

A THEORETICAL STUDY ON CONSUMER RELATIONSHIP MANAGEMENT

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ABSTRACT

CUSTOMER RELATIONSHIP MANAGEMENT is short for customer relationship management. The ideas behind customer relationship management are by no means new. Today it's widely acknowledged that how you understand and treat your customers, goes a long way to determining your future success and profitability, and companies are making bigger and bigger investments to do just that. The concepts of customer relationship management have been in the air ever since people started exchanging things, but CRM as a term came into existence in the mid-1990s. Companies are already pouring billions of dollars into CRM solutions—software and services designed to help businesses more effectively, manage customer relationships through any direct or indirect channel a customer might use. That's why, the market for CRM technology is exploding.

Since “the customer is always right” calls between the client and the employee, in Customer Care department, must be recorded in order to analyze the voice, to keep control on Customer-Employee relation. Companies that consider the relationship with clients as number one in their working process, face problems in “how to keep eyes on employees” and waste lots of time in hearing recorded calls. Since most of the CRM's find difficulties in moving data from the company database to the CRM database, which would be expensive and wastes a lot of time. There is a need of a new tool that allows transferring data from existing database to server side where it can be previewed or imported to CRM database.

Customer Relationship Management (CRM) is regarded has been changing over time, and is currently a phenomenon with considerable importance, not only for big organizations but also for Small and Medium Enterprises (SMEs), due to the competitiveness that presently exists. After the literature review about the theme, the research questions emerged were.

I. INTRODUCTION

Customer Relationship Management (CRM) is a business philosophy involving identifying, understanding and better providing for your customers while building a relationship with each customer to improve customer satisfaction and maximizing profit. It is about understanding, anticipating and responding to customers' needs. To manage the relationship with customer, a business needs to collect the right information about its customer and organize the information for proper analysis and action. It needs to keep that information up to date, make it accessible to employees and provide the know-how from employees to convert that data into products, better matched to customers need. The secret to an effective CRM package is not just in what data is collected but in the organizing and interpretation of that data. This is the area where computers play a vital role and computers alone cannot transform the relation between the company and the customer. That does take a cross department, top to bottom and a corporate desire to build better relationships. But computers and good computer based CRM solution can increase sales by as much as 40-50%. An example of a CRM application would be in car manufacturing business (assuming they sell directly to end customers).

If they maintained a database of, which customer buy, what type of product and when, how often they make that purchase, what type of option they choose with their typical purchase, their color preferences, whether the purchase needed financing etc., the manufacturer knows what marketing material to send out, what new products to promote to each customer, what preference/options may swing the sale, whether a finance package should be included in the marketing material and when would be a good time to target each customer. They could use the information to build a relationship with the customer by reminding customers of service dates, product recalls and may even send the customer a birthday card/gift. Choosing the

CRM solution Using a consultant could save your time and money. Software resellers are often good first line advisors as they have experience and feedback from selling competing CRM packages. Some resellers offer wiser packages including strategic planning process management. Most of the big CRM software manufacturers have extensive advise, PDFs and guides on their sites that repeatedly hold your hand through the choosing process. They are likely to be biased of course but can be good source of ideas anyway.

II. OBJECTIVE OF THE STUDY

Why manage customers? Customers are the usual source of income for an organization.

If not than they will certainly leverage your income, as in the case of readers of a free publication which is funded by advertising. As such there are two types of customers: the readers and the advertisers.

Customers are also an exceptional source of information- information which is vital to enable a business to success; i.e. giving customers what they want.

Some of the basic objectives are as follows:

- Knowing what customers want and need- which enables you to focus your production and service efforts.
- Knowing which products or customers have most growth potential- which enables you to focus on developing highest potential.
- Knowing which products or customers are most or least profitable- which enables you to focus on maximizing profit.
- Knowing which customers will advocates and supporters- which enables you to provide references, case studies and to safely test new products and services.
- Knowing about the customer satisfaction level and increase customer satisfaction level, and to know about that are they getting exactly what they want.
- To identify the threats aced by the Maruti, VARUN MOTORS., Hyderabad due to customer relationship and to create the awareness to the employees of VARUN MOTORS. regarding the customer value.

SCOPE OF THE STUDY

The study titled “Customer Relationship Management” has been conducted on behalf of Maruti VARUN MOTORS., Hyderabad. The study focuses on the prospective customers who are giving business to the company. A data prepared to find out the business fitness in the market initially, which provides Strengths and Weakness about the organization to lead the project in a systematic manner.

On obtaining information, an analysis had been done to find out the better Relationship Management with the customers by using the latest technologies. The recent internet technologies like e-commerce etc. wish supports to increase the efficiency of customer relation.

Personalized customer attention acknowledging the customer, as the king is the “Mantra” of Maruti. “The Customer is King”, “Customer Services is of paramount importance to stay in the business” are principle followed by Maruti VARUN MOTORS.

The focus of Maruti VARUN MOTORS. is on:

- Customer Relationship
- Customer Loyalty
- Profitability
- Value Creation

This goal can be achieved through the process of:

Transforming corporate culture from being product center to customer centric.

Movement from mass marketing to target market of individuals.

Reduction in cost per transaction substantially.

Reaching out to customer is the most cost effective way with target offers.

LIMITATIONS

- As the time given for the completion of the project was limited.
- The survey was restricted to Hyderabad and Secunderabad only.
- They may be few opinions, which might have been missed out.
- The accuracy of the analysis and conclusion drawn entirely depends upon the reliability of the information provided by the employees.
- Sincere efforts were made to cover maximum departments of the employees, but the study may not fully reflect the entire opinion of the employees.
- In the fast moving/changing employees behaviour, name new and better things may emerge in the near future, which cannot be safeguard in this report.

III. NEED FOR THE STUDY

Organizations have **MARUTI MOTORS LTD** be competitive environment with relationship management of customer and they are attracting **MARUTI MOTORS LTD** the customer with some effective sale promotions. But some organizations need to evaluate the purpose, utility, effectiveness of customer satisfaction. They are fails to evaluate this customer relationship management. So these studies has been undertaken to assess the customer relationship management in the organization.

IMPORTENCE

1. CRM system consists of a historical view and analysis of all the acquired or to be acquired customers. This helps in reduced searching and correlating customers and to foresee customer needs effectively and increase business.
2. CRM contains each and every bit of details of a customer, hence it is very easy for track a customer accordingly and can be used to determine which customer can be profitable and which not.
3. In CRM system, customers are grouped according to different aspects according to the type of business they do or according to physical location and are allocated to different customer managers often called as account managers. This helps in focusing and concentrating on each and every customer separately.
4. A CRM system is not only used to deal with the existing customers but is also useful in acquiring new customers. The process first starts with identifying a customer and maintaining all the corresponding details into the CRM system which is also called an 'Opportunity of Business'. The Sales and Field representatives then try getting business out of these customers by sophisticatedly following up with them and converting them into a winning deal. All this is very easily and efficiently done by an integrated CRM system.
5. The strongest aspect of Customer Relationship Management is that it is very cost-effective. The advantage of decently implemented CRM system is that there is very less need of paper and manual work which requires lesser staff to manage and lesser resources to deal with. The technologies used in implementing a CRM system are also very cheap and smooth as compared to the traditional way of business.

IV. RESEARCH METHODOLOGY

Research design:

“Research design is the plan, structure. And strategy of investigation conceived so as to obtain answers to research questions and to control variance”

The research designs are both descriptive and exploratory in nature. The objectives of this study is to answer the “who, what, when, where and How “of the subject under investigation.

SAMPLE MARUTI MOTORS LTD PLAN AND SIZE FOR CONSUMERS:

Sample MARUTI MOTORS LTD plays a vital role in decide MARUTI MOTORS LTD the quality of any project while do MARUTI MOTORS LTD this survey it is felt to conduct the survey for consumers under convenient sample MARUTI MOTORS LTD method. Convenience sample MARUTI MOTORS LTD was adopted both for consumers where the sample unites are chosen primarily on the basis of the convenience of the investigators. The sample size was determined as 100 consumers

SAMPLE TERRITORY:

The survey has been conducted and restricted to the city of Hyderabad in ANDRA PRADESH ‘

SOURCE OF DATA:

Data, which is to be used for the project, has come both from primary sources as well as secondary sources

- **PRIMARY DATA SOURCES:**

The crux of the report is based on the information collected from the respondents with the help of questionnaires. The primary source of information have been consumers who have filled up the questionnaire

Consumer who interviewed separately and the respondents jotted down in the questionnaire for the purpose.

- **SECONDARY DATA SOURCES:**

Information has also been borrow from both internal sources such as company records and external sources like journal, magazines and book on market **MARUTI MOTORS LTD** research

DATA COLLECTION METHOD:

The survey method was employed for primary data collection. The medium of date collection was through personal interviews. Where the respondents were questioned in face-to-face meet **MARUTI MOTORS LTD** the consumers were met either in their homes (or) place of work. Some of respondents were questioned through telephones,

- **TOOLS FOR DATA COLLECTION**

The data was collected through structured questionnaire. Questions can be categorized into multi-choice and open-ended questions. Questionnaires were designed for consumers. Care was taken to ensure that the questions framed were compatible with research objectives.

Firstly, by take **MARUTI MOTORS LTD** the sample questionnaires, a pilot survey have been conducted among the various sections of the people. Word **MARUTI MOTORS LTD** and sequence **MARUTI MOTORS LTD** of questions, choice of respondents, information sought and instruments clarity as a whole were tested. After take **MARUTI MOTORS LTD** the exactness and correctness the final version of the questionnaire has been drafted and was taken up for field survey purposes.

STASTICAL TOOLS:

In the context of the present study, the follow **MARUTI MOTORS LTD** statistical tools have been used:

PERSENTAGES:

Percentages are used to describe relationships, since they reduce every MARUTI MOTORS LTD to a common base and there by allow mean **MARUTI MOTORS LTD** full comparisons to be made.

PIE DIAGRAM/BAR DIAGRAM:

There are pictorial representations of statistical data with several subdivisions in a circular from and column from respectively.

METHOD OF WEIGHTED AVERAGE FOR RANKS:

This method is used to complete the weighted averages for the rank to determine which factor is the most preferred one. The ranks are taken as the variable and the numbers of people are the weights for each rank. From the weighted averages the most preferred factor is chosen as the one with the minimum average. The next average selects the rank and the procedure continues for other ranks also.

Chapter 5 System Testing

After completion of project, testing is needed to confirm the system can handle most of the situation. 2 types of testing were needed to test the system which is unit testing and functional testing. The testing is completed by follow a series of instruction to test the system ability. Before releasing the system, testing must be carried out carefully to increase the quality of system and provides better user experience for the users.

5-1 Unit Testing

Unit testing is mainly to test the system’s individual part of function. The unit test is require to input to the system with all of the possible input such as correct input, empty input, wrong format and others possible input. This is to ensure the system can validate the input as correct input or invalid input. The unit testing will be carrying out included user login system.

Unit Test 1: Login as administrator or users

Testing Objective: To ensure the login form working correctly

No	Event	Attributes and values	Expected Result	Result
1.1	Login with correct username and correct password	Username: admin Password: admin	Successfully login to the system and redirect to homepage.	Pass
1.2	Login with empty username and empty password	Username: null Password: null	Failed to login and turn the require field to red color.	Pass
1.3	Login with correct username and wrong password	Username: admin Password: abc	Failed to login and prompt wrong username or password	Pass
1.4	Login with wrong username and correct password	Username: abc Password: admin	Failed to login and prompt wrong username or password.	Pass
1.5	Login with correct username and empty password	Username: admin Password: null	Failed to login and turn the require field to red color	Pass
1.6	Login with empty username and correct password	Username: null Password: admin	Failed to login and turn the require field to red color	Pass

Table 5-1 T1Unit Test 1: Login as administrator or users

Unit Test 2: Register Customer

Testing Objective: To ensure the registration of customer work correctly.

No	Event	Attributes and values	Expected Result	Result
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2.1	Register User with valid username,valid password,Valid I/C Number and Valid Access Code	Username: Cust1 Password: a I/C Number: 880519-04-4889 Access Code: 7302	The web page will redirect to the login page.	Pass
2.2	Register User with duplicate username,valid password,duplicate I/C Number and Valid Access Code	Username: Cust1 Password: a I/C Number: 880519-04-4889 Access Code: 7302	The form will show "This I/C was registered"	Pass
2.3	Register User with empty username,empty password,empty I/C Number and empty Access Code	Username: null Password: null I/C Number: null Access Code: null	The form will show " Please insert username. Please insert password. Please insert I/C number. Please insert access code. "	Pass
2.4	Register User with valid username,valid password,valid I/C Number and invalid Access Code	Username: Cust1 Password: a I/C Number: 880519-04-4889 Access Code: 73021	The form will show " Access code not match with the I/C number "	Pass

Table 5-1 T2 Unit Test 2: Register Customer

Unit Test 3: Change User Password

Testing Objective: To ensure user's password update correctly

No	Event	Attributes and values	Expected Result	Result
3.1	Update Password with valid current password, valid new password and valid confirm new password	Current Password: a New Password: b Confirm New Password: b	The web page will prompt an alert show "Success to Update password"	Pass
3.2	Update Password with empty current password, empty new password and empty confirm new password	Current Password: null New Password: null Confirm New Password: null	The form will show "Please fill in the field with red label and *"	Pass

3.3	Update Password with valid current password, valid new password and different confirm new password	Current Password: a New Password: b Confirm New Password: c	The form will show "Please insert same password for NEW PASSWORD and CONFIRM NEW PASSWORD"	Pass
3.4	Update Password with valid current password, same new password and same confirm new password with current password	Current Password: a New Password: a Confirm New Password: a	The form will show "Please insert different password for new password"	Pass

Table 5-1 T3 Unit Test 3: Change User Password

Unit Test 4: Insert new role

Testing Objective: To test the new role was insert correctly.

No	Event	Attributes and values	Expected Result	Result
4.1	Insert new role with valid role name	Role Name: admin2	The web page will prompt an alert show "New Role:ADMIN2 successfully added"	Pass
4.2	Insert new role with empty role name	Role Name: null	The form will show "Please fill in the field with red label and *"	Pass
4.3	Insert new role with existed role name	Role Name: admin2	The form will show "The role:Admin2 was exist."	Pass

Table 5-1 T4 Unit Test 4: Insert new role

Unit Test 5: Insert new page

Testing Objective: To test the new page is inserting correctly

No	Event	Attributes and values	Expected Result	Result
5.1	Insert new page with valid file name	File Name: test_insert	The web page will prompt an alert show "New Page: test_insert successfully added"	Pass
5.2	Insert new page with empty file name	File Name: null	The form will show "Please fill in the field with red label and *"	Pass
5.3	Insert new page with repeated file name	File Name: test_insert	The form will show "The file: test_insert was exist."	Pass

Table 5-1 T5 Unit Test 5: Insert new page

Unit Test 6: Add new user

Testing Objective: To test the new user is added correctly

No	Event	Attributes and values	Expected Result	Result

6.1	Insert new user with valid username, valid password	username: manager1 password: a	Prompt alert to show " New user added successfully"	Pass
6.2	Insert new user with empty username, empty password	username: null password: null	The form will show "Please fill in the field with red label and *"	Pass
6.3	Insert new user with existed username, valid password	username: manager1 password: a	The form will show "username existed"	Pass

Table 5-1 T6 Unit Test 6: Add new user

Unit Test 7: Add new Promotion

Testing Objective: To ensure the promotion validate correctly

No	Event	Attributes and values	Expected Result	Result
7.1	Insert new promotion with valid title, valid start date, valid end date, valid content, select a product and choose some outlet	Promotion Title:test start date:2014-4-1 end date; 2014-4-5 Product detail: testing contentProduct: Apparel- Children's Wear- Baby Clothes- Enel BabyClothes Selected Outlet:Johor- Batu Bahat Outlet	The promotion will be created and the page will redirect to customer filtering page	Pass
7.2	Insert new promotion with empty title, empty start date, empty end date, empty content, select a product and empty outlet	Promotion Title:null start date:null end date; null Product detail:null Product:Apparel- Children's Wear-Baby Clothes- Enel BabyClothes Selected Outlet: null	Bottom of the form will show " Please	Pass
7.3	Insert new promotion with valid title, valid start date, valid end date, valid content, select a product and choose some outlet which are totally same with testing 7.1	Promotion Title:test start date:2014-4-1 end date; 2014-4-5 Product detail: testing contentProduct: Apparel- Children's Wear- Baby Clothes- Enel BabyClothes Selected Outlet:Johor- Batu Bahat Outlet	The page will show "The following outlets is having test for Enel Baby Clothes on 2014-04-01 to 2014-04-05 BATU PAHAT OUTLET"	Pass
7.4	Insert new promotion with valid title, valid start date, valid end date, valid content, select a product and choose some outlet which are totally same with testing 7.1 except the outlet. This	Promotion Title:test start date:2014-4-1 end date; 2014-4-5 Product detail: testing contentProduct:	The promotion will be created and the page will redirect to customer filtering page	Pass

	test will choose another outlet.	Apparel- Children's Wear- Baby Clothes- Enel BabyClothes Selected Outlet:Kedah- Alor Setar Outlet		
7.5	Insert new promotion with valid title, invalid start date, invalid end date, valid content, select a product and choose some outlet. The testing is putting the start date later than end date.	Promotion Title:test start date:2014-4-5 end date; 2014-4-1 Product detail: testing contentProduct: Apparel- Children's Wear- Baby Clothes- Enel BabyClothes Selected Outlet:Kedah- Alor Setar Outlet	Bottom of the form will show " End date must later than startdate."	Pass

Table 5-1 T7 Unit Test 7: Add new Promotion

5-2 Functional Testing

After completing the unit testing, functional testing is require to perform. The purpose of functional testing is to ensure the system is performing as the system requirement stated. This is more on testing the correctness of workflow of the system.

Functional Test 1: Login with different roles

Testing Objective: To ensure different user's role log in will display different navigation menu.

No	Event	Attributes and values	Expected Result	Result
1.1	Login with the ADMIN role	Username:admin Password:admin	The navigation menu having 'Home', 'User', 'System', 'Setting', 'Logout'	Pass
1.2	Login with the HQ_MANAGER role	Username:manager Password:a	The navigation menu having 'Home', 'Analysis', 'Promotion', 'Setting', 'Logout'	Pass
1.3	Login with the BRANCH_MANAGER role	Username:bmanager Password:a	The navigation menu having 'Home', 'Promotion', 'Setting','Logout'	Pass
1.4	Login with the SERVICE_STAFF role	Username:bstaff Password:a	The navigation menu having 'Home', 'Promotion', 'Setting','Logout'	Pass
1.5	Login with the CUSTOMERrole	Username:custA Password:a	The navigation menu having 'Home', 'Transaction', 'Setting','Logout'	Pass

1.6	Using PUBLIC role		The navigation menu having 'Home', 'Register', 'Logout'	Pass
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Table 5-2 T1 Functional Test 1: Login with different roles

Functional Test 2: Create and Update User

Testing Objective: Ensure the management of user is working correctly.

No	Event	Attributes and values	Expected Result	Result
2.1	Login with Admin through the login page	username: Admin password: admin	The user login the admin page with admin's navigation bar. Admin's navigation bar should	Pass
2.2	Go to the create user page	Menu -> User List (Internal User) Button-> New User	A New User registration form appear in the page.	Pass
2.3	Fill the new user's detail, then click the 'Add' button.	username: bstaff2 password: a Role: SERVICE_STAFF Outlet: ALOR SETAR OUTLET	An alert prompt out and show "Success to add new user. ". Then return to the user list page.	Pass
2.4	Click the username created in previous event	Table -> SERVICE_STAFF -> bstaff2	The system will go to User-Edit page.	Pass
2.5	Insert the updated information and click 'Update' button	password: b Role: BRANCH_MANAGER Outlet: BATU BAHAT OUTLET	An alert prompt out and show "Success to update"	Pass

Table 5-2 T2 Functional Test 2: Create and Update User

Functional Test 3: Create and Update Role in System

Testing Objective: The ensure the management module of user role working correctly

No	Event	Attributes and values	Expected Result	Result
3.1	Login with Admin through the login page	username: Admin password: admin	The user login the admin page with admin's navigation bar. Admin's navigation bar should display 'Home', 'User', 'System', 'Setting' and 'Logout'	Pass
3.2	Go to the create role page	Menu -> User -> Role Button-> New Role	A New Role creation form appear in the page.	Pass

3.3	Fill in the detail and click the 'Add' button	Role Name: Test_Role Pages: Home Widgets: user_login	An alert prompt out and show "New Role: Test_role successfully added. After this, the page will redirect to the user's role list page.	Pass
3.4	Click the role's name in the list to update the details.	Table -> Name of Role -> TEST_ROLE	The page will redirect to the Role-Edit page.	
3.5	Change the role's detail and click 'Update' button to update the role.	Role Name: Test_Role2 Pages: All Widgets: All	An alert prompt out and show "Role: Test_role successfully updated. After this, the page will redirect to the user's role list page.	

Table 5-2 T3 Functional Test 3: Create and Update Role in System

Functional Test 4: Create and Update System Page

Testing Objective: Ensure the page management system working correctly

No	Event	Attributes and values	Expected Result	Result
4.1	Login with Admin through the login page	username: Admin password: admin	The user login the admin page with admin's navigation bar. Admin's navigation bar should display 'Home', 'User', 'System', 'Setting' and 'Logout'	Pass
4.2	Go to the create page page	Menu -> System -> Page Button-> New Page	A New Page creation form appear in the page.	Pass
4.3	Fill in the page detail and click the 'Add' button	File Name: test_page Type: PAGE Role: ADMIN	An alert prompt out and show "New Page: test_page successfully added.". After this, the page will redirect to the page list interface.	Pass
4.4	Click the page name to update the page detail	Table -> PAGE -> Name of Page-> test_page	The page will redirect to the Page-Edit form will filled information.	Pass
4.5	Change the data and click 'Update' button to update the page.	File Name: test_page2 Type: WIDGET Role: ALL	An alert prompt out and show "Page: test_page2 successfully updated.".	Pass

Table 5-2 T4 Functional Test 4: Create and Update

System Page

Functional Test 5: Change user password

Testing Objective: To ensure the user of system can change their password

No	Event	Attributes and values	Expected Result	Result
5.1	Login with the the user created in Functionl Test 2 throught the login page	username: bstaff2 password: b	The user login the admin page with Branch manager's navigation bar. Branch manager's navigation bar.	Pass
5.2	Go the change password change by the menu button	Menu -> Setting -> Change Password	The system will redirect to the Change Password Form	Pass
5.3	Insert the current password, new password and confirm new password to change the current password to new password.	Current Password: b New Password: a ConfirmNew Password: a	An alert will prompt out and show " Success to update password ".	Pass
5.4	Logout the user to further test whether the password was change	Menu -> Logout	The system will go to logout page and redirect to public Home page in 3 seconds.	Pass
5.5	Click Login button to login the user changed password	Menu -> Login	The system will go to the login page	Pass
5.6	Login the user with the new password	username: bstaff2 password: a	The user logged into the system and the system will redirect to the user's Home Page	Pass

Table 5-2 T5 Functional Test 5: Change user password

Functional Test 6: Customer Filtering and Profiling

Testing Objective: To ensure the customer filtering and profile working well.

No	Event	Attributes and values	Expected Result	Result
6.1	Login with HQ_MANAGER throught the login page	username: manager password:a	The user login the HQ Manager's page with HQ Manager's navigation bar. HQ Manager's navigation bar should display 'Home', 'Analysis Tools', 'Promotion Tools', 'Setting' and 'Logout'	Pass
6.2	Go to the customer filter page	Menu -> Analysis Tools-> Filter Customer	The system will go to the filter customer form.	Pass

6.3	Select the options to filter customers then click 'Search' button	Gender: MALE Age: 20 to 30 Race: CHINESE State: PERAK City: IPOH	The system will go to a page display many tables. These table included Filter Option, Summary (Gender, race, age, State, City), and a Customer List Table.	Pass
6.4	Click on the customer's name in the Customer List table to see the customer's profile		The customer profile page is showing customer's information, Customer behavior (Most Favourite Item, Visit Frequency, Span on Different Category) and Transaction History	Pass
6.5	Click the ID in the Transaction History table to get the detail of the selected transaction		The transaction detail will show in the coloumn beside the transaction table	Pass

Table 5-2 T6 Functional Test 6: Customer Filtering and Profiling

Functional Test 7: Product Analysis Testing

Testing Objective: To ensure the product could be analyze correctly

No	Event	Attributes and values	Expected Result	Result
7.1	Login with HQ_MANAGER through the login page	username: manager password: a	The user login the HQ Manager's page with HQ Manager's navigation bar. HQ Manager's navigation bar should display 'Home', 'Analysis Tools', 'Promotion Tools', 'Setting' and 'Logout'	Pass
7.2	Go to the product selection page	Menu -> Analysis Tools-> Analyze Products	The system will go to the production selection form.	Pass
7.3	Select Main Category	Main Category: Apparel	A list of second category will be displayed	Pass
7.4	Select Secondary Category	Second Category: Children's Wear	A list of third category will be displayed	Pass
7.5	Select Third Category	Third Category: Baby Clothes	A list of products will be displayed	Pass
7.6	Click on the products name in the product detail table to see the analysis of the selected product	Product Detail-> Product Name-> Enel Baby Clothes	A product profile page will show product's information and Product Sale Perfomance (Month Analysis, Weekday Analysis, Outlet Analysis, Gender, Age, Race, City and State Analysis)	Pass

Table 5-2 T7 Functional Test 7: Product Analysis Testing

Functional Test 8: Create and Update Promotion

Testing Objective: To ensure the promotion management tools working correctly

No	Event	Attributes and values	Expected Result	Result
8.1	Login with HQ_MANAGER through the login page	username: manager password: a	The user login the HQ Manager's page with HQ Manager's navigation bar. HQ Manager's navigation bar should display 'Home', 'Analysis Tools', 'Promotion Tools', 'Setting' and 'Logout'	Pass
8.2	Go to the new promotion page	Menu -> Promotion Tools-> New Promotion	The system will go to the new promotion form.	Pass
8.3	Insert the promotion detail and click 'Create' button	Active: Checked Promotion: Test Promotion Main Category: Apparel Second Category: Children's Wear Third Category: Baby Clothes Product: Enel Baby Clothes Start Date: 2014-4-20 End Date: 2014-4-25 Promotion Detail: Test Promotion Content	The promotion was created and the system will display Customer Filtering Page	Pass
8.4	Go to promotion list select the promotion created in Testing 8.3 to update	Menu -> Promotion Tools-> All Promotion	A list of promotion displayed	Pass
8.5	Click on the promotion title to update the promotion	Table -> Promotion -> Title -> Test Promotion	Edit Promotion Form displayed	Pass
8.6	Change the information of the promotion and click 'Save' button	Active: Checked Promotion: Test Promotion2 Main Category: Apparel	The promotion was updated and the system will display Customer Filtering Page	Pass

		<p>Second Category: Children's Wear Thid Category: Baby Clothes Product: Enel Baby Clothes Start Date:2014-4-18</p> <p>End Date:2014-4-25 Promotion Detail: TestPromotion Content2 Promotion Outlet: Johor, Kedah</p>		
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Table 5-2 T8 Functional Test 8: Create and Update Promotion Functional Test 9: Select Promotion Target Customer

Testing objective: To ensure the sytem can filter a list of customer and target them based on thepromotion.

No	Event	Attributes and values	Expected Result	Result
9.1	Login with HQ_MANAGER throught the login page	username: manager password: a	The user login the HQ Manager's page with HQ Manager's navigation bar. HQ Manager's navigation bar should display 'Home', 'Analysis Tools', 'Promotion Tools', 'Setting' and 'Logout'	Pass
9.2	Go to promotion list select the promotion created in Testing 8.3 to update	Menu -> Promotion Tools-> All Promotion	A list of promotion displayed	Pass
9.3	Click on the promotion title to update the promotion	Table -> Promotion -> Title -> Test Promotion	Edit Promotion Form displayed	Pass
9.4	Click the 'Save' button without changing the promotion's detail		The system will display a customer filter form	Pass
9.5	Select an filter option to filter the customer then click the 'Submit' button	Filter option: Customer who never purchase before.	The page will show a list of customer fullfilled the filter option.	Pass
9.6	Click the 'process' button to confirm the promotion's target customer		The system will return to the Home Page	Pass

Table 5-2 T9 Functional Test 9: Select Promotion Target Customer

Functional Test 10: Sending promotion to customer and Getting Respond

Testing Objective: To ensure the staff can promote the promotion to the customers assigned to them. Beside, the customer registered a account also able to respond to the promotion.

No	Event	Attributes and values	Expected Result	Result
10.1	Login with the staff account to perform the testing	username: bstaff password: a	The user login the staff page with staff's navigation bar. Staff's navigation bar should display 'Home', 'Promotion Tools', 'Setting' and 'Logout'	Pass
10.2	Search the task of the customer.	Menu -> Home	Task Page will be displayed. Within the page, there are a table of promotions list.	Pass
10.3	Click on the promotion's title to promote the promotion to the customers	Table -> Task -> Title -> Test Promotion2	The page will display 2 tables which are promotion detail and targeted customer.	Pass
10.4	Click on the 'EMAIL' link within the customer's row to send the email to the customer	Table -> Targeted Customer -> Action -> EMAIL	A new page with email template will displayed	Pass
10.5	Click the 'Send' button to send the email with final content to the customer		The page will closed	Pass
10.6	Click on the 'PHONE' link within the customer's row to make phone call to the customer	Table -> Targeted Customer -> Action -> PHONE	A new page with phone call detail will displayed	Pass
10.7	Click the 'End Call' button to end the call with customer		The page will closed	Pass
10.8	Click on the 'SMS' link within the customer's row to send the SMS to the customer	Table -> Targeted Customer -> Action -> SMS	A new page with SMS template will displayed	Pass
10.9	Click the 'Send' button to send the SMS with final content to the customer		The page will closed	Pass
10.10	Click on the refresh button of the browser to see the update information	Refresh' button OR press 'F5'	The action column of the customer selected in previous testing will become EMAIL(1), PHONE(1), SMS(1)	Pass
10.11	Click on customer name to get customer's IC and Access Code	Table -> Targeted Customer -> Customer's Name -> previous customer	A new customer profile page will be open	Pass
10.12	Open another web browser and open the My CRM web system	url: localhost/CRM	public's Home Page displayed	Pass
10.13	Go to the customer registration page	Menu -> Register	The system will show customer's user register form	Pass

10.14	Register a new customer with the I/C number and access code retrieved in Testing 10.11 . Then click the 'Register' button to register.	username: Customer1 password: a I/C Number: 841016-02-4939 AccessCode: 6651	The user was created and the system will show the login form.	Pass
10.15	Login with the customer's user created in Testing 10.14 .	username: Customer1 password: a	The system will go to customer Home Page. The navigation bar of this user will display Home,Transaction, Setting and Logout	Pass

Table 5-2 T10 Functional Test 10: Sending promotion to customer and Getting Respond

Functional Testing 11: Promotion performance

Testing Objective: To ensure the manager user can check the performance of the promotion.

No	Event	Attributes and values	Expected Result	Result
11.1	Login with HQ_MANAGER through the login page	username: manager password: a	The user login the HQ Manager's page with HQ Manager's navigation bar. HQ Manager's navigation bar should display 'Home', 'Analysis Tools', 'Promotion Tools', 'Setting' and 'Logout'	Pass
11.2	Go to the promotion list page	Menu -> Promotion Tools-> All Promotion	The system will show the list of promotion	Pass
11.3	Select the promotion to review	Table -> Promotion-> Performance-> CHECK (Test Promotion2)	The page will display the promotion details, Analysis (Total Promotion Done, Total Feedback Done and Feedback VS Promotion)	Pass

Table 5-2 T11 Functional Testing 11: Promotion performance

Chapter 6 Discussion and Conclusion6-1 Project Review

In conclusion, customer leaving is the problem faced by all of the organization. This problem is no method to solve completely because every customer was unique and changing every day. This problem was serious because it will directly affect the profit of the company; the method to decrease the number of customer leaving is increasing customer loyalty. The proposed solution to decrease the customer retention in this project is applying the customer relationship management (CRM) system to the organization. This CRM system will help the company to have a more clearly and critically view to the customer, then increase the current customer’s loyalty and stay the customers before they leave.

This project was developed a CRM at the end. This CRM system was achieve the objectives of the project. The objectives were done by different modules of the system. The modules included customer segmentation and filtering, system page management, customer profiling and promotion management tools.

6-2 Strength and Limitation

The Strength of this system is using data mining to discover the history data with more patterns and make it more valuable. This system is using data mining technology to generate

the profile of the customer base on the purchase history. The customer profile included the analysis like which products is most frequent bought by the customer, which category of product customer spend most and others.

The data mining technology also used to find out the potential buyer for the promotion. The system can find out the customer who frequently purchasing the promoted product or the customer who never but the promoted products. After that, the user can send the promotion to these targeted and listed customers.

The Limitation of this CRM system is its complexity for use. New user might not be easy to handle the features in the system since the features include many pages. So the new user might need to be trained before using the system.

6-3 Future Enhancement

There are some enhancements available for this project. The first enhancement is the module of the system. This CRM is not complete and still has a lot of space to expand. The module can be added including Sales Force Automation (SFA), Service Automation, Marketing Automation and others. While the system added these modules, this CRM will be more complete and more powerful for the organizations. Besides the modules, this system can be improved to be more merge able with another Enterprise Resource Planning (ERP) System. The system can add module to customize the connection with other system's database, and make it adaptable to most of the database design of other ERP system. So this CRM could become more standalone system but adaptable to other systems at the same time.

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