



M-Laundry Advertisement System Utilizing Location Based Service

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Abstract— *Marketing and advertising products have been widely applied. Use of information technology has long been used to help improve e-business, such as online site, marketing through social media like youtube, twitter and facebook. Location-based services can be used to help improve mobile commerce. Users of mobile devices will get information of laundry location near them. The technique will be used to get the location of the mobile devices. In this paper will use a combination of network and handset. Using a combination will accelerate the process of identifying the location and make more precise identification of the location. This research proposed json and web services that communicate on e-commerce server and use mobile computing to compute nearest location from customer location.*

Keywords—*M-Laundry, Mobile Computing, Location-based Services.*

I. INTRODUCTION

Today's modern life makes people need all of his fast-paced. They should be able to divide his time very efficiently. While they eat they do not have enough time to cook their own food rather they buy fast food. Moreover, people now didn't have enough time for washing clothes, the worst when they dirty clothes have been worn, if not washed will accumulate and can even cause odor. Therefore, many people were happy to bring his dirty clothes to the laundry. There are many laundry business in different places with different pricing options.

Use of information technology has long been used for marketing a product, such as creating E-commerce sites to online marketing products and services through social media like youtube, twitter and facebook. Utilization of information technology use online sites and social media is quite effective in marketing or providing information products and services to potential buyers. Currently the development of Internet technology and mobile technologies more rapidly led to the development of mobile business and mobile commerce increasingly innovative and diverse. It is undeniable that business growth is currently quite high, it causes competition in the business world is getting sharper. Resulting in increasingly needed a marketing system that is more efficient and reliable to attract more customers.

Dramatic evolution in mobile technology benefited E-Business considerably and extended the competitive advantages. mobile adoption may raise for retail commerce. In the second method, data is stored and processed on the hand held device itself which is called standalone database. Electronic Commerce (E-Commerce) is known as subset of E-Business dealing with electronic transaction. Enhancement in internet, network technology and mobile personal devices improved Mobile E-Commerce called M-Commerce. M-Commerce is an E-Commerce transaction through mobile terminals over a wireless network to make business more efficient. M-commerce which is mobile-based commerce is different from traditional commerce systems and is more beneficial for new business services. M-Commerce can be combined with location-based services. The combination of M-commerce and LBS support can be used as a marketing tool to improve E-Marketing which will communicate and deliver value to the customers by using information technology [12].

Customer loyalty or repeat purchasing is critical for the survival and success of any store [3]. The combination M-commerce and LBS support are expected help repeat order by customer, because customer always receive new advertising when customer near by store location. But it will be better if customer receive multimedia advertisement rather than text [19].

M-Laundry by using location based service can be used to bring the laundry place with potential customers. Prospective customers are permitted to find the closest locations laundry prospective customers as well as to help consumers find the location of the laundry with the help of a map.

M-Laundry with LBS expected to increase customer. Expected with a nice laundry management will support marketing of laundry because make people easier to find laundry. Especially with the management of laundry utilizing information technology in the form of an application. It will bring the laundry and prospective customers meet each other, also it is a value that customer can search for a laundry that is fast, effective and efficient, With M-Laundry using LBS, laundry and consumers can interact easily, in particular by providing information where is laundry place and also price of the laundry. Laundry is also easy knowing that potential customers want to order laundry service. In addition prospective customers will also be more interested in knowing the location of the laundry that can be reached and can provide pickup and delivery service.

II. RELATED WORK

Many research and system has been done utilizing location based service in E-Commerce application. Location based services are effective in public area[1], location based services using google map [6], Also life style will change e-commerce to social e-commerce[8], and we know frienship and life style can be known by LBS[4], location based advertising in mobile[9], social endorsme mechanism for location based[14]. Enhancing e-business using location based advertising[12], interactive or static location based advertisement[16], Implementation of Location based Services in Android using GPS and Web Services[18], accessing restaurant using cloud and lbs[17].

III. PROPOSED M-LAUNDRY ADVERTISEMENT SYSTEM

Utilizing technology to help facilitate the public to know the location of the store and product offers based on interests and location automatically.

A. Using Hybrid

GPS is a navigation system using worldwide [2]. It gives accurate precision and higher accuracy[10]. The system consist of networks of 24 satellites in six different 12 hour orbital paths spaced so that atleast five are in view from every point on the globe and their ground stations.trilateration is the base of GPS.one can determine the Longitude, Latitude and altitude of device.GPS gives much higher accuracy as compare to cell identification, but it updates the location of device after every 5 sec.Therefore its response time is slow which is the major drawback of GPS. To calculate the exact location of GPS user, one can know the exact position of satellites at all the times. The other limitation of GPS is to locate device indoor. It works only outdoor not indoor.

Network mobile phone can be located by the telecom operator in the network. The positioning is based on identifying the mobile network cell in which the phone is located, or on measuring distances to overlapping cells. In urban areas the accuracy can be down to 50 meters, whereas in rural areas the accuracy may be several kilometres. The advantage of the cell-based positioning method is that the user needs no extra equipment - an ordinary mobile phone will do. If the user wants to use location-aware services from other service providers, the location has to be transferred to the other service pro- vider and the telecom operator must get permission for this from the user. The location data is possessed by the telecom operator, which may not be willing to pass it on free of charge. Possibly because of these data transaction needs, current cell-location-based services are provided mainly by telecom operators..

Using Hybrid[5] this technique uses a combination of network-based and handset-based technologies to identify the location. One example would be some modes of Assisted GPS, which can both use GPS and network information to determine the location. Both types of data are used by the mobile phone to identify the location faster and more accurately.

B. Pull rather than push for simplicity

Push

The push implies that users accept the information as a result of its existence without having to actively request it. Information can be sent to the user with the prior consent (for example, a terror attack warning system is a subscription-based) or without consent (for example, an advertisement welcome messages sent to users when entering a new town).

Pull

Means that users are actively using the app, in this context that users will "pull" information from the network. Information will be obtained after a user asks to interact with the system (for example, where to find the nearest cinema).

Our proposed system using pull services, customer request all data from e-Commerce server, later mobile client will compute where is nearest store closer to a customer.

C. Server computing using web services or mobile computing

We propose mobile computing systems, which means that the calculation of the nearest locations are calculated on mobile rather than on the server, this is to avoid a time-out on the server, and that server performance is too heavy. Therefore, we needed a system processor speed high enough on the smart phone. Although later this will lead battery waste on the mobile client.

D. Find nearest location

Our propose system using haversine formula to calculate distance between two points.

Haversine

formula:

$$a = \sin^2(\Delta\phi/2) + \cos \phi_1 \cdot \cos \phi_2 \cdot \sin^2(\Delta\lambda/2)$$

$$c = 2 \cdot \operatorname{atan2}(\sqrt{a}, \sqrt{1-a})$$

$$d = R \cdot c$$

where

ϕ is latitude, λ is longitude, R is earth's radius (mean radius = 6,371km);

note that angles need to be in radians to pass to trig functions!

IV. PROPOSED ARCHITECTURE

The architecture of our location based service system are simple, because our computation are done in mobile. MySQL database are use as database, and apache web server as server for receiving request by customer. More detail can be seen in figure 1. below



Fig. 1 Architecture of application

Our proposed system architecture are explain in figure 1 above. User or customer will pull data from e-commerce server. Customer receive data store from e-commerce server. Later customer get their geo location from gps satellite or if customer are in indoor location, customer will get their location from gsm network.

V. BUSINESS PROCESS OF M-LAUNDRY ADVERTISEMENT

Business process of M-laundry that proposed are explain more detail in fig 2 below

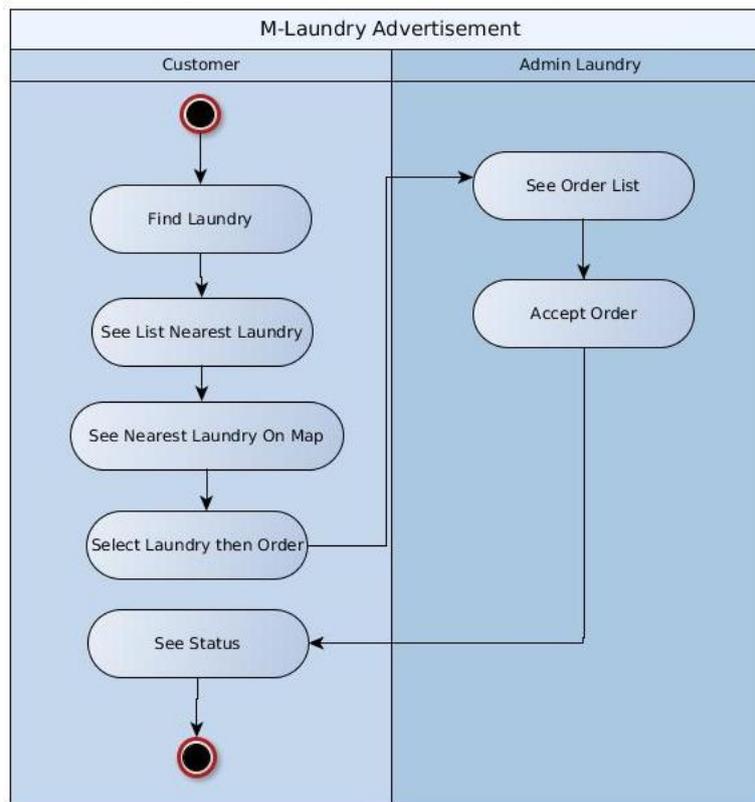


Fig 2. Activity diagram business process of M-Laundry System

As seen in figure 2, first customer receive list of nearest laundry from customer location, then customer view nearest laundry location on map in radius about 2 km. Later customer choose laundry that meet their requirement. Admin in each laundry will see on their list order, and then they will accept the order. Finally customer will see their status of order are pick up or not.

VI. DEMONSTRATION

Our application are try to find laundry shop that nearest customer location in tangerang. So when customer drive near location, customer will see list of laundry shope close to them. As seen in figure 2.



Figure 2. List of laundry near customer

Customer will receive all laundry near him, and also customer can see map of laundry place in his android device to guide help him to visit laundry place, as we can see in figure 3.

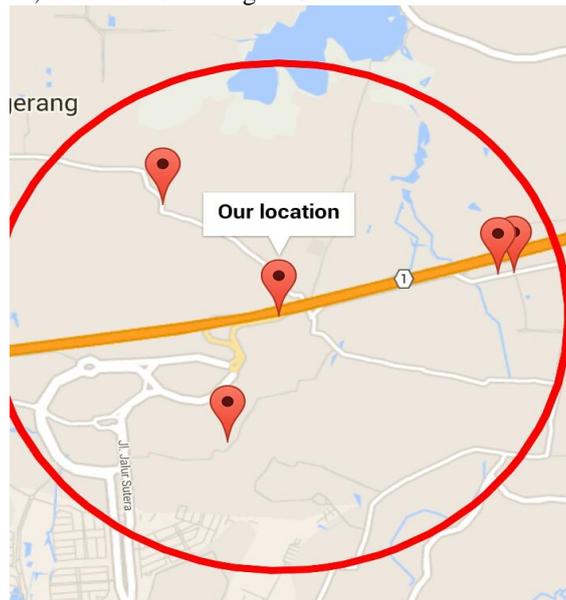


Figure 3. Map customer location

Application was set to search nearest laundry (radius 2 km) from user location. Customer can also click on location of laundry and give rating if service are excelent. So it can be useful recommendation for other new customer.

VII. CONCLUSION

Global Positioning System (GPS) based location tracking systems are good way for tracking the exact location of a mobile user to get the information about his current location. Customer can find nearest laundry place from their location as their request, user can select radius 1 km, 2 km or km, also customer can see laundry location in map, it will be valuable service for user. We proposed Laundry Mobile Advertisement system using json, web services and mobile computing. These M-Laundry based mobile advertisement systems also can be use to other businesses (like tailor services, restaurants, souvenir shop) to advertise their products in a cheap and efficient way to mobile customers and attract them with their packages. Also with utilizing of GPS and mobile technology (LBS) can be used as E-Business and M-Commerce opportunity in expand the market to enhance E-Business. Mobile computing in these paper makes simplicity but also will lead battery waste on the mobile client. Future application will use cloud computing to compute nearest laundry from user location.

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