# DEVELOPMENT OF CUSTOMER RELATIONSHIP MANAGEMENT INFORMATION SYSTEM (CRM) FOR QUALITY ANALYSIS OF SERVICES IN PT. AFRILIA MEGA WISATA

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## ABSTRACT

PT. Afrilia Mega Wisata is a service company located in Labuan Bajo, Flores Nusa Tenggara Timur (NTT) and it was estabilished since 2005. The company was enganged on tour and travel services namely rent ship. The problems were experienced by company namely there is not documentation to criticsm of suggestions received from customers yet that effect the company is difficult to analyze quality services which was given.

Customer Relationship Management (CRM) is effort to manage relationship between company and customer so that the company can be better to understand of characters and customer needs and then make a company program according to requirement. With this CRM will help company for fix existing services are suitable to customer expectations for the future.

Based on black box and User Acceptance Test results then can be concluded that this information services quality system can support company in the case this director to do improvment service quality is suitable to customer expectations.

**Keywords** : Customer Relationship Managemnt, Service, Ship Service

## 1. INTRODUCTION

PT. Afrilia Mega Wisata is a service company located in Labuan Bajo, Flores, East Nusa Tenggara (NTT) and was founded in 2005. The company is moving on to tour services and travel, namely in the form of boat rental (Boat Charter). As for the type of ship that provided the company i.e. the type of boat tours (Pinishi), where each boat hire facilities are also available in the form of rooms, kitchen, tool – the tool up to the provision of the diving crew or guides to accompany customers during travel tours. The company is divided into two types of customers that is a tourist agency customers (members) and tour operators (non member).

The company has a business process that prioritizes the quality of service to the services offered. To know the quality of service, the company has always listened to criticism or advice of customer related services received. Criticism of the suggestions obtained through processes that range from customers who delivered through the ship's crew, or customers who deliver directly to the company, to the delivery of advice in the form of critiques via email from customer related services accepted. But with the condition that there are companies still difficult to determine the quality of the services provided given the company does not have documentation related complaints from customers. To find out the level of service quality data collection is done in the form of a questionnaire to the customer. From the results of a questionnaire that was distributed against 30 respondents obtained the Ministry that have low quality of service, such as the condition of the ship (the Toilet, rooms, kitchen) clean and comfortable 37%, as well as a proper diving equipment used 47% (Appendix D). From these data it can be seen that the service quality of the company still has some problems so that the need for improvements to the quality of the services provided in order to keep customers served well.

Customer Relationship Management (CRM) is a corporate strategy that is used to pamper customers so as not to turn to a competitor [1]. A company must have a good service to make customers become comfortable in using the facilities provided, because the Ministry is one of the strategies to retain customers or to attract potential customers the new tour will travel.

Based on the description of the problem above, PT. Afrilia Mega Wisata still difficulty in analyzing the quality of service provided. For that it needs a system that is able to analyze the quality of service as well as help determine improvements against the Ministry so that the quality of service is maintained so that customers remain under-served him well. The solution to those needs is to build Customer Relationship Management information system [1] for an analysis of the quality of service at PT. Afrilia Mega Wisata.

### 1.1. Basic Consept CRM

Customer Relationship Management (CRM) enables the company to provide service to customers directly and optimally with how to develop

relationships with each customer through the use of valuable information or database (database) customers who owned the company. In this strategy the company uses Customer Relationship Management (CRM) with the goal of keeping the company stay focused against the customer based on the information or data base (database) customers.

### 1.2. Type and Framework of CRM

The following is the type and level of Customer Relationship Management:

1. Strategic CRM

CRM Strategic aims to build a company that is designed to create and deliver maximum customer value and better compared to competitors. [1]. This CRM focused on efforts to develop a culture of customer-oriented business or customer-centric. Culture is intended to win the hearts of consumers and keeping their loyalty by creating and delivering value to customers who outperform competitors.

2. Operational CRM

Operational CRM focused more on automation way – the way companies in touch with customers [1]. Variety of applications CRM allows device functions – functions of marketing, sales and service can be run automatically.

3. Analitical CRM

Analytical CRM used to exploit customer data in order to improve their value. The system was developed based on the information about the customer. Pengelolahan collection, storage, and usage of customer data information is an important element for the strategy of Customer Relationship Management (CRM). [1]

4. Collaborative CRM

CRM collaboration components include e-mail, personalized publishing, ecommunities, and others designed for interaction between customers with the company. Its main purpose is to provide added value and expand customer loyalty to other customers who still have not been on the level of customer loyalty. Collaborative CRM also includes understanding or awareness that a loyal customers can be a magnet for other customers [1].

## 2. CONTENT OF RESEARCH

### 2.1 Analysis Of Customer Relationship Management Using Dynamic CRM Framework

On the system to be constructed using the type of Colaborative CRM. With CRM processes and Colaborative integrated data so that the company can better improve services to retain customers. The advantage of this type of CRM is the interaction with customers productive and efficient and customer service costs can be reduced.

Application of CRM in manufacturing as the foundation used the Framework of Dynamic CRM. This framework as a reference implementation of CRM where we can know what features will be applied to the appropriate CRM with the background of the problem. Based on the background issues, the CRM system built is efforts to analysis of the quality of service at PT. Afrilia Mega Tour based on the quality of service that do not match expectations, so from that step that will be taken is focused to Relationship Phase. The following is an analysis of the Framework of Dynamic CRM:

1. Acquisition Phase

This phase is implemented in the process acquire. Acuisition phase is where the company stages attempt to provide services in the form of corporate information, such as company profile, services offered, rental services, as well as information questionnaire.

2. Retention Phase

Retention is the phase of stages which the company conveyed the information to the customer. This phase is implemented in the process enhance. Information obtained by the customers is information to fill in the questionnaire on quality of service.

3. Expansion Phase

Expansion phase are implemented at this stage retain, this phase is the phase where the company get the information the results of the questionnaire of the customer which can later be used for analysis of service quality improvement based on the value that displays the biggest gap between the expected service with the reality of the received service customers. As for the Framework Dynamic CRM PT. Afrilia Mega Wisata can be seen in Figure 1 as follows:

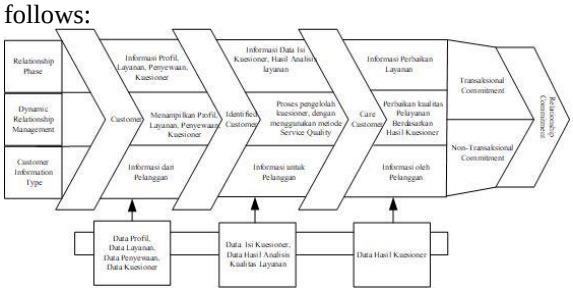



**Figure 1** Framework Dynamic CRM

### 2.2. Stages Of Customer Relationship Management

Customer Relationship Management has three stages which include: Acquire, Retain, and Enhance where each stage has facilities respectively. This step to determine what will be built to suit existing problems at PT. Afrilia Mega Tour. Each stage has a different purpose but inter-related. Service quality improvement system based on customer complaints, PT. Mega Afrilia Wisata that correspond to the stages of CRM can be seen in Figure 2 as follows:

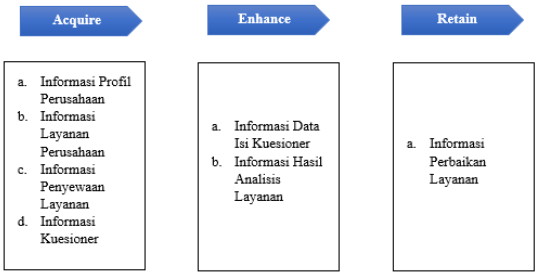



**Figure 2** stages of Customer Relationship Management

## 2.3. Analysis Databases

Stage analysis database was done so that the system made in accordance with the desired, at this stage used entity relationship diagrams (ERD) for its analysis. ERD can simplify data base of the work, because of the ERD can be known of the relationship of any data. Data base analysis on PT. Afrilia Mega Wisata using the ERD can be seen in Figure 3 as follows:

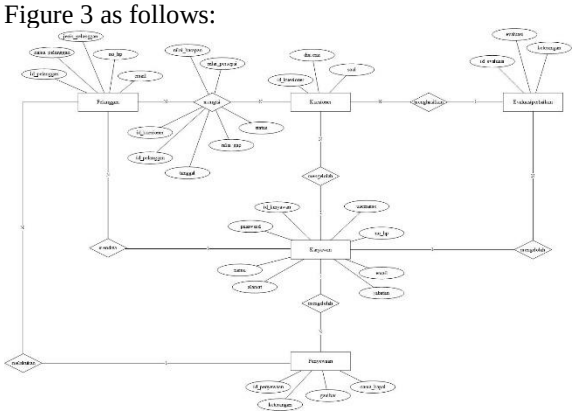


**Figure 3** ERD Diagram CRM PT. Afrilia Mega Wisata

## 2.4. Context Diagram

Context diagram is a diagram of the highest level of a DFD illustrates the relations with users of the system. There are four users who play a role in this system, Admin, customer, Menejer, and Director. Each user has different access rights can be seen in Figure 4 as follows:

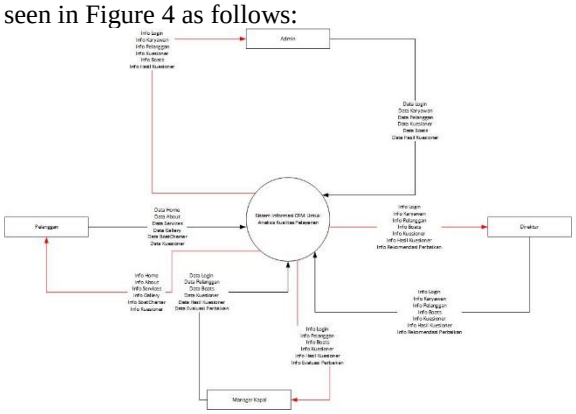


Figure 4 the context Diagram CRM PT. Afrilia Mega Wisata

## 2.5. Data *Flow Diagrams*

Data Flow Diagram is a representation of the development of a system based on the context diagram illustrating the parts of the process that is in the system as well as the involvement of users and data.

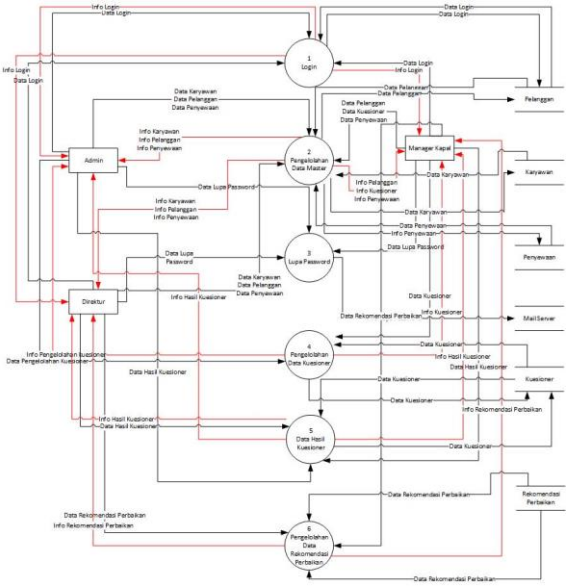


**Figure 5** DFD PT. Afrilia Mega Wisata

## 2.6. Diagram of Relation

Relationship diagram is an overview of some of the data that are interconnected with the limit. The diagram depicted in the design phase can be seen in Figure 6 as follows:

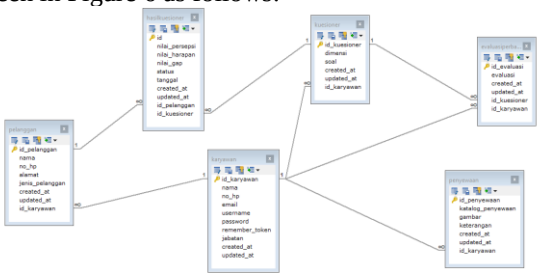


Figure 6 Diagram of Relation

## 2.7. The design of the menu structure

The design of the structure of the menu is designed to provide the functions that will be used in information systems will be built. On the design of the menu structure from the CRM system to be built, there are 4 parts, each of which can be accessed by Admins, directors, managers, and customers.

### 2.7.1. The Admin Menu Structure

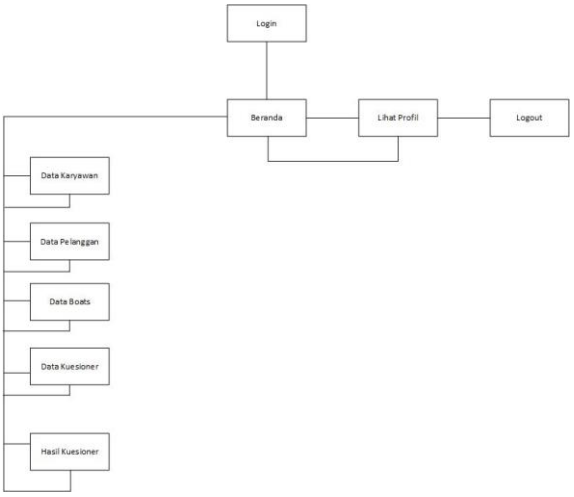



**Figure 7** The Admin Menu Structure

### 2.7.2. Menu Structure Director

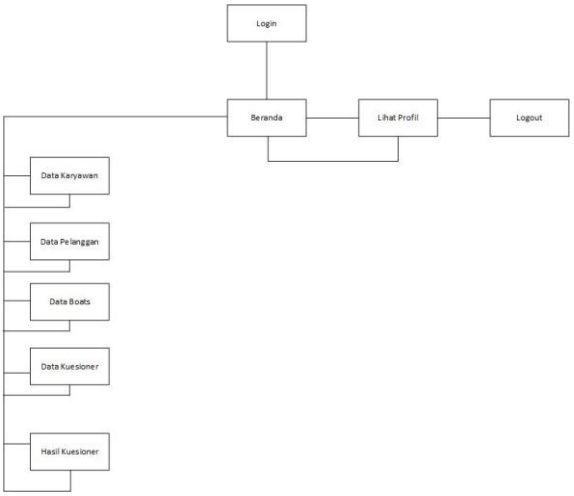



Figure 8 Menu Structure Director

### 2.7.2. Ship Manager Menu Structure

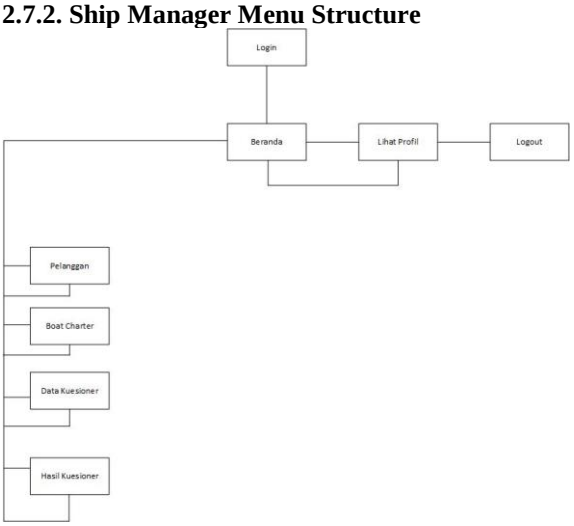



**Figure 9** Ship Manager Menu Structure

### 2.8. The Design of The Message

The design of the message on the development of CRM system in PT. Afrilia Mega Wisata can be seen in table 1 as follows:

**Table 1** Desaign of The Message

| Kode Pesan | Pesan |
|---|---|
| PS01 | Username/Password yang anda masukan salah! |
| PS02 | Username/password Tidak boleh kosong! |
| PS03 | Data pelanggan berhasil ditambahkan |
| PS04 | Data pelanggan berhasil diubah |
| PS05 | Data pelanggan berhasil dihapus |
| PS06 | Data karyawan berhasil ditambahkan |
| PS07 | Data karyawan berhasil diubah |
| PS08 | Data karyawan berhasil dihapus |
| PS09 | Data boats berhasil ditambahkan |
| PS10 | Data boats berhasil diubah |
| PS11 | Data boats berhasil dihapus |
| PS12 | Data kuesioner berhasil ditambahkan |
| PS13 | Data kuesioner berhasil diubah |
| PS14 | Data kuesioner berhasil dihapus |

### 2.9. The Design Of The Semantic Network

The design of the semantic network is a network that connects the design menus that can be accessed by each user is accompanied by the appearance of the message. There are 4 Semantic Network system on development in PT. Afrilia Mega Wisata are as follows:

### 2.9.1. Semantic Network Admin

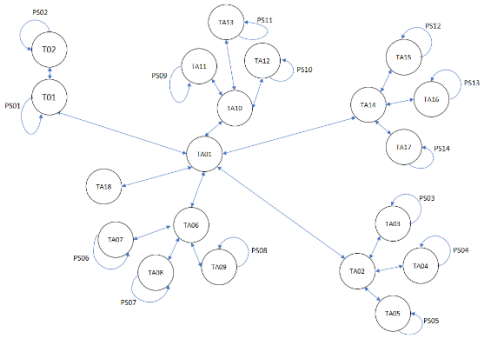



**Figure 10** Semantic Network Admin

### 2.9.2. Semantic Network Director

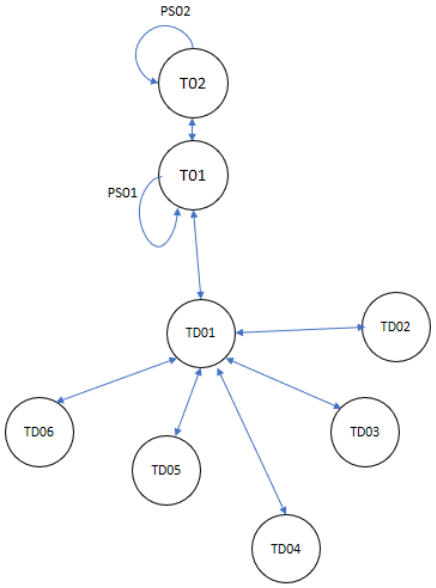



**Figure 11** Semantic Network Director

### 2.9.3. Semantic Network Manager Ships

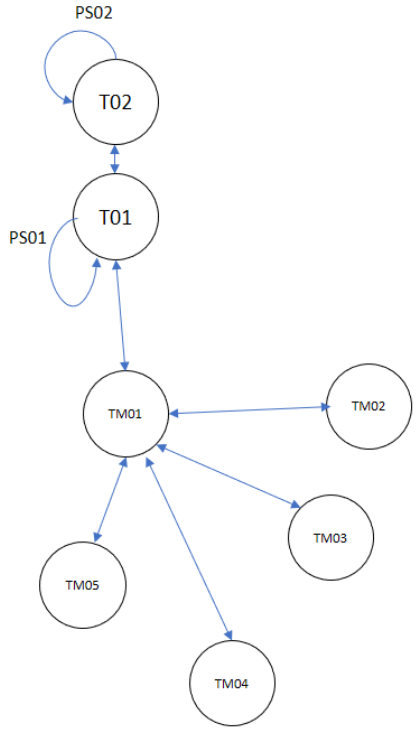



**Figure 12** Semantic Network Manager Ships

### 2.10. System Implementation

The stage of system implementation is the stage after the process of analysis and design of the system. System implementation is the stage for implementing a system that has been so it can operate. Based on the implementation of the system, it can mengkomfirmasi the design of the modules of the system so that users can provide inputs towards the development of the system.

### 2.10.1. The Hardware Implementation

**Table 2** The Hardware Implementation

| No | Perangkat Keras | Spesifikasi |
|---|---|---|
| 1 | Processor | Kecepatan 2.40 GHz |
| 2 | Monitor | Resolusi 1024x768 |
| 3 | Memori | 480 MB |
| 4 | Hardisk | 256 GB |

### 2.10.2. Software Implementation

Table 3 Software Implementation

| No | Perangkat Keras | Spesifikasi |
|---|---|---|
| 1 | Sistem Operasi | Microsoft Windows XP |
| 2 | Aplikasi Perangkat Kerja | Microsoft Office 2007 |
| 3 | Web Browser | Chrome |
| 4 | Koneksi | Akses Internet |

### 2.11. Implementation Of Interface

Interface implementation is done based on any view of the construction of information systems customer relationship management for service quality analysis at PT. Afrilia Mega Wisata with the coding in the form of program files. Display interface implementations are built is divided into four, namely Admin, Manager of the ship, the Director, and customers.

### 2.11.1. Implementation Of The Admin Interface

**Table 4** Implementation Of The Admin Interface

| Menu | Deskripsi | Nama File |
|---|---|---|
| Login | Halaman yang digunakan untuk login ke sistem | index.php |
| Lupa password | Halaman yang digunakan ketika admin lupa password | lupa_password.php |
| Beranda | Halaman utama setelah admin berhasil melakukan proses login | dashboard.php |
| Pelanggan | Halaman yang digunakan untuk mengolah data pelanggan | Data.php |
| Karyawan | Halaman yang digunakan untuk mengolah data karyawan | Data.php |
| Kuesioner | Halaman yang digunakan untuk mengolah data kuesioner | Data.php |
| Hasil Kuesioner | Halaman yang digunakan untuk melihat hasil kuesioner | Data.php |
| Logout | Digunakan ketika akan keluar dari halaman admin | Logout.php |

### 2.11.2. Interface Implementation Director

**Table 5** Interface Implementation Director

| Menu | Deskripsi | Nama File |
|---|---|---|
| Login | Halaman yang digunakan untuk login ke sistem | index.php |
| Lupa password | Halaman yang digunakan ketika admin lupa password | lupa_password.php |
| Beranda | Halaman utama setelah admin berhasil melakukan proses login | dashboard.php |
| Pelanggan | Halaman yang digunakan untuk mengolah data pelanggan | Data.php |
| Karyawan | Halaman yang digunakan untuk mengolah data karyawan | Data.php |
| Kuesioner | Halaman yang digunakan untuk mengolah data kuesioner | Data.php |
| Hasil Kuesioner | Halaman yang digunakan untuk melihat hasil kuesioner | Data.php |
| Rekomendasi Perbaikan | Halaman yang digunakan untuk melihat rekomendasi perbaikan | Data.php |
| Logout | Digunakan ketika akan keluar dari halaman admin | Logout.php |

### 2.11.3. Ship Manager Interface Implementation

**Table 6** Ship Manager Interface Implementation

| Menu | Deskripsi | Nama File |
|---|---|---|
| Login | Halaman yang digunakan untuk login ke sistem | index.php |
| Lupa password | Halaman yang digunakan ketika admin lupa password | lupa_password.php |
| Beranda | Halaman utama setelah admin berhasil melakukan proses login | dashboard.php |
| Pelanggan | Halaman yang digunakan untuk mengolah data pelanggan | Data.php |
| Kuesioner | Halaman yang digunakan untuk mengolah data kuesioner | Data.php |
| Hasil Kuesioner | Halaman yang digunakan untuk melihat hasil kuesioner | Data.php |
| Rekomendasi Perbaikan | Halaman yang digunakan untuk melihat rekomendasi perbaikan | Data.php |
| Logout | Digunakan ketika akan keluar dari halaman admin | Logout.php |

### 2.12. Testing The System

System testing is the most important thing that aims to find any errors or omissions in the information system tested. Testing the system in question to know the performance of information systems that have been made in accordance with the objectives of the design of information systems. Testing the system using black box testing. Black box testing focuses on the functional requirements of the software.

The testing plan will do is to test the system in a way that was built in Black Box and Beta.

### 2.12.1. Black Box Testing Scenarios

Black box testing is focused on the functional requirements of the software being built. Testing information systems customer relationship management for service quality analysis at PT. Afrilia Mega Wisata can be seen in Table 7 as follows:

**Table 7** Scenario Testing

| Kelas Uji | Detail Pengujian | Jenis Pengujian |
|---|---|---|
| Login | Login user | *Black Box* |
| Lupa password | Lupa password | *Black Box* |
| Pelanggan | Tambah data pelanggan<br>Edit data pelanggan<br>Lihat data pelanggan<br>Hapus data pelanggan | *Black Box* |
| Karyawan | Tambah data karyawan<br>Edit data karyawan<br>Lihat data karyawan<br>Hapus data karyawan | *Black Box* |
| Kuesioner | Tambah data kuesioner<br>Edit data kuesioner<br>Hapus data kuesioner<br>Lihat data kuesioner | *Black Box* |
| Kuesioner Pelanggan | Tambah data kuesioner | *Black Box* |

### 2.12.2.The results of Testing a User Login

**Table 8** The results of Testing a user Login

| **Kasus dan Hasil Uji (Data Benar)** | | | |
|---|---|---|---|
| **Data Masukkan** | **Harapan** | **Pengamatan** | **Kesimpulan** |
| Contoh masukan<br>Username : saldy<br>Password : 123456 | Mengisikan data login yang sudah terdaftar | Data login benar dan user akan masuk ke halaman utama sistem | [√] diterima<br>[ ] ditolak |
| Contoh masukan<br>Username : sopian<br>Password : 123456 | Mengisikan data login yang sudah terdaftar | Data login benar dan user akan masuk ke halaman utama sistem | [√] diterima<br>[ ] ditolak |
| **Kasus dan Hasil Uji (Data Salah)** | | | |
| **Data Masukkan** | **Harapan** | **Pengamatan** | **Kesimpulan** |
| Contoh masukan<br>Username : direktur<br>Password : 0032 | Akan muncul pesan "username/Password yang anda masukan salah !" | Dapat menampilkan pesan "username/Password yang anda masukan salah !" | [√] diterima<br>[ ] ditolak |
| **Kasus dan Hasil Uji (Data Kosong)** | | | |
| **Data Masukkan** | **Harapan** | **Pengamatan** | **Kesimpulan** |
| Contoh masukan<br>Username :<br>Password : | Akan muncul pesan "Username dan password tidak boleh kosong" | Dapat menampilkan pesan "Username dan password tidak boleh kosong" | [√] diterima<br>[ ] ditolak |

### 2.12.3. The Test Results of the case and Forgot the Password

Table 9 The Test Results of the case and Forgot the Password

| Kasus dan Hasil Uji (Data Benar) | | | |
|---|---|---|---|
| **Data Masukkan** | **Harapan** | **Pengamatan** | **Kesimpulan** |
| Contoh masukan Email : saldyif15@yahoo.com | Muncul pesan "Password anda telah terkirim, Silahkan cek E-Mail anda!". | Data email sesuai menampilkan "Password anda telah terkirim, Silahkan cek E-Mail anda!" | [√]diterima [ ] ditolak |
| **Kasus dan Hasil Uji (Data Salah)** | | | |
| **Data Masukkan** | **Harapan** | **Pengamatan** | **Kesimpulan** |
| Contoh masukan Email : Saldy@yahoo.com | Email tidak terdaftar maka akan menampilkan pesan "Email anda belum terdaftar" | Data email tidak sesuai menampilkan "Email anda belum terdaftar" | [√]diterima [ ] ditolak |
| **Kasus dan Hasil Uji (Data Kosong)** | | | |
| **Data Masukkan** | **Harapan** | **Pengamatan** | **Kesimpulan** |
| Contoh masukan Email : | Muncul pesan "Data tidak boleh kosong" | Dapat menampilkan pesan "Data tidak boleh kosong" | [√]diterima [ ] ditolak |

### 2.12.4. The test results of the case and Add Customer Data

Table 10 The test results of the case and Add Customer Data

| Kasus dan Hasil Uji (Data Benar) | | | |
|---|---|---|---|
| **Data Masukkan** | **Harapan** | **Pengamatan** | **Kesimpulan** |
| Contoh masukan Nama : Diki Alamat : jln merdeka no 5 Email : diki@gmail.com Status : Member | Jika data pelanggan diisi dengan benar muncul pesan "Data pelanggan berhasil disimpan". | Data tersimpan dan muncul pesan "Data pelanggan berhasil disimpan". | [√] diterima [ ] ditolak |
| **Kasus dan Hasil Uji (Data Salah)** | | | |
| **Data Masukkan** | **Harapan** | **Pengamatan** | **Kesimpulan** |
| Contoh masukan Nama : Diki Alamat : jln merdeka no 5 Email : diki@@gmail.com Status : Member | Muncul pesan "format email salah!". | Dapat menampilkan pesan kesalahan "format email salah!" | [√] diterima [ ] ditolak |
| **Kasus dan Hasil Uji (Data Kosong)** | | | |
| **Data Masukkan** | **Harapan** | **Pengamatan** | **Kesimpulan** |
| Contoh masukan Nama : Alamat: Email : Status: | Muncul pesan "Data tidak boleh kosong" | Dapat menampilkan pesan "Data tidak boleh kosong" | [√] diterima [ ] ditolak |

### 2.12.5. Black Box Testing Conclusions

Based on the test results from the Black Box, customer relationship management information system for service quality analysis at PT. Afrilia Mega Wisata this tourism functionally already meet the needs that fit with the expectations.

### 2.12.6. User Acceptance Testing (End User)

User acceptance testing (end users) there are two testing i.e. User Acceptance testing using the Test (UAT) and end user acceptance testing.

#### 2.12.6.1. End user Acceptance testing after the system applied in the company

In this testing, the software will be left up to the user to find out whether the software meets user expectations and work as expected. The user will perform an assessment of the system using the method of interview indicated to the Director with questions based on research objectives. So the questions become clear and purposeful.

Questions raised at the time of the interview is as follows:

1. is the customer relationship management information system for analysis of service quality has been helpful in analyzing the quality of service at PT. Afrilia Mega Wisata?
2. Is customer relationship management information system for the analysis of the quality of service is easy to use?
3. Is customer relationship management information system for analysis of service quality of this functionally can already help to menganalisi quality of service as well as providing priority repair service?
4. What do you think about the ease of use of these systems?
5. What is your opinion about the language used on this system?
6. How do you feel about the look of this system?

## 5. CONCLUSION

This chapter discusses how the conclusions of the results of research to 12th results analysis, design and implementation, designing, and testing of the system analysis of the quality of service at PT. Afrilia Mega Wisata. This chapter also discusses about the suggestions – advice to give the important note in the development of the system.

### 5.1. Conclusion

Based on the results of the testing and discussion has been made then the obtained conclusions that service quality analysis system in pt. Mega Afrilia this tour can help directors in menganalsis quality of service and still be able to maintain customers

### 5.2. Suggestion

Advice that can be given to development of service quality analysis system in PT. Afrilia Mega Wisata that has been created for further development

is the analysis of service quality System in pt. Mega Afrilia this tour could be developed with Add the feature of booking which can be accessed directly by the customer when ordering services in the enterprise

## BIBLIOGRAPHY


[1] Anatasha Onna Carissa. " Penerapan Customer Relationship Management (CRM) Sebagai Upaya Untuk Meningkatkan Loyalitas Pelanggan". Jurnal Administrasi Bisnis. Vol. 15 No. 1 Oktober 2014.

[2] M. V. Rosing, S. White, F. Cummins dan H. , "Object Management Group (OMG), "Object Management Group, [Online]. Available:http://www.omg.org/news/whitepapers/Business_Process_Model_and_Notation.pdf.[ Diakses 17 April 2017].

[3] Rosa A. S, M. Shalahuddin, Rekayasa Perangkat Lunak; Terstruktur dan Berorientasi Objek, Bandung : Informatika, 2013

[4] Fandy Tjiptono, G Chandra, Service, Quality & Satisfaction Edisi 3, Penerbit Andi, 2011

[5] EKO. K Budiarjo dan Faldy Irwiensyah, Analisis Fitur Crm Untuk Meningkatkan Kepuasan Pasien - Berbasis Pada Framework Of Dynamic Crm Studi Kasus: Departemen Obstetri Dan Ginekologi Fkui - Rscm Jakarta, 2008.

[6] Sugiyono. 2014. Metode Penelitian Kauntitatif, Kualitatif, dan R&D. Bandung : ALFABETA

[7] Triton P B, SPSS 13.0 Terapan; Riset Statistik Parametrik, Yogyakarta: ANDI, 2007

[8] Yakub, Pengantar Sistem Informasi, Graha Ilmu, 2012

[9] Sutarman, Membangun Aplikasi Web dengan PHP & MySQL Edisi 2, Yogyakarta: Graha Ilmu, 2007.

[10] Agung Utama. "Analisis Pengaruh Persepsi Kualitas Pelayanan Terhadap Kepuasan Pelanggan Rumah Sakit Umum Cakra Husada Klaten". OPSI, Vol 1, No. 2, Desember 2003.