Disaster Victim Service Application at the Social Services of Tangerang District

Ade Setiadi[*1], Sulaiman[2], Fifit Alfiah[3]
[1,3]Teknik Informatika, Raharja University Faculty of Science and Technology
[2]Master of Computer, Sekolah Tinggi Manajemen Informatika Komputer ERESHA
E-mail: [*1]**adesetiadi@raharja.info**, [2]sudesak45@gmail.com, [3]fifitalfiah@raharja.info

Abstract

The social service of Tangerang District is a government institution that caters to the social welfare problem and one of the services that will be discussed is the service of disaster victims in the district of Tangerang that have not been computerised so that the running system is less efficient. The process of service that is still having difficulty due to the collection of disaster victims is still far from the word accurate and to get the service should often visit the office so it takes a lot of wasted time. Since the system is running less efficiently, a Disaster Victim Service Application has been made which is computerized and runs more efficiently. The method used in data collection is observation, interviews, and literature study. In analyst a system using the PIECES method (Performance), (Information), (Economy), (Control), (Efficiency), (Service) to make it easier to analyst the running system and provide solutions in making application programs and writers in making application design with visual modelling using UML (Unified Modelling Language) to make a diagram, Hypertext Preprocessor (PHP) as a programming language, and MySQL as a database to be used in the system. The results of the design discuss how to create a system that runs and the proposed system and the existence of this system can facilitate service employees in receiving accurate reports so as to shorten the time of handling in serving victims affected by disasters.

Keywords *— Service, Complaint, Disaster Victims, Application*

1. INTRODUCTION

Technology is a means in the form of various kinds of equipment or systems that function to provide comfort and convenience for humans. Technology is also a place to increase our knowledge in finding information. The opportunity for the creation of this technology can make us think more broadly to use it in making service programs at the Social Service office in Tangerang Regency.

The Office of Social Affairs is a government agency tasked with assisting the Regent in formulating policies, coordinating, fostering and controlling government affairs in the social sector which are under the authority of the Region and the assistance tasks given to the Regional Government [1]. The Department of Social Affairs is one of the government agencies that serves the protection of social welfare issues. And one of the services that will be discussed is the service for disaster victims in the Tangerang Regency area which has not been computerized yet. The form of service that will be carried out is in the form of providing social assistance such as logistics, social donations, aid funds, and public kitchens will be made if the area is badly affected [2].

The problem faced by the Social Service at this time is that the service process is still experiencing difficulties because data collection for disaster victims is still far from accurate and to get services, they must often visit the office [3]. Disaster victim data which includes regional data, number of victims, age, and status of victims will be recapitulated then the recorded data will be informed to the social service after that the office provides services to victims affected by the disaster [4]. Sources of information for disaster victims can be through sub-district social workers, disaster volunteers, firefighters, and local communities, and where data collection uses paper, telephone, and input data still using Ms.Excel.

As time goes by, the use of technology is very beneficial for companies and offices and here the author will connect technology with service. So, it is very appropriate to create a system application in which there is a database so that it is easier to identify disaster data and help reduce obstacles in serving disaster victims in Tangerang Regency, as well as to explore problems so as to create better service targets because this research focuses on disaster victim services and improvement of the running system by creating applications to process victim data and better services.

2. RESEARCH METHOD

2.1. Analysis Method

The data analysis method is a stage of the research process where the data that has been collected is managed to be processed in order to answer the formulation of the problem. This data management and processing process is called data analysis. In this study, the authors use the PIECES (Performance, Information, Economy, Control, Efficiency, Service) analysis methods to make it easier to analyst the current system and provide solutions and produce the desired goals [5].

2.2. Development Method

In designing the Disaster Victim Service Application, using Extreme Programming (XP) with the following stages:

1. Planning, planning or the initial step in this research uses PIECES (Performance), (Information), (Economy), (Control), (Efficiency), (Service).
2. Design, for design using Unified Modeling Language (UML) in making use case diagrams, activity diagrams, sequence diagrams, and class diagrams and MySQL for database modeling.
3. Coding uses Hypertext Preprocessor (PHP) as one of the programming languages used, with the CodeIgniter framework in making programs and JavaScript as a dynamic computer programming language to write functions inserted into HTML.
4. Testing, testing uses Black box testing to test the designed application system and to support or test the system, use XAMPP as a web server to support various types of website data that are in the development process.

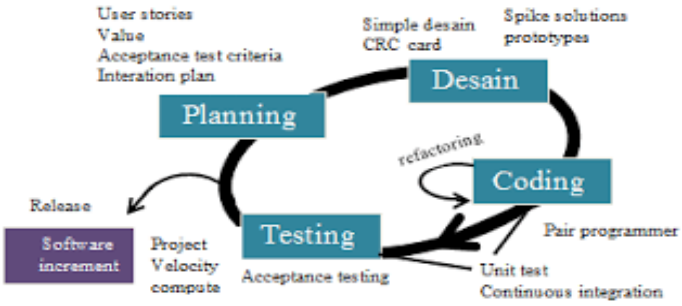

Figure 1. Stage Flow Extreme Programming (XP) [6]

2.3. Use Case Diagram

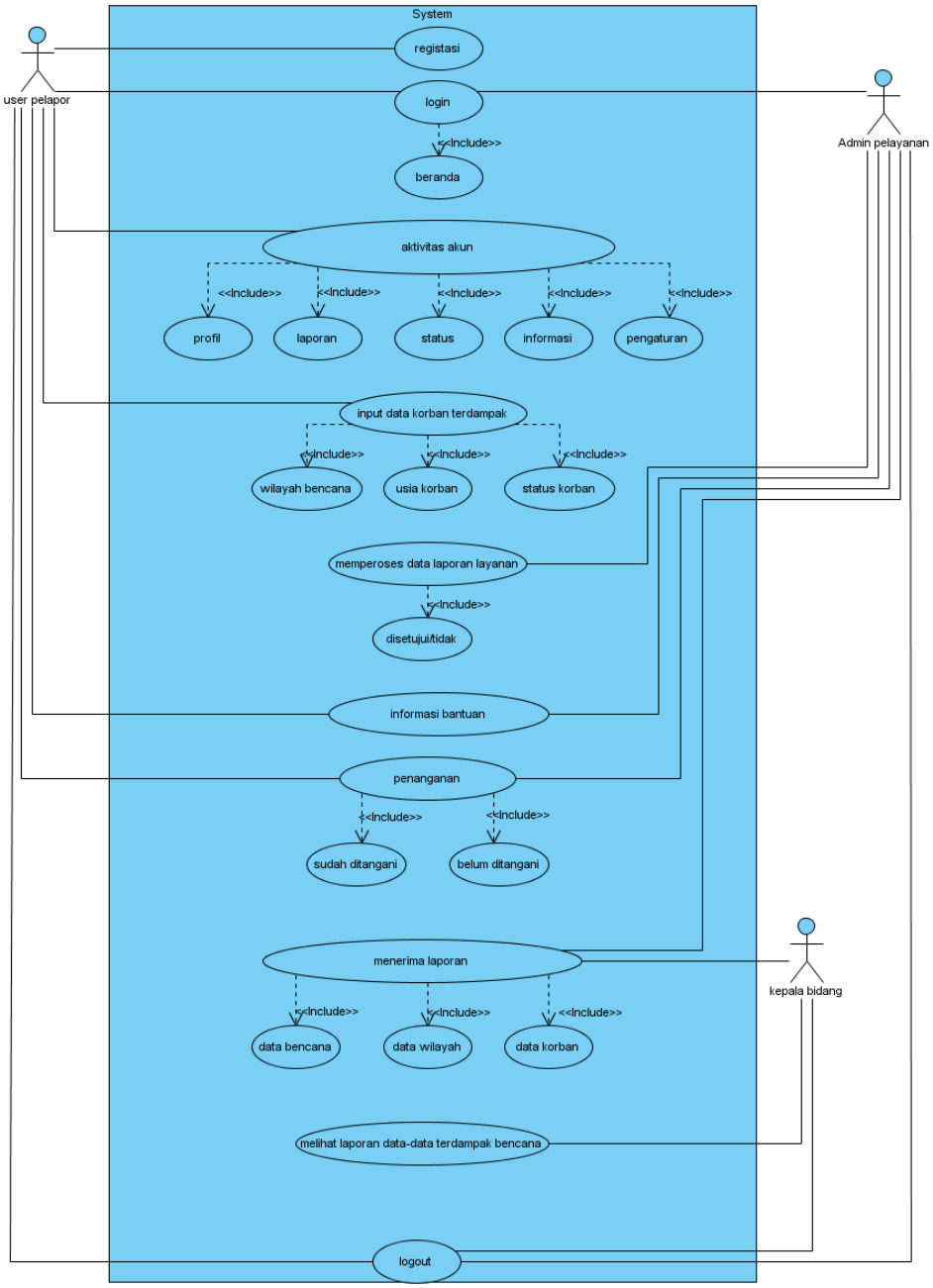

Figure 2. Use case diagram system

Use case Diagram of the proposed service system can be explained, namely:

1. There are 3 (three) actors who act as: User, Admin, Head of field.
2. There are 10 (ten) Use cases that run as follows: Register is user registers himself as an account user by filling in the requirements, Log in is user, admin, and Head of field login before visiting them, Account activity is all actors perform account activity, Input affected report data is user inputs disaster data, Processing is after inputting the data is processed by the admin, Assistance information is after processing, the admin provides assistance information to users who report for taking disaster relief staples, Handling is after the complainant (user) collects the basic aid materials, the handling is carried out to serve the victims affected by the disaster, Receiving reports is after handling, the admin provides reports to the head of the field in the form of disaster data, regional data, and victim data to be used as archives, Viewing disaster-affected data: the head of the field can view the disaster-affected data archive, and Log out: user, admin, and Head of field log out.
3. 5 (five) extends on account activity, namely: profile, reports, status, information, and settings.
4. 3 (three) extensions to the victim data input, namely: disaster area, age of victim, status of victim.
5. 1 (one) extend on data processing that is, approved or not.
6. 2 (two) extend handling, namely: already handled, and not yet handled.
7. 4 (four) extends in providing reports, namely: official report, disaster data, regional data, and victim data.

2.4. Literature Review

1. This research was conducted by Bahagia, Dedi Satria, and Hendri Ahmadian 2017, entitled "Design of an Android-Based Mobile Android-Based Disaster Victim Data Management Information System". The current administration system is still managed internally and victim data can only be accessed at the agency's information center and is difficult to access remotely for the public. In addition, any data needed by the community must contact the disaster data collector. So, we need an application that can anticipate problems such as information on victims of damage and disaster assistance for the Android-based mobile community [7].
2. This research was carried out by Amir Alkodri, Burhan Isnanto, and Sujono 2019 entitled "Application of Public Complaints for Reporting Events and Disasters at the Bangka Belitung National Basarnas". This study aims to find solutions to existing problems by building an Android-based application or system that is expected to be able to help the community more effectively and efficiently, as well as to improve the service of a good national base. This android-based application makes it easier for the community to submit incident or disaster reports, receive information related to environmental conditions around the Bangka Belitung area. This application uses the waterfall model in building the system, tools are also used, namely Unified Modeling Language (UML) [8].
3. This research was conducted by Dhuha Ginanjar Bayuaji, Arief Laila Nugraha, and Abdi Sukmono 2016 entitled "Analysis of Landslide Disaster Risk Zoning Determination Based on Geographic Information System (Case Study: Banjar Negara

Regency)". The purpose of this study is to focus on a local scale to conduct landslide risk mapping as a disaster mitigation effort in Banjarnegara Regency [9].

4. This research was conducted by Yuli Asbar, and Mochamad Ari Saptari 2017 with the title "Analysis of Measuring Service Quality on Consumer Satisfaction Using the PIECES Method". System analysis is carried out to produce a written report that is used to identify problems with an applied system in order to get an overview of the state of the system that will be implemented. The approach used to determine customer satisfaction in the company is using the PIECES method, PIECES analysis (Performance, Information, Economy, Control, Efficiency, Service) is a technique to identify and solve problems that occur [5].
5. Research conducted by Wahyu Hidayat Ibrahim, and Idria Maita (2017) entitled "Web-Based Public Service Information System at the Kampar Regency Public Works Service". This study aims to make it easier for the public to submit complaints and requests for construction or repair of roads and bridges in Kampar Regency, as well as speed up the Public Works Department to respond to any complaints and make it easier to manage complaints submitted by the community [10].
6. This research was conducted by Nayomi Kankanamge, Tan Yigitcanlar, Ashanta Goonetilleke, and Md. Kamruzzaman 2020 entitled “Determining disaster severity through social media analysis: Testing the methodology with South East Queensland Flood tweets”. The aim of the study was to identify the disaster areas that were highly impacted as perceived by the local community and to identify fluctuations in disaster severity over time. The spatial analysis of tweets validates the application of geo-location messages to delimit highly impacted disaster zones [11].

3. RESEARCH RESULTS AND DISCUSSION

3.1. Disaster-Prone Areas

The disaster-prone area in Tangerang City is a disaster-prone area landslides, urban flood-prone areas, earthquake-prone areas, and drought-prone areas. Here is a description of each one disaster-prone areas in Tangerang City:

1. Landslide Prone Area

Landslide-prone areas in Tangerang City are divided into 2 (two) categories, namely: landslide-prone areas are low and landslide-prone areas are very low. Here is a picture Distribution of Landslide Hazard Areas in Tangerang City.

Wide distribution of areas prone to landslides is low with the highest area being in Sangiang Jaya Village, Jatiuwung District with an area of 130.98 Ha, Very Low Disastered Prone Area with the highest area at Pajang Village, Benda District with an area of 1,757.92 Ha. As for the total area each KRB category and its percentage can be seen in the following table.

Table 1. Percentage of KRB Landslide Area in Tangerang City

No	KRB	Area (Ha)	Percentage Against Overall Region (%)
1	Low	861,44	4,70
2	Very Low	17.475,71	95,30
TOTAL KRB OVERALL		18.337,15	100

Sumber: eprints.itn.ac.id [12]

2. Urban Flood Prone Area

Flood-prone areas in Tangerang City are divided into 3 (three) categories, namely: High Flood Prone Area, Medium Flood Prone Area, and Low Flood Area. The following is a picture of the distribution of flood-prone areas in Tangerang City.

Wide distribution of High Flood Prone Areas with the highest area being in Pajang Village, Benda District with an area of 1,344.74Ha, the Medium Disaster-Prone Area with the highest area is in Pajang Village Benda District with an area of 417.49 Ha, and the Low Disaster-Prone Area with the highest area are in Pajang Village, Benda District with an area of 5.79 Ha. Whereas for the total area of each KRB category and the percentage can be seen in the following table:

Table 2. Percentage of Flood KRB Area in Tangerang City

No	KRB	Area (Ha)	Percentage Against Overall Region (%)
1	High	3.105,86	59,77
2	Middle	2.085,05	40,12
3	Low	5.79	0,11
TOTAL KRB OVERALL		5.196,70	100

Sumber: eprints.itn.ac.id [12]

3. Earthquake Prone Areas Earthquake Prone

Areas in Tangerang City are divided into 3 (three) categories, namely Medium Earthquake Prone Areas, Low Earthquake Prone Areas, and Earthquake Areas the Earth is very low. Here is a picture of the distribution of Earthquake Disaster Prone Areas in Tangerang City. Medium Earthquake Prone Area with the highest area is in Cipondoh Subdistrict Cipondoh Village with an area of 379.88 Ha, Low Earthquake Prone Area with the highest area is in the Village Display Benda District with an area of 1,730.49 Ha, and a Very Low Disastered Prone Area with the highest area is in Jatiuwung District, Pasir Jaya Village with an area of 510.01 Ha. As for the total area of each KRB category and its percentage can be seen in the following table:

Table 3. Percentage of The Area of Earthquake KRB in Tangerang City

No	KRB	Area (Ha)	Percentage Against Overall Region (%)
1	Middle	4.577,50	24,96
2	Low	11.905,38	64,92
3	VeryLow	1.854,27	10,11
TOTAL KRB OVERALL		18.337,15	100

Source: Sumber: eprints.itn.ac.id [12]

4. Drought Prone Areas Drought

Prone Areas in Tangerang City are only divided into 1 (one) category, namely Normal Drought Disaster Prone Areas. Here is a picture of the distribution of Drought Prone Areas in Tangerang City. Based on the results of calculations, all areas in Tangerang City have the status of Normal Drought Prone Areas. As for the total area of each KRB category and its percentage can be seen in the following table.

Table 4. Percentage of Drought KRB Area in Tangerang City

No	KRB	Area (Ha)	Percentage Against Overall Region (%)
1	Usual	18.337,15	100
TOTAL KRB OVERALL		18.337,15	100

Sumber: eprints.itn.ac.id [12]

3.2. Program Mapping PRB

Formulation of disaster risk reduction policies with output in the form of mitigation /disaster risk reduction policies with space dimensions, which include relocation, adaptation, and protection that require space. The following are the PRB programs resulting from analysis and integration between existing PRB programs and disastered prone areas and the resulting recommendation programs:

Table 5. Disaster Risk Reduction Programs of Tangerang City [12]

No	Program	Source	Location
1	Control and development of the region Local protection is the border of the river and the border there	BPLH 2011-2016	The Whole City Tangerang
2	Pay attention to the intensity of the space so that RTH is available Enough as the heart green city	BPLH 2011-2016	The Whole City Tangerang
3	Programs for the development, management and conservation of rivers, lakes, and other water resources through application and pumping of rivers, times, and channels Disposal	Pu Office Renstra 2011-2016	The Whole City Tangerang
4	Development of disaster evacuation room areas and development of space area disaster evacuation	Renstra Bappeda 2011-2016	The Whole City Tangerang
5	Activities of maintaining, maintaining and increase sustainability environmental functions and natural resources	Kesbangpolinmas 2011-2016	The Whole City Tangerang

No	Program	Source	Location
6	Development of drinking water supply systems Done according to three zones Service	Pu Office Renstra 2011-2016 RTRW Tangerang City	Ciptawadas Region (Cipondoh District, Tangerang,Karawaci, Cibodas Subdistrict), Karpiladug (Subdistrict Central Coral, Pinang, Prohibition, Ciledug Subdistrict), Riungdapenuk (Neglasari and Jatiuwung, Benda and Periuk Subdistrict)
7	Development of residential areas and development basic infrastructure	Pu Office Renstra 2011-2016 RTRW Tangerang City	The Whole City Tangerang
8	Landfill stabilization, rehabilitation TPS, improved waste services, and business reduction through composting, recycling, and sorting garbage	BPLH 20112016 City RTRW Renstra Tangerang	The Whole City Tangerang
9	Improved water management facilities and infrastructure waste, development the main channels and pipes of wastewater channels, and manufacturing local management installation for industrial activities and hospital	BPLH 20112016 City RTRW Renstra Tangerang	Cibodas Subdistrict, Karawaci Subdistrict, Tangerang District
10	Development and optimization of the road network	Pu Office Renstra 2011-2016	The Whole City Tangerang
11	Program rehabilitation/maintenance of the road and the bridge	Pu Office Renstra 2011-2016	The Whole City Tangerang
12	Provision of pedestrian paths and bike paths with considering the safety, security, comfort and smoothness by paying attention to people with disabilities and integrated with other transportation systems.	Kesbangpolinmas 2011-2016RTRW Tangerang City	The main road network in Tangerang City
13	Polder making and/or water tandons and/or ponds catchments and infiltration wells throughout the city area	Pu Office Renstra 2011-2016RTRW Tangerang City	Coral Village East, Subdistrict Ciledug
14	Drainage development is directed as a waterway rain which is the main drainage channel of the river, environmental drainage, and road drainage	Pu Office Renstra 2011-2016RTRW Tangerang City	The Whole City Tangerang
15	Private green open space	Recommendations	Residential areas
16	*Flood Proofing*	Recommendations	The whole building in Krb Flood
17	Relocation of residential and industrial areas	Recommendations	High Flood KRB
18	Alternative relocation locations	Recommendations	Agricultural areas and vacant land

3.3. Result of Application

The following is a display of the design of the disaster victim service application program at the Tangerang City Social Service.

1. After logging in by entering your NIK and password, you will see a dashboard display. In the dashboard there is information on the number of complaints, the number of handled, the number of users, and the number of admins and displays a table of complaints that have not been approved and the handling has not been processed.
2. Disaster in the type of disaster display, there are several names of disasters are floods, earthquakes, hurricanes, landslides, fires and pandemics, then the admin user can add the type of disaster according to the standard operating procedures of the Social Service.
3. On the menu for this type of logistics, there are several names of logistics materials that will be given to victims affected by the disaster, as well as adding types of logistics.
4. Then there is also a logistics data display, which consists of the logistics name, quantity, price per kilogram, and the total price. You can also add logistics data via the add button menu.
5. Complaint menu display

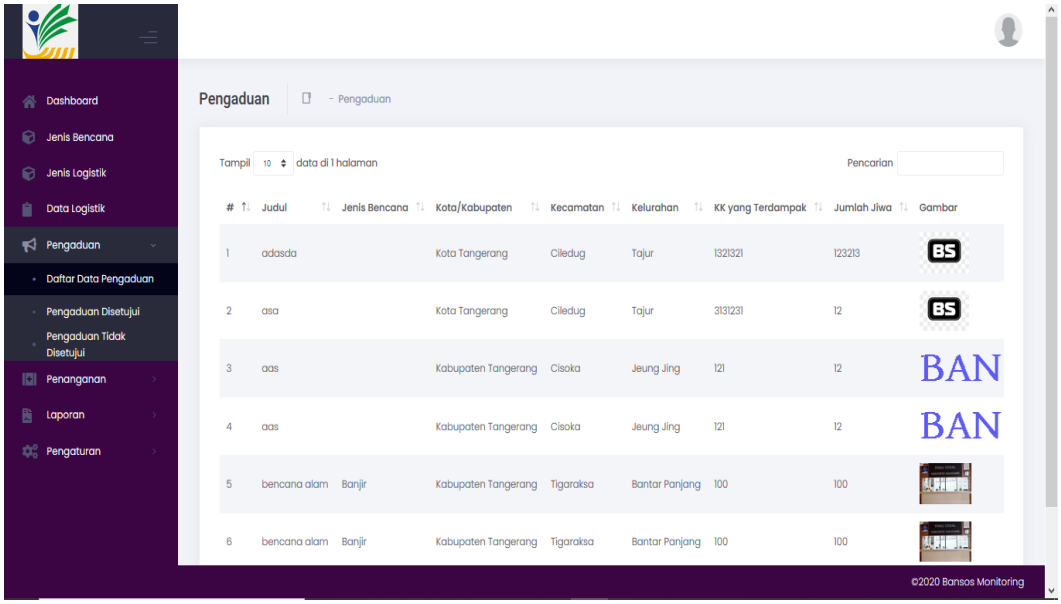

Figure 3. Complaint Menu

Furthermore, on the complaints menu the admin user can see the incoming affected complaints with the complaint title column, type of disaster, city or district, sub-district, village, affected KK, number of people, pictures, and status of the complaint.

6. Approved complaint menu display

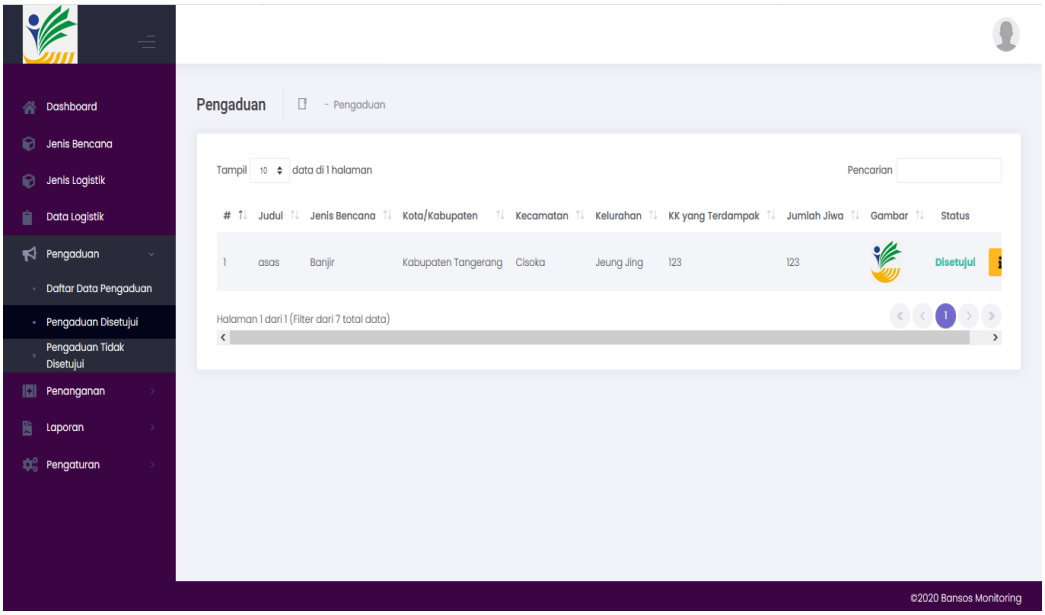

Figure 4. Menu of Approved Complaints

On the display there are complaints that are approved and then processed for handling disaster-affected services. Menu for complaints that are not approved, there are complaints that are not approved and can also display a description of the reasons why the complaint was not approved.

7. Handling menu display

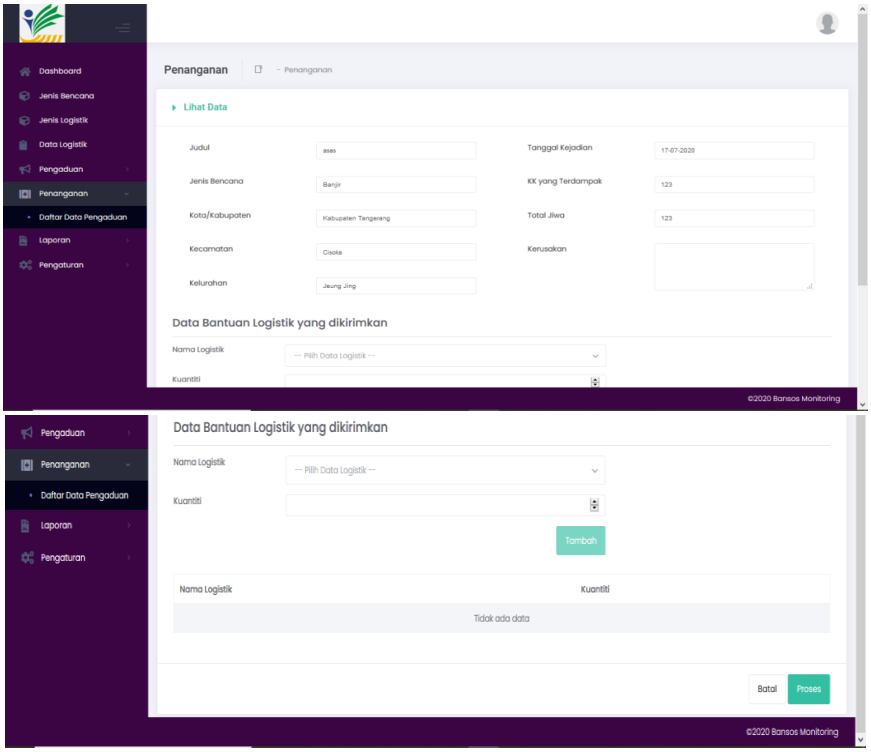

Figure 5. Handling Menu

In this handling menu there is data on complaints affected by disasters that have been approved by the admin user. Then for the handling, all you have to do is choose the logistics and the quantity after that the handling process and the user or reporter gets an email notification for providing assistance information from the admin.

4. CONCLUSION

The results based on this report can be disclosed regarding the Social Security protection services at the Social Service as follows:

1. The current disaster victim service system in Tangerang Regency is not yet accurate and computerized, so to file a complaint, they still use a call or directly visit the Social Protection Division of the Tangerang Regency Social Service to meet the needs of the disaster community.
2. sometimes the reporting party is always hampered in submitting a complaint when viewed from the time indicator because the complainant must often visit places that handle disaster services and the lack of maximum for service employees in processing disaster data, irregularities in reports are often found, such as data that is not updated, which has an impact on basic aid materials are not in accordance with the condition of the victim.
3. The computerized system by designing an Application Program for Disaster Victims Services can make it easier for reporters and service employees to access disaster-related information and create better, effective and efficient services. The system design uses the PHP programming language, UML as a model diagram, and MySQL as the database that will be used in the system.

5. SUGGESTED

1. In the Social Security Protection Section, there are 4 (four) persons with social welfare problems (PMKS), namely displaced persons, victims of violence, migrant workers, and disaster victims. Therefore, it is hoped that this application system can be used to respond in serving the 4 (four) factors with social welfare problems.
2. To make it easier to deal with odd reports, it is necessary to provide a spam report feature to reach more accurate reports and it is hoped that this system will be developed into a mobile application.
3. It is expected to provide geographic system features to detect the location of the situation and conditions affected by the disaster so as to accelerate the performance of these services.

6. REFERENCES

[1] F. A. Ade Setiadi, "Sistem Penjualan Spare Part Toko Ajm Motor Menggunakan Ci Berbasis Arsitektur MVC," Jurnal Simetris, vol. 7, no. 2, pp. 575-586, 2016.

[2] S. Zaman, "Perancangan Aplikasi Sistem Informasi Distribusi Bantuan Bencana Alam dengan Memanfaatkan Metode Rational Unified Process," Jurnal Teknologi dan Manajemen Informatika, vol. 7, no. 2, pp. 69-76, 2021.
[3] R. T. A. A. Fifit Alfiah, "Perancangan Sistem E–Commerce Untuk Penjualan Pakaian Pada Toko A&S," ICIT Jurnal, vol. 6, no. 1, pp. 70-81, 2020.
[4] R. N. S. F. N. R. Andi Aslam, "Aplikasi Crowdfunding Sebagai Penggalangan Dana Korban Bencana Alam Berbasis Web Dengan Menggunakan Framework Codeigniter," Jurnal Teknik Informatika, vol. 13, no. 2, pp. 45-51, 2021.
[5] M. A. S. Yuli Asbar, "Analisa Dalam Mengukur Kualitas Pelayanan Terhadap Kepuasan Konsumen Menggunakan Metode PIECES," JURNAL VISIONER & STRATEGIS, vol. 6, no. 2, pp. 39-47, 2017.
[6] M. N. D. S. D. A. Lisa Ariyanti, "Sistem Informasi Akademik Dan Administrasi Dengan Metode Extreme Programming Pada Lembaga Kursus Dan Pelatihan," Jurnal Teknologi dan Sistem Informasi (JTSI), vol. 1, no. 1, pp. 90-96, 2020.
[7] D. S. H. A. Bahagia, "Perancangan Sistem Informasi Manajemen Data Korban Bencana Berbasis Mobile Android," Jurnal Manajemen dan Akuntansi, vol. 3, no. 2, pp. 22-30, 2017.
[8] B. I. S. Amir Alkodri, "Aplikasi Pengaduan Masyarakat Untuk Pelaporan Kejadian Dan Bencana Di Basarnas Bangka Belitung," SENSITIF , pp. 15-20, 2019.
[9] A. L. N. A. S. Dhuha Ginanjar Bayuaji, "Analisis Penentuan Zonasi Risiko Bencana Tanah Longsor Berbasis Sistem Informasi Geografis (Studi Kasus : Kabupaten Banjarnegara)," Jurnal Geodesi Undip, vol. 5, no. 1, pp. 326-335, 2016.
[10] I. M. Wahyu Hidayat Ibrahim, "Sistem Informasi Pelayanan Publik Berbasis Web Pada Dinas Pekerjaan Umum Kabupaten Kampar," Jurnal Ilmiah Rekayasa dan Manajemen Sistem Informasi, vol. 3, no. 2, pp. 17-22, 2017.
[11] T. Y. A. G. M. K. Nayomi Kankanamge, "Determining disaster severity through social media analysis: Testing the methodology with South East Queensland Flood tweets," International Journal of Disaster Risk Reduction, pp. 1-13, 2019.