

**FOOD ORDERING SYSTEM
USING QR CODE**

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ABSTRAK

Pesanan makanan adalah perkhidmatan yang sangat penting bagi sesebuah restoran. Ini adalah satu perkhidmatan yang ditawarkan oleh seseorang pelayan terhadap seseorang pelanggan yang datang untuk mengunjungi restoran tersebut. Terdapat beberapa masalah yang dihadapi terhadap sistem pesanan makanan yang sedia ada pada masa kini. Antara masalah yang dihadapi adalah berlaku perselisihan faham antara pelayan dan juga pelanggan semasa membuat pesanan. Selain itu, pelanggan juga perlu menunggu untuk seketika bagi seseorang pelayan untuk datang mengambil pesanan mereka. Sistem sekarang masih menggunakan cara tradisional iaitu menu kertas dan juga menggunakan lembaran kertas untuk mengambil pesanan makanan. Oleh itu, sistem pesanan makanan yang menggunakan QR kod teknologi adalah sistem pesanan yang paling sesuai untuk menguruskan proses pesanan makanan untuk restoran. Sistem pesanan makanan menggunakan teknologi QR kod ini adalah satu alternatif untuk mengatasi masalah tersebut. Sistem ini menggunakan telefon pintar sebagai medan utama kerana telefon pintar pada masa ini adalah dianggap sebagai keperluan. Pelanggan restoran hanya perlu mengimbas QR kod yang terdapat pada menu makanan yang disediakan oleh pihak restoran. Dengan menggunakan sistem ini juga, pelanggan boleh mengesahkan senarai makanan yang telah dipesan. Selain itu, pihak restoran juga boleh menguruskan jenis makanan dan melihat paparan pesanan.

ABSTRACT

Food ordering are very important service for a restaurant. This is a service that offered by a waiter to a customer who came to the restaurant. There are some problems that maybe to face by using the traditional food ordering. Problems that occur are misunderstanding between the waiter and the customer when taking the order. Besides, the customer need to wait for a moment for a waiter to come to take the order. The current system are using the traditional way which using a piece of paper and menu paper to take an order from the customers. Therefore, Food Ordering System using QR Code technology is a real time ordering system to manage the order process for the restaurant. Therefore, the food ordering system using QR Code technology is an alternative to solve that problem. The system use smartphone as a platform because nowadays smartphone is a necessary for everyone. The customers need to scan the QR Code on the menu paper that provided by the restaurant. By using this system also, the customer can confirm the ordered item. Besides, the staff of the restaurant also can manage the menu and view order list.

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LIST OF ABBREVIATIONS

QR	Quick Response
SDLC	System Development Life Cycle
GPS	Global Positioning System
2D	2 Dimensional
SMS	Short Message Service
SQRC	Safety Quick Response Code
RAD	Rapid Application Development
CASE	Computer Aided Software Engineering
UML	Unified Modelling Language
HTML	Hypertext Mark-up Language
ERD	Entity Relationship Diagram
UAT	User Acceptance Test

CHAPTER 1

INTRODUCTION

1.1 Introduction

One of the life human pleasure and pride is eating. In this era, everything has changed a lot when talking about food habits and taste for every household. There are a lot of trading activities that growing up right now such as restaurants, hotels and services. Everyone have their own goals and vision to build up their brand towards the market and the customers. For a restaurants, service quality and customer satisfaction are important for keeping their business at a stable level in the market.

Restaurant is a place for people to eat or buy a foods and beverages. Restaurant serve a lot of variations of foods. People who is always busy with their life especially the career person will choose to eat at the restaurant rather than cook by themselves. If they cook the food by themselves, it will waste their time and make them feel exhausted. Sometimes, the people go to restaurant just want to chill and relaxing while enjoy their beverage.

In term of restaurants, the management of restaurants are known as service provider while the customers are known as service receivers. Customers are regard as the pillar for each restaurant because without customers the function of a restaurant is useless. The restaurant need to serve a quality and good services to their customers make sure the customers satisfied with services that provided.

Most of the restaurant in Malaysia still use the waiter to take customer orders. This method is still consider efficient if the restaurant are not crowded, but however if the restaurant are crowded with the customers, it will arise a lot of human error that made by the waiter such as missing of order papers, mistake in jot down the order, did not have a waiter to take the order from customers and others.

Therefore, this project proposes a Food Ordering System Using QR Code (FOSuQC) to address the stated problem. This application will be use a mobile application for the customers and web application for the staff of the restaurant. The customers need to use their phone with the application that has been installed to scan the QR code from the menu. Then, the customers must submit the order to make a confirmation and it will directly send to the kitchen.

The staff at the restaurant can manage the menu such add a new items, delete the items of the food or update the menu easily. By using this system, the staff of the restaurant can make a change of the menu easily. Besides, the ordered menu list also will be view in this system. The staff will prepared the food based on the ordered menu that will be listed out on the screen.

1.2 Problem Statement

Waiter is the middle person between the customer and the department kitchen staff. Waiter tends to make human error such as miscommunication with customers. Because of this miscommunication, it will affect the process of preparing the food. In this case, the customer feel unsatisfied if the ordered food are not same with the food that served to their.

Secondly, sometimes the customer need to face with the problem that need to wait a quite long time for the waiter to come and take the order. This problem will give negative effect for the restaurant because maybe that is the last time for the customer to come to that restaurant. This problem can be solved with this system because the customer can taking the order by themselves without need to wait for the waiter anymore.

Lastly, usually the restaurant used to take order by using the paper and the paper will passing to the kitchen department. This may cause the misplaced of the ordered paper and the waiter need to take a new order again from the customers. This problem will solved if have the application that the kitchen can view the ordered menu in the systematic way without using any paper.

1.3 Objectives

The aim of this project is to develop a food ordering system using QR Code. To achieve the aim of the project, the following objectives are outlined:

- i. To study the functionality of each existing food ordering system owned by the restaurants.
- ii. To develop food ordering system using QR code to avoid any mistake happen while ordering the food.
- iii. To test the effectiveness of the Food Ordering System using QR Code by the user in Pelak Café to ensure that it meet requirements.

1.4 Scopes

To ensure the objectives will be able to achieve, there are a few scopes that will be defined.

- i. This system are proposed and will use by the Pelak Café that located in Kuantan.
- ii. The food ordering system will divide into two parts which is the mobile application and web application.
- iii. The user of this system are divided by two category which is:
 - The customer of that restaurant who the one will order for their food.
 - The staff that work at the restaurant who can manage this system.

REFERENCES

Accessible, U., For, O., & Markets, E. (2015). C A S E S T U D Y : S T A R B U C K S P R O G R E S S I V E W E B A P P.

Company, S. C. (2014). Starbucks Coffee Company. Retrieved from https://news.starbucks.com/uploads/documents/Mobile_Order_and_Pay_Fact_Sheet.pdf

Company, S. C. (2018). Coffeehouse. Retrieved from <https://www.starbucks.com/coffeehouse>

DENSO. (2013). QR code model 1 model 2. Retrieved from <http://www.qrcode.com/en/codes/model12.html>

food valet. (2016). Food Valet. Retrieved from <http://foodvalet.my/>

Mei. (2011). Sakae Shusi And TheIpad. Retrieved from <https://ccfoodtravel.com/2011/08/sakae-sushi-and-the-ipad/>

Parija Bhatnagar. (2008). Dining trends: Self-service=quick service. Retrieved from http://money.cnn.com/2006/03/27/news/companies/restaurant_trends/

Wave. (2003). What is QR Code. Retrieved from <http://www.qrcode.com/en/about/>

ASP.NET Tutorial. (2018). Retrieved from ASP.NET Tutorial: <https://www.tutorialspoint.com/asp.net/index.htm>

Xamarin Tutorial. (2016). Retrieved from Intertech: <https://www.intertech.com/Blog/xamarin-tutorial-part-1-create-a-blank-app/>