

Hotel Food Ordering System Using QR Code

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Abstract: *Now a days technology is increasing rapidly in many areas, people are always craving for faster and easier day to day tasks. Improving the business techniques in food industry like restaurants and hotels will help to increase the customer satisfaction and also reduce the time taken to the user for various activities like waiting for table, menu, and also helps for manager and chef to perform their functions easily. Smart restaurant system using QR code will reduce the manual errors which always takes place in manual restaurants like wrong food serving, billing etc. In smart restaurant system by scanning the QR code the details of restaurant was opened, here the customer can login to book the table, select the menu, and place the order without intervention of waiter. The manager can update the table status, menu status and other updates regarding restaurant. Chef can see the order details along with table number to prepare the food, which results correct delivery without mistakes. The existing systems does not include the pre-booking of the table, does not display time to receive order, no manager panel, no chef panel and no gaming applications in case of late delivery.*

Keywords: Restaurant, QR Code, JAVA, Bootstrap, MYSQL.

I. INTRODUCTION

The deployment of smart cities, smart classrooms, and smart phones, people are swiftly moving towards a smarter world. In order to make operations more convenient and effective, information and communication technology has been applied to a variety of business formats.

Restaurants are an essential center for social connections in practically every nation and culture in the globe today. They provide not just as a source of food, drink, and nutrition for individuals, but also as a gathering place for groups of people to mingle, connect, and share memorable experiences.

Restaurants are also incredibly profitable enterprises; in 2014, the worldwide restaurant industry expanded by 6.2 percent to \$2,737.1 billion, and it is expected to grow to \$3,805.8 billion by 2019. Despite the fact that restaurants play such an essential part in our society and generate significant cash, the restaurant sector has remained relatively unchanged over the last century. Despite all of the wonderful technological improvements achieved in recent decades with the emergence of the internet, mobile smart devices, and cloud computing, the restaurant business has yet to fully leverage the full capabilities of these technologies and continues to suffer from significant inefficiencies [4].

The current restaurant system uses a standard restaurant system that includes paper menu cards and uses pen and paper to take customer orders, which are then taken to the kitchen for processing. There is a risk of making a lot of mistakes with manual ordering; for example, when there is a large crowd in the restaurant, the waiter will take orders quickly, and the handwriting of the waiter will not be understood by the kitchen department, resulting in the preparation of food that is not in accordance with the customer's order, resulting in customer dissatisfaction, resulting in a lot of customer complaints about the services, receiving the wrong order or even not receiving the order even after waiting. Occasionally, The papers in which the order is placed are sometimes lost as well [5][6]. Even collecting orders, printing menu cards, and creating bill receipts resulted in a lot of paper waste. If a menu card is produced incorrectly, or if the menu offered in the restaurant changes, or if the menu prices change, it is not possible to modify it simply and we must print another menu card, wasting paper and money. This system wastes time and energy by collecting orders, waiting for orders, and even waiting for tables to be available, and customers are unaware of the amount of time it takes to make the food. As a result, both customers and management are inconvenienced by the current system. As a result, a system is recommended that will assist management in increasing services while also ensuring that clients do not have

to wait for waiters to take their orders. It will also save time for both customers and restaurant personnel while also improving customer satisfaction.

To address those issues of a smart restaurant system based on QR codes was implemented. Customer happiness and restaurant production both increased as a result of using this technique. It saves both clients and restaurant employee's time and energy. It also saves money on ink and paper. It lowers the number of manual errors and waiters needed in restaurants [8].

Floor management, kitchen management, and administration management are the three primary categories in the restaurant system. In restaurants and motels, the main purpose is to order food.

1.1 Floor Management

The floor manager is responsible for managing the personnel or waiters who provide services to clients as well as allocating the duties of shutting and opening restaurants. The manager will be in charge of floor management; he is the one who will be responsible for the entire restaurant, and he must ensure that his employees are completing their jobs correctly and honestly. He should also ensure that the restaurant personnel adhere to all restaurant standards and health and safety regulations. The managers are the most essential people in restaurants; they must stimulate the workforce in difficult times by caring for them and providing job happiness. By serving as a guide and demonstrating some skills, respecting employees and allowing them to take on some responsibility improves their work and leads to increased revenues.

1.2 Kitchen Management

It entails supervising personnel in the kitchen sector who prepare meals, such as a chef. It is the primary section in restaurants or hotels because the food, which is the main portion of the restaurant, is prepared in the kitchen, and this is the main reason for consumers to patronize if the cuisine is not up to par. Because most restaurant kitchens are enclosed, the kitchen staff will become bored and tired of constantly making meals, which will cause them to lose enthusiasm and produce uneven food. Even the kitchen department is in charge of managing products and costs, as well as budgeting by creating delicious food with minimal ingredients. Here, the head chef can assume responsibility for teaching the remaining personnel about money management and teaching them new cooking skills.

1.3 Administration

The main area overseen by the restaurant's head of operations is administration, which covers all activities such as overseeing all restaurant workers from waiters to managers, employing them, budgeting labor costs, balancing costs and profits, making seasonal changes, and maintaining kitchen equipment.

II. LITERATURE SURVEY

Mayur et.al [1] (2015) proposed a system using microcontroller, Wi-Fi, LCD. A smart phone or a tablet will kept at each table which connect the menu of the restaurant. Smartphone, microcontroller are connected to the Wi-Fi and when a customer wants to order, firstly he should connect the tablet on his table to the Wi-Fi of the restaurant by keeping the power supply, then a buzzer will ring and LCD will stop blinking by indicating that some smart phone is connected to the hotspot that implies some table is occupied. So the admin can make the menu list available to that particular tablet by knowing that some customer will take place of that table.

Bhaskar Kumar Mishra et.al [2] (2015) proposed a frame work using Android, Bluetooth and GSM. Where an android application is installed on every table as it is a one – time investment. It contains two apps, where the manager, cashier and chef can login through restaurant app to manage the restaurant, to take bill, and to make food respectively. The manger can also able to see the list of tables that are empty and filled to direct the new customers to empty table. Where a customer will login through customer app, where menus are displayed and he can also send request to send the menus depend on his taste, and send order without waiting for waiters. The order was sent to kitchen department, manager [15] and cashier to perform their respective activities and finally the cashier will take bill to customer and he will pay bill to manager after giving feed-back.

Jun Zeng et.al [7] (2016) proposed a Restaurant recommendation system using user preference and location of the mobile. When a user login to the page it ask for the preference of the user as some users like sweets and some are allergic about sea food, by selecting the desired item the user preference will added to list and desired restaurant will be shown, if he visited the restaurant then it added to the visited preference. And also depending upon the users location which is calculates by mobile GPS and Baidu map cloud service the nearest

[3] restaurant will be shown to the user. In this the restaurants and their preferred food type will be organised in a matrix form. When more number of restaurants are shown depend on user preference 80% of people are visited among top 5 restaurants, and the visited one are added to their preference.

Hassain Saeed et.al [9] (2016) proposed a “Near-Field Communication Sensors and Cloud-Based Smart Restaurant Management System”, using web technologies, IoT, NFC sensors and cloud computing. The two applications are available that are android for customers and web for restaurant staff. This two applications will connect through Apache HTTP using database for operations. In this first the customers will find the parking place using the android application through NFC sensors places at centre of parking spot and then secondly they can book a table and then they order an items using NFC tags placed in their table which shows them the available menu list, they can select from the list and place order as well as they can modify their menu also, and after taking meals they can able to split the bill with the table mates using split the bill NFC tags. The data regarding the parking, ordering food from respected table, paying bill will be stored in the database using AWS.

Ketaki et.al [10] (2016) proposed a methodology for E-restaurant system using android applications as over the years, technology has revolutionized gastronomy. There are more and more people now Competition in the hospitality industry is even more fierce as we are willing to spend money on dining in restaurants. This will result in Proper management of the restaurant system. This paper is about an order from a customer who arrived at the kitchen module immediately. Android-based application Improves restaurant efficiency and accuracy by being easy to use, saving time and reducing human error. Also, a hardware system that can be used by the user eat like a normal restaurant system. To do this, use the ARM7 microcontroller and matrix keyboard to select food. The food menu is displayed on the LCD Microcontroller screen. When the user selects a food item, a list of ordered items is displayed on the LCD along with the billed amount. This system improves quality and speed Terms of use, terms of use.

III. METHODOLOGY

QR code based smart restaurant system was implemented to make a way easier to user, as well as for the restaurant managing process. This methodology reduces the time taken for a user to spend on waiting time in restaurant, by implementing the system of tables pre - booking, selecting the menu from the website directly without referring to the menu card, which sometimes shows the menu that is not available in the restaurant. This also provides the easier way to user in payment process by providing both online payment and offline payment, where the user can choose according to his availability of money. This process also helps the hotel management system like, for chefs, includes the process of receiving the order detail with table numbers, and to reduce the wrong serving of food to customers.

To create an interactive and dynamic website JAVA is used. It is known as Hypertext Preprocessor, and it is very popular, and free, for Microsoft’s Active Server Pages.

SQL (Structured Query Language) is a standardized programming language for managing relational databases and performing operations on the data contained within them. SQL was first developed in the 1970s and is now widely used by database administrators, developers writing data integration scripts, and data analysts setting up and running analytical queries.

Instamojo is a popular and user-friendly online payment service. It supports all modern payment methods, including debit and credit cards, online banking, UPI, and EMI. It's really simple to incorporate into your website or app. You may also use the Instamojo payment button to send a payment link for a certain amount.

Because of its faster readability and larger storage capacity than regular UPC barcodes, the Quick Response system gained widespread outside of the automobile industry. Product monitoring, finding the item, time tracking, and document maintenance are some of the applications.

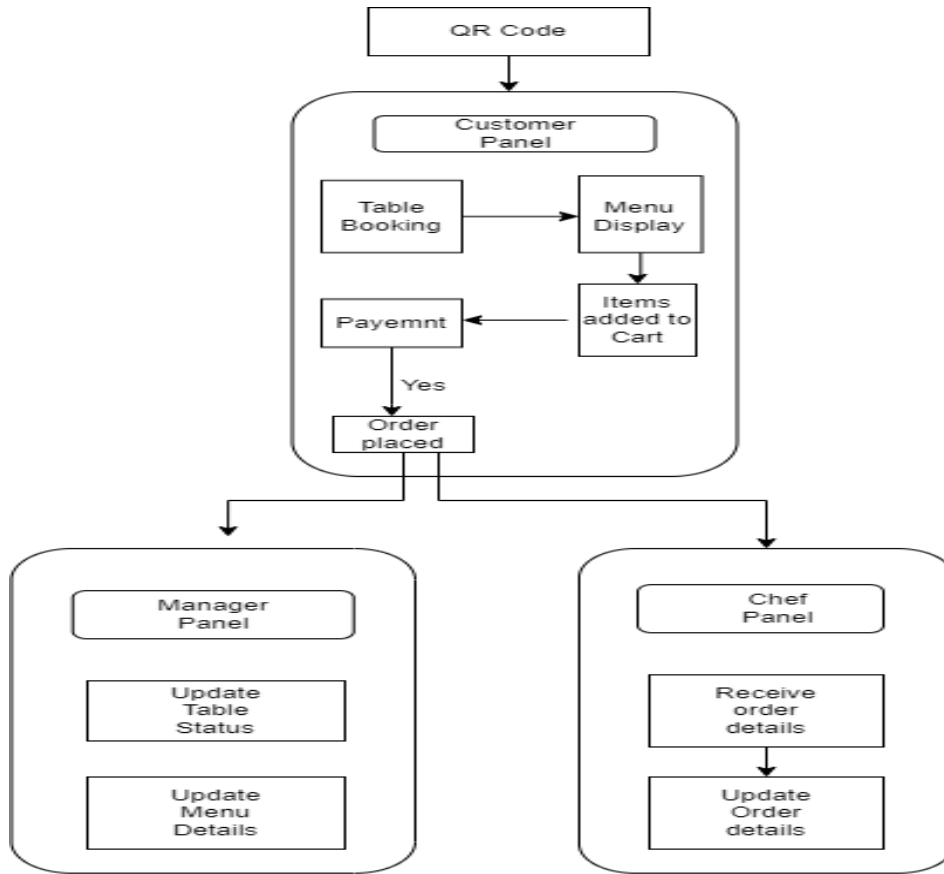


Fig. 1 System Architecture

A QR code is made up of black squares placed in a square grid on a white background that can be scanned by a camera and then processed using Reed–Solomon error correction until the image can be properly comprehended. The essential details were obtained in vertical and horizontal patterns of image.

The figure 1 represents the system architecture that contains the details about the frontend and backend areas that are used in the system. In front end reservation of the tables, sales, ordering, digital menu, restaurant pos system was available. The complete process of the QR-based smart restaurant system like ordering, payment, menu system, and the cloud server used to store this data was available in back end of the system.

A reservation is thus a bilateral contract between a hotel and a guest, under which the hotel agrees to provide the guest or customers with seats or tables and the guest agrees to pay all applicable charges. This is also known as a booking contract.

In the proposed methodology after scanning the QR code, the customer panel will open where the customer can do the process of booking table, selecting menu, doing the payment, which after the details will directly send to manager and chef panels, where they can do their respective operations like menu updating, table status updating, updating order details. The digital menu is a restaurant’s menu system that can be accessed and viewed via the website’s front end and accessed by customers by scanning the QR code of a specific restaurant.

IV. RESULTS

The smart restaurant system using QR code contains of 3 panels named customer panel, chef panel, manager panel. Using these panels the process that taken in manual restaurant systems will be automated. In this system first the customer have to scan the QR code to open the website of the particular restaurant by the scanner in their phones. By scanning a QR code the restaurant’s web page with its details was opened.



Fig. 2 QR Code

The figure 2 represents the QR code that is used to scan to open the restaurant webpage. This QR codes are placed in various places, so the customer can easily scan the QR from various places and after scanning the QR code the details of the particular restaurant was opened and the customer can book the table, ordering, billing, using this webpage.

Using the customer panel, the process that customer usually gone through in restaurant manually for selecting the menu, ordering, payment, will be all done using this website of the particular restaurant

The figure 3 shows the front page of the system that is seen by customers after scanning the QR code available for them. This page shows the details of the restaurant like restaurant name, address of the restaurant, contact number for the restaurant, and its opening timings. It displays the Book a table button, using which the he can book the table in advance. It also displays our menu button using which the user can directly see the menu available in the restaurant.

Table. 1 Comparison of proposed system with existing systems

Paper name	Pre-Booking Tables	Display time to receive order	Payment Methods : Online and Offline	Quiz Platform	Manager Panel	Chef Panel
Smart Restaurant [3]	x	x	<input type="checkbox"/>	x	x	x
Scan & Order A Model for Ordering in Restaurant Based on QR Code [17]	x	x	<input type="checkbox"/>	x	x	x

Smart Food Ordering System for Restaurant [16]	X	X	<input type="checkbox"/>	X	X	X
QR Code Based Smart Dining System [18]	X	X	<input type="checkbox"/>	X	X	X
Smart Restaurant System using QR Code (Proposed System)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

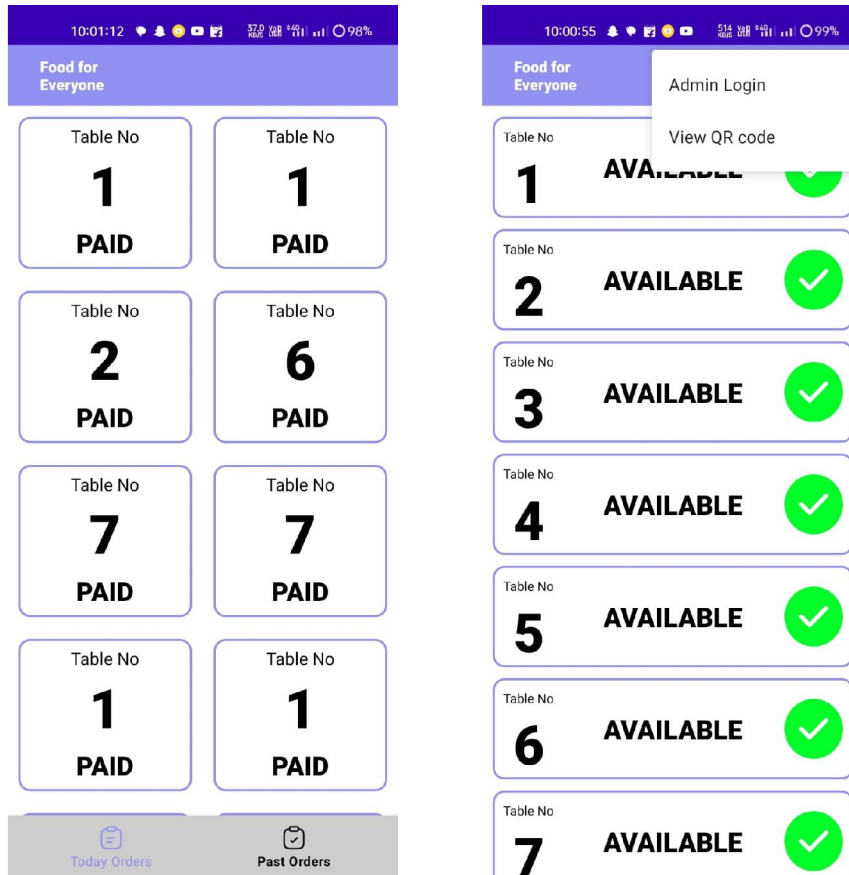
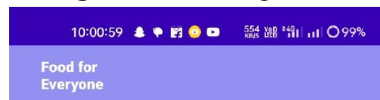


Fig. Table & Billing Status



Admin Login

Username

Password

Login

Fig. Admin Panel

V. CONCLUSION AND FUTURE ENHANCEMENT

The Objective of our project “Smart Restaurant System using QR Code”, is to improve the customer dining experience and to automate the process that usually takes place in restaurants that are table booking, selecting menu, ordering, billing, chef receiving order list through waiters, and manager can go through the entire process through his panel. The workload in restaurants will be reduced, and it also reduces the paper waste and need of the waiters. Using the QR Code that are available in various places or using the app the customer can be able to enter the restaurant page, using this he can be able to book the table, refer the menu items, select the menu of his interest and place the order through this system only. He can also be able to pay the bill through online or offline mode. Chef will directly get the list of items ordered by the customer along with table number to the customer panel. Using this he can prepare the food and he can update it as it is delivered or it will take time. Manager can manage the entire restaurant using manager panel. This system will reduce the manual errors in the restaurant like delivering wrong orders, giving the menu cards late when the restaurant is in rush with lot of customers, reduce time taken for customers, chef and manager. Reduce the paper waste. This system improves customer satisfaction. It is also less cost effective.

In future a common application for all the restaurants will be developed. So using this customer can select the restaurant of his interest and go through the process that designed in current system. Online food delivery will also be included in future. Automatic serving will also be implemented

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