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TOWARDS INCLUSIVE GOVERNANCE: EGOVERNMENT IN CENTRAL ACEH'S SOCIAL ASSISTANCE

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Article Info

Keywords: social assistance, poverty alleviation, local government, Aceh Province, Central Aceh Regency, vulnerable populations, program implementation, program evaluation, welfare improvement.

Abstract

Social assistance programs play a vital role in safeguarding individuals and communities against potential social risks. The provision of aid by local governments, in a non-continuous and targeted manner, aims to support vulnerable populations in their journey towards socioeconomic well-being. This study examines the implementation of social assistance in Aceh Province, with a specific focus on Central Aceh Regency. The province, with a population of 5,274,871 people, faces the challenge of addressing the needs of its 492,227 inhabitants residing in both urban and rural areas.

The primary objective of this research is to explore the efficacy of social assistance initiatives in Central Aceh in tackling poverty and improving livelihoods. By analyzing data from the Central Bureau of Statistics of Aceh Province, we identify the number of people living below the poverty line, estimated at 32.31 thousand (15.58 percent) in 2018, and rising to 32.78 thousand (15.5 percent) in 2019. These figures underscore the urgency of evaluating the existing social assistance measures and identifying potential areas of improvement.

Drawing from existing literature, we present a comprehensive review of social assistance models employed in various regions globally. This comparative analysis sheds light on successful strategies and provides valuable insights for enhancing social assistance programs in Aceh Province. Furthermore, we examine the challenges faced by the current system, including resource limitations, administrative inefficiencies, and targeting issues. Understanding these challenges is crucial for formulating targeted and sustainable interventions.

To assess the impact of social assistance, we employ a mixed-methods approach, integrating quantitative surveys and qualitative interviews with beneficiaries and program administrators. The quantitative data provide statistical evidence on the program's reach and effectiveness, while the qualitative insights offer nuanced perspectives on its perceived benefits and limitations.

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1. Introduction

To shield people from possible social risks, *social assistance* is defined as the non-continuous and selected provision of aid by the local government to individuals, families, groups, or communities [1]. The population of Aceh Province, particularly in Central Aceh, is 5,274,871 people, with up to 492,227population in both urban and rural areas, based on Information from the Central Bureau of Statistics of Aceh Province. The number of poor people (those whose annual per capita income is below the poverty line) in Central Aceh Regency reached 32.31 thousand in 2018 (15.58 percent) and increased to 32.78 thousand in 2019. (15.5 percent).

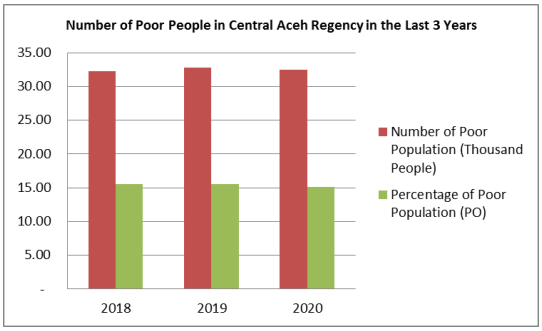

Fig 1. A graph depicting Central Aceh District's poverty rates
(Source BPS Aceh Tengah 2020)

In 2020, there were 6,738 Beneficiary Families of the Family Hope Program (PKH) participants and 6,211 Cash Social Assistance (BST) recipients. This brought the total number of PKH and BST recipients to 12,949 families or around 39,868 percent of the actual poor in Central Aceh.

Social jealousy in society is caused by indications of misuse and mismanagement of social assistance, so the Community's role is essential in supporting government transparency in terms of the management of social aid [2],[3],[4],[5],[21],[22].

Therefore, a community-based system model is needed that can contribute comparative information to the government in evaluating government policies on the distribution of social assistance that has been running [4],[6],[7],[23],[24].

The comparison information is in the form of pictures of houses and other parameters that become a reference for beneficiaries. To support this, a system is needed to manage spatial-based information and the role of the Community. In other terms, Volunteered Geographic Information (VGI) [5],[6],[7],[8],[9],[10] by utilizing spatial data to design an open and accountable Geographic Information System to minimize misuse of social assistance distribution.

The purpose of this research is to support and assist the government in creating a transparent government or green government through the contribution of the Community or Community in providing information and assessment of the distribution of assistance that has been distributed based on Volunteered Geographic Information (VGI).

2. Literature Review

Research needs to have a concept in formulating literature that supports an examination and an explanation as a theoretical basis for research. This study's state of the art is to analyze existing analyses but has a method concept that is in line and almost the same as the current research. Through a review of state of the art in research, it is possible to see the extent of the differences between each study so that each study can have an original theme.

There is still little study of the Volunteered Geographic Information (VGI) infrastructure model for social assistance programs in research and development. The related literature studies are as follows:

a. Geographic Information System Support for Social Assistance Data Collection.
b. The Role of Volunteered Geographic Information (VGI) Systems in Disaster Risk Reduction

c. Geographic Information System Mapping Communities Recipients of Social Assistance Targeted at Sulangai Village Based on Web. d. Volunteered in Geographic Information System Design.
e. Volunteered Geographic Information (VGI) for Land Administration
f. Spatial Data Infrastructure Model to Support E-Government based on Geographic Information Systems.

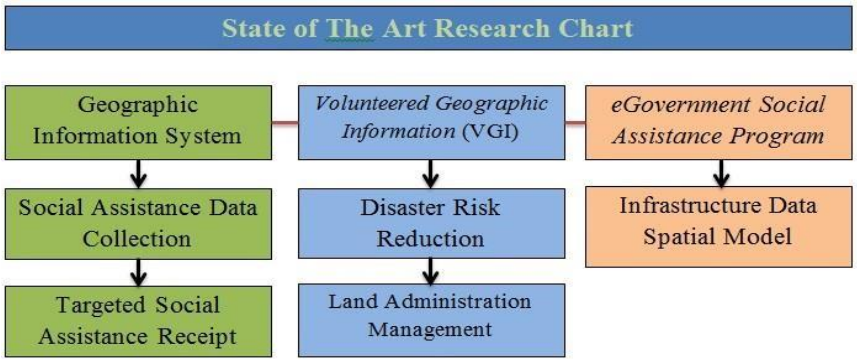

Fig 2. State of The Art Research Chart

Geographic information system maps/maps provide information on the distribution of social assistance in various regions and the distribution of community reporting by utilizing the multi-marker on the map to give information to users/users. It is possible to use the system's development from this study for distributing social assistance data in the Community. It can also be used to mark the coordinates of the location of community reporting. Moreover, the advantage of the GIS application for Social Assistance Data Collection is that maps do not need to be made first because they already take data. Maps are from the LeafletJS library, so the maps need to be implemented, and maps are obtained for free because the library is open source [2].

In the previous implementation of VGI utilization, VGI information resulted from community participation and volunteering to provide information about a phenomenon in their environment quickly and in real-time. This, of course, can provide input for decision-makers in moving to take concrete steps related to disaster risk reduction. Compared to the traditional way, you have to wait for formal data issued by the relevant institution. However, the need for a study of additional information on the quality of VGI data poses a challenge in the future. This provides many opportunities for further research on a methodology to obtain information on the quality of VGI data as well as the ability to provide a summary of the many incoming details [5],[11],[12].

The design of the Geographical Information System for Mapping of Targeted Social Assistance Recipients in Sulangai Village was successfully carried out. The plan was carried out using the Waterfall method, MySQL database, Laravel Framework, and Bootstrap. The features contained in this system are Mapping of Community Recipients of Social Assistance, Submission of Social Assistance, and information to the Community, who are the people who receive Social assistance and can display the location of the houses of the people who receive social service using a GIS model (Geographical Information System). Based on system testing and user interviews, the mapping system of the beneficiary community in Sulangai Village can be expected and effective in overcoming problems. It can provide many benefits and conveniences in carrying out mapping activities and applying for assistance in Sulangai Village [3],[13],[14].

Methodology, considerations and tools, and a description of the steps to be followed to design a VGI system. This organized design methodology is practically oriented toward developing VGI projects. Align the three components: the VGI system, reducing the gap between projects, participants, and technology. The VGI system design process is triggered by problems or detects opportunities for improvement and then sets out to create an integrated design flow: from clear objectives and appropriate participatory operations, including a collaborative

environment and participatory engagement strategies based on identified factor motivations and proper technical infrastructure and tools to support collaborative community-specific environments. It aims to reduce friction in the VGI workflow, from destination to final system output, thereby facilitating the design of various aspects of participation and technology [6],[15],[16].

Information quality issues in general and geographic information in particular. This problem is not solved automatically by using VGI. As one of the most successful community resources, the encyclopedia Wikipedia sometimes faces significant edits. In this case, it may happen to the land administration. The business opportunity is related to the data stored in the land administration database. So, competitors prevent some of these business opportunities by falsifying land administration data. While it is possible to correct these forgeries, delays can result in severe business losses. What does this mean for every obligation that public administration has? Should the cost of liability be downgraded to the original? Contributor? Clear solutions are needed but may impact citizens' willingness to share data. The VGI approach can be used but only to gather this type of information. Citizens can only provide information that they have. This is a general statement derived from observation or communication. So an invisible fact, for example, in ownership can only be provided by a few people, and this presents problems for social control in VGI. An approach to solving this could be comparing VGI and data from other sources, such as public registers. However, it may be problematic to deal with contradictions between public records and VGI as both sources may be incorrect [7],[17],[18],[21],[22].

The proposed local Spatial Data Infrastructure (SDI) model develops from perceptions of the organization, technology, production, and interoperability. The analysis and evaluation of SDI implementation in the city of Depok on the SDI components in the city of Depok form the basis of the criteria utilized in the proposed model. The Local SDI model that connects agencies using spatial data in the city of Depok, the government, and institutions can be connected to the juridical level above it. The results of the implementation show that The model is implementable. The analysis and evaluation of SDI implementation in the city of Depok on the SDI components in the city of Depok form the basis of the criteria utilized in the proposed model. in the case study area of the Depok City Government to share data and support GIS for eGovernment applications. Due to the disparate scales being utilized and the lack of data quality assurance, there is an issue when attempting to merge the administrative boundary data owned by the City of Depok with the administrative border at the national level [4],[20],[23],[24]. State of The Art Research Chart.

3. Methods

The method of solving implementable research problems uses the System Development Life Cycle (SDLC) method with a prototype model. The following is the research methodology scheme that will be applied:

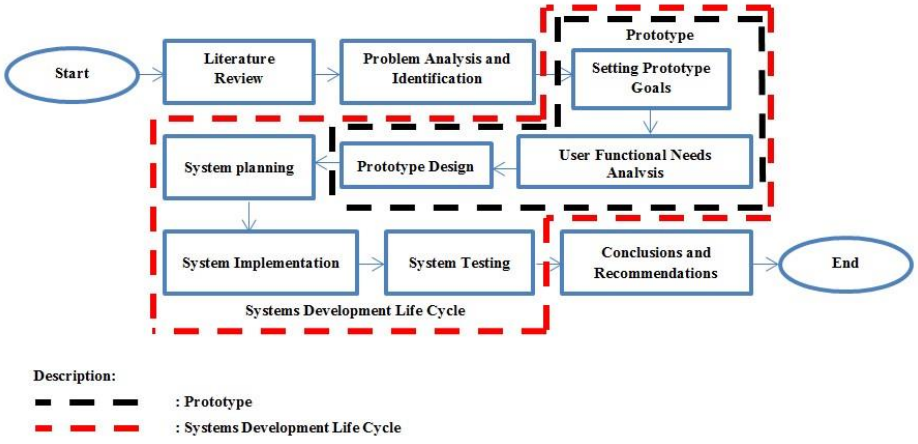

Fig 3. Research methodology **3.1. Problem Analysis and Identification**

The author directly observed the Social Service and the Community users in analyzing the problem and investigating and identifying these problems, resulting in formulating research problems that would be used to develop the Volunteered Geographic Information (VGI) Infrastructure Model for the Social Assistance Program to Support eGovernment.

3.2. Setting Prototype Goals

At this stage, the author and the user plan to create a prototype related to the Volunteered Geographic Information (VGI) Infrastructure Model for the Social Assistance Program to Support eGovernment.

3.3. User Functional Needs Analysis

At this stage, it describes a more detailed needs analysis of the plans that have been made. For modeling, UML is used, which consists of use cases and use case scenarios. There are two stages to be made, namely the identification of actors and the identification of functional needs of the Volunteered Geographic Information (VGI) Infrastructure Model for the Social Assistance Program to Support eGovernment. **3.4. Prototype Design**

In this stage, a prototype display or user interface of the Volunteered Geographic Information (VGI) Infrastructure Model for the Social Assistance Program to Support eGovernment is created. Based on the system development life cycle (SDLC) prototype model development method and based on the user's functional needs as previously determined and must be following the VGI concept as shown in the following figure:

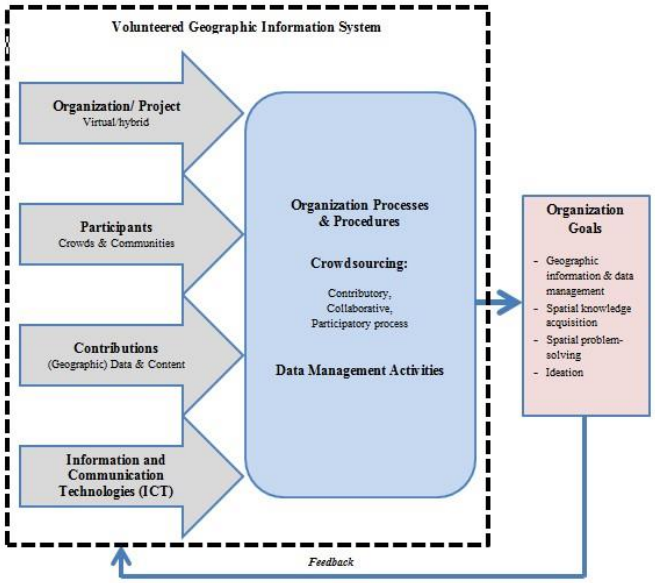

Fig 4. General Concept of VGI System **3.4. System planning**

At this stage, the concept used is object-oriented design, based on analyzing the user's functional requirements. The method includes database design and user interface design. Volunteered Geographic Information (VGI) Infrastructure Model for Social Assistance Programs to Support eGovernment.

4. Result and Discussion

4.1. Actor Identification

The users of the Volunteered Geographic Information (VGI) Infrastructure Model for Social Assistance Programs to Support eGovernment system to be built include volunteers, operators, and administrators, as in the following table:

Table 1. Actor Identification

No	Actors	Description
1.	volunteers	A person who gains access rights to the system through logging in to report social assistance recipient information.
2.	operators	A person who verifies all VGI social assistance resources.
3.	administrators	Someone who manages all VGI social assistance resources.

4.2. User Functional Needs

At this stage, it describes a more detailed needs analysis of the plans that have been made. For modeling, UML is used, which consists of use case diagrams, sequence diagrams, and class diagrams, as in the following table:

Table 2. Volunteer Functional Needs

No	Functional Needs	Description
1.	Register	The system must be able to process user registration into the system
2.	Login	The system must be able to authenticate the entered username and password to get access rights.
3.	Viewing beneficiary data and information	The system must be able to display data on the location of social assistance recipients containing the identity of the recipient and Geolocation based on the Central Aceh District Map.
4.	Report the location of the beneficiary	The system must be able to store data on the location of social assistance recipients containing the identity of the recipient and Geolocation based on the Central Aceh District Map.
5.	Adding a comment	The system must be able to store user comments on data and information on social assistance recipients based on the recipient's location point.
6.	Add another photo	The system must be able to store photos uploaded by the user against the data and information of social assistance recipients based on the recipient's location point.
7.	Logout	The system must be able to log the user out of the system and return to the login page.

Table 3. Operator Functional Needs

No.	Functional Needs	Description
1.	Register	The system must be able to process Operator registration into the system
2.	Login	The system must be able to authenticate the entered username and password to get access rights.
3.	Viewing beneficiary data and information	The system must be able to display data on the location of social assistance recipients containing the identity of the recipient and Geolocation based on the Central Aceh District Map.

4.	Verifying beneficiary data and information	The system must be able to store the results of verifying the correctness of the social assistance recipient data.
5.	Adding a comment	The system must be able to store Operator verification comments on social assistance recipient data and information based on the recipient's location point.
6.	Add another photo	The system must be able to store verification photos uploaded by the Operator against the data and information of social assistance recipients based on the recipient's location point.
7.	Logout	The system must be able to log the Operator out of the system and return to the login page.

Table 4. Administrator Functional Needs

No.	Functional Needs	Description
1.	Register	The system must be able to process Administrator registration into the system
2.	Login	The system must be able to authenticate the entered username and password to get access rights.
3.	Viewing beneficiary data and information	The system must be able to display data on the location of social assistance recipients containing the recipient's identity and Geolocation based on the Central Aceh District Map.
ecap	the report on the results of data verification and beneficiary Information	The system must be able to recap and display reports on the results of verifying social assistance recipient data correctness.
5.	Adding a comment	The system must be able to store Administrator comments on the data and information of social assistance recipients based on the recipient's location point.
6.	Add another photo	The system must be able to save the photos uploaded by the Administrator against the data and information of social assistance recipients based on the recipient's location point.
7.	Logout	The system must be able to log the Administrator out of the system and return to the login page.

In this case, the user is divided into 3 (three) levels, namely level 1 for administrators, level 2 for operators, and level 3 for users (volunteers).

4.3. Use Case Diagram

To describe the actors involved in the system and the functions that run in the design, a particular diagram is needed, namely, using a use case diagram.

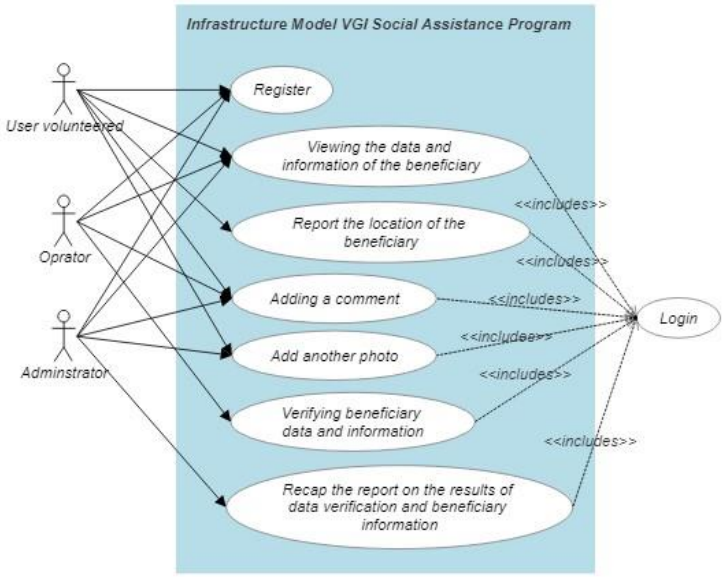

Fig 5. Use Case Diagram of Infrastructure Model VGI Social Assistance Program

4.4. Sequence Diagram

Sequence diagrams describe scenarios or interactions between objects in the VGI social assistance system so that specific outputs are produced.

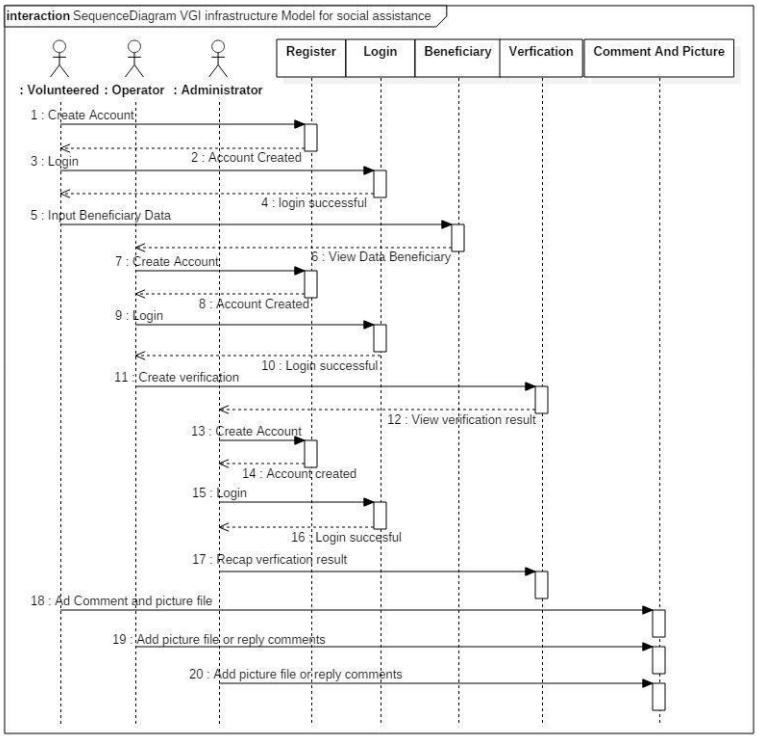

Fig 6. Sequence diagrams of Infrastructure Model VGI Social Assistance Program **4.5. Class Diagram**

Showing the VGI structure of social assistance also increases understanding of a program's general picture or scheme.

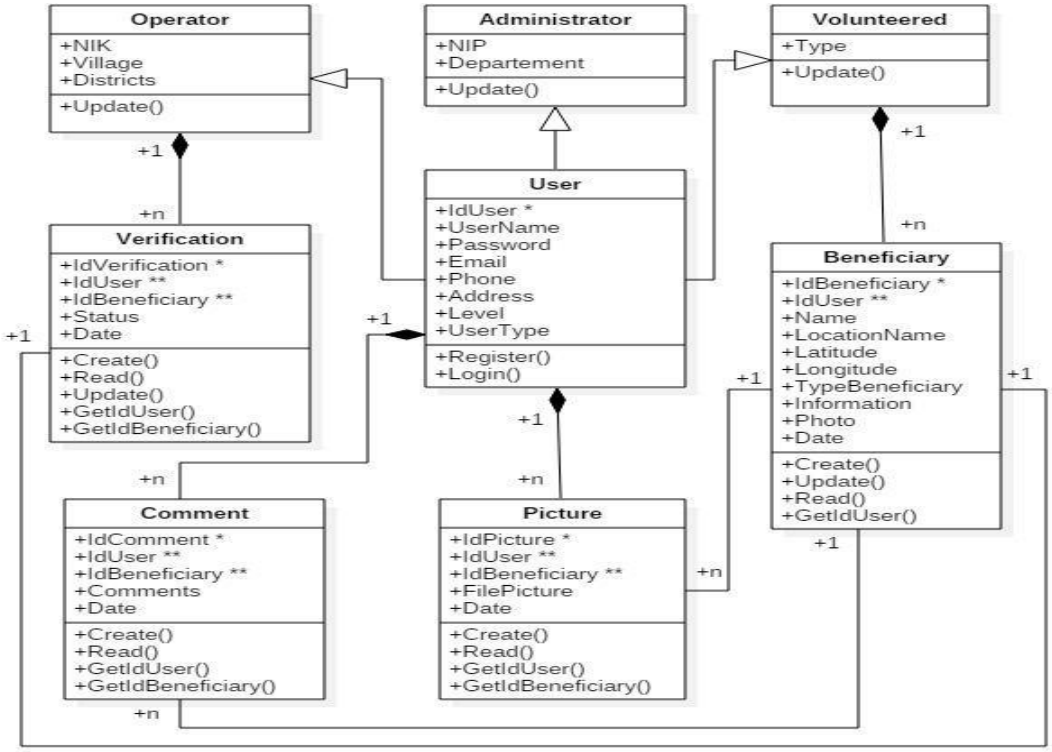

Fig 7. Class diagrams of Infrastructure Model VGI Social Assistance Program

4.6. System Implementation

The user interface implementation contains the results of the display of the system implementation stage that has been carried out. The appearance of the VGI Social Assistance system is depicted in Figures 8 to 12.

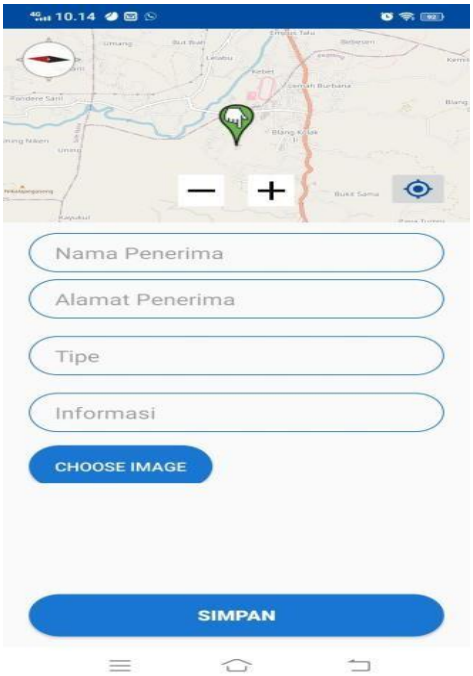

Fig 8. Volunteers interface to report the location of the beneficiary

The interface page for volunteers above uses the Android mobile-based VGI Social Assistance application already installed on each volunteer's mobile phone. Where the form of data collection carried out by volunteers must be

directed at the beneficiary's location and add a photo from the beneficiary's house so that the place coordinated data can be accounted for.

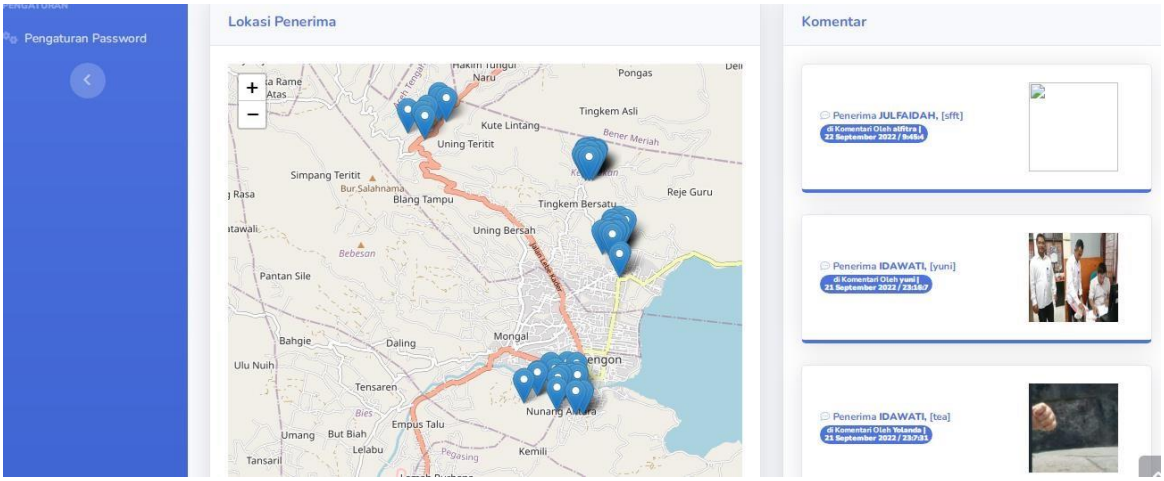

Fig 9. Main page interface of Infrastructure Model VGI Social Assistance Program System

This system's main page results from a web-based VGI Social Assistance application that user operators and administrators can open. The beneficiary data on the map results from collecting data on volunteers.

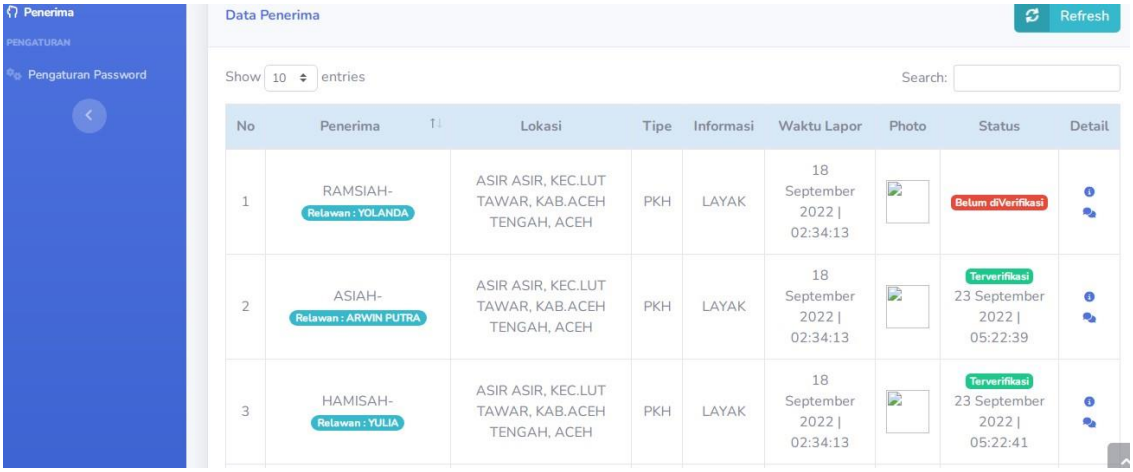

Fig 10. Operator's Interface to verifying beneficiary data and information

Then after the Operator enters the web-based system, the Operator can verify the correctness of the data entered by the volunteer. If the beneficiary's data is correct and valid, the Operator will verify the data and add photo evidence and comments related to the beneficiary's data.

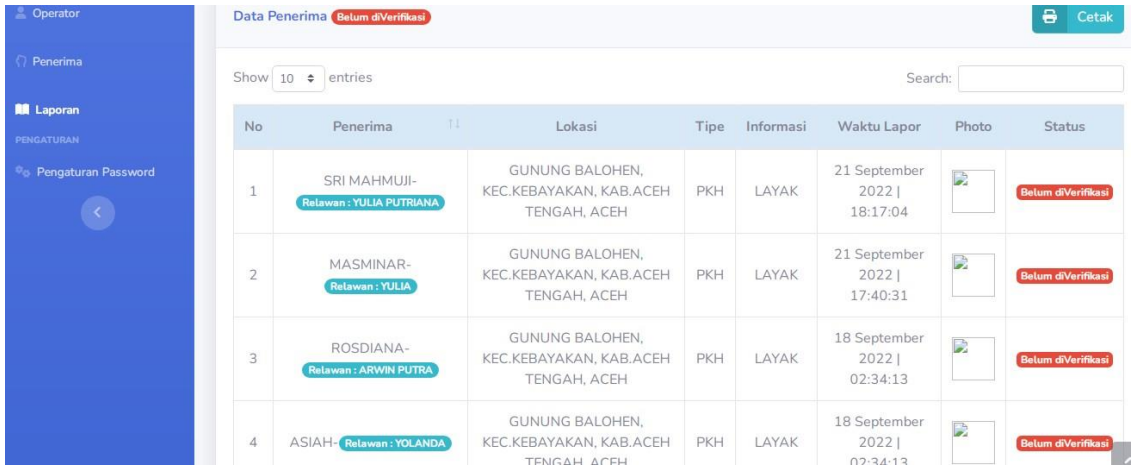

Fig 11. Administrator Interface to recap the report on the results of data verification and beneficiary information (not verified)

After the Operator has verified the beneficiary data, the Administrator can record verified data (Fig. 11) and unverified data (Fig. 12). As for data that the Operator has not confirmed, the Administrator can instruct the Operator to check the correctness of the data.

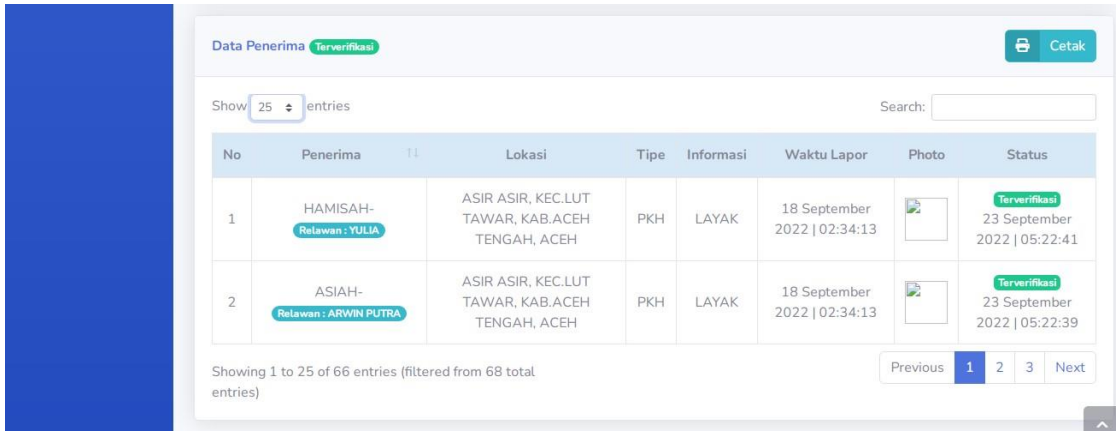

Fig 12. Administrator Interface to recap the report on the results of data verification and beneficiary information (verified)

Administrators can also print reports related to verified and unverified beneficiary data via the print menu on the system

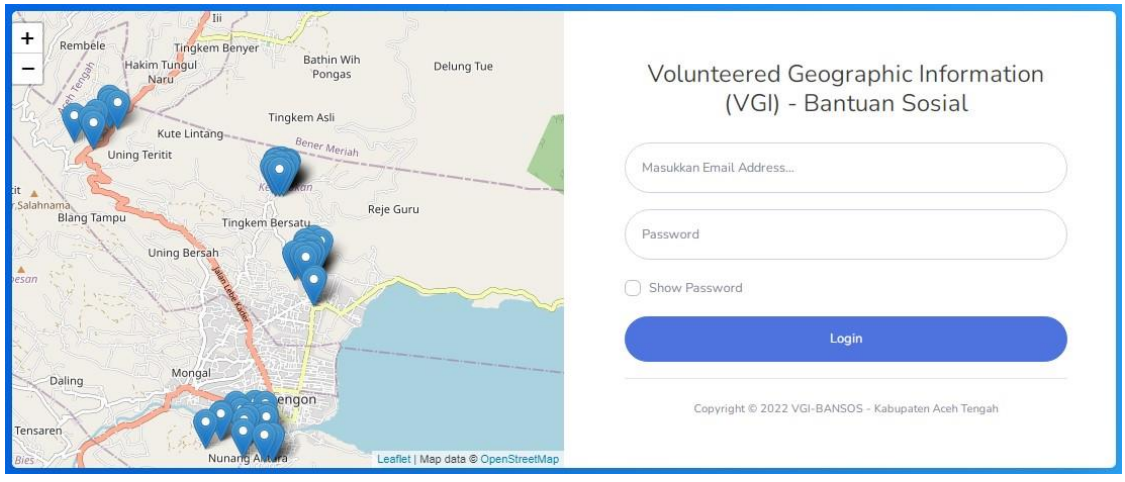

Fig 13. Main page interface of Infrastructure Model VGI Social Assistance Program System

The interface page above is for people who want to know the validity of the beneficiary data recorded by volunteers. Suppose there is data on recipients of assistance deemed by the Community to be inappropriate. In that case, the Community can report it by becoming a volunteer first through registration to the system as a volunteer. Then download the android application provided by the authorities for social assistance.

4.7. System Test

Black box testing is software testing in terms of functional specifications without testing design. The code program determines whether the software's functions, input, and output are according to what is needed. In this system, black box testing can be seen as follows:

Table 5. Black-box testing of the VGI Social Assistance system

No	Test Case	Test Step	Results	Status
1.	Register	The user fills out the registration form through the register menu.	The user has successfully registered, and the system can save the registration data.	succeed
2.	Login	Fill in the username and password, and click login.	The user enters the system. If it is wrong, then an error notification appears.	succeed
3.	Viewing beneficiary data and information	The user selects the beneficiary menu.	The system is capable of displaying beneficiary data.	succeed
4.	Report the location of the beneficiary	The user opens the beneficiary menu and fills in the information related to the beneficiary.	The system can save beneficiary data and display it on a map.	succeed
5.	Verifying beneficiary data and information	The user opens the beneficiary menu and verifies the beneficiary data.	The system can update the status of the beneficiary data.	succeed
6.	Recap the report on the results of data verification and beneficiary Information	The user selects the report menu.	The system can display a table of verified and unverified beneficiary data recapitulation.	succeed
7.	Adding a comment	The user selects one of the beneficiaries and then fills in the comments.	The system can save comments on beneficiary data.	succeed
8.	Add another photo	The user selects one of the beneficiaries and then adds a photo.	The system is capable of storing pictures associated with the beneficiary data.	succeed
9.	Logout	The user selects the exit button on the system.	The user exits the system and returns to the login interface.	succeed

5. Conclusion

The study's findings are a web-based VGI Social Assistance system model and, for volunteers, the Android-based VGI Social Assistance application. The two systems can run following the objectives of the research that has been carried out, namely in recording the location of recipients of assistance by volunteers through the Android-based VGI Social Assistance application and Geolocation so that the accuracy of the site of the beneficiary data

is very valid. Then the Operator can verify the beneficiary data that the volunteer has input through the web-based VGI Social Assistance application. Also, the Administrator can recap the verified and unverified data.

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