

INTERACTIVE USER  
USI



DERING SYSTEM

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## **Abstract**

**Interactive User Interface for Food Ordering System using QR Code Technology** is a real time ordering system to manage the order process for restaurant. The current system is using traditional way which is paper menu and using paper sheets to record the orders of customers. They do not have a proper ordering system to support and make the ordering process smoothly. Nowadays, smartphone and tablet have widely used in our daily life. Therefore, this system is developed to provide an electronic ordering system using mobile and tablet for customers in order to increase the restaurant productivity. There are two target users which are restaurant customers and restaurant administrator. This system is divides into three subsystems which are Android-based and Web-based Food Ordering System and Administrator Management System. Besides, QR code is used to encode the order details then will be decode by the tablet. This proposed system is using waterfall model as the methodology. There are five phases such as requirement phase, design phase, implementation phase, verification phase and maintenance phase.

### **Abstract**

Sistem pesanan makanan yang interaktif menggunakan QR kod teknologi adalah sistem pesanan tepat masa untuk menguruskan proses pesanan untuk restoran. Sistem sekarang masih menggunakan cara tradisional iaitu menu kertas dan menggunakan lembaran kertas untuk mencatat pesanan pelanggan. Mereka tidak mempunyai proses pesanan makanan yang betul dan lancar. Pada masa kini, telefon pintar dan tablet telah digunakan secara meluas dalam kehidupan seharian kita. Oleh itu, sistem ini bertujuan untuk menyediakan satu sistem pesanan elektronik menggunakan telefon bimbit dan tablet untuk pelanggan bagi meningkatkan produktiviti restoran. Terdapat dua pengguna sasaran yang pelanggan restoran dan pengurus restoran . Sistem ini dibahagikan kepada tiga sub-sistem iaitu Android dan web sistem pesanan makanan dan pengurusan restoran sistem. Selain itu, kod QR digunakan untuk rekod maklumat pesanan dan tablet akan membaca kod ini. Sistem ini menggunakan model air terjun sebagai metodologi. Terdapat lima fasa iaitu fasa keperluan , fasa reka bentuk , fasa pelaksanaan , fasa pengesahan dan fasa penyelenggaraan .

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**LIST OF ABBREVIATIONS**

<b>PHP</b>	<b>Hypertext Preprocessor</b>
<b>IDE</b>	<b>Integrated Development Environment</b>
<b>SQL</b>	<b>Standard Query Language</b>
<b>HTTP</b>	<b>Hypertext Markup Language</b>
<b>UAT</b>	<b>User Acceptance Testing</b>
<b>RAD</b>	<b>Rapid Application Development</b>
<b>API</b>	<b>Application Programming Interface</b>
<b>DBMS</b>	<b>Database Management System</b>
<b>B2B</b>	<b>Business-to-Business</b>
<b>ERD</b>	<b>Entity Relationship Diagram</b>
<b>RDBMS</b>	<b>Relational Database Management System</b>

## **Chapter 1**

### **Introduction**

This chapter briefly describes the Interactive User Interface for Food Ordering System using QR Code Technology that will be developed later. It contains five sections which are introduction, problem statement, objective, scope and thesis organization.

#### **1.1 Background**

Nowadays, smartphone has play an important role in our life whether is adults or teenagers. It becomes very important to our daily life since the trend of technology is changing very fast and rapid than human expected. In addition to this, people can easily access the internet at any place due to many shop outlets, restaurants or café have provided Wi-Fi.

Recently QR code has become very common and popular in our daily life as we can always see the QR code on magazines, in-store displays, tickets, mobile application, website and sometimes that will be a huge QR code displays outside the building or on the shopping mall's floors and windows. People can easily scan the QR code by their

smartphone. QR code is stand for Quick Response code which is a two dimensional code. It was invented in 1994 by Denso Wave with the purpose to track the vehicles parts during manufacture. But nowadays many people use QR code widely as a marketing strategy on industrial (Wikipedia, 2014).

It is designed as an advanced barcode which can store product information such as price, product description, URL of company website as a shortcut and so on. It is easy to use and free which it can be generate by open source QR code generator and use smartphone as a scanner. Many businesses have taking its advantage on marketing their product to attract the customers. It's work and become very popular which has widely applied in inventory system, management system, and ticket tracking system. Compared to barcode, QR code can store huge amount of information up to 7000 characters of numeric code, 4300 alphanumeric characters or 3000 binary units whereas barcode only can hold up to 20 numbers. That's the reason why people mostly prefer to use QR code on industrial, manufacture and business (whatisqrcode.co.uk, 2014).

Therefore, the food ordering system with the QR code is developed to ease the restaurant staff and customers on ordering food process. This system is divided into two parts: one is web-based food ordering system which they can browse the menu by their smartphone or laptop at anywhere if they connect to internet access before they arrived to the restaurant then a QR code will be generated to let customers scan by the tablets that prepared on the restaurant's table; the other one is customers are using the tablets that prepared at every table to browse menu and place the order directly goes to the kitchen. By using the system, it provides a convenient way for customers to go through the menu before they reach or waiting outside the restaurant during peak hours and choose the items at the same time. After the confirmation of order, a QR code will be generated. So when customers reach the restaurant and after take their seats, they can straight away scan the QR code by the tablets and the order will directly send to the kitchen.

Actually web-based ordering system and android-based ordering system provide similar functions since both system are allow customers to browse menu and select items and place order to cart but the different is the web-based ordering system is generating the QR code whereas the tablet is used to scan the code and send order to kitchen. Hence, one of the advantages of the food ordering system with QR code is

customer satisfaction. Currently, the technology is expanding rapid, every people are holding a smartphone to surf internet, search for food, and play around with the applications.

All the menu information will be save in the database and admin can manage the menu items easily at any time or anywhere. Admin also can manage the sales of the restaurant and upload the data to Dropbox for backup purpose.

## **1.2 Problem statement**

The existing Food Ordering System still using the traditional way which is the paper menu and waiters require to record down orders information from customers by handwriting. All the orders will be written on the paper sheets and one sheet will send to kitchen and one sheet will send to cashier. Sometimes, during peak hours, waiters are not sufficient to serve all customers one by one due to lack of workers. On this situation, customers always have to take plenty of times on waiting the waiters to place order and carrying the food to their table. Hence, the restaurant will always receive complaint from customers which are not satisfied with the services as they always receive the wrong order or not receive the order after a very long time. Besides, the paper sheets easily lost.

Paper menu can't be changed once printed. The management can't easily update the items or the price on the paper menu. If they want to change the menu, they have to reprint again. This will increase the cost and wastage of paper. In addition to that, paper menu will damage from time to time.

By using the traditional way, a problem always happened which is the mistakes and misunderstands between a waiter and a customer. The waiters might easily place the wrong order requests especially in the peak hours. This problem may lead to confusion between waiters, customers and also kitchen. Besides that, the paper menu didn't provide the clear view of the items. So this will makes customers feel difficult on get the clear view of items or ingredients of the food.

Based on those problems, by implementing an electronic and efficient ordering service can avoid those problems happen. Hence, I proposed to develop an ordering system using QR code to solve the problems. By using the proposed system, the restaurant productivity and customer satisfaction can be improved.

### **1.3 Objectives**

The objective of developing this system is as the following:

1. To develop an electronic ordering system to replace the manually record to cut down the ordering time and avoid the missing order.
2. To provide a real time ordering system which allows management easily manage the sales and menu by replace the paper menu to electronic menu.
3. To avoid wrong order and eliminate the error or misunderstand when placing order.

### **1.4 Project Scope**

The scope that will be covered is described as following.

- i) User of the system will be covered for administrator and customer of the restaurant.
- ii) This system has divided into three subsystems: Android-based and Web-based Food Ordering System and Administrator Management System.
- iii) Android-based Food Ordering System will run on Android-based tablet whereas Web-based Food Ordering System and Administrator Management System will run on web browser.
- iv) These subsystems require internet access to run the system.
- v) A QR code will be generate from the website if customers choose to browse the menu and add items to cart before they reach the restaurant.
- vi) Order can be placed by selecting items on tablet or scan a generated QR Code by tablet.
- vii) Administrator can manage the menu items and sales in real time and export the database for backup purpose.



## **1.5 Thesis Organization**

This thesis consists of six chapters such as the following.

Chapter 1 is to introduction of Interactive User Interface for Food Ordering System using QR Code Technology. This chapter is highlighting the problem statement of current existing system, objectives and scope to develop the system and summaries of the sequence of each chapter in the thesis.

Chapter 2 is to explain about the review of the existing Food Ordering System. This chapter is to review and explain about the researches that had been developed by others which are related to the current project and to explain about the technique, method, equipment or technology that can be used in constructing the project.

Chapter 3 is to discuss the overall approach and framework of project. This will include the methods, technique o approach that will be used and have been used in designing and implementing in this food ordering system.

Chapter 4 is to describe the framework and model through flow work. This chapter will include all the design of work flow and model using Microsoft Visio.

Chapter 5 is to highlights generally about the designed project development and databases structure and the source code for developed the designated user's interfaces.

Chapter 6 is to explain about the results and data analysis that had been acquired. The project limitation must be elaborated about development constraints and system constraints of the project and suggestion of future improvement on the research.

Chapter 7 is to briefly summarize about the developed project which include the project summary, summary of gathered data review reliability of information objective and project problem, summary of methodology and research implementation that had been used.

## **Chapter 2**

### **Literature Review**

This chapter describe about the existing system in detail regarding techniques, method or hardware have been used which similar to Interactive User Interface Food Ordering System using QR Code Technology that will develop later. This chapter includes four sections which is review on existing related systems, description of development tools, review on method, techniques, and hardware that are used in the previous project and last is the methodology.

#### **2.1 Current Systems that Similar with Food Ordering System**

There are a lot of food ordering systems which using different technologies and methods to promote their restaurant products. Hence, three of the food ordering system are chosen for comparison and discuss important criteria to develop the new system later.

### 2.1.1 Sakae Sushi iPad Ordering System

Sakae Sushi Malaysia is a Japanese Restaurant who has first launched an iPad ordering system through an interactive menu to offer customer a new level of convenience and interactivity ordering system. This system allows customers view the menu and place order by touching on the screen and zoom in to see each item.

The iPads are display at every table on a metal holder; hence customers may browse through the menu and take order by themselves. This is a two-way communication system which will send each selected item directly goes to the kitchen to process after confirmation of customer then customers are able to continue choosing other items.

The Figure 2.1 shows the homepage of the Sakae Sushi iPad menu. Actually this system look like computer system, but it was better and easy to use as customers can flip them like a page, tapping on screen to choose item through a finger or zoom by pinching as shown at Figure 2.2. Figure 2.2 is the food menu list page and Figure 2.3 is the beverage list page. Besides that, customers are able to search their favourite dish by typing the specific key words and it will show all the items based on the specific key words. This interactive menu features have improved the customer dining experience and satisfaction.

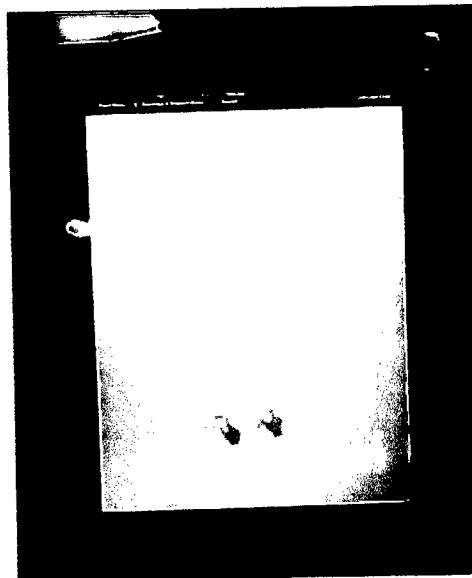


Figure 2.1: Sakae Sushi iPad Menu Home Page



Figure 2.2: Sakaé Sushi iPad Menu Food Menu Page

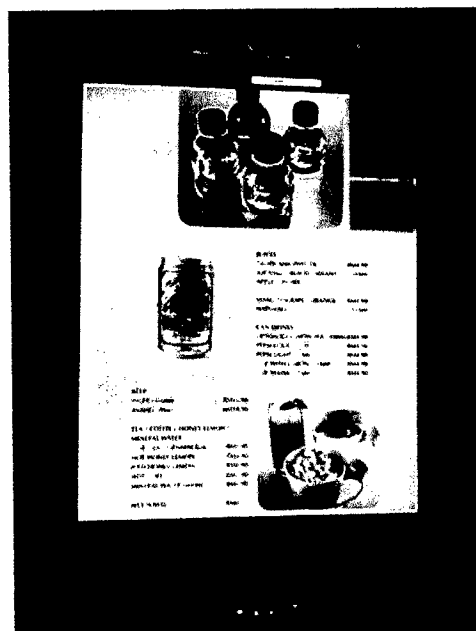


Figure 2.3: Sakaé Sushi iPad Menu Beverage Page

After place the order, customers are able to track their order whether it has been sent or being prepared. Figure 2.4 shows the confirmation order page to let customers are able to keep track the order have been made. Once the waiters sent the food to the table, they will update the order status. Thus customers are able to keep track on their order and bill easier (Siniah, 2011).

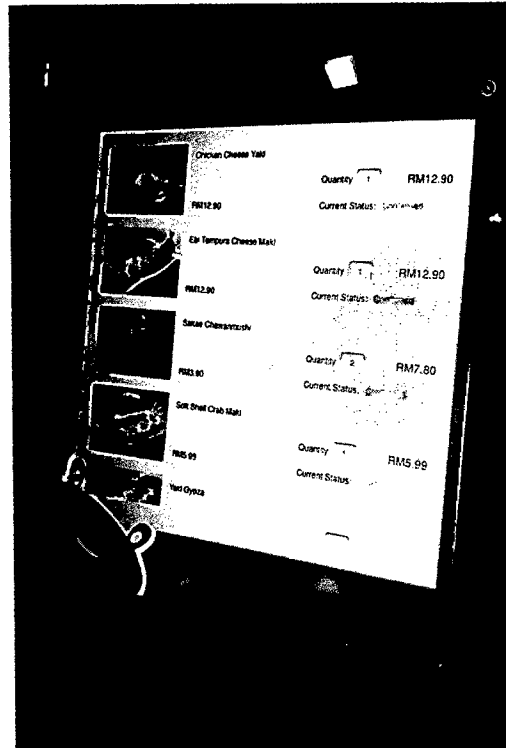


Figure 2.4: Sakae Sushi iPad Menu Confirmation Orders Page

So, with this new innovation, Sakae Sushi has provided a real time ordering and billing system. By using the iPad ordering system, restaurant's efficiency and staff productivity has been increased by reducing the serving time to place order to kitchen and send the bill to cashier.

### 2.1.2 McDelivery Web Ordering System for Malaysia

McDonalds Malaysia has launched the McDelivery Web ordering system which benefits customers in a convenient way to place order online for 24/7 operation (Wikipedia, 2014). This system is a web-based food ordering system which can replace the calling service for McDelivery which customers are able to view the menu and make order accurately and easy. Customers are able to browse the website through internet browser at any place that has internet access.

The Figure 2.5 is the home page for the McDelivery Web ordering system which provides some information for the meal such as limited time sales, special offer and new item. Figure 2.6 shows that customers are able to browse the menu based on different items type. However they have to register an account and login before they want to place an order as shown at Figure 2.7.



Figure 2.5: McDelivery Online Home Page

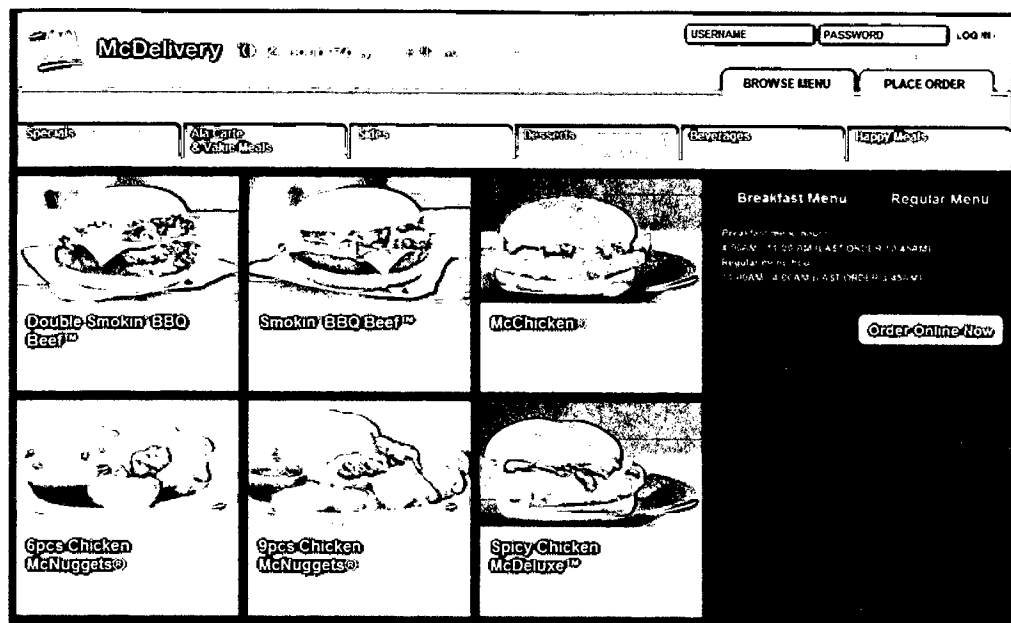


Figure 2.6: McDelivery Online Menu Page

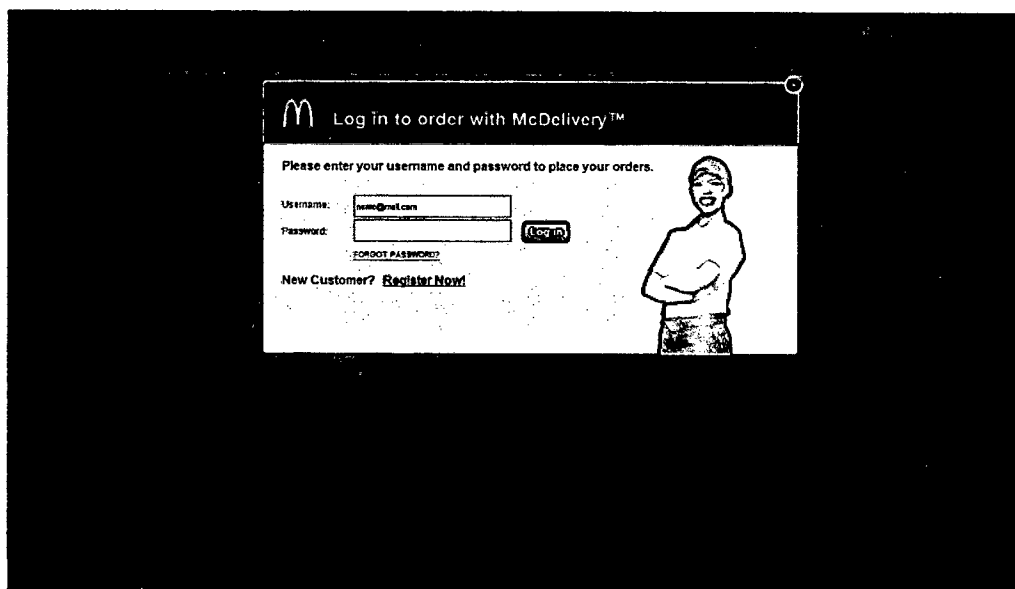


Figure 2.7: McDelivery Online Login Page

Figure 2.8: McDelivery Online Mobile Web Page

Customers are able to browse the menu without limitation of time period. They have more time to look over the menu to discuss and decide before ordering. There will be more convenient and efficiency to make order. Nowadays, more people are using smartphones or tablets to surf internet either they are at indoor or outdoor. Therefore, they can easily place order if they have the internet access. Figure 2.8 shows the mobile web page which customers can login and view the menu on the smartphone.

By this, it also eliminates the misunderstandings during phone conversation. Previously, they are using phone calling service to make delivery order, but sometimes due to the noise or bad communication, it may getting confuse or mistake. All the environment factors or human factors cannot be under control, so with online orders, the ordering process is handled by customers.

Besides, customers are able to keep track on their order status either it has been prepared or delivered. This improves the customer satisfaction by knowing their order status (mcdelivery.com.my, 2014).