

ANDROID- BASED CUSTOMER TO CUSTOMER (C2C) PORTAL

¹ Dwi Cahyono ² Veronika Nugraheni Sri Lestari ³ Muhammad Firdaus

^{1,3} Information Engineering, Faculty of Engineering, University Dr. Soetomo Surabaya

² Faculty of Economics, University of Dr. Soetomo Surabaya

Email ¹ dwik@unitomo.ac.id ² venugra@unitomo.ac.id ³ cakmuhammadfirdaus@gmail.com

Abstract

Android- based C2C portal uses Web Service and is developed to help and bridge between seller and buyer in transaction of sale with responsive digital media tools known as consumer to consumer (C2C). In buying and selling process digital media is highly important as the main media in selling and buying products that are fast and secure. C2C portal using android application is created in this research as a media of buying and selling with additional digital map media that the application can recommend the nearest seller from buyer and can give route from buyer to seller. The android app is created based on Google map used to display sellers in the form of icons. Android technology used is Javascript programming language and Apache Cordova as the library and use web service and mysql as data management. This application is able to help sellers and buyers as a medium of digital aids in making sale and purchase transactions and facilitate buyer in knowing the location of seller. Thus, feature designed in this apps can increase the confidence of the prospective buyer against seller.

Keywords: *portal, c2c, android application, digital maps, web services, mysql, javascript, buying and selling*

1. INTRODUCTION

Development of information and communication technology today has made Internet as an appropriate medium for people to meet their needs. The number of Internet users increased rapidly over the time. A manual method of marketing has been replaced by E-Business and it becomes more popular among sellers-buyers as it is considered more practical and efficient in application. Selling goods or promoting products online has become a trend and even becomes a society need. Mobility needs of modern society have been complex and they do not have much time to negotiate directly and they do not know the location of the seller accurately.

There have been many models of online transaction used to communicate. There are many communication models to buy and sell online as each customer has different needs, such as B2B, B2C, C2C, B2B2C, and B2E. C2C (Consumer To Consumer) is one of e-commerce model in which consumers sell directly to other consumers. It is also be regarded as transactions between consumers. Online buying and selling trends in C2C platform being widely considered by sellers is a display that allows users to access sellers' site/website. Desktop display commonly used in devices with large monitors such as a PC, laptop, Macbook is considered inefficient as users cannot operate it anytime and anywhere. Agus Latif, S. (2013)

With the development of information systems, increasing attractive technology and needs of users/consumers today, a new application commonly known as the application of mobile/mobile apps is created. Fraud committed by seller in C2C-based platform causes a weakening of buyers' trust to shop.

For example, the absence of indicators/guarantee stating that seller is not going to commit fraud such as the existence of accurate seller. Often we find fraudulence contains false sales location, when buyers tracks for the location, it turns out that the location is not valid. This is because buyer see the product through internet and pay via transfer without knowing the location of the seller.

The study focus on mobile applications that is able to provide solutions for Android-based C2C portal with media support of Google Maps and GPS mobile. C2C portal application is able to provide position information and closest seller from the buyer.

II. OBJECTIVES OF THE RESEARCH

The purpose of this research is to create a customer 2 customer android-based portal that has particularly capabilities including:

- a. Ability to provide information of seller location to consumer.
- b. Ability to detect or suggest seller closest to buyer.
- c. The platform is built in mobile and able to contact seller directly from the application.

III. RESEARCH METHODS

Library Research is a method of data collection, design and implementation of system by finding, surveying and reading books related to the research. Methodology used to develop the software is SDLC (Software Development Life Cycle). SDLC is a pattern taken to develop a software system, which consists of the following stages: planning, analysis, design, implementation, testing and management (maintenance). Here are seven stages or SDLC cycles from this study

1. Identify problems faced by both actors of sellers and buyers and the purpose of applications for communication aids in transactions. Activities in this stage include researching into buying and selling process, concluding knowledge on how to transact effectively between sellers and buyers. The output of this stage is a flexible report definition contains an effective way of trading and a summary of the purpose of the application as a medium of communication or tools.
2. Incorporating terms of information. Determining needs of the terms of the two actors of seller and the buyer. Seller needs to register and then login to enter the product, then checking form that will be used as form of list, form login and product upload form.
3. Analyzing system needs, conducting research of the system need to facilitate the development. Sale and purchase applications require programming languages of html, css, and javascript as client side and PHP as server side.
4. The design of the system created is the first step to implement and discuss problem. System design has been adjusted to the needs of sellers and buyers as a medium of communication aids in transactions to fit the system design developed in accordance with the problems encountered. The system design concepts uses UML (Unified Modeling Language) to facilitate developer to design system and to facilitate the development stage to the next stage.
5. Developing and documenting software (coding). The applications is developed by using a structured way in order to facilitate further development. Each module is documented by using trading app to make it easier for future developers.
6. Testing and maintaining system (testing). Developers conduct tests on the application of in stages such as testing each feature that has been developed, thus the developers did not

wait for the system is completed then conduct testing. The developer then deploy the application to the user and provide a questionnaire to record errors or suggestions and feedback from app users.

7. This stage involves exercise for user to use or control information system. The developers monitor the application by giving questionnaires to users on how to use the application as a functional application, user interface application, user experience applications, bugs found by users which will be evaluated by the developer, data from the questionnaire to make sure that users really use the system.

IV. THEORITICAL BASIS

A. C2C (Consumer to Consumer)

C2C is one of e-commerce model where consumers sell directly to other consumers or transactions among consumers. C2C Activity can be performed in various ways through internet. Auction is one of the most recognized example of C2C activity. Millions of people make purchases and sales on eBay and hundreds of auction web site. More C2C activity is classified as advertising, personal services, exchange, sale of virtual properties and supporting services. Agus Latif, S. (2013).

Consumer to consumer scope is special a transactions is made only between consumers, such as Auction of Goods. Internet is a means of exchange of information about products, prices, quality and service. Consumers also form a community of users or a fan of a product. Therefore, if there is dissatisfaction of a product, it will soon be widespread through the community.

Consumer to Consumer (C2C) is popular among students as there is a large community and come from the same area. They look for alternatives to sell and look for a cheap media to sell goods by using C2C website.

The most popular channel of Consumer to Consumer (C2C) is e-mail, which serves as a digital post office. C2 means that more and more online visitors create information products, not merely consume it.

C2C activities can be carried out directly the various parties through Internet with many various kinds of internet media service that facilitates the continuity of this activity.

There are a variety of sites that allow everyone to be able to make this transaction, whether to sell or purchase. Some facility (site) is used to perform the activity of this C2C, including:

1. [http:// www.ebay.com](http://www.ebay.com)
2. [ttp:// www.olx.co.id](http://www.olx.co.id)
3. [http:// www.kaskus.com](http://www.kaskus.com)
4. [http:// www.rumah123.com](http://www.rumah123.com)
5. [http:// www.mobil123.com](http://www.mobil123.com)

B. Android

Android is an operating system of Linux-based mobile devices that includes an operating system, middleware and applications. Android provides an open platform for developers to create their apps. Bandung, I. T. (t.thn.)

Android is a new generation of mobile platform that provides an opportunity for developers to do the development in accordance with the underlying operating expected. Android system is licensed under the GNU General Public License Version 2 (GPLv2), which is commonly known as copy left. This term is a license that any repairs by third parties should continue to fall under the terms

C. Digital Map

According to the definition of experts, a digital map is a representation of a geographical phenomenon that is stored for display and analysis by a computer. Each object on a digital map is stored as a set or a set of coordinates. Debra Schepp. (2009)

D. Map Knowledge

Map is a picture of a part or all of the face of the earth either located above or below the surface and presented on a flat plane on a certain scale and projection (mathematically). Because it is limited by scale and projection, map will never be as complete and as detailed as the original (earth), therefore it is necessary to simplify and select the elements to be displayed on the map.



Figure 1. Map of Indonesia (Rompas, S. Y. (2013, 05 20))

E. Google Maps

Google Maps is a free service provided by Google and is very popular. Google Maps is a map of the world that we can use to view an area. In other words, Google Maps is a map that can be viewed using a browser, Eddy, B. (2013).

Google launched Google Maps API in June 2005 to allow developers to integrate Google Maps into their website. This is a free service, and currently does not contain ads, but Google states in that they use that they are eligible to show ads in the future.

F. GPS

GPS (Global Positioning System) is a satellite navigation system and positioning its owned and managed by the United States, Eddy, B. (2013) This system is designed to provide position and speed of the three-dimensional as well as information about the time, continuously throughout the world without depending on time and weather for many people simultaneously. Currently GPS has been widely used people around the world in various fields of applications that require information about position, speed, acceleration or timeliness. GPS can provide position information with accuracy varies from several millimeters (zero order) up to tens of meters.

G. Web Service

Web service is application of a set of data (databases), software (software) or a piece of software that can be accessed remotely by various devices with a particular intermediary. In general, web service can be identified by using the URL as well as the web in general, Riyanto (2011). However, what makes web service to the web in general is the interaction provided by the web service. In contrast to the URL of the web in general, web service URL only

contains a collection of information, commands, configuration or syntax that is useful to build a certain functions of the application.

H. Location Based Service

Location Based Service (LBS) is an information service that can be accessed through mobile devices through cellular networks and has ability to utilize the positioning location of mobile devices. An IP is wireless service that uses geographic information to provide services to mobile device users. Each application service utilizes mobile terminal positioning. Location Based Service (LBS) is a common name for a new service whereby location information into its main parameters. Rompas, S. Y. (2013, 05 20)

V. ANALYSIS AND DISCUSSION

Android application for C2C Using Web Service Portal is an Android-based mobile application that is used to facilitate sellers and buyers to communicate in transaction through the medium of digital maps. The app helps seller to promote their product or goods into an app that has provided a place to display into the folder so that the buyer also knows the position of the seller's position. The app assists buyers in finding the desired product based on buyer's position. Buyers are also automatically advised on the nearest seller's seller from the buyer with a distance-adjustable radius to buyer's preference. In general, this sale and purchase application is expected to facilitate transaction process both the seller and the buyer as the original location-based sellers who are usually prone to commit fraud.

A more detailed description of the general picture can be seen in Figure 2 as follows:

- a. Smartphone seller or buyer communicates with a web server through Internet to obtain data from the database through web service.

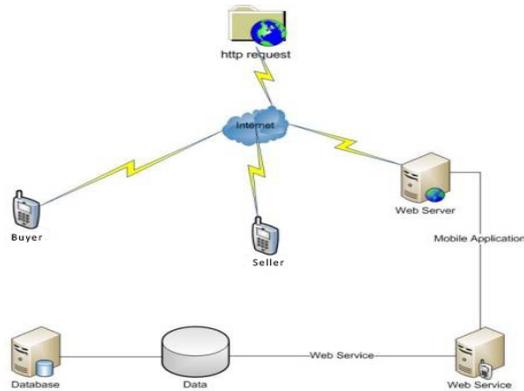


Figure 2. Application Architecture

- b. Web Server serves data request and provide results to android.
- c. Web service serves data requests from web server to android.

Each part of system block diagram of Figure 2 can be explained as follows:

1. Data Alert serves as output application
2. JSON parses functionsto parse data format to data in the form of notifications to be processed.
3. Post HTTP works to request data with POST method.
4. HTTP View serves as a presentation for HTTP Web.
5. JSON-Format works to convert data format from database to JSON mode.
6. MySQL-DB functions to store all seller data

Process Diagram

Diagram of the process used is Case Diagrams and Activity Diagrams.

Use Case Diagram

Actors acting and visible in this system are Sellers and Buyers. The depiction can be seen in Figure 3:

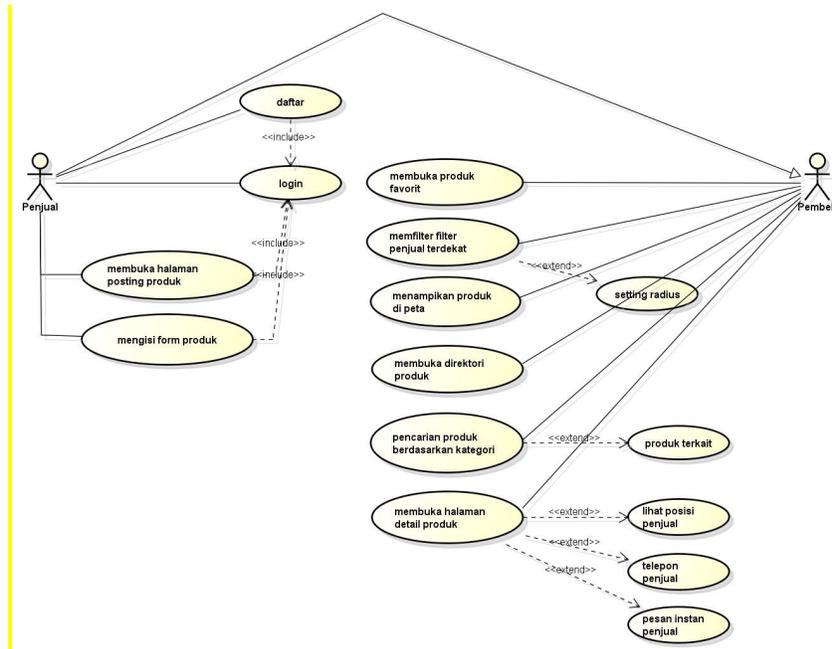


Figure 3. Use case diagrams C2C portal

Activities for seller actor are explained as follows:

1. **Login:** function to verify whether vendor has registered.
2. **List:** function to register as a member.
3. **Posted Products:** function to upload product to be sold.

Below is the explanation of activity for buyer actors:

1. **Closest Sellers Filter:** function to filter sellers by closest location or radius to the location of seller.
2. **Radius Setting :** function for setting within a radius of how many products are filtered
3. **Showing Seller on Map:** function to show seller that has been registered to display on map in order to determine the position of the seller.
4. **List View:** function to display products in a list by displaying a photograph, name, price, condition, see the position of the seller.
5. **Favorite product:** function to display products based on the most widely viewed and searched by utilizing counter the buyers visit to product detail page.

6. **Product search:** function for search for desired products by keyword, category and sub-category.
7. **Related Products:** function for displaying related products when the product searched is not found.
8. **See the Product Details page:** function to view more detailed product by displaying all the information entered by seller.
9. **See the seller location:** function to get direction to the position or location of the seller.
10. **Call Seller:** function to contact seller by calling through mobile phone number that has been entered by seller when registering.
11. **Instant Messaging Seller:** function to contact seller by sending instant messages through mobile phone number that has been entered by seller when registering.
12. **See Products By Category and Subcategory:** function to view products by category and subcategory of the product wanted by users.

TRIALS

In trials of android application, scenario of testing by answering or proving the success of the goals targets was performed. There are 3 goals on target.

- A. The application is able to provide information about sellers location to consumer .
 1. Users who want to be a seller must register first by filling out the forms that have been provided. After the registration process succeeds, the user is directed to the login page. When user logs in, the system records and updates the user's location and then stores it into a server or database.
 2. In the device of each user on the display map, the system retrieves the contents of the table member that contains the latitude and longitude sellers by http request and the contents of the member table to display them into folders according to the latitude and longitude of each seller.
 3. Figure 4 is the final result of the first objective which display icons of sellers scattered in folders. Here is a picture of the result of the first goal:



Figure 4. The Seller's Position View

B. Able to detect or suggest sellers closest to buyer.

1. At the first destination it successfully displayed all sellers listed on the application, yet on the second goal the application is able to detect or recommend the nearest seller. In other actors of buyer, when opening the system application will record the buyer's position then store it on the device by using local storage.
2. After the latitude and longitude position of both actors of sellers and buyers are successfully stored, the system then compares seller's position and buyer's position and then sorting positions that enter within the radius or buyer's area and only display the icon seller with a radius or area that set, the application is also able to adjust the distance desired by the buyer.
3. Figure 5 is an end of the second goal that shows the icon closest to the buyer seller, thus the application does not show all the sellers who have registered. Here is the image of the result on the second goal:

C. The platform is built in mobile and able to contact the seller directly from the application.

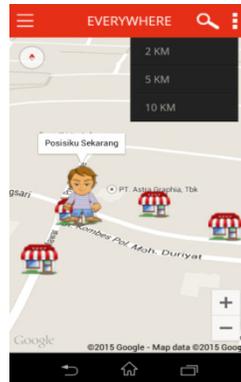


Figure 5 views of related seller apps

1. At the time of registering there is a form to be filled
2. Mobile phone number then saves it into the database.
3. When buyers open the app and go to the product detail page, there are three menu options for contacting seller: SMS, Phone and Get Direction. At this point seller phone number is used by accessing the seller's native applications each user device.
4. Figure 5 is the end result of a third goal that buyers are able to contact the seller directly from the application without having to exit the application first.

VI. CONCLUSION

The results of this study are as follows:

1. The app is successfully built on mobile and successfully helps buyers recommend the nearest vendor and product.
2. Android applications are able to provide convenience for the buyer and are considered good enough by the correspondent with an average value of 2.95 from the range of values 0 to 4.
3. Applications can be accessed and opened quickly with an average speed of 5.3 seconds in the opening applications and 8.2 seconds in proceed http request with a different provider.

BIBLIOGRAPHY

- Agus Latif, S. (2013). SIG Fasilitas Umum di Bojonegoro Berbasis Android. Surabaya: Universitas Dr. Soetomo.
- Bandung, I. T. (t.thn.). Teknologi GPS. Diambil kembali dari Kelompok Keilmuan Geodesi: http://geodesy.gd.itb.ac.id/kkgd/?page_id=498
- Debra Schepp. (2009). The Official alibaba.com Success Guide.
- Eddy, B. (2013). Sistem Informasi Geografis Berbasis Google Map dengan Teknologi Android. Malang.
- Eddy, B. (2013). Sistem Informasi Geografis Berbasis Google Map dengan Teknologi Android. Malang. Himawan, C. H. (2013). Candra Lab Studio ; Penjelasan Struktur Data Json. Diambil kembali dari www.candra.web.id: <http://www.candra.web.id/2014/06/12/penjelasan-struktur-data-json/>
- Rangkuti, Y. W. (2012). Teknologi Web Service SOAP vs REST. Bandung.
- Riyanto. (2011). *Location Based Service*.
- Rompas, S. Y. (2013, 05 20). Peta Digital. Diambil kembali dari <http://supeerblog.blogspot.com/>: <http://supeerblog.blogspot.com/2013/05/peta-digital.html>

Biography

Author 1

Name Dwi Cahyono, Born in the city of Probolinggo on January 27, 1973. The author graduated from the University of Dr, Sotomo Surabaya in the field of Informatics Engineering in 1998 and graduated in master's degree at the Surabaya Institute of Technology Technology Technology (ITS) Surabaya. Currently working as a Permanent Lecturer of the Faculty of Engineering at Dr. Soetomo

Author 2

Name Veronika Nugraheni Sri Lestari, Born in the city of on October 25, 1971 The author graduated from the University of Dr, Sotomo Surabaya in Development Economics in and graduated with a master degree in Magister Management of Dr.Soetomo University, Surabaya. Currently working as a Permanent Lecturer of Faculty of Economics, University of Indonesia. Soetomo.

Author 3

Name Muhammad Firdaus , The author graduated in Informatics Engineering 2015 at Universitas Dr. Soetomo Surabaya, currently works as a programmer at one of the software houses in Surabaya.