Mobile Food Ordering System for Restaurant

This project is submitted in partial fulfilment of the requirements for the degree of Bachelor of Computer Science and Information Technology with Honours (Multimedia)

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ABSTRACT

Nowadays, most of the local restaurants are using paper-based restaurant management system except for larger cooperation of restaurants are using computer based to monitor the restaurant. Development of Mobile Food Ordering System for Restaurant (MFOSR) is anticipated to bring benefits to local restaurant in its management system as well as reduce the redundant work carried out by the waiters or waitresses in food order entry. This Final Year Project report describes the background of study, research on the literature review, requirement analysis, system design, system development, system prototyping, testing and evaluation as well as its limitations and future enhancements of this system. This system is developed using Microsoft Visual Studio 2005 with Microsoft Access for data storage. The modules included in this system are User Login, Order Entry, Generate Total Amount, Staff Maintenance and Menu Maintenance. This study generally indicates the importance of MFOSR in its effectiveness and efficiency in improving the local restaurant management.
ABSTRAK

ACKNOWLEDGMENTS

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CHAPTER ONE: INTRODUCTION

1.1 Introduction

Over the last two decades, the use of computers has brought great conveniences and contributions to society in daily activities. Computers are used for the purpose of increasing the reliability and speed of transactions of various management systems, such as restaurant management system, file management system, banking system and so on. The information technology helps these management systems to be carried out more effectively as it could significantly reduce human errors. Other than that, it eases the process of managing these systems.

Before the use of computer in restaurant management system, every order entry is done in traditional way which used hand-written sketch papers and needed more labour force. Ordering is made on the sketch paper and pass to the kitchen. This procedure is more time consuming as customers have to wait longer for the food to be ready. Other than that, the reliability of this traditional ordering system is questionable, because there are cases where the order entry is lost and the cook misinterpreted the writings on the order entry. With the information introduced into this area of business, every single transaction can be done via internet with the online services provided by the restaurant. Customer can take order and make reservation for table at the particular restaurant online. However, as convenience and effective as this system can be, not many people are familiar with this system. Thus, the online reservation is not popular among small restaurants, since the revenue of these restaurants would not be enough to cover the cost and services charge of implementing this system.

In the market nowadays, there are several companies that produce products which give a more efficient restaurant management system by using mobile technology. In many
European countries, handheld device like Pocket PC is used for taking order from customer in faster manner. Studies have shown that this is a faster way of taking order as compare to the traditional papers-and-pens method, and as a result, the productivity of that restaurant has increased.

However, this system, or with similarity, are hardly found in local restaurant in Malaysia. Therefore, these restaurants need a computer-based system which offers better reliability, greater efficiency and faster transaction to replace the traditional manual ordering system, so that the productivity of local restaurants in Malaysia can be increased.

1.2 Problem Statement

The restaurant management system for restaurants nowadays is available in manual and computer-based system. With the rise of human population, restaurants face problems in handling the orders, especially during peak hour. Human errors are more intense when the situation is out of control.

The main problems faced by the restaurants using manual ordering nowadays:

* Hand-writing ordering will cause redundant problem.
* Takes time for waiter or waitress to take every order to kitchen.
* Changes on the order can't make in a blink of an eye time.
* Need to hire more waiter or waitress to give more efficient services.
* Greater cost is required to hire more workers.
* Customer can not make table reservation at the particular table they want.
* Unsystematic restaurant management.
The main problems faced by the restaurants using touch screen technology system:

* The system uses only one terminal.

* They are using Local Area Network (LAN), where connection is done by cables, instead of Wireless Local Area Network (WLAN) for the connection in the restaurant.

* Customers need to queue up long when peak hours, for example, lunch time.

1.3 Proposed Solution

In order to overcome the problem faced, a systematic and affordable system for managing order entry of small restaurant is needed. This project is aimed to solve the problem mentioned above so that the restaurant can have a more manageable system. With this system, human errors can be reduced to its minimal and faster services can be provided to customers.

In a quick view of the proposed system, the proposed system named Mobile Food Ordering System for Restaurant (MFOSR) will have the function of new food order entry and recall order entry that will enable waiter or waitress to take order at tableside. Besides that, functions such as staff maintenance and menu maintenance will be developed for the restaurant management.

1.4 Objective

The main objective of this proposed system is to assist restaurant manager to better manage and handle the restaurant ordering system. Easy navigation interface is needed in this system to allow waiter or waitress to learn the use of the program in the shortest training time
possible. Besides that, it will be beneficial in cost wise to the manager as less manpower will be employed in taking order at tableside.

Therefore, MFOSR is developed with the following objectives:

* To study the current development about the restaurant ordering management system.
* To identify the system requirement specification of restaurant ordering management system.
* To design the food ordering system for restaurant which take into account the usage of Personal Digital Assistant (PDA).
* To develop prototype base on the finding from objective above.

1.5 Scope & Limitation

The proposed system is customized for the use of restaurant in handling and managing the menu ordering system which takes into account the usage of PDA. The design of food order entry module is limited to ordering, retrieving, modifying the order taken. The amount of payment will be summed up after every order is made and the order will be send to the kitchen for preparation. Besides that, managing business report, staff maintenance and menu maintenance are within the scope of this project in the design of kitchen module. The proposed system will be able to give business report on daily business operation.

However, the proposed system does not include the function of receipt printing. Customers have to make their payments at the payment counter and not with the waiter or waitress who took the order. Thus, waiter or waitress will no be able to notify the kitchen about the late delivery of food to avoid customers wait long as the notification function is not included.
1.6 Methodology

System Development Life Cycle (SDLC) (Kendall & Kendall, 2002) will be used as guideline for this project. Hence, Waterfall Model is chosen as the methodology of this project. It includes five phases, which are system planning, system analysis, system design, system implementation and system evaluation. Each phase is described briefly below.

1.6.1 System Planning

Study the problem faced by the existing restaurant ordering management system either on manual or computer-based system. Identify the objective of the project and set the scope of this project to ensure the final product produced within the scope. This project is to introduce mobile technology into restaurant ordering management system. It is planned to produce a more manageable and reliable management system which could increase the productivity of a restaurant. The project scope for order entry module is limited to new food order entry and recalls back all the order taken in order entry module. While for kitchen module, notification of food prepared is not included in this proposed system. After identify the objective and scope of the project, project schedule will be set up to ensure the project finishes on time. After everything is planned well, a proposal will be produced.

1.6.2 System Analysis

Observation technique is used in collecting user's requirements for the proposed system. Existing system which is available on the Internet will be observed to analyze the system functionality. From the observation from the Internet, there are several examples found, such as NextPOS and Point of Success. Literature review will be carried out in this stage. Data Flow Diagram will be produced to follow up the current restaurant management
system. This system is targeted for the use of waiter or waitress to take order from customer in more effective way.

1.6.3 System Design

At this stage, data flow diagram of the proposed system will be designed. Design of the interface for order entry module which takes into account the use of PDA base on the requirement collected from the analysis stage will be produced. Besides that, the interface for the kitchen module will be designed as well on a storyboard. Microsoft Visual Studio 2005 will be selected for developing the proposed system. For the technical environment, the system will work on the personal computer at the kitchen and PDA could be used on waiter’s or waitress’s side. Each order which is done will be transmitted to the kitchen.

1.6.4 System Implementation

Coding will be done using Microsoft .Net programming in this stage for both modules. After implementation, user interface testing will be done by moving through each modules and interfaces. Usability of the system will be tested as well. Training will be carried out if necessary.

1.6.5 System Evaluation

Before closing the project, user feedback from testers will be analyzed at this stage. Evaluation on the system to conclude whether it meets the objectives of the proposed system will be carried out. Besides that, the proposed system will be evaluated to determine whether it overcomes the problems of the current existing systems.
1.7 Significant of Outcome

The proposed restaurant ordering system could serve as a sample of computer-based restaurant ordering system. It can demonstrate the use of mobile technology to enhance restaurant management system.

1.8 Project Plan

The project began with identifying the problem faced by the existing system and evaluation on those systems. Refer to Appendix A for further information on the schedule.

1.9 Expected Outcome

MFOSR is expected to bring a convenient and efficient management system to the restaurant in Malaysia. There will be two editions, the kitchen edition that will be installed in computer at the kitchen and the order entry edition.

1.10 Outline of Project Report

The project report mainly included 5 chapters which are Introduction, Background, Requirement Analysis and design, prototyping and testing, and conclusion and future work. Each chapter's content and outcomes are explained roughly as below.

Chapter 1 - Introduction

This chapter shows an overview of the proposed system named Mobile Food Ordering System for Restaurant (MFOSR). It defines the problem of the current available systems, the project's objectives, scope and limitation, plan and contribution.
Chapter 2 - Background

Literature review is done on three current available systems to study and review their functionalities, processes and components used. Comparison is carried out on the functionality and component of the reviewed systems. Requirement specification of the proposed system is defined in this chapter.

Chapter 3 - Requirement Analysis & Design

In this chapter, the methodology employed for the system development will be explored in detail. Problem of the current system, user requirement and system specification will also be identified. Besides that, it will also outline the system design which includes the architecture of the system, entity relationship diagram, data flow diagram, data dictionary, storyboard for the proposed system and the interface design.

Chapter 4 - Prototyping & Testing

Chapter 4 will focus on system implementation of the proposed system and testing. The testing will include system testing and usability testing where system testing will detect the errors of the system, while usability testing will evaluate the system.

Chapter 5 - Conclusion & Future Work

This chapter will conclude the problems faced, evaluating the actualization of objectives and future enhancement to the system.
CHAPTER TWO: BACKGROUND

2.1 Introduction

As mobile technology is widely used in the market, different kinds of restaurant ordering system are available all over the world. The various types of systems which are currently available in the market differ mainly from the technology they use, such as touch screen technology and personal digital assistant (PDA) technology. Study about the current restaurant food ordering systems which are available in the market has been carried out. For the purpose of this study, literature review is focused on the functionalities, processes and components of the reviewed systems. Technology used and the functionalities provided by the system are the main focus when selecting system for system review and comparison among the selected systems.

The purpose of this literature review is to study the requirement specification, weaknesses and strengths of those selected systems. After these systems are reviewed, ideas can be gained and implemented on the proposed system to overcome the weaknesses of this kind of technology. Besides this, functions which are commonly used among the selected systems could be selected as functions of the proposed system as well. Technology used by the selected systems is also studied to further enhance the proposed system.

2.2 Restaurant Management System

Various types of food ordering system are available in the market nowadays. From the examples found, three systems were selected for review; they are Pointsoft handheld order entry system (OES), NextPOS and Point of Success Restaurant software (POS). OES and NextPOS use Personal Digital Assistant (PDA) with wireless features to take order from customers, while POS uses touch panel or touch monitor which is touch screen technology to
run the program. The selection of these systems was based on the functions each system provides, the components used and the overall processes involved.

2.2.1 NextPOS

NextPOS Corporation invented the NextPOS For Restaurant Wireless Edition which is an extension of NextPOS for restaurant PRO software (NextPOS Corporation, 2003). The software uses wireless technology for the application to operate in the restaurant and it requires the use of personal digital assistant (PDA) for full installation. NextPOS for restaurant wireless edition is installed in the PDA for order entry, while NextPOS For Restaurant PRO software is a “back office” for the restaurant manager’s use.

Figure 2.1 Snapshot of the NextPOS for restaurant wireless edition

Waiter or waitress takes food orders from tableside by using a PDA is installed with the NextPOS For Restaurant Wireless Edition. It is an effective way to improve the services of the restaurant. The order will be sent to the kitchen for preparation once the waiter or waitress finalized the order and sends it to the kitchen or bar monitor from his or her PDA. When the food is ready to be served, the waiter or waitress who assigned the order entry will
not be notified. This is because this job will be assigned to waiter or waitress who is not involved in making order entry.

The functionality of this application is providing food order entry via PDA which is implemented in the NextPOS For Restaurant Wireless Edition. Besides order entry, order can be edited anytime as required by the waiter or waitress that has not yet closed the PDA device. The total amount for each order session can be known after order is done but the payment cannot be done at that time. It can only be done at the payment counter after the customer finished his or her meal. The recall order function enables waiter or waitress to look at the order taken by all the waiters or waitresses in the restaurant. Customer can request to hold back their order to be served until the time they preferred. Next, regular customer’s information will be store in the database for future track of their ordering behavior to improve the business strategy. Besides ordering the food that is listed in the menu, the modifier function enables the customer to modify these choices of meals, for example adding the desirable topping of the pizza.

2.2.2 Pointsoft handheld Order Entry System (OES)

Pointsoft handheld Order Entry System (OES) was developed by Pointsoft (M) Sdn Bhd which forms a natural extension of Pointsoft tableservice (Pointsoft, 2004). The application needs PDA as the main component for the Pointsoft handheld OES installation as the software is integrated the wireless technology. The Pointsoft tableservice enables manager to arrange the graphical floor plan and gives waiter or waitress in-charging sit administration a big picture about the table arrangement of the restaurant. Pointsoft handheld OES is installed in the PDA which enables the waiter or waitress to take order from tableside remotely within the wireless connection.