THE IMPROVEMENT ANDROID BASED INFORMATION SYSTEM AND SMS GATEWAY TO IMPROVE PMI DONORS

Jatmiko Indriyanto[1*], Miftakhul Huda [2], Qirom[3]

[123]Diploma Computer Engineering, Politenik Harapan Bersama, 52147, Indonesia

email: dewajat@gmail.com

ABSTRACT

Researchers conducted research at PMI (Indonesian Red Cross) in Tegal City. After visiting PMI, the researchers found that PMI often held blood donor activities in various places. However, the efforts made are still unable to cover the blood needs that are needed each month. PMI has made efforts to send text messages manually to blood donors who have been donors before, but because there are thousands, so many are often missed. Therefore, an automatic sms system is needed, or often called an sms gateway based on existing donor databases, and data. that has been sent can be seen on android. The sequence of research methods, data collection, system analysis, problem identification, application design, application development and application implementation. With the existence of an Android-based information system and an SMS gateway, it certainly makes it very easy for PMI to raise blood donors, it can even increase the number of blood donors. With the Android-based information system and SMS gateway, it will certainly make it easier for PMI Tegal City to collect blood donors. This research succeeded in bringing in donors to donate blood regularly.

Keywords: PMI, blood donation, sms gateway

Introduction

PMI (Indonesian Red Cross) is a humanitarian and social organization, whose daily task is to find blood donors and distribute them to those in need. PMI's routine activities include gathering blood donors in crowded places, providing medical assistance in natural disasters, as well as providing social and public health services. In accordance with PMI's main tasks,: aid preparedness and disaster management, training in first aid for volunteers, health and community welfare services, blood transfusion services.

The amount of demand for blood supply is currently very high, it is not proportional to the existing blood supply. Indonesia needs about 4 million bags of blood to meet people's needs in a year (Tanjung, 2012). However, blood donors in Indonesia still do not meet the ideal number, which is only 1.7% of the total grow population, under the ideal number of around 3%. This shows that the amount of blood supply in Indonesia is still lacking (Hapsari & Herdiana, 2013). PMI Tegal City also often lacks blood supply, according to the information I got after visiting there. With the Android-based information system and SMS gateway, it will certainly make it easier for PMI Tegal City to collect blood donors. Because the donor is contacted and reminded when it is time for the donor. PMI officers are also facilitated by this new product, the officers know the number of donors that have been texted per day, via Android cellphones, including their blood type.

Table 1. Blood Need and Availability and Number of Blood Transfusion Units by Provinces in Indonesia (Ministry of Health of the Republic of Indonesia, 2014) Long start and many will stop the reader from readingFor starters it can be presented in the following display.

Table 1. Blood Need and Availability and Number of Blood Transfusion Units by Provinces in Indonesia (Ministry of Health of the Republic of Indonesia, 2014)

Provinsi	Darah				Jumlah UTD
	Kebutuhan (Kantong)	Yang Ada (Kantong)	Kekurangan (Kantong)	% Kekurangan	
Aceh	93.437	36.274	57.163	61,18	4
Sumatera Utara	267.825	43.280	224.545	83,84	7
Sumatera Barat	100.706	42.579	58.127	57,72	3
Jambi	66.598	13.307	53.291	80,02	1
Riau	122.873	42.430	80.443	65,47	5
Sumatera Selatan	157.149	60.691	96.458	61,38	4
Kep. Riau	38.752	20.356	18.396	47,47	3
Kep. Bangka Belitung	26.795	3.910	22.885	85,41	2
Bengkulu	35.993	10.104	25.889	71,93	3
Lampung	157.615	55.436	102.179	64,83	6
DKI Jakarta	200.039	321.919	-121.880	-60,93	1
Banten	230.460	73.718	156.742	68,01	6
Jawa Barat	909.457	368.099	541.358	59,53	23
Jawa Tengah	653.692	487.146	166.546	25,48	36
DI Yogjakarta	71.202	55.694	15.508	21,78	5
Jawa Timur	765.377	530.605	234.772	30,67	37
Bali	82.794	53.254	29.540	35,68	7
Nusa Tenggara Barat	93.033	6.191	86.842	93,35	4
Nusa Tenggara Timur	99.436	13.209	86.227	86,72	4
Kalimantan Barat	90.179	25.211	64.968	72,04	4
Kalimantan Tengah	46.576	7.853	38.723	83,14	3
Kalimantan Selatan	76.811	39.559	37.252	48,50	3
Kalimantan Timur	67.638	56.605	11.033	16,31	10
Sulawesi Utara	47.093	15.418	10.452	67,26	4
Gorontalo	22.206	11.754	10.452	47,07	1
Sulawesi Tengah	55.743	14.767	40.976	73,51	4
Sulawesi Barat	25.041	1.087	23.954	95,66	1
Sulawesi Selatan	166.103	46.092	120.011	72,25	6
Sulawesi Tenggara	47.411	10.511	36.900	77,83	3
Maluku Utara	22.298	3.742	18.556	83,22	1
Maluku	33.259	6.201	27.058	81,36	1
Papua	66.214	2.726	63.488	95,88	3
Papua Barat	16.934	624	16.310	96,32	1
Indonesia	4.956.741	2.480.352	2.455.164	49,53	206

At PMI Tegal City, every time there is a blood donation event, each donor is recorded the name, address, cellphone number, and blood type, date of the donor. This data is used by the PMI of Tegal City to contact the donor, to remind blood donors that can be done routinely every 3 months, usually via SMS. However, due to the large number of donors, there are hundreds of people, often PMI Tegal City officers forget to text or miss them. This can lead to a reduction in the number of donors in Tegal City. Based on these problems, the researchers came up with an idea for an automatic sms reminder model, with the sms gateway method, so that with the existing data, they could send SMS every few months to the donors. This study aims to raise blood donors more effectively and efficiently, so it is hoped that PMI will rarely lack blood stock.

Method

The research location is in PMI Tegal City, which is located at Jalan KS Tubun,

Tegal City. When the research was conducted from March 2020 to June 2016. The number of respondents was 30 people, how to process the observation data using SPSS software. The data collection techniques used in this study are as follows: observation, interviews, documentation and literature.

The research sequence can be illustrated in the following figure: Perhaps, the novelty of a study is in the method section, even though the topic is the same as previous research. Never-before-used methods that are simpler but have the same ability to answer these research questions Better so that it can be used or applied by the next researcher. In addition, if the equipment has tolerance for accuracy in reading data such as thermometer, transducer, airflow meters, etc., must also be clearly and honestly stated in the method section.
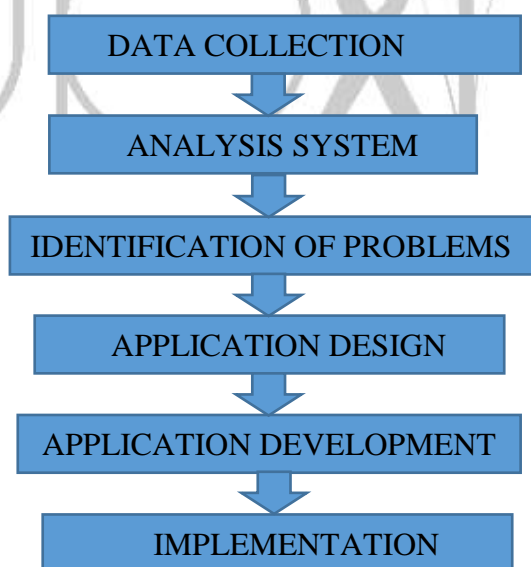

Figure 1. Research Sequence

The research method used, data collection, system analysis, problem identification, application design, application development and application implementation. The research is declared successful, if the application and tools have passed the blackbox test, and the results of

the final questionnaire are entered into SPSS

Result and Discussion
System planning

The system design aims to provide a clear picture of the application for the

notification of sending sms gateway to PMI Tegal. By utilizing the SMS Gateway that will be created. The design consists of Tiered Charts, Flowcharts, Data Flow Diagrams (DFD), Entity Relationship Diagrams (ERD), Database Design and Application Interface Design.
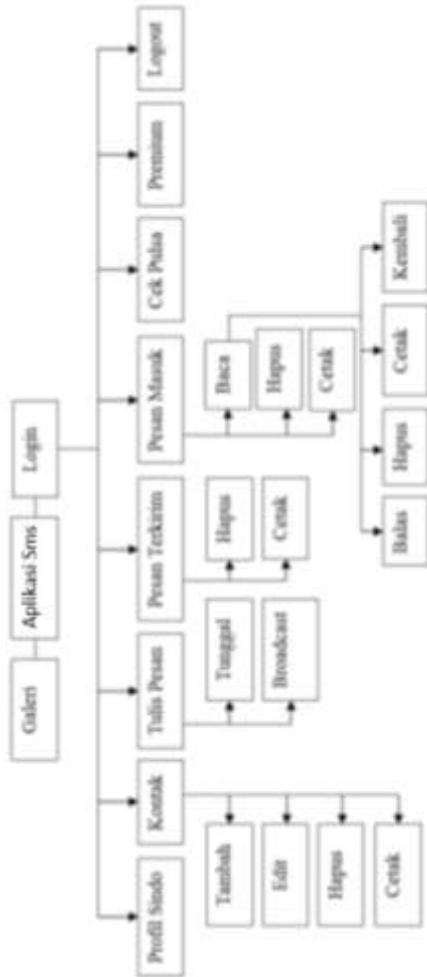
1. Tiered Chart / Input Output Hierarchy (HIPO)

Figure 2 Tiered Chart

2. Data Flow Diagrams (DFD)

a. Diagram Context (DFD Level 0)

In general, the relationship between Announcement Information Application Using SMS Gateway and its external entities can be seen in the following context diagram.
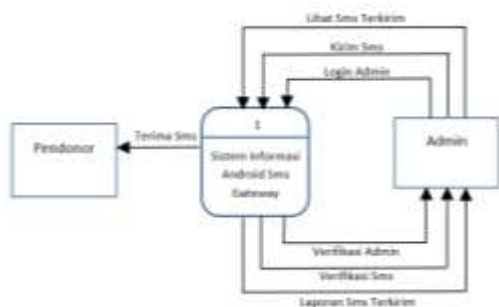

Figure 3 Context Diagram (DFD Level 0)

3. Data Flow Diagram Level 1

DFD level 1 of this library application consists of 3 processes, namely:
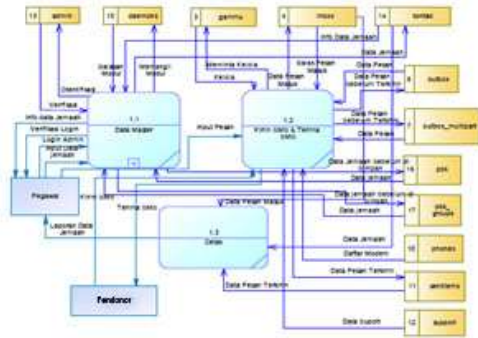
a. Process Master Data
This process handles the congregation data processing

b. Process of Send SMS & Receive SMS

This process takes care of Sending Messages and Receiving Incoming Messages
c. Print Process
This process handles the Printing of Data Required for Company Interests

Gambar 4 *Data Flow Diagram (Level 1)*

4. Entity Relationship Diagram (ERD)
This is an Entity Relationship Diagram Designing Announcement Information Application Using an SMS Gateway

Figure 5. Entity Relationship Diagram
System Creation
a. Splashscreen Menu page

Figure 6. Initial view of the application
This is the first time that appears when a visitor / admin accesses the address of the SMS gateway application for PMI Kota Tegal, where only admin can enter the SMS Gateway menu by entering the specified Username and Password, while visitors can only access the Gallery menu and donor info.
b. Menu page of the donor sms gateway application

Figure 7. Application Menu Display

On the application Menu page there is a collection of menus to open the next display with different functions, on the Gallery Menu Page also visitors / admins can select the about application Menu Page and the Exit Menu Page.

c. Send SMS Menu page

Figure 8. Send Sms Display

On the SMS sending page, there is information that Tegal City Pmi officers and blood donors need to know, on the Umrah Info Menu page visitors / admins can also select the Back Menu Page to return to the Main Menu.

d. Sms Gateway Status Page

Figure 8: Display of SMS that has been sent

On the SMS gateway status page, there are donor data that the sms gateway has sent, the information can be used by pmi officers to validate the data that has been sent.
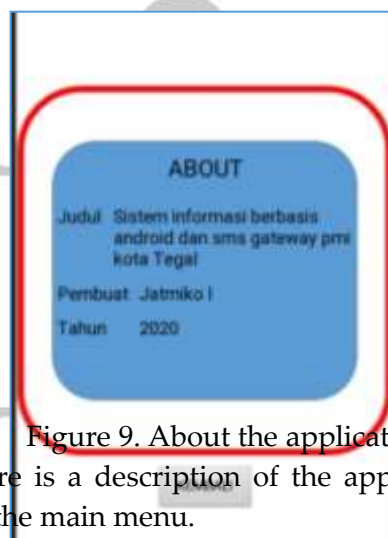
e. Application about page

Figure 9. About the application

On the about application page there is a description of the application maker, application title, year of manufacture and the menu back in the main menu.
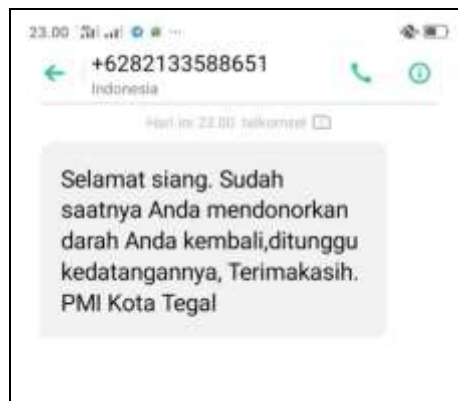
f. SMS received by donors

Figure 10. Sms received

Above is a description of the text messages received by donors, so when the donor donates blood at PMI Tegal City, the date of the donor is recorded, then 3 months are added, which is used to remember the next SMS delivery. Donor data is grouped based on the month when the person is a donor.

g. Equipment used

Figure 11. Modem Pool

Above is a modem pool device, a tool used to send sms gateways to blood donors in Tegal City.

Figure 12. Researchers are conducting trials

The modem pool above is connected to the linux server computer, connected to the internet, from the internet connected to the android sms gateway application.

Figure 13. Linux Server Computer

Above is a monitor display, computers that use the linux operating system, use the linux operating system, because it is more stable and durable. The difference from the previous application, this application can reply to sms to the sms gateway system

System Testing

The android-based sms gateway application for PMI Tegal City has gone through the Black Box and WhiteBox tests and the results are:

1. Black Box Testing

All software functions have been running properly in accordance with defined functional requirements.

2. White Box Testing

No logic errors were found in the system and the system is functioning properly.

Based on the questionnaire divided among several donor members and Pmi Kota Tegal officers, the results are as follows:

Table 1. Questionnaire Results

Number	Name	Application easy to use		The application is according to its function	
		Yes	No	Yes	No
1	Dwi Kukuh	√		√	
2	Satrio Anggoro		√	√	
3	Hendrawati	√		√	
4	Wantoro	√			√
5	Zulfa S	√		√	
6	Galuh Wahyu		√	√	
7	Budi Sulistio	√		√	
8	Heri Santoso	√		√	
9	Eko S	√			√
10	Sulistiyasni		√	√	
11	Anna Zarifah	√		√	
12	Probo Istika	√		√	
13	Diah Proborini	√		√	

Conclusion

By using the SMS gateway application for Pmi Tegal City donors, using the SMS Gateway and Android application, it can make it easier for Tegal City officials to call back donors who are due to donate, so that the blood donor stock at PMI Tegal City is more stable and rarely empty.

References

Syaifudin dkk. 2013.Sistem Informasi Penggajian Karyawan Pada Toko Winscom Kabupaten PacitanDengan Menggunakan Program PHP.ISSN: 2302-5700

Umar Abdul A, Rinda Cahyana. 2015. Pengembangan Aplikasi Pengarsipan SuratDi Bagian Informatika Sekretariat DaerahKabupaten Garut Untuk Kemudahan Dalam PendisposisianSurat.ISSN : 2302-7339

Wahana Komputer. 2013. Mobile Web Development With Adobe Dreamweaver CS6. Yogyakarta: C.V Andi Offset

Yudi Ardiansah, Anggit Dwi H. 2015. Perancangan Dan Pembuatan Aplikasi Ready ForBattle Futsal Berbasis Android. ISSN: 1411-3201

Yuli Astuti, Erni Seniwati. 2013. Aplikasi Reservasi Ruangan Kelas. ISSN: 2089-9815

Febrina Sari and Putri Lidya, Mobile Application Reminder of SPP Payment Schedule's and School Activities Information Based SMS Gateway, e-ISSN: 2289-8131 Vol. 9 No. 3-8

P. Siagian dan E. Fernando, "Sistem Informasi Penerimaan Mahasiswa Baru Dengan SMS Gateway", vol. 6 no. 1, pp. 679-685, 2014.

Tarigan, Daud Edison, Membangun SMS Gateway Berbasis Web dengan Codeigniter, Lokomedia, Yogyakarta, 2012.

Randi V. Palit. 2015. Rancangan Sistem Informasi Keuangan Gereja Berbasis Web Di Jemaat GMIM Bukit Moria Malalayang. EJournal Teknik Elektro dan Komputer. Vol 4. No 7.

Ribka Judita Veronica Pakasi. 2015. Aplikasi Monitoring KTP Kota Manado Menggunakan SMS Gateway. Teknik Elektro Fakultas Teknik Universitas Sam Ratulangi. Manado

Tarigan, Daud Edison. 2012. Membangun SMS Gateway Berbasis Web dengan CodeIgneter. Lokomedia Yogyakarta

Yaulie Deo. Y. Rindengan. 2016. Rancang Bangun Aplikasi Fasilitas Umum Berbasis Web Services. E-journal Teknik Informatika. Teknik Informatika Universitas Sam Ratulangi Manado, Indonesia.

J. Indriyanto, I. Afriliana, and E. Budi Hartono, "Peningkatan kompetensi anggota HISPPIKota Tegal dalam penggunaan aplikasi berbasis android," J. Abdimas PHB, vol. 2, no. 1, pp. 13–17, 2019.