

# Develop CRM on E-Business for Online Course

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**Keywords:** CRM, E-business, Online Course, Customer Relationship Management, E-learning.

**Abstract:** Customer Relationship Management (CRM) is one of the popular components of e-business in the education sector. CRM is a business strategy that uses information technology to expand a relationship with customers and increase revenue for the owner. This research aims to develop CRM on e-business in the education sector which name gurupanda online course. Actors in this online course use case diagram are consist of admin and customers. Admin is representative of the owner of e-learning business and sales who manages all activities in gurupanda. Customers have two functions, as exercise seeker and exercise maker. Waterfall model is used as a methodology for developing this CRM. The black box method is applied for testing from the customers point of view. The results state of scenario testing are valid. Therefore, it was concluded that gurupanda online course runs well and as expected, especially for manage customer relationship.

## 1 INTRODUCTION

In a business, CRM is an important aspect which maintains business existence in the customers mind. Competition in a business cannot be avoided. Initially, the business is only focused on product sales, then currently, it extends to managing customer relationship.

CRM has been widely applied by a businessman to increase business profitability with the development of information technology. Now, CRM is considered as one of the most important targets in about 60% of the projects around the world. A modern technology helped in better dividing of the market territories, enhancing communications with customers, providing an environment have rich information so, it contributes to improving efficient strategies to deal with customers (Soliman, 2011).

Why use CRM? According to a Harvard Business Review study: 1) A customer who satisfies in 10 years will take more than 100 customers to the company. 2) The budget to attract a new customer is 7 times more than to serve an old customer. 3) 20% loyal customers of the company account for 80% of its revenue (Pareto's principle). 4) Almost 70% of customers change brands because they don't like the service or the company. 5) On average a customer tells 9-10 other people about a problem. 6) To an existing customer, the chances of selling are 1 in 2; to a new customer, the chances of selling are 1 in 16.

Although CRM has been widely used by businessman, it was found that there is a deficiency in the strategy that has been used. The strategy that has been implemented similar with others in maintaining customers. The competitive strategy which involved customers combination and unique marketing is needed to build a relationship between customers and products because the unique values become sale values and a differentiator with others.

In Indonesia, there are several popular online courses such as Ruangguru, Quipper, and Zenius. The online course provides materials and exercises from elementary school level until senior high school level. To establish relationships with customers, ruangguru provides many features that can be used by students and teachers, quipper provides affordable prices for customers by giving ten subjects with a total learning time of 220 hours, and zenius establishes a relationship with customers by providing educational access services in Indonesia video that are presented online and offline. From these three online courses, some other features that have similarities are learning by video (Gideon, 2018).

The strict business competition in this era requires businessman to be more creative in developing CRM. This research aims to develop CRM on e-business in education sector as an online course which name is gurupanda. Gurupanda is an online course which provides exercise for students from elementary school until college level.

Gurupanda offers different innovations from an online course which has existed before in Indonesia. As e-business in the education sector, gurupanda not only provides benefits for the owner, but the most important is benefits for customers. The innovation provides exercise from elementary school level not only until senior high school level but also until college level. Besides, customers can be divided into two functions, as exercise seeker and exercise maker. Customers who will be an exercise maker must take the test first in accordance with competence. It makes exercise in gurupanda become well verified because it is made by people who experts in their fields. Actually, many customers able to be experts exercise maker, but it cannot be channeled because of the limitation. Gurupanda is present as media for customers who have a provision of education to increase their ability in making exercise which sometimes cannot be channeled well in a formal education institution.

## 2 E-BUSINESS FOR LEARNING

Transformation in education is influenced by ICT progress in last decade. It changes face to face (traditional) way of education into online education which facilitates a learner constrained by distance from a far place. ICT becomes a central base of business organizations to support their strategies in a wide business area. (Gwamba, 2016). By using ICT in almost all aspects of people transaction activities using software application based on internet connection has introduced the concept of electronic transaction include e-business, e-commerce, e-learning, e-banking, which of course are covered by e-business (Achugue, 2014).

E-business definition is a business activity which re-designing the business process through adding support mainly by electronic facilities include information system and networking technologies in internal and also external organizations for communicating with their customers, suppliers, and communities, with purpose to achieve goals of business such as reducing operational costs, improving performances, increasing transaction speed, expanding customers and markets, providing additional service for customers, and enhancing partnerships of business (Mitchell et al., 2003).

E-business increases connectivity in the field of education which provide chances to integrate the key business processes both vertically and horizontally. By integration vertically, both distance learners and also full-time learners will connect with many resources of education in real time, make a coopera-

tive learning and collaboration with online group of communities. Through backward integration vertically, authors or teachers, and suppliers can predict the number of resources demanded to increase their production and revenues which provide more opportunities to the growth of business and also profitability (Gwamba, 2016).

In essence, e-learning is a computer-based educational system that enables people to learn without boundary of time and place. E-learning offers an alternative way to learn that is faster, cheaper and potentially better. The term "e-learning" has been introduced since 1999 when this term was first utilized at a CBT systems seminar. Other terms also began to grow which have an equal and accurate description such as "online learning" and "virtual learning" (Epignosis, 2014). Online education can be facilitated by e-learning or online learning. The benefits of online learning (Epignosis, 2014):

### 1. No Boundaries, No Restrictions

In the case of face to face learning, the location limits attendance to the learners who live in a near place from the area to participate the learning activity, and in the case of time, it limits the learners who can follow the activity at a specific time. By using E-learning, process of learning can be held without having to organize the place and the time for the participant who is interested in a specific course can be present.

### 2. More Fun

E-learning can be designed as a course in a way that makes it interactive, interesting and fun by using multimedia, game, competition or others.

## 3 CRM

In the National Office for the Information Economy scoping study of e-business in education, John Mitchel found that the three most popular components of e-business for educational, one of them is CRM. He also says that previously CRM defined as using databases of customers details to expand sales. Currently, CRM is as a way of restructuring the organizations to have a better manage relationships with their customers. By implementing and managing effectively, customer relationship management can change an organization from product-centric and supply-driven to become more customer-centric and demand-driven.

According to Kalakota and Robinson, CRM is defined as an integrated sales, marketing, and service strategy that precludes lone showmanship and that depends on coordinated enterprise-wide actions. CRM

is also a concept that is based on the philosophy of using a combination of customers and marketing for relationship building in a company (Bin-Nashwan and Hassan, 2017). CRM becomes a business strategy that uses information technology to provide an enterprise with a comprehensive, reliable, and integrated view of its customer base so that all processes and customer interactions help maintain and expand mutually beneficial relationships (Hong-kit Yim et al., 2004). CRM as a business strategy can be adopted and implemented using ICT by developing an SCM software. This application helps organizations which can have a better manage customer relationships by tracking all types of customer interactions.

The three goals of the customer relationship management business framework are to use existing relationships to increase revenue (it is cheaper to sell to an existing customer than to find a new customer), use integrated information to provide excellent service, and provide consistent, replicable sales channel processes and procedures (Kalakota and Robinson, 2001).

CRM comprises three phases: acquiring, enhancing, and retaining (figure 1). Each phase supports increased intimacy and understanding between a company and its customers and impacts the customer relationship differently.

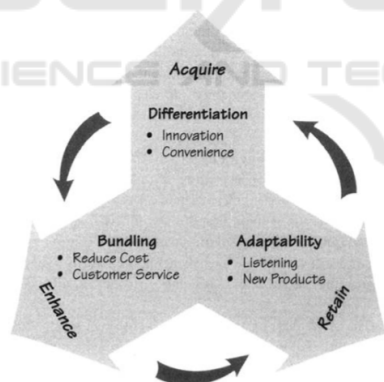


Figure 1: Three phases of CRM (Kalakota and Robinson, 2001)

Gurupanda is an e-business of learning using CRM. Customers in gurupanda can be divided into two functions, as exercise seeker and exercise maker. Customers as exercise seeker can get free exercise package and buy a paid exercise package in gurupanda. Customers also can follow the test to become an exercise maker. If pass the test as exercise maker, customers can get honorarium with make exercise and exercise package in gurupanda. Beside providing benefits for customers, it also provides benefits for owner by selling exercise package and advertising

in gurupanda.

Gurupanda is developed by using codeigniter framework which includes PHP as a programming language and MySQL as a database. Gurupanda provides exercise for students from elementary school until college level. For elementary school, junior high school, and senior high school level, gurupanda provides exercise subjects to national exams. For college students, gurupanda provides exercise, especially in information technology. Gurupanda integrates sales, marketing, and service strategy (according to (Kalakota and Robinson, 2001) above). The strategy is giving free exercise package for customers. To get full access, customers can buy a paid exercise package in gurupanda. Customers can give a score to gurupanda exercise package by giving rating scale one until five. Customers also can ask for a consultation with an exercise maker and give a complaint. To increase relationship intimacy between company and customers (based on figure 1), gurupanda is doing several manners:

1. **Acquiring new customers**  
Getting new customers with promoting superior products supported by excellent service. Gurupanda provides discount vouchers to users who invite others to join gurupanda.
2. **Enhancing the profitability of existing customers**  
The value proposition to the customer is an offer of greater convenience at a low cost. In gurupanda, there are new innovations, that is giving points to a customer who does activities in gurupanda (such as making exercise, answering exercise, buying exercise package, login, or whatever). Customers who often doing activities in gurupanda, their points will be increased. If customers rarely access gurupanda, their points will be decreased. To increase their points back, customers must do activities in gurupanda. The purpose of giving these points is to increase customers state in gurupanda. There are several states in gurupanda, which consist of a basic panda, intermediate panda, diploma been fulfilled specified state requirements, they can follow competition held by gurupanda.panda, undergraduate panda, master panda, doctor panda, and professor panda. If customers points have a proactive relationship
3. **Retaining profitable customers for life**  
In this stage, the value proposition to the customer is an offer of that works in his or her best interest. Customer who wins a competition held by gurupanda will get rewards that can support their education.

## 4 METHODOLOGY

The method used to develop CRM on gurupanda online course is the waterfall model. The waterfall model is a static model and it approaches systems development in a linear and sequential manner, easy to understand, and completing one activity before the other (Adenowo and Adenowo, 2013). There are several phases in the waterfall model, includes requirement analysis and specification phase, design phase, implementation, and unit testing, integration and system testing, and operation and maintenance phase (Kannan et al., 2014).

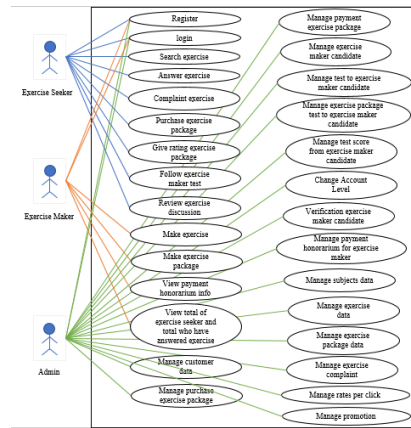


Figure 2: Use case diagram gurupanda

## 5 SYSTEM ANALYSIS

The stages of gurupanda online course refer to object-oriented design. In this research, authors use Unified Modeling Language (UML). Use case diagram of managing CRM on gurupanda online course consists of admin and customer. Admin which represents the owner of the e-learning business and marketing staff is as an actor who manages all activities in gurupanda. Customers in gurupanda are divided become two functions, as exercise seeker and exercise maker. Exercise seeker can search for exercise in gurupanda after login. Exercise maker can make an exercise package after pass follow exercise maker test.

Use case diagram (figure 2) explain activities between actor and system. In the diagram, there are three actors, customer (as exercise seeker and exercise maker) and admin. Exercise seeker can do activities such as register, login, search exercise, answer exercise, complaint exercise, purchase exercise package, give rating exercise package, follow exercise maker test, and review exercise discussion. Exercise maker can do activities such as register, login, make exercise, make exercise package, view payment honorarium info, and view the total of exercise seeker and total who have answered exercise.

Admin can do activities such as register, login, manage customer data, manage promotion, manage purchase exercise package, manage payment exercise package, manage exercise maker candidate, manage test to exercise maker candidate, manage exercise package test to exercise maker candidate, manage test score from exercise maker candidate, change account level, verification exercise maker candidate, manage payment honorarium for exercise maker, manage subjects data, manage exercise data, manage exercise package data, manage exercise complaint, manage rates per click, and manage promotion.

Payment honorarium for exercise maker is done

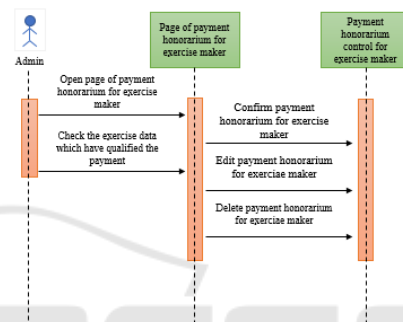


Figure 3: Sequence diagram of manage payment honorarium for exercise maker.

when exercise maker have qualified the payment. Before making a payment, the admin will check exercise data which have qualified for the payment. If it has qualified, the admin will confirm payment honorarium for exercise maker. The flow can be seen in the sequence diagram below (figure 3).

## 6 IMPLEMENTATION

Before doing activities in gurupanda, the customers open the main page of gurupanda first (figure 4). On the page, customers can register an account in gurupanda and also log in. By default, customers are registered as exercise seeker. After customers as exercise seeker login, the system will enter to the home page (figure 5). On the page, exercise seeker can see exercise, see exercise package, buy exercise package, and register to become an exercise maker. If customers pass the test as exercise maker, while they log in, the system will enter to the home page where there is an additional menu to make exercise and exercise package and honorarium info menu to see honorarium received by exercise maker (figure 6). Exercise

maker can see honorarium info that has been received and not yet been received along with the nominal on page honorarium payment info (figure 7).

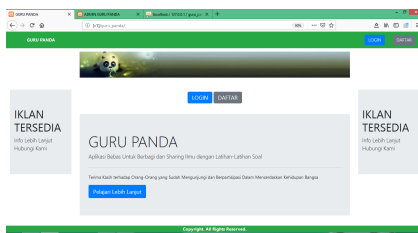


Figure 4: Main page of customer interface.

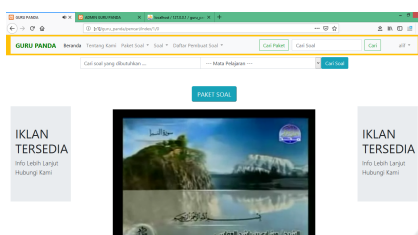


Figure 5: Home page of exercise seeker after login.

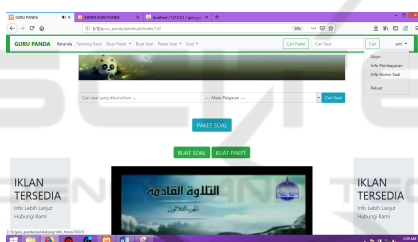


Figure 6: Home page of exercise maker after login.

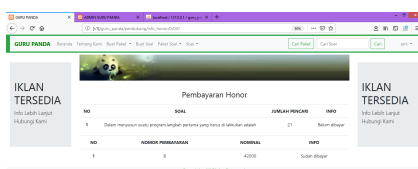


Figure 7: Page of honorarium payment info.

While customers as exercise seeker want to buy exercise package, they open an exercise package menu and choice paid exercise package. Then, it will appear a page of the paid exercise package list. On the page, it displayed exercise package description, name of exercise maker, and exercise rating (figure 8). Before deciding to buy exercise package, customers can see the exercise package first by click package review. Then, it will appear exercise on the package without answer options (figure 9). Answer options will appear if customers buy the exercise package. Then, if customers decide to buy the exercise package, customers

must click buy package menu in figure 8. Next, the system will enter to page of purchase exercise package (figure 10). On the page, the system displayed the exercise package price and destination account number to make payment.

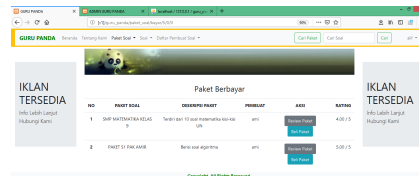


Figure 8: Page of paid exercise package list.

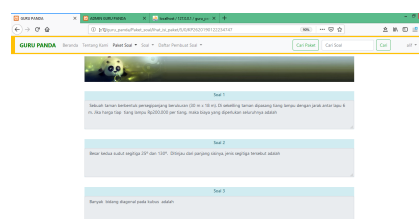


Figure 9: Page of package review.

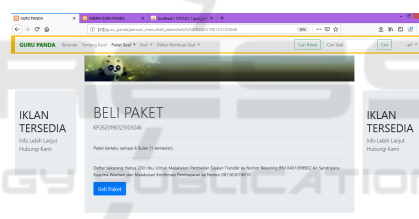


Figure 10: Page of purchase exercise package.

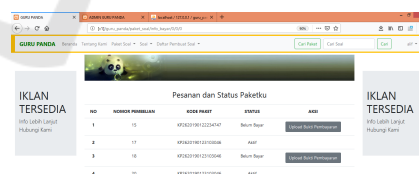


Figure 11: Page of payment info.

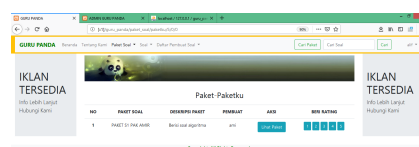


Figure 12: Page of my package.

After doing a payment, customers can see the payment menu info. On the page of payment info, customers can see the exercise package which has been ordered (figure 11). After that, customers upload

proof of payment. If customers have not uploaded proof of payment, it will appear the button of upload proof of payment and the exercise package state which is not yet paid. If customers have uploaded proof of payment, the button of uploaded proof of payment will disappear. After admin confirmed, the exercise package state will change to active and exercise package will enter to my package page (figure 12). This page contains an exercise package that has been purchased by customers. On this page, customers can give value to the exercise package of scale 1 to 5. If the active period has been expired, the exercise package will disappear from my package page.

## 7 RESULT AND ANALYSIS

In this research, testing is using a black box method. Black box testing is testing based on the requirements specifications and there is no need to examining the code in black box testing. This is purely done based on the customer’s viewpoint. Only the tester knows inputs and predictable outputs. Black box testing is done based on the end user perspective. The main importance of black box testing is it handles both valid and invalid inputs from the customers perspective (Nidhra and Dondeti, 2012).

No	Test Case	Expected Results	State
1	Login	Only customers registered in the database are allowed to enter the system	Valid
2	Answer exercise	Success displays the exercise answer	Valid
3	Complaint exercise	Success displays form to give complaint exercise	Valid
4	Purchase exercise package	Success displays purchase exercise package	Valid
5	Give rating exercise package	Success displays the rating of exercise package	Valid
6	Follow exercise maker test	Customers who have uploaded their file can fill exercise package test	Valid
7	Make exercise package	Success displays form to make exercise package	Valid
8	View payment honorarium info	Success displays honorarium info which have paid and not yet paid	Valid
9	Manage purchase exercise package	Success displays customers data which propose purchase exercise package	Valid
10	Manage payment exercise package	Success displays customers data which have paid exercise package	Valid

Figure 13: Black box testing results.

As CRM for online learning, gurupanda online course is testing with black box method. The results of the several tests are outlined in Figure 13. All the

results of 28 test cases are valid. The test includes get customer, purchase the product, offer product, try the product as a service, accept rating and complaint from a customer, revenue management for the company and also customer, besides other management include customer profile, exercise package, and customer learning process. From the test shown that performance of gurupanda have been fulfilled the components of CRM.

## 8 CONCLUSIONS

Developing CRM on e-business for online courses, it provides a convenient environment for customers in supporting their education. To sharpen the ability of the material that has been taught, customers need exercise. Currently, customers is searching exercise by online search and very few searching exercise from books. The online course can facilitate customers to get exercise which can access anywhere and anytime. Therefore, gurupanda online course is present to support learning process customers from elementary school level until college students. As an e-business in education sector, with innovations that are different from the existing online courses, gurupanda can provide convenience and benefits not only for the owner but also specifically for customers.

The limitation of this research is there is no feature to interact directly between customers and gurupanda customer service which can give directly solution if customers find problems when doing activities in gurupanda. For further research, it can add “ask customer service” feature to help customers resolve the problems directly. In addition, it can add interesting tutorials and animations to make customers easier to access gurupanda.

For the next development of gurupanda, innovation made by adding education game with the theme “who wants to be a king panda”, where customers who want to win this game must pass the preliminary round to the top eight. After that, there will be a duel between two customers, where one customer will be randomly paired with other customers. The customers who lose in this game will be a slave panda. With this game, it can make customers more active in gurupanda so that the relationship with customers stronger. Another innovation is by adding game between exercise maker with the theme “the rich panda and poor panda”. In this game, an exercise that will be contested are exercises which have been made by exercise maker that has been included in gurupanda. If an exercise maker often discusses exercise from another exercise maker, he will get knowledge and can

complete the game from that another exercise maker so that he will be the rich panda. This encourages the exercise maker to continue to make innovative exercise in gurupanda so that relationship with customers is maintained. For exercise maker that loses in this game will be the poor panda.

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