

Website for Food Ordering and Billing Using QR Code for a Restaurant

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Abstract

Food ordering is a highly essential service for a restaurant. It is a service provided by a restaurant to a customer who is visiting the restaurant. There are certain issues encountered while using the traditional food ordering method. Issues that will arise include misunderstandings between the customer and the waiter due to miscommunication while taking the order. Additionally, customers typically have to wait briefly for a waiter to arrive and take their order. In the traditional system, orders are recorded using paper and a physical menu. Therefore, the food ordering and billing system using a QR code for a restaurant is an alternative solution for solving those issues. Such a system includes the complete order cycle of the restaurant, right from the customer to the waiter, and customer to manager interaction using an intranet web-based application. This system uses smartphones and their browsers as platforms for customer orders and uses them to display the digital menu card, since the smartphone has become a necessity for everyone. The customer must scan the QR code on the table, which is provided by the restaurant for each table uniquely. Using the system, the customer can also ensure the orders and is able to track their orders by themselves. In addition, the manager of the restaurant can handle the menu orders and product information; also, the manager is able to perform operations on orders, such as accept, delete, complete, and print the bill on the table. The restaurant owners would also be in a position to increase sales through this system. The primary concept behind this QR-based ordering and billing system is to improve customer experience by offering an automated solution for the communication process between the restaurant owner and the customer to order their meal efficiently. It also facilitates the manager to easily get billed out and count sales and other analytical information through an analytical dashboard.

Keywords: Analytical dashboard, digital billing, digital menu, food billing, food ordering, intranet, QR code, quick ordering, website

INTRODUCTION

The website for ordering and billing using QR codes for a restaurant is an efficient platform for the digital restaurant industry that aims to solve the problems faced by hotel owners regarding the pick-up of orders, data management, billing, and selling products. By implementing this project, rural restaurant owners and the large restaurant industry will learn about new technologies, and with the help of these technologies, their work will become easier, faster, and more efficient. Basically, our project is dedicated to all café and rural restaurant owners to help them generate a good profit [1] and get connected with the digital platform through it.

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This project will reduce manual work and effort through the implementation of new technology. The platform helps develop businesses rapidly and

widely. Currently available websites based on food ordering only display the product and some information about the food [2]. However, this project is a website for ordering food and billing based on the table. Food also has detailed information along with an order cart option [3].

As business widens, there is a need for employees in the shop; as a result, the job needs to pay a higher salary. However, in our system, the process of ordering will be handled by the user, so there is no need to pay extra for a waiter who takes orders; instead, that cost will be diverted to server waiters and chefs to improve the quality of food and their response time for order delivery [4]. The interface of the website is completely user-friendly, meaning a customer can easily access the website, search for products, etc. In this project, data is handled easily on updated servers, and there is no need to maintain diaries for order and sales information maintenance. The website has images along with the prices of the products, which is helpful for looking for products and ordering them [5].

The website is user-friendly for the user, easy to use for the manager, and the restaurant owner. It offers easy login, quick browsing for the latest orders, and automated bill generation, making the process of ordering and billing more efficient. By implementing this project, customers are directly connected to the manager and chef, reducing intermediaries [6].

Our main aim in developing this website is to satisfy the customers and managers through this new technology, make the restaurant owners' business more efficient, and speed up their ordering process.

Basically, Figure 1 explains the flow of our project. The user and admin controls, by scanning a QR code, direct the user to the home page of the website. Then he can order his meal; in the cart, he can choose products that he wants to buy and must choose the quantity of the food. If the food is available to cook, then the order is processed by the manager. If the order is canceled by the manager, then the page is directed back to the product choice option. If the order is accepted, the product is placed in the cart [7].

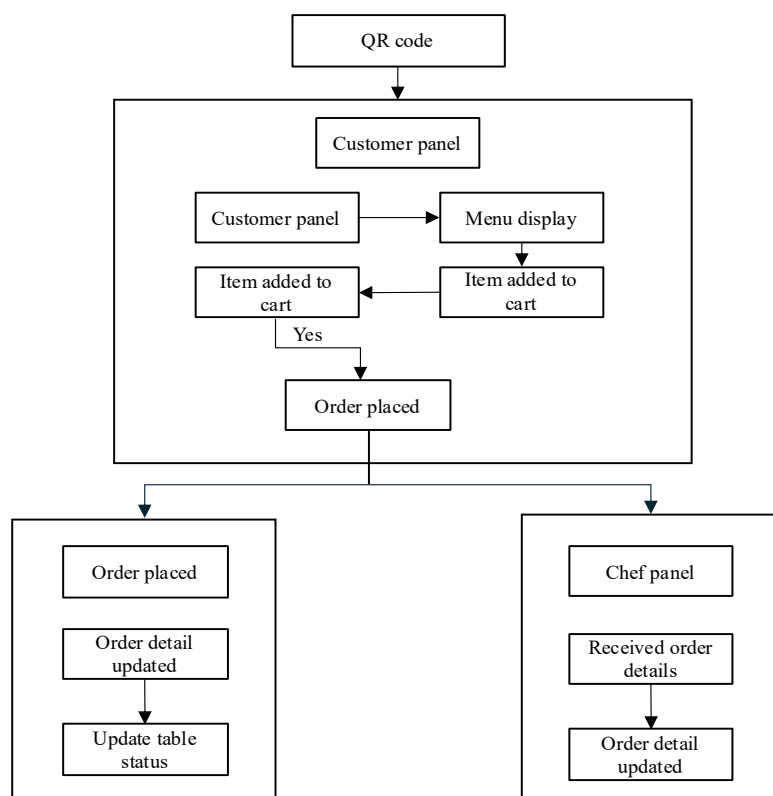


Figure 1. Block diagram.

In case a product is not available, the option to contact the manager is available, and after some time, the food is displayed on the menu. Users also receive notifications after order completion. The admin, who is the owner of the shop, has a profile and can log out [8, 9]. Regarding orders, he can manage billing, order operations such as order acceptance and deletion, and receive complaints from customers [10, 11]. The chef's panel receives notifications of the accepted orders; once the order is completed or rejected, the order information from the chef's panel is flushed, as shown in Figure 2.

Admin Dashboard

- *Centralized control*: Upon successful authentication, administrators are invited to a centralized dashboard. This dashboard serves as a nerve center, offering a complete picture of important functionalities and controls.

Order List

- *View orders*: Lists all orders that require review by the admin.
- *Accept order*: Authorize and complete an order for execution.
- *Delete order*: Cancel or delete an order if required or not available for serving.

Product Management

- *Add products interface*: The application makes it easy for admins to accept products on the administrator's dashboard, ensuring a constant upgrade in the available products in their product catalog.
- *All products view*: Admins will be able to see an overall view of all available products with facilities for editing or deleting products; this feature helps make updating product details easier.

Logout Option

- *Security measure*: The inclusion of a logout option adds a layer of security.

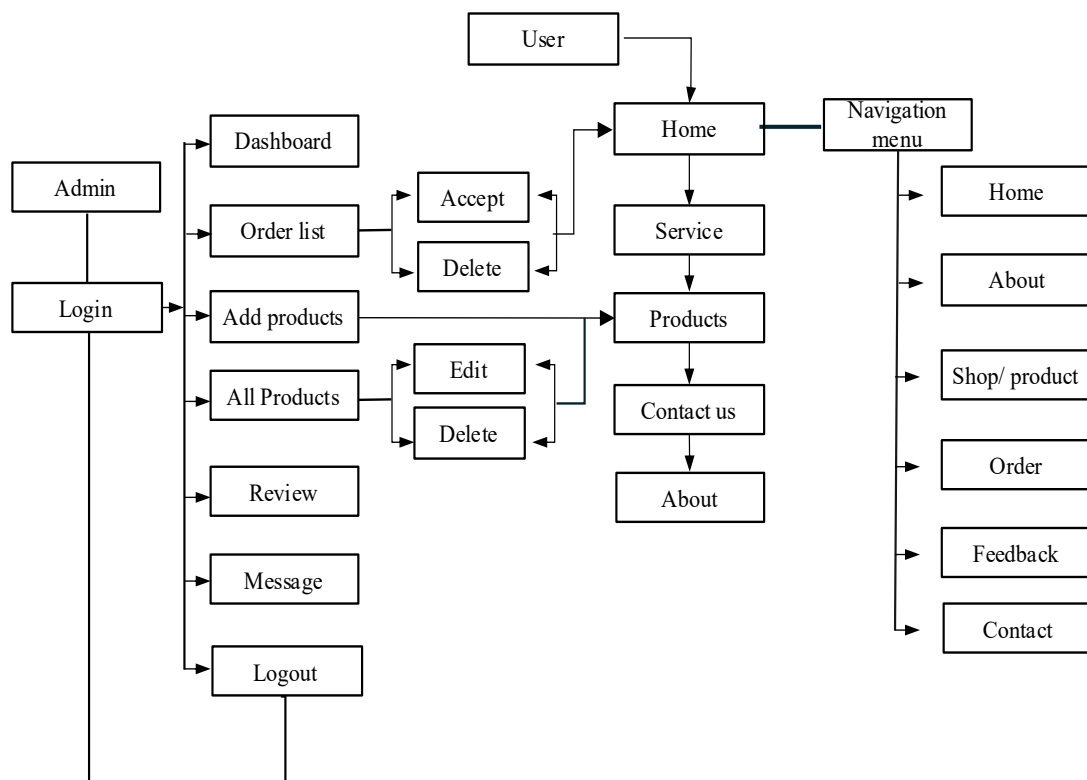


Figure 2. Use case diagram.

Pages for Users

- *Home*: The homepage is the entry point, providing an overview of the overall content and highlights of the website.
- *Orders*: Users can access detailed information about the orders, fostering a clear understanding of the order information.
- *Products*: A dedicated section enables users to explore the product catalog with options to interact by editing or deleting items, thereby enhancing user engagement.
- *Contact us*: A user-friendly interface encourages users to initiate contact, facilitating seamless communication between the website and visitors.
- *About us*: This section provides insights into the website's background, mission, and values, establishing a connection with users and enhancing transparency.

RESULT AND DISCUSSION

The developed system interface was designed to provide a user-friendly platform for monitoring and interacting with greenhouse data. As illustrated in Figure 3, the dashboard page displays real-time sensor readings and system status, enabling users to efficiently observe variations in the temperature, humidity, soil moisture, and light intensity. The graphical layout supports quick assessment, contributing to improved decision-making for environmental regulations, as emphasized in prior Internet of Things (IoT)-based monitoring studies [1].

In Figure 4, the list tab offers a structured overview of the available data streams and system features. This tab allows users to navigate between the modules, access the recorded data, and evaluate the actuator performance. Having well-organized information enhances usability and minimizes operational complexity, which aligns with earlier findings that clear visualization improves monitoring efficiency [2].

Figure 5 presents the login tab, which provides secure system access and user authentication. Security is a crucial aspect of IoT systems, ensuring that only authorized personnel can manage or modify the environment. The implementation of secure access mechanisms is consistent with the recommendations of existing research on IoT cybersecurity and data protection [3].

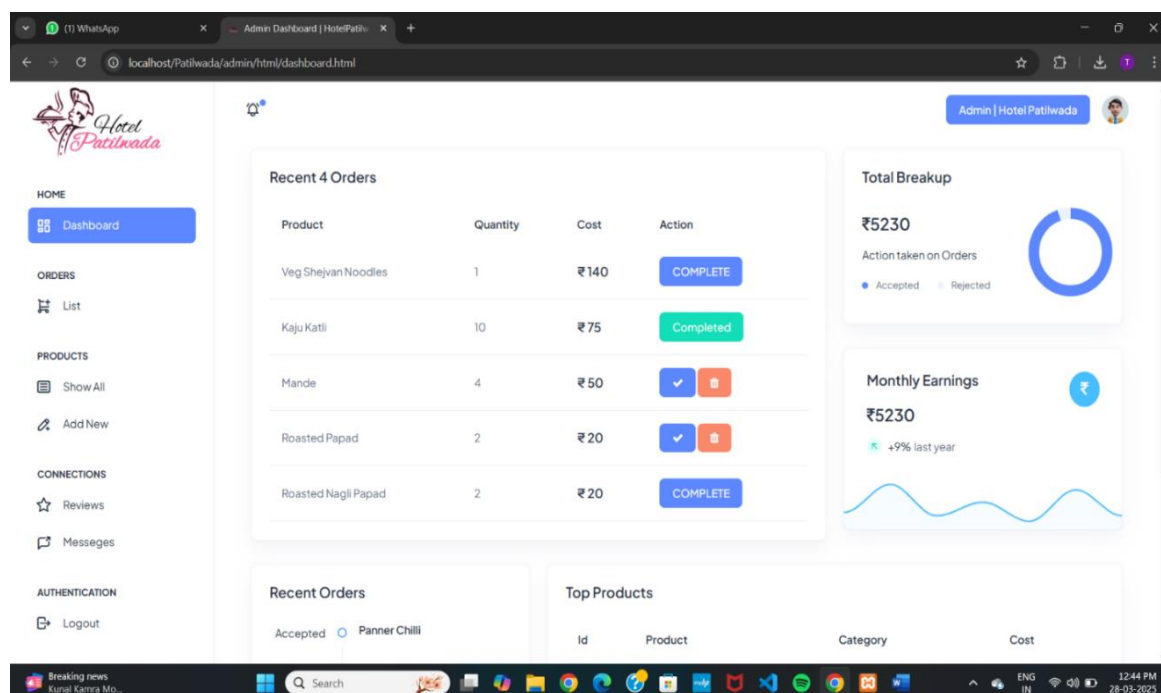
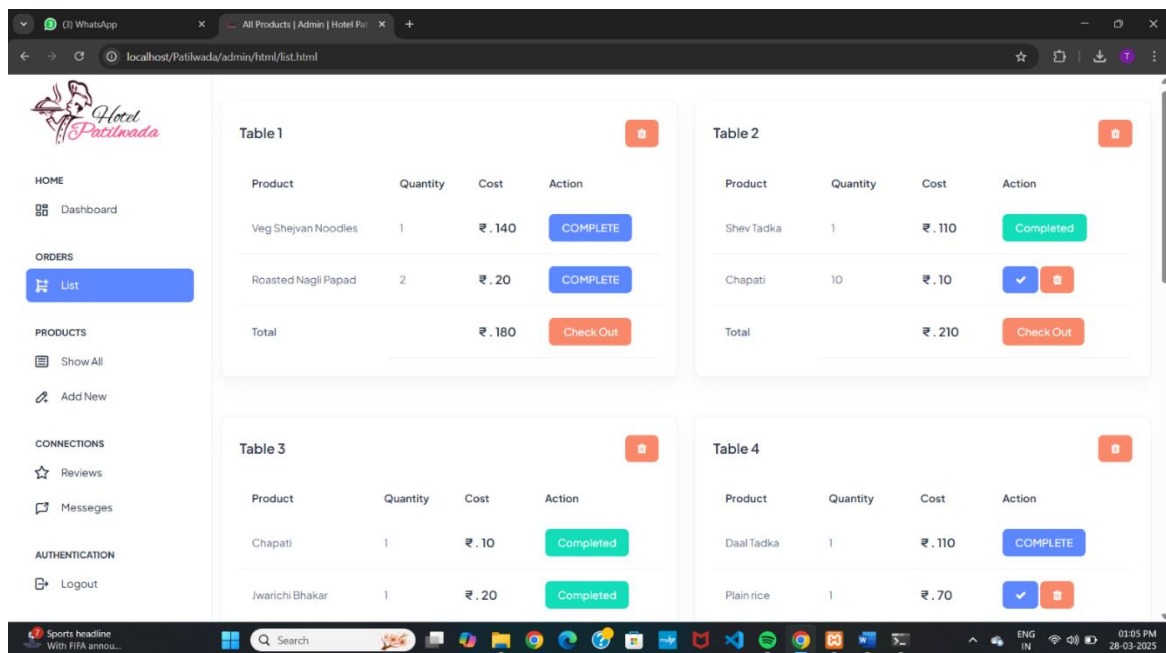


Figure 3. Dashboard page.



The screenshot displays the admin interface for Hotel Patilwada. On the left is a sidebar with navigation links: HOME, Dashboard, ORDERS (List), PRODUCTS (Show All, Add New), CONNECTIONS (Reviews, Messages), and AUTHENTICATION (Logout). The main area contains four tables, each with a delete icon in the top right corner.

Table 1

Product	Quantity	Cost	Action
Veg Shejvan Noodles	1	₹.140	COMPLETE
Roasted Nagli Papad	2	₹.20	COMPLETE
Total		₹.180	Check Out

Table 2

Product	Quantity	Cost	Action
Shev Tadka	1	₹.110	Completed
Chapati	10	₹.10	✓ [Delete]
Total		₹.210	Check Out

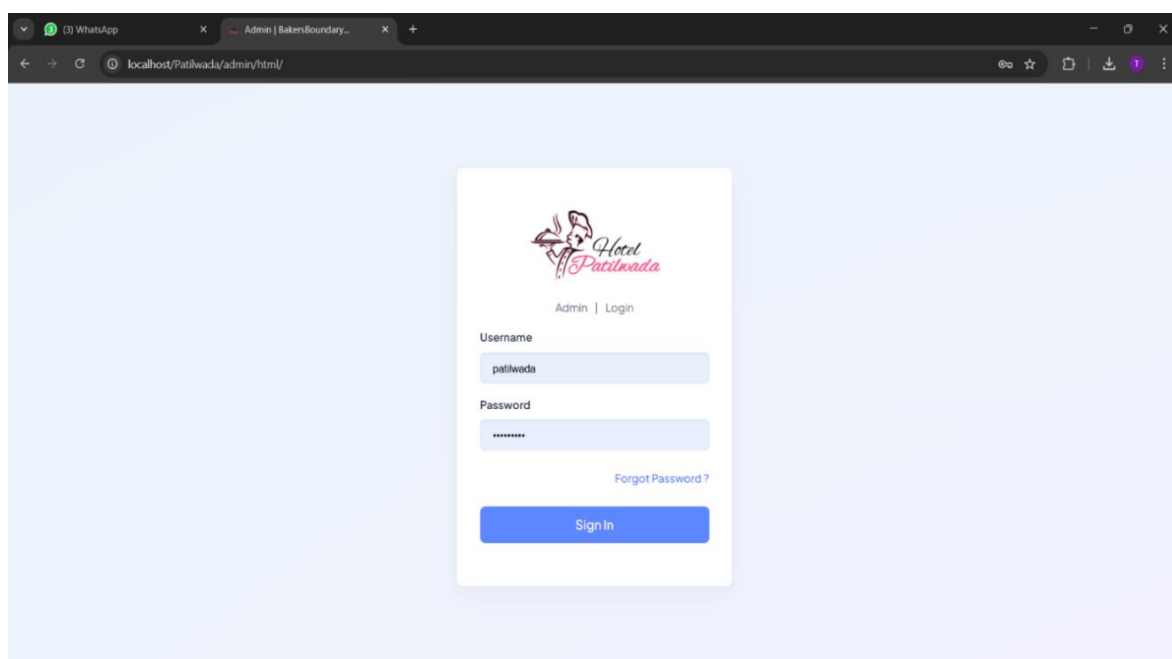
Table 3

Product	Quantity	Cost	Action
Chapati	1	₹.10	Completed
Jwarichi Bhakar	1	₹.20	Completed

Table 4

Product	Quantity	Cost	Action
Daal Tadka	1	₹.110	COMPLETE
Plain rice	1	₹.70	✓ [Delete]

Figure 4. List tab.



The screenshot shows the login page for the Hotel Patilwada admin interface. It features the hotel's logo at the top, followed by the text 'Admin | Login'. Below this are two input fields: 'Username' with the value 'patilwada' and 'Password' with masked characters. A link for 'Forgot Password?' is positioned below the password field. At the bottom is a blue 'Sign In' button.

Figure 5. Login tab.

The shop interface, shown in Figure 6, demonstrates an additional functional component of the system, where users can procure tools, sensors, or agricultural accessories. This integration bridges monitoring with practical applications and offers a unified platform for greenhouse management. Meanwhile, Figure 7, the shopping cart, allows users to review selected items before purchase, thereby contributing to a streamlined transaction process.

Overall, the results highlight a system that is not only capable of collecting and displaying data but also emphasizes user interaction, security, and the potential for commercial integration. These findings demonstrate the advantages of combining IoT technologies with intuitive design to support modern agricultural practices and enhance sustainability [4].

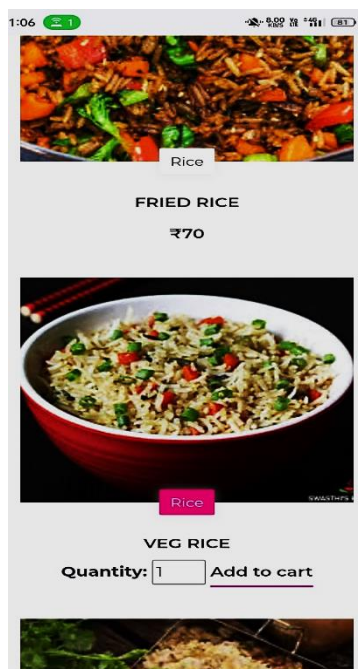


Figure 6. Shop.

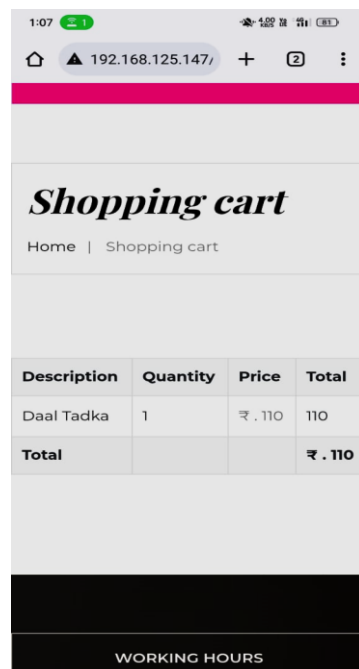


Figure 7. Shopping cart.

DISCUSSION

Expanded Reach

Customers can now purchase meals from a wider range of restaurants. Customers can have direct access to the digital menu and e-waiters in all areas of the restaurant.

Ease in Accessing the Shops

In the existing system, a waiter must physically go and get the orders from the customer, which takes more time. The benefit after the implementation of this project will be that the customer can place an order at any time, and time will also be saved.

Customer Benefit

Customers can now easily search, compare products/prices, and order their meals from their smartphones, which saves effort.

Owner Benefit

The website is accessible to a wide range of customers, which will increase the profit percentage and increase business rapidly.

CONCLUSION

In conclusion, our project offers a digital solution designed to enhance the overall dining experience and automate processes that are traditionally handled manually in restaurants. By implementing this system, the workload of restaurant staff can be significantly reduced, along with minimizing paper waste and reliance on waiters. It also helps eliminate common manual errors, such as serving incorrect orders or delaying the provision of menus during peak hours. Overall, this digital approach streamlines operations, saving time for customers, chefs, and managers. Finally, it can be concluded that this system improves customer, owner, and manager satisfaction.

Orders are directly transmitted to the manager's desktop, minimizing errors associated with manual order entry. This automation lightens the staff workload, allowing them to concentrate on delivering improved customer service and maintaining efficient kitchen operations. The system also facilitates

efficient table management, as the staff can readily track the order status and table occupancy. The digital print billing process, enabled by QR code scanning, eliminates the need for manual bill generation, reduces errors, and speeds up table turnover. This results in faster service, improved customer satisfaction, and increased utilization of tables.

The system helps lower labor costs, boost table turnover, and streamline inventory management, all of which enhance overall profitability. Additionally, by eliminating the need for printed menus and paper bills, it offers long-term cost savings for the restaurant. Moreover, the use of unique QR codes adds a personal touch to the dining experience. Customers can quickly and easily access the menu and place orders without relying on the staff for table identification. The system can also be configured to provide personalized recommendations and promotions based on the table-specific order history. The implementation of unique QR codes requires careful management and maintenance to ensure that they are correctly placed and functioning. However, the benefits of enhanced table management and improved order accuracy are significant.

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