IMPROVEMENT OF SERVICE QUALITY ON CUSTOMER SATISFACTION USING CUSTOMER RELATIONSHIP MANAGEMENT APPROACH (CRM) IN PT. MARGA NUSANTARA PERSADA

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ABSTRAC

PT. Marga Nusantara Persada is a national consulting company that provides professional services in the fields of civil planning, environmental management, survey services, and inspection services. There are two service groups at PT. Marga Nusantara Persada is a port engineering design service and port development services . PT. Marga Nusantara Persada currently receives complaints in the form of emails sent by consumers of PT. Marga Nusantara Persada, due to not having a consumer satisfaction survey PT. Marga Nusantara Persada finds it difficult to recommend suggestions for improving service quality that are in line with the expectations and needs of consumers and reduce complaints addressed to the company.From these problems raises the idea of implementing a *Customer Relationship Managament* information system , which can help the complaints team of PT. Marga Nusantara Persada in recommending suggestions for improving service quality at PT. Marga Nusantara Persada. Service quality assessment is calculated using the *Fuzzy Service Quality* (*Servqual*) method . After going through the testing phase, this information system can overcome the problems that occur. PT. Marga Nusantara Persada Bandung can find service quality indicators that have not satisfied consumers and provide recommendations for service improvements at PT. Marga Nusantara Persada by using the method of *Fuzzy Service Quality* (*Servqual*).

Keywords: *Customer Relationship Management, Service Quality,* Service Quality, Customer Satisfaction

1. PRELIMINARY

PT. Marga Nusantara Persada is p ompany national consultants who provide professional services in the field of civil planning, environmental planning, surveying services, and technical inspection services. PT. Marga Nusantara Persada is a company engaged in the field of transportation consulting, especially ports and maritime. This company works with private companies and government agencies. There are two service groups at PT. Marga Nusanatara Persada is port engineering design services and port development services.

Based on interviews conducted with Mr. Fauzi Hananto, as part of the administration at PT. Marga Nusantara Persada said that consumers can submit criticism and suggestions for services that have been received through e-mail so that they become a performance benchmark in the future to be better in providing services to consumers. In 2017 PT. Marga Nusantara Persada formed a complaints team, the team is tasked with managing criticism and suggestions from consumers and conducting a consumer satisfaction survey. Every month a meeting is held to analyze complaints obtained by the company, then the results of the meeting will be made as a report and the complaints team sends a letter to the parts relating to complaints submitted by the consumer, then followed up by each section. Based on the results of data summary kel uhan PT Marga Nusantara Persada, t e rdapat complaints which was referred to the company in 2016, namely 19.23% of consumers complained about designer services, whereas in the complaint data recapitulation in 2015 complaints related to the service of designer consumers only complained of 5.88%. Can be seen increasing complaints given by consumers to the company. But the complaints team of PT. Marga Nusantara Persada has difficulty in improving service quality and recommending

suggestions for improving service quality because the company does not have a customer survey . So that they cannot know what service quality indicators have not satisfied consumers with the services that have been provided and recommend suggestions for improving service quality. In this case, the poor quality of services provided can cause a decrease in the level of satisfaction of consumers of PT. Nusantar a Persada clan towards the company,

As a result of the many complaints submitted to PT. Marga Nusantara Persada has an impact on consumer dissatisfaction. The objective to be achieved in this study is to help the PT. Marga Nusantara Persada in recommending suggestions for improving the quality of service of the company so that it is in line with the expectations and needs of consumers and reduces complaints to the company.

1. CONTENT

2.1 Service Quality

Service quality is defined as the delivery of services that will exceed the level of customer interest. The types of quality used to assess service quality are as follows [6]:

1. Quality of techniques *(outcomes)* , namely the quality of results
   service delivery service itself.
2. Quality of service (process), namely the quality of the way
   delivery of these services.

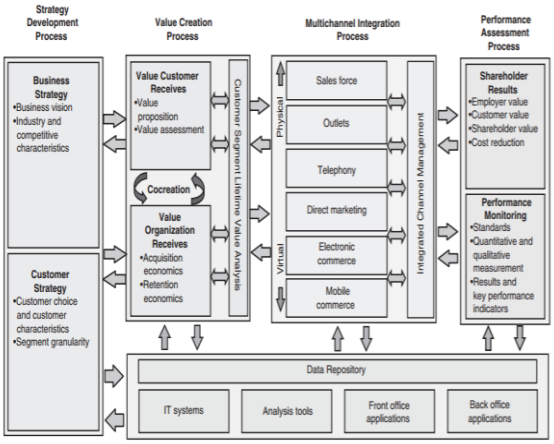
Because invisible services and the quality of service techniques cannot always be evaluated accurately, customers try to assess service quality based on what they feel, namely attributes that represent the quality of the process and the quality of service [6].

2.2 Customer Saticfaction

Customer satisfaction is defined as the customer's response to a discrepancy between the level of prior importance and the actual performance he feels after use. One factor that determines customer satisfaction is the customer's perception of service quality that focuses on five dimensions of service. Customer satisfaction, in addition to being influenced by the perception of service quality, is also determined by the quality of the product, price, and personal factors and the nature of the momentary situation. Customer perception about the quality of services does not require customers to use the service first to provide an assessment [6].

2.3 Customer Relationship Management

Buttle emphasized that "CRM is a business strategy that uses information technology to produce competent, trustworthy and integrated companies with customers based on the customer side so that all processes and interactions with customers help maintain and improve beneficial relationship" [1] . The method used is the Strategic S Framework for CRM method which is a framework that analyzes strategy formulation, value creation, information management, multi-channel integration, and performance research and consists of strategy development process, value creation process, multi-channel integration process and information management process in its stages. The concept of the *strategic framework* can be seen in Figure 1below.



picture 1. *Strategic Framework* CRM

From the framework of *the* CRM *strategic framework there are* several phases, including [3]:

1. Strategy Develoment Process

In this process requires a dual focus on the organization of business strategies and customer strategies. How well the two relate to each other fundamentally influences the success of CRM strategies. The strategy development section is divided into two elements: business strategy and customer strategy. First, business strategies must be considered first to determine how customer strategies can be developed and developed at all times. Business strategy can be started by reviewing or linking the vision of the company. Furthermore, a review of industrial competition is carried out. In short, the strategy development process involves a detailed assessment of business strategies and the development of appropriate customer strategies.

2. Value Creation Process

The value creation process takes the output from the development strategy process and turning it into

a program where both produce and provide value. This area is divided into three key elements, namely (1) determining the value of the company that can be accepted by the customer; (2) determine what value the company can receive from customers; and (3) by successfully managing this value exchange, which involves the process of *co-creation* or joint production, maximizing the *lifetime value* desired by the customer segment .

3. Multichannel Integration Process

Multi channel integration can be said to be one of the most important processes in CRM because at this stage the output of business strategies and the value creation process are translated into activities that can be added value to the company by customers. Multi channel integration focuses on making decisions about what channel combinations are the most appropriate to use.

There are several channel options that can be used, where the choice of channel options is divided into six broad categories based on physical contact or virtually. The first is salespeople, such as field managers, and servants. The second is an otlet, such as branch offices, shops, depots, and kiosks. Third telephony, such as traditional telephone, facsimile, telex and contact *call center*. The fourth is marketing dirrect, such as dirrect mail, radio, traditional television (but not e commerce). Fifth, E-commerce, such as e-mail, internet, and interactive digital television. The sixth is m-commerce, such as mobile phones, short messages, wireless authentication protocols, and 3G mobile services.

4. Performance Assessment Process

The performance assessment process includes the important task of ensuring the organization's strategy leads to the requirements of CRM to be able to provide appropriate standards and as a basis for future improvements. This process can be seen based on two main components, namely shareholder results and performance monitoring. Shareholder results are the result of implementing CRM technology so that it is beneficial for companies to reduce operational costs and work efficiency.Performance monitoring is to ensure that CRM activities are planned and practiced effectively and reciprocally still exists to maximize performance improvement and as learning for the organization.

5. Information Management Process

The process of managing information relates to the collection, inspection, and use of data along with information from all points of customer contact to produce knowledge about customers and the right marketing response. The main material for managing this information is the data repository, which provides storage of data about customers; IT systems, which include computer hardware, software, and middleware owned by the organization; Tool analysis; and front office and back office applications, which support many activities that involve direct relationships with customers and managing internal operations, administration and supplier relationships.

2.4 Metode *Service Quality*

Servqual is an *instrument* method to measure the quality of services developed by Parasuraman, Zeithaml and Berry in their series of researches on service sectors, this model is also known as *Gap* . This model is closely related to the satisfaction model [4].

In *Servqual* models , service quality is defined as a global assessment or attitude regarding the superiority of a service (Parasuraman, et al, 1985). Definition of the three main conceptual bases, namely:

1. Service quality is more difficult for consumers to evaluate than the quality of goods.
2. Perception of service quality is the result of a comparison between customer expectations and actual service performance.
3. Quality evaluation is not only done on the results of services, but also includes an evaluation of the service delivery process.

2.5 Questionnaire

According to Larry Cristensen (2004) Questionnaire is an instrument for data collection, where participants or respondents fill in questions or statements given by researchers. Researchers can use questionnaires to obtain data related to the thoughts, feelings, attitudes, beliefs, values, perceptions, personality and behavior of respondents. In other words, researchers can measure various characteristics using questionnaires [5].

2.6 licert skale

Likert scale is used to measure attitudes, opinions, and perceptions of a person or group of people about social phenomena. In research, this social phenomenon has been specifically determined by the researcher, hereinafter referred to as the research variable.

With a Likert scale, the variables to be measured are translated into variable indicators. Then the indicator is used as a starting point to compile instrument items that can make statements or

questions. The answer to each instrument item that uses a Likert scale has a gradation from very positive to very negative. Therefore it must be calculated correctly.
For the purposes of quantitative analysis, answers can be given a score, for example:

a. Agree / past / very positive given 5
b. Agree / often / positively given a score of 4
c. Doubts / sometimes / neutral are given a score 3
d. Tidaksetuju / almost / ti dakpernah / negative given a score of 2
e. Very not intended / never / given a score 1

Research instruments that use a Likert scale can be made in the form of a cluster or multiple choice [5].

2.7 CRM Framework Analis

To set the CRM feature appropriately, a *framework is* needed as a reference. *The framework* is a framework for presenting the phase and maturity of the company's relationship with its customers. CRM *framework* used in the system to be built is using the *CRM Strategic Framework* which can be seen in Figure 2.

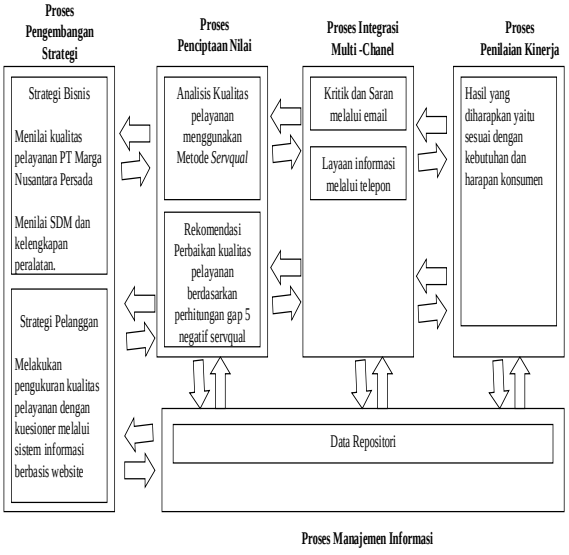


Figure 2. Application *of the* CRM *Strategic Framework* at PT. Marga Nusantara Persada

Application *of the* CRM *Strategic Framework* at PT. Marga Nusantara Persada consists of 5 main processes that are interrelated, the linkages between processes are shown by two-way arrows.

2.8.1 Strategy Sharing Process

In this process an analysis of strategy development is carried out, in this process there are two main focuses, namely business strategy and customer strategy. The linkages between these two strategies basically affect the success of the CRM strategy that will be applied at PT. Marga Nusantara Persada. The result of this process is recommending services that are not yet in line with the expectations and needs of consumers and a service quality assessment strategy that can be used by PT.Marga Nusantara Persada can then be implemented in the value formation process.

1.Bussines Strategi

In planning and implementing the business strategy of PT. Marga Nusantara Persada has human resources who are competent in their fields. The following are human resources owned by PT. Marga Nusantara Persada in providing services can be seen in table 1.

Tabel 1. Analisis Strategi Bisnis

Current business strategy	Analysis	Proposed business strategy
PT.Marga Nusantara Persada has the motivation ofestablishmentwhich originated from the desire of several Bachelor of Engineering to become Entrepreneurs are good and successful. torealize these ideals, namelyby working hard.	In terms of improving service quality, PT. Marga Nusantara Persada is a monthly meeting to analyze complaints that enter via email.	The strategy undertaken to improve service quality is to assess the quality of services available at PT. Marga Nusantara Persada.
PT. Marga Nusantara Persada isbased on the determination and spirit of professionalism to meet the challenges of Engineering consultancy services in the present and the future. Where	For the implementation of planned, good, correct, and measurable services PT.Marga Nusantara Persada already has human	Assessing from the customer side about human resources and the completeness of equipment available at PT. Marga Nusantara

consultancy services are very much needed for participation in the context of National Development.	resources and equipment that can support services.	Persada

2.**Customer Strategy**

The customer strategy analysis that is currently running at PT. Marga Nusantara Pers can be seen in table 2 .

Table 2. Analysis of Customer Strategies

Current Customer Strategy	Analysis	The proposed strategy
PT Marga Nusantara Persada has e-mail services for consumers in making complaints regarding services that have been received.Consumers can submit their complaints via email.	According to the data recapitulation of complaints from PT Marga Nusantara Persada in January-December 2016, consumers were more likely to complain about services.	Measuring service quality by using a questionnaire through a website-based information system for consumers.

Based on this analysis, PT. Marga Nusantara Persada needs a new strategy to assess service quality. The strategy is to conduct a service quality survey using a questionnaire.

The strategy development process relates to the Information Management process. The survey to measure service quality will be built with a website-based information system. Where answers to survey results will be stored in the *database* and can be used as an assessment of service quality surveys .

2.8.2 Proses Pembentukan Nilai

Furthermore, in the process of value formation, the implementation of the strategy development process is carried out. Based on the results of the business strategy of PT. Marga Nusantara Persada requires an assessment of the quality of services and things that need to be assessed are human resources and the completeness of supporting equipment from the customer side. Whereas based on the results of the customer strategy of PT. Marga Nusantara Persada needs to add an assessment indicator of service quality. There are two stages of value formation in the CRM system that will be built as follows:

1. Service Quality Analysis

Service quality analysis is an analysis conducted to assess the quality of services available at PT. Marga Nusantara Persada. In this study, service quality analysis was carried out through the following stages:

Identification of Service Quality Attributes of Port Engineering Design Services and Characteristics of Respondents

Identification of service quality attributes is done by identifying elements of port technical design services at PT. Marga Nusantara Persada with five service quality dimensions from the *Service Quality* method . Before it can be identified first, the definition of servqual dimension is made to the elements of service at PT. Marga Nusantara Persada.

Furthermore, it can be defined every dimension of quality of service in PT. Marga Nusantara Persada is as follows:

1) ***Tangibles*** **(physicalevidence),** *tangibles* dimensions in service elements at PT. Marga Nusantara Persada includes completeness of modern facilities and equipment supporting facilities. Supporting facilities in question include availability of lockers, bathrooms, seating and so on. While the equipment in question is studio equipment such as Laptops, *Personal Computers* (PCs) and field equipment such as *Theodolite, Current meter, Waterpass* , and others.

2) ***Reliability*** **(reliability),** *reliability* dimension s in the service element at PT. Marga Nusantara Persada encompasses the availability of services received by customers and the suitability of service time. The suitability of the services in question is to provide services without errors in accordance with development planning. While the suitability of service time in question is the timeliness that has been determined in completing a project from a consumer.

3) ***Responsiveness ,*** **the** dimensions of *responsiveness* in the elements of service at PT. Marga Nusantara Persada includes immediate or fast service, and the willingness of officers to help customers. The immediate or fast service is intended as the responsiveness of the officer if the customer has input or has a

plan change in the request during the process of the project.

4) ***Assurance ,*** *assurance* dimension in service elements at PT. Marga Nusantara Persada includes courteous and friendly service, the ability to grow trust in consumers, the ability and knowledge of officers in serving. The polite and friendly service that is meant is that officers always give smiles to consumers and use polite words when interacting with consumers. The ability to foster a sense of trust in consumers is that the officer always assures consumers that the services received are safe and in accordance with the standards. While the capabilities and knowledge of officers in serving are meant as the ability of officers to work on every consumer request.

5) ***Emphaty*** **(Empathy),** an *empathic* dimension t o the elements of service at PT. Marga Nusantara Persada includes personal attention to consumers. Full personal attention is meant as communication between officers and consumers so that consumers feel cared for by officers.

Questionnaire data processing contains a calculation of *gap* analysis of the *Service Quality* method . The gap analysis of the *Service Quality* method can be seen in table 3.

Table 3. Gap analysis of the Service Quality method

Gap 1	That is the gap between management's perception of consumer expectations and consumer expectations.
Gap 2	That is the gap that occurs in service quality specifications.
Gap 3	That is the gap that occurs in service delivery.Negative Gap 3 occurs because service delivery cannot reach the target and there is no target measurement.
Gap 4	That is the gap between service delivery and external communication.
Gap 5	That is the gap between consumer expectations and consumer perceptions. This gap means that perceived services are not in accordance with the expected services.

In this questionnaire data processing phase, a *gap* calculation of 5 from the *Service Quality* method will be carried out . Gap 5 was chosen because it can measure the gap between customer expectations regarding service services to customer realities perceived by customers (customers in this study are consumers). Calculation of the 5 *gap was* collected from the answers to questionnaires of perceptions and expectations of each of 30 respondents (port engineering design services and port construction). The following are the steps taken in processing the questionnaire data on port technical design services and port development services:

Questionnaire data processing was carried out to determine how much the average value of expectations and perceptions of consumers regarding port engineering design services to the reality and service expectations perceived by consumers (*gap*5). The following are examples of calculations performed for the attributes of K1 service elements:

1. Calculate the weighting value

To find the weighting value on service expectations (NPE) using formula (2.1), it is obtained in the following calculation:

NPE = (∑ TB x 1) + (∑KB x 2) + (∑ C ∑ x 3) + (∑ B x 4) + (∑ SB x 5)

= (0 x 1) + (2 x 2) + (13 x 3) + (13 x 4) + (2 x 5)

= 105

While to find the weighting value on service perception (NPP) using formula (2.1), it is obtained in the following calculation :

NPP = (∑ Tb x 1) + (∑KB x 2) + (∑ C x x 3) + (∑ B x 4) + (∑ SB x 5)

= (0 x 1) + (3 x 2) + (13 x 3) + (12 x 4) + (2 x 5)

= 1 03

Calculate the average Expectations and Perceptions

To find average expectations ( ) and average perception (P) using the formula (2.2), then obtained in the calculation as follows:

Average expectations (E)

E = = 3.5 0

The calculation results show that the average consumer expectation of the K1 attribute in port engineering design services is as large as

Perception Average (P)

P = = 3.43

The calculation results show that the average consumer perception (P) of the K1 attribute in port engineering design services is as large as

Calculate the gap value of 5 (Q)

To calculate the gap value 5 (Q) using the formula (2.3), it is obtained in the following calculation:

Q = P - E

= 3.50 - 3.43

= -0.07

The calculation results show that the gap value of 5 (Q) on the attributes of K1 in port engineering design services is -0.07. The greater the

negative gap value 5 (Q) resulting from this Servqual calculation, the less good the quality of the service. Conversely, if the value of gap 5 is close to zero or positive the better the quality of the service
.

2. Recommended Repair Advice

Service quality improvement recommendations will be prepared based on the results of the preparation of the preliminary questionnaire. The following recommendations will be made to improve service quality for each statement contained in port technical design services and port development services.

The preparation of recommendations for improving the quality of port engineering design services that have been completed can be seen in Table 4.

Table 4. Recommendations for Improving the Quality of Port Construction Services

Var	Repair recommendations
K1	Need to regenerate equipment and more modern facilities
K2	Service support facilities need to be equipped to support services
K3	Evaluation of service procedures needs to be done so that there will be no errors in providing services to consumers
K4	It is necessary to evaluate the system to access more complete and easy information
K5	Need to be added and equipped with the availability of complete and informative information
K6	Training is needed for employees to be able to respond to customer needs quickly and accurately.
K7	Evaluation is needed for employees to remain disciplined in providing services to consumers
K8	Reprimand must be given to employees to complete each job given by the company
K9	Employee performance evaluation needs to be done to the maximum in providing services to consumers
K10	Speed, timeliness of doing a job must be evaluated and corrected
K11	Need to be evaluated and corrected in this service
K12	Employees must provide maximum performance to all consumers

In the recommendation recommendations for improving the quality of service on services and engineering design services for port development ports, priority is given to service elements that have the largest negative 5 gap value. The suggestion contains that every element of service that has the biggest negative gap value 5 must be evaluated, corrected, and improved to suit the expectations and needs of consumers. The following is an example of giving recommendations for improving service quality on port technical design services from table 4 . It is known that the biggest negative gap value in port engineering design services is -0.60 at K5.
The K5 attribute is about the question "Availability of complete and informative information ."
So the suggestion to improve the quality of service on the services of port 4 technical design of the port is as follows: Service Elements on 'Need to be added and equipped with the availability of complete and informative information.'

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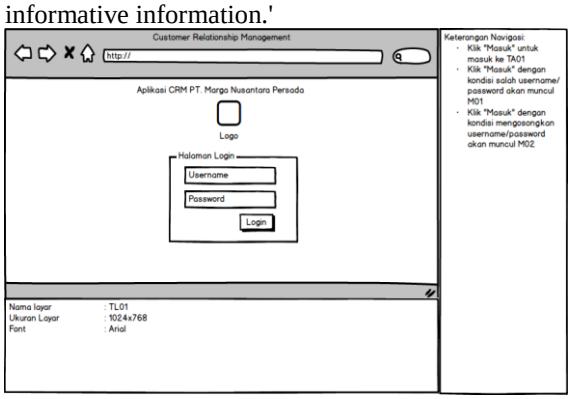


Figure 3. Login Interface

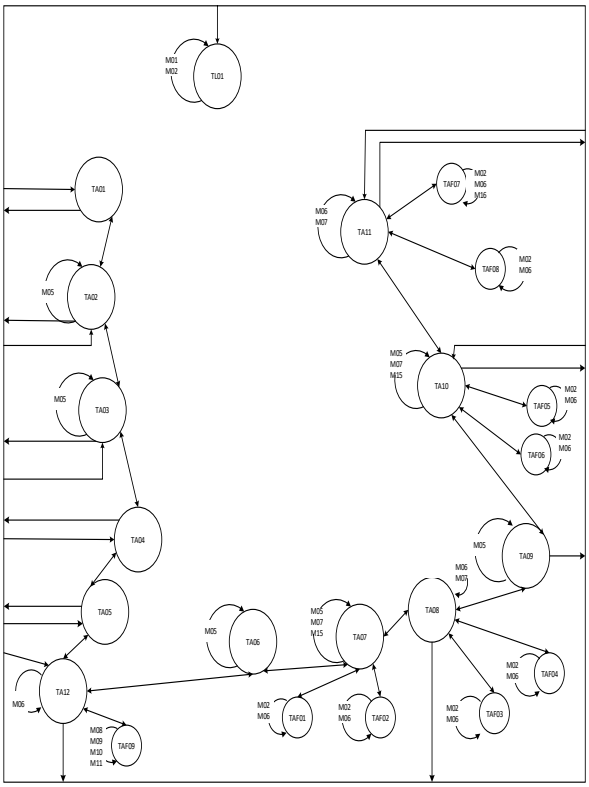
2.10 Semantic Network Design

Semantic network design is a network design that connects menus that can be accessed by each user accompanied by the appearance of notification messages, errors, and warnings. There are two semantic networks in the construction of CRM information systems at PT. Marga Nusantara Persada is as follows.

2.10.1 Design of Admin Semantic Network

The admin semantic network design is network design that connects menus that can be accessed by the admin with error messages as shown in Figure 4.

Figure 4. Admin Semantic Network



2.11 System Testing

At this stage is a continuation of the implementation phase, which is to carry out tests on the applications that are built. CRM (*Customer Relationship Management)* information system testing has two stages of testing, namely *alpha* and *beta* testing .

2.11 .1 Conclusion of Alpha Testing

Based on the results of functional testing conducted by eating it can be concluded that the *customer relationship management* information system that has been built has been able to run well and in accordance with the purposes and objectives of the study.

2.11 .2 Conclusion of Beta Testing

Based on the results of interviews and the results of the questionnaire with the existing *user* , it can be concluded that this information system is appropriate and can be understood by the user.

3. CLOSING

3.1 Conclusions

PT *CustomerRelationshipManagement* info rmation system . Marga Nusantara Persada Bandung has been built and tested against the system so that it can be concluded that.System *Customer Relationship Management* information PT. Marga Nusanatara Persada Bandung can help the complaints team of PT. Marga Nusantara Persada in knowing the service quality indikitator, recommends a proposal to improve service quality and reduce complaints at PT. Marga Nusantara Persada.

3.2 Suggestions

PT *Customer Relationship Management* information system . Marga Nusantara Persada Bandung, of course there are still shortcomings, these deficiencies can be corrected in future research. The suggestions for developing the system in the future are by adding an email / sms *gateway* feature to remind customers when there is a period for filling out surveys.

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