Designing E-CRM System for Banking Industry
Based on Web 2.0 Technology : A Proposal

Ryan Peterzon Hadjon[1]
ryanphd2@gmail.com

Irya Wisnubhadra[2]
irya@mail.uajy.ac.id

Eddy Julianto[3]
eddiedb@staff.uajy.ac.id

Abstract

Use of Customer Relationship Management (CRM) as a way to support marketing strategy is an important key to increase companies profitability. Integration of classic CRM concepts and technology becomes new paradigm for success implementation of CRM. One way to accomplished this is by using web 2.0 technology. The innovation of web 2.0 which is based on user-oriented approach is a fit combination for CRM which is based on customer-oriented approach. This research was aimed to combine those two concepts for analyzing and designing an E-CRM system to help improved business marketing strategy in banking industry.

Keywords: CRM, web 2.0, E-CRM, customer relationship, banking industry

1. Introduction

Web 2.0 technology for supporting activities in several business process has been long considered as an important part of the business processes itself. In one of their research, Constatinides & Fountain (2008) discuss about web 2.0 concepts and how its role can affect marketing strategy for supporting business activities. Another research conducted by Stone (2009) have shown that web 2.0 also plays an important role for supporting business activities by maintaining customer's trust in financial services through Customer Relationship Management. Furthermore, as a part of his research recommendation, Stone (2009) also suggest financial service companies to stay focus on keeping and listening to their customer's needs by combining classical approach of Customer Relationship Management (CRM) and web 2.0. Other study discuss the use of *blog* as an implementation of web 2.0 technology that can be used as e-CRM tools for corporate to building consumer engagement through content management. As one of the web technology that based on user-oriented approach (Aghaei, Nematbakhsh, & Farsani, 2012), web 2.0 is an exact tool to be applied on banking industry for designing an Electronic Customer Relationship Management (E-CRM) system. This article present the brief overview of proposed method to create and deliver E-CRM prototype system by analyzing the CRM classical concept and combining it with web 2.0 technologies that can help improved business marketing strategy for competitive advantage purpose in banking industry.

2. Literature Review

Some research on the application of CRM and its functionality and role in supporting business processes in organizations and companies have been conduct by some researcher. In their study, Sahaf, *et. al.* (2011) suggested that the role of CRM as an integral part of company

business processes can create a competitive advantage by focusing on understanding, communication, and the development of the fabric of relations between the company and the customer, whether it is to retain existing customers or to gain new customers. Furthermore it is said that customer is an important asset for the company because one of the major factors of success in a competitive market is determined by the subjective assessment of the customer service goods or services offered by the company. Therefore, the company that is committed to establishing a good relationship with the customer is a company that is considered able to compete and succeed in a competitive marketplace.

Specifically, Bohling, *et. al* (2006) in his study suggested a merger between the CRM strategy and business marketing strategies to get the results of the implementation of CRM more effectively. The study by Chopra, *et. al* (2011) suggest implementation techniques of data mining as one of the solution in addressing strategic issues of CRM. A number of suggestions were raised by El-rafaey, *et. al* (2012) in order to increase the effectiveness of the implementation of CRM within the company. While in their studies, Pupovac, *et. al* (2012) identified a number of ways that it deems appropriate to implement CRM effectively. Motivation for the company to establish good relationships with customers is to improve the profitability of the company by putting the main focus on potential customers who have a high economic value (Schoder & Madeja, 2004). This focus is important to determine priorities in dealing with customers. According to Stone (2010), different customers will react in different ways as well. Therefore, it takes special handling to the needs and characteristics of different customers. In his study on the telecommunications industry, Bayer (2010) offers an alternative customer segmentation with emphasis on the four schemes : the segmentation of customer value segmentation (Customer Value Segmentation), segmentation of customer behavior (Behavior Customer Segmentation), segmentation of the customer life cycle (Life Cycle Customer Segmentation), segmentation and customer migration (Migration Customer Segmentation).

One of the techniques offered by Jackson (2007) is to combine the concepts of CRM and the use of information technology by utilizing the web to apply personalization as an approach that can assist managers in getting the website visitors, maintain, and bring him back to visit through the provision of information or content precise form of products, services, or data at the right time and place through appropriate means. In a recent study, (Lin, 2010) offers the application of the concept of information systems as a means to improve the relationship between company and customer. Merger between information technology and the concept of the traditional CRM generate transformation paradigm that led to the birth of the concept of E-CRM. Numerous studies have been conducted to identify the fundamental differences in technology use between CRM and E-CRM (Chandra & Strickland, 2004) (Farooqi & Dhusia, 2011).

In his study, Ahuja & Medury (2010) defines the concept of E-CRM as activities to manage customer relationships through the use of the Internet, web browsers, or other electronic devices are equivalent. This is shown in their research by utilizing the company blog as a means of effective E-CRM to build customer relationships through better content management. In his study, Grover (2011) suggests the effectiveness of CRM can be achieved through the implementation of E-CRM. While the study by Peshwe & Kothari (2012) introduced the E-CRM as a new dimension in support of the customer management process. A number of other studies have been conducted to show an example of the application of technology and the concept of CRM to manage relationships with customers (Schoder & Madeja, 2004) (Ang & Buttle, 2006) (Woodcock, Green, & Starkey, 2011) (Furtuna & Barbulescu, 2011). Other research by Kennedy (2006) highlights the challenges and opportunities owned by E-CRM in the digital era. Several studies addressed the use of web 2.0 technologies and its influence in support of business processes and enterprise organizations (Almeida, 2012) (Chen, 2009) (Kim & Hawamdeh, 2011). Studies conducted by Constatinide & Fountain (2008) discusses the role of Web 2.0 and its relation to the issue of marketing in the business strategy. But more

specifically, Bughin (2008) in his study observed the adoption of web 2.0 technologies in the enterprise, known as Enterprise 2.0 as a basis for improving competitive advantage. Meanwhile Rogers, *et. al* (2007) discussed the potential of the Web 2.0 in education with the concept of learning through the use of collective intelligence. Similar research by Rollet, *e.t al* (2007) also discusses effective teaching methods through the use of Web 2.0 in education. The study by Levy (2009) discusses more about Web 2.0 and its implications for knowledge management in the enterprise 2.0. While the study by Stone (2009) suggested a combination of the classical approach to CRM and Web 2.0 technologies as one of the strategies the implementation of E-CRM in financial services companies as an important point in its research recommendations.

3. Customer Relationship Management

The term CRM was proposed by Frow & Payne (2009) as a single entity that can not be separated from the term Relationship Marketing (RM) and Customer Management (CM). RM definition itself was described as a relationship management strategy involving all stakeholders to obtain long-term shareholder value. Definition of CRM strategy described as involving customer relationship management with the use of appropriate technology. While the CM itself was defined as a form of tactical implementation and management in interacting with customers. The concept of CRM by Jackson (2005) is seen as a business strategy to acquire, improve, and retain customers. However, according to Frow & Payne (2009), definition of CRM in the narrow sense can often be one of the factors causing the failure of CRM application if the company saw it only from the limited perspective of business and technology. Therefore, further CRM system was described by Foss, *et. al* (2008) as a technology-based business management tools for developing and utilizing knowledge of the customer in order to preserve, maintain, and strengthen mutually beneficial relationships with customers. Other definitions were used by Ang & Buttle (2006) that defines CRM as a core business strategy that integrates internal processes and functions, and external networks, to create and give value to targeted customers for profit. While Rababah, *et. al* (2011) did the unification of the definition of CRM through content analysis in the fields of marketing, management, and information systems as deemed appropriate definition that will be able to help improve the success of adoption and implementation of the CRM itself.

CRM has a significance role in supporting the business processes. According to Sahaf, *et. al* (2011), CRM can act as cultural alignment between business strategy and information technology to manage customer interactions and enterprise customers in a mutually beneficial level. One of the benefits of CRM implementation in the company according to Pai & Tu (2011) not only assist companies in finding profitable market (or business opportunity), but also can improve the company's competitive advantage through reduced costs and as well as attract high-value customers. Some examples of the application of CRM in the case of various industrial industry put forward by a number of researcher (Ivanovic, Mikinac, & Perman, 2011) (Jasola & Kapoor, 2008) (Keshvari, 2012) (Milovic, 2012) (Mohammed & Rashid, 2012).

The main objective of CRM (Tuzhilin, 2012) is to get (identification and adopted), keep (serving and maintain), as well as improving relationships with potential customers. Further it is said that the goal can be achieved through a number of ways including :

1. Treat each customer differently depending on the needs and values of customers, where the value itself is further defined as a measure of how valuable a customer in view of the company. The same principle applied to the needs of customers, where each customer has different characteristics needs and preferences so that relationships are built not apply to all customers, but only addressed to the company's best customers based assessment.

2. Providing the right offer, through appropriate channels, at the right time and place. Based on the possible number of products and services offered, companies must be able to choose which should be provided to customers at the right time through the right lane choice and in conditions that are also appropriate. This can be achieved through a coordinated communication.

3. Coordination of communication with the customer, where all customer interaction is recorded and integrated in a single repository, should lead to a centralized coordination mechanism.

Study by Gavrila, *et. al* (2009) suggested CRM architecture to be divided into three main components: Operational CRM, Analytical CRM, and Collaborative CRM. Overview of this architecture can be seen in figure 1.
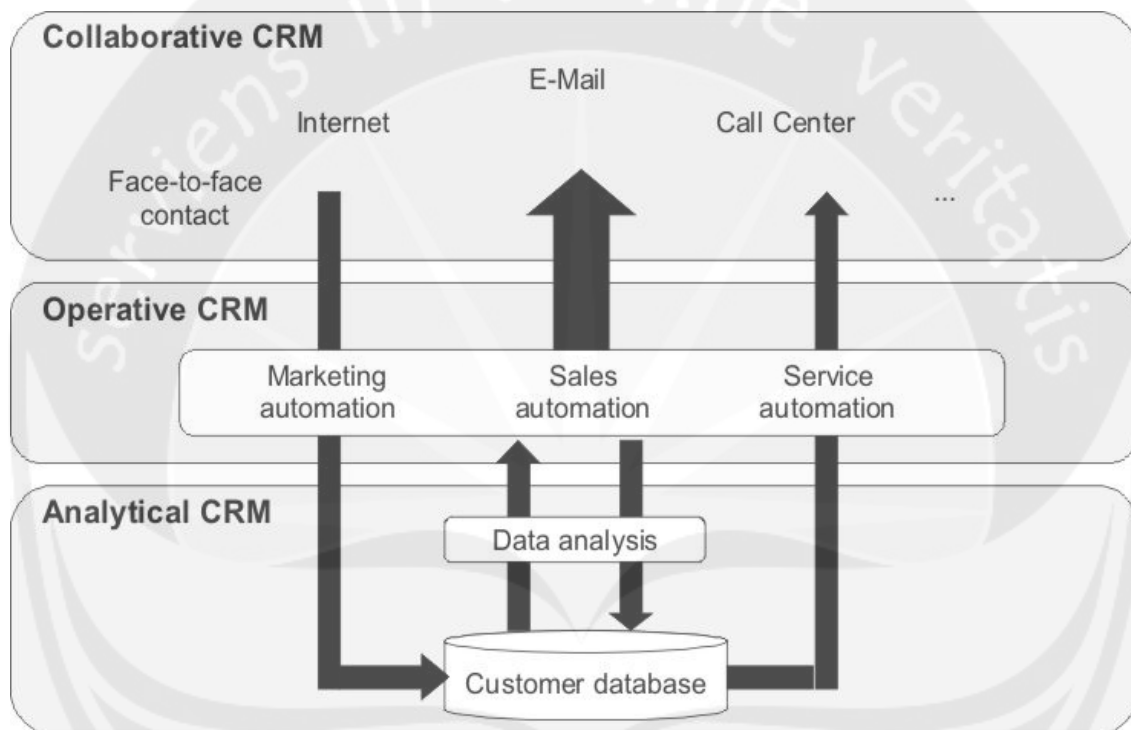

Figure 1. General Architecture of CRM

(http://www.fidis.net/typo3temp/tx_rlmpofficelib_a219f6551f.jpg)

According to Bohling, *et. al* (2006), the success of CRM within a company rely heavily on the accuracy of the CRM strategy adopted by the company and the effectiveness in the implementation of CRM itself. Furthermore, Bohling (2006) classifies two things that generally support the practice of CRM success adoption of the company, which is a bottom up and top down approach. Bottom up approach highlights the successful implementation of CRM that is initiated by a single group or divisions within the company. The top-down approach highlights the success of the application of CRM which is manifested through the full support of senior executives and management at the top level. While in his research, Soeini, *et. al* (2012) recommend the use of CRM performance measurement framework, as one measure that can be used in assessing the performance of CRM in the company.

4. Web 2.0

Web 2.0 is a web technology that was first introduced by Dale Dougherty, vice president director of the O'Reilly Media in a conference session between O'Reilly and MediaLive International (O'Reilly, 2007). Although there is no standard definition of Web 2.0, however, a number of parties were able to recognize characteristic defines web 2.0 such as web as a platform (O'Reilly, 2007), consumer-oriented web (Aghaei, Nematbakhsh, & Farsani, 2012), or web collaboration (Lee & Lan, 2007) (O'Reilly, 2007) (Aghaei, Nematbakhsh, & Farsani, 2012). Overview of a web 2.0 detail architecture can be seen in figure 2.
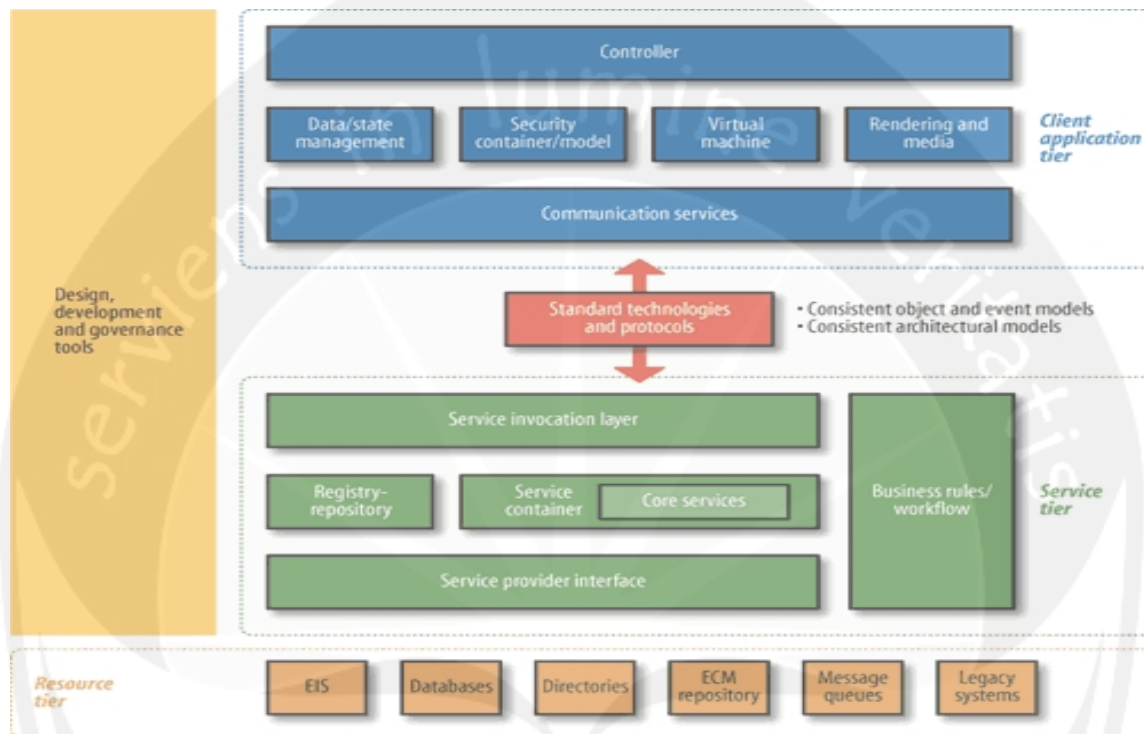

Figure 2. Web 2.0 detail architecture

(http://cdn.oreilly.com/excerpts/9780596514433/w2dp_0502.png)

The research by Constatinides & Fountain (2008) clarifies the definition of Web 2.0 applications as open source interactive and controlled by users to enhance the experience, knowledge, and strength of the consumer market as participants in business and social processes. A number of key technologies as well as web 2.0 services were categorized as follows (Aghaei, Nematbakhsh, & Farsani, 2012) :

1. Blog - The term blog was first introduced by Jorn Barger in 1997. Blog covers web page mentioned publish posts in chronological order following the journal style and are based on the latest posts publish.

2. Really Simple Syndication (RSS) - RSS is an XML file of type trees included information and provide links to sources of information.

3. Wiki - Wiki is a web page (or group of websites) that its contents can be easily modified by anyone who has access.

4. Mashups - mashup is a web page or web site and service that combines information from many sources on the web. Mashups can be categorized into seven categories which are mapping, search, mobile, messaging, sports, shopping, and movie

Some features that distinguish web 2.0 and the previous web 1.0 technology according to Aghaei, *et. al* (2012) were shown on Table 1.

Table 1.

Difference features between web 1.0 and web 2.0

Web 1.0	Web 2.0
Reading	Reading/writing
Companies	Communities
Client-server	Peer to peer
HTML, Portals	XML, RSS, JSON
Taxonomy	Tags
Owning	Sharing
IPOs	Trade sales
Netscape	Google
Web forms	Web applications
Screen Scraping	APIs
Dialup	Broadband
Hardware costs	Bandwidth costs
Lectures	Conversation
Advertising	Word of mouth
Services sold over the web	Web services
Information portals	Platforms

In his study, Levy (2009) add two things : tagging and social network web 2.0 as the main treatment. In addition, a number of features list is also considered by Lee & Lan (2007) as characteristic of Web 2.0 in relation to knowledge management, namely:

- Contribution - every Internet user has the opportunity to contribute content freely according to their field of knowledge.

- Sharing - free content knowledge can be available for everyone. Nonetheless, a peaceful mechanism is also available for specific members in certain communities to share knowledge in peace.

- Collaboration - content knowledge is created and maintained by the provider of collaborative knowledge.

- Dynamic - content knowledge is updated periodically to reflect changing circumstances and environment.

- Reliance - contributing to knowledge based on the level of trust between provider and expert knowledge.

In short, Constatinides & Fountain (2008) included three key elements as key principles of web 2.0 :

1. Focus on content based services (service-based), medium and form of open source solutions in the online application form.

2. The continuous expansion and incremental application relying on user participation and interaction in a new visual way, where users can contribute, review, or change the content.

3. New business models based on services as well as new opportunities to reach small scale individual customers with not too many products.

5. Proposed Method

In this article, the authors proposed a combination of web 2.0 technologies and classical concept of CRM as method to create an effective E-CRM prototype system for the banking industry. The classical concept of CRM includes the needs to acquire, increase, and retain customer as a main asset for banking industry to help improve business marketing strategy for competitive advantage purpose. The use of web 2.0 was meant to bring the classical concept of CRM into technology perspective by using the collaborative technology offered by its features. Furthermore, the main reason to use the web 2.0 was because its unique characteristic as user-oriented web that fits the CRM strategy which is based on customer-oriented approach. The combination of these two concepts of web 2.0 and CRM technologies makes an effective method to create and design E-CRM prototype system on banking industry. The case study in Bank NTT is then performed to first analyze the needs of CRM strategy in Bank NTT using performance analysis and then combines the CRM concept with web 2.0 technology to design E-CRM prototype system suitable for the business process in Bank NTT. The architecture design for the E-CRM prototype system is presented as MVC (Model, View, Controller) architecture. Overview of E-CRM architecture planning in this article is shown in figure 3.
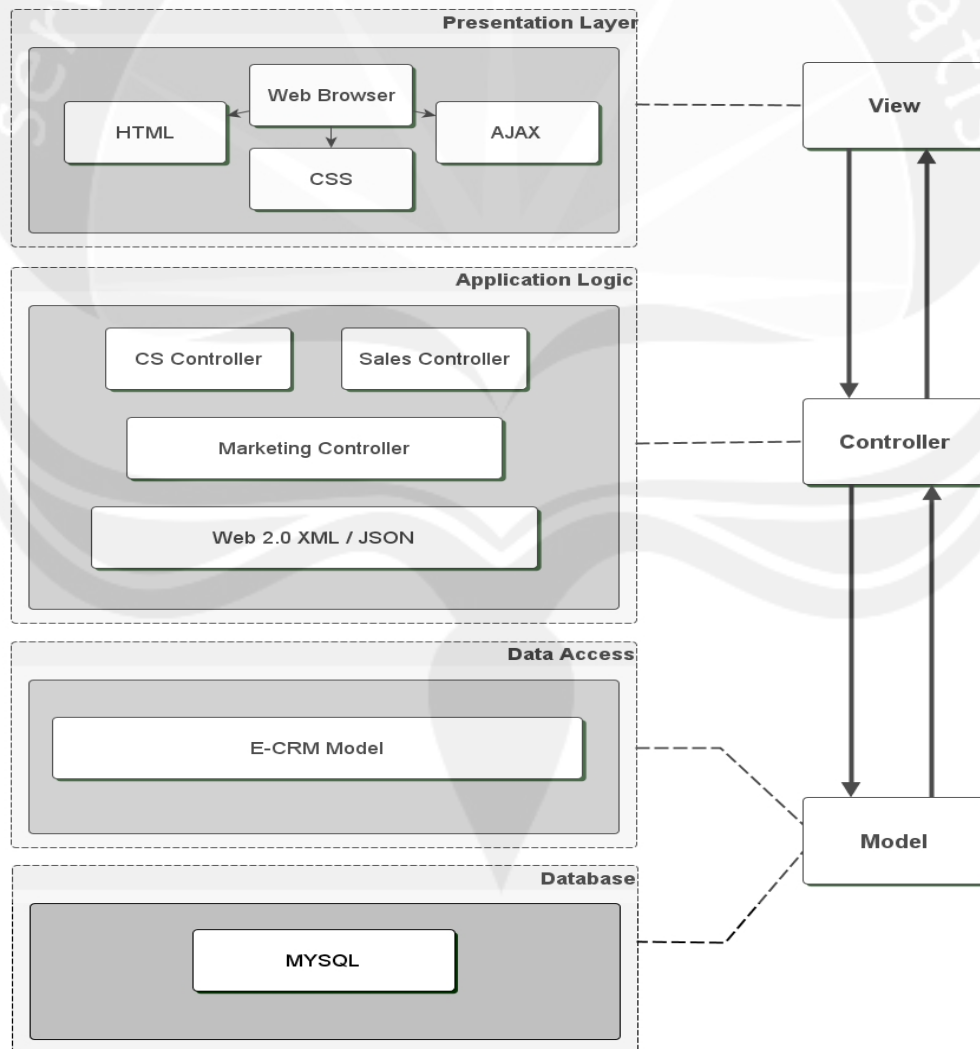

Figure 3. E-CRM Architecture Planning

The premise behind MVC architecture is that the system is divided into three different areas :
- **Model :** is an object representation of the data, usually handle all the processes read in from database.
- **View :** is the boundary between computer and user. In a web application architecture, the view refers to web page or web browser that handle all the processes presented to user.
- **Controller :** is where the application processing logic goes. It's an intermediary between model and view. Controller interprets user input and transform the result into model and then shown it back to user in the view.

In the planning architecture shown in figure 3, the web 2.0 technologies will be implemented in the presentation layer and the application logic of the system. The merge processs between CRM concepts and Web 2.0 for an E-CRM system will be implemented at the application logic level.

5. Conclusion

An E-CRM system combines the classical concept of CRM and internet technology to acquired new customer, enhanced the customer experience while at the same time maintaining its relationship with existing customer. The web 2.0 as user oriented web technology fits the requirement to merge with CRM classical concept which is known for its customer oriented characteristic. Banking industry services which are depend on customers as their main assets need a new approach of E-CRM to leverage the strength of internet for capturing customer to achieve competitive advantage. The use of web 2.0 accommodate the needs to create an E-CRM system that able to enhanced customer experience by exploring its rich content features and applications. Collaboration and content aggregation offered by web 2.0 brings much more participation from customers side and therefore enable banking industry to keep the longterm relationship they need with their customers. Combination of CRM classical concept and web 2.0 technology creates an effective E-CRM system that met expectation of much more customer engaged with less operational costs.

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