

Community Service Monitoring Information System at The Level of Community Harmony of Citizens

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Abstract

Effective and efficient public services are a fundamental requirement for improving the quality of interactions between citizens and government officials at the sub-district, village, and neighborhood association (RW) levels. Conventional, manual-based service systems often result in delays, long queues, and limited transparency. This study aims to design and build a web-based Community Association Service Information System at Perumnas Antang Blok 10 by adopting the System Development Life Cycle (SDLC) method as a system development framework, and the Multi-Objective Optimization on the Basis of Ratio Analysis (MOORA) method as a decision support tool in the social assistance acceptance process. The results show that the developed system is able to accelerate the reporting process, improve data accuracy, and provide services without having to go through a physical queue process. This system also provides significant benefits in supporting objective decision-making regarding the distribution of social assistance. Based on the results of a questionnaire trial involving respondents, a final score of 88% was obtained, indicating that the system is considered very good and feasible to use. These findings confirm that the innovation of the web-based public service information system not only improves the quality of services at the RW level but also contributes to the realization of more transparent, responsive, and accountable governance.

Keywords: Rukun Warga; Decision Support System; Service Information System; Web-Based Information System

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Introduction

The development of information technology cannot be separated from the rapid development of computer technology, because the computer is a medium that can provide convenience for humans in completing a job (Wu et al., 2018); (Li & Chan, 2019). Changes and dynamics of society are getting faster along with the times and technology, so it requires quality information that is accurate, fast, and precise. Rukun Warga or RW is part of the work of the lurah and is an institution formed through deliberation of the RT management in its working area, determined by the Village Government or Lurah (Dewi, 2019). While the Rukun Tetangga or RT is an institution formed through local community consultations in the context of government and community services, it is determined by the Village Government or Lurah (Sudrajat et al., 2021).

However, in carrying out their duties as RW and RT, they often experience problems because the service process to residents is carried out manually; therefore, it takes a long time, especially if residents come together to make the service process less than optimal. From the residents' point of view, this has had a significant impact; residents are not well informed, service requests are disrupted, and the distribution of residents' aspirations cannot be accommodated. Apart from the problem of service to residents, there is another issue: the system for receiving social assistance. Currently, there is no sorting process for residents applying for social assistance during the recipient determination phase.

The design of the system built using the Waterfall or System Development Life Cycle (SDLC) Method is a sequential software development process, where the process continues to flow from top to bottom (such as the waterfall concept) with the stages including needs analysis, design and modeling, implementation, testing and maintenance (Salve et al., 2018) (Kramer, 2018). The drawback of this service information system is that it still requires several additional features,

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such as the citizen complaint feature, the citizen activity feature, the social assistance support feature, and the information feature.

The Multi-Objective Optimization by Ratio Analysis (MOORA) method is used in decision-making (Arabsheybani et al., 2018). The initial stage in building the system is planning and selecting, analyzing, designing, implementing, and operating, which aims to be able to provide information to residents related to activities to be held or appeals to residents, number of residents, providing cover letter submission services, and handling complaints. and other administration. Meanwhile, the use of the Multi-Objective Optimization by Ratio Analysis (MOORA) method will focus on the decision support system for social assistance recipients. The way this method works is to give weight to each specified criterion (Dabbagh & Yousefi, 2019).

Rukun Tetangga (RT) and Rukun Warga (RW) are neighborhood units and associations that are community-driven, formed according to local needs, and partner with the village government and lurah to empower the community. One of the organs that is seen as effective in bridging citizen participation is the Rukun Tetangga (Zaina & Wicaksono, 2019). The duties of the RT/RW include population data collection and government administration services, maintaining security, order, and harmony among citizens, generating ideas for development by fostering aspirations and genuine self-reliance within the community, and driving self-help, mutual assistance, and community participation in its territory.

The management of social institutions is determined on the condition that they are Indonesian citizens, are local residents, have the will, ability, and concern, and are elected by deliberation and consensus. The working relationship between community institutions and the village government is a partnership, consultative, and coordinating, while the relationship with other social institutions is coordinating and consultative. In carrying out their duties, RT/RW cannot work alone but must foster good communication and cooperation with their citizens. In this case, if the RT/RW management has high mobility due to their dual roles as head of the family and RT/RW administrator, a communication medium is needed to bridge the gap between the RT/RW and residents, thereby creating a conducive environment.

The Multi-Objective Optimization by Ratio Analysis (MOORA) method is the method introduced. Brauers first used this relatively new method in a multi-criteria decision. The MOORA method has a level of flexibility and ease of understanding in separating the subjective part of an evaluation process into decision weight criteria with several decision-making attributes (Karpen et al., 2020) (Limjong et al., 2018). The MOORA method is easy to understand and flexible in separating objects in the evaluation process of decision weight criteria.

Based on the explanation of the background of the problem, a solution is needed, namely a system that is able to help provide effective and efficient services to residents in order to minimize service delays, and a decision support system is also needed in order to sort out residents who apply for social assistance, especially services. Residents (RW) at Perumnas Antang Block 10 in the city of Makassar. Therefore, a study was carried out to design a system that was able to provide solutions to the problems described previously. With this system, it will be able to provide effective and efficient services to residents and sort out those who apply for social assistance.

Method

The system design is built using the Waterfall Method, while the decision-making method uses multi-objective optimization by ratio analysis (MOORA), which will focus on the decision support system for social assistance recipients (Karpen et al., 2020) (Hanifatulqolbi et al., 2019). The decision-making criteria in this system is a measure that explains the basis of the assessment, while social assistance is the provision of assistance in the form of money/goods from the local government to individuals, families, groups, and/or communities that are not continuous and selective. While the testing method is done by using BlackBox testing. BlackBox testing is used as a tester of special functions in software applications that have been created (Koroglu et al., 2018) (Supriyono, 2020). System testing is carried out in order to test the performance of components in the implemented system.

The software needed to design the system is:

- a. Windows operating system
- b. Sublime Text

- c. MySQL
- d. Google Chrome/Mozilla Firefox
- e. Xampp

Required information needs:

- a. RT/RW resident data
- b. RT/RW management data
- c. RT/RW document
- d. Citizen Agenda
- e. Criteria for receiving social assistance

The concept of system design is to see how the description of a system will be formed or built with a detailed process, so that we know where the system was originally formed. The concept can be described as a Use case diagram as follows:

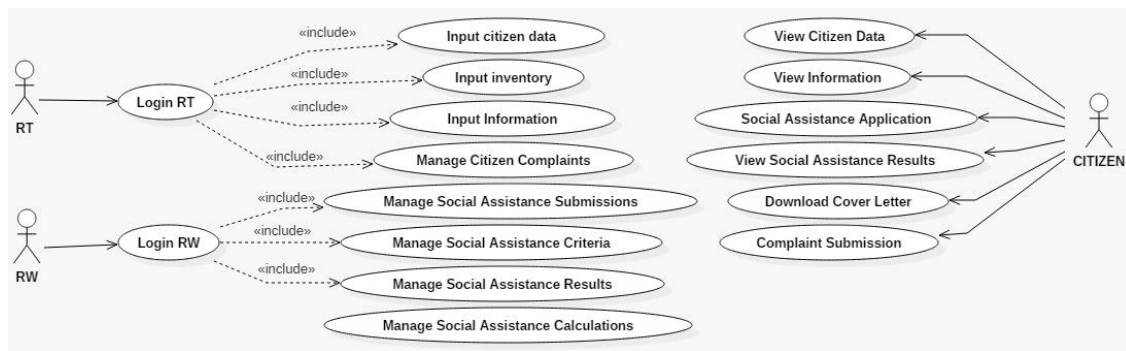


Figure 1. Use case diagram

Figure 1 describes the system users starting from the neighborhood unit (RT), community unit (RW), and the community. Furthermore, the RW logs in, inputs RT/RW management data, verifies cover letters, and verifies BANSOS to manage citizen complaints. Residents can then view citizen data, submit cover letters, submit BANSOS, and submit complaints, as well as access additional information.

Results and Discussion

Result

Social assistance is the much-needed and expected support for people in need. Many sources of social assistance are provided directly by the government or by social organizations that are legal entities, which are directly distributed to people in need. The social service is an implementing element of the government in the field of community social welfare (Specht & Vickery, 2021). Social services at this social service also include social protection, sponsorship for orphans and the elderly, youth development, and social organization development.

As is known, Indonesia currently has a number of social assistance programs. For example, the Family Hope Program (PKH), Rice for Prosperous People (Rastra), the Smart Indonesia program, and the national health insurance program (Purnomo, 2022). Many studies highlight the large value of social assistance distribution, which does not provide the benefits as promised to the community. A number of social assistance programs were also judged not to be timely because they were given too early or too late, with the system that had been developed being able to assist government auxiliary agencies in serving the community, especially in the research locations. The results of system design can be seen as follows:

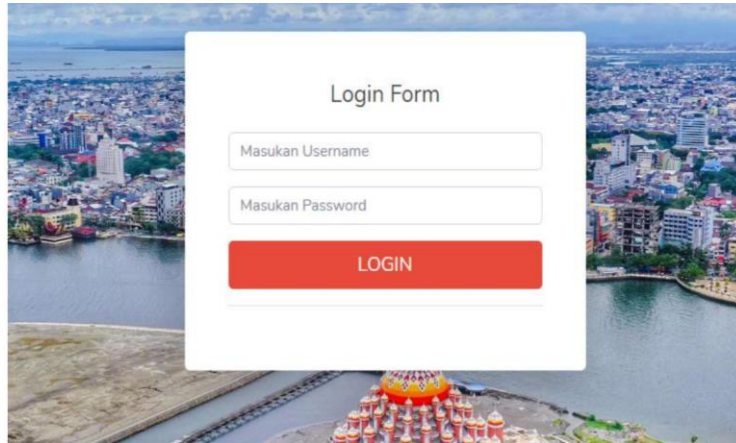


Figure 1. Login form

The login page is a form that appears for admins and users to enter the system. This login is used for security so that not everyone can access the application.

Figure 2. Social assistance application input form

Figure 2 provides instructions for residents applying for social assistance, directing them to complete an application form. After filling out the application form, the citizen's data will be sent to each RT for data verification, as shown in Figure 3.

No	Nama	Alamat	No Telfon	Status	Action
1	karolus B	jln biola 18	082256310828	Sudah Diverifikasi	
2	risal I	jln biola 18	085273888992	Sudah Diverifikasi	
3	lidiewaty B	jln biola 10	0812902778342	Sudah Diverifikasi	
4	sahlan ono	jln biola 13	089123545899	Sudah Diverifikasi	
5	muhammad ali	jln biola 19	089234667980	Sudah Diverifikasi	
6	wartiyani G	jln biola 8	081224266299	Sudah Diverifikasi	
7	DG. mumi	jln biola raya	082270377876	Sudah Diverifikasi	
8	DG. halim	jln biola 4	087877210333	Sudah Diverifikasi	

Figure 3. RT performs data verification

After the respective RT has successfully verified the citizen data, the citizen data will be automatically sent to the RW for stage 2 verification. After the RW has successfully verified the citizen data, a calculation process will be carried out for the data of residents who have applied for social assistance. At this step, the number of residents who receive recommendations for social assistance will be determined in accordance with the amount of the aid quota that has been resolved.

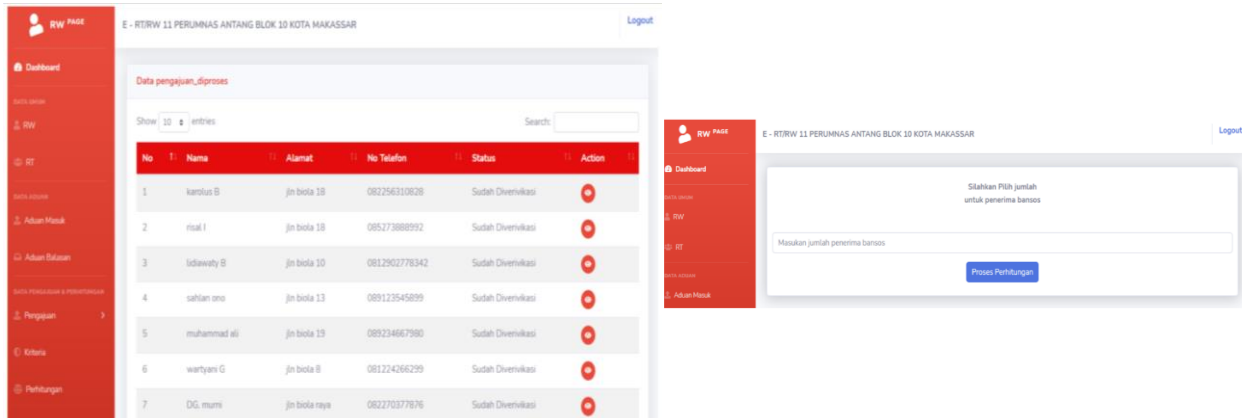


Figure 4. RW performs verification, and the system analyzes the recipient criteria

Once the residents' data calculation is successful, the results will appear on the calculation results menu. Select "action" for the details of the results displayed for up to 20 residents. The calculation page is a menu that will display the calculation process for social assistance. On this menu page, the RW will determine the number of residents who will receive social assistance in accordance with the available social assistance quota. The calculation is carried out based on the criteria data and the weight value for each criterion. Furthermore, the results of the calculation are the names of residents who will receive social assistance, categorized by recommendation status. Residents with a recommendation status can receive social assistance, whereas those with a non-recommendation status cannot.

Jumlah penerima bansos = 20

Jumlah warga yang mengajukan = 60

No	Nama	Nilai	RT	Status
1	DG halim	0.15	001	rekomendasi
2	riak I	0.15	001	rekomendasi
3	Pusi F	0.14	001	rekomendasi
4	Haki albir	0.14	001	rekomendasi
5	Anas sival	0.14	001	rekomendasi
6	Calang	0.13	001	rekomendasi
7	Suryadi H	0.13	001	rekomendasi
8	saftan ono	0.13	001	rekomendasi
9	muhammad ali	0.13	001	rekomendasi
10	kerliu B	0.12	001	rekomendasi
11	DG usi	0.12	001	rekomendasi
12	Idiawaty B	0.12	001	rekomendasi

Figure 5. System calculation results

The results of testing the system as a whole indicate that it has met the criteria for a system that can be used or implemented on the object of research. System testing is one of the important things in the era of software development. Testing this device using BlackBox testing as a tester of special functions in software applications that have been created. System testing is carried out in order to test the performance of components in the implemented system. The main function of this test is to ensure that the components of the existing system are in accordance with expectations.

Discussion

Based on the results of the research that has been discussed previously, it has described the results of the research in its entirety. However, the display of the residents' menu page is not included in its appearance. Still, the menu has become an integral part of the system. where the function of this menu is a menu that will display citizen data. There is also an action that is used to edit citizen data if there is an error and there is a feature to add citizen data if there are new residents who want to be uploaded to the system. In addition, an information menu page is also available, which is a menu that will display information on residents' activities. Likewise, with the cover letter download menu, a menu has been prepared which, when clicked, will automatically download the RT and RW cover letters.

All results of the system design have been tested using a black box approach and by comparing the manual calculations of the Moora method in Microsoft Excel with the system's calculations. The purpose of this test is to show that the results of the system calculations are in accordance with the results of calculations carried out manually. Based on respondents' responses to the developed system, the average percentage of respondents' scores for the questionnaire questions was 88% with very good criteria.

Conclusions and Suggestions

Conclusions

Based on the research results, the tests and discussions conducted provide an overview of effective and efficient assistance services for residents, facilitating informed decision-making about who receives the appropriate social assistance. In addition, based on respondents' responses, it was found that the information system for this community service was utilized effectively, with a final score of 88%.

Suggestions

Based on the conclusions described previously, the Rukun Warga Service Information System still requires development, especially in the part of the system that can display data for residents who have died, elderly residents, and those who have moved. In addition, it needs to be developed in a mobile-based direction, equipped with chatbots or providing additional notifications via email or SMS gateway.

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