Towing Service Ordering System based on Android: Study Case - Department of Transportation, Pekanbaru

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Abstract: The department of transportation is an element from the government of Pekanbaru, led by the head of department who responsible and work under mayor and regional secretary. Towing services from department of transportation are part of their task to implementing regional autonomy authority. Present increasingly rapid technology demands government agencies push hard to maximize their performance in order to facilitate services for the community. Four-wheel vehicle users who mostly don't know about car engine and when suddenly their vehicle is breaking down, it can cause panic. Sometimes car users who visit Pekanbaru, or only passing by, don't know towing service's telephone number, will have difficulty experiencing problem if their car is breaking down. Then, from the government side will experience difficulties during pickup, because the officer in charge doesn't know where the shortest route or where's the exact location. Meanwhile, for ordering service still done manually and not computerize by using telephone. To overcome this problem, a system is built in the form of an android application, so that it can overcome the problem. Using this system, cars users can ordering towing services from their smartphone, and also the officer can easily locate their location from the system.

1 INTRODUCTION

Nowadays, mobile technology has given big impact for our society. It can be seen by increasing number of mobile technology users. As example, almost everyone around us using mobile phones. They use it for work, entertainment, bank transaction, buying groceries and not closed every activities using mobile phone. But, not every activities has already using mobile technology, and there's so many reason why not integrated with mobile technology, like cost for integration, or cost for development.

Mobile technology that is currently popular is Android. Android is an operating system that is modified from Linux Kernel which is based on open source, so that it can be used by anyone. Android technology can be used in a variety of human activities with the aim to making it easier, starting from facilitating communication, learning, to service issues in the community.

The increasing number of residents in Indonesia, especially in Pekanbaru, does not rule out the possibility of users four-wheel drive type is increasing. Car is no longer seen as a special item, it can be seen from the level of traffic congestion that is increasingly crowded by many vehicles including cars.

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location from the system.

2 RELATED RESEARCH

Based on research, (Akbar et al., 2014), the high telephone credit rates with limited service areas also help lazy customers to use this service. System like this is no longer feasible to use when time becomes very important because the increase of human activities. One of popular operating system on smart phone is an Android, which experienced rapid development after it was acquired by Google Inc. Android is a computer code-based software that can be distributed openly (open source), so that programmers can create new applications in it. With the increasing growth of Android, it indicates that there are more Android-based devices, so many people will use android phones. Food delivery service application is an information system on an Android-based mobile device to simplify restaurant food ordering process and optimize delivery of food services at restaurant.

Next, based on research, (Hanaf et al., 2013), that in the process of serving customers who come to repair or take their cars, PT. Surya Kencana experienced various obstacle in conducting a transaction. These transaction sometimes do not go according to plan which cause various customers complaints. Among them is the recording of customer data and payment transactions that are still carried out using notes in the book which can cause transaction process hampered. From the problems that described earlier, PT. Surya Kencana needs an information system as a tool to provide right solution to solve the problem. Therefore, a web-based car workshop information system will be created at PT. Surya Kencana. It is expected that PT. Surya Kencana can solve these problems and can improve service to customers by using system.

And then, based on research, (Steven, 2015), that PT. Isuindomas Putra still running their process manually, where customers come directly to workshop, register their car which is takes time, and others still waiting for their turn. Therefore the author makes computerized web-based application for car service ordering system. With the car service ordering system, customers is easier ordering service for their cars.

2.1 Basic Theory

2.1.1 Meaning of Ordering

Based on research, (Hermawan and Kurnia, 2016), meaning of ordering is the process, manufacture, how

to order, or order itself. The following is the definition of ordering according to experts:

- Order is receipt of an order from customer for a product. Continuation from order is delivery goods to the hands of buyer, safely.

- Reservation in general sense are booking agreement between two or more parties.

- Ordering is the entire process of activities related to managing inventory, product location distribution, and records every booking transaction for both passengers and goods.

2.1.2 Meaning of Service

Service is an activity carried out by interacting with people or with physical machine in order to produce customer satisfaction. Service cannot be equated with something that tangible, because it is intangible and not real. Service only can be felt and experienced by each individual. (Rao, 2011).

Service is an activity originating from an individual or organization by way of giving to other people or connoisseurs of service and basically the service has intangible properties and does not result in any ownership.(Chatterjee and Hevner, 2010).

According to (Kotler, 2012), determine that there are 5 determinants of service quality, presented sequentially based on their level of importance, including tangibles, empathy, reliability, responsiveness, and assurance.

Meanwhile, (Tjiptono, 2010) identified 10 factors or main dimension which determine the quality of service, including reliability which is include 2 points performance and dependability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding, tangible.

According to (Saladin, 2012), there are 10 factors in service quality, includes readiness of service facilities, good communication, employee must be skilled, good relations with consumers, employees must be customer oriented, must be real, quick response, security must be maintained, tangible, understand the desires of consumers.

According to (Alma, 2010), types of services can be classified as follows

- Personalized Service, divided into 3 groups, personel service, professional service, business service

- financial service, consists of banking service, insurance service, investment securities

- Public utility and transportation service

- Entertainment

- Hotel service

2.1.3 Mobile Apps

according to (Purnama, 2010), mobile app is an application that running on mobile device. By using a mobile application, can easily do every activities such as holiday, selling, studying, doing office work, browsing, etc. Mobile app has many types on size, design, even layout, but they have very different characteristic form desktop, which is smaller size, limited memory, limited processing, low voltage, strong and reliable, limited connectivity, and short life span.

Based on sources from the book, (Safaat, 2008), android is a robot who looks like human. Android is a operating system for smartphone and tablet.

2.1.4 API

According to (Tulach, 2008), API or Application Programming Interface, not just a set of classes and methods or functions and simple signatures. But the main aim is to overcome the "clueless" in building large size software, starting from something simple to complex, and a component behavior that is difficult to understand. It can be concluded that the API is a collection of commands, functions, classes and protocols that allows software to connect with each other. The purpose of the API is to eliminate clueless from the system by creating large blocks of software throughout the world and reusing commands, functions, classes, or protocols that they or API has.

As noted by (Svennerberg, 2010), Google Maps API is the most popular API on internet. This record has been done at May 2010, this state that 43% mashup (applications and websites which combining two or more data sources) using Google Maps API. Some of the purpose of using Google Maps API is to see the location, look for an address, get driving instructions, etc.

Location Based Service (LBS) is an information service that can be accessed using mobile device through the internet and cellular network and utilize the ability to pinpoint the locations on mobile device. (Razaq and Jananto, 2014).

3 RESEARCH METHOD

At this time, department of transportation at Pekanbaru, car towing system still done manually, ordering by telephone made by the driver, or ordering to the operator at department of transportation's office, then the operator will look the availability of crane unit and assign crane's driver who's willing to look available tow truck, and tow the ordering car at the location

that has been ordering by phone and receive towing cost immediately after car has been delivered to the destination.
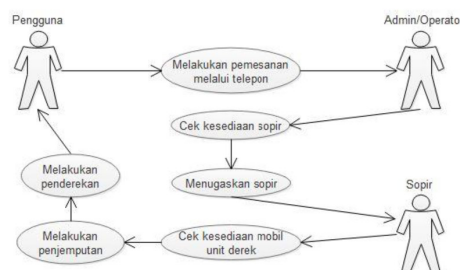

Figure 1: Existing System

3.1 System Development and Design

The system that will be developed is citizen order towing service using their smartphones in this case is Android which has already installed towing service ordering system application. Then, ordering will receive by server which will be processed immediately by spreading notifications to all active drivers, after that the driver will receive an order and immediately pick up to the location that has been ordered and do the towing.

Figure 2: Development System

This is a design of system that will be develop

4 RESULT AND DISCUSSION

After development has already done, next step author doing a test for system, and it shows good result, just like author's expectations.

4.1 Car's Users Register

At this stage of testing carried out by the driver (citizen) as a user on an android-based application, to register new account, then fill in user data form. After filling in all fields, a successful message will appear,
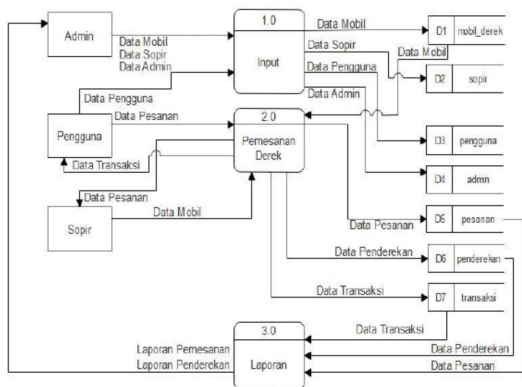
Figure 3: Design System

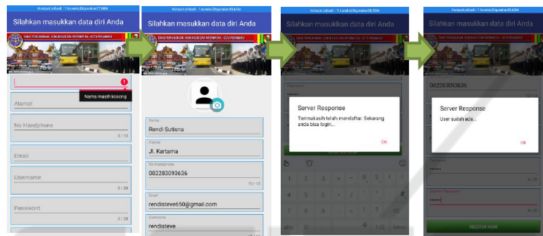but if there's something wrong, a warning message will appear.

Figure 4: Driver Registration

4.2 Driver Login Process Testing

At this stage of testing carried out by the driver (citizen) as a user on an android-based application, to log in user must fill in username and password, after filling all fields, main page will appear, but if there's something wrong, a warning message will appear.
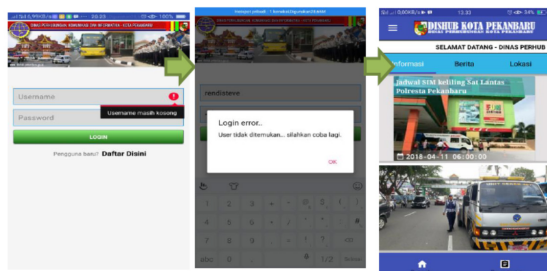

Figure 5: Driver Registration

4.3 Testing of Towing Service Ordering Process

At this stage of testing carried out by the driver (citizen) as a user on an android-based application, to

order the first thing to do is press order button and fill in all fields from filling form. User must fill pick up location and destination, then system will look for where driver is located. After getting location and destination, next step is driver must fill in driver's car data and take pictures of the condition of the car will be towed. The order data will be saved and will appear on history tab menu.
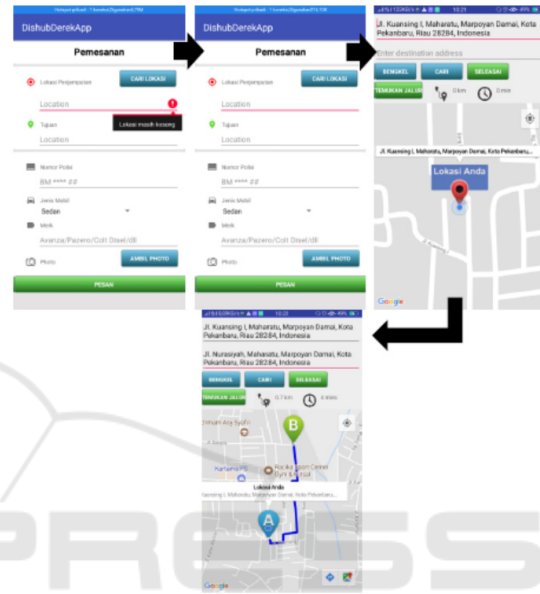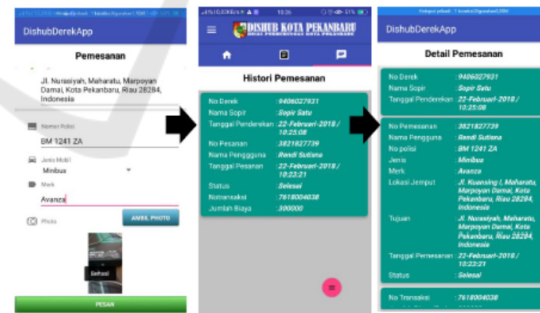

Figure 6: Testing Towing Service

Figure 7: Order History

4.4 Towing Service Testing

Officer waits for order that has been sent by the driver through an android-based application, then it will be immediately received by the officer by pressing accept button, after that google map will appear and will find the location of the driver. If driver's location has been found, officer must press pickup button, and after pickup process is complete, officer must deliver

to driver's destination. After the delivery is finished, driver data will be saved and stored in the order history.
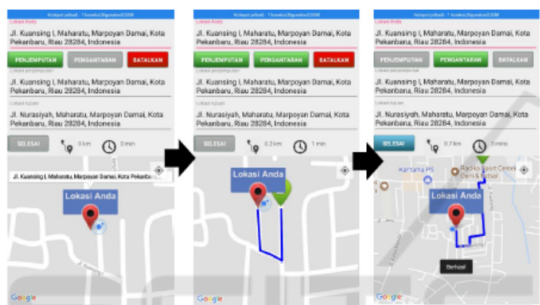

Figure 8: Receive Message

Figure 9: Pickup Process

Figure 10: Pickup History

5 CONCLUSIONS

Based on the results of the analysis and discussion that has been done, conclusions can be taken as follows system can replace manual system that has been used so far to be a more computerized system, easier for people to process towing service reservation, can produce towing report.

The suggestions that can be given for the development of this system are as follows further research is expected to add payment features, and able add officer's location in real time, so the driver can find out where is officer's location

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