INFORMATION SYSTEM FOR SERVICE QUALITY IMPROVEMENT BASED ON COMPLIANCE WITH PATIENT USING CRM APPROACH IN JAVA WEST PROVINCE HOSPITAL

Eko Aprilianto[1], Anna Dara Andriana[2]

Informatics Engineering – Indonesian Computer University
Jl. Dipatiukur 112-114, Coblong, Bandung, Jawa Barat
rico.riechozz41@gmail.com[1], anna.dara.andriana@email.unikom.ac.id[2]

ABSTRACT

The Mental Hospital of West Java Province was originally a combination of 2 different mental hospitals, namely the Bandung mental hospital and the Cimahi mental hospital. In 2009 it was legally inaugurated the merger between the two Mental Hospitals, based on Government Regulation Number.41 of 2007. The problem that occurs is that the marketing department at the Mental Hospital has difficulty determining the priority of services that must be corrected based on patient complaints or guardian. Because the complaint that was expressed did not always reach the official who was supposed to be and the hospital staff also had difficulty in determining the service that had to be prioritized for the repair of the service. Based on existing problems, a CRM system is needed. The development objective of this system is to facilitate the marketing department of the Mental Hospital in determining the services that must be prioritized to be improved or improved first. The analysis used is the service quality method, because it is adjusted to the facts and service expectations in the field that have been received by the patient. From the calculation of the expectation and fact values will produce a gap value, which results will be taken to be able to prioritize the improvement which has the biggest negative value. Then this analysis also uses the dynamic of CRM framewok. From the analysis of this study resulted that the emergency services that must be prioritized first. Seen from the results of the tests carried out, it can be concluded that the system built has helped in determining the priority of services that must be increased so as not to increase complaints in the same service.

.

Keywords : Customer Relationship Management, Service Quality, Mental Hospital Services.

1. INTRODUCTION

Mental Hospital of West Java Province is a government class A state hospital located on Kolonel Masturi street KM.7 Lembang, West Bandung Regency, Province. West Java. West Java Province Mental Hospital was officially established in 2009 which was formed from a combination of Bandung Mental Hospital and Cimahi Mental Hospital, in accordance with Regional Regulation No.23 of 2008. The hospital has several types of services such as, ED, Outpatient, Health Child & Adolescent Life, Quiet Hospitalization, Intensive Care, Medical Support, Rehab. Mental, Rehab. Drug, Rehab. Medical and Mental Health Society. These services are an effort to realize the vision of the West Java Mental Hospital to become a superior mental hospital in West Java in 2018. In the utilization of information technology, the Mental Hospital is still using desktop-based applications to process patient data used to make reports to directors .

Based on the results of the interview with Mrs. Yuni as Head of Marketing at the Mental Hospital of West Java Province, data on patient complaints that have not been handled properly is one of the obstacles being faced by the Hospital, making marketing difficult to evaluate to determine the priority level of Mental Hospital services. which is likely to improve its services. In evaluating services, the marketing department must work extra to coordinate with other parts to get valid complaint data. Patients or carers of Mental Hospital patients expressed their complaints that they were not in accordance with their intended location. This resulted in patient complaints not being conveyed clearly and not handled by the Head of Marketing in accordance with the organizational structure. So that the complaint

submitted by the patient or the patient's guardian is unknown to the Head of Marketing so that its performance is hampered in efforts to improve services due to not optimal and the difficulty of the marketing department in evaluating patient complaints data.

In addition, based on the data recap number of complaints from 2016-2017, there have been an increase of 46 complaints in 2017, which originally amounted to 117 complaints in 2016 turned out to be 163 the number of complaints in 2017. This indicates that unconsciously there has been a decline quality service for mental hospitals for patients. According to Christopher Lovelock, Jochen Wirtz and Jacky Mussy, "The magnitude of the level of patient dissatisfaction indicates the low quality of the product or service and it is likely to make the company at a competitive disadvantage, potentially expelling dissatisfied patients" [5]. Therefore, the Head of Marketing has difficulty monitoring data complaints and recapping which level of service must be improved first, so that complaints of patient guardians can be monitored and improved service quality can be controlled properly, so that it can help the Head of Marketing to take the best decision.

Then based on the results of the recapitulation from the initial questionnaire distribution to 35 respondents regarding their level of satisfaction with the services provided, the results showed that as many as 17 respondents who used outpatient services felt less satisfied, this was obtained from the calculation results in the initial questionnaire recapitulation table . Outpatient services get the lowest average satisfaction score compared to inpatient and ED services.

Based on the problems that have been described, then in this study the authors intend to help the West Java Province Mental Hospital to optimize service evaluation in order to make it easier to determine the priority of services that will be improved based on patient complaints which will automatically improve services to Mental Hospital patients. . The goal to be achieved is:

1. Facilitate the marketing department at the Mental Hospital in proposing to determine the priority of services that must be improved based on patient / guardian complaints.
2. Helping the Mental Hospital marketing department to monitor and control the number of complaints from patients / guardians.

2. RESEARCH CONTENTS

The foundation of this research writing theory explains several theories related to the development of Csomeromer Relationship Management information systems at the West Java Province Mental Hospital.

2.1.1 Information System

Sistem ialah sekumpulan dari beberapa elemen yang saling terhubung untuk mencapai suatu tujuan tertentu. Sedangkan informasi adalah suatu data yang diolah menjadi bentuk yang lebih bermanfaat bagi yang menggunakannya. Jadi, Sistem Informasi ialah kumpulan beberapa elemen data yang sudah diolah menjadi bentuk yang lebih bermanfaat untuk mencapai suatu tujuan tertentu. [1]

Kesimpulan dari penulis yang dapat diambil dari pernyataan tadi bahwa sistem informasi dapat diartikan sebagai kumpulan beberapa data yang diolah menjadi bentuk yang lebih bermanfaat untuk mencapai tujuan tertentu.

2.1.2 Service Quality

Service quality or Service Quality is the difference between the expectations and the reality of the patient about the service they receive. Whereas according to Wyekof the quality of service can be described as "The expected level of excellence and control over the level of excellence to meet customer desires". [2]

The dimensions of the servqual method are divided into 5, namely:

1. **Tangibles:** includes equipment, personnel, communication materials and physical appearance.
2. **Reliabilty:** skill in providing services in accordance with what was promised before.
3. **Responsivness:** the ability to help service users and provide fast service.
4. **Assurance** : attitude and knowledge from employees and their ability to have the trust of service users.
5. **Emphaty** : caring attitude, individual attention given by the hospital to patients.

2.1.3 Complaint

Complaints are a sign of dissatisfaction with hospital services to patients, whether it is the services of doctors, nurses or administrative services. [3] Dissatisfaction with service is caused

by several factors including external factors, namely:

1. The doctor's aspects include competence, availability and quality of service, and empathy.
2. Aspects of nurses include responsiveness and good relationships with patients / guardians in providing services.
3. Responsiveness provides supporting services, such as administration including finance and laboratories.
4. Other aspects such as facilities, cleanliness of buildings and equipment.

The external factors of the hospital that are connected are factors that influence accessibility (use of services) and include geographical factors: the distance of the patient to the place of service, transportation, rates, and opening hours. [3]

2.1.4 Patient

The patient is a bio-psycho-socio-economic-cultural creature. Which requires fulfillment of needs, from socio-economic aspects (board, clothing, food, and social affiliation), psychological aspects (satisfaction), biological aspects and cultural aspects. [3]

1. Outpatient patients are medical services that do not have to stay in health care facilities, either inside a building or outside the building.
2. Inpatient patients are health care for hospitals where patients stay / stay for at least one day based on referrals from health service providers or health care providers.
3. ED patients are emergency health services that are very urgent.

2.1.5 Customer Relationship Management

Customer Relationship Management (CRM) is a corporate strategy that is used to spoil customers so they do not turn to competitors. The main thing is that the Hospital intends to create strong bonds with patients / guardians while aiming to maximize their loyalty. [4] With the Customer Relationship Management can guide the Mental Hospital to provide a better service to patients / guardians to the maximum, that is by establishing a good relationship with each patient / guardian is valuable through the use of information or database (database) of patients owned by the Home Mental Pain. [10]

2.1.5 Framework of Dynamic CRM

This framework is useful for setting CRM features accurately, as a reference for building an Information System to be built, a framework is needed as a guide. According to the CH Park & YG Kim framework of dynamic CRM can explain a series of stages in the development of a system that uses a CRM approach. The most important substantive is the information that is obtained from the customer, so that the results are obtained in the form of Relationship Commitment as shown below. [4]

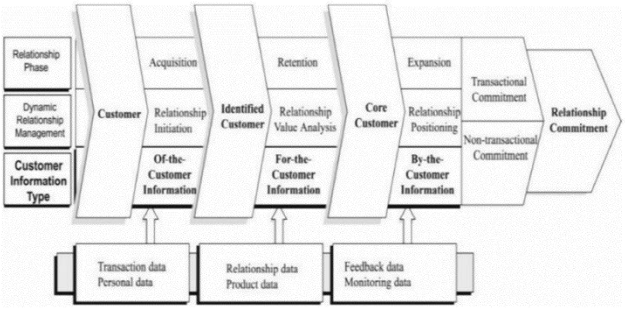


Figure 1. Framework Of Dynamic CRM

The main points of information are as follows: [9]

1. Information about customers.
2. Information for customers.
3. Information by customers.

In the framework of dynamic CRM there are also several phases of need, namely: [9]

1. Acquistion phase
2. Retention phase
3. Expansion Phase

2.1.6 Servqual method

Service Quality method or commonly called servqual is commonly used as a guide for management research and service marketing. This method was developed by Parasuraman, Berry and Zeithaml. Based on the conceptual model compiled then parasuraman and friends try to compile a scale of servqual measurement. They propose perceived quality operationalization as "the degree and direction of discrepancy between consumers" perceptions and expectation. "This operationalization has the equation formula Q = P - E. Fact (P) is defined as the patient's / guardian's belief regarding the service received or experienced. While Hope (E) is formulated as the wishes of the patient / guardian, which is what they feel the service provider must offer. [6]

The other equation formulas are as follows:

1. Formula 1

Used to get the value of customer perception.

$$P = \frac{\sum_{i-1}^{n} Pi}{n}$$

Information :

Pi = Perception Value given by patient / patient guardian for questions i

N = Number of respondents

2. Formula 2

Used to get the value of customer expectations.

$$P = \frac{\sum_{i-1}^{n} Ei}{n}$$

Keterangan :

Ei = The value of the expectations given by the patient / patient guardian for the i-question

N = Number of respondents

3. Rumus 3

Used to get the gap value between customer perceptions and expectations of services received.

$$S = P - E$$

Information :

S = Gap Value

P = Perception Value

E = Expectations Value

2.2 Analisis Masalah

Problem analysis is the assumption of the problem that will be described in the data processing procedures in the construction of information systems at the Provincial Mental Hospital. West Java .

1. The marketing division of the West Java Province Mental Hospital has difficulty in evaluating to determine the priority level of Mental Hospital services that must be improved based on complaints. This can happen because there is no known which complaint is the most among all complaints submitted.
2. Increased patient complaints against the Mental Hospital. This indicates that unconsciously there has been a decrease in the quality of service of the Mental Hospital to patients.

2.3 Framework Analysis of Dynamic CRM

Framework analysis of dynamic CRM will be used to implement the CRM approach to the system that will be created. The model is as follows:

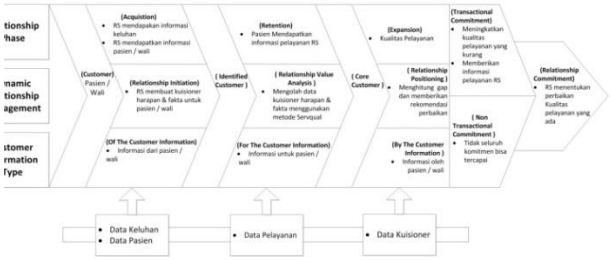


Figure 1. Framework Analysis of Dynamic CRM

2.3.1 Acquisition phase

This stage is the stage where the hospital tries to get to know or know patients / guardians who use services in the West Java Provincial Hospital.

a. Hospitals Get Complaints Information

At this stage, the hospital provides facilities for patients / guardians to express their complaints, so that it will make it easier for patients / guardians to submit their complaints and will also facilitate the hospital in knowing and obtaining information on complaints from patients / guardians.

b. Hospitals Get Patient Information

At this stage, the hospital gets patient information. This information was obtained together when the patient entered his complaint, this can help the hospital to find out the number of patients and other patient information

c. Hospital Makes Hope & Facts Questionnaire

At this stage, the hospital made a questionnaire of hope and facts in the form of a form, which later the questionnaire will be filled by the patient / patient guardian.

d. Information From Patients / Guardians

All data information that is processed is from the patient / guardian of the Sakir Jiwa House of West Java Province.

2.3.2 Retention Phase

This phase is the stage where the hospital delivers information to patients / guardians. This phase is implemented in the enchance process.

a. Patients / Guardians Get Information on Mental Hospital Services.

At this stage, the hospital provides information on services available at the West Java Province Mental Hospital, the service information in question can be obtained from the information system that will be built or can also be accessed through the official

website of the existing West Java Mental Hospital at the following address rsj.jabarprov.go.id. This aims to make it easier for patients to know and get information about the services available at the hospital.

b. Processing Hope and Factor Questionnaire Data

At this stage, the hospital carries out data processing from patients / guardians.

c. Information for Patients / Guardians

From the processing of the questionnaire data that has been carried out, the data will later be returned to the system.

2.3.3 Expansion Phase

The Expansion phase is implemented at the retain stage, this phase is the stage where the hospital gets information from the patient / guardian which can then be used to help make strategies in improving hospital services according to what services are complained of using the servqual method.

a. Service quality

At this stage the process of measuring service quality will be carried out by distributing questionnaires to patients / guardians until the calculation phase of the questionnaire results.

b. Calculating Gap & Providing Repair recommendations

At this stage, the hospital calculates the gap value between the hope questionnaire and the fact questionnaire from each service in the West Java Province Mental Hospital. Then after that, if the results are negative then recommendations for improvement based on priorities are adjusted according to the dimensions of the attributes of the servqual method and the negative value of the greatest value.

c. Information by Patients / Guardians

The entire questionnaire data, is a contribution obtained from the patient / guardian .

2.4 Database Analysis

Database analysis on the construction of CRM information systems at the West Java Provincial Mental Hospital will be built using the Entity Relationship Diagram (ERD). Here is a picture for database analysis can be seen in Figure 3 .

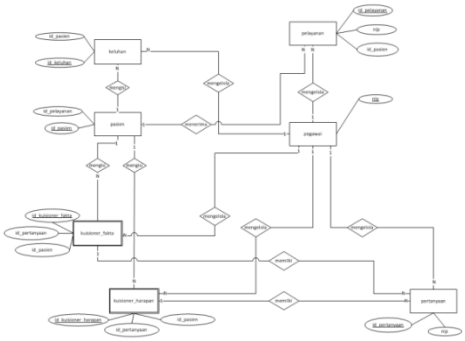


Figure 3. Entity Relationship Diagram for the Development of CRM Information Systems at the West Java Provincial Mental Hospital.

2.5 Context Diagram

Context diagram explains how the data used to process in the form of data flow into or out of CRM information systems in West Java Province Mental Hospital universally. [8] Context diagram can be seen in Figure 4.

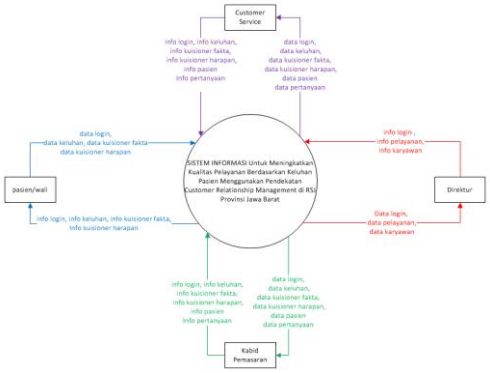


Figure 4. Context Diagram of CRM information system in West Java Provincial Hospital

2.6 *Data Flow Diagram* (DFD)

Data Flow Diagrams explain the flow of data in describing the processes that occur in the system to a more detailed process. Diagarm context contained in Figure 4. can be broken down into DFD form.

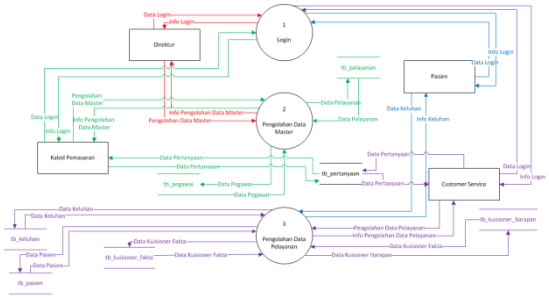


Figure 5. DFD Level 1 CRM information system in West Java Provincial Hospital

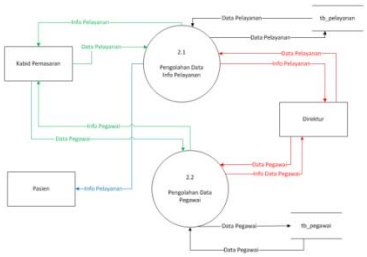


Figure 6. DFD Level 2 Information System in West Java Provincial Hospital

2.7 Skema Relasi

The relation scheme explains the relationship between data. The relation process between attributes that have the same primary key, so that the attribute becomes a single entity, the attribute is connected by the key filed. [7] The relation table can be seen in Figure 7.

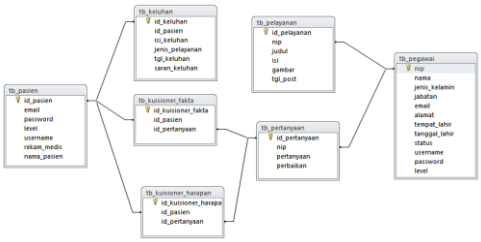


Figure 7. CRM Information System Relationship Scheme Table at the West Java Province Mental Hospital

2.8 Interface Design

Interface design is made to describe the appearance of the system that will be used by users so that they can interact with the system to be built. Interface design can be seen in the example in Figure 8.

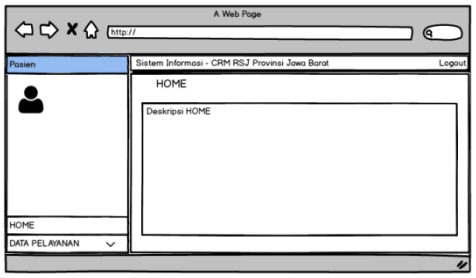


Figure 8. Designing The Patient's Page Interface

2.9 Semantic Network Design

Semantic network design describes the interface design that has been done to show the flow of each interface interconnected.

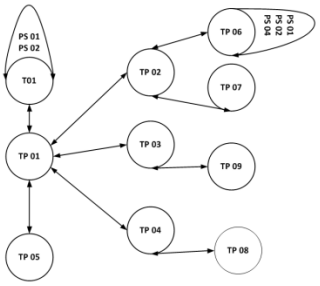


Figure 9. Design of Patient / Guardian Semantic Network

2.10 Procedural Design

Procedural design describes the structural parts of the program architecture in a procedural description of the software component.

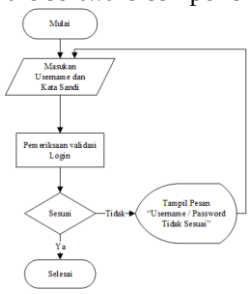


Figure 10. Logical procedural design

2.11 Menu Structure Design

2.11.1 Director's Menu Structure

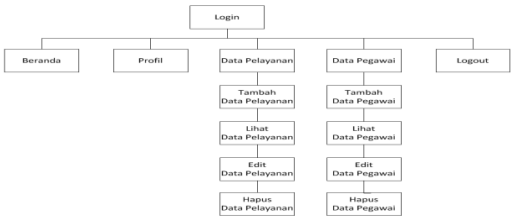


Figure 11. Director Menu Structure

2.11.2 Menu Structure Section head

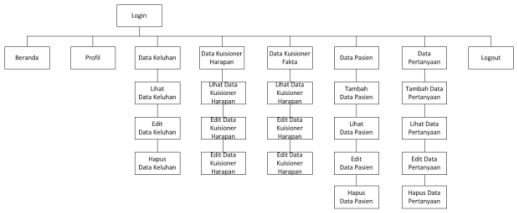


Figure 12. Section Head Menu Structure

2.11.3 Customer Service Menu Structure

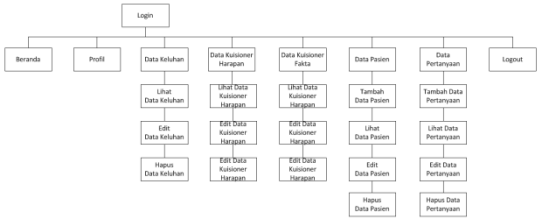


Figure 13. Customer Service Menu Structure

2.11.4 Patient Menu Structure

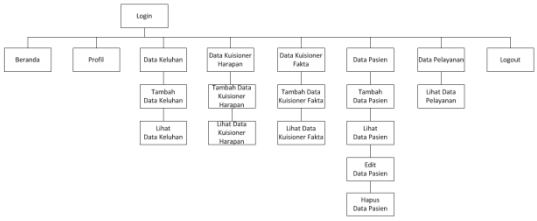


Figure 14. Patient Menu Structure

2.12System Testing

System testing is no less important because it serves to find out the deficiencies found in the system being tested. The purpose of this test is to find out that the CRM information system in the Mental Hospital of West Java Province that has been made already meets the needs that are in accordance with the design goals.

The test used to test this system is a black box, and beta testing method.

1. *Black Box* Testing

The main focus of black box testing is to prioritize the functional requirements of the system that has been built.Testing each process to find out the deficiencies in the system.

From the results of the tests that have been carried out, it can be concluded that the system made has been running well. Functionally, the system can provide the desired information.

2. *Beta* Testing

The main focus of this beta test is carried out by conducting direct testing at the research site by interviewing each system user who plays a role.

Based on the beta testing that has been carried out, it can be concluded that:

1. The system that has been created can help the Mental Hospital in determining the priority of improving service quality.
2. The system built can help the Mental Hospital in managing patient / guardian complaints.

3. CLOSING

This section describes the conclusions of the processes produced after the analysis, design, and implementation of the system design built.

3.1 Conclusion

Based on the results obtained in this study, the results of the conclusions are:

1. 1. This CRM information system can help the Mental Hospital in determining the priority of services that must be improved.
2. 2. This CRM information system can reduce the intensity of complaint numbers found in the West Java Provincial Mental Hospital.

2.2 Suggestions

The CRM information system at the West Java Province Mental Hospital can still be further developed with additional features that can be used to support the needs in the Hospital. There are several suggestions for the development of this CRM information system, namely:

1. Use the patient's medical record number to log into the system.
2. Development of processes and features contained in the information system that has been built, so that the system can be used in accordance with the needs in the future.

BIBLIOGRAPHY

[1] Jogianto, Hartono. (2003). *Sistem Informasi*. Yogyakarta : Andi.

[2] Erlina, Purnamawati. (2014). *Analisis Kualitas Layanan dengan Metode Servqual dan AHP di Dinas Kependudukan dan Pencatatan Sipil di Surabaya*. Teknik Industri FTI Veteran Jatim.

[3] Supriyanto.S,. Ernawaty. (2010). *Pemasaran Industri Jasa Kesehatan*. Yogyakarta : Andi.

[4] Francis Buttle. "Customer Relationship Management (Manajemen Hubungan Pelanggan) Concepts and Tools",Malang, Bayumedia Publishing, 2007.

[5] Christopher Lovelock, Jochen Wirtz, Jacky Mussy, "Pemasaran Jasa, Manusia, Teknologi, Strategi Perspektif Indonesia",Jakarta,2010,p.121.

[6] Fandy Tjiptono. Ph.D, Gregorius Chandra. *"Service, Quality dan Satisfaction"*, Edisi ke Empat. Yogyakarta: ANDI, 2016.

[7] Muhammad Musligudin dan Oktafianto. *"Analisis dan Perancangan Sistem Informasi Menggunakan Model Terstruktur dan UML"*, CV Andi Offset: Yogyakarta, 2016.

[8] Janner Simarmata. *"*Rekayasa Perangkat Lunak*"*, Medan, Andi OFFSET, 2009, pp.303-304.

[9] Priyanto Dwi, (2016). *"Rancang Bangun Customer Relationship Management (CRM) Menggunakan Metode Framework of Dynamic CRM Pada Totebag Corner Semarang"*. Universitas Dian Nuswantoro Semarang.

[10] Setiawan D.L. (2015). *"REKAYASA SISTEM INFORMASI KOPERASI BERBASIS CUSTOMER RELATIONSHIP MANAGEMENT"*. ICT Learning – Vol.1 No.1.