

FOOD COURT ORDERING SYSTEM USING MOBILE APPLICATION
(FooCOSUMA)

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ABSTRACT

Food court ordering system is the way to manage a flow or process in the food court and mobile application device has been use to complete the process in managing food court. The project was to design and develop a food court ordering system using mobile application that will potentially used in the biggest restaurant such as food court, to increase the performance and quality of the services. The project has been focused on the food ordering process at the food court. This project is based on the System Development Life Cycle (SDLC) to achieve the entire objectives in a given period of time. System Development Life Cycle (SDLC) is focuses on the interaction of planning, analysis, and design which leads to implementation followed by testing and evaluation.

This food court ordering system was design to allow waiters to takes customer orders at the food court through mobile device. The mobile device is connecting to the server through wireless connection. This system also designed for food court manager to manage their menu and order that has been send by food court waiters. They were allowed to add, update or remove items from food court menu. Besides that, this system is designed to calculate customer billing automatically and make the food court system more systematic.

ABSTRAK

Sistem pesanan makanan di restoran adalah cara untuk menguruskan aliran atau proses di restoran dan alat aplikasi mudah alih telah digunakan untuk melengkapkan proses dalam menguruskan pesanan makanan. Projek ini adalah untuk mencipta dan membangunkan sistem pesanan makanan menggunakan aplikasi mudah alih yang akan berpotensi digunakan di restoran yang besar seperti 'food court', untuk meningkatkan prestasi dan kualiti perkhidmatan. Projek ini memberi tumpuan kepada proses pesanan makanan di 'food court' atau restoran-restoran besar. Projek ini adalah berdasarkan Kitaran Hayat Pembangunan Sistem (SDLC) untuk mencapai objektif keseluruhan dalam tempoh masa tertentu. Kitaran Hayat Pembangunan Sistem (SDLC) memberi tumpuan kepada interaksi perancangan, analisis, dan reka bentuk yang membawa kepada pelaksanaan yang diikuti oleh ujian dan penilaian.

Sistem pesanan makanan ini adalah dicipta untuk membolehkan pelayan untuk mengambil pesanan pelanggan melalui peranti mudah alih. Peranti mudah alih berkomunikasi dengan pelayan melalui sambungan tanpa wayar. Sistem ini juga direka bagi pengurus restoran untuk mengendalikan menu dan mengubahsuai menu mengikut kemas kini terbaru daripada pelayan dan dapur. Mereka dibenarkan untuk menambah, mengemaskini atau memadam item dari menu makanan. Selain itu, sistem ini direka bentuk untuk mengira bil pelanggan secara automatik dan membuat sistem makanan ini bersifat lebih sistematik.

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CHAPTER I

INTRODUCTION

This chapter briefly discuss on the overview of this research. It contains six sections. The first section is introduction; follow by the problem statement. Next are the objectives where the projects goal is determined. After that are the scopes of the system; follow by the thesis organization which briefly describes the structure of this thesis and lastly conclusion.

1.1 Introduction

A mobile application is software that runs on a handheld device (phone, tablet, smart phone, e-reader, iPod, etc.) than can connect with wireless carrier networks, and has an operating system that supports standalone software. Usually, many people assume that mobile applications are native application. Mobile applications usually help users by connecting them to internet services more commonly accessed on desktop or notebook computers, or help them by making it easier to use the internet on their portable devices.

Food Court Ordering System Using Mobile Application is a computerized system that applies in a food court service. This project used by the food court staff to take customer orders without using paper and pen. Waiters only have to select list of food menu in their mobile device to take customer orders. In this system, there will be dividing into three sections. First is the waiter (mobile), second is the food section (kitchen), and last is cashier section (admin).

For this service, mobile application is used to make customer order and as a device for communicates between cashier and kitchen. Data in mobile application device will be sent to cashier computer and simultaneously to kitchen computer. Using mobile application device, staff will take a customer order and that order will be send to the database. In the meantime, food section and cashier section (kitchen) will get the order information from the database simultaneously. When the food order is finished, it will send the data back to the database and inform the mobile device to deliver the food to customers. All the order that have been made will be saved into the database of this system, so cashier can get the update and calculate the bill. With this system, manager can know all the transaction that has been made. Manager also can monitor or control the operation and performance of the food court.

1.2 Problem Statement

Today, many food courts still using the traditional way to make customer order, as we can see in the traditional service that use today is the waiter takes customer order by pen and paper. This is a not efficiency method, inconvenient and may contain mistakes. For example, if the waiter lost his order paper in the hustle or the waiters writing is hard to understand, that may cause the kitchen and cashier mess up the orders also may cause calculation errors.

By using Food Court Ordering System Using Mobile Application, it makes the service more efficiency and can help the manager to avoid human error and enhance the business development. In this system, the ordering transaction is a step by step model to make the transaction more systematic and the system can guide the staff to avoid errors. Beside the efficiency service, by using this system it can gave a better quality service to customer and it will attract more customers to the food court to get this quality of service.

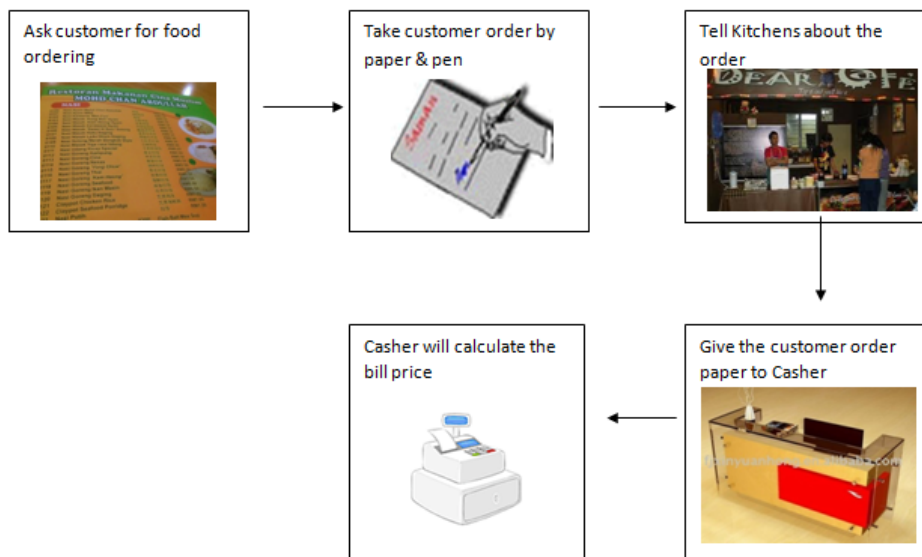


Figure 1.1: Manual/Traditional Restaurant Ordering

1.3 Objectives

The main objectives for the development of Food Court Ordering System Using Mobile Application are:

- I. To computerize the ordering system so that it can make the transaction more systematic.
- II. To avoid misuse errors such as waiter lost his order paper or the waiter's handwriting is hard to understand.
- III. To save all the transactions into the database and using that database manager can know all the transaction that has been made.
- IV. To apply mobile application such as smart phone, wireless etc for all data acquisition.

1.4 Scopes

The scopes of this project are:

- I. The scope of this project is for the large food court that used centralized management of operation.
- II. The module includes ordering, cooking status, payment and administration.
- III. This system will be used by waiter, stall cooker, cashier and manager.

IV. Administrator (manager)

- Control all system activities.
- Delete, update and search all data in the system.
- View all data in the system.

V. Users (waiters)

- Takes customer orders.
- Checking food status.

VI. Cashier

- Calculate customer billing
- Print a receipt

VII. Hardware

- Wireless Router (Wifi)
- Smart phone
- Laptop (PC)
- Printer

1.5 Thesis Organization

This thesis consists of five (5) chapters. Chapter 1 discusses an introduction at the system. This includes the basic concept, problem statements, objectives and scopes. Chapter 2 describe literature review depicts the manual systems and the existing systems as the case studies of the project. This chapter also reviews the technique, method, equipment, and technology that had been used in the case studies. Chapter 3 discusses the methodology used in the development of the project. Chapter4 about implementation and been Chapter 5 results and discussion. Chapter 6 draws the conclusion.

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CHAPTER II

LITERATURE REVIEW

This chapter describes the review on existing techniques related for this project. This chapter comprises two sections: The first section describes the comprehensive review on existing related systems. The second section describes the review on method, equipment, and technology previously used in the same domain.

2.1 Existing System Review

This section is to review the current system and the existing system that related to food court ordering system.

2.1.1 Restaurant Point of Sale (POS)

Restaurant Point of Sale (POS) have been providing a bar and restaurant system which is called as jRestaurant POS. That restaurant system is ideal for all catering environments being a pizzeria, a fast-food, fine dining, a cafeteria or any other food-service.

The restaurant system can be installed on any computer running Microsoft Windows. Apart from the desktop version which is installed on a normal PC, user can add a wireless interface to their POS restaurant system. User can purchase the PDA plug-in which is installed on a wireless PDA.



Figure 2.1: View homepages of jRestaurant POS
(<http://www.jrestaurant-pos-system.com>)



Figure 2.2: Menu form for admin billing



Figure 2.3: jRestaurant POS flow diagram

That restaurant system allows multiple transactions to occur at the same time and prevents any human errors which are quite normal especially in high season.

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User can have a waiter booking a table from the desktop PC and another one from the wireless PDA.

2.1.2 Multi-Touchable E-Restaurant Management System

Multi-touch technology is an enhancement to the existing touch technology whereby users are allowed to control and perform operations simultaneously on the electronic visual displays using multiple fingers or gesture inputs. Large displays such as from the tabletop and the wall-screen are deemed to be essentials when dealing with multiple users sharing the same display for information visualization purposes. It is reported that the social interaction is highly improved among users using a shared display and input.

According to Cheong, Chiew & Yap (2010), one of the technologies that have been adopted by restaurants is the PDA-based wireless food ordering system. Various applications have been developed specially for such restaurant ordering system, which include iMenu, a web-based ordering system that runs on wireless connection and Easy-Order, the first application developed to communicate with computers to deliver e-commerce tasks. Business that implemented such mobile technologies generally improved their operation efficiency, reduced operation costs, and improved service quality. Another important aspect of restaurant ordering system is the dining menu. Dining menu ought to be informative, attractive and updated all the time for customers to make order easily. Restaurant owners strive to outwit each other by introducing new promotions, new food menus and new attractive announcements. By doing so, dining menu is frequently changed, which involve huge amount of money and time.

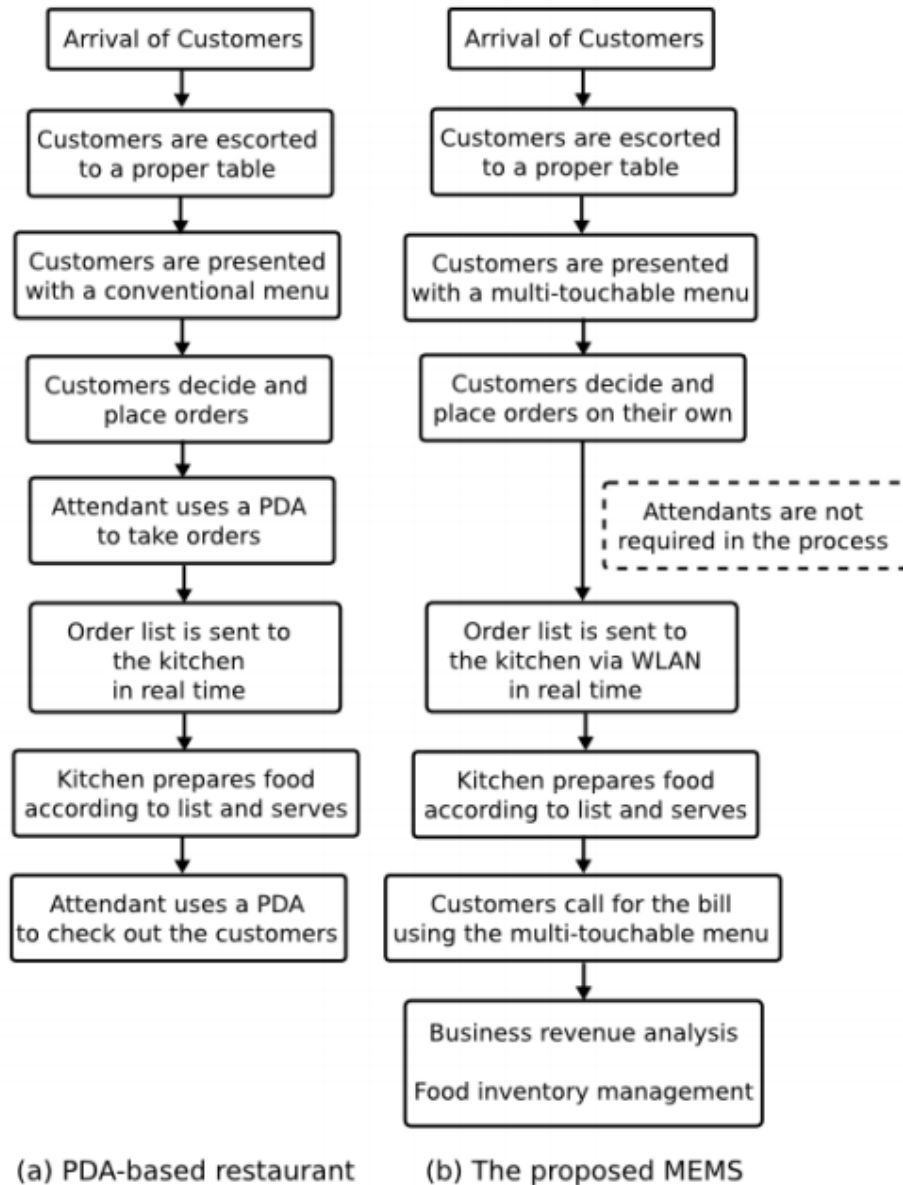




Figure 2.4: Service procedures for the PDA-based restaurant

The multi-touchable dining menu on the dining table provides the interface for customers to order food at their table. The menu serves as an informational platform that allows user to browse and view food details, an ordering platform that gives customers place and manage orders digitally on top of the dining table. Multi-


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touchable E-restaurant management system solved that some of the limitations encountered by the PDA-based food ordering system.

Multi-touchable
E-restaurant System

Home
View Waiting Orders
Daily Billing
Cashier Billing
Customer's View
Logout

Currently Logged in as:
 admin

Welcome to Multi-touchable E-restaurant System Add New Entry

Please select a menu category

		Appetizers	Main Course	Beverages	Desserts	
Delete	Edit	Id	Name	Description	Imageurl	Price
✕	✎	A001	Steamed Pork and Shrimp Dumpling(Siew Mai)	Small steamed dumplings with pork and shrimp meat inside a thin wheat flour wrapper. It is known as "Siew Mai" in chinese.	images/A001.jpg	RM9.00
✕	✎	A002	Shrimp Dumpling(Har Gao)	A delicate steamed dumpling with whole shrimp filling and thin wheat starch skin.	images/A002.jpg	RM8.00
✕	✎	A003	Pea Sprout and Scallop Dim Sum	Slices of pea sprout and bits of scallop wrapped in a soft thin dumpling skin.	images/A003.jpg	RM8.90
✕	✎	A004	Vege Roll	A roll consisting of various types of vegetables — sliced carrot, cabbage, mushroom and wood ear fungus, rolled inside a thin flour skin and deep fried. Served in a dish of four with thai chili sauce.	images/A004.jpg	RM8.00
✕	✎	A005	Duck Floss in fried spring rolls	A delicate deep fried roll with mixed vegetables and duck meat floss.Served in a dish of four.	images/A005.jpg	RM8.00
✕	✎	A006	Signature Egg Tarts	A signaure dish in Canton- that consists of an outer pastry crust that is filled with egg oustard and baked.Comes in a plate of two.	images/A006.jpg	RM5.00
✕	✎	A007	Steamed Prawn Dumpling with Omelette Skin	A dumpling dish that consists of steamed prain meat wrapped in a delicious omelette skin.Comes in a plate of three.	images/A007.jpg	RM10.00
✕	✎	A008	Crispy Bun Stuffed with Honey-glazed BBQ Pork	A delicate bun stuffed with honey-glazed BBQ pork deep fried to provide a crispy experience.	images/A008.jpg	RM7.00
✕	✎	A009	Conoh with American Ginseng	A type of saltwater snail(Conoh)boiled in fine American Ginseng soup.	images/A009.jpg	RM11.00

Figure 2.5: User Interface for the Multi-touchable Dining Menu

2.1.3 A Personalized Restaurant Recommender Agent for Mobile E-Service

A recommender agent in mobile environments should be context-aware to assist users while the users are moving. Many different kinds of contexts can be used by a recommender agent, such as weather, route conditions, time and location, etc.

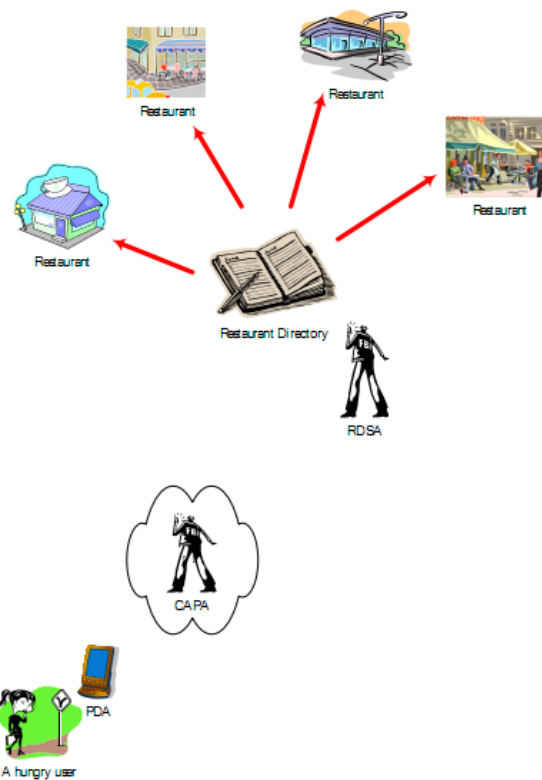


Figure 2.6: The overview scenario of the system.

Tung &Soo (2004) identify that PDA is chosen as the hardware for implementing the agents, the Personal Handyphone System (PHS) as the wireless connection of the PDA, and the Global Positioning System (GPS) for the agent to determine the current position of the user.

There are two types of agents in that system, first is the context-aware personalized agent (CAPA) and second is the restaurant directory service agent (RDSA). The CAPA resides in the PDA of the user (Figure 2.6). Its main role in the multi-agent system is to interact with the user and the RDSA. CAPA is capable of getting user's preferences for selecting restaurants. For the mobile user, CAPA can explore the user's time and spatial context by the built-in sensor capabilities. For use that system, a new restaurant must register in the restaurant directory with RDSA before it can be recommended to the user. The entry will contain information about the restaurant. The RDSA also has the ability of searching restaurants given preference constraints. If the RDSA couldn't find anything according to these preference constraints, it will propose some modifications to the constraints. It also has the ability of recommending a restaurant out of many matched ones.

2.1.4 Comparison between all the existing systems.

The table shows comparison operating system between all the existing systems.

Feature	Manual System	Restaurant Point of Sale (POS)	Multi-Touchable E-Restaurant Management System	Personalized Restaurant Recommender Agent for Mobile E-Service
Hardware	Pen, Paper, File	Computer, Mobile(PDA)	Computer, Mobile(PDA)	Computer, GPS, Mobile(PDA)
Software	Not available	Visual Basic	PHP	PHP
Language	Not available	VB.net	XML	HTML
Setting	Not available	Easy to setting	Hard to setting	Hard to setting
Methods	Not available	SDLC	SDLC	SDLC
Accessible via Internet	Not accessible	Accessible through Internet, must use WIFI for communication.	Accessible through Internet, must use WIFI for communication.	Accessible through Internet, must use WIFI for communication.
Management system	Manual management system is being record manually by pen and books	The POS management system is based on the computerized system.	The Multi-Touchable E-Restaurant management system is based on the computerized system.	The Personalized Restaurant Recommender Agent for Mobile E-Service management system is based on the computerized system.

Table 2.1: Comparison between existing systems

2.2 Technique Used

This section will review on the current technique used on the mobile application and fact-finding.

2.2.1 Mobile Application Technique

This Mobile application is one of the techniques that we are use. It is a term used to describe internet applications that run on smartphones and other mobile devices. In contrast, a mobile web application is uses technologies such as Javascript, HTML, WML or JQuery to provide interaction, navigation, or customization capabilities. These programs run within a mobile device's web browser. That's means they're delivered wholly via the internet, they are not separate programs that get stored on the user's mobile device.

Smartphones usually combine both mobile phone and handheld computers into a single device. Smartphones functions are allowing users to store information likes email, install a programs, along with using a mobile phone in one device. A smartphone could be a mobile phone with some PDA functions integrated into the device. Examples of smartphones is Sony Ericsson, Palm Treo, Blackberry, Nokia T-Mobile Sidekick, Torq, Motorola Q, E-Ten, HP iPaq, I-mate,

Mobile applications can improve efficiency in many ways. First is improving in enabling faster decision making. Second is in maintaining seamless communication channels. Next is about reducing re-entry of data. Others are about