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Mobile CRM student-parent information system

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Abstract. This paper presents UML (unified modeling language) modeling on mobile CRM for a parent guardian information system. The current problem is that the relationship between parents of students and university is still there. The purpose of this study is to eliminate the distance between parents of students with universities in the aspect of information related to the academic development of their children. Using ones of system development life cycle, UML is used to model the system requirements that will be developed based on an analysis of existing needs. The result of this study is a UML model of mobile CRM for parental guardian information system.

1. Introduction

Utilization of information technology on this day has become an inevitable requirement. According to APJII data of Indonesian internet users in January of 2016 has reached 88 million [1],[2]. Of course, internet usage will increase every time, because the government and the private sector continue to provide facilities increasingly reach new areas in remote locations [3]. Internet users will always learn to utilize the internet to help all things in life activities. The use of emails has replaced conventional letters, e-books have replaced books in libraries, could be corrupted by termites, and e-news has replaced newspapers every morning.

Information technology has been utilized in the world of education to process. One of the benefits in the world of teaching is the existence of e-learning. e-Learning can remove the problem of time and distance to deliver information from educators to learners. The smartphone is an information and communication technology equipment that has been owned by everyone. Smartphone has been able to replace the function as a computer in the form of a PC or laptop. People use longer smartphones than PCs and laptops [2].

However, the use of information systems to foster relationships with parents or guardians of students to improve customer satisfaction by the concept of CRM is still less attention. So it still often happens ignorance of parents or guardians of students with the development of studies and student activities in the college where his college where science demands. UAS value information for each course, IP semester, cumulative IP, college payment status, and other academic activities should not be obtained from his / her child but can be through a direct information system. It can be delivered directly to the parents of the student guardian. One of Industrial application for customer convenience is CRM, in the world of education must also provide satisfaction to all customers called learners and parents guardians of children who have entrusted their children to educational institutions concerned.

Information technology is a fast-growing technology [4]. The world of education is required to use information technology to accelerate the delivery of information because it is essentially education is

the transfer of knowledge. Universitas Muhammadiyah Magelang (UMMgl) has started to utilize information technology one of them with KRS online with URL address krsol.ummgl.ac.id. Universities will be able to cut the course time and cost with the utilization of information technology.

One method to improve customer satisfaction is using a concept of customer relationship management. Fostering good relationships with their customers will give us confidence and ultimately customer loyalty to increase greater market share. Loyal customers will be loyal and will indirectly promote to new prospective customers.

The implementation of CRM in the education world is growing stronger with the emergence of several models of distance learning, e-learning, and e-business [5]. Implementation of CRM becomes imperative because CRM is also part of SaaS (Software as a Service) in Cloud Computing technology. Looking at stakeholders as customers will make their feelings more comfortable and loyal to provide a competitive advantage. College by implementing CRM will be able to attract, retain, and serve its customers.
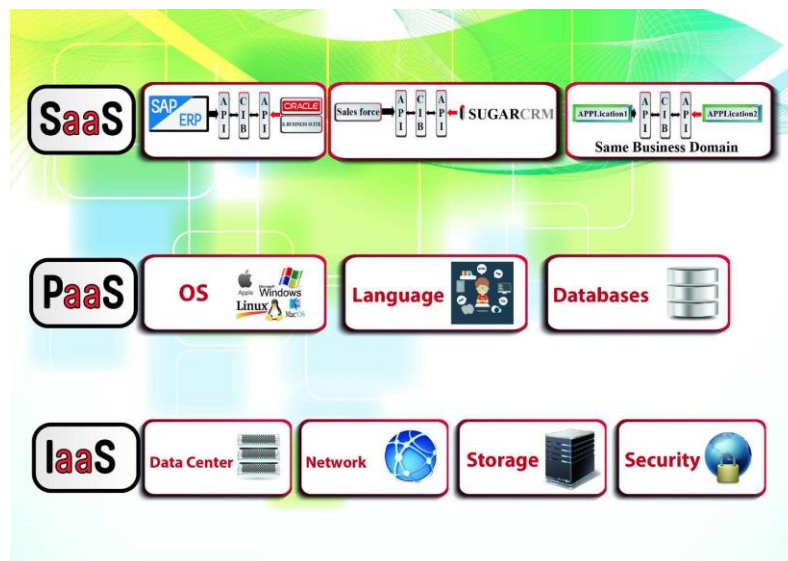

Figure 1. CIB Location inside SaaS layer of Cloud Computing Layers [6]

In the previous study, CRM application is also applied to CRM reporting of enterprise development to provide confidence to customers and improve customer loyalty [7]. Many companies develop and maintain CRM-based data warehouse systems appropriately to get what they expect, that is, to maintain a sustainable customer relationship. The use of CRM information technology makes the service to customers more flexible, especially for multinational companies certainly have different currency, with this system is very easy to convert because based on the system.
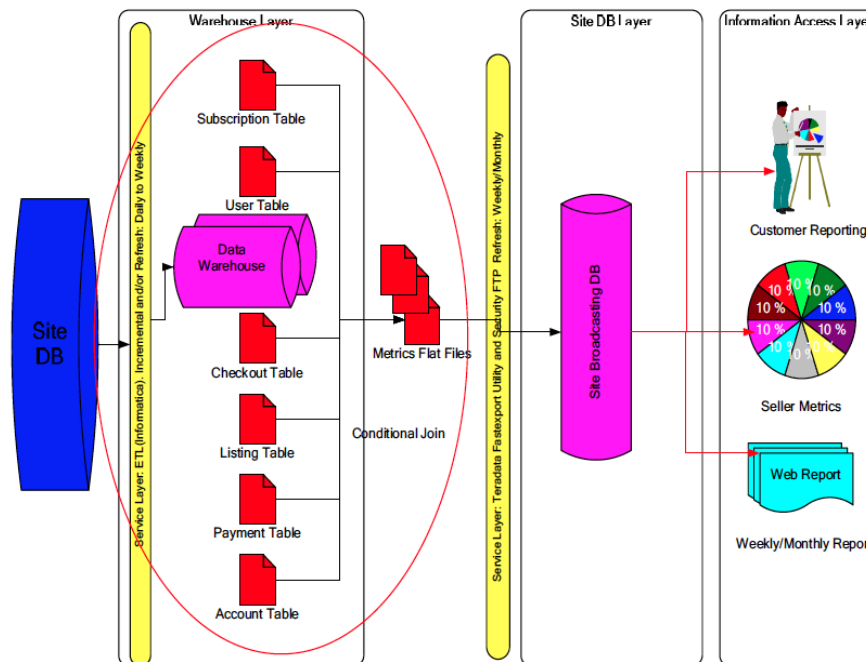
Figure 2. Technical architecture of this CRM/Customer Data Reporting system [7]

Furthermore, some research on CRM still focuses on students as customers but has not considered parents as customers. Therefore, research has focused on parents of student guardians as customers. In this case, mobile CRM developed and designed using UML.

2. Method

In this study, an activity to identify the object of research and related environment further to deepen the situation and condition of the system to be developed. Expectations and constraints on the system that run will be used as a reference in developing the system. The preliminary study was conducted by collecting information about existing educational business processes at universities, consulting with related parties and supporting information about the relationship of parents of guardian students and universities.
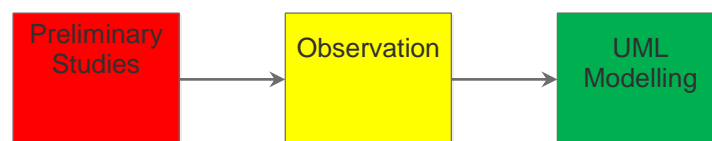

Figure 2. Set up experiment and apparatus

After the data is obtained, the next step is to browse the system that has been running along with its advantages and disadvantages. To accomplish this, the results of this activity are also reinforced by literature and library studies with accountable sources, such as from the literature on mobile customer relationship management, information systems, and academic systems.

Researchers conduct a meeting with student guardians (prospective users of information systems) to identify the purpose of the application or system and determine the information needs to achieve the goal. Researchers analyze aspects of business or management and analysis of technological issues. The business perspective analysis is carried out to obtain information related to the flow and relation of information needed from the interaction of parents of guardians with the education providers (universities). Technological aspect analysis is done to get information related to technology already

owned by the college, and the possibility of developing what needs to be done in the future in connection with the implementation of mobile customer relationship management information system of parents of student guardian. This analysis will result in minimal requirements of a system. Requirement Planning will create a minimum specification of a system.

This design stage is done to get the blueprint of system design and prototype from the parent student information system. System design is closely related to the previous process, namely the planning of the needs. These design stages include the design of business process models to be developed and the design of information-based information systems based on mobile customer relationship management. This interface design will be done on the Android and iOS platforms because these two platform models have different characteristics. This design researcher requires the help of the professional UI / UX designer to create an interface that matches the character of each platform mobile phone (smartphone). This stage of the design process also includes the design transformation into the coding of mobile-based programming languages. From the results of this implementation has been obtained mobile-based information system installed on the smartphone and set up a server that is used to serve parent guardian information systems based on mobile CRM.

3. Result and Discussion
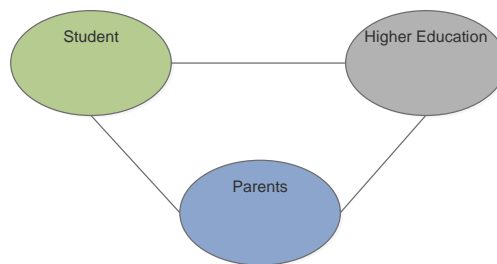
3.1. Preliminary Studies

Figure 3. Relationship between Students, University, Parents

Figure 3 shows the relationship between students, university, and parent/guardian, the dashed line of guardian parents towards the higher education shows an indirect relationship, but the student towards the higher education is a direct connection. The inconsequential relationship that occurs is because the parents of the student guardian are less likely to interact with the university than the students with the higher education. Students and parents, will encounter obstacles if their children (students) never provide information about academic development obtained by his son at the university. In the course of the study plan in each semester, students will only fill out online through the krsol.ummgl.ac.id page, unnoticed by the parents of the student guardian. The parents of the student guardian also have an important role in the success of their children in university education, without the supervision and control of higher education parent will also find it difficult to provide academic-related actions. Thus, the role of parents in the success of education in college is also one of the important points.

The researcher conducts a preliminary study of the existing SOP from the educational business process of the student to an academic system of Study Plan Card (KRS). It it is concluded that there is a standard procedure for the registration of the study plan for the next semester with the existing online system also through the krsol.ummgl.ac.id page. This online KRS process hopes to facilitate the student in enrollment of study plan for one semester ahead with more efficient because it can be done according to the schedule specified. Students can also determine according to their ability because students can choose the courses that will be taken during the next semester which will also impact with the bill one semester. Students will surely deliver this to guardian parents as a supporter for the still. Obstacles that arise later then the parents cannot see the detailed resume bill, so it appears

nominal so paid for immediately. Current constraints from interviewing with the Guardian's parent, her child sometimes cannot explain about the fee, so parents need to come to the campus for clarification.

3.2. Observation

Mobile application development can be maximized and by its characteristics [8]. Mobile devices have many types of sizes, designs, and layouts, but they have very different features of the desktop system, which are:

a) Small size

Mobile devices have a small size. Consumers want the smallest devices for their convenience and mobility.

b) Limited memory

Mobile devices also have a small memory, namely primary (RAM) and secondary (disk). This restriction is one of the factors that affect the writing of programs for various types of these devices. By limiting the amount of memory, special considerations must be taken to maintain the use of these expensive resources.

c) Limited processing power

Mobile systems are not as tight as their desktop counterparts. Size, technology, and cost are some factors that affect the status of these resources. As with discs and RAM, you can find them in sizes that fit a small package.

d) Low power consumption

Mobile devices spend less power than desktop machines. These devices must conserve power because they are running in a state where the power supplied is limited by batteries.

e) Powerful and reliable

Since mobile devices are always taken wherever they are, they must be robust enough to deal with collisions, movement, and occasional drops of water.

f) Limited connectivity

Mobile devices have low bandwidth, some of them are not even connected. Most of them use the wireless connection.

3.3. UML Modelling

Based on preliminary study and observation then mobile CRM is expected to meet the information needs that no longer pass the student but can be directly enjoyed by guardian parents directly with mobile devices. Based on the summary of requirements analysis, the minimum specification of a system is found:

a) Able to provide KHS information
b) Able to provide KRS information
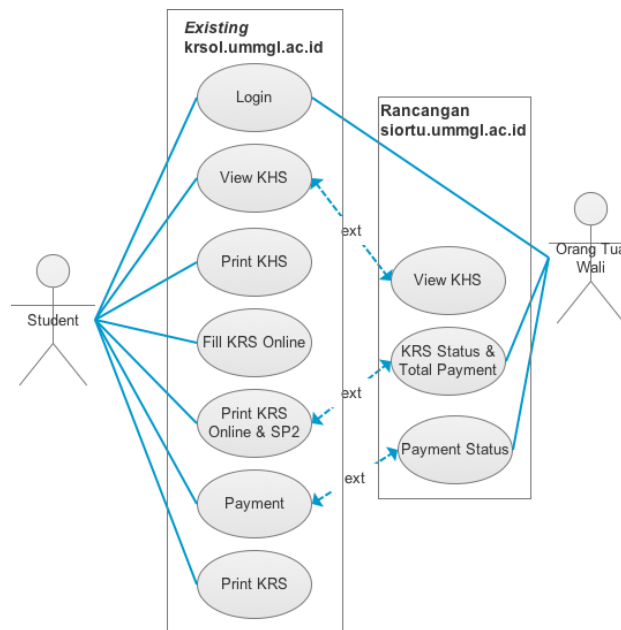c) Able to provide billing information and Payment Status

Figure 4. Parents information system [9]

Based on Figure 4, the development of parental guardian information system is developed without changing the existing system. The parent guardian's information system only retrieves data related to the necessary information to be presented to the parents of the student guardian. In figure 4 above also seen the primary function of the parental guardian student information system is to provide three essential information, as well as the expectations and specifications that will be the system to be developed. As shown in Figure 5 below, the system will be designed using the use case diagram from the parent guardian information system. Thus, that in the development will be done on the limits of information that has been set in the needs planning. The language of general facilitated the use of language generally to assist users in understanding the term education. So "KHS" we make comfortable with "Value" and "KRS" with "Study Plan."
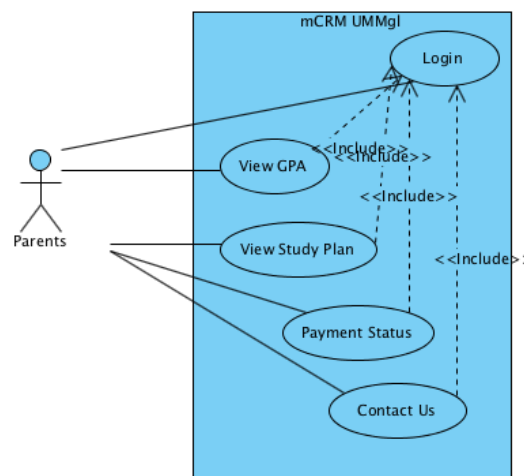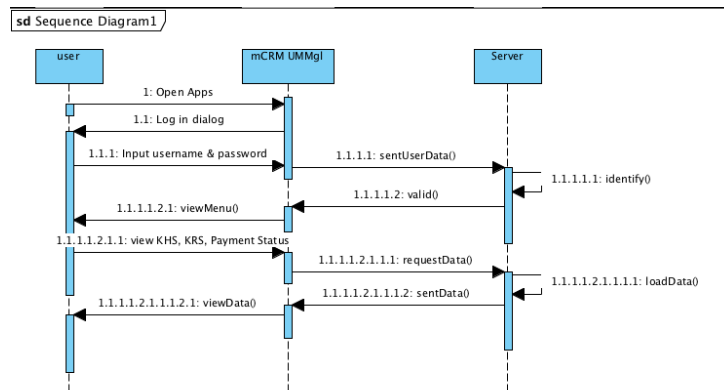

Figure 5. Use Case Diagram for mCRM

Figure 6. Sequence Diagram for mCRM

4. Conclusion

In this study, UML model usable diagram use case diagram and sequence diagram which can be the basis of further mobile CRM software development. The existing use case diagram already meets the minimal needs of a CRM mobile system for the parent student information system at a college. Mobile CRM has a function to connect the distance between parents of students with universities to provide academic information development of students to their parents.

Acknowledgment

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