

Web-Based Village Fund Assistance Distribution Information System Using the Quota Based Method

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Abstract: The development of information technology has greatly influenced several aspects of human life in the implementation of daily activities. One of the benefits of the development of information technology is that it can help local governments provide information regarding the distribution of financial assistance through monitoring. Village fund assistance is one of the government programs aimed at economic recovery for people affected by the pandemic. Currently, assistance from village funds is often not supported by good governance in every village. Particularly in Tanah Merah Village, aid arrangements were still carried out by recording manually, so sometimes data input errors occurred which resulted in inaccurate data. Therefore, we need a computerized system that can overcome the limitations and problems that occur. In making this system using the Waterfall method, the stages are needs analysis, application design, system design, testing, and system maintenance. The tools used to design this system are UML (Unified Modeling Language), which consists of Use Case Diagrams, Activity Diagrams, and Class Diagrams. The results of this study are an information system for distributing village fund assistance at the Tanah Merah Village office. The application of this information system for distributing village fund assistance can help provide alternative solutions for the village government to problems in the data collection process so that the implementation process can achieve its objectives properly.

Keywords: Distribution; Information System; UML; Village Fund Assistance; Waterfall;

INTRODUCTION

The development of information technology today has greatly influenced several aspects of human life in the implementation of daily activities. The use of computers has progressed from just technology as a calculation tool to decision making (Suendri, 2020). One of the benefits of the development of information technology is that it can help local governments provide information regarding the distribution of financial assistance through monitoring. By monitoring the information system, it aims to realize errors as early as possible and reduce the risk of greater occurrence (Pratama, Nurdianwan, & Pramudita, 2019).

Government programs related to the distribution of village fund assistance have increased every year. To help people in need, various relief efforts have been channeled by the government to help to ease the burden on people whose economies have been affected, especially during the Covid-19 pandemic. The government is trying to ensure that the management of village fund assistance is

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distributed on target. The regional government and the community jointly supervise the distribution of village fund assistance (Asrurin, 2021).

Tanah Merah Village is an area located in North Sumatra Province, Perbaungan District, Deli Serdang Regency. Based on data from the Central Bureau of Statistics for North Sumatra Province, in 2021 it is recorded that the total population in Tanah Merah Village is 3,302 people. In this area, there are 3 hamlets, namely Hamlet A, Hamlet B, and Hamlet C. Tanah Merah Village is one of the areas where the government's program has been implemented in channeling village fund assistance. This village fund assistance is in the form of Rp. 300,000 in cash per month and distributed every 3 months for a total of Rp. 900,000.-. In Tanah Merah Village, management of village fund assistance is still carried out by recording manually so sometimes data input errors occur which results in inaccurate data. Thus, we need a system that can carry out data management effectively and efficiently. Where this system will provide convenience to the village government in managing assistance in Tanah Merah Village so that it is right on target and in accordance with the required quota.

Based on this, the researcher will design a system that will assist the village in processing the distribution of village fund assistance by utilizing the Quota Based Method to illustrate how the application can manage the distribution of fund assistance to appropriate targets gradually and evenly. The application will carry out the monitoring process with a progress bar for assistance in the first stage that enters and so on until the set targets are met. Then, the application will automatically make a percentage of the village fund assistance process according to the domicile until it reaches the target of 100% of the assistance that has been distributed (Saputra & Darusalam, 2022).

The purpose of this research is to build an information system for distributing village fund assistance that is capable of realizing transparency in the processing of aid in Tanah Merah Village. In addition, this research is expected to produce a more effective, efficient and efficient management information system for village fund assistance. This application also makes it easier for the village government to manage village fund assistance such as helping to carry out the data collection process, facilitate data search, and generate more detailed village fund management reports, replacing the role of the old system which was less efficient and functional.

Referring to the research entitled "Application of Quota-Based Methods in Monitoring Information Systems for the Distribution of Website-Based Cattle Assistance", this research produces an application that can be used in accumulating the results of cattle assistance with the aim that the assistance can be divided equally according to predetermined prospective recipient data on the system (Saputra & Darusalam, 2022).

Referring to another study entitled "Information System for the Distribution of Natural Disaster Logistics Assistance in Kuantan Singingi Regency", it produces an application that can provide convenience to employees in recapitulating natural disaster logistical assistance reports and is able to provide information provided by the public about disasters through the system that has been built. (Annas, 2019).

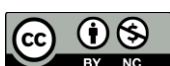
As for references from other studies entitled "Web-Based Social Assistance Information System Design in Makassar City", this study used the waterfall method with the results of several website designs, namely logins, dashboards, population data, beneficiary data, types of assistance, parameters, complaints, and user management. The results of the research application are intended so that people get assistance in a fair and equitable manner (Moch Fauzan Harinin, Dandi Saputra, & Andi Harmin, 2021).

LITERATURE REVIEW

The information system is a set of components that are interrelated and have a function to solve problems and make decisions called Information Systems. Information systems are used to carry out the process of collecting, storing, and distributing data or information with the aim of supporting decision making and control within the organization (Teknologi et al., 2021). There is also an opinion from alda regarding information systems, which is a combination composed of people, hardware, software, communication networks and data resources that are able to change, collect and also disseminate information within a group / organization (Alda, 2020).

In Amalia's opinion, a website can be defined as a set of several pages, where each page contains digital data in the form of information displayed in the form of text, audio, images, video and similar

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animations. The website can be accessed via an internet connection (Amalia & Huda, 2020). As for Adelheid's opinion, a website is an information page provided via the internet, so that it can be accessed anywhere as long as it is connected to an internet network. Website is a collection of components consisting of text, images, sound, animation, so it is more of a medium interesting information to visit (Rochman, Hanafri, & Wandira, 2020).

PHP or Hypertext Preprocessor is a programming language used in making websites. *PHP* can translate source lines into machine code that the computer can immediately understand when the code line is executed. *PHP* and *HTML* code are related. In making website layouts, you can use *HTML* as the foundation, while for carrying out processes on the website and carrying out maintenance, you can easily use *PHP* (Karma, Studi, Informasi, & Insan, 2022). *MySQL* is a DBMS application that performs data processing functions to build a web application (Nilfaidah, Miru, & Lamada, 2021).

In Assauri's opinion, the definition of distribution is the activity of moving products from sources to final consumers through distribution channels at the right time (Zulkarnaen, Fitriani, & ..., 2020). Referring to Soekartawi's opinion, the notion of distribution is the activity of distributing or sending goods and services so that they reach the final consumers (Zulkarnaen et al., 2020).

METHOD

The system development method used in this study is the System Development Life Cycle (SDLC) by applying the Waterfall method. The Waterfall method was chosen because this method works sequentially with clear stages. (Fauzi & Sihombing, 2021). The several approaches to the software design stage in the Waterfall method sequentially are needs analysis, system design, system design, program testing and system maintenance (Hantoro, 2021).

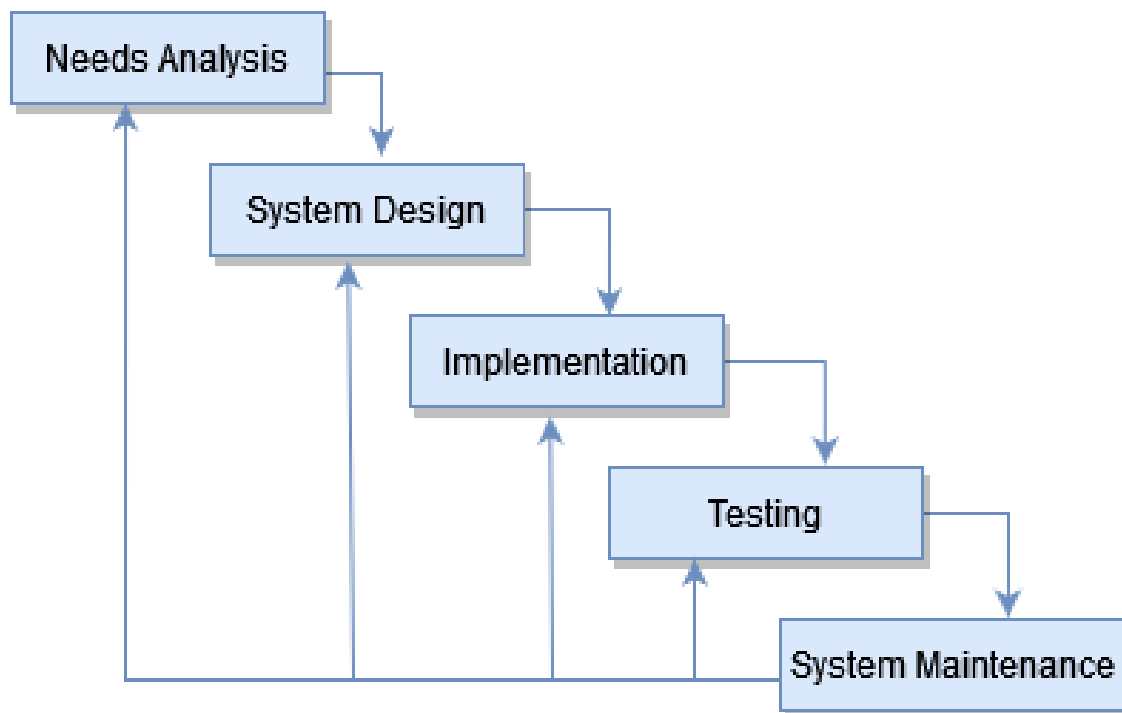


Figure 1. Waterfall Stages

Needs Analysis

The initial stage in the research is that the writer makes observations in the field to identify the problems that occur, then looks for references that can provide solutions through the system to be implemented (Irnawati & Darwati, 2020).

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System Design

System design is the stage of system design whose goal is to create an overview and design that is needed in the application. The tool used in the development of this system is the Unified Modeling Language (UML) (Kurniawan, Apriliah, Kurnia, & Firmansyah, 2021).

Implementation or Coding

The system began to be developed by creating program code and creating a database. Writing program code is the stage where the system design is changed into instructions that can be understood by a computer using a programming language (Alda, 2020).

Testing

In the testing phase, the focus is on the software being tested to ensure every element works according to the interface design. The purpose of doing this is to minimize errors encountered during use (Tabrani, Abdussomad, & Sopandi, 2022).

System Maintenance

At this stage, namely the system installation phase and the checking process, if discrepancies are found in the system, repairs will be carried out so that the system can function properly (Wahid, 2020).

RESULT

This study applies the Quota Based Method in supporting the development of an information system for distributing village fund assistance. This method illustrates how the application can manage the distribution of aid funds to the right destination gradually and evenly. After the aid, funds are distributed evenly and according to the recipients of the assistance, the system will enforce monitoring of incoming assistance in the first stage onwards until the targets set have been met. In this case, the application will automatically percentage the village fund assistance that has been distributed according to the recipient's domicile until 100% reaches the target recipient of the assistance that has been set.

Needs Analysis

The author analyzes the problems of the system currently running in Tanah Merah Village, focusing on the village fund assistance management system which is still being run manually by writing down the beneficiaries and signatures on paper. This can cause problems such as difficulties in making reports. The author is aware of the results of the ongoing system analysis and suggests a solution to solving the problem, namely building a web-based village fund distribution system to make it easier for the village government to manage aid effectively and efficiently.

System Design

The tools used to design this system are UML (Unified Modeling Language), which consists of Use Case Diagrams, Activity Diagrams, and Class Diagrams. UML (Unified Modeling Language), which is a visual language used to describe modeling and communication about a system by relying on diagrams and supporting text (Wilmar & Krisnanik, 2021).

In Figure 2 below is a use case diagram that explains the relationship between the user and the system and describes what types of interactions users can make with the village fund information system that will be built. The use case diagram describes 3 actors who can access the system, namely admin, leaders and the community. admin and village head must login first before accessing the system. Meanwhile, the public can only see the information page on the main page.

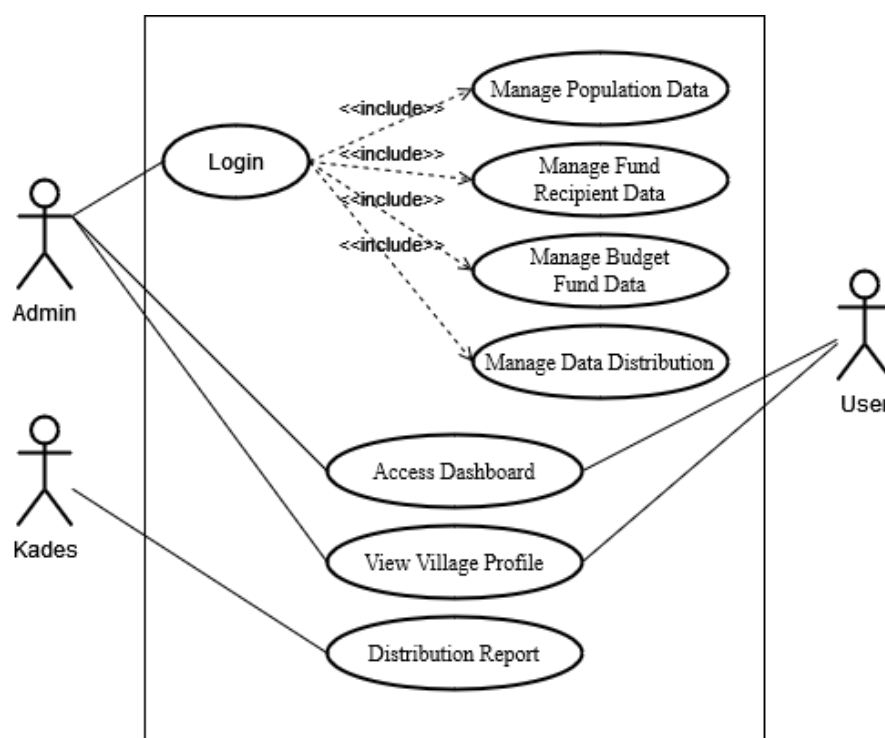


Figure 2. Use Case Diagram

Then the next design is an activity diagram. The activity diagram which describes the activities that users can perform on the system so that the system process as a whole can be understood (Aryati, Samsudin, & Fakhriza, 2022). In Figure 3 below, there is activity diagram of distribution that illustrates how the process of managing the distribution of village fund assistance starts from the admin inputting the beneficiaries. , then collect data on the distribution of financial assistance, until the preparation of the final report.

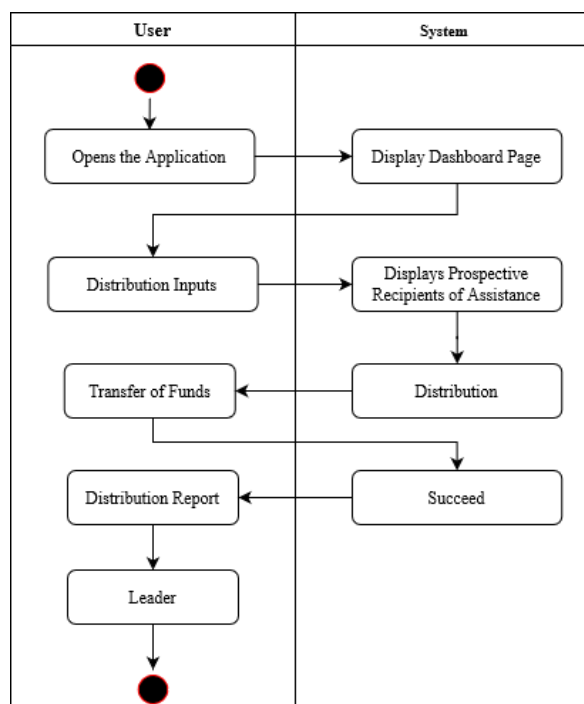


Figure 3. Activity Diagram of Distribution

*name of corresponding author

Class diagram is a diagram that describes the interaction or relationship of each table or class that is still contained in the database to build the system (Steven, Metode, Waterfall, & Sistem, 2020). In Figure 4 below is a class diagram on the information system for distributing village fund assistance in Tanah Merah Village.

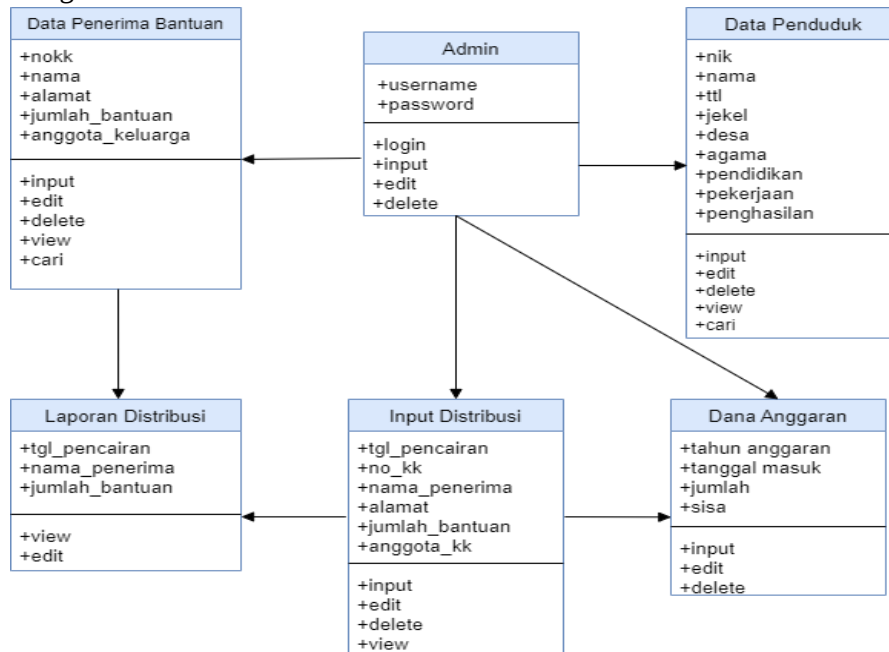


Figure 4. Class Diagram of Information System For The Distribution Of Village Fund Assistance

Implementation or Coding

This stage will describe in detail how the system works. Below is the result of the stages of implementing the program that has been built, in the form of a display of the information system for the distribution of village fund assistance. The information system for distributing village fund assistance is accessed by the admin or the community.

On the login page, the user inputs the username and password according to the data that has been registered in the database. Administrators play an important role in managing population data and distributing village fund assistance.



Figure 5. Login Page

*name of corresponding author

After successfully entering on the login page, the admin will be redirected to the dashboard page. On this page, some of the data contained in the database is displayed. Admin can manage the data as needed. Dashboard page can be seen in Figure 6 below.

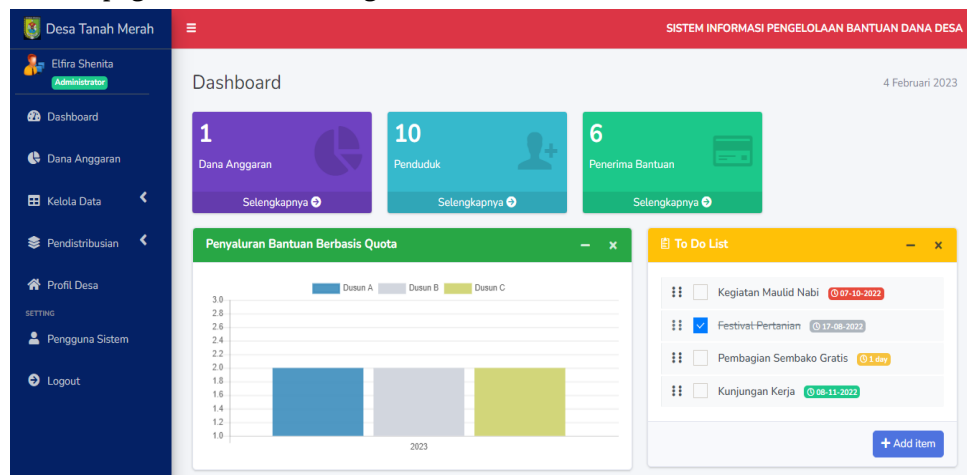


Figure 6. Dashboard Page

Then, on the distribution input page in Figure 7, the Admin can input village fund recipient data by filling in the recipient's personal data from the form provided. After the data is input, the data will be stored in the database by clicking the save button.

Figure 7. Distribution Input Page

After the beneficiary data has been successfully saved, then the data will appear on the distribution page. On the distribution page displays a bar diagram of the process of distributing aid beneficiaries who have been input on the distribution input page. Only the admin can do the processing on the distribution page. The distribution page is shown in Figure 8.

No	Tgl	No KK	Penerima	Alamat	Tgl Pencairan	Jumlah	Aksi
1	0187263	Sugianto	Dusun A Desa TM	2023-01-25	Rp.300.000,-		
2	0189273	Misran	Dusun B Desa TM	2023-01-25	Rp.900.000,-		
3	0187783	Linda Wati	Dusun C Desa TM	2023-01-25	Rp.900.000,-		

Figure 8. Distribution Page

*name of corresponding author

Then, all distribution data can be seen on the distribution report page as shown in Figure 9. This distribution page displays the aid distribution data report. Reports can be viewed according to the selected time scale.

No	Tgl Pencairan	NO KK	Nama Penerima	Alamat	Jumlah Bantuan	Aksi
1	2023-03-03	0187263	Sugianto	Dusun A Desa TM	Rp. 900.000,-	[Icons]
2	2023-03-03	0189273	Misran	Dusun B Desa TM	Rp. 900.000,-	[Icons]
3	2023-03-03	0187783	Linda Wati	Dusun C Desa TM	Rp. 900.000,-	[Icons]
4	2023-03-03	0182739	Yaniwati	Dusun A Desa TM	Rp. 900.000,-	[Icons]
5	2023-03-03	0182932	Misnati	Dusun B Desa TM	Rp. 900.000,-	[Icons]

Figure 9. Distribution Report Page

All budget processes used in the distribution of funding assistance are found on the budget funds menu as shown in figure 10. On this page the admin can input incoming and outgoing budget funds. This page also manages the disbursement of aid funds, the remaining funds and the percentage of the aid disbursement process.

No	Tahun Anggaran	Tanggal Masuk	Jumlah	Sisa	Aksi
1	2023	2023-03-01	Rp108.000.000	Rp102.600.000	[Icons]

No	Alamat	Jumlah Keluarga	Jumlah Penerima	Persentase Progress	Status
1	Dusun A Tanah Merah	200	40	0.2% Complete	Progress
2	Dusun B Tanah Merah	220	40	0.18% Complete	Progress
3	Dusun C Tanah Merah	270	40	0.15% Complete	Progress

Figure 10. Fund Budget Page

Testing

System testing uses black box testing to ensure that all functions in the software are running as expected (Wardani, Gede, Cipta, & Mahendra, 2021). Following are some of the results of the program tests carried out shown in Table 1 below.

Tabel 1. Application Testing with Blackbox Testing

No.	Testing	Test Scenario	Test Result	Conclusion
1.	Form Login	Admin fill in the username and password, then click the Login button	The user has successfully logged in and is redirected to the dashboard page	Valid

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2.	Distribution Input Form	Admin clicks the add data menu on the beneficiary input page and saves the data	The admin has successfully saved the beneficiary's data and displayed on the distribution page	Valid
3.	Distribution Page	Admin selects the distribution page	Successfully displayed distribution page with data and pipeline chart	Valid
4.	Distribution Report page	Admin chooses the time scale of the report that you want to display	successfully displays distribution report data according to the selected time scale	Valid
5.	Fund Budget Page	Admin selects the budget funds menu	The system successfully displays the budget funds page and the percentage of aid distribution.	Valid

From the above tests that have been carried out by five people as program testers, it can be seen that all the tests that were carried out were successful and met the testers' expectations. With this it is ensured that the information system for distributing village fund assistance based on the website in Tanah Merah Village has a system eligibility percentage of 90% so that it is running well and can be used immediately.

DISCUSSIONS

Research that produces an information system for channeling village fund assistance is one of the efforts in managing the process of channeling village fund assistance at the Tanah Merah Village Office which is still done manually without a supporting system. The process of developing this village fund distribution system uses the Waterfall method which has three stages, namely: Needs analysis, system design, implementation, system testing and maintenance. After successfully designing and creating this grant management application, researchers conducted tests to find out whether the application had problems or not when used. From the results of tests carried out using blackbox testing, no problems were found during the testing process. The application for distributing village fund assistance can run and work smoothly as expected by researchers and users. It is hoped that future researchers can further develop the system so that it can provide benefits to users.

CONCLUSION

After successfully designing and creating an application for distributing village fund assistance based on this website, the authors draw several conclusions, namely the information system that has been built can assist the Tanah Merah Village office in managing the distribution of village fund assistance with accurate data and on target according to the quota needed. With the existence of an information system for distributing village fund assistance, the village can easily recapitulate data starting from population data, budget funds to beneficiaries in an orderly manner and easy to access. This system can also be used to produce more detailed beneficiary reports within a certain time scale. The system can be accessed by the community, so that the community can easily find information about the latest aid distribution in Tanah Merah Village.

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