

The Development Model for Customer Relationship Management (CRM) to Improve The Quality of Services in Academic Information Systems

Faculty of Computer Science Sriwijaya University

Fathoni

Department of Information System, Faculty of Computer Science Sriwijaya University

fathoni@unsri.ac.id

Abstract— The development and utilization of information technology will make the competition among universities, as a result the universities should maintain their quality of services to get their potential customers and key customers, in particularly to get related information, in order to being first choice in the society. Professional management will be able to provide outstanding quality services and highly competitive, especially in academic services. The development of academic information system to improve the services can be done by apply the Customer Relationship Management or (CRM). Implementation of CRM in academic information system can create an emotional bond that is able to build a two-way communication between users and academic system providers. With good and reliable communication can improve the quality of academic services to the customers, which in turn will be able to improve the customer loyalty and increase the customer satisfaction in the Faculty of Computer Science.

Keywords — CRM, Quality of Services in Academic, Faculty of Computer Science

I. INTRODUCTION

University as one of the educational institution is an institution that provides public services, as like general firms. Competition among universities intensifies make them should maintain the quality of service for their stakeholders, especially in getting the related information, in order to remain the top choice in the society. Professional management will be able to provide outstanding service quality and highly competitive (Farr, 2003).

According to Berry and Parasuraman (1992), the quality of public services can be achieved through the implementation of an information system it capable to serving the academic needs of the users of the system transaction. Academic information system development in terms of improved service can be done either by applying the model of Customer Relationship Management or (CRM) (Binsardi & Ekwulugo, 2003). Fundamentally CRM built with emphasis on the principles of relationship marketing (Berry, 1983) and the client placement strategy as a processes center, activities and culture (Hamidin,

2010). This concept has been well known and widely implemented to improve services in the company. Nevertheless, CRM concept here is not intended as a form of commercial in education, but rather the effort to improve service quality.

The development of academic system based on CRM in university has different with the implementation of CRM in the world of business. CRM systems are built should pay attention to cultural and academic characteristics of the institution (Raman, Wittmann, & Rausedo, 2006) and to know and understand the behavior and needs of key customers, such as students (Daradoumis et al., 2010). According Syaekhoni (2010), the implementation of CRM in the university can improve service to the customer, where the customer will get the information about the university more easily and also can create good cooperation relationship between the customer and can facilitate student trustee to monitor the activities of their children in campus and not have to bother anymore to come or call the university to determine the development of academic and financial processes of their children (Mabrur, 2011). Faculty of Computer Science (Fasilkom) is one of the faculty under the auspices of the University of Sriwijaya who have a vision of educational programs in Information Technology and Communication, relevant and have high competitiveness in the administration tridharma 2020. As a new faculty was established on February 22, 2006, the development of Fasilkom can be said to be progressing rapidly. The progress can be judged from the number of programs and in good academic cooperation and peer education institutions overseas as well as with government agencies. The development of Fasilkom can also be judged from interests of students who entered the Faculty.

One of the efforts of the Faculty of Computer Science in the improvement of public services is by providing enrollment services such as online registration of new students. Services can also be done on line for old students to process their KRS, KHS and transcripts through academic website. Based on the services outlined above, it appears that the service in Fasilkom was not implemented specifically method. This of course can cause customer dissatisfaction. Business processes are the features of

academic websites have not been able to meet the information needs of users such as: Parents, prospective students, faculty and others. Quick solution is needed as a tool that able to bridge the needs of customers, both prospective students, students, parents of students, faculty, academic and student section, and the top management. A tool that is able to present data quickly and provide ease of access for each user. Means are able to streamline the administrative issues related to academic services (Harrison Walker, 2010). To overcome this, it takes a special method such as Customer Relationship Management (CRM) it can help the management of Fasilkom in improving the academic quality of service. From the background above the researchers interested in developing CRM to the academic process at the Faculty of Computer Science with the title : The model of development for Customer Relationship Management (CRM) to improve the quality of services in Academic Information Systems faculty of Computer Science Sriwijaya.

II. RESEARCH PURPOSE

The purpose of this research is as follows:

1. Analyzing academic processes which directly related to the services that contain in the Customer Relationship Management (CRM).
2. Produce an academic information system model by applying the approach to Customer Relationship Management (CRM) as an effort to improve service quality faculty.

III. THE BENEFIT OF RESEARCH

The benefits of this research are as follows:

1. Assist the distributing process of information more effectively, efficiently and in accordance with the needs of stakeholders.
2. Increase direct interaction between the users of the system with the existing system of academic information.
3. Expand and improve the quality of academic services that have been implemented.
4. Improve customer satisfaction of the academic system services.

IV. LITERATURE REVIEW

According to Whitten (2004), CRM is a software application that provides end-users with access to a business process from initial request through post-sales service and support sales. While Strauss (2001) stated that Customer Relationship Management is used to define the process of creating and maintaining a relationship with the customer-business customers or customers. CRM is a process to identify, attract, and retain customers and differentiate O'Brien (2002) argues Customer Relationship Management (CRM) is the use of information technology to create cross-functional enterprise systems that integrate

and automate customer service processes in the areas of sales, marketing, and service of products / services related to the company.

Thus it can be stated that the CRM in academic services at higher education institutions is an integrated approach between people, process and technology to understand the main customers (students and Guardians of students) at a university with a focus on key customers and the development of relationships between educational institutions and their customers. Basically, the purpose of a university is adopting CRM to improve durability and customer satisfaction. To be able to develop a good model of CRM needs to be done and preparation stages of CRM. Kalakota and Robinson (2001), states that there are 3 (three) main stages in the manufacture of CRM, namely:

1. The process for getting new customers (Acquire)
2. Processes to enhance customer value (Enhance)

CRM applications can be used by manufacturing and service companies. For the company consideration is choosing the right software and applications as required. The key success is to understand the whole fabric of CRM / cooperation going on in the organization / company, both internally and externally by utilizing IT-Based programs and software. This program and software should be able to gains both sides. For customers, this program and software should be easy to use, highly effective and efficient and can be used to keep track of things related to customer relationship. On the other hand, companies also benefit to improve the efficiency and productivity as well as to provide service and a consistent experience for customers through a variety of media that can be selected by users. Thus, it lead to creating a harmonious value chain in the long term.

V. RESEARCH METHOD

A. Sources Of Data

Source of data required in this study were obtained from the main customer of academic information system at the Faculty of Computer Science such as students, parents of students, academic information systems administrator, head of the academic, as well as future students.

B. Data Collection

The techniques of data collection in this study were:

1. Interview
2. Observation
3. Library Studies

C. Model Development Method CRM

In this study the model development method CRM used is Waterfall Model or Linear Sequential Model. This model is a systematic approach and sequence ranging from system level requirements and then headed to the stage of analysis, design, coding, testing/ verification, and maintenance.

1. Phase System/ Information Engineering and Modeling. This stage is search for the needs of the whole system to be applied to the stage in the form of software which is often called the Project Definition. The purpose of this phase is to find the needs of the whole system.
2. Phase Requirement Definition. This stage is focused on the needs of the software information domain from devices, such as the required functionality, user interface, and so on.
3. Phase System and Software Design. This stage is used to change the above needs to be representation in the form of a "blueprint" software before the coding begins. The design should be able to implement the requirements mentioned in the previous stage.
4. Phase Implementation and Unit Testing. This stage is the implementation of the technical design it will produce a model of CRM.
5. Phase Integration and System Testing and Phase Operation and Maintenance. Basically this stage is the stage of the unification of these functions were a whole (system testing) and phase operate the program in its environment and perform maintenance, such adjustments or changes due to adaptation to the actual situation. This stage is also useful for the development of the system in the future such as when there is a change of the operating system, or other device. Due to this study is limited to the modeling of CRM, then this step will not be performed
2. The system receives input through the website critiques and suggestions
3. The system should be able to make a report for criticisms and suggestions to top management
4. The system must be able to manage personal attention
5. The system will inform the greeting for personalized birthday for students or lecturer
6. The system will inform the personal greeting to students or faculty who get good performance.
7. The system will inform the personal greeting to students who have graduation
8. The system able to inform
 - a. IP (GPA) on a particular semester and the details of the grade
 - b. IPs (temporary a Grade)
 - c. List of courses and the amount of credits (Semester Credit Units) are taken by students in a particular semester
 - d. The total number of credits that have taken up half run
 - e. Percentage of student attendance by students access, prospective students, or parents
9. The system able to inform
 - a. Course information to students who intended
 - b. Notice to parents of students who have not paid tuition fees
 - c. Academic announcements to students and faculty
10. Management system can perform academic announcements
11. Simulation test system provides services to prospective students.
12. The system can perform management reports to the Top Management of academic

VI. RESULT

Based on the results of interviews with prospective customers and customer's CRM in the academic system Fasilkom can be defined several business processes is an urgent need of the users of the system through the existing problems. To clarify the results the interviews focused on the subject matter and the cause of the problem, the authors used cause and effect analysis matrix so it can be found that the real heart problem, while the search for appropriate solutions to improve their existing problems to improve business processes on a system that was developed to use the system improvement objectives matrix. Table I. is the identification of problems, causes and consequences of the problem, purpose of system development and system constraints are expected to be achieved in this study.

A. Requirements Definition

Functional requirements are activity descriptions and service needs of the system must be met. While the non-functional requirements are different from the description of feature requirements, characteristics, and some solutions for improving the system (Whitten, 2004). Priority of user functional requirements of the system proposed is as follows:

1. The system must be able to manage the data that there is criticism and suggestions on customer service

B. System and Software Design

To change the functional requirements described above to form "blueprint" software, the authors use data modeling approach. Data modeling is a formal way to describe the data used and created in a business system. This model can show the place, person or thing in which the data is retrieved and relationships between data.

In this research, data modeling is described using ERD (Entity Relationship Diagram) which consists of :

- a. Student entity: a table that defines the data associated with the student. This table contains all the personal data of students in the Faculty of Computer Science.
- b. Entities lecturer: a table that defines the data associated with the lecturer. All personal data held by the lecturer's table.
- c. Cama entities: a table that defines the data associated with the prospective student. All personal data is owned by the prospective student's table.

- d. Parent entity: a table that defines the data associated with the student's parent. All personal data is owned by the parents of students by this table.
- e. Entities subject: a table that contains all information related to the subject.
- f. Nilai_mk entities: a table that defines the data associated with the value. This table has a field id_nilai and value.
- g. Question entities: a table that defines the data relating to the questions and answers on simulation tests for prospective students
- h. Entities payment info: is a table that defines the data associated with payment information lectures.
- i. Entities criticism: a table that defines the data relating to criticism and suggestions. Both prospective students, students, or parents of students.

Visually, data modeling results are shown through the ERD in Figure 1. To make a model of the whole system of processes ranging from the input, process and output the author uses the modeling process. Modeling process is the formal way to describe how the business operates. Illustrate the activities undertaken and how data moves between those activities. In this study the modeling process for the new system will be described with DFD (Data Flow Diagram). Level 1 DFD shows all the processes that take place in the academic information system that will be proposed. In this DFD are 9 of processing and 4 pieces of entities.

1. The process 1.0 is a process to manage all the information about the customer service in the form of criticism and suggestions from students, prospective students, faculty, and parents of students
2. The Process 2.0 is in charge of managing the process of personal attention to students and faculty.
3. The process 3.0 is a process that served to show good attendance recapitulation students and faculty absenteeism This process involves pieces of entities such as students, faculty, parents and students of Academic and Student Affairs section
4. The process 4.0 is a process that displays KHS and transcripts for students and parents of students. This process requires the database to generate the output value.
5. The process 5.0 is a process to display all the information about the courses to students, prospective students, and parents of students
6. The process 6.0 is a process for information processing of tuition payments for Faculty of Computer Science. This process will result in a description whether the student has to pay tuition or not. Payment information will be provided to students and parents of students.
7. The process 7.0 is a process to cultivate academic announcements.
8. The process 8.0 is a process of simulation test, value to generate information that can support the decisions of prospective students in determining the ability to take the entrance exam for Fasilkom.
9. The process 9.0 is a process in charge of preparing reports required by the Dean Assistant I.
10. The process 10.0 is a process that performs data processing on the data of prospective students.

11. The process 11.0 is a process that performs data processing on the data of parents of students.
12. The process 12.0 is a process to show the value of KHS.

From DFD there is addition several processes that appear to support the implementation of CRM. These processes include processes for managing criticism and advice, to the management of personal attention, managing payment information and management simulation tests. Criticism and suggestion process or customer service are a process where the customer (students, prospective students, faculty, and parents of students) can give critiques and suggestions to the Faculty of Computer Science which essentially will be reported to the PD I as a material consideration in the decision making efforts to improve the quality of faculty service.

Management of personal attention, a process to give special attention to the faculty and students in an effort to increase the loyalty of the faculty. Payment management is the process of delivering information relating to the payment of tuition / tuition to the students and parents of students. The process will be able to help the parents of students in implementing parental monitoring. Meanwhile, the simulation process is a process containing test on trials test on the ability of prospective students for entrance exams to fasilkom. Results of these simulated tests is a comparison of the simulation results with the passing grade fasilkom test. This will assist students in making decisions on their interests and abilities in the college entrance exams. In addition, this effort is also intended to get new customers for the fasilkom.

Amount of information received by each user of the system will improve the performance of the users of the system itself. More and varied information will also help the users of the system to make decisions so the resulting decision will be more fast and accurate.

VII. CONCLUSION

Academic Information Systems (SIMAK) which has been implemented in the Faculty of Computer Science Sriwijaya University basically good enough and there are many features that can facilitate student academic data processing such as: KHS, KRS, transcripts, student registration. SIMAK existing on-line has not been touched prospective customers and increase customer loyalty academic itself. For it is necessary to build academic services with CRM approaches in an effort to improve service to users of the system.

This research resulted in a CRM model can improve the relationship between prospective customers (such as: students, parents, and the general public) and customer systems (such as student, faculty) with the Faculty of Computer Science as an institution of education services and can create an emotional bond were able to create a close and open relationship and create two-way communication between users and providers of the academic system. With good and reliable communication can improve the quality of academic services to customers, which in turn will be able to improve customer loyalty and increase customer satisfaction to the Faculty of Computer Science.

TABLE I
PROBLEMS, OPPORTUNITIES, OBJECTIVES AND CONSTRAINTS MATRIX

Cause and Effect Analysis		System Improvement Objectives	
Problem or Opportunity	Cause and Effect	System goals	System limitation
1. The absence of on-line process that can capture the interest of prospective students of Fasilkom	<ol style="list-style-type: none"> 1. There is a new promotion process through direct visits to school, promotion in the mass media so that takes time, effort and considerable expense. 2. There is no mechanism to attract prospective students on line via the personality approach. 	<ol style="list-style-type: none"> 1. Provides a new simulation admissions test, which contains data about the admission procedure. 2. Provide data related to academic support services for prospective students to communicate with 	<ol style="list-style-type: none"> 1. Only prospective customers who already registered can use this facility.
2. The absence of critical management processes and suggestions from users of the system	<ol style="list-style-type: none"> 1. There is no mechanism to accommodate criticisms and suggestions 2. There are no reports of services 3. Complaints and suggestions still delivered by conventional 4. Lack of fulfillment of the required customer information. 5. The absence of specific policies to support increased academic services 	<ol style="list-style-type: none"> 1. The system can display the report to customer service 2. Submission of comments and suggestions submitted via website 3. Submission of criticisms and suggestions can be submitted by SMS 	<ol style="list-style-type: none"> 1. Only customers who already registered can give criticism and advice. 2. The report can be accessed online 3. Criticism and suggestions accommodated by customer type 4. Criticisms and suggestions can be sent via SMS 5. SMS sending comments and suggestions should be made in accordance with the SMS format for inputting criticism and suggestions
3. The absence of the management personal attention for students and faculty	<ol style="list-style-type: none"> 1. There is no harmonization between students and lecturers 2. The absence of processing of personal data of students and faculty 3. Students and faculty are less personal attention 4. Students and lecturers are rarely open academic website 5. The absence of specific policies to support the management of personal attention 	<ol style="list-style-type: none"> 1. The system can manage personal information. 2. Based on the results obtained information management will be given information about the student / faculty such as student / faculty's birthday, earn achievements, and graduate students. 3. Students and faculty get a special greeting through the website 	<ol style="list-style-type: none"> 1. Personal attention is given to students and faculty through the website 2. Just received a birthday greeting when student / faculty birthday 3. Congratulations on the anniversary, achievement, graduation or personally delivered to the customer when logging in on the website 4. Personal information sent through SMS.
4. Nonoptimal delivery of academic announcements	<ol style="list-style-type: none"> 1. Submission of academic announcements are not up to date and continue 2. Submission of academic announcements still general 3. Students actively looking for information about academic 4. Students rarely open website to get academic announcements 	<ol style="list-style-type: none"> 1. Academic announcements delivered up to date and continue 2. Submission of certain academic announcements made directly to individuals associated with the announcement 	<ol style="list-style-type: none"> 1. Academic announcements submitted via website 2. Specific announcements are sent specifically to individuals associated with the announcement.
5. Prospective students / learners difficult to get academic information	<ol style="list-style-type: none"> 1. Student / prospective student has no special access to communicate with faculty 2. The absence of mechanisms for communicating with prospective student-related information needs of the faculty academic 3. The absence of the data processing mechanism of prospective students 	<ol style="list-style-type: none"> 1. Provide special media for prospective students to interact with Fasilkom through website 2. Prospective students are given the right of access to academic information conformed to the requirements 3. Simulation test facility is provided for students' graduation exam (UN) 	<ol style="list-style-type: none"> 1. Prospective students will gain special access to Academic Information Systems 2. Only students who are already registered can interact with the Fasilkom website 3. Only prospective students already enrolled can use simulation test facility
6. The absence of parental monitoring features for parents of students associated with the development of his lecture	<ol style="list-style-type: none"> 1. The absence of system privileges granted to the student's parent 2. There may be a misunderstanding between the parents and the faculty for incorrect information submitted by student 3. Parents difficult to get academic information from the faculty 	<ol style="list-style-type: none"> 1. Parents can get information related to the course (academic) 2. The system can provide academic information effectively and efficiently 	<ol style="list-style-type: none"> 1. The system gives access to the parents to get their children's academic information

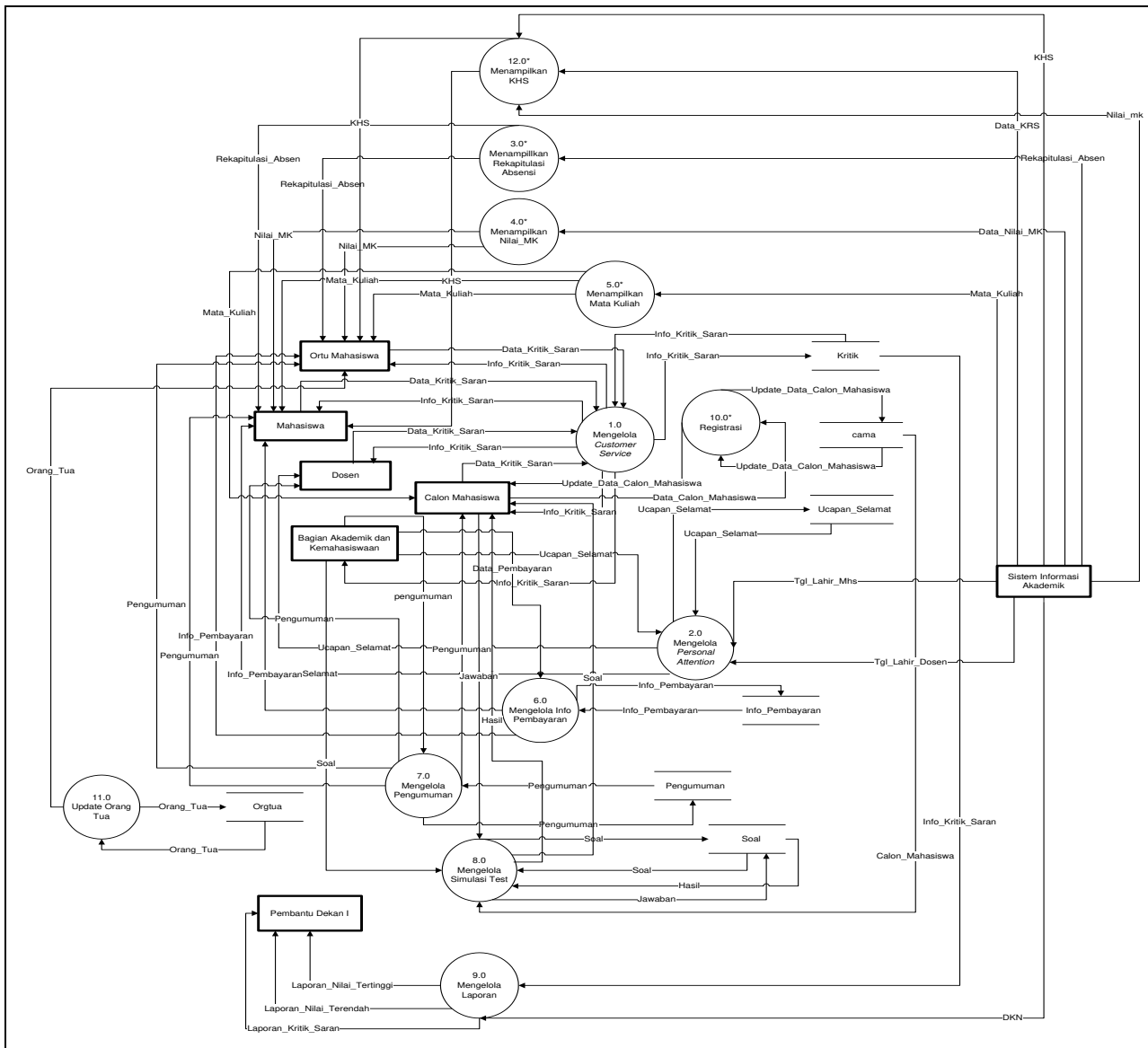


Fig.1 Developed System

REFERENCES

- [1] Berry, L. L. (1983). Relationship marketing. Emerging perspectives on services marketing, pp 2528.
- [2] Berry, L. L., & Parasuraman, A. (1992). Prescriptions for a service quality revolution in America. *Organizational Dynamics*, 20(4), pp 515.
- [3] Binsardi, A., & Ekwulugo, F. (2003). International marketing of British education: research on the students' perception and the UK market penetration. *Marketing Intelligence & Planning*, 21(5), pp 318327.
- [4] Daradomis, T., RodríguezArdura, I., Faulin, J., Juan, A. A., Xhafa, F., & MartínezLópez, F. J. (2010). CRM Applied to Higher Education: Developing an eMonitoring System to Improve Relationships in eLearning Environments. *Management*, 14(1), pp 103125.
- [5] Farr, M. (2003). Extending participation in higher education Implications for marketing. *Journal of Targeting, Measurement and Analysis for Marketing*, 11(4), pp 314325.
- [6] Hamidin, Dini.2008. Model Customer Relationship Management (CRM) di Institusi Pendidikan, [Online] Tersedia : <http://journal.uui.ac.id/index.php/Snati/article/viewFile/559/483>. [20 Juli 2011]
- [7] HarrisonWalker, L. J. (2010). Customer prioritization in higher education: targeting 'right' students for longterm profitability. *Journal of Marketing for Higher Education*, 20(2), pp 191208.
- [8] Kalakota, R. And Robinson. (M. 2001). e-Business 2.0 : Roadmap for Success. Addison-Wesley information technology series.
- [9] Mabur Muhammad Alex. 2011. Aplikasi operasional customer relationship Management layanan akademik dan Keuangan berbasis website dan sms gateway. [Online] Tersedia : <http://eprints.upnjatim.ac.id/998/1/file1.pdf> [08 Desember 2011]
- [10] O'Brien, James A., 2002, "Customer Relationship Management", *Management Information Systems: Managing Information Technology in the E-Business Enterprise* (5th ed.), McGraw-Hill Higher Education, pp.128-131.
- [11] Parasuraman, A., Zeithaml, V. A., & Berry, L. (2004). SERVQUAL: a multipleitem Scale for measuring consumer perceptions of service quality. *Retailing: Crit Concepts Bk2*, 64(1), 140.
- [12] Pressman, Roger S. 2002. *Rekayasa Perangkat Lunak*. Yogyakarta : Penerbit ANDI.
- [13] Raman, P., Wittmann, C. M., & Rauseo, N. A. (2006). Leveraging CRM for sales: the role of organizational capabilities in successful CRM implementation. *Journal of Personal Selling and Sales Management*, 26(1), pp 3953.
- [14] Strauss, Judy. (2001). *E-Marketing edisi 2*. upper Saddle River, New Jersey.
- [15] Syaekhoni Muhammad Alex. 2010. Rancang Bangun Sistem Informasi Akademik Dengan Konsep Collaborative Customer Relationship Management. [Online] Tersedia : <http://xa.yimg.com/kq/groups/23555923/901180413/> [20 Juli 2011]