



Customer Relationship Management System at Aesthetic Clinic

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ABSTRACT

Accessing and processing information more effectively and efficiently is made possible through the employment of quality information technology, one of which is in the technology the clinic requires. According to our case study, the clinic is still manually documenting customer service data and experiencing declining repeat client visits. Utilizing information technology is necessary for efforts to boost customer value innovation. As one of its aspects, Customer Relationship Management uses a framework of dynamics to acquire customer satisfaction data from loyal customers. The utilization of customer data will be categorized into platinum, gold, and silver using a ranking system for decision-making with the Simple Additive Weighting method—rating customers through the normalization of a decision matrix. The maximum consumer value based on the parameters determined by the choice matrix is one, while the lowest is 0.27. The testing that has been conducted is black-box testing. It is determined that 100 percent of the system's functionality is operating correctly, and UAT testing reveals that all features operate properly. Usability Testing conducted on patients yielded a ratio of 78.1%, indicating that the clinic evaluated customer satisfaction with the customer relationship management system.

Keywords: CRM, Framework of Dynamic, SAW

1. INTRODUCTION

Customer Relationship Management (CRM) applications benefit companies in various fields, especially the health [1] CRM is a technology that can retrieve data, store, access, share, and analyze large amounts of customer data [1]–[3]. Different types of CRM research have been widely adopted in telecommunications, banking, and manufacturing, but CRM research in healthcare is minimal [4]–[6]. [3] In this study, we applied a CRM system to one of the aesthetic clinics.

This clinical case study has 218 members. Members know the service information by visiting the clinic directly or from social media. Currently, social media followers have as many as 424, and several posts from treatment results have been done. There are still many target markets that are not widely reached. CRM systems aim to improve organizational effectiveness and performance by increasing customer satisfaction and loyalty [7]–[9].

Another problem is that complete information about the clinic is only obtained by using Instagram and visiting the clinic directly, so customers who need information feel reluctant to go directly. Then, the

clinic finds it challenging to get regular and loyal customers who do the treatment every month due to the lack of attention on the part of the clinic to customers, so customers are dissatisfied and disloyal. Fourth, the number of customers who come are decreasing, so the clinic needs new efforts to increase customers and services and have regular customers who regularly consult every month.

Based on the above problems, there needs to be a CRM system with a decision-making approach to analyze customer data using simple additive weight (SAW) *methods*. This method can find the optimal alternative of alternate and specific criteria. One of the methods found in CRM systems is the Framework of Dynamic CRM. Using this method, the importance of getting customer information, providing information to customers, and getting inputs that customers will provide so that output is obtained in the form of Relationship Commitment [10],[11].

2. LITERATURE REVIEW

2.1 Customer Relationship Management

CRM is a marketing philosophy that puts customers first. The company's marketing and sales section collects and analyzes customer information to understand and enhance customer value to meet customer needs [12],[13]. CRM is a solution that helps businesses grow by maintaining healthy relationships with existing customers and building solid relationships with new customers [9],[10]. CRM has four perspectives, namely: (1) strategic, (2) analytical, (3) operational, and (4) collaborative [14].

2.2 Framework of Dynamic

The research method used is the *Framework of Dynamic* method has four stages in the formation of information systems, namely: customer, identified customer, core customer, relationship commitment (figure.1)[10]. This framework is a series of stages in the development/implementation of CRM. Substantively the most important is the information obtained from customers so that the output is obtained in the form of Relationship Commitment, which is a relationship that can provide loyalty and benefits to a company.

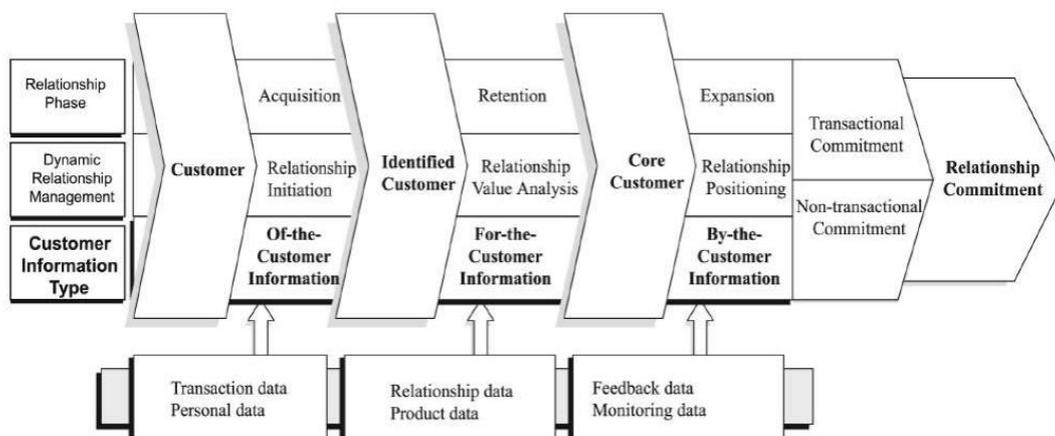


Figure 1 A Framework of Dynamic CRM Method Stages

3. RESULT AND DISCUSSION

Strategic CRM is a customer-focused business strategy that aims to win and retain profitable customers. Currently, clinics only use social media such as Instagram to run their businesses. To achieve the goal of strategic CRM, the clinic provides exclusive offers such as promos, discounts on product and service prices, and special offers to customers sent through the SMS gateway feature.

Analytical CRM is how organizations convert customer-related data into insights that can be followed up for strategic or tactical purposes. Currently, customer data in the clinic has not been utilized, only in a collection of unprocessed data. So, with the design of this website, customer data will be processed

by making decisions using saw methods to determine customer loyalty, aiming to provide targeted promotion to customers. To achieve the goal of analytical CRM clinics by grouping the types of customers, namely platinum, gold, and silver customers.

Operational CRM automates customer-facing processes such as marketing, sales, and customer service. To achieve the goal of operational CRM clinics to automate by increasing marketing, salesforce, and service (Table 1).

Table 1 CRM Implementation

<i>Types of CRM</i>	The current state of the clinic	CRM implementation
<i>Strategic</i>	Use media social Instagram.	Website for promoting and sending reminders via SMS gateway.
<i>Operational</i>	<i>Marketing Automation</i> The service information provided is known when it comes to the clinic	Website features showing promotions and clinic service information
	<i>Salesforce</i> Promotions can be viewed on Instagram.	Customers receive <i>SMS reminders</i> of drug use and promotions automatically.
	<i>Service Automation</i> Direct consultation is conducted in the clinic, and the data is stored in books/papers.	The website can conduct online consultations, and customer data will be stored in a database.
<i>Analytical</i>	Customer data has not been taken advantage of.	Customer data will be processed to get categories from each member. Categories divided into 3, namely <i>platinum, gold, and silver</i>

Selection of customers who receive *rewards* using the SAW method with four criteria: the active status of the customer, the length of subscription, the number of transactions, and the period of purchase. The steps in the calculation are as follows (1) Determine criteria, (2) Determine the weight of the criteria, (3) Determine weights on each criterion indicator, (4) Determining alternatives, (5) Create a match rating table from each alternative. Here is the weight of the criteria (table 2).

Table 2 Weight Of Criteria

Criterion(C)	Weight (%)
Customer Liveliness Status	20
Long Subscribe	15
Number of transactions	45
Purchase period	20

The clinic determines the criteria. Here is an explanation of each criterion such as (1) Customer liveliness status is the accumulation of customer arrivals within six months, (2) Extended subscription is how long the patient has been consulting the Pratama Ashofa clinic, (3)The number of transactions is the total patient transaction above Rp500,000.00, (4) The time of purchase/treatment is how long the duration of taking the product or *treatment* is in 6 months. To complete decision-making based on the calculation of the SAW algorithm, the first thing to do is determine the value of the Cj criteria in an alternative set of Ai. Along with each Cj criterion's weight of preference (Wj), the following criteria needed in decision-making recommend the primary customer (table 3).

Table 3 Weighting Criteria

Criterion	Information	Weight
K1	Customer Liveliness Status	20 %

Criterion	Information	Weight
K2	Long subscription	15%
K3	Number of Transactions	45%
K4	Purchase/Treatment Period	20%

After determining the criteria and weight of the assessment, the next is to conduct a fight to find out the *reward* that will be obtained by the customer based on the customer category. Here are customers' rewards from the work results (table 4). The explanation of *the value range* is if vulnerable customers rank 1-20, then the customer gets a *reward* of All facial *discs* and 30% and All product *discs* 15%. If vulnerable customers rank 21-50, then the *reward* given by the clinic is All facial *disc* 15% and All *product* 10%, and if vulnerable customer rank 51-100, then the *reward* for All *product discs* are only 5%.

Table 4 Range Of Value

Category	Range of value	Reward
Platinum	1 - 20	All facial discs 30% and All product discs 15%
Gold	21 - 50	All facial discs 15% and All products 10%
Silver	51 - 100	All product disc 5%

Table 5 explains the functionality of the Framework of Dynamic CRM and the Framework of Dynamic CRM and system features.

Table 5 Mapping Framework Of Dynamic CRM

<i>Relationship Phase</i>	<i>Acquisition</i>	<i>Retention</i>	<i>Expansion</i>
	The system features: <i>Login</i> , Server information, About <i>us</i>	System features: Criticism and advice, Online consultation	System features: Online consultation
<i>Dynamic Relationship Management</i>	<i>Relationship Initiation</i>	<i>Relationship Value Analysis</i>	<i>Relationship Positioning</i>
	System features: Home, Information, Service	System features: <i>Sms gateway</i> , Reminder consultation, patient care	System features: Criticism and advice, Online consultation
<i>Customer Information Type</i>	<i>Of - the – Customer Information</i>	<i>For - the – Customer Information</i>	<i>By - the -Customer Information</i>
	System features: Patient transactions	System features: <i>Platinum, gold, and silver</i> customer category information, Consulting information	System features: Criticism and advice, Information on patient needs.
Requirements	<i>Transaction data – personal data</i>	<i>Relationship data- product data</i>	<i>Feedback data- monitoring data</i>
	Transaction data, patients, clinics, Doctors, Doctor Schedules, Clinic logos, Type of services, Product type, Education, Practice schedule, Patient Data.	Re-consultation schedule, phone number. Product data: Service name, product name, price	Criticism and advice, Patient consultation

The new system is as follows:

- i) Produce a system that looks at how to sustain patients with patient care.
- ii) Patients who have been consulting will be used data to determine each customer's loyalty level.
- iii) The data will be processed using *the simple additive weighting* method and grouped based on criteria to get categories.
- iv) Patients can provide criticism and advice about the services provided so that the owner can immediately make the best decision based on criticism and advice from patients.
- v) The system can send SMS broadcasts to patients according to the selected category. Broadcast SMS also sends reminder messages about drug use and reminders to perform treatment back at the clinic.

This clinical system will be built by having three actors: admin, patient, and doctor. Patients can log in, view clinical information, and provide criticism and suggestions to the clinic. Admin can manage each menu on the admin page. To perform this action, the admin must first log into the system. Meanwhile, doctors can manage medical records and consultation forms. The design of use case diagrams is based on system requirements according to the actors (Figure 2).

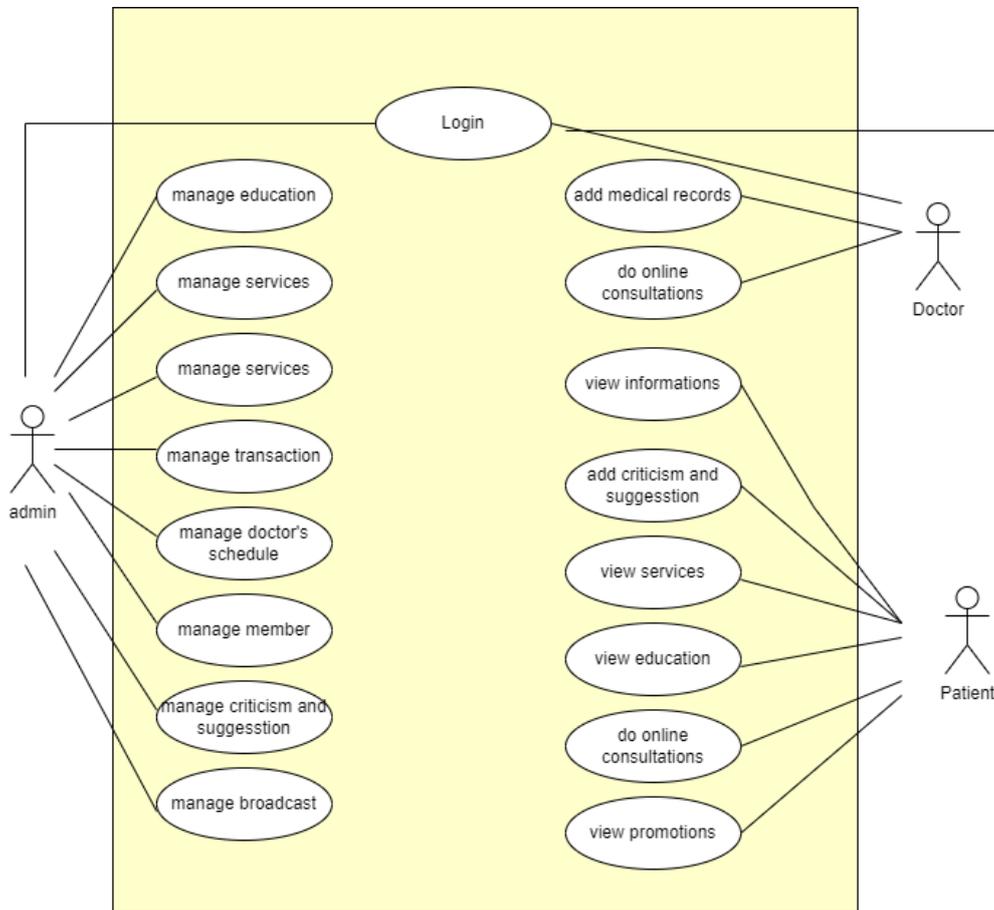


Figure 2 Use case diagram

The form of strategic implementation on the system can be accessed by admins, with SMS broadcast pages to provide promotions and rewards to customers, adjusting to each category of customers (Figure 3). Analytical is utilizing customer data in determining customer loyalty by providing categories for each customer who meets the criteria (figure 4).

Broadcast Sms Gateway Home / Broadcast

[Broadcast Customer](#) [SMS Customer](#)

Show 10 entries Search:

No	Nama Pasien	No Hp	Isi Pesan
21	yosari	081261497724	tess
22	Siti	082239661344	test
23	Yosari Dwi Fadh	081261497724	test sms gateway
24	Yosari Dwi Fadh	081261497724	test sms gateway
25	Yosari Dwi Fadh	081261497724	test sms gateway
26	sara	085365204187	test sms gateway
27	sara	085365204187	test sms gateway
28	Yosari Dwi Fadh	081261497724	test sms gateway
29	Yosari Dwi Fadh	081261497724	test sms gateway

Figure 3 Broadcast page and SMS Customer

[Cek Loyalitas](#)

Show 10 entries Search:

No	Nama Pasien	Status Keaktifan (6 bulan terakhir)	Lama Berlangganan	Jumlah Transaksi (6 bulan terakhir)	Jangka Waktu Pembelian	Kategori Pasien
1	Ridawati	1 x	21 Bulan	Rp 9,000,000	1 x	Platinum
2	Shafa Humaira	0 x	12 Bulan	Rp 4,085,000	1 x	Platinum
3	Dr.Ami	0 x	5 Bulan	Rp 7,500,000	1 x	Platinum
4	Iki	0 x	0 Bulan	Rp 10,890,000	2 x	Platinum
5	Sonya Cinta Pratama	0 x	2 Bulan	Rp 2,900,000	2 x	Platinum
6	tj	0 x	0 Bulan	Rp 3,000,000	1 x	Platinum
7	Yosari Dwi Fadhillah	2 x	2 Bulan	Rp 4,500,000	1 x	Platinum
8	Dedy Arpansyah	4 x	14 Bulan	Rp 1,080,000	2 x	Platinum
9	Chairudin	5 x	15 Bulan	Rp 750,000	1 x	Platinum
10	Ayu Putri	0 x	12 Bulan	Rp 1,200,000	2 x	Platinum

Showing 1 to 10 of 52 entries Previous 1 2 3 4 5 6 Next

Figure 4 Platinum Category Customer Loyalty Page

The operational perspective is divided into three forms of application: Marketing Automation, Sales Force Automation, and Service Automation. Marketing Automation has a promotional page and service information (Figure 5). Sales Force Automation is a customer receiving a promotional SMS broadcast (Figure 6). Lastly, Service Automation is an online consultation feature as a communication feature used by customers. It will be responded to by a doctor (figure 7).

[Informasi](#)
[Pelayanan](#)
[Edukasi](#)
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[Promo](#)
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Kategori : Gold
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Pelayanan

Facial Gold platinumm

Snow White Bubble Facial

Chemical Peeling

Oxygeneo Premium

Eye Fresh Treatment

Infus Whitening

Derma PRP

Facial AntiOxidant Platinum

Lip Treatment

Diamond Whitening Infusion

Figure 5 Marketing Automation Page

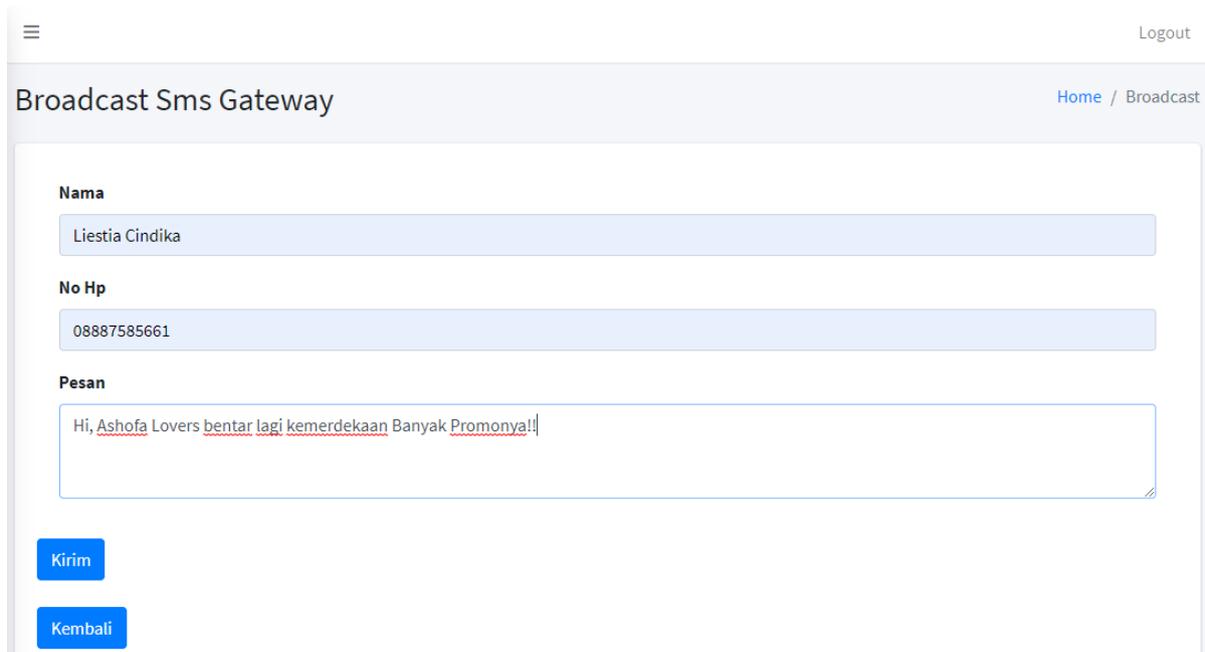


Figure 6 Sales Force Automation Page

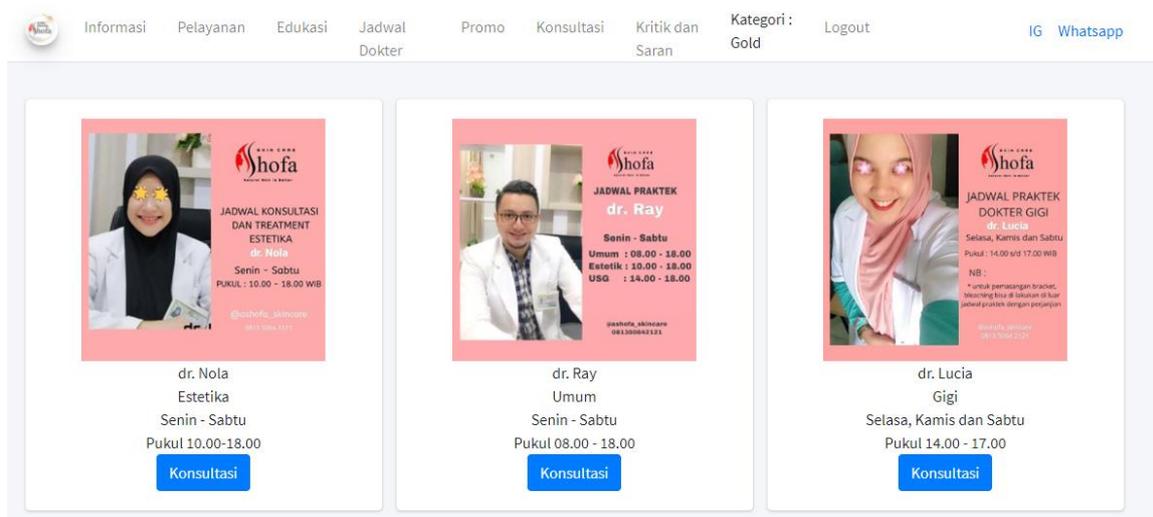


Figure 7 Service Automation page

4. CONCLUSION

The built system can run well and follow the expected objectives using the framework of dynamic CRM methods and 3 CRM perspectives: strategic, operational, and analytical. Based on calculations using the Simple Additive Weight method, three categories of customers, namely platinum, gold, and silver-based on the criteria that have been determined. This system is built with static weighting that has limitations by doing manual calculations using 5 sample data.

Based on the results of Black Box testing done on this system, it is obtained that the functions on the system are under the expected results with 100% results. User Acceptance Testing, the clinic's website has functionality that runs well so that users can accept it. This system is helpful for patients based on Usability Testing that has been done on patients. 78.1% of respondents stated that this system could meet the usability aspect, easy to use from the testing. Patients are satisfied with the feature of sending reminder messages about drug use and sending promotional messages via SMS.

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