

Food Ordering Application in Restaurant Using Loyalty Program Based on Android

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Accepted on May 13, 2019
 Approved on June 15, 2020

Abstract—The purpose of this research is to make an application that give an information to the waiter or waitress about the table that want to ask for help and to chef or drink maker about the order sequentially, to easily make the restaurant management to renew the menu list without pay for more surcharge, ease the customer to save their point and for increase customer's loyalty, help the customer to count their individual payment including the tax, and to ease the restaurant to analyze the revenue, product, and customer satisfaction. The method of this research is collecting data (interview), analysis method, system design method (use case diagram, activity diagram, class diagram, sequence diagram, application interface, and incremental SDLC), and also literature review. The result is mobile application based on Android for food ordering and web application for restaurant management. The conclusion of this application is this application "TMS Cafe" help restaurant to increase the customer loyalty using membership system, ease customer to store their point, simplify the restaurant to manage the menu and promo list with digital system, facilitate the restaurant to give information to customer about the active promo, ease customer to order food, increase the customer satisfaction with song request feature, facilitate customer to count their individual payment including taxes and also to see the transaction and point usage history.

Index Terms—Android, Food Ordering Introduction, Loyalty, Mobile, Restaurant

I. INTRODUCTION

Restaurant business is still having a good chance to develop that there are many people who cultivate this business. Nevertheless, not a few businessmen who have gone bankrupt. This business has a good prospect because this business has a close relation with the fulfillment of human's basic needs; the need for food. Unfortunately, many businessmen still don't know about what things that they have to watch, like to keep the quality of the food they serve and also service quality. To keep the service and food quality is the most important things in the way to start restaurant business. However, there still a lot of businessmen don't care about this. They don't know how to keep customer's loyalty through give a best food and service quality of the restaurant.

In this modern era, technology becomes an important thing in human life, and it expected to answer the problem that faced by restaurant. Therefore, businessman see there is a chance to develop an application that can increase customer's loyalty and to ease business process in the restaurant and answer the problems that arising from manual business process of restaurant as well.

The application that want to be develop is a mobile application based on Android. Seeing Android is open source operating system makes the businessman choose Android to replace manual way in restaurant.

Different from the previous application, developer also add some function in this application like customer's reward to increase customer's loyalty, notification to show the order status (waiting or cooking), and tax calculator feature to ease customer to count each payment including restaurant tax if they come in group.

The problem that are often encountered is a problem about updating a menu or promo list. As the knowledge of researchers, menu in restaurant change constantly, this change make restaurant must pay more to print that menu again. The other problem is restaurant always get a constraint in case that restaurant is crowd; The waiter/waitress have to list all of the customer; this may take a long time and also can't be given to chef/drink maker in the correct order. The other problem is to keep customer's loyalty.

A. Similar Application

There were several similar applications before that can help them to solve their problem; Application in *Genki Sushi* Restaurant and *Mujigae* Restaurant. *Genki Sushi* Restaurant have some features in their application: Menu digital, promo, and call waiter. As well, *Mujigae* Restaurant has several features like Menu digital, add/redeem point, request song, game, and call waiter. There was some feature that each other restaurant applications do not have, therefore we develop an application that combine their feature to solve the problem in restaurant. The comparison of these three applications is shown in Figure 1. There were several similar applications before that can help

them to solve their problem; Application in *Genki Sushi* Restaurant and *Mujigae* Restaurant. *Genki Sushi* Restaurant have some features in their application: Menu digital, promo, and call waiter. As well, *Mujigae* Restaurant have several features like Menu digital, add/redeem point, request song, game, and call waiter. There was some feature that each other restaurant application don't have, therefore we develop an application that combine their feature to solve the problem in restaurant. The comparison of these three application is shown in Figure 1.

Feature	Application Name		
	Genki Sushi	Mujigae	TMS Cafe
Digital Menu	✓	✓	✓
Promo	✓	x	✓
Add and Redeem Point	x	✓	✓
Request Song	x	✓	✓
Game	x	✓	x
Membership System	x	x	✓
Call Waiter	✓	✓	✓
Tax Calculator	x	x	✓
Digital Customer Rating	x	x	✓

Fig. 1. Application Comparison

II. LITERATURE REVIEW

Android is a mobile operating system that is based in a modified version of Linux. It was originally developed by a startup of the same name, Android, Inc. In 2005, as part of its strategy to enter the mobile space, Google purchased Android over its development work [2]. Android is an open source project that develop in purpose to provide an open platform for develop user experience in mobile. Android was the first mobile platform that complete, open, and free [1].

The most important software to develop Android application is Android SDK. Android SDK contains debugger, libraries, emulator, documentation, example code, and tutorial. Besides Android SDK, for developing an Android Application, we also need the integrated development environment (IDE). In the case of Android, the recommended IDE is Eclipse, a multi-language software development environment featuring an extensible plug-in system. It can be used to develop various types of application, using languages such as Java, Ada, C, C++, COBOL, Python, and others [2]. And the additional tools to support development and debug of Android application is android development tools (ADT). So, to develop Android application, we need Android SDK, IDE (Eclipse), and ADT.

III. RESEARCH METHODOLOGY

Methodology that used in this project consists of two processes. First, estimate cost using Activity Based Costing (ABC). Second, controlling cost using Earned Value Analysis (EVA).

Methodology used in this research is:

- *Data Collection Method*

In collecting data, researcher used interview method. Conduct interview with client and the company as the bridge between us and client.

- *Analysis Method*

Researchers analyze the result of collecting data that got by interviewing related parties.

- *System Design Method*

System design method that used in this research is:

– *Unified Modelling Language (UML)*: Researchers design use case diagram, activity diagram, class diagram, and sequence diagram.

– *Software Development Life Cycle (SDLC)*: Application development using incremental SDLC model as shown in Figure. We use this model because at the first meeting, client just give the outline of the application that they want.

– *Designing Application Interface*: Before we develop the interface, we build a mockup of the application.

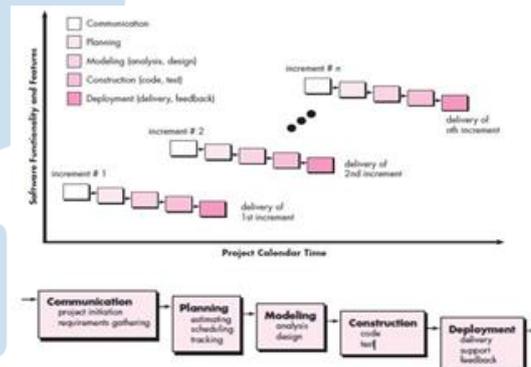


Fig. 2. Incremental Model

IV. RESULTS AND ANALYSIS

Here is the result of this application. This application has some features, in following:

- *Digital Menu*

Digital Menu shown in this application is equipped with discount info from promo menu.

- *Promo Feature*

This feature shown the active promo in the restaurant.

- *Add and Redeem Point*

This application has Add Point feature that gave to member as the reward for their loyalty. Point that has been collected can be redeem with the selected product in restaurant.

- *Song Request*

In order to increase customer satisfaction, this application have song request feature, as well, so customer can request the song they want to play.

- *Membership System*

This application has membership system to increase customer loyalty

- *Call Waiter*

This application has call waiter feature to ease restaurant in fulfill customer's needs.

- *Tax Calculator*

This application has tax calculator feature to help customer while count each payment including the tax if they come in group.

- *Customer Rating Digital*

This application has customer rating digital feature to ease restaurant to measure customer's satisfaction to service and product quality

Figure 3 shows the first page of this application that only appear once a day. The table number is input by waiter/waitress. The table number is used for marking the device.

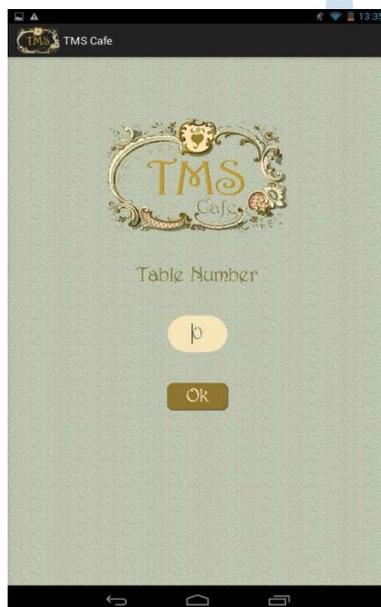


Fig. 3. First Page Interface

The home interface of this application contains main menu (features) of this application. The features

of this application are shown in menu icon in the center of page and tabs in the bottom of page. The home interface of this application is shown in Figure 4.



Fig. 4. Home Interface

Digital menu as the solution of one of the restaurant problem is shown in Figure 5.



Fig. 5. Menu Interface

Customer's satisfaction is needed to know to help restaurant in analyze their products and services. We give the solution by make a page in this application to let customer give a feedback to the restaurant. It is shown in Figure 6.

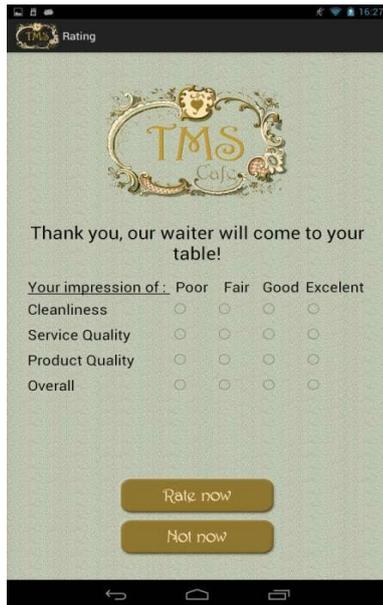


Fig. 6. Customer Rating Interface

V. CONCLUSION

This paper presents a food ordering application for Android based devices. The application deploys to help restaurant in manage their business process (including to renew the menu and promo list and manage customer order), to increase customer's loyalty, and to facilitate restaurant to analyze the revenue, product, and customer satisfaction. This application is quite good and useful, and also can solve the main problem of the restaurant in renew the menu and promo list, manage customer order, increase customer's loyalty, and to analyze.

In the further development of this application, it will be developed to iOS or windows operating system and researchers also will add some additional features in this application like entertainment feature like games, search feature, and feature to provide delivery order of the restaurant.

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