



Complementation of Customer Relationship Management (CRM) Method in Website Bases E-Marketing Applications

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Abstract. In the business world, competition is a challenge for companies that run businesses in the same field. Not only by getting new customers, maintaining customer loyalty is also a must in order to survive the competition. With the rapid development of technology, many companies are adopting technology to provide ease and convenience in transactions as well as an effort to retain customers. However, CV. Aku Teknologi is a company engaged in electronic commerce and until now CV. Aku Teknologi does not have an application that can support in providing convenience for customers to make transactions. Therefore, this study aims to produce a website-based e-marketing application using a customer relationship management approach to increase customer loyalty. Customer Relationship Management is internalized in the chatbot feature and provides product reviews so that CV. Aku Teknologi can find out customer product preferences. Responding to customer complaints, answering customer needs, and conducting product evaluations are the advantages of implementing CRM in the application offered in this study, which is then expected to increase customer loyalty. This study adopts a methodology that includes literature review, needs analysis, data collection, application design, development, implementation, testing, and conclusions. The results of the study are in the form of an e-marketing application that applies the concept of customer relationships which is expected to support CV. I am technological in running my business and am not inferior to competitors.

Keywords: E-Marketing, Customer Relationship Management, Application.

1 Introduction

Strategy used to beat their competitors. By involving technology, companies can provide convenience to customers through easy access to information about the company, products, services, and customer management implemented. On the other hand, not only by adopting technology, companies need to pay special attention to consumer needs. A deep understanding of customers is very important so that companies can continue to grow because they can always meet customer needs. Therefore, companies must be able to provide high-quality products that are in

accordance with customer needs and developments, as well as provide fast product information and better service than competitors.

CV. Aku Teknologi is a company engaged in electronic commerce. CV. Aku Teknolgi is faced with very tight competition in running its business. In addition, CV. Aku Teknologi also experiences problems related to the product ordering system which is still carried out conventionally, sellers and buyers must meet directly to make transactions to purchase goods. The unavailability of sales data makes CV. Aku Teknologi difficult to manage customer data, transaction data and maintain customer loyalty. In addition, the marketing system that is still manual can cause limited market share that can be achieved by CV. Aku Teknologi.

A series of these problems can affect the competitiveness of CV. Aku Teknologi and result in less than optimal sales results. Therefore, a technology-based facility is needed that can make it easier for companies to market their products, simplify the buying and selling transaction process with consumers, and increase customer loyalty. In previous research conducted by Kifti and Swaradana in dealing with problems similar to CV. Aku Teknologi, researchers proposed the development of e-marketing [1]. Another research suggest to implement information technology to improve organization's profit [2]. Therefore, referring to previous research, the proposal given is to design an E-Marketing application with a website-based Customer Relationship Management (CRM) concept to provide convenience for the public in accessing product information, providing convenience in transactions and increasing customer loyalty. In addition, unlike previous research, this research uses the Extreme Programming (XP) method by involving users in application development so that the application developed is expected to be right on target.

2 Literature Review

2.1 Customer Relationship Management

CRM is a fundamental business strategy that brings together internal processes and functions along with external networks to generate and provide value to specific customers profitably. It relies on high-quality customer data and is supported by information technology [3].

According to Kotler and Keller, customer relationship management involves handling comprehensive information about each customer. CRM oversees all customer "contact points" to enhance customer loyalty. These contact points include any interactions customers have with a product or service, ranging from personal experiences and mass communications to informal observations [4].

Customer Relationship Management is a process for gathering, consolidating, and analyzing customer data, which is then utilized to engage with consumers effectively [5].

2.2 E-Marketing

Electronic Marketing, or E-Marketing, is a marketing strategy that incorporates digital media and online technologies for the planning, execution, and evaluation of marketing activities [6].

2.3 Extreme Programming (XP)

This study utilizes the Extreme Programming (XP) design methodology. XP is an agile approach that does not rely on formal documentation throughout the development process. It is particularly suited for creating applications that require rapid delivery, such as the doctor search application developed by Gunawan et al [7].

2.4 Extreme Programming

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3 Methodology

This research employs Extreme Programming, and the research phases conducted are as follows [8].

1. Exploration
- Activities carried out to explore system needs so that the scope of the system being worked on can be known. These system needs are listed in a note called a user story. Table 1 contains user story for this application.

Table 1. User Story.

ID	Title	Acceptance Criteria
US-01	Log in Admin	Login feature can only be accessed by admins with a registres username and password
US-02	Manage Customer	Feature that can be used to view a list of customer data, starting from biodata to product preference for each customer
US-03	Manage Product	Feature that can be used for adding product data, deleting product data and updating product data

US-04	Manage Transaction	Feature that can be used for accepting, delaying or rejecting transactions
US-05	Manage Poin and Promo	Feature that can be used for adding, deleting and updating points data and ongoing promotions
US-06	Manage Criticism and Suggestion	Feature that can be used to view comments and ratings given by customers based on available products as well as a feature to answer customer questions via chat
US-07	Report	There is a dashboard page that contains informations on total customers, total transactions and total income
US-08	Log in buyer	There is a log in feature for buyers and there is an account registration feature for new prospective buyers
US-09	Display Product	There is a feature for buyers to see product details starting from title, price and also product examples
US-10	Ordering Product	There are features for ordering paying and shipping products
US-11	Display Reward	Rewards points are added to the user profile according to the total transactions made
US-12	Comments, cricism, suggestion	There is a feature to provide comments or reviews and there is a direct chat feature with the admin

2. Planning

Activities carried out to estimate between user needs and the needs of the system to be worked on, including system business processes, as well as scheduling for each stage of system development. Table 2 contains scheduling for each stage of system development for this research.

Table 2. Scheduling

No	Task	Duration	Dependencies	Status
1	Planning	20		Complete
	1.1 Project Identification	10		Complete
	1.2 Feasibility Analysis	5	1.1	Complete
	1.3 Project Effort and Planning	5		Complete
	1.3.1 Staffing people	1		Complete
	1.3.2 Use case estimation	4		Complete
2	Analysis	25	1	Complete
	2.1 Requirement gathering	5		Complete

	2.1.1 Discussion with stakeholder	1		Complete
	2.1.2 Observation	4	2.1.1	Complete
	2.2 Requirement Definition	20	2.1	Complete
	2.2.1 Design a user story	10		Complete
	2.2.2 Design use case diagram	10		Complete
3	Design	15		Complete
	3.1.1 Design Activity diagram	10		Complete
	3.1.2 Interface	5		Complete
4	Coding	15	3	Complete
	4.1.1 Feature for owner	8		Complete
	4.1.1 Feature for buyer	7		Complete
5	Testing	15	4	Complete

3. Iteration

In the Extreme Programming approach, system requirements analysis, system design and system testing activities can be carried out repeatedly by involving system users. In this research, owner of CV.Aku Teknologi is actively involved so that authors can easily defined the needs of system.

1 Discussion

The results of this study are presented in the form of an e-marketing application by adopting a website-based customer relationship approach. This application facilitates buyers to make transactions online, reach a wider market and provide input to the owner of CV. Aku Teknologi related to buyer needs.

1.1 System Modeling

To describe the process modeling that occurs in the system, this study uses activity diagrams. Activity diagram refers to user story in table 1. Here is the example of activity diagram for managing data product in CV. Aku Teknologi that shown in figure 1.

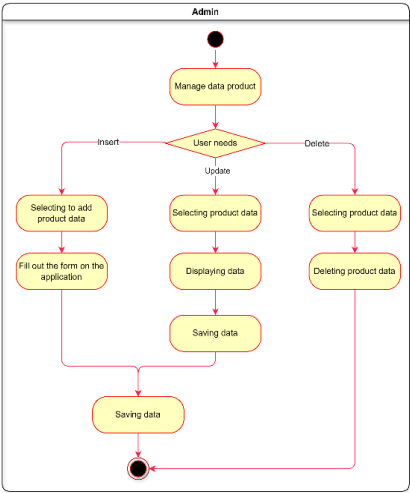


Fig 1. Activity Diagram Managing Data Product

Figure 1 explained about the way user can insert, update and also delete the products in application. This features are needed to make buyers can easily choose what products they wanted. Figure 2 shown activity diagram from buyer side.

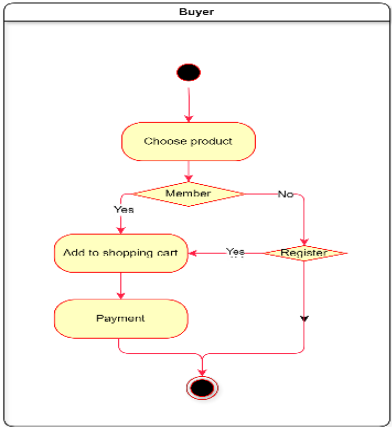


Fig 2. Activity Diagram Ordering Product

Figure 2 explained about the way customer order a product and only registered buyers can make product purchased.

1.2 System Interface

On figure 3, users are asked to log in first. When the login was successful, the next activity is to input product data, customer data, points and promo data, and manage criticism and suggestions. All of these activities can be done if you have access rights to the system as an admin.

The image shows a login interface for a system titled "E-MARKETING" by "CV AKU TEKNOLOGI". The interface is centered on a light gray background. At the top, the title "E-MARKETING" is in a large, bold, black font, with "CV AKU TEKNOLOGI" in a smaller, bold, black font below it. Below the title, there is a white rectangular box containing the login form. The form has a heading "Login" in bold. It includes two input fields: "Email/Username" and "Password", both with light gray borders. Below these fields is a large, solid blue button labeled "Login" in white text.

Fig. 3. Log in

If admin or buyers didn't have the access rights, the registration page will appear. Figure 4 shown registration page.

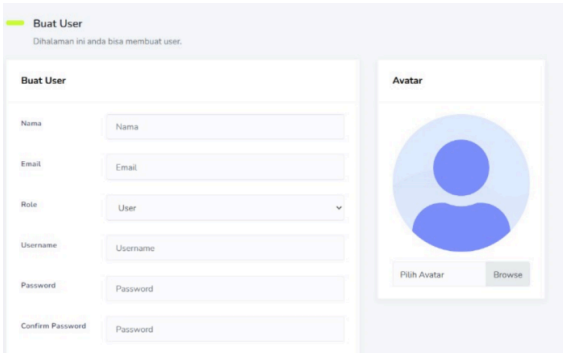
The image shows a registration page titled "Buat User" (Create User). At the top, there is a blue header bar with the text "Buat User" and a sub-header "Dihalaman ini anda bisa membuat user." (On this page you can create a user). The main content area is white and contains a form with several input fields: "Nama" (Name), "Email", "Role" (a dropdown menu currently showing "User"), "Username", "Password", and "Confirm Password". To the right of the form, there is a section titled "Avatar" which features a large circular placeholder for a profile picture and a "Browse" button to select an image.

Fig. 4. Registration Page

After log in, admin was allowed to manage product, customer, point, reward and also criticism or suggestions. This application made the business process was easier than before implementing information technology. For an example, the admin can add product data, update or even delete product data so that the product information can then be accessed by customers anywhere and anytime. Figure 5 shown managing data product.

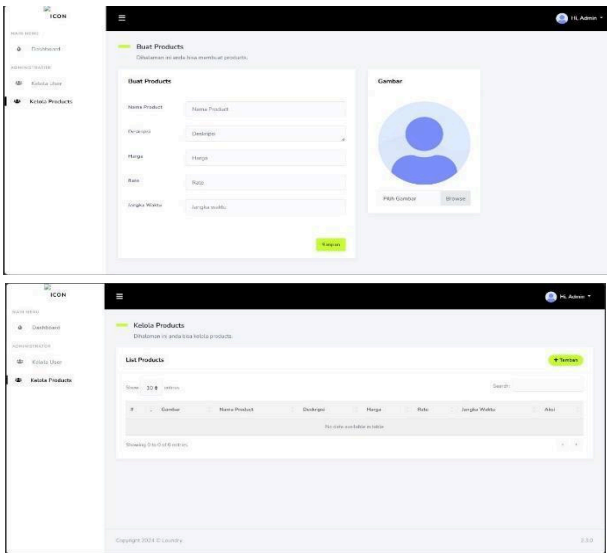


Fig. 5. Managing Data Product

There was a feature to view comments and ratings given by customers based on available products. Reviews can only be given by customers when the purchase process has been completed. Therefore, CV. Aku Teknologi can directly find out what customers want and can evaluate products, which products should be improved, increased in number or even replaced with other products. This was a form of internalization of customer relationship management and it was shown in the figure 6.

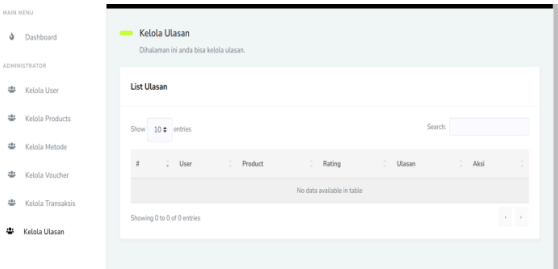


Fig. 6. Managing Review

On other hand, this research proposed a chatbot feature to make customer can directly communicate with admin so that customer loyalty can be increased. In recent years, engaging with customers has been recognized as a lucrative opportunity for organizations, with customers holding a significant role in how organizations perceive them through customer relationship management [9].

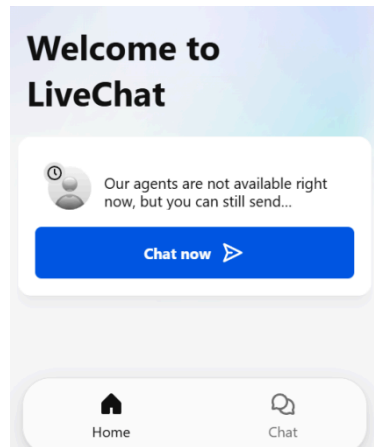


Fig. 7. Chatbot

2 Conclusion

Based on the discussions from the previous chapters, addressing the research questions, research objectives, and referring to the system's process and outcomes, the following conclusions can be drawn:

1. E-marketing applications can provide convenience to customers in accessing information related to the desired product and simplify the transaction process
2. With a customer relationship management approach, the owner of CV. Aku Teknologi can increase customer loyalty by providing products according to needs
3. CV. My technology can expand market share thereby increasing the company's competitiveness.

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