MEDICAL INFORMATION SYSTEM DEVELOPMENT AT KLINIK PRATAMA KALIMASADHA TENGARAN



This Final Project Compiled as a Condition to Complete Bachelor Degree Program at Department of Informatics Faculty of Communication and Informatics

> Submitted: <u>MAKARIMA FAHREZA FATHONY</u> L 200 144 011

DEPARTMENT OF INFORMATICS FACULTY OF COMMUNICATION AND INFORMATICS UNIVERSITAS MUHAMMADIYAH SURAKARTA

2019

APPROVAL PAGE

MEDICAL INFORMATION SYSTEM DEVELOPMENT AT KLINIK PRATAMA KALIMASADHA TENGARAN

SCIENTIFIC PUBLICATION

By:

MAKARIMA FAHREZA FATHONY L 200 144 011

Have been inspected and approved to be tested by:

Supervisor

Agus Ulinuha,S.T.,M.T.,Ph.D. NIP. 656

VALIDATION PAGE

MEDICAL INFORMATION SYSTEM DEVELOPMENT AT KLINIK PRATAMA KALIMASADHA TENGARAN

By:

MAKARIMA FAHREZA FATHONY L 200 144 011

It has been defended in front of Examiners Faculty of Communication and Informatics Muhammadiyah University of Surakarta at . January 14, 2019 and declared to qualify

Examiners:

1. Agus Ulinuha, S.T., M.T., Ph.D.

(Chief of Examiners Board)

2. Dr. Heru Surpiyono, M.Sc.

(Member I of Examiners Board)

3. Dr. Endah Sudarmilah, M.Eng. (Member II of Examiners Board)





ii

STATEMENT

I hereby declare that in this final project there is no work ever submitted for a degree at a college and to the best of my knowledge there is no work or opinion ever written or published by any other person, except in writing referred to in the manuscript and mentioned in the list library. If later there is proved untruth in my statement above, then I will be fully accountable.

Surakarta, 12 February 2019

Writer

MAKARIMA FAHREZA FATHONY L 200 144 011



UNIVERSITAS MUHAMMADIYAH SURAKARTA FAKULTAS KOMUNIKASI DAN INFORMATIKA PROGRAM STUDI INFORMATIKA

Jl. A Yani Tromol Pos 1 Pabelan Kartasura Telp. (0271)717417, 719483 Fax (0271) 714448 Surakarta 57102 Indonesia. Web: http://informatika.ums.ac.id. Email: informatika@ums.ac.id

SURAT KETERANGAN LULUS PLAGIASI

No Surat 51/A.y - 11.3 / 114F - FKI/ 2019

Assalamu'alaikum Wr. Wb

Biro Skripsi Program Studi Informatika menerangkan bahwa :

Nama	:	Makarima Fahreza Fathony
NIM	:	<u>L200144011</u>
Judul	:	MEDICAL INFORMATION SYSTEM DEVELOPMENT AT KLINIK PRATAMA KALIMASADHA TENGARAN
Program Studi	:	Informatika
Status	:	Lulus

Adalah benar-benar sudah lulus pengecekan plagiasi dari Naskah Publikasi Skripsi, dengan menggunakan aplikasi Turnitin.

Demikian surat keterangan ini dibuat agar dipergunakan sebagaimana mestinya.

Wassalamu'alaikum Wr. Wb

Surakarta, 9 februari 2019

Biro Skripsi Informatika

Ihsan Cahyo Utomo, S.Kom., M.Kom.



UNIVERSITAS MUHAMMADIYAH SURAKARTA FAKULTAS KOMUNIKASI DAN INFORMATIKA PROGRAM STUDI INFORMATIKA

Jl. A Yani Tromol Pos 1 Pabelan Kartasura Telp. (0271)717417, 719483 Fax (0271) 714448 Surakarta 57102 Indonesia. Web: http://informatika.ums.ac.id. Email: informatika@ums.ac.id



V

MEDICAL INFORMATION SYSTEM DEVELOPMENT AT KLINIK PRATAMA KALIMASADHA TENGARAN

Abstrak

Klinik Pratama Kalimasadha Tengaran adalah sebuah klinik yang bertempat di Desa Tengaran, Kabupaten Semarang. Klinik ini menyediakan jasa kesehatan untuk semua pasien, namun klinik ini masih menggunakan sistem manajemen manual. Semua aktifitas operasional masih dijalankan dengan kertas dan pulpen. Manajemen inventaris obat juga masih dilakukan secara manual dengan menggunakan buku inventaris. Ini berdampak terhadap operasional yang tidak efektif dan efisien, karena kertas dan pulpen dapat menghasilkan duplikasi data dan kesalahan penulisan. Penelitian ini bertujuan untuk menciptakan sistem informasi berbasis computer untuk Klinik Pratama Kalimasadha Tengaran, agar aktifitas operasional pada klinik ini berjalan lebih mudah dan dapat memberikan data yang lebih akurat dari sebelumnya. Setiap bagian dari klinik akan memiliki bagian dari sistem, seperti staf, dokter, dan apoteker. Pengembangan sistem menggunakan metode waterfall dan metode pendekatan menggunakan orientasi objek dengan diagram use case. Sistem ini akan dikembangkan menggunakan bahasa pemrograman PHP sebagai antarmuka dan MySQL sebagai basis data.

Kata Kunci: sistem informasi klinik, website, MySQL, PHP

Abstract

Klinik Pratama Kalimasadha Tengaran is a health service that is located in the sub district of Tengaran, the District of Semarang. This clinic provides medical service for every patient, but this clinic is still utilizing manual administration system. All operational activity is still using paper and pen. Also, medicine inventory management is still done manually, by using inventory book. This affects to operational being not effective and efficient, because pen and paper can result in data duplicity and writing mistake. This research aims to design computerized information system for Klinik Pratama Kalimasadha Tengaran, to make operational activity of this clinic easier and provide more assured data than before. Every section of clinic will be computerized, such as staff, doctor, and pharmacist. System development method using waterfall method and approach method using object oriented with use case diagram. This system will be developed in PHP programming language as the frontend interface and MySQL as the back-end database.

Keywords: clinic information system, website, MySQL, PHP

1.INTRODUCTION

The advancement of information technology has huge impact in every aspect of life as it can facilitate the processes easily and automatically. In the case of health and medical treatment, the usage in information technology can lead to the effectiveness of practice in managing every data related to operational of medical treatment, such as patient data and medicine data management.

Klinik Pratama Kalimasadha Tengaran is a healthcare center that is located at sub district of Tengaran, district of Semarang. This clinic has run for almost 4 years and has hundreds of clients across all sub district. But, since then, all of operational in Klinik Pratama Kalimasadha Tengaran is done by only using pen and paper, because this healthcare doesn't have any computerized system. This proves difficulties in patient data management, because staff has to find patient data one by one through many files. Pharmacist is also having difficulties in managing medicine inventory. Pharmacist has to count every single medicine to update the inventory data. All of this activity is the example why utilizing medical information system can make operational in Klinik Pratama Kalimasadha Tengaran to be more reliable.

Based on aforementioned problem, this study aims to create medical information system to handle all operational in Klinik Pratama Kalimasadha Tengaran, such as patient data management, medicine inventory management, and medical treatment.

2. METHODOLOGY

This research utilizes System Development Life Cycle (SDLC) method with waterfall model to develop this information system. By using waterfall model, this research is performed in linear-sequence which consists of several consecutive stages, starting from analysis, design, development, testing, and maintenance as shown in Figure 1. (Bassil, 2012).

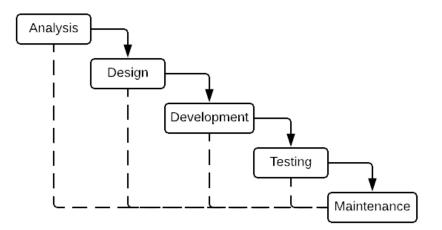


Figure 1. Waterfall Models

The analysis begun by gathering requirement and information about each sections of clinic, which includes staff, doctor, and pharmacist. The requirements for this study include: input and manage patient data, manage inventory of pharmacy, and payment management. From the requirements, researcher specified that there are three actors: staff, doctor and pharmacist. Additional administrator with all features enabled, is available in case of failure in one of actors, administrator can temporarily fill the role in order to keep the system running. All functions of the system are presented as use case diagram in Figure 2.

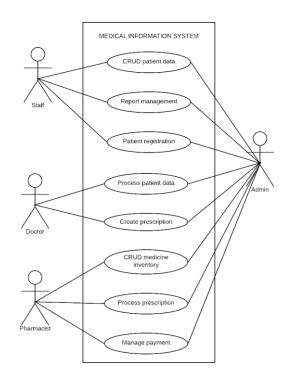


Figure 2. Use Case Diagram

To explain more about how the system works, activity diagram is presented for each actor, shown in Figure 3-6. Activity diagram is a complementary of use case diagram, further explaining the flow of the system in provided scenario.

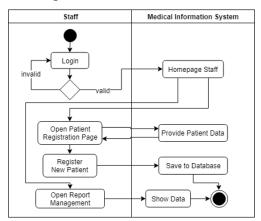
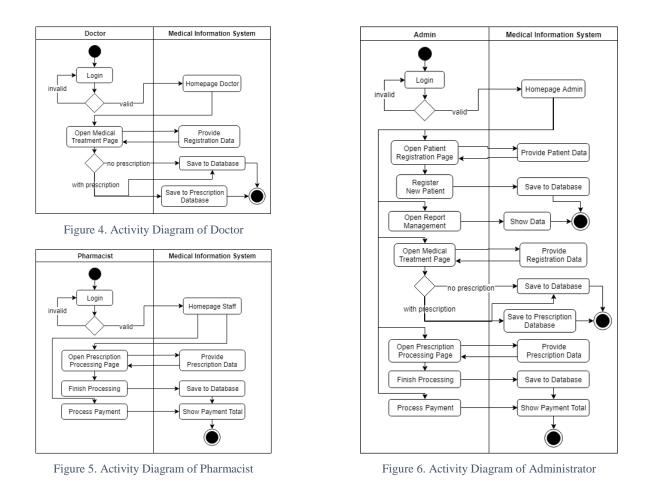


Figure 3. Activity Diagram of Staff



After determining roles of each actors, the next step is to design database that will be used for the system, as shown in Figure 7. The system will utilize MySQL as database server. The system will use centralized medical record table, with companion table of patient data, medicine transaction history, prescription data, and doctor and staff data. Each transaction of medical treatment will be set as new entry in table medical record, accompanied with data pulled from connected table, such as patient number, acting staff who performs the registration, acting doctor, and prescription number.

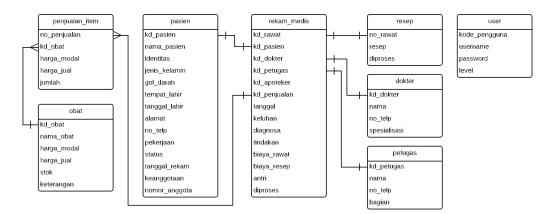


Figure 7. Entity Relationship Diagram

3. RESULT AND DISCUSSION

In this section, there will be explanation about the usage and testing of medical information system for Klinik Pratama Kalimasadha Tengaran. Notable feature available in the system is patient registration, medical treatment, and prescription management.

The system starts with homepage. If there are no user logged in, homepage will show login screen, which prompts user to insert username and password. Login screen is shown in Figure 8.

Login Petugas
Username
Password
Login

Figure 8. Login Screen

After user is logged into the system, homepage will be presented based on level of the user. Each level has different homepage, and has its own specific task designated to each level. Administrator has full privilege of the system, being able to do all task in the system. Homepage for administrator is shown in Figure 9.

Klinik & Apote	k	
Home		
Lill Data <	Home	
Pendaftaran Pasien	Selamat Datang di Sistem Informasi Klinik Pratar	na Kalimasadha Tengaran, Admin
Rawat Jalan Pasien	-	•
Penjualan Apotek	🔍 Pasien	Dokter dan Staf
Laporan <	Pengelolaan Data	Pengelolaan Data
Logout	Details O	Dokter© Staf©
	Obat	Laporan
	Data Penjualan	Pasien dan Obat
	Details	Menu Laporan 👻

Figure 9. Homepage for Administrator

Homepage for staff, shown in Figure 10, will be limited to its own access, which will be patient data management page, report management page, and patient registration page. Staff can provide report data to doctor, if required, since doctor doesn't have access to any other data.

Klinik & Ap	otek ter 6 Apotek
Home	
Pendaftaran Pasien	Home
Data Pasien	Selamat Datang di Sistem Informasi Klinik Pratama Kalimasadha Tengaran, Thony
Laporan	
Logout	Pasien Laporan
	Tambah Data Pasien dan Obat
	Details O Menu Laporan -

Figure 10. Homepage for Staff

Homepage for pharmacist, shown in Figure 11, will be limited to prescription processing page and medicine management page.

Klinik & Apote	k **		
Home			
Laporan Penjualan	Home		
Penjualan Apotek	Selamat Datang di Sistem Informasi Klinik Prata	ama Kalimasadha Tengaran. T	Thony
Logout			
	Obat Data Penjualan	7	Laporan
	Details O	Details	Ð

Figure 11. Homepage for Pharmacist

Homepage for doctor, shown in Figure 12, will be limited to only medical treatment page. The role of doctor will only be given access to process of medical treatment. When doctor wants to access other data, for example medicine data, doctor can ask staff to provide the data.

E Klinik & Apot	ek Apotek		
Rawat Jalan Pasien			
Logout	Home		
	Selamat Datang di Si	stem Informasi Klinik Pratar	na Kalimasadha Tengaran, dr. Choirul Anam
	7	Rawat Tambah Data	
	Details	O	

Figure 12. Homepage for Doctor

In patient data page, by Figure 13, staff and/or administrator can manage data regarding to patient. Staff and/or administrator can add new patient, and/or edit or delete existing patient data. Data shown in table are patient number, name, sex, and address. Detailed data is available once staff or administrator click 'Lihat'. If staff or administrator want to edit patient data, staff or administrator have to click 'Edit', which will show edit page.

	ta Pas Add Data	sien						
(]-	Add Data							
G,	Add Data							
			🕂 Add Data					
No	Nomer	Nama	Kelamin	Alamat		Tool	s	
	Pasien	Pasien						
1	RM000004	Makarima Fahreza	Pria	Tengaran	Lihat	Edit	Delete	
		Fathony						
2	RM000005	Tes	Pria	Tengaran	Lihat	Edit	Delete	
	1	Pasien 1 RM000004	Pasien Pasien 1 RM000004 Makarima Fahreza Fathony	PasienPasien1RM000004Makarima Fahreza FathonyPria Fahreza Fathony	PasienPasien1RM000004Makarima Fahreza FathonyPria Fangaran	PasienPasien1RM000004Makarima Fahreza FathonyPria FangaranTengaran	PasienPasien1RM000004Makarima Fahreza FathonyPria PasienTengaran PangaranLihat PangaranEdit Pangaran	

Figure 13. Patient Data Page

In doctor data page, by Figure 14, administrator can add new doctor, and/or edit or delete existing doctor data. Data shown in table doctor are name, specialist, phone number, and address. If administrator wants to edit doctor data, administrator has to click 'Edit', which will be presented with edit form.

B Home							
<u>ul</u> Data	· Da	ta Dokter					
Data Petugas							
Data Dokter	-	Add Data					
Data Obat							
Data Pasien	No	Nama Dokter	Spesialis	No. Telepon	Alamat	Т	ools
Pendaftaran Pasien	1	dr. Choirul Anam	Umum	0817	Dusun Krajan, Tengaran	Edit	Delete
Rawat Jalan Pasien	2	Asti	Bidan	08585858	Krajan, Tengaran	Edit	Delete
Penjualan Apotek							
Laporan	Jum	ah Data : 2				Halam	an ke :



In staff data page, by Figure 15, administrator can add new staff, and/or edit or delete existing staff data. Data shown in table staff are name, address, phone number, and level. Level will determine role and access for each staff. If administrator wants to edit staff data, administrator has to click 'Edit', which will be presented with edit form.

B Home							
ul Data	∽ Da	ta Petugas	i				
Data Petugas							
Data Dokter	- CF	🕂 Add Data					
Data Obat							
Data Pasien	No	Nama Petugas	Alamat	No. Telepon	Level	Tool	s
Pendaftaran Pasien	1	Thony	Krajan, Tengaran	0822	Staf	Edit	Delete
Rawat Jalan Pasien	2	Thony	Krajan, Tengaran	0822	Staf	Edit	Delete
Penjualan Apotek							
	Jum	ah Data : 2			Halam	an ke :	

Figure 15. Staff Data Page

In medicine data page, by Figure 16, pharmacist and/or administrator can add new medicine, and/or edit or delete existing medicine data. Data shown in table medicine are medicine code, name, available stock, retail price, and additional information regarding each medicine. If pharmacist or administrator want to make a change to medicine data, pharmacist or administrator have to click 'Edit', which will open edit form.

Home Data ~	Da	ta O	bat					
Data	Da	la U	bal					
Data Petugas	0	Add Do	4-					
Data Dokter	Lt /		na					
Data Obat								
Data Pasien	No	Kode	Nama Obat	Stok	Harga (Rp)	Keterangan	т	ools
Pendaftaran Pasien	1	H0001	Akar Zaitun	78	50.000	Obat Diabetes	Edit	Delete
Penjualan Apotek	2	H0002	Habatusauda	86	100.000	untuk kesehatans	Edit	Delete
Laporan <	3	H0003	Air Zam Zam 1 Liter	4	40.000	air zam zam	Edit	Delete
aporan	4	H0004	Alat Bekam 12 Cup	6	70.000	alat bekam	Edit	Delete
Logout	5	H0005	Bio Skin Car	34	15.000	Skin car	Edit	Delete
	6	H0006	Bio Xamthone	8	70.000	xamtone	Edit	Delete
	7	H0007	Buah Merah Papua (BMW)	9	90.000	buah merah	Edit	Delete
	8	H0008	Cabe Jawa HIU	6	45.000	cabe jawa	Edit	Delete
N	9	H0009	Cream Jerawat Anisa Dark Spot	7	85.000	untuk jerawat	Edit	Delete
ß	10	H0010	Daun Sirsak HIU	17	45.000	daun sirsak	Edit	Delete



The process of medical treatment begins at registration, which is done by staff. As shown in Figure 17, staff can find and enter patient data, if the data is already provided, or if there is new

patient that has yet to be registered into the system, staff can add new patient data. After finding patient data, staff can put data regarding complaint by patient. Following patient registration input, a queue will be made for every patient.

PEN	DAFTARAN P	ASIEN						
Kode		: 0	0000007					
Nome	or Pasien	: [
Nama	Pasien	: [
Tgl. C	aftar	: [06-02-2019					
Keluh	an Pasien	: [
		[SIMPAN					
No	No. Daftar	Tanggal	No. Pasien	Keluhan		Perawat	Aksi	-
1	00000006	14-01-2019	RM000002	p		dr. Choirul Anam	Lihat Edit	Delete
2	00000005	14-01-2019	RM000005	pegal		dr. Choirul Anam	Lihat Edit	
3	00000004	14-01-2019	RM000001	pusing		dr. Choirul Anam	Lihat Edit	Delet
4	0000003	03-01-2019	RM000001	pusing		Asti	Lihat Edit	Delet
5	0000002	20-12-2018	RM000002	pegal		Asti	Lihat Edit	Delet
6	0000001	20-12-2018	RM000004	pusing		Asti	Lihat Edit	Delet
			Jumlah D	Data :			Halam	an ke :
No	Nomor RM	Nama Pa	sien	Kelamin	Alamat	Tools		
1	RM000004	Makarima	Fahreza Fathony	Pria	Tengaran	Daftar		
2	RM000005	Tes	Pria Tengaran		Daftar			
Jumla	ah Data : 2					Halaman ke : 1		
Cari N	ama Pasien :			Cari				

Figure 17. Patient Registration Page

Next step of medical treatment is done by doctor. In this page shown in Figure 18, doctor can see the name of patient and the complaint. After doing medical treatment on patient, doctor can write the diagnosis of the patient, and depending on the requirement of medicine for patient, doctor may or may not write prescription.

Kembali ke Menu

RAWAT PASIEN

DATA RAWAT		
Nomor Pendaftaran	:	* pilih dari <u>daftar pasien</u> , lalu klik menu Rawat
Tgl. Rawat	:	20-12-2018
Nama Pasien	÷	
Keluhan	;	
Diagnosa	:	
Tindakan Pasien	÷	
Biaya	÷	Rp.
		SIMPAN TRANSAKSI * klik di sini jika tidak ingin menambah resep untuk pasien.
DATA RAWAT		
Resep	:	
		TAMBAH RESEP * klik di sini jika ingin menambah resep untuk pasien.

Figure 18. Medical Treatment Page

After being treated by doctor, patient is transferred to pharmacist to process payment and prescription. As shown in Figure 19, pharmacist has a function to read prescription made by doctor, and process the medicine transaction for patient.

PROSES	RESEP							
RESEP BELUM	DIPROSES						SEC	GARKAN
No Nomor RM	Nama Pasien	Resep		A	ksi			
DATA PENJUALAN								
No. Penjualan		: JL000007]				
Tgl. Penjualan		: 20-12-2018						
Nomor Pendaftarar	1	:]				
Nomor Pasien		:]				
Nama Pasien		:						
Keterangan		:						
Resep		:						
INPUT OBAT								
Kode Obat		:]			
Jumlah		: 1	Tambah					
DAFTAR OBAT								
No Kode	Nama Obat				Harga (Rp)	Jumlah	Sub Total(Rp)	
					GRAND TOTAL (Rp.) :	0	0	
						SIMPAN	TRANSAKSI	

Figure 19. Prescription Process Page

After every transaction is done, patient will have to process the payment shown in receipt, as shown in Figure 20. Depends on whether doctor gives prescriptions for patient, the receipt will only show the cost of medical treatment, if doctor doesn't create prescriptions.

Cetak Nota Total Biaya - Klinik Prata	soft E	-		×							
i localhost/klinik_newdb/penjualan/penjualan_nota.php?noNota=JL000008											
NPWP/ PKP Tanggal Peng	A KALIMASADHA T : 1.111111.111 pukuhan : 20-07 n, Kab. Semaran	11 -2015	AN								
		-	0.1.1.1.	1 (D-1							
No Daftar Obat	Harga@	Uty	Subtota	ат (кр)							
Total Harg	a Resep (Rp) :			0							
Jenis Perawatan			Harga	(Rp.)							
				0							
Tota	l Biaya (Rp) :			0							
Petugas :											

Figure 20. Receipt Page

Furthermore, any transaction, including medical treatment and prescription, are recorded and can be accessed at the report page, in Figure 21-22. Here, staff can pull record from medical treatment in general, and/or filtered based on overall operational time, or per patient data. This also applies to prescription transaction, where data can be shown generally, or filtered periodically.

ome									
endaftaran Pasien	La	porar	n Rav	wat Pa	sien				
Data Pasien	_								
Laporan 👻	No	No. Rawat	Tgl. Rawat	Nomor RM	Nama Pasien	Bayar (Rp)	Hasil Diagnosa	Tools	
Laporan Data Pelugas Laporan Data Dokter	1	00000001	20-12- 2018	RM000004	Makarima Fahreza Fathony	50.000	meriang	Cetak	
Laporan Data Pasien Laporan Data Obat	2	00000005	14-01- 2019	RM000005	Tes	35.000	encok	Cetal	
Laporan Rawat Pasien	Jumlah Data :2			Halaman k					
Laporan Rawat Pasier/Periode									
Laporan Rawat Pasien/Pasien									
Laporan Penjuatan Obat									
Laporan Penjualan Obal/Periode									
ogout									



Elinik & Apotek											
Home											
Pendaftaran Pasien	Laporan Penjualan										
Data Pasien	_										
🖹 Laporan 🛛 👻	PERIODE PENJUALAN										
Laporan Data Petugas	Per	iode	: 01-12-20	18 s/d 0	6-02-2019						
Laporan Data Dokter			Tampilk								
Laporan Data Pasien											
Laporan Data Obat	No	Tanggal	No. Penjualan	Pelanggan	Keterangan	Tools					
Laporan Rawat Pasien	1			RM000005 Tes		Cetak					
Laporan Rawat Pasien/Periode	2	2 20-12- JL000002		RM000004		Cetak					
Laporan Rawat Pasien/Pasien		2018		Makarima Fahreza Fathony							
Laporan Penjualan Obat	hue	nlah Data ∷	2			alaman ke : 1					
Laporan Penjualan Obat/Periode	Jun	mali Data : .	2		na	uanidii Ke .					

Figure 22. Sales of Prescription Page

Logout

To prove that this system meets its requirement, the next stage of development is testing. The system will be using Black Box Testing (table 1) as a parameter of its usage. By utilizing Black Box Testing, the system will be developed and having right specification based on given requirement. (Nidhra & Dondeti, 2012).

Function	Description	Actor	Result	Status
CRUD	Actor can Create, Read,	Staff	Patient data can be created,	\checkmark
Patient Data	Update, and Delete patient		read, updated, and deleted	
	data		by staff	
Registration	Actor can manage patient	Staff	Registration of new patient	\checkmark
	registration for medical		can be performed by staff	
	treatment			
Report	Actor can manage report	Staff	Patient data, medical	\checkmark
Management	regarding patient, medical		treatment data, prescription	
	treatment, and prescription		data can be shown by staff	
Patient	Actor can put patient	Doctor	Patient treatment data and	\checkmark
Treatment	treatment report and make		prescription are	
and	prescription		successfully input by	
Prescription			doctor	
CRUD	Actor can Create, Read,	Pharmacist	Medicine data can be	\checkmark
Medicine	Update, and Delete medicine		created, read, updated, and	
Data	data		deleted by pharmacist	
Processing	Actor can process	Pharmacist	Prescription can be	\checkmark
Prescription	prescription		processed by pharmacist	
Processing	Actor can process payment	Pharmacist	Payment can be processed	\checkmark
Payment			by pharmacist	

Table 1.	Black Box	Testing
----------	-----------	---------

By using Technology Acceptance Model, there are two main parameters about how wellreceived the system is towards user, first is perceived usefulness and second is perceived ease of use. (Momani & Jamous, 2017). This is done by distributing questionnaire to 8 members of Klinik Pratama Kalimasadha Tengaran. The result is shown in table 2.

No	Question	Surveyors								Result
	Question	А	В	С	D	E	F	G	Н	Result
1	Question A	5	5	5	4	5	5	4	4	37/40
2	Question B	5	5	5	4	5	5	5	4	38/40
3	Question C	4	4	5	5	4	4	4	5	35/40
4	Question D	5	4	4	5	5	4	4	5	36/40
5	Question E	4	4	4	5	5	5	4	4	35/40

Table 2. Questionnaire of Satisfaction by Users

Based on table 2, the results show that question B (*Does the system perform well in certain given task?*) has the highest value, because medical information system has all the function that is needed by medical center, therefore this leads to more efficient in data management. Question A (*Does the system have good interface?*) and question D (*Does the system make it easy to show report?*) have average results, meaning that interface, theming and data reporting are well presented. In other word, question C (*Does the system make it easy to manage every available data?*) and question E (*Is the system reliable enough for continuous usage?*) have the lowest value, regarding to ease of usage and reliability of the system, respectively, which is not perfect, but the system can still be considered usable.

4. CONCLUSION

According to the testing, results, and discussions of research conducted in Klinik Pratama Kalimasadha Tengaran, the conclusion can be drawn: a) medical information system can be helpful in the center of process happening in such a medical center; b) the system can manage each kind of data, such as patient, staff, doctor, pharmacist, patient, and medicine; c) by utilizing the system, this brings efficiency and effectiveness in managing data, and also this can speed up any process done in medical center.

This system is still far from perfect, but the author has hope to develop the system to be better. Suggestion received by author for upcoming development are: a) better interface; b) better algorithm; c) feature to export data into external file, such as Excel, for physical report.

REFERENCES

Bassil, Youssef. (2012). A Simulation Model for the Waterfall Software Development Life Cycle. International Journal of Engineering & Technology (iJET), 2(5), 2. Retrieved from <u>https://arxiv.org/abs/1205.6904</u>

- Momani, Alaa & Jamous, Mamoun. (2017). The Evolution of Technology Acceptance Theories. International Journal of Contemporary Computer Research (IJCCR), 1(1), 50-58. Retrieved from <u>http://ojs.mediu.edu.my/index.php/IJCCR/article/view/479</u>
- Nidhra, Srinivas & Dondeti, Jagruthi. (2012). Black Box and White Box Testing Techniques A Literature Review. *International Journal of Embedded Systems and Applications*, 2(2), 29-50. DOI: 10.5121/ijesa.2012.2204.
- Susilowati, Sinta & Kusuma Riasti, Berliana. (2011). Pembuatan Sistem Informasi Klinik Rawat Inap Prima Husada Widoro Pacitan Berbasis Website. Speed - Sentra Penelitian Engineering dan Edukasi, 3(1), 4. Retrieved from <u>http://www.ijns.org/journal/index.php/speed/article/view/901</u>
- Nurwidanastasia, Citra. (2008). Sistem Rekam Medis Pasien Pusat Kesehatan Masyarakat Berbasis Web. USD Repository, 1, 52-72. Retrieved from <u>http://repository.usd.ac.id/id/eprint/1834</u>
- Avika Rahmah, Tifany & Ulinuha, Agus. (2017). Development of Information System for Patient Medical Services at PKU Muhammadiyah Kutoarjo, 1, 7-11. Retrieved from <u>http://eprints.ums.ac.id/id/eprint/56561</u>