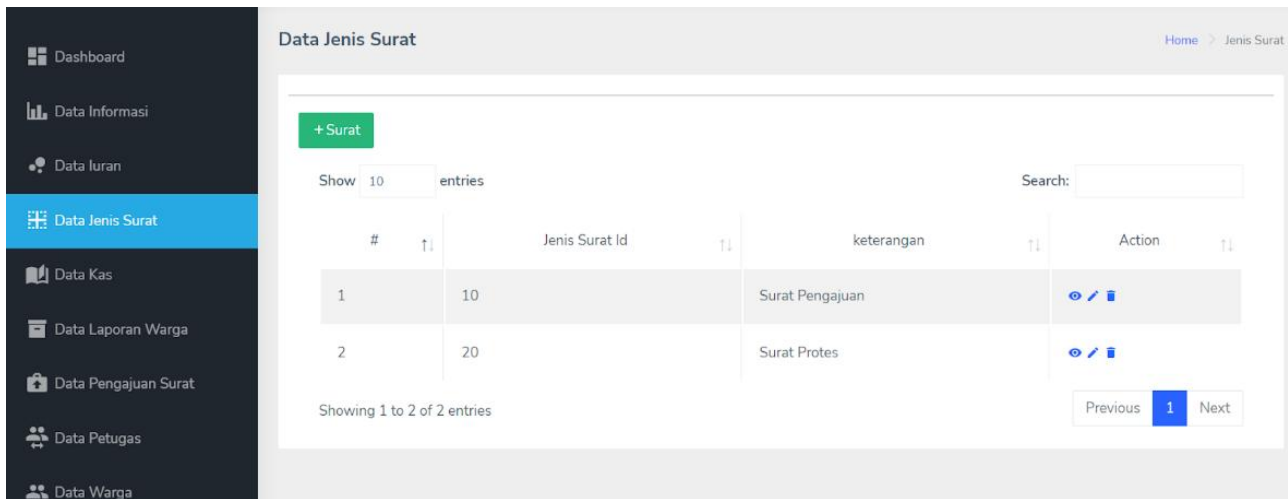


Figure 8. User Interface of Letter Type Data

Figure 9 is the user interface for cash data menu. In this cash data menu, the administrator who has the task and authority to manage cash, does so in accordance with the access rights granted by the admin or RW head.

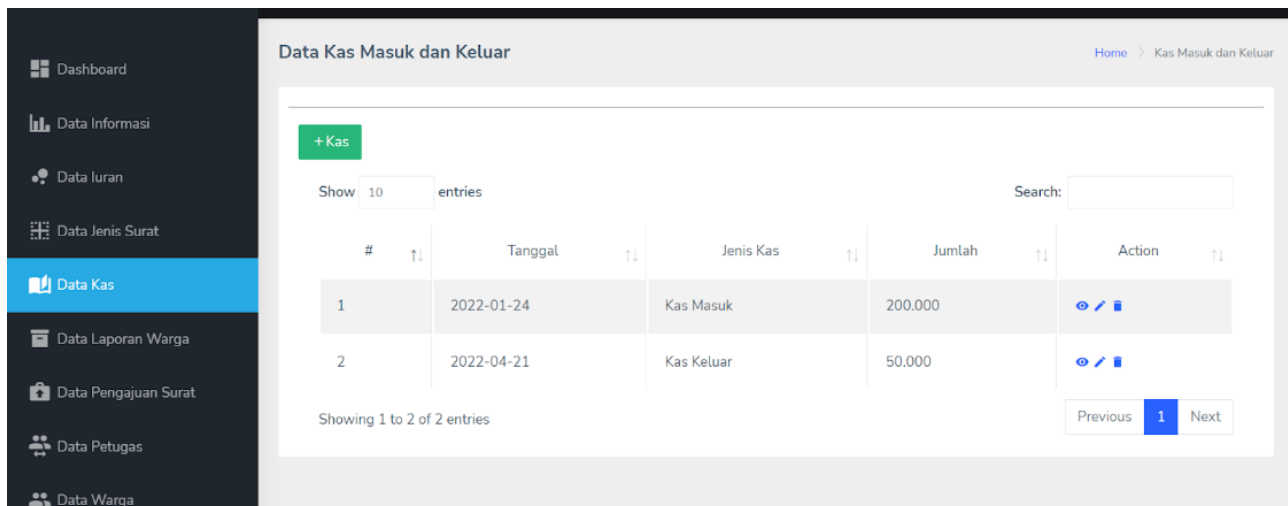


Figure 9. User Interface of Cash Data

Figure 10 is the user interface for menu of citizen report data. Data menu contains all data updates for all reports that occur in the residents' environment in real time and up to date.

#	Tanggal	Warga Id	Laporan	Action
1	2022-01-01	22	Kehilangan Sandal	View Edit Delete
2	2022-01-01	12	Kehilangan Gayung	View Edit Delete

Figure 10. Citizen Report Data

Figure 11 is the user interface for menu submission of letters. The data submission menu contains all the data regarding the submission of citizen letters.

#	Tanggal	Warga ID	Jenis Surat ID	Status	Action
1	2022-01-24	12345 Nama Warga	Pembuatan KTP	Proses	View Edit Delete

Figure 11. Data Submission of Letters

Figure 12 is the user interface for officer data menu. The data menu contains all officer data and their access rights settings.

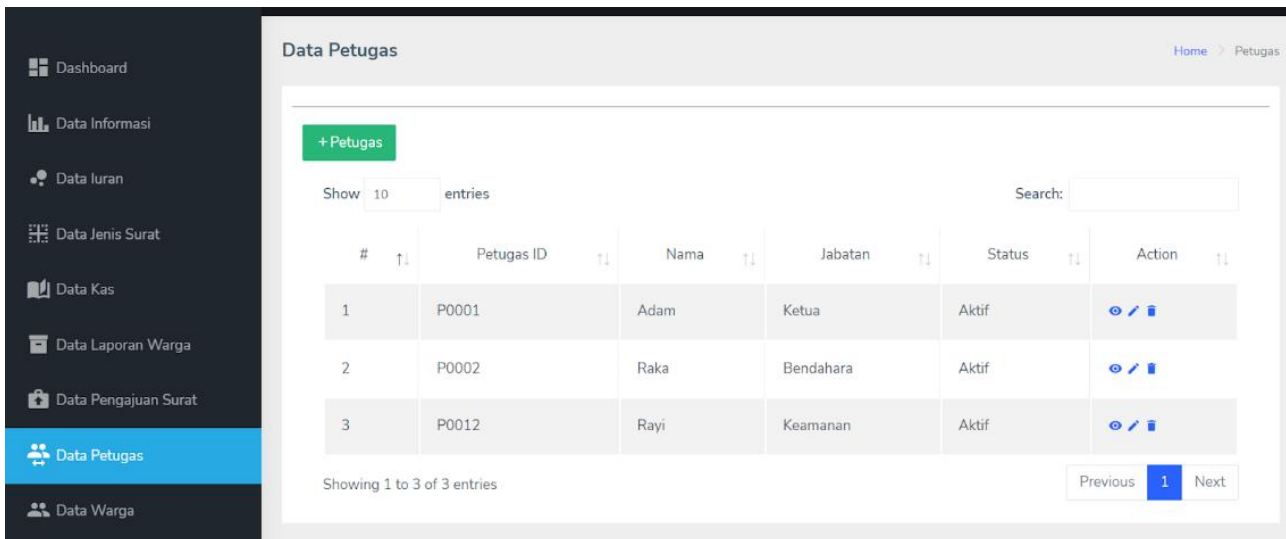


Figure 12. User Interface of Officer

Figure 13 is the user interface for citizen data menu. This citizen data menu contains all citizen data that has been inputted by the officer. This menu contains all citizen data that has been inputted by the officer.

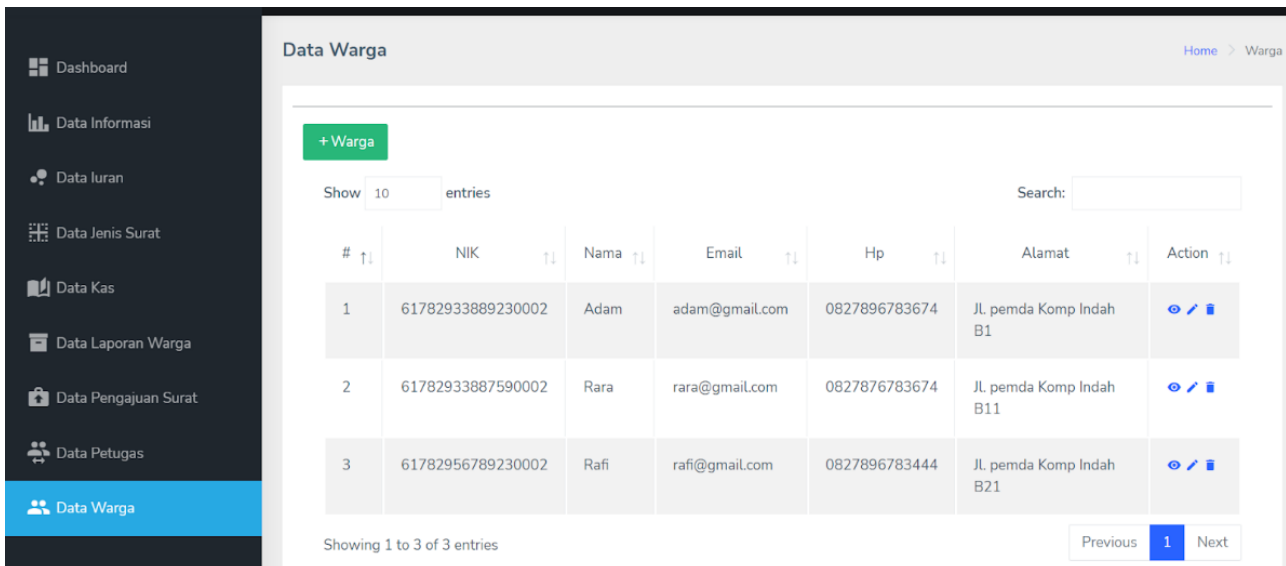


Figure 13. Citizen Data

Programming code using the Yii2 framework. The manufacturing process is also standard with the concept of Object-Oriented Programming, which has a Model View and a Controller. So that making the RT/RW Portal application does not take a long time. Tests carried out are Black Box testing. Where each interface is tested one by one. That is starting from testing the login, and the menus that exist in each actor or user until logging out. Test Results using black box testing, based on the test case design, the test results are shown in Table 1.

Table 1. Black Box Testing

Id	Testing Description	Expected	Results Testing Results	Conclusion
L01	Enter Username and pass with username "sandy" and password " sandy123" then click the login button	access is successful, the system will display all application menus according to the access rights of the logged in user	.	According
L02	to ", Password be filled with "abc123" then click the Login button	. Access Login Failed, the system still displays the Login form	.	abc123
Fill	the enter NIK "abcdefgh" and name "123"	Data entry failed; the system refused to save the display data back to the data entry form.	Data failed to save and displays an error message.	In accordance
A02	Entering cash data by entering the type of cash "Kas RT" and the nominal amount of money in rupiah "200.000"	Data input is successful, the system will save to the database. The data will be displayed in the data table. The data	was successfully saved and the system displays the appropriate and successfully saved	According
A03	Entering Cash Data by Entering "122338989" and the nominal amount of money "2.89"	save	If the data was not saved successfully, the system displays a message that the data was not saved successfully, check the data again.	According

The implementation carried out in this research is by hosting so that it can be directly applied. The registered domain is PortalRW_05Sekeloa.com.

4. Conclusion

Based on the results of the research, it can be concluded that, in general, the needs of public services in the Terusan Village, especially RW 05, have been successfully fulfilled. The thing that is still not covered is the automatic recall of resident reports or incidents that are indicated to be duplicated. However, this can be circumvented by workshops or outreach activities that invite residents not to report the same incident. The success of the RT/RW Portal application depends on good cooperation between RT/RW administrators and their citizens. As a suggestion, the development of the RT/RW Portal application needs to apply a semantic method that can identify duplicate reports of citizen incidents. This needs to be done so that the RT/RW management can focus on a solution. In addition, there needs to be strong cooperation with the Regency or City Government so that the report of the RW head can be known by the wider policy holders quickly.

References

- [1] M. Fukuyama, "Society 5.0: Aiming for a New Human-Centered Society," Japan Spotlight, pp. 47-50, Jul. 2018.
- [2] Utomo and Andalina, "Capacity Development of RukunTetangga/RukunWarga as 'Grassroots' Organizations in the Era of Widespread Decentralization," Journal of Administrative Sciences, vol. 6, pp. 18-33, 2009.
- [3] Sutarmidji, "Pontianak City Regional Regulation Number 10 Year 2011 Concerning Neighborhood Associations (RT) and Residents Associations (RW)," Pontianak, Oct. 2011.

- [4] N. Purwatmini, Shalahudin, and HS Yudianto, "The Role of the Head of the RukunWarga as Servant Leader and Society for Success in Getting Infrastructure Development Projects," *UMA Journal of Public Administration*, vol. 8(1), pp. 50-56, 2020.
- [5] M. Khafid and A. Wahyudin, "Preparation and Implementation of a Public Service System for Rt/ Rw Online Cover Letter to Realize a 'Smart City' Semarang," *Engineering Journal*, vol. 16(20), pp. 209-218, 2018.
- [6] Public Relations, "President: Our Priority is to Prevent the Spread of Covid-19 More Wider," <https://setkab.go.id/ppresi-prioritas-kitatangan-penyebaran-covid-19-more-broad-again/>.
- [7] Sarmidi, EDS Mulyani, RA Wiyono, and Gunawan, "Citizen Information System (Simwarga) Web-Based RT/RW Level," *National Seminar on Community Service (SNPMas)*, pp. 447-454, 2019.
- [8] RA Sukanto, *Software Engineering Structured and Object Oriented*. Bandung : Informatics, 2015.
- [9] Indrajani, *Database Design (Case Study All in One)*. Jakarta : PT Elex Media Komputindo, 2015.
- [10] "Definitive Guide For Yii 2.0," <https://www.yiiframework.com/doc/guide/2.0/id/intro-yii>.
- [11] U. Hanifah, R. Alit, and Sugiarto, "Using the Black Box Method in Testing Outgoing Mail Information Systems," *SCAN*, vol. XI (2), pp. 33-40, 2016.
- [12] MQ Khairuzzaman, "Analysis and Design of Electronic Customer Relationship Management Information Systems(e) -Crm) PT Delta Jaya Motor Singkawang," *Journal of Equator Informatics*, vol. 4, pp. 220-224, 2016.
- [13] A. Lubis, *Basic Database for Computer Science Students*. CV. Main Budi, 2016.