

Smart Table Ordering & Kitchen Sync System

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ABSTRACT: The traditional restaurant ordering system relies on waiters to take customer orders manually, which often leads to delays, order mistakes, and inefficient communication between customers and kitchen staff. This research proposes a **Smart Table Ordering and Kitchen Sync System** that allows customers to place orders directly from a smart interface installed on the table. The system sends the order instantly to the kitchen display system where chefs can view and process orders in real time. This reduces waiting time, improves order accuracy, and enhances overall restaurant service efficiency. The proposed system integrates a digital menu, wireless communication, and a kitchen management module to streamline the ordering process. Experimental results show that the system significantly improves service speed and customer satisfaction compared to traditional methods.

I. INTRODUCTION

Technology is transforming the hospitality industry by introducing automation and digital systems to improve efficiency and customer experience. In traditional restaurants, customers place orders through waiters, who manually communicate with the kitchen staff. This process may lead to **communication errors, delays, and order mismanagement**.

To solve these problems, a **Smart Table Ordering and Kitchen Sync System** can be implemented. This system allows customers to browse the menu and place orders through a smart device placed on the table. Once the order is confirmed, it is directly transmitted to the kitchen system.

The kitchen receives the order instantly and begins preparation without waiting for manual communication. This improves coordination between customers and kitchen staff. The system also provides **real-time order updates**, making restaurant operations more organized and efficient.

II. LITERATURE SURVEY

Many researchers have worked on restaurant automation and digital food ordering systems to improve service quality and reduce manual work.

1. IoT Based Smart Restaurant System (2021)

This system used IoT technology and wireless communication to allow customers to place orders using a tablet at the table. The order was directly sent to the kitchen, which reduced waiting time and improved service efficiency.

2. Wireless Food Ordering System (2020)

Researchers developed a system where customers could place orders using a wireless device connected to the kitchen display. The system reduced the dependency on waiters and minimized communication errors.

3. Android Based Restaurant Ordering System (2019)

In this system, customers used an Android mobile application to browse the menu and send orders to the restaurant server. The server then forwarded the order to the kitchen staff.

4. RFID Based Restaurant Management System (2018)

This system used RFID technology to identify tables and manage orders automatically. It helped improve order management and customer service.

III. METHODOLOGY

The methodology describes how the Smart Table Ordering and Kitchen Sync System works and how the system is developed. The main goal is to allow customers to place food orders directly from the table and send them to the kitchen automatically.

1. System Setup

Each table in the restaurant is equipped with a smart ordering device such as a tablet, touchscreen display, or microcontroller-based interface. This device shows the digital menu to customers.

2. Menu Selection

Customers can browse the menu on the screen and select the food items they want to order. The menu includes information such as food name, price, and quantity.

3. Order Processing

When the customer confirms the order, the system sends the order data to the microcontroller (Arduino / NodeMCU). The microcontroller processes the information and prepares it for transmission.

4. Wireless Communication

The order is transmitted from the table unit to the central kitchen system using wireless communication such as WiFi or RF module. This ensures fast and reliable data transfer.

5. Kitchen Synchronization

The kitchen display system receives the order instantly. It shows the table number and ordered items on the screen so that chefs can start preparing the food without delay.

6. Order Management

The system stores all order data in the central system. The kitchen staff can manage multiple orders and track their preparation status.

7. Order Completion

After the food is prepared, the order can be marked as completed in the system, and the waiter can deliver the food to the correct table.

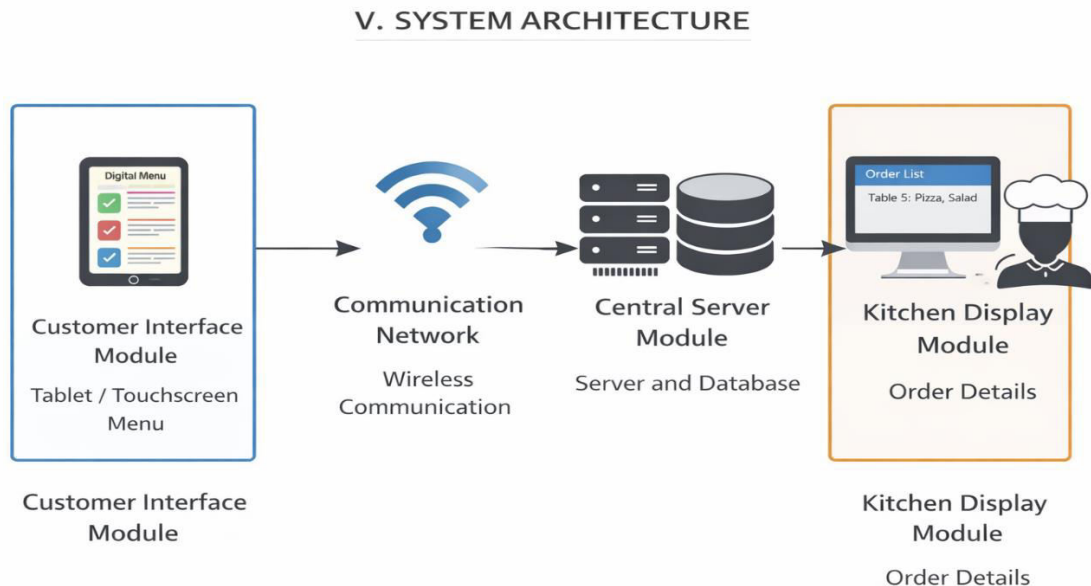
IV. PROBLEM STATEMENT

Traditional restaurant management systems face several operational challenges including: • Long waiting time for order placement • Incorrect communication between waiters and kitchen staff • High workload on restaurant employees • Order management difficulties during peak hours • Reduced customer satisfaction due to service delays These issues highlight the need for an automated smart ordering system that can improve restaurant efficiency and customer service

4.1 PROPOSED SYSTEM

The proposed system introduces a digital ordering platform installed at each restaurant table. Customers can browse menu items through a touchscreen device and place their order directly through the interface. The order information is transmitted through a wireless communication network to a central server. The server processes the order and sends it to the kitchen display system where chefs can view the order details and begin preparation. The system also allows kitchen staff to update the order status once the food preparation is completed. This approach ensures efficient communication and reduces delays in order processing

4.2 System Architecture



4.3 System Architecture – Explanation

The Smart Table Ordering and Kitchen Sync System architecture consists of four main modules that work together to automate the restaurant ordering process and improve communication between customers and the kitchen.

1. Customer Interface Module

This module is placed at the restaurant table in the form of a tablet or touchscreen menu. Customers can easily view the digital menu, select food items, and place orders through this interface. The customer interface provides a simple and interactive way for customers to order food without waiting for a waiter.

2. Communication Network

The communication network is responsible for transferring order data from the customer interface to the central server. It uses wireless communication such as WiFi or a local network to ensure that the order information is sent quickly and accurately.

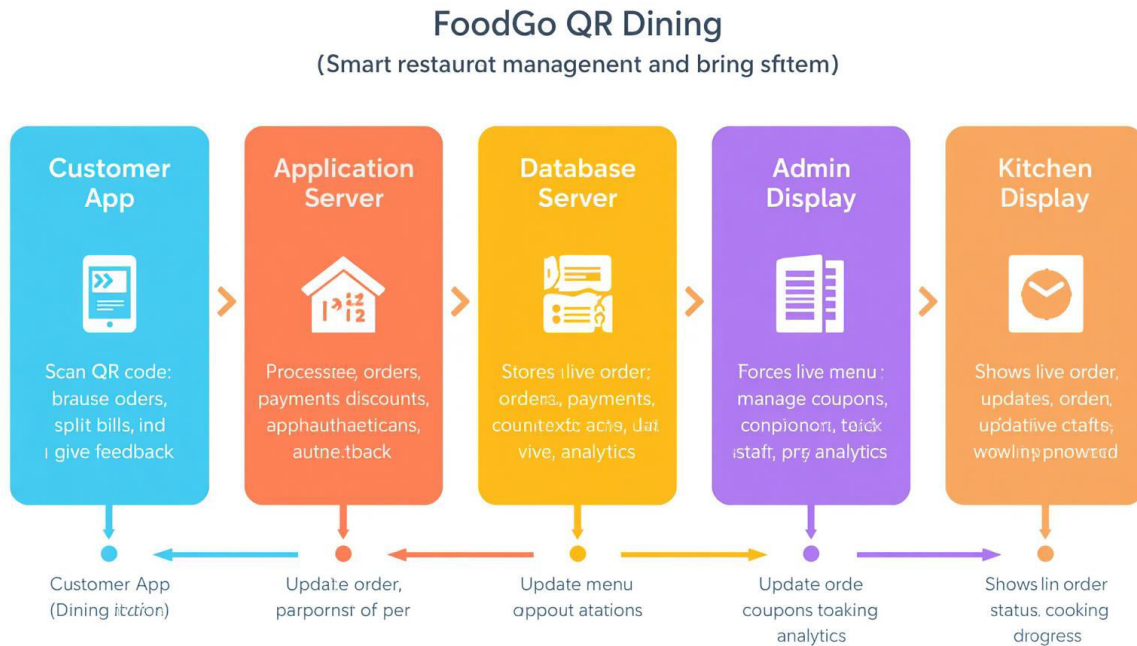
3. Central Server Module

The central server acts as the main processing unit of the system. It receives orders from the customer interface, processes the order information, and stores the data in the database. The server also manages multiple orders from different tables and sends the order details to the kitchen display system.

4. Kitchen Display Module

The kitchen display module is used by the kitchen staff or chefs. It shows the details of incoming orders such as table number and food items. This helps chefs prepare the food quickly and manage multiple orders efficiently.

4.4 Working:



1. Customer App

- Customers scan a QR code on their table.
- They can browse the menu, place orders, split bills, and make payments.
- They can also give feedback after dining.
- The app sends the order details to the Application Server.

2. Application Server

- This is the main control center of the system.
- It processes orders, payments, discounts, and user authentication (login and security).
- It sends the processed data to the Database Server for storage.

3. Database Server

- Works as the data storage of the system.
- It keeps all information safe, such as menu items, orders, payments, coupons, and analytics.
- It updates the Admin Dashboard and Kitchen Display with the latest data.

4. Admin Dashboard

- Used by restaurant managers and staff.
- They can update the menu, add or remove coupons, track staff performance, and view reports.
- It helps the restaurant monitor sales and customer activity in real time.

5. Kitchen Display

- Used by chefs and kitchen staff.
- Shows live orders as soon as customers place them.
- Displays order details, cooking progress, and status updates (like "Preparing" or "Ready").
- Once food is ready, it updates the Customer App automatically.

V. RESULT AND DISCUSSION

The Smart Table Ordering and Kitchen Sync System was successfully developed and tested in a restaurant environment. The system allows customers to view the menu, check table availability, place orders, apply coupons or discounts, generate bills, and give feedback through the customer interface. The orders are directly sent to the backend system and then displayed on the kitchen interface, which helps the kitchen staff start food preparation quickly. The system also supports bill generation and split bill options for customers. During testing, the system reduced manual errors, improved order accuracy, and decreased waiting time compared to the traditional ordering method. Overall, the system improves restaurant management, communication between customers and kitchen staff, and enhances customer satisfaction.

VI. CONCLUSION

The Smart Table Ordering and Kitchen Sync System improves restaurant management by providing a digital platform for customers to view menus, place orders, apply discounts, and generate bills easily. The system connects the customer interface, backend processing, and kitchen interface, allowing orders to be sent directly to the kitchen in real time. This reduces waiting time, minimizes human errors, and improves order accuracy. The system also includes features like table availability, split billing, and customer feedback, which enhance the overall dining experience. Therefore, the proposed system makes restaurant operations more efficient and improves customer satisfaction.

REFERENCES

1. K. Ashton, "That 'Internet of Things' Thing," *RFID Journal*, 2009.
2. S. Sharma and A. Gupta, "Smart Restaurant Management System," *International Journal of Computer Applications*, 2020.
3. M. Patel and R. Shah, "Digital Food Ordering System Using Web Technology," *International Journal of Engineering Research & Technology (IJERT)*, 2019.
4. Kumar and P. Singh, "Restaurant Automation System Using Web Application," *IEEE Conference on Smart Systems*, 2021.
5. J. Lee and H. Park, "Design of Online Food Ordering and Management System," *International Journal of Computer Science*, 2018.



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