Jurnal TAM (Technology Acceptance Model) Volume 11, Nomor 1, Juli 2020 Hal. 48-53
p-ISSN : 2339-1103
e-ISSN : 2579-4221

APPLICATION OF POSYANDU GEOGRAPHIC INFORMATION SYSTEM OF PINANG SUB-DISTRICT USING LEAFLET-BASED IGNITER CODE

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Article history:
Received: 24 March 2020
Revised: 6 May 2020
Accepted: 17 June 2020

Keywords:
information system;
geographical;
leaflet;
posyandu;

Abstract
The development of information technology has now reached all fields and become something very important in life, humans need fast, accurate information in presenting data. One of the health problems to be resolved is the problem of children's health and old age with the establishment of Posyandu in every region both villages and cities in Indonesia. Geographic information systems, information processing services that contain data information that is displayed in a map view, this system can provide information more easily and support health management. The posyandu geographic information system can help the public to know where the posyandu is located. Application of Geographical Information System based (GIS) based on leaflets about posyandu in the Pinang Regency to search for posyandu located in Pinang Regency, Tangerang City, Leaflet-based geographical information system. The results of this study are in the form of a geographic information system that is connected to a google map that can show a map of puskesmas locations and information from each Posyandu in Pinang District, Tangerang City. In this study, some things need to be investigated and further developed.

1. INTRODUCTION

Integrated Family Planning-Health Service Post (Posyandu) is a basic health activity organized, from, by and for the community. Posyandu is a self-help activity from the community in the field of health. Integrated health service (Posyandu) is a form of integration of health services carried out in a Puskesmas working area. The place for implementing integrated program services in village halls, village halls, Rukun Warga (RW) and so on is called the Integrated Service Post (Posyandu). The concept of Posyandu is closely related to cohesiveness. The cohesiveness meant includes cohesiveness in the aspects of the targets, aspects of the location of activities, aspects of the organizing officers and so forth.[1]

Since it was launched in 1986, Posyandu has succeeded in reducing the Maternal Mortality Rate (MMR) and Infant Mortality Rate (IMR). The targets and targets of efforts to improve the nutritional status of the community in the 2015-2019 National Medium Term Development Plan (RPJMN) are: (1) the prevalence of undernutrition / underweight in children under five decreased from 19.6% to 17.0%; (2) the prevalence of stunting (short and very short) in under-two children (under 2 years) decreased from 32.9% to 28.0%; (3) the prevalence of wasting (thin) toddlers decreased from 12.0% to 9.5%; (4) the prevalence of anemia in pregnant women decreased from 37.1% to 28.0%; and (5) the percentage of babies with low birth weight (LBW) decreased from 10.2% to 8.0%. [1]

Posyandu to serve toddlers (immunization, weight) and elderly people (Posyandu Elderly), and was born through a Joint Decree between the Minister of the Interior of the Republic of Indonesia (Minister of Home Affairs), Minister of Health (Menkes) of Indonesia, Head of the National Family Planning Coordinating Board (BKKBN) and Chairperson of the Family Welfare Development (PKK) Mobilization Team (PKK) and were announced around 1986. The legitimacy of the Posyandu was reinforced through a Circular Letter of the Minister of Home Affairs and Regional Autonomy dated June 13, 2001, which included the "General Guidelines for the Revitalization of Posyandu" among others, asking for the reactivation of Posyandu Operational Working Groups (POKJANAL) at all levels of government administration. The issuance of this Circular was motivated by changes in the strategic environment that occurred so rapidly in tandem with a prolonged monetary crisis. The Posyandu was developed on the initiative of President Soeharto in 1984, Posyandu

was once the pride of the people. Every month, people flocked to Posyandu which is managed based on the community. Health volunteers at Posyandu who have received training from the local health office provide health guidelines for pregnant and breastfeeding mothers. Posyandu provides basic immunization vaccinations and provides additional food for infants and toddlers. Posyandu is also a medium for early detection of cases of malnutrition and malnutrition in infants and toddlers. [1]

To overcome the problems that occur, web-based GIS (Geographics Information System) or GIS (Geographic Information System) technology can help users or the general public to see information as a whole easily and quickly, through online mapping. Based on the background of the problem, the online information system can provide information on the location of Posyandu facilities in Pinang District, Tangerang City. It is hoped that this system can help the public to find out the location and information of the required Posyandu facilities easily.

Sistem Informasi Geografis(Gis) Pemetaan Posyandu Di Kecamatan Gebog Kabupaten Kudus Berbasis Web, Web-Based District, Posyandu in Gebog District Kudus Regency. This application will be in the form of a Web-based Geographical Information System that will allow the health department to directly obtain the children's health data, data on pregnant women, family planning data (KB) in an area quickly and accurately. [2]

Sistem Informasi Geografis (Sig) Posyandu Kecamatan Palengaan Berbasis Web Web-Based. Health problems at this time are highly considered by several groups, especially the United Nations. This is stated in the millennium goal that has been formulated by the United Nations. Application in the form of a web of a geographical information system that will allow the health department directly related to getting the health data of children in an area quickly and accurately.[3]

Rancang Bangun Sistem Informasi Geografis Posyandu Berbasis Web. Posyandu Geographic Information System. Integrated Service Posts (Posyandu) are basic health activities carried out by, from, and for the community. To develop a Web-Based Posyandu Geographic Information System using the pmapper framework to display reports in the form of maps.[4]

Aplikasi Sistem Informasi Geografis Penyebaran Penyakit Demam Berdarah Dengue Berbasis Web (Studi Kasus: Kabupaten Kudus). One case of disease that is quite common in Indonesia is Dengue Hemorrhagic Fever (DHF). Web-based Geographic Information System applications using XAMPP software for local servers and MySQL databases with phpMyAdmin features in it, Dreamweaver CS4 for the process of making program code, database integration with the Google Maps API.[5]

Sistem Informasi Geografis Monitoring KKN Posdaya Universitas Ahmad Dahlan Berbasis Google Maps API. This study discusses Community Empowerment Posts that can be integrated with systems capable of displaying location information from Posdaya KKN UAD, providing ease of data exchange and dynamic visualization and can help LPM to see and monitor the development of Posdaya as a whole and can help students of community service if activities start not running by using the Google Maps API.[6]

The difference with previous research that raised this type of system. The difference is that this research uses LEAFLET and can see data on posyandu members and cadres, and can find out the shape of the posyandu building so that it makes it easier to find the location of the building

II. LITERATURE

2.1. Geographical Information System (GIS)

Geographical Information System (GIS) is a special information system that manages data that has spatial information (spatial reference). Or in a more narrow sense, is a computer system that can build, store, manage and display geographic reference information, for example, data identified by location, in a database.[7]

Geographic information systems (GIS) are systems that can be used to capture, store, process, manipulate, analyze, organize, and display the types of geographic data needed. [8]

Geographic Information System as a computer-based system used to store and manipulate geographical information. Geographical Information Systems are designed to collect, store and analyze objects and phenomena where geographical location is an important or critical characteristic to be analyzed.[9]

2.2. Map

Posyandu (Integrated Service Post) is one form of Community-Based Health Efforts (UKBM) that is carried out by, from and with the community, to empower and provide facilities for the community to obtain health services for mothers, infants, and toddlers.[10]

CodeIgniter is one of the PHP Framework and even the most powerful PHP Framework today because in it there are full features of web applications where those features are packaged into one.[11]

CodeIgniter is a toolkit intended for people who want to build web applications in the PHP programming language. Some of the advantages offered by CodeIgniter are as follows:[12]

1. CodeIgniter is a free and open-source framework.
2. 2. CodeIgniter can have a small size compared to other frameworks. After the installation process, the CodeIgniter framework is around 2MB in size. CodeIgniter documentation has a size of around 6MB.

3. Applications created using CodeIgniter can run fast.
4. CodeIgniter uses the Model-View-Controller (MVC) design pattern so that one file does not contain too much code. This makes the code easier to read, understand, and maintain in the future.
5. CodeIgniter can be expanded according to needs.
6. CodeIgniter is well documented. Information about class libraries and functions provided by CodeIgniter can be obtained through the documentation included in the distribution package.

Leaflets allow developers without a GIS background to easily display tile web maps hosted on public servers, with an optional tile layer. It can load feature data from GeoJSON files, organize and create interactive layers, such as markers with popups when clicked. Leaflets are the leading JavaScriptOpen-Source Library library for interactive maps. Weighing only around 38 Kb, it has all the mapping features that most developers need.[13]

Open Street Maps is a tool for creating and sharing information in the form of maps. Anyone can contribute to OSM, and thousands of people can add projects every day. Users draw maps on a computer, compared to paper, but we will see in this guide, drawing a map on a computer is not much different from drawing a map on a piece of paper. Open Street Maps is a website-based map that everyone can access as long as they have internet access, actually, OSM and Google maps have almost the same function but the data that is owned by OSM is still very little due to the new system and the contributing ones still very little so that if you want to know a location sometimes it has not been found on the OSM map.[14]

Mapbox supports several developer applications, including JavaScript, iOS, Android and API. Mapbox has been used for Foursquare, Pinterest and Evernote applications that make it easy for users to mark their location anytime, anywhere. Mapbox users who will register are provided with various data access options with various cost options which of course affect the diversity of facilities that can be obtained by the user.[15]

III. RESEARCH METHODS

3.1. Geographical Location

Pinang sub-district is administratively part of the Tangerang city government area, with a total of 11 villages. Geographically the overall area of administration in Pinang District is 20.6 km2, with a population of 203,868 people.[16]

Figure 1 Geographic Location of Pinang District

The limits for the administration area of Pinang District government include:

1. Northside, bordering Tangerang District
2. Southside, bordering South Tangerang City
3. Eastside, bordering Ciledug District.
4. Westside, bordering Cibodas District

3.1 Development Methods

The development method used in making the posyandu geographic information system in the pinang district is the waterfall method. In this development method, a systematic approach is carried out starting from the level of system requirements analysis followed by the system design, coding, testing, and maintenance stages. Why is it called a waterfall because the stage through which you have to complete the previous stage.[17]

a. Software Requirements Analysis.

At this stage the search for posyandu geographic information system software needs. for example, observations and interviews with posyandu members from the sub-district of Pinang such as the required posyandu profile or information, the current system, and the system to be proposed.

b. Design.

At this stage, preparations are made to make the design stage. Like design modeling processes like UML, Interface Design,

c. Coding.

In this stage the coding is done using the CodeIgniter Framework, and Mysql for the databased. Testing

In this stage, the system that has been completed will do the testing using the Black box method.

e. Maintenance.

In this stage, if there will be a change in the application by the user. Changes that occur in software must be adjusted to the changes.

3.2. Data Collection Methods

The stages in the data collection method used by the author are as follows:

a. Observation

Observation is the process of making direct observations of the object studied to determine the actual condition. The preparation of these observations is as follows:

Theme: Know the data and posyandu layout

Purpose: Designing a geographical information system that can know the posyandu layout

Jurnal TAM (Technology Acceptance Model) Volume 11, Nomor 1, Juli 2020 Hal. 48-53
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Target Observation: Posyandu District Pinang District

b. Interview

The interview is a data collection technique that is done face to face and question and answers directly with the parties concerned to obtain accurate information. The related resource persons are Posyandu Members in the Subdistrict area.

IV. RESULTS

Geographical information system (GIS) Model of Posyandu Geographic Information System Services in Pinang District Using Leaflet-Based Code Igniter. Included in the prototype which will be part of a geographic information system (GIS) that will be used in the Pinang City of Tangerang.This procedure is a stage of instruction that must be carried out before reaching the goal. This procedure is the result of system analysis, where the proposed system can run as expected.

4.1. Use Case Diagram

a. Usecase User dashboard

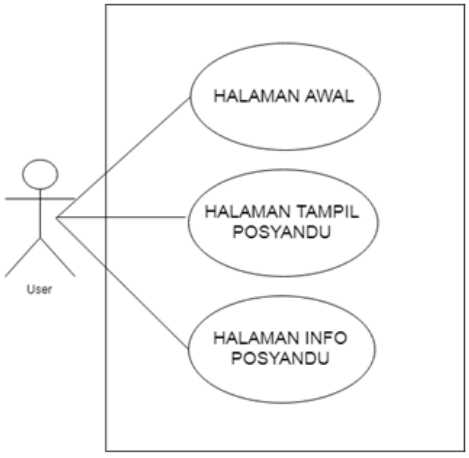

Figure. 2. Usecase User Dashboard

b. Usecase Admin

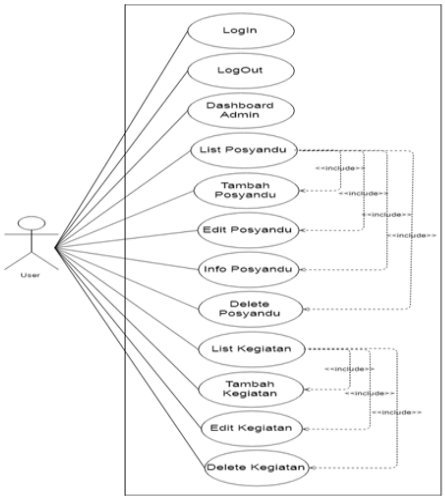

Figure. 3. Usecase Admin

4.2. Sequence Diagram

a. Sequence Diagram User Dashboard

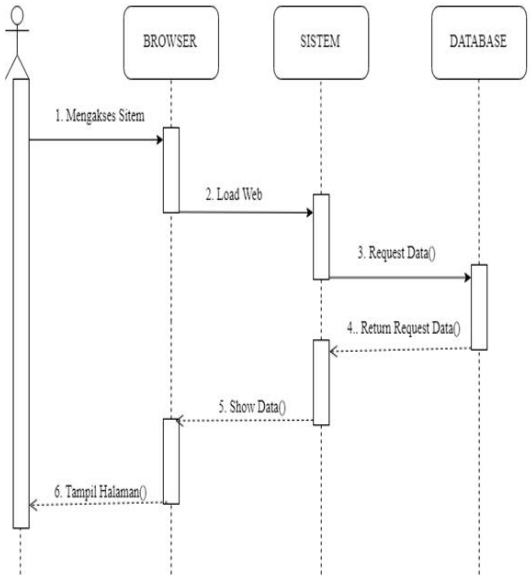

Figure. 4. Sequence Diagram User Dashboard

b. User Posyandu Page Sequence Diagram

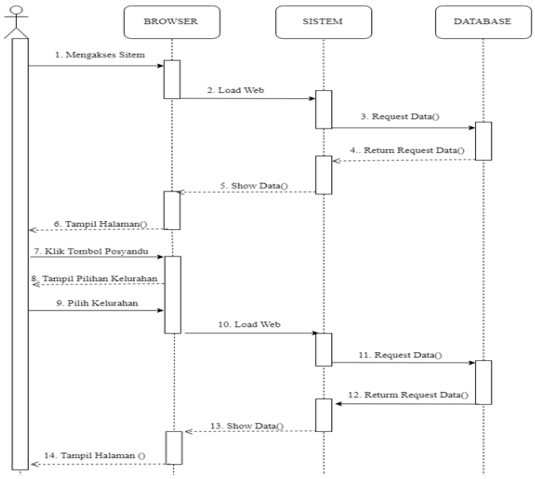

Figure 5. User Posyandu Page Sequence Diagram

4.3. Class Diagram

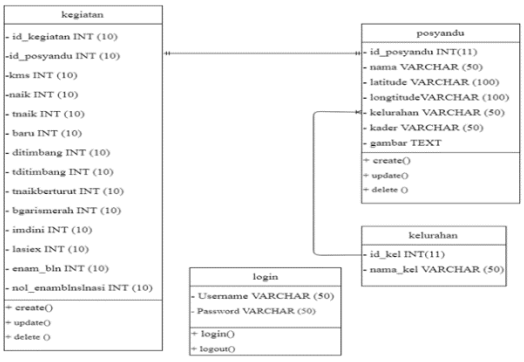

Figure 6. Class Diagram

4.4. Application

a. Dashboard (*User)*

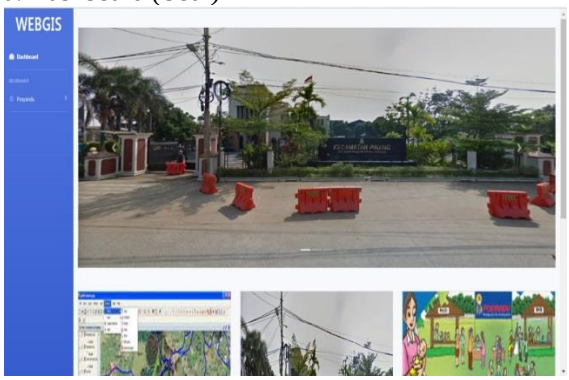

Figure 7. Dashborad User

b. Pasyandu

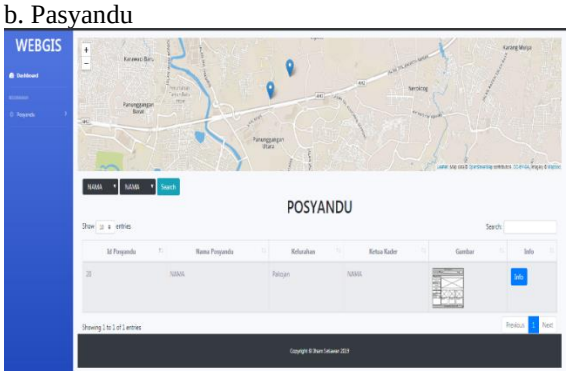

Figure 8. Posyandu

c. Info Page (User)

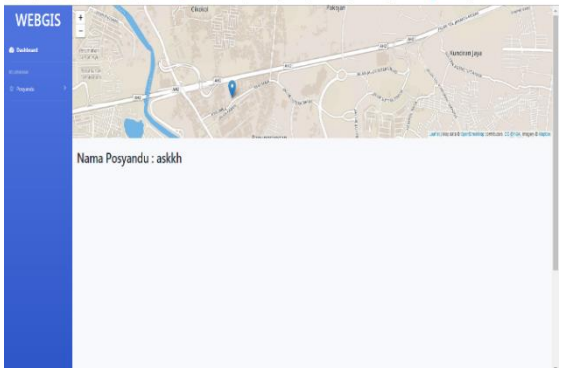

Figure 9. Info Page

d. Search (User) page

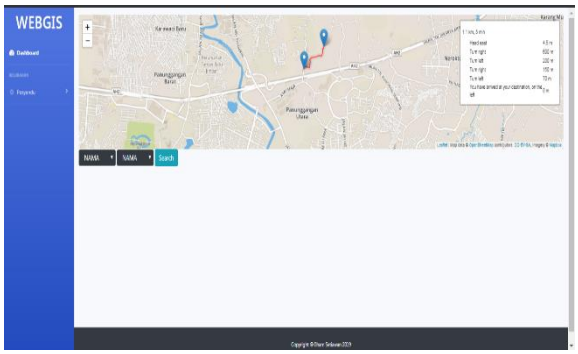

Figure 10. Search page

V. CONCLUSION

5.1. Conclusion

Based on the results of research that has been done, it can be concluded.

1. 1. A geographic information system program for mapping the location of Posyandu in Pinang Subdistrict, Tangerang City has been created
2. Geographical Information System for Posyandu Based on Leaflets has been developed successfully.
3. This system can manage information about where the posyandu is located, such as where the posyandu is located, the name of the posyandu, and its activities that can facilitate the community.
4. This system is well integrated, users can find out where the posyandu is, the name of the posyandu, and its activities.

5.2. Suggestion

In this study, some things need to be investigated and further developed. For the benefit of further development for researchers, they are as follows:

1. It is expected that a search system that starts from the GPSUser point makes it easier for Users.
2. It is expected that there is Polygon in the system so that it can know the boundaries of each region.

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