Development of Management Information System and Web-Based Village Education Center in East Lampung

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Abstract. The rapid development of science and technology indirectly requires people to be able to adapt to technology and also be able to harmonize it to create new opportunities by forming an innovative, competitive and creative generation. The information system is a combination of several components that are integrated with each other for collecting, storing, processing data, providing information, knowledge and digital products. The main components of an information system are hardware (hardware) and also software (software) which will later form an information technology embedded in the organization's management operations. This study aims to design and build a village management information system that can be used to improve administrative services and the provision of information in the district of East Lampung. This study uses the Rapid Application Development (RAD) research method with three stages, namely planning requirements requirements, workshop design and implementation. The website test results show that 80% representing 16 respondents commented that they agreed that the website was easy to use. Then 70% or about 14 respondents commented agree, 30% representing 6 respondents commented strongly agree that the website is functioning well. As a whole the system has been successfully designed and built which contains village government services and an education center. The system can be accepted by users, namely village government staff and the community.

Keywords: management information system · village · education · web

1 Introduction

The development of the 21st century and the industrial revolution 4.0 are things that we have not realized have given many changes. One of them is the rapid development of science and technology in the field of government [1]. This development indirectly requires the community to be able to adapt to new technological sophistications and be able to harmonize them to create new opportunities by forming an innovative, creative

and competitive generation [2]. Along with the development of information technology, it has been proven that on the side of human desire, various kinds of information storage systems are used or more commonly known as information systems.

The development of information systems during the industrial revolution 4.0 as it is today must be able to create better public services and create good government [3]. In order to achieve this, of course, there are several challenges that must be faced, ranging from the development of existing information systems to human resources [4]. In order to create good public services in every government work unit, not only within the city government but must start from the smallest work unit, namely the village [5].

The village is the smallest unit in the government structure in Indonesia, the village has a very important position because the village has a fundamental role for the Indonesian state itself. Villages are seen as places where people live with civilizations that are considered more backward than cities and have strong mother tongue characteristics with livelihoods dominated by farmers [6]. Based on data from the Central Statistics Agency (BPS) at least until 2019, Indonesia has 83,820 villages spread across 34 provinces in Indonesia. The most villages are in Central Java with 8,562 villages and the fewest are in DKI Jakarta with 267 villages. East Lampung is one of the regencies in the province of Lampung in which there are villages. East Lampung is part of the chain of government that has the responsibility to provide services to the people who live there. So that in each village there is a village apparatus led by the village head and assisted by other village officials. The village head has the responsibility to carry out all services that will have an impact on the village community.

Villages in East Lampung district are currently trying to improve public services, especially in the field of administration and information delivery, especially during the Corona Virus Disease 2019 pandemic or commonly called Covid-19 which requires the implementation of physical distancing to reduce the spread of Covid-19. The implementation of technology and information in a government agency is one of the methods used by government agencies to convey various information and provide excellent service, so as to improve the quality of service to the community [7]. Previously, community services at the village office were still carried out conventionally or it could also be said offline, meaning that people who needed services had to come to the village office to resolve these needs. In addition, in the data management process, errors often occur due to human resource factors, on the other hand, it is also a waste of time and money. In connection with this, if the service is continued during the pandemic, it will increase the risk of transmission of the Covid-19 Virus.

One of the proposed solutions is the use of a village management information system that can support administrative activities as well as the delivery of information at the village level. This system is expected to facilitate services to the community without having to come to the village office. In addition to the pandemic situation that requires changing the way services are electronically based, the application of electronic services has been stated in the ITE Law No. 11 of 2008 concerning information and electronic transactions as well as the mandate of Presidential Instruction No. 3 of 2003 concerning the implementation of electronic government governance in Indonesia, which requires every state institution or public agency to implement Electronic Government (e-Government) in governance and public services [8].

Research on village management information systems has been carried out extensively and generally concludes that village information systems have a lot of positive impacts such as the process of requesting administrative services can be completed in a relatively short time compared to before using a management information system [9][10][11]. Then research by Melinda et al., [12] regarding the design of a web-based public information system. This research produces a web-based public information system that can be used to assist the work of durian village officials to provide community services. Furthermore, Rozi et al., [3] in their research entitled the development of a website and village information system in the Tulungagung district. The result of this research is to develop a website and village information system using the available source code, namely OpenSID to improve employee performance.

Based on the problems above, the researchers will develop a "WEB-Based Management Information System and Village Education Center in East Lampung". This system is to answer existing problems and can be used by village officials and the community as an education center and also to facilitate work and provide efficiency in both time, energy, and costs incurred to meet the needs of the people in Mandalasari village, East Lampung district.

2   Method

This study uses the Rapid Application Development (RAD) research method. Rapid Application Development is a method used in software development with a linear sequential development method that emphasizes the relatively short development time cycle. The RAD research method according to [13] has three stages, namely requirements planning, system design process and implementation.

3   Results and Discussion

The results of this study are a website for management information systems and village education centers. There are web pages on the website which are generally divided into two parts, namely first, the first page of the dashboard to manage content by the admin which will later be displayed on the website. The second is the website page, this page contains the results of content management carried out by the admin then displayed on this website page and can be accessed by website visitors, especially the Mandalasari village community in East Lampung district. In detail, the results and discussion will be presented based on the stages of the method used, namely planning requirements, workshop design and implementation.

3.1 Planning Needs (Requirements Planning)

1. Needs Analysis Functional
2. Village officer

Functional requirements for officers ward namely being able to log in to access citizen data, view details, edit and delete citizen data. Then the kelurahan officials can manage, add, edit and delete information. In addition, village officials can manage correspondence that will be needed by the community.

b) Head of RT/RW

The functional requirement for the head of the RT/RW is to be able to login to view various types of letters submitted by the community. The head of the RT/RW can also check the letter and forward it to the admin or local kelurahan officer.

iii) Public

Needs functional for Public that is could see information about village, announcements and information regarding administration village and information other. Besides that too, society could log in for change personal data on the system, file and print required correspondence.

3.2 Design Process (Design System)

After carrying out the requirements planning process in the previous stage, at this stage a design is made based on the results in the previous stage. The purpose of making this system design is to make it easier for researchers to build the system. The system design in this study is described using use case diagrams, activity diagrams and design of the system interface to be built.

1) Use case diagrams

Use case diagrams or use case diagrams according to Rosa & Salahudin, [14] are modeling for the behavior of the management information system to be made. Use case diagrams can describe an interaction between one or more actors and the information system that will be created. This use case will describe what the system will do [15]. Thus, the design of village management information system functionality requirements and typical interactions between admins, RT/RW heads and the community can be understood and described using use case diagrams. The use case diagram of the village management information system can be seen as shown in Fig. 1.

2) Activity diagrams

The flow of the village management information system is described in the form of an activity diagram. Activity diagram will describe the process flow of the system to be built which can be seen in Fig. 2.
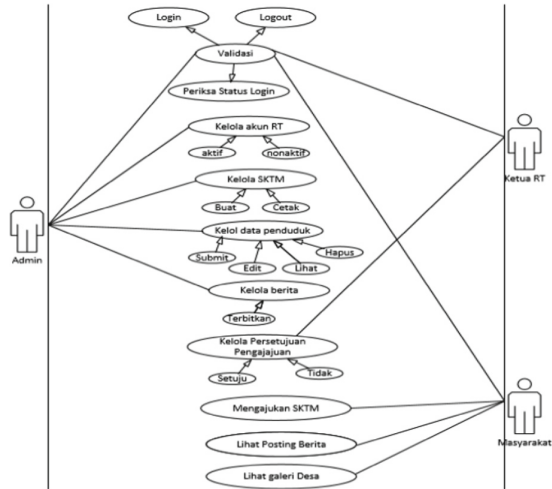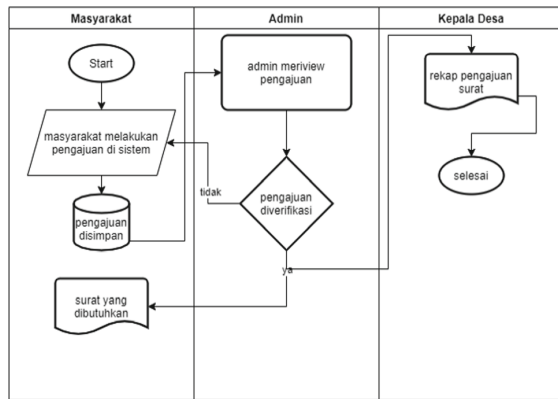
Fig. 1. Use case diagram

Fig. 2. The flow of the village management information system that proposed

Based on analysis system proposed depicted _ in form activity diagrams above, started from community in need enough access system information village with user and password each – respectively. Then Public To do submission as well as fill in data which needed for then submission the will considered by admin for received or rejected. If submission rejected so Public could To do submission repeat. Will but if submission received so Public can direct print letter the which by automatic there is sign hand from head village.

3) Interface design

On Step next is designing interface system which will built, following this is interface design system which will be built (Fig. 3).
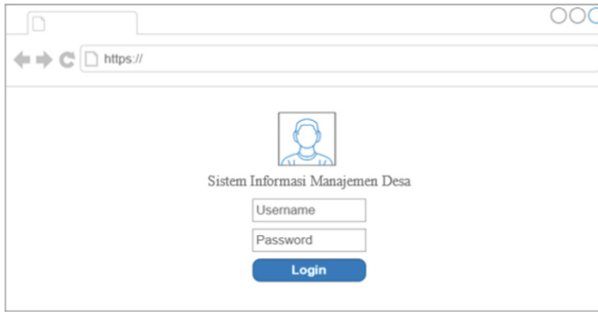
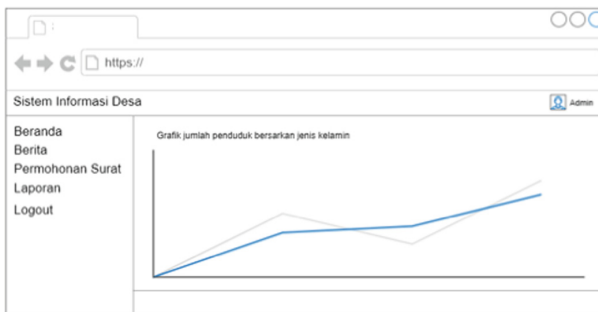**Fig. 3.** Design between advance login

Fig. 4. Design between advance home

a) Login interface design

On the login page contains *a form* to enter a *username* and *password* that corresponds to the respective users (Fig. 4).

b) Home interface design

On appearance home later will there is list menu and also amount data population based on type sex which will served in form graph (Fig. 5).

iii) Inter Design Advance News

On view news is the page to be display the form for change news which only can conducted by admin, when admin choose for edit data so on form stuffing will filled according to data which selected.

After completing all stages, the authors conducted testing of the system that had been built using the blackbox testing method. This method compares the functionality of the system with the functional requirements of the system that have been planned in the previous stage. If at the time of testing there is system functionality that is not in

Fig. 5. Inter Design Advance News

accordance with what has been planned, it will be repaired until it is as expected and then implemented.

3.3 Implementation (Implementation)

At this stage the system has been agreed upon, designed and refined from the previous system that has been tested. Then it will be introduced to users widely, especially in one of the villages, namely: village Mandalasari, East Lampung Regency.

1. Login page. The login page contains Username menu display using NIK and password. And there is an entry menu, login with e-KTP, register and forget pin or password menu. To be able to enter using the management information system and village education center, the community can contact village officials to get a pin. After that the user can login and the system will direct based on the function of each actor. People can make independent letters that allow people to request letters from anywhere and anytime. The letter requested by the community will automatically provide a notification to the village administrator. After getting approval by the admin and verified by the head village, then letter already ready printed.

2. Home Page. Home screen showing Some of the features presented include menus about villages, village officials, regional data, village contacts, article archives, photo galleries, village stalls, village maps and village buildings. In addition, there is also a menu of village profiles, village administrations, community institutions, village data, regulations, maps, statistics, IDM, complaints, supplements, vaccine data, building villages, village stalls, village galleries, attendance and archives. This menu can make it easier for the community and village officials to serve the community with an easy, fast and online process that can improve services for the community and provide services for the community convenience in To do data display .

3. Profile Page village. Appearance page profile This village provides information on the profile of the village area, the profile of the village community, the potential profile of the village, the history of the village, the geography of the village and the demographics of the village. So with this menu, the public can easily find out

information about the profile of the Mandalasari village by clicking on the menu that the community wants.

4. Government Pages village. Government page village presents a menu of information on vision and mission, village government and village consultative bodies. The public can click on the menus according to the desired information needs. In addition, the village government menu page makes it easier for village officials in terms of inputting village apparatus data or editing village apparatus data if needed there is change structure position in the future day.

5. Activity Page village. This page presents a menu of community institutions in which there is a menu for posyandu, LPM, Linmas and youth organizations.

6. My Data Page. Village data page this consist from several menus that can provide information to website visitors, especially the Mandalasari village community. The menus contained in this village data include administrative area data, gender data, religious data, blood type data, citizen data, employment data, education data taken, education data in family cards. The village data page provides a menu for the process of entering family data much more easily. This can be done by filling in the fields provided. On the other hand, it can make it easier to find population data with far more easy.

7. Statute page. Statute page this give information on legal products and public information.

8. Region Page village. Regional menu village in system management information and village education center, making it easy for villages to input village map information. Map of land, area of village assets, buildings and other detailed village information. In addition, information on the land for which the digital map is built can be supplemented with information enough with web admin help.

9. Statistics page. Page statistics give information related to demographic data based on age range, age category, relationship in family, occupation, religion, marriage, gender and education in the KK.

10. Service Page complaint. Page menu complaint give a special room for the community to convey all complaints, complaints, suggestions and everything that needs to be conveyed related with village mandalasari .

11. See Us Page. Menu view us on system information The village management and education center provides information related to data on orphans, data for young teachers, data for early childhood teachers, residents who do not have sanitation, data on families who have not been connected to electricity, data on MSME actors, tahfidz data, integrated social welfare data, data for Islamic teachers and employees syarak.

12. Page Against Covid-19. Menu on page fight Covid -19 give information about people who have already vaccinated, whether it's one, two and three or booster vaccines. The existence of this vaccine data certainly makes it easier for officers government village mandalasari in control and find out who the citizens are who have not carried out vaccination activities.

13. Village Page succeed. Menu on page village successful give information about development village infrastructure that has been realized and that will be built. The existence of this menu provides information to the community regarding the development prospects of village development.
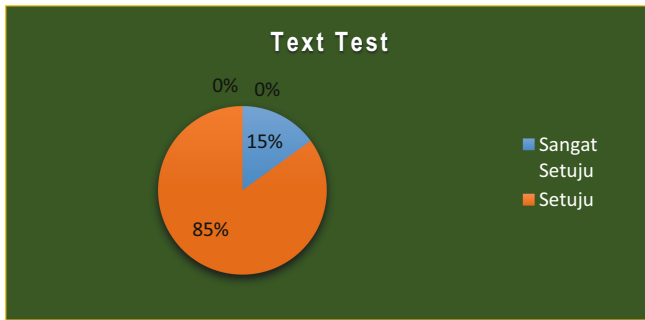
Fig. 6. Text Test Results

14. MSME page. Menu on page MSME this give opportunity to Public to market their produce. The community can take advantage of the management information system and village education center as a catalyst in advancing the economy. This is of course in accordance with the vision and mission village mandalasari that is capable advancing the economy of its citizens with the digital village program or smart village.
15. Gallery page. Page menu gallery showing taking pictures activities carried out whether it's the activities of village government officials, guests or community activities Public village mandalasari.
16. e- archive page. Page menu e- archive this containing gathering articles previously published news. For people who want to read or find information related to past news, they can open archive menu article this.
17. News page. News page _ developed in management information system and village education center to provide convenience for village officials in updating information and news in the village. With this feature, village officials can also complement the news with interesting photos and articles. In this menu, website admins can also add more than one photo for the slider display.

3.4 System Website Testing Information Management and Education Center Village

The results of this test are used to improve the system, if there is something that needs to be fixed, the researcher makes system improvements based on user responses. The following is a graphic image of the results of testing with a questionnaire (Fig. 6):

The picture above is the result of respondents' assessment of the display text on the website, the test results show that 85% or about 17 respondents commented strongly agree, 15% representing 3 respondents commented that they agreed with the text on the website display. Overall, the appearance of the website is sufficient (Fig. 7).

The graph in the picture above is the result of respondents' assessment of the color and font display on the website. The test results show that 60% or about 12 respondents commented strongly agree, 40% representing 8 respondents commented that they agreed. This indicates that the appearance and fonts are in accordance with the website (Fig. 8).
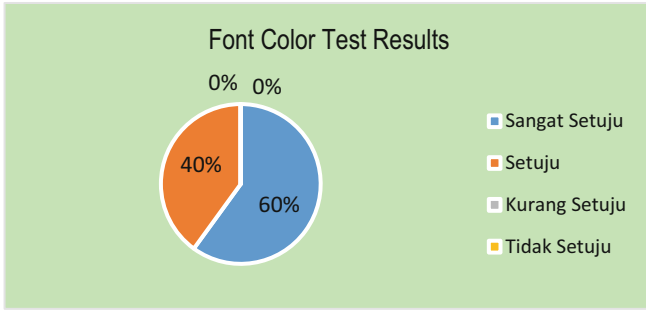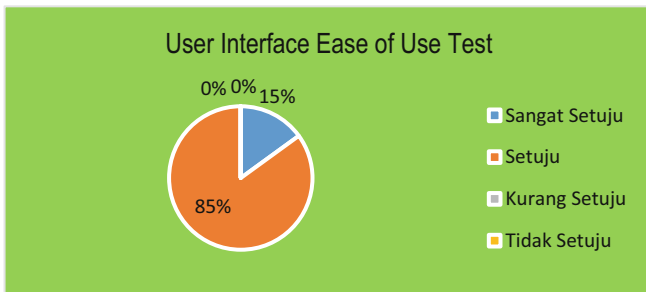
Font Color Test Results

Fig. 7. Font Color Test Results

User Interface Ease of Use Test

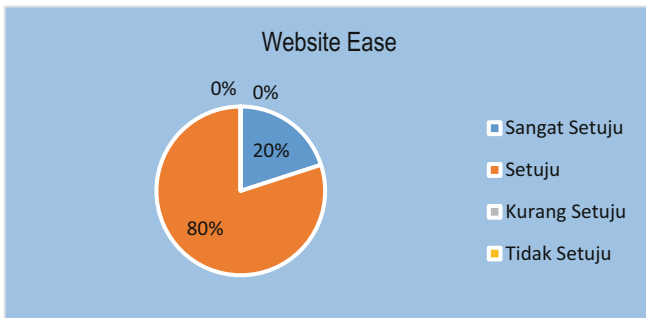Fig. 8. User Interface Ease of Use Results

Website Ease

Fig. 9. Website Ease Test Results

The graph in the picture above is the result of respondents' assessment of the user interface display on the website. The results of these tests show that 85% or about 17 respondents commented agree, 15% representing 3 respondents commented strongly agree that the appearance and font are in accordance with the website (Fig. 9).

The graph in the picture above is the result of respondents' assessment of the website. The results of these tests can be produced that 20% or about 4 respondents commented
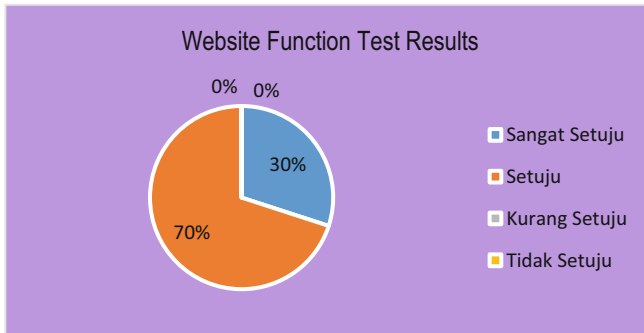
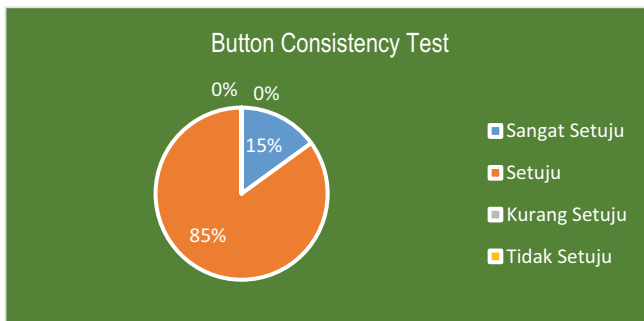**Fig. 10.** Website Function Test Results

Fig. 11. Button Consistency Test Results

strongly agree, 80% representing 16 respondents commented agree that the website is easy to use (Fig. 10).

The graph in the picture above is the result of respondents' assessment of the functions on the website that have met their needs. The test results show that 70% or about 14 respondents commented agree, 30% representing 6 respondents commented strongly agree that the website is functioning properly (Fig. 11).

The graph in the image above is the result of the respondents' assessment of the button being consistent with the function. The results of these tests indicate that 15% or about 3 respondents commented strongly agree, 85% representing 17 respondents commented agree that the button is consistent with its function. After testing with questionnaires, it can be concluded that the overall Management Information System and Web-Based Education Center have functioned to facilitate the community and village government staff in terms of administrative services and other purposes. Moreover, it can provide education and the latest information to the public.

4   Discussion

The research focuses on the development of a web-based village education center and management information system used by village government staff and the community

that can have a positive impact on the administrative service process by shortening the handling time of the administrative service process, from one week handling time can be completed in one day, the community can save time without having to come directly to the village office to ask how far the service is being carried out because it can be monitored through the system handling process, so that the level of public trust in service providers can increase because the community directly monitors the performance of the service provider. On the other hand, it can provide education and the latest information in terms of administration or other information education. The website for the management information system and village education center can be visited through various devices or devices owned by the community and can be accessed by various browsers. For further information that is not answered through the menus provided on the website, the user can contact the contact provided on the website. Based on the results of the system test, it shows that, all the functions on the website that have been tested have obtained results that are in accordance with the basic design of the initial development. So that the results are obtained that run according to its function.

5   Conclusion

Based on the research conducted, the overall system has been successfully designed and built which contains village government services and education centers. The system can be accepted by users, namely village government staff and the community. This research succeeded in developing a web-based village education center and management information system in East Lampung district.

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