Analysis And Design Of A Survey Application To Measure Outpatient Loyalty Using The Customer Relationship Management Method

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ABSTRACT

Addressing patient complaints regarding the services provided indicates potential issues with service quality, possibly even non-compliance with procedures. To identify such issues, regular surveys must be conducted. Conducting surveys requires specialized human resources and significant costs, which can be burdensome for hospitals. Therefore, a software application was developed to conduct surveys and process the data, allowing results to be analyzed and used for policy-making. This software uses the Customer Relationship Management (CRM) method. The software was tested for 6 months at RSU Royal Prima. In the first month, many service quality issues were identified, and SOPs were not followed correctly. However, in the following months, these issues were addressed, and after 6 months of testing, the survey software proved to be beneficial with relatively low costs, as it did not require specialized human resources. In other words, the CRM survey software can enhance transparency, responsiveness, and service quality, as well as manage patient satisfaction levels without relying on third parties.

Keywords: CRM, Survey Software, Customer Relationship Management, CRM Application

INTRODUCTION

RSU Royal Prima is one of the general hospitals located in Medan. RSU Royal Prima frequently receives complaints from patients regarding the services provided. However, these complaints have only accumulated into a backlog of data since no analysis has ever been conducted on them, leading to a new problem—managing this backlog of complaint data. The handling of these complaints significantly impacts the trust and loyalty of RSU Royal Prima's patients. Therefore, a survey system is needed to analyze the impact of marketing communication, trust, and complaint handling on patient loyalty.

Healthcare services encompass efforts to prevent, treat, and care for diseases, performed by individuals or organizations to maintain and improve health as well as restore the

health of individuals, families, groups, or communities. Health workers are responsible for all activities aimed at improving public health, which is also greatly influenced by patients' trust in the healthcare services provided [1]. Trust is key to success in the use or purchase of products, as it relies on the belief that the company will meet expectations. The dimensions of trust include integrity (honesty and truthfulness), competence (knowledge and technical, interpersonal skills), consistency (alignment between words and actions), and loyalty (resulting from a commitment to rules and agreements) [2].

Patient complaints are emotional expressions that arise due to dissatisfaction with the product or service provided. Complaint handling must be done systematically to prevent the recurrence of errors and ensure effective resolution. Proper handling can turn dissatisfied customers into loyal ones. Indicators of effective complaint handling include empathy towards customers, quick responses, fairness in resolution, ease of filing complaints, and the ability to find solutions. Complaint handling has a significant impact on customer satisfaction and loyalty.

CRM (Customer Relationship Management) is a process aimed at establishing profitable relationships with customers, with the goal of creating value, satisfaction, and company profitability. CRM also considers competitive advantages and product quality to achieve optimal customer satisfaction [3]. According to Mohammad's research [4], the importance of implementing CRM in improving service quality is highlighted. CRM, a combination of business processes and technology, aims to comprehensively understand customers so that companies, including universities, can competitively differentiate products and services. Mohammad's research focuses on identifying, acquiring, converting, and retaining customers, with an emphasis on students and hospital patients as the subjects of the study. Another study conducted by Alkhair [5] highlights the factors supporting optimal healthcare services, including the awareness of healthcare workers, the responsibility of health officers, the availability of operational funds, and adequate facilities. The quality of these services affects the positive evaluation of the community, as evidenced by the satisfaction level of 82.55% among outpatients at RSUD Pratama Bolaang Mongondow Timur, categorized as very satisfied. The difference with previous research lies in the analysis method, which uses CSI and CRM.

The use of survey applications in hospital healthcare services plays an important role in collecting direct feedback from patients for efficient evaluation. With a survey application, hospitals can systematically identify areas that need improvement in healthcare services, refine service processes, and design appropriate interventions to enhance service quality. Moreover, the data from surveys helps hospitals make evidence-based decisions and improve overall patient satisfaction. Another positive impact is the hospital's improved reputation, as they demonstrate a commitment to service quality and transparency in receiving feedback from patients. Additionally, the survey application also allows for better relationship development between the hospital and patients by facilitating more open and responsive communication to patient needs.

A hospital may choose to hire a third party as a supervisor and manager of hospital service satisfaction levels when they face internal human resource limitations or lack specific expertise in customer satisfaction survey management. This third party could be a consulting firm or vendor experienced and capable of managing the survey process, analyzing data, and providing recommendations for improvement based on patient feedback. Not all hospitals have enough teams or personnel to efficiently carry out this task, so contracting a third party can be a solution to ensure professional management focused on improving patient satisfaction. In this study, the survey application is designed to provide an efficient and independent solution for hospitals in managing customer satisfaction levels without relying on third parties. The main goal of the survey application is to enable hospitals to collect feedback directly from patients, analyze data quickly and accurately, and respond to input and complaints more effectively. With this application, hospitals can improve transparency, responsiveness, and overall service quality, which in turn can strengthen relationships with patients and enhance their reputation in the eyes of the public.

LITERATURE REVIEW

CRM (Customer Relationship Management) is currently one of the strategies used by companies to better understand and comprehend their customers, allowing them to provide the best services and build better long-term relationships. CRM is an approach that views customers as the core of the business, and the success of a company depends on how effectively they manage their relationships [3]. The similarity in this research

lies in the shared theme and use of the CRM concept, focusing on the customer. The differences are in the research objectives, the research objects, and the focus of the research, which analyzes CRM activities. The research findings also show differences between the two studies [6].

The main instrument in this research is a closed questionnaire distributed to patients at Royal Prima Hospital. The data measurement technique uses the Likert scale because this measurement scale is used to systematically and specifically measure a person's attitude towards a predefined attitude object [7]. Therefore, this technique is considered the most appropriate for measuring the three variables in this research, namely Social CRM, patient satisfaction, and patient loyalty at Royal Prima Hospital.

Secondary data refers to data obtained from secondary sources. Secondary data is gathered from literature studies by reading various journals and books as references. A literature study is conducted to obtain information from previous research, gaining a broader orientation related to the issues raised and avoiding unwanted research duplication [8].

The research titled "Analysis and Design of a Survey Application Using the CRM Method to Measure Outpatient Loyalty at RSU Royal Prima" uses a positivist paradigm, which is interpretive and constructive, viewing social reality as something holistic, complex, dynamic, meaningful, and interactive. This research is quantitative, presenting issues with results that can be generalized and prioritizing the breadth of data to represent the entire population. The research is explanatory, using a correlational and comparative research strategy to observe the relationship or influence between variables and to compare differences between variables [9]. The purpose of this research is to explain the impact of social CRM on the satisfaction and loyalty of Royal Prima Hospital's patients.

This research uses a survey method to collect data. In the survey method, questionnaires are used as data collection instruments distributed to a sample representing a specific population to examine the beliefs, attitudes, values, or behaviors of respondents [10]. The survey method is used to obtain natural data from a particular place with treatment, but it differs from experiments, as data collection is done by distributing questionnaires, conducting structured interviews, and so on [11]. In this research, the survey is

conducted online, using an application designed for the survey and distributed to outpatients at Royal Prima Hospital.

The population in this research consists of patients at Royal Prima Hospital. The research focuses on complaint handling, trust, and marketing at this hospital, so this population was chosen to align with the research objectives [12]. The sample size was determined using the formula from Hair, Black, Babin, & Anderson, which recommends a minimum sample size of 100 for multivariate research, with a rule of five times the number of indicators analyzed [13]. With 36 indicators, the minimum sample size is 180, rounded to 200 samples. The total respondents in this research consist of 50 pretest respondents to test data validity and 200 main respondents.

In the current digital era, data and information management is crucial, especially in the healthcare sector [14]. One critical aspect is measuring outpatient loyalty, which can help improve service quality and the relationship between healthcare providers and patients [15]. This research aims to develop a web-based survey application that can be used to measure outpatient loyalty using the CRM method.

To support the development of this application, MySQL was chosen as the database management system. MySQL is widely used in creating dynamic web-based applications. As a Relational Database Management System (RDBMS) [16], MySQL supports the PHP programming language and provides simple queries or Structured Query Language (SQL) and uses the same escape characters as PHP [17].

There are three variables in this research: the independent variable, which is Social CRM; the dependent variable, which is Customer Loyalty; and the intervening variable, which is Customer Satisfaction [18]. The measurement scale used to gauge responses is the Likert scale, as it is used to measure respondents' attitudes towards a predefined object of attitude in a specific and systematic way [19].

The recommended number of response points on the Likert scale is seven, as it has good validity, reliability, discrimination power, and stability, and is more preferred by respondents [20]. In this research, the "neutral" response option was removed because this category has a double meaning, respondents tend to choose this option, and it may result in the loss of a significant amount of research data [21].

METHODS

Customer Relationship Management (CRM) is currently one of the strategies used by companies to better know and understand their customers, so that companies can provide the best service and build better long-term relationships with their customers. Customer Relationship Management (CRM) is an approach who views that customers are the core of their business and the success of a company depends on how they manage their relationships effectively. What this research has in common is that they both raise a theme and use the concept of customer relationship management (CRM) which focuses on customers. Differences in research objectives and research objects, and research focus analyzing customer relationship management (CRM) activities. The research results also show differences in these two studies.

This research uses a survey method to collect data. In the survey method, a questionnaire is used as a data collection instrument which is distributed to a number of samples representing a certain population with the aim of examining respondents' beliefs, attitudes, values or behavior. The survey method is used to obtain natural data from certain places with treatment, but is different from experiments, namely data collection is carried out such as by distributing questionnaires, structured interviews and so on. In this research, the survey was conducted online, which was used by designing an application for the survey and giving it to Royal Prima Hospital patients who were receiving outpatient treatment at Royal Prima Hospital.

The population in this study were patients at Royal Prima Hospital. The focus of the research was complaint handling, trust, and marketing in this hospital, so this population was selected to suit the research objectives. The sample size was determined using the formula from Hair, Black, Babin, & Anderson, which recommends a minimum sample size of 100 for multivariate research, with a rule of five times the number of indicators analyzed. With 36 indicators, the minimum sample size is 180, rounded up to 200 samples. The total respondents for this study consisted of 50 pretest respondents to test the validity of the data and 200 main respondents.

There are three variables in this research which are divided into independent variables, namely Social CRM, the dependent variable, namely Customer Loyalty, and the intervening variable, namely Customer Satisfaction. The measurement scale used to measure responses is the Likert Scale, this is because this scale is used to measure

respondents' attitudes about an attitude object that has been determined specifically and systematically.

The number of response points recommended in the Likert scale is seven because it has fairly good criteria of validity, reliability, discriminatory power and stability and is preferred by respondents. In this study, doubtful answer options were eliminated on the grounds that this category had a double meaning, respondents would tend to choose that answer, and this category could also cause the loss of a lot of research data.

The methodology used by the author is UML (Unified Modeling Language), which is divided into Use Case Diagrams, Class Diagrams, and Activity Diagrams:
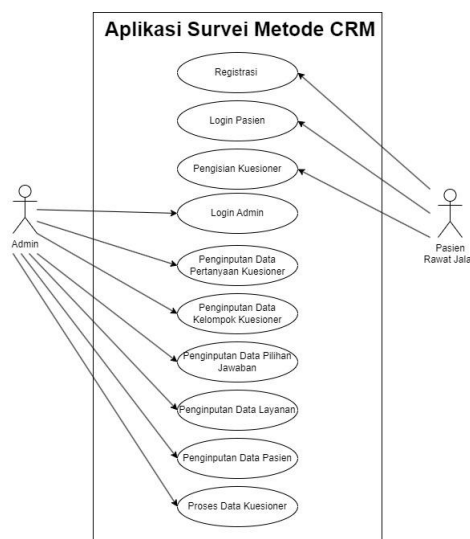
Figure 1 Use Case Diagram

In a Use Case Diagram, the actors involved include the Admin and the Outpatient Patient. The Admin actor is responsible for several key activities within the system. These activities include logging in as an admin, entering data for the questionnaire questions, inputting data for questionnaire groups, entering answer choices, inputting service data, and entering patient data. The Admin is also responsible for processing questionnaire data. On the other hand, the Outpatient Patient actor engages with the system through different actions. These actions include registering within the system, logging in as a patient, and completing the questionnaire. Each of these actions represents the interactions between the actors and the system, outlining the responsibilities and tasks managed by each role.
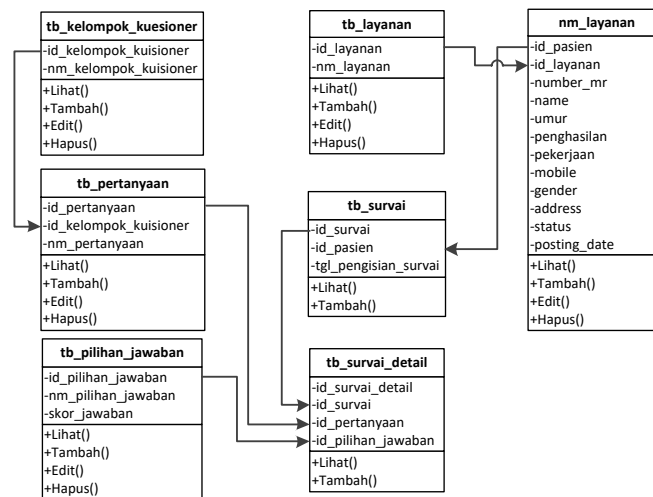
Figure 2 Class Diagram

In a Class Diagram, several key classes are represented, each playing a specific role within the system. The tb_kelompok_kuesioner class is responsible for grouping related questionnaires, containing attributes like id_kelompok_kuesioner and nm_kelompok_kuesioner. The tb_layanan class represents the services provided, with attributes such as id_layanan and nm_layanan (the name of the service). The tb_pertanyaan class manages the questions within a questionnaire, including attributes like id_pertanyaan and teks_pertanyaan (the text of the question). The tb_pilihan_jawaban class handles the answer choices linked to each question, with attributes such as id_pilihan_jawaban, id_pertanyaan (connecting to tb_pertanyaan), and nm_pilihan_jawaban. The tb_survai class represents the survey itself, containing information like id_survai, id_pasien (linking to the patient), and tgl_pengisian_survai (the survey date). Finally, the tb_survai_detail class captures the detailed responses to the survey, linking back to the tb_survai, tb_pertanyaan, and tb_pilihan_jawaban classes through attributes such as id_survai_detail, id_survai, id_pertanyaan, and id_pilihan_jawaban. These classes are interconnected, forming a structured database for managing questionnaires, services, and survey responses.

RESULTS

The designed application includes various features and functions, among which are:
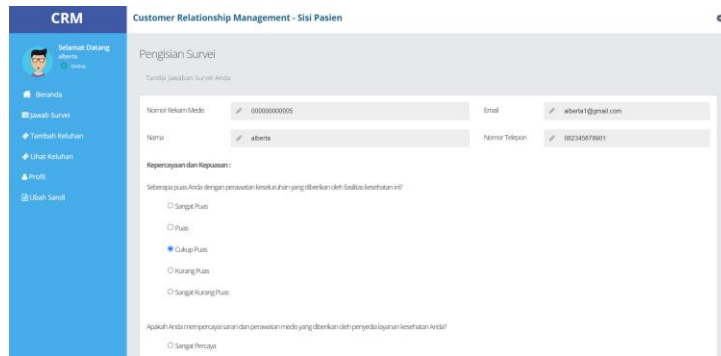
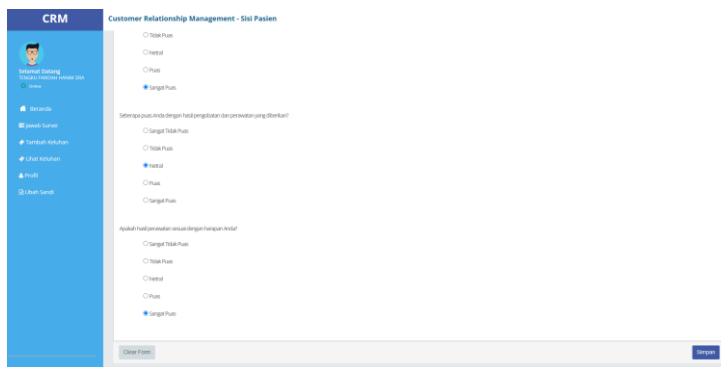1. Survey Response Page

Figure 5 Survey Response Page

Figure 6 Save Survey Response

This interface is designed to allow patients to easily and comprehensively answer the satisfaction survey. The survey questions are divided into eight sections covering satisfaction, service quality, commitment, communication, value, interaction with staff, experience using facilities, and satisfaction with treatment outcomes.
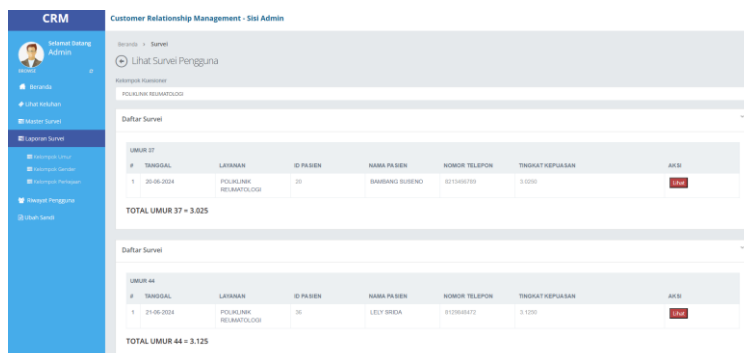
2. Survey Report Page by Age Group

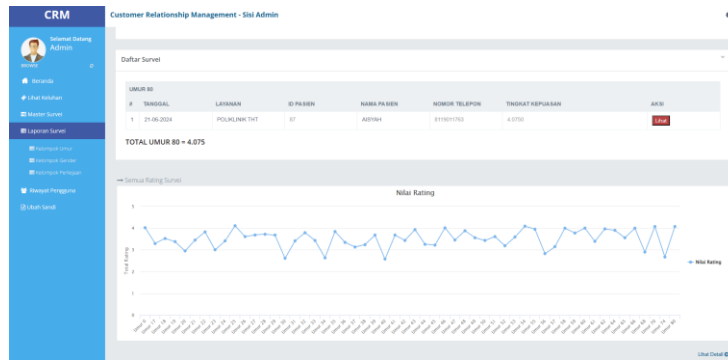**Figure 7 Survey Report by Age Group**

Figure 8 Survey Graph Report by Age Group

The Survey Report Page displays the results of the survey based on age group.
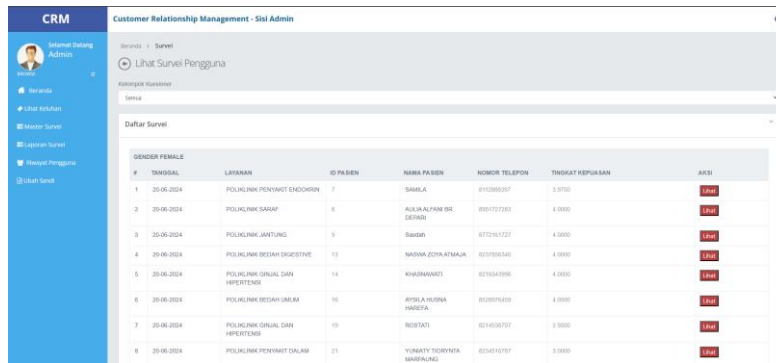
3. Survey Report Page by Gender

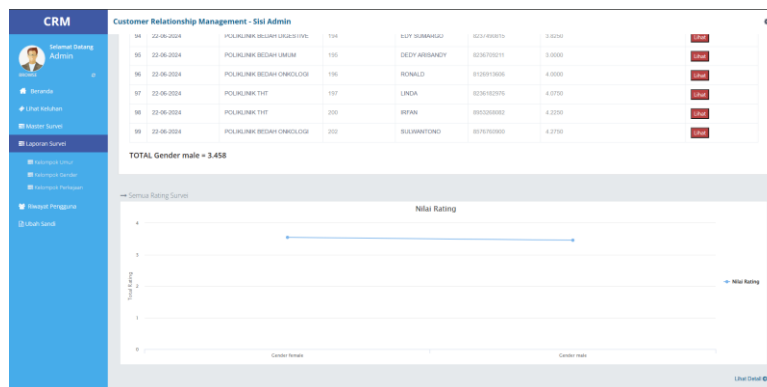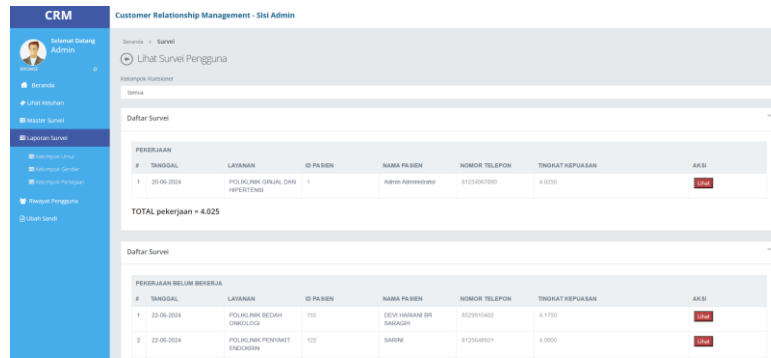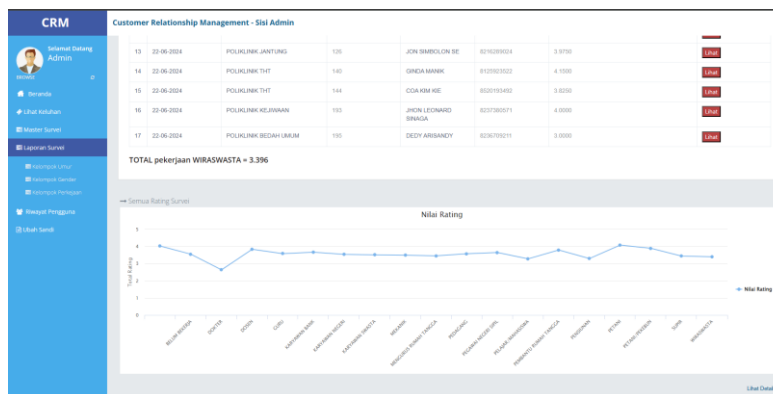**Figure 9 Survey Report by Gender Group**

Figure 10 Survey Graph Report by Gender Group

The Survey Report Page displays the results of the survey based on gender.

4. Survey Report Page by Occupation

Figure 11 Survey Report by Occupation Group

Figure 12 Survey Graph Report by Occupation Group

The Survey Report Page displays the results of the survey based on occupation.

DICUSSION

The discussion covers the strengths and weaknesses of the system. Based on the design, several strengths that address the existing problems are as follows:

1. The system is designed to collect and analyze data on outpatient loyalty at Royal Prima Hospital, providing management with deeper insights into patient loyalty levels.

2. The system aids in the documentation and analysis of patient complaints to reduce repeated errors. The structured complaint handling feature ensures that every complaint is resolved effectively, enhancing patient satisfaction and trust in the services.

3. By implementing the CRM method, this application allows for better management of patient relationships. This includes data analysis, understanding patient needs, and personalizing services, enabling appropriate actions based on data analysis.

However, there are some weaknesses in the system designed in this study:

1. Limited access through a web browser application may restrict usage for those who prefer mobile applications.
2. Data analysis is limited to Royal Prima Hospital, affecting the generalization of results and their applicability to other hospitals.
3. The data only includes outpatients and does not cover inpatient data.
4. The survey focuses more on BPJS patients, limiting the overall demographic representation of patients.
5. The analysis factors are limited to marketing, trust, and handling, while other factors such as physical facilities and costs are also important.
6. CRM is the chosen method for analysis, but other methods like Six Sigma or TQM might be more suitable for certain contexts.

CONCLUSION

The conclusions of this study are as follows:

1. The design of the Survey Application using the CRM method can help determine the loyalty level of outpatients at Royal Prima.
2. The design of the Survey Application using the CRM method is expected to prevent repeated mistakes and ensure that complaints are resolved effectively and thoroughly.
3. The design of this Survey Application implements the CRM method in the survey application to analyze and understand the loyalty of outpatients at Royal Prima.

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