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Smart Restaurant Using QR Code

Shraddha S. Dhoke[1], Tanvi K. Mhatre[2], Prof. Prashant H. Rathod[3]

[1]*Computer Department, Theem College of Engineering*
[2]*Computer Department, Theem College of Engineering*
[3]*Computer Department, Theem College of Engineering*

Abstract — In India, almost all restaurants are working manually. The purpose of this Smart Restaurant Management System using QR Code is to understand and make use of the computer to solve some of the problems which are usually encountered during manual operations of restaurant management. The QR code based restaurant system aims at replacing the traditional menu system which is time consuming and old fashioned. In this system, the customer must scan the QR code printed on the table using his Smartphone's camera or a QR Code Reader. As he scans the code he will be redirected to the restaurant's webpage through their Wi-Fi network, where he will see the menu available in the restaurant with their prices. The customer must click on the buy button of the menu that he wishes to order. After this, the order will be placed and it will be displayed on the screen in the kitchen with the table numbers. The webpage will also consist a feedback section where in the customers can express his views about the food and the restaurant. Lastly, the bill of the respective customer will be generated. This user-friendly Smart Restaurant using QR Code is based on PHP - MySQL server which will help the restaurants to work more efficiently.

Keywords QR code, Smartphone, Wi-Fi, Menu, Feedback, Bill, Efficiently.

I. INTRODUCTION

Time saving and cost optimizations are essential for a restaurant to run effectively. Reduction in time by a few seconds for each table can speed up order processing, increase efficiency and boost profits. The food ordering system, till a few years ago, was a completely manual process where a waiter used to note down orders from the customers using pen and paper, take the orders to the kitchen, bring the food and make the bill. Although the traditional food ordering system look simple, it may increase the work load of waiters or may also be prone to human errors in noting down the orders when the number of customers increases during peak hours.

The project mainly aims in designing completely automated menu in restaurants with the help of smart phone using Wi-Fi module and a LCD to provide a user-friendly environment. There is no need of a person to take the order from the table. The menu will be displayed automatically on the customer smartphone using wireless Wi-Fi connectivity and we can directly order the menu with the help of press on the menu. [3]

The traditional system that is used widely in India has some drawbacks. Some of them are –

1. Large manpower
2. Prone to human errors
3. Greater time consumptions
4. Coordination of work activities

To overcome these drawbacks, a web based restaurant system is introduced. Unique QR Code is scanned and is linked to the restaurant's Wi-Fi. Thus, the serving area and the kitchen is connected.

QR Codes

QR or Quick Response Codes are a type of two-dimensional barcode which can be easily read using smart phones and QR reading devices, that link directly to text, emails, websites, phone numbers and more! This make things a bit more robust. By this, it doesn't matter whether the QR code is wrapped around a curved surface or upside down, the message will still get through.

Figure 1. Sample of QR code of table number 1

Objective

- Display interactive menu items
- Display ongoing combo offers
- Online bill generation
- Reach to wide range of customers
- To develop food ordering system using a suitable interface with the computer.
- To help restaurant operator/waiters easy to see the handwriting of the taken order using Smart Restaurant Management System.

Purpose and Scope

- The main purpose of the Smart Restaurant Management System is to reach wider range of customers and to educate them about existing and combo offers.
- One more purpose is to allow customers to place order online using interactive menu.
- It must be developed to reduce the manual work carried out in restaurants.
- This makes the system cost effective and saves time and manpower.
- This project helps the management to know customers order details in few seconds.

II. LITERATURE SURVEY

Table 1. Comparative study

Method	Advantages	Disadvantages
Manual Paper Based	Cheap	Easy to tamper Possible wastage of resource and manpower
PDA (Personal Data Assistants)	Improves order response Easy to use	Limited system Restricted to staff only
POS (Point of sale)	Secure control over business flow Capacity to optimize response time	Complicated to use Might require training for staff May increase cost
RFID (Radio Frequency Identification)	Can be read from large distance Read rates are much faster	More expensive Security and privacy issues
NFC (Near Field Communication)	Consumes less power Improves efficiency and productivity	Costly Noncompatible with all devices Short range(20cm) Low transfer rates
Barcode	Less expensive	Range is not more than 15feet Time Consuming
Bluetooth	Cheap Easy Connection Wireless	Short range Can lose connection in certain conditions
ZigBee	Large power saving Secure connection	Restriction for memory size, speed
Touchscreen	Simple user interface Efficient	Costly More power consumption
QR Code	Ease of use Cost effective Quick transfer of information	Dependability on smartphone Security issues

III. ARCHITECTURE

The system takes away the waiter's responsibility of taking the order and delivering it to the kitchen. The customer at the table must scan the QR Code which will redirect him to the restaurant web page where he can view the menu and order his desired food. The order will be transmitted to the kitchen screen with the table number, the chef will view the order, prepare and send it to the table. The architecture covers the three main areas of restaurant: The Serving area, the Kitchen and the Admin. The system architecture is shown in figure 2.

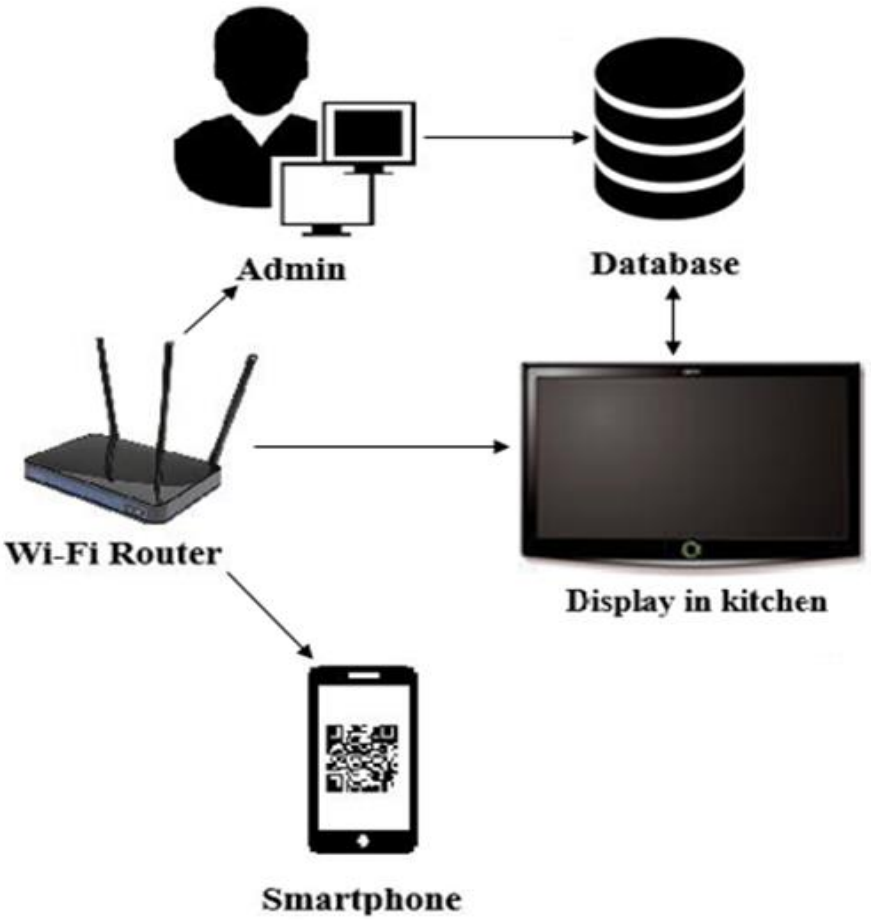

Figure 2. System Architecture of Smart Restaurant

The main modules of this project are as follows:

- Unique QR Codes at the customer's table:

These QR codes are easily accessible by the users arriving at the restaurant. The QR codes when scanned redirects to the restaurants webpage and displays the whole menu of the restaurant. The menu contains text and graphics that describe each item to an average customer. The customer can view the menu, add menu items to cart, see total price, specify, etc. He can also go through the features of the restaurant and check for various combo offers available. The customer selects his desired dish and clicks on "Buy". This order is then sent to the chef via the kitchen display. It also provides a feature for providing real-time feedback.

- Kitchen Display Interfaces:

These displays are set up at the kitchen near the chef so that he can view the orders requested from a particular table. The ordered items are displayed at the chef's interface along with their table numbers. The resolution and font size is large enough to be seen by chef at a reasonable distance. The screen displays few orders simultaneously which updates the chef about the orders to be finished.

- Admin:

It controls the functioning of whole restaurant. He is authorized to access any table and can make changes to the menu. He can perform various updates like changing the price of an item or disabling an item which is not available at that time. [1]

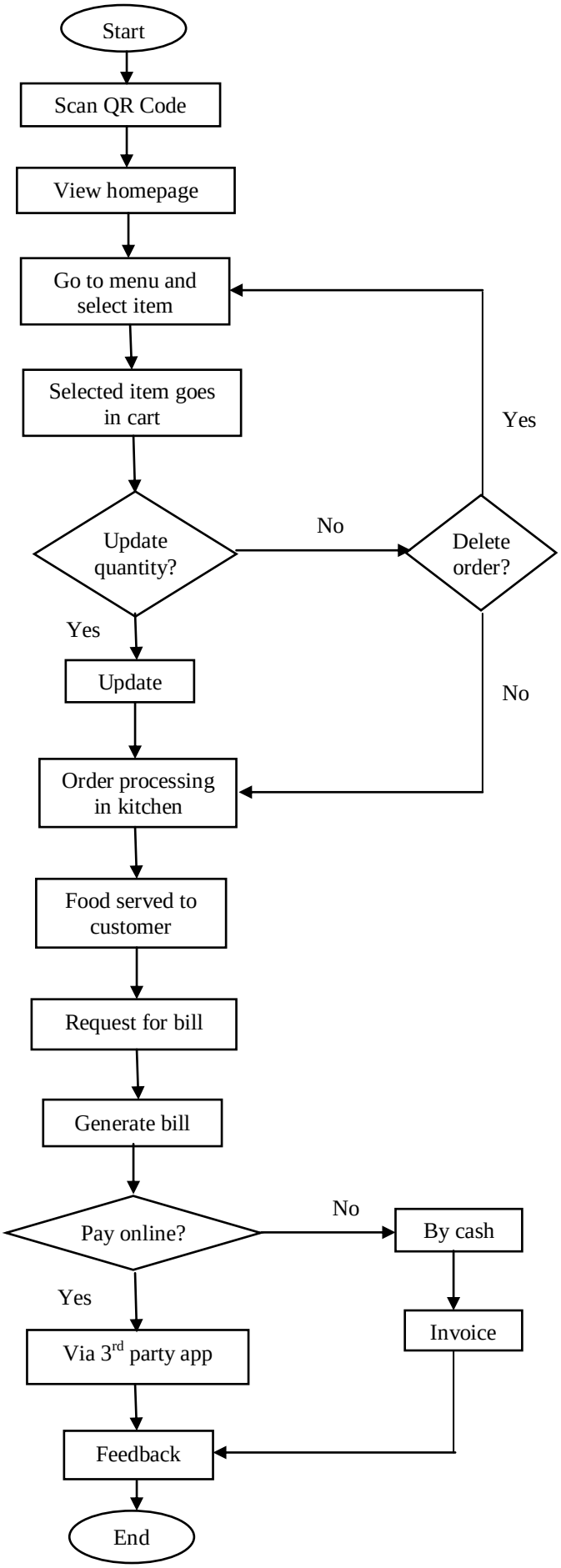

Figure 3. Flow Chart of Smart Restaurant

IV. CONCLUSION

In this paper, we present a Smart Restaurant Management System with-real time customer feedback. This system is convenient, effective and easy which improves the restaurant's performance. It will also provide quality service and customer satisfaction. The overall conclusion is that, this is a fabulous system for the restaurant sector, made by combining the QR code and Wireless technology. With the wide availability of camera phones and increasing awareness of QR Codes, this system is technically and financially practical to be implemented.

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