

Management Information System of Ummi Primary Clinic in Improving Service and Loyalty using WEB-based Customer Relationship Management

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ABSTRACT

The rapid development of science and technology plays a very important role in life, both in the fields of education, industry, business, tourism, entertainment and so on. To improve service quality, an effective information system is needed. This system serves to switch from manual methods to computerized systems. With the information system, the accuracy of the data stored can be guaranteed, thus reducing the possibility of errors when inputting data. Ummi Primary Clinic is one of the level I health facility clinics in Medan in providing health services to the community. To find out customer needs, customer relationship management (CRM) is needed to manage interactions with customers, and can improve service quality and loyalty to customers. The purpose of this research is to build a Management Information System for Ummi Pratama Clinic in Improving Services and Loyalty Using Web-Based Customer Relationship Management (CRM) to facilitate clinic owners and patients in order to improve the quality of services at Ummi Pratama Clinic. In this study, researchers adopted a descriptive qualitative approach method, the Waterfall Method was applied to structured research in building a software. Based on the results of the research, it can be concluded that this system is a web designed according to the needs of Ummi Pratama Clinic which is useful for managing clinic relationships with customers. The information generated by CRM is beneficial for the clinic and customers, because criticism, suggestions, needs and desires of customers can be well facilitated and become a motivation for the clinic to improve services for satisfaction.

INTRODUCTION

The development of science and technology is increasingly rapid, especially in information and telecommunications which are increasingly fast and play a vital role in various aspects of life, including education, industry, business, tourism, and entertainment (Sutabri, Sugiharto, Krisdiawan, & Azis, 2022). The process of disseminating information that was previously done manually and slowly can now be done more quickly and efficiently (Megawati & Gustina, 2018). To improve service quality, an effective information system is needed. This system serves to switch from manual methods to computerized systems. With an information system, the accuracy of the data stored can be guaranteed, thus reducing the possibility of errors when inputting data (Fhonna & Rafika, 2021).

Klinik Pratama Ummi is one of the level I health facility clinics in Medan. Klinik Pratama Ummi is located at Jalan Amal No. 70, Sunggal, Medan Sunggal, Medan City. Klinik Pratama Ummi serves BPJS, KIS BPJS, and BPJS Employment and General participants. In terms of services, Ummi Pratama Clinic has several criticisms and input regarding the quality of service, as well as the facilities available at the clinic. For this reason, a computerized system support is needed, which can help clinic owners to monitor the performance of their employees, and can provide a forum for patients to provide an assessment of the services at the Clinic, so that the services at the Clinic are improved.

To meet customer needs, an information system is needed that applies the Customer Relationship Management (CRM) method (Amatullah, Delima, Syafitri, & Ibrahim, 2018). Customer Relationship Management (CRM) is an approach that aims to better understand the needs and characteristics of consumers in building better relationships with customers (Sugiarni, Pramana, & Puspita, 2015). This concept is designed to provide optimal service to customers so that they remain loyal and do not switch to competitors. This method is applied to increase customer loyalty to the products or services offered by utilizing electronic media (Juliani & Zufria, 2022). The CRM method is used because it can improve services and improve and manage services in accordance with customer expectations and loyalty (Nugraha, Rosalina, & Suherman, 2022). With the application of effective Customer Relationship Management (CRM) methods, clinics can attract new patients and retain old patients, thereby increasing profits. The information generated by CRM is useful for clinics and patients, because criticism, suggestions, and patient needs and wants can be managed properly, becoming a motivation for clinics to improve services for patient satisfaction (Fitriana & Sartana, 2018).

Management Information System is an integration between Human Resources and information technology used to select, store, process, and access data to support decision making in a company. To implement an integrated and effective Management Information System (MIS) in support of business success, a balance is needed between the



availability of Human Resources skilled in using information technology, such as computers, and funds for the procurement of sophisticated devices (Rochaety, 2017). Designing, implementing and operating a SIM is an expensive and complex process, so the costs and efforts required must be carefully considered. The success of an organization depends largely on its management capabilities (Wijoyo, Ariyanto, Sudarsono, & Wijayanti, 2021). SIM is expected to provide benefits not only to company decision makers, but also to society as part of the control system, especially in company operations and in the presentation of quality products or services that can be accounted (Rochaety, 2017).

Codeigniter is an open source application in the form of a framework for building websites using the PHP programming language. The goal is to speed up project development compared to writing basic code, by providing various libraries that are often used in the work (Hanayah & Ridho, 2024). Codeigniter adopts the Model, View, Controller (MVC) concept, which divides the application into three parts. Therefore, using the Codeigniter framework is the right choice in terms of maintenance and accessibility of open source code, as well as the availability of many plug-ins that are easily accessible (Krisna, Muhammad, & Nadia, 2022).

The purpose of this research is to build a Management Information System for Ummi Pratama Clinic in Improving Services and Loyalty Using Web-Based Customer Relationship Management (CRM) to facilitate clinic owners and patients in order to improve the quality of services at Ummi Pratama Clinic. In previous research conducted by Imam Agustian Nugraha, Vidilla Rosalina, Suherman (2022) on the Application of Customer Relationship Management (CRM) in Web-Based Meteorological Service Information Systems can be utilized to measure the level of customer satisfaction as well as user criticism and suggestions for the performance of service officers to make it better in the hope of increasing efficiency, transparency, and accountability of Meteorology services at STAMET Class 1 Maritime Serang based on feedback from service users. Research conducted by Imam has similarities using CRM but from some of these similarities this research has differences in focus, scope of both, and different features.

LITERATURE REVIEW

Customer Relationship Management (CRM)

Customer Relationship Management (CRM) is a strategy in forming and managing relationships with customers at the organizational level. This is done by understanding, anticipating, and managing customer needs based on knowledge gained about customers, in order to increase the effectiveness, efficiency, and profitability of the organization (Fadly & Wantoro, 2019). Indicators for assessing customer satisfaction include product quality, service, innovation, and corporate image. Companies can utilize these indicators to attract and satisfy customers, leading to loyalty and increased profitability (Sembiring, Jaya, Silalahi, Rumapea, & Hasibuan, 2021). CRM plays a crucial role in modern business, especially in managing interactions with customers. The use of CRM is driven by the desire to retain customers, increase revenue, and reduce costs. It encompasses the practices, strategies and technologies used to manage and analyze customer data throughout the customer life cycle. The main focus of CRM is to strengthen customer relationships and optimize sales (Budi, 2023).

Customer Relationship Management (CRM) Concept

The concept of Customer Relationship Management (CRM) can be divided into three different levels: strategic, operational, and analytical.

1. Strategic CRM: This level is concerned with developing a customer-focused corporate culture. The goal is to win over customers and retain their loyalty by providing better value than competitors.
2. Operational CRM: The main focus of this level is the automation of interactions between companies and customers. Various CRM software applications allow marketing, sales, and customer service functions to run automatically, thereby increasing efficiency.
3. Analytical CRM: This level involves using customer data to increase value for both the customer and the company. Data can come from a variety of sources, including sales, financial, marketing, and service data.

Customer Relationship Management (CRM) Objectives

Some of the goals of CRM implementation are to help companies achieve their ultimate goal of profit. Some of the main objectives of CRM include:

1. Improving Customer Relationships: CRM helps companies strengthen relationships with existing customers, which can increase revenue through repeat sales to loyal customers.
2. Maximizing Customer Value: CRM provides complete information about customers, so companies can identify customers who add the most value.
3. Better Customer Service: By integrating customer information, CRM enables companies to provide better and more efficient services, meet customer needs, and save them time.
4. Consistency in Service: CRM plays a role in maintaining consistency in procedures and processes of interaction with customers, ensuring that answers and services provided are uniform and of high quality (Budi, 2023).

Aspects of Customer Relationship Management (CRM)

According to Chen & Popovich (2003), Customer Relationship Management (CRM) consists of three main interrelated aspects, namely:

1. **People**
This aspect refers to the employees involved in implementing CRM. The success of CRM is greatly influenced by the enthusiasm, ability and friendliness of the staff. It is important to pay attention to the organizational structure, roles and responsibilities, corporate culture, procedures, and overall change management program. Companies should value the involvement of frontline staff in building and running CRM programs. This is because CRM basically aims to maintain good relationships between people, which requires a personal touch. In practice, CRM requires the activeness and enthusiasm of business people to get to know customers better and provide maximum satisfaction.
2. **Process**
The process dimension focuses on the systems and procedures that support human interaction with customers. According to Kotler & Keller (2012), there are four steps in the CRM process that must be done to achieve success:
 - a. **Identifying Prospects and Customers:** This stage aims to determine the criteria of customers who are most profitable for the company. A common mistake is that companies only look at the number of customers without identifying who really provides benefits.
 - b. **Differentiating Customers:** At this stage, companies analyze customers based on their needs and values. By dividing customers based on behavior and demographics, companies can focus more on profitable segments.
 - c. **Interaction with Customers:** At this stage, the company interacts with customers to understand their needs and build a closer relationship. Good communication will bridge customer expectations with the programs offered.
 - d. **Customizing Products and Services:** This is the personalization stage, where companies study consumer behavior and tailor products and services to suit customer needs. This approach includes providing customizable products without customer intervention.
3. **Technology**
Technology plays an important role in accelerating and supporting the human and process dimensions of managing customer relationships. Technology enables management to manage customer data and separate knowledge information about them. The integration of CRM technologies, such as data warehouse and data mining, with front-end and back-end operational systems, demonstrates the importance of collaboration within the organization. Without cutting-edge technology, implementing CRM strategies will be difficult, especially since interactions with customers today rely heavily on technology, such as social media, websites, and telephones. Technology also plays a role in storing and analyzing customer information to formulate various strategies.

How Customer Relationship Management Works

CRM involves a series of steps and processes designed to effectively manage customer relationships. Here are the general steps in how CRM works:

1. **Customer Identification:** The first step is to identify the customer by collecting basic information such as name, address, phone number, and email, as well as additional information such as product preferences, purchase history, and previous interactions with the company.
2. **Interaction Monitoring:** CRM involves monitoring all interactions with customers, whether by phone, email, social media, or other communication channels, so that companies can collect valuable data on customer behavior and preferences.
3. **Data Analysis:** The data obtained from customer interactions is then analyzed to gain deeper insights into their behavior, including buying patterns, product preferences, and needs.
4. **Customer Segmentation:** Based on data analysis, customers are grouped into different segments according to their characteristics and behavior, which allows companies to personalize services and communications.
5. **Developing a Communication Strategy:** Based on the segmentation, the company can formulate a suitable communication strategy for each segment, including customized marketing campaigns, special offers, and relevant content.
6. **Customer Service:** CRM also includes providing good and responsive customer service, including providing fast and effective assistance when customers experience problems or have questions.
7. **Measuring Performance:** It is important to continuously monitor and evaluate CRM performance to ensure the effectiveness of implemented strategies, including monitoring customer retention and satisfaction levels.
8. **Continuous Improvement:** Based on the results of performance measurement, the company can make continuous improvements and enhancements to the CRM strategy to increase effectiveness and maintain customer satisfaction and connection with the company.

Functions and Roles of Customer Relationship Management

CRM has various functions and roles that are important for the success of a company, including:

1. **Customer Information Management:** One of the key functions of CRM is to collect, store, and manage information about customers, including contact data, purchase history, product preferences, and previous interactions. This information allows companies to better understand their customers.
2. **Improved Customer Retention:** CRM helps companies retain customers by offering more personalized and responsive services. By understanding customer needs and preferences, companies can strengthen relationships and reduce the risk of losing customers to competitors.
3. **New Customer Acquisition:** CRM also supports new customer acquisition by analyzing existing customer data. This helps companies identify potential market segments and develop targeted marketing strategies to attract new customers.
4. **Improved Operational Efficiency:** CRM improves operational efficiency by streamlining customer-related business processes, such as lead management, sales cycle, and customer service. Automation of some tasks allows companies to save time and resources.
5. **Improved Decision Making:** CRM provides valuable data and insights that can help management in decision-making. By analyzing customer data, companies can identify trends, predict demand, and formulate more effective business strategies.
6. **Personalization of Customer Service:** With the data collected, companies can provide more personalized services, including relevant product recommendations and customization of promotional offers according to individual preferences.

Thus, the role of CRM is not only limited to managing customer information, but also includes customer retention, new customer acquisition, operational efficiency, decision-making, and service personalization. This makes it a very important tool in modern business strategies.

Measuring the Success of Customer Relationship Management

Measuring the success of a CRM implementation is essential to ensure the strategy implemented delivers the desired benefits. Some common methods for measuring such success include:

1. **Customer Retention Rate:** Assesses the percentage of customers who remain loyal without switching to competitors; a high retention rate signifies a successful CRM strategy.
2. **Customer Satisfaction:** Using surveys or feedback to measure satisfaction levels, where high results indicate the effectiveness of the strategy in meeting customer needs.
3. **Sales Improvement:** Comparing sales data before and after implementation to see any increase in transaction volume or value.
4. **Customer Behavior:** Observe changes in purchasing and interaction patterns, such as frequency of purchase and channels used.
5. **Operational Efficiency:** Measures efficiency in customer-related processes, including request turnaround time.
6. **Data Analysis:** Evaluate the effectiveness of CRM strategies in identifying trends and predicting customer behavior.
7. **System Usage:** Measures the frequency with which employees use the CRM system and the volume of data entered.
8. **Cost and ROI:** Calculate implementation costs as well as measure Return on Investment (ROI) to ensure expected value.

With this method, companies can monitor and evaluate the success of CRM implementation and make necessary adjustments.

METHOD

In this study the authors took the research location at Umami Pratama Clinic, which is located at Jalan Amal No. 70, Sunggal, Medan Sunggal District, Medan City, North Sumatra, 20128. In this study, researchers adopted a qualitative approach method. Qualitative research focuses on in-depth observation and is descriptive, often using analysis. The descriptive approach in qualitative research aims to understand various events through data in the form of words and images, to provide explanations, generate predictions, and reveal implications (Qalbi & Dai, 2024). The descriptive approach was chosen because this research deals with ongoing events and relates to current conditions. In this research, data collection techniques include three main approaches, namely observation, interviews, and literature study (Syahputro, Chairunnisa, Apriyant, Akbar, & Marpaung, 2023). This research uses two types of data, namely primary data and secondary data. Primary data obtained through the process of direct interviews with clinic staff and visitors in order to obtain accurate data. As well as secondary data taken through the collection of journal and book literature. The data collected through interviews will be processed using a non-statistical data analysis approach (Syahputro, Chairunnisa, Apriyant, Akbar, & Marpaung, 2023).



The Waterfall method is applied to research that is structured in building a software. This method is like a waterfall model as follows:

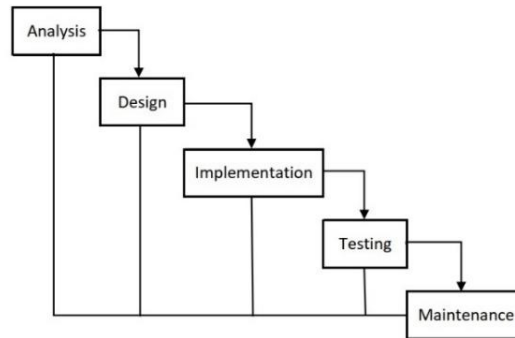


Figure 1. Waterfall Development Method

Class Diagram

Class Diagram is one of the important components in software modeling using the Unified Modeling Language (UML). This diagram is used to visually represent the structure of the system by displaying the classes in the system, attributes, methods, and relationships between classes, such as associations, generalizations, and dependencies. By using class diagrams, software developers can understand the logical structure of the system to be built, as well as document the design clearly and systematically. The following is a class diagram in this research.

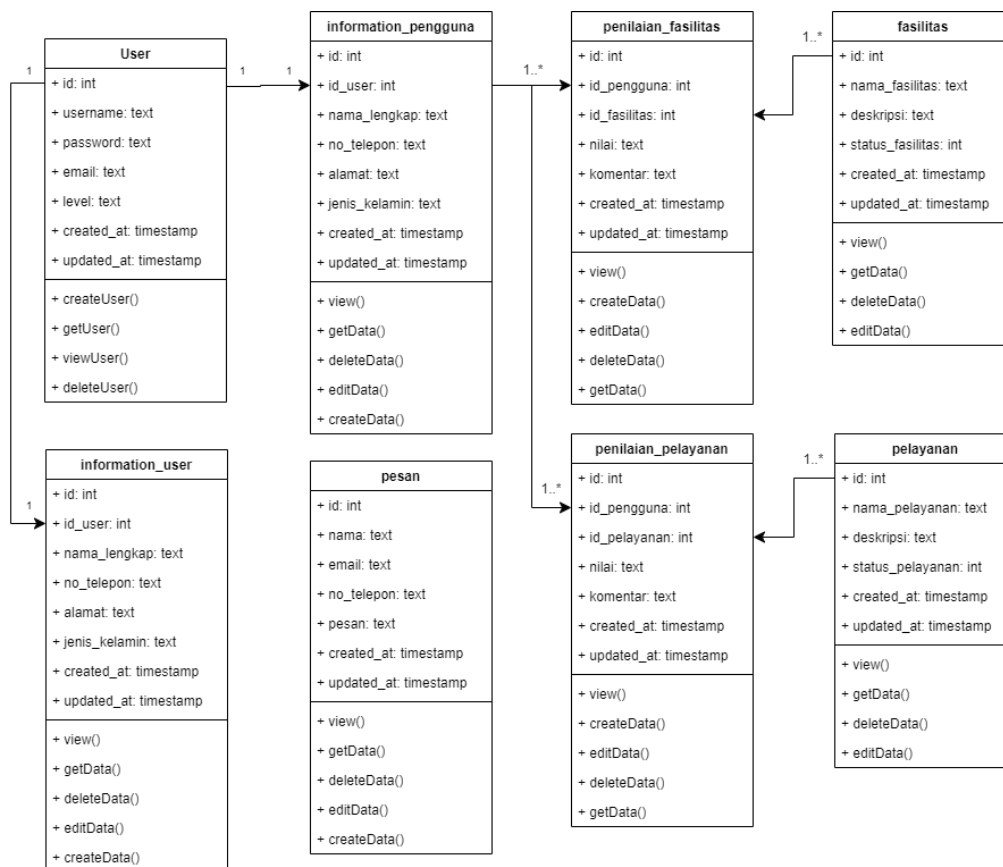


Figure 2. Class Diagram

Use Case Diagram

Use Case Diagram is one type of diagram in the Unified Modeling Language (UML) that is used to model the interaction between actors (users or external systems) and the system being designed. This diagram helps describe the main functions of the system from the user's point of view, making it easier to understand the needs or goals to be achieved. Use Case Diagrams usually consist of elements such as actors, use cases, and relationships between these elements, such as associations, generalizations, or dependencies. By using Use Case Diagrams, developers and stakeholders can communicate more effectively about the features to be implemented in the system.

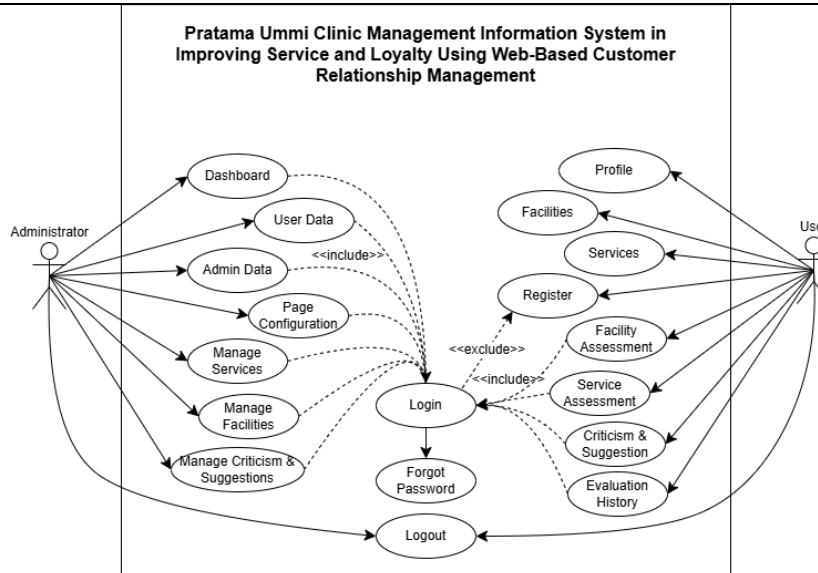


Figure 3. Use Case Diagram

RESULT

To implement an effective CRM strategy, several important steps need to be considered. First, an in-depth understanding of customers is crucial; companies should collect and analyze data to know customer preferences and behaviors. Secondly, personalization of communication is possible by leveraging such data to offer appropriate recommendations and services. Furthermore, process automation helps save time by automating routine tasks. CRM integration with other systems is also important to keep customer data consistent and real-time. In addition, improved customer service can be achieved by providing quick access to information and interaction history. Continuous data analysis is required to identify trends and predict behavior. Employees must be trained to utilize CRM effectively, and continuous monitoring and evaluation of the strategy will ensure its effectiveness. With these steps, companies can improve customer relationships and achieve greater success.

CRM involves a series of steps and processes designed to effectively manage customer relationships. Here are the general steps in how CRM works:

- Customer Identification:** The first step is to identify the customer by collecting basic information such as name, address, phone number, and email, as well as additional information such as product preferences, purchase history, and previous interactions with the company.
- Interaction Monitoring:** CRM involves monitoring all interactions with customers, whether by phone, email, social media, or other communication channels, so that companies can collect valuable data on customer behavior and preferences.
- Data Analysis:** The data obtained from customer interactions is then analyzed to gain deeper insights into their behavior, including buying patterns, product preferences, and needs.
- Customer Segmentation:** Based on data analysis, customers are grouped into different segments according to their characteristics and behaviors, which allows companies to personalize services and communications.
- Develop a Communication Strategy:** Based on the segmentation, companies can formulate communication strategies suitable for each segment, including customized marketing campaigns, special offers, and relevant content.
- Customer Service:** CRM also includes providing good and responsive customer service, including providing fast and effective assistance when customers experience problems or have questions.
- Measuring Performance:** It is important to continuously monitor and evaluate CRM performance to ensure the effectiveness of implemented strategies, including monitoring customer retention and satisfaction levels.
- Continuous Improvement:** Based on the results of performance measurement, companies can make continuous improvements and enhancements to CRM strategies to increase effectiveness and maintain customer satisfaction and connectivity with the company.

The following is a display of the application that has been developed, which aims to provide an overview of the existing display of the Umami Pratama Clinic Management Information System Using the Web-Based Customer Relationship Management (CRM) Method. There are two types of form displays, namely forms for patients and forms for admins. Thus, the implementation results can be seen in accordance with the program that has been made. An explanation of each display in the program will be described below.

Main Page Display

This view is the main view when you first open the web. It features basic clinic information, facility data, service data, contact info, and login info.

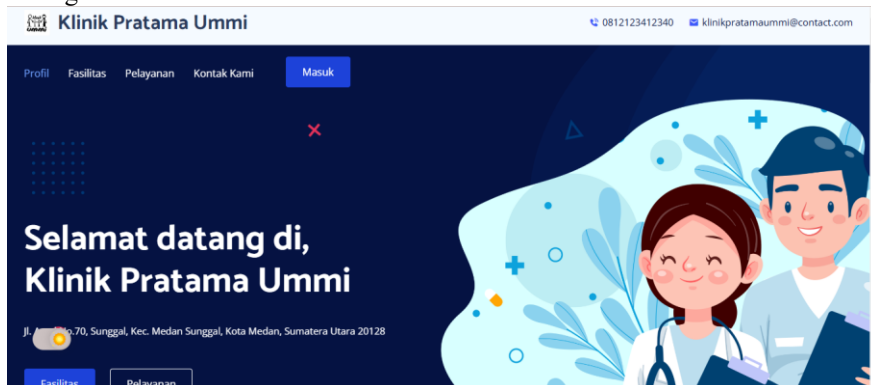


Figure 4. Main Page Display

Login Menu Display

The following is a view of the login menu as shown in the picture.

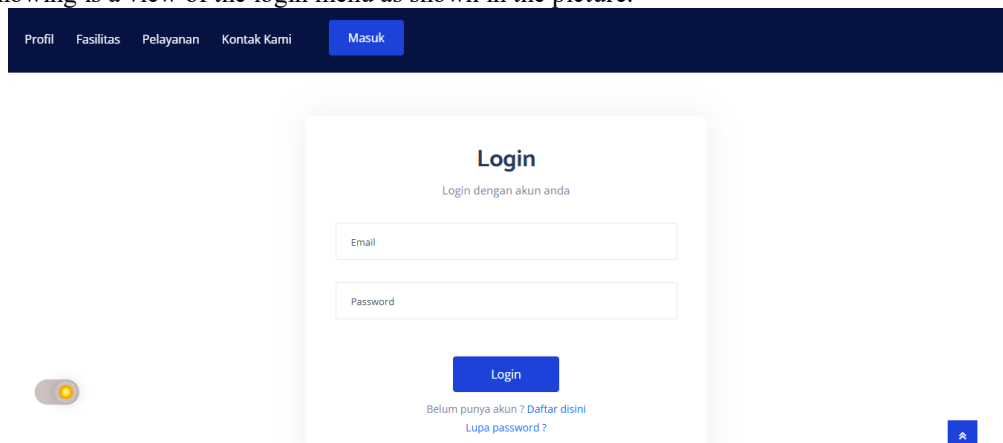


Figure 5. Login Menu Display

Admin Dashboard View

The following is a view of the admin dashboard which displays several menu forms such as facility and service assessment forms by users, registration forms, administrator data, user data, doctor lists, patient treatment history, basic clinic information forms, facility data forms, service data forms.

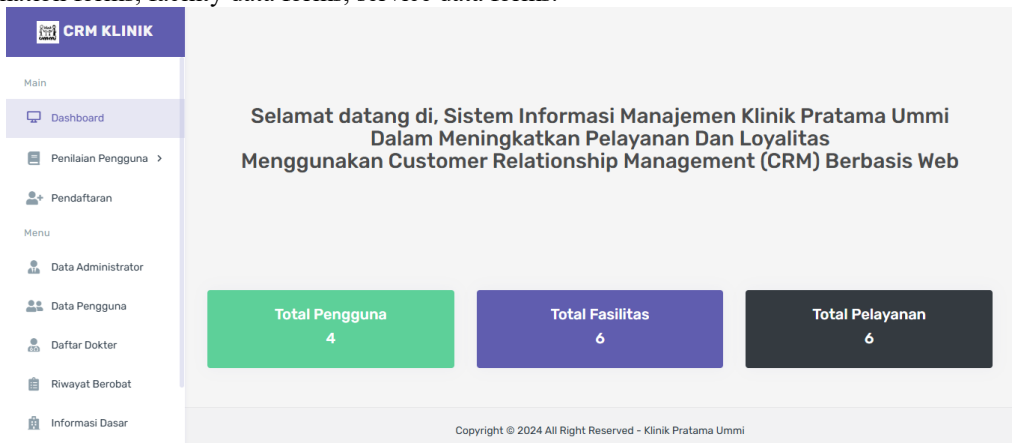


Figure 6. Admin Dashboard View

Assessment Form Display

In this assessment form, the facility assessment form, facility assessment graph, service assessment form, service assessment graph, and user criticism and suggestion display will be displayed.

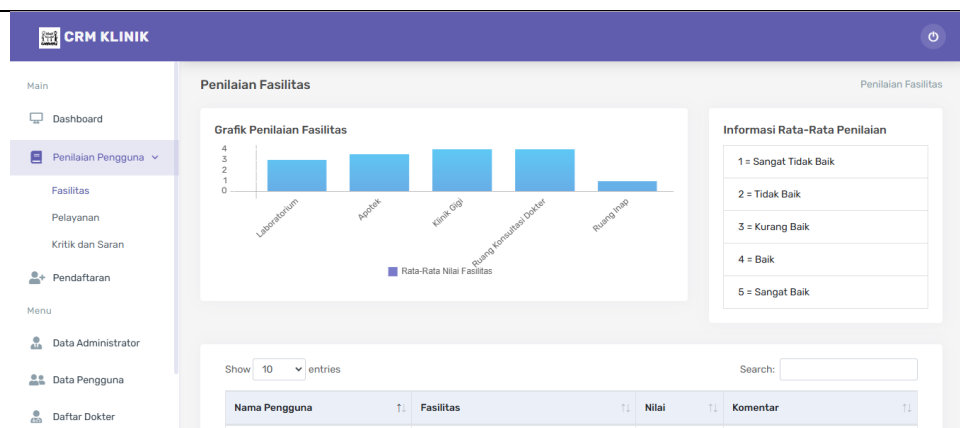


Figure 7. Facility Assessment Display

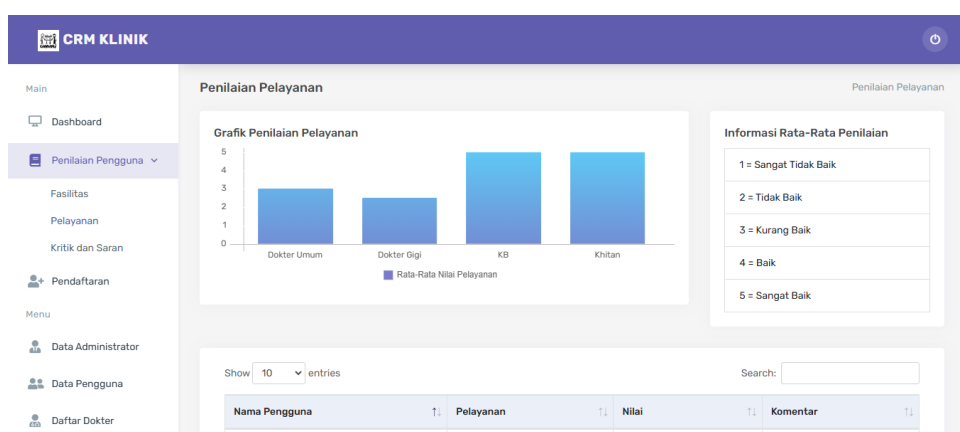


Figure 8. Service Assessment Display

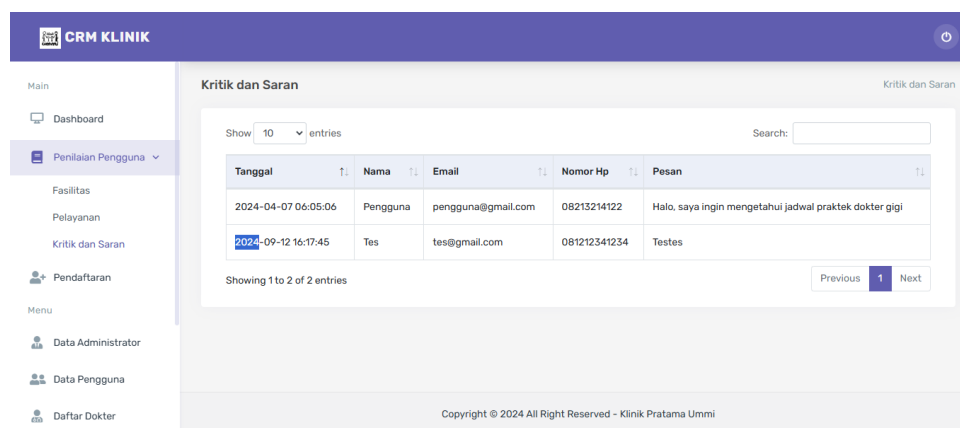


Figure 9. Criticism and Suggestion Display

User Main Menu Display

The following is a view of the user's main menu after logging in. On the main menu of this user has a slightly similar appearance to the appearance of the main page, but on this page the user can fill in the facility assessment form, service assessment form, criticisms and suggestions, and can edit the user profile.

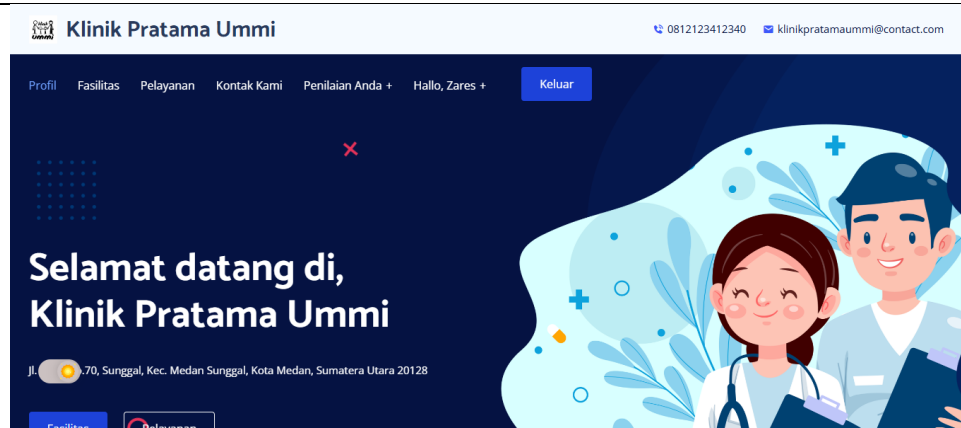


Figure 10. User Main Menu Display

DISCUSSION

This application was developed by applying the concept of Customer Relationship Management (CRM) through a computer-based system to improve service quality and strengthen customer loyalty to the clinic. By utilizing a computerized web-based system, data storage becomes more structured and precise. The system produces output in the form of service evaluation reports, facility evaluation reports, assessment charts on services and facilities, and input reports in the form of criticism and suggestions. The CRM-based clinic management information system is designed to function in accordance with the objectives, with recommendations to conduct training or socialization to users to facilitate its operation. In this system, customers will provide evaluations of clinic services and facilities, while the clinic will receive reports on the results of these assessments from customers.

CONCLUSION

From the results described earlier, it can be concluded that this system is a web designed according to the needs of Umami Pratama Clinic which is useful for managing clinic relationships with customers. The information generated by CRM is beneficial for the clinic and customers, because criticism, suggestions, needs and desires of customers can be well facilitated and become a motivation for the clinic to improve services for satisfaction. Based on the results of this study, there are several suggestions that can be given, including the following: In the currently built system still uses web-based programming, so the author hopes that in the next study it can be developed using android-based programming. terms of appearance, it is hoped that it can be made more attractive and more comfortable to use.

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