

A Survey on Touch Based Food Ordering System in Restaurants

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Abstract— In today's world, technology has entered almost all the fields and has grown vastly in each of these fields. But one of the industries where technology is yet to expand is the Food Industry. In India the food industry i.e., the restaurants still follow the traditional pen and paper method. While the new cafes have adapted to a new a computer based ordering, the restaurants in India still use the traditional method of pen and paper. This method often tends to waste the time of both the customers as well as the restaurants, plus there is a possibility of getting the wrong order. This paper presents touch based food ordering system considering android as the base and various other technologies such as Java and Html, CSS, AJAX, etc. for web based applications.

Keywords— Touch, android, java, php, ajax, CSS, MSR, Wi-Fi, POS, Tablets, Feedback, Login, Food Ordering System, Digital Menu, OTP.

I. INTRODUCTION

In the recent years, technology has become an integral part of all the industries. Technology has made life easier and convenient by replacing the old standard with its new standards. However, the food industry has not been able to adapt to technology like other industries. There are no major automation processes known to be established in this industry. In India we often observe restaurants following the traditional pen and paper method. There are many drawbacks of using this traditional method. This method requires great amount of manpower; thus, the economy of the restaurants falls. The process also takes a lot of time to execute. The waiter notes down the order, takes the order to the kitchen, updates the order in records, delivers the order, and then computes the bill. Plus, there are times when the customer must wait just to give an order because all the other waiters are busy.

Though there have been technologies to overcome these problems none of them have been quite impactful. In the recent years, there have been technologies like Personal Digital Assistants (PDAs), KIOSK based systems, Computer based ordering none of them have been able to eliminate the problems completely faced by the customers. Some of these have proved

to be quite complex for the customers as well as costly for the restaurants to adopt.

So, to overcome these problems, a touch based system is introduced where all the food content is stored in an android application along with the price and images. This system reduces the time complexity faced by the customers, allows the customer to track the order, provides a message box for customers extra needs. It also provides the online payment methods directly via the tablet, automatically generates bill, also has a feature to call a waiter for help and provides a feedback form to review their experience.

The following paper has three sections. They are: Previous work, Proposed work and Conclusion.

II. PREVIOUS WORK

YongChai[1], focused on automated food ordering system which includes interactive User Interface System Approach. The entire process is divided into several parts and the whole task is performed in a proper flow. Firstly, for placing the orders from a table at the restaurant, touch screen computers are placed at each and every table in the eating room. The interface of the ordering system had its base on Visual Basic 2008. The customer could then place the order after

considering the menu card present in the system itself after following the basic guidelines. Once the customer finalises his/her order, he/she presses the confirm button and the final order is sent to the kitchen. The interesting thing about the system is, there is a computer made available in the kitchen area also. This means that the entire process is totally computerized and made possible in a digital manner. The system which is installed in the kitchen will act as the virtual server and every other computer other than the one in the kitchen area will be considered as the client's system. All the computers belong to the same Local Area Network and the connection between them is via Wi-Fi. The customers can also check the status of the food being prepared and can view it Live with the help of camera present in the kitchen area. After the preparation of food, there are robots moving around the hall so that they can serve the customers and help them provide better service. There is also a facility provided for getting your queries resolved by the specialist staff present. The customer can also provide their feedback after they enjoy eating their food and make their payment successfully.

Indu S [2], proposed a system which focuses on automated food ordering system in restaurants using embedded technology. The system comprises of two parts: Ordering Terminal and receiving section. At the ordering terminal, there is a input module which consists of 4 x 4 matrix keypad. Every key present on the keypad has a specific task assigned to it. Example is for the choice of dish, quantity, etc. As mentioned by Indu S, the input selected by the user is then transferred to the Graphical LCD display and the device used is Nokia 5110. The mediator between the two parts i.e. the Ordering terminal and the Receiving section is Radio Frequency Module. Once, the data is fetched from the Ordering terminal it is being sent to the Receiving section with the help of RF module. The RF modules used by developers is Cypress's Proprietary 2.4Ghz Cyfi Wireless Communication Module. Next the Receiving section comes into play. The data which is being received by the wireless module is being pushed to Personal Computer's for display purpose by the microcontrollers using USB Serial Bus Communication. If at all there is a need for accessing the database, a special kind of service is being provided with the help of GUI. The workflow of the system is being put forth by Indu S. At the very outset, the customer orders the food on Graphical display through the matrix keypad. The order is being forwarded to the admin PC and its then eligible to be displayed on the GUI. After the food is being served by the staff and eaten by the customer, the admin prepares a bill for the payment and then stores the entire data in the database, manually.

Bhaskar [3], put forth a system which helps the customers as well as the restaurant keepers to continue their work in a very digital manner. The System proposed by Bhaskar [3] uses an android device. The android device consists of two different applications namely the Customers app and the restaurant app. The customers app is made exclusively for the customers who can just sit on the respective table and make the ordering system easier and very effective for themselves. The primary key for the customer app would be the respective table number. The order made by the customer is sent to the kitchen along with the table number. Secondly, the other application developed for the system is the restaurant app.

This application is used by three different actors viz. the manager, the cashier and the chef. The functionality of the android application differs from the role of the particular actor. Manger has to look after all the activities and make it happen timely and very appropriately. The order placed by the customer reaches to the chef in the kitchen and the chef can prepare the dishes accordingly. Finally, at the very end the final billing is done by the cashier and based on the table number as our special index the final bill is prepared and paid by the customer in a digital way itself. The system is divided into four different parts: the dining area- where each and every tables are arranged and the customers need to sit there to eat their food, the Manager area- where the manger can access each and every information on the tables booked, the empty tables and all the other data which is essential, the chef area- where a LCD screen is present and the chef can view the orders on every individual table and record the changes too and finally the cash counter. When the customer places the order the signals are sent to the server via GSM and then the information is stored in the database. Human Labour work is needed to serve the food and no where else in the entire system.

Ashutosh [4], proposed a system for the digital ordering in restaurants using android. The idea of the research was to make the ordering system in the restaurants more simpler and fully digitalized. There are many other services provided to the customers and the restaurant stake holders as discussed by Ashutosh [4]. As stated by Ashutosh [4], there are tablets present on each and every individual table where the customers can browse the food items and order as well. The customers can also provide their feedback on the same tablet itself. Furthermore, there are various other features the system provides to the users. Some of them include, searching the desired items in the menu based on the category, price, name etc., the offers present for the payment of the bill, etc. The DOSRUA (Digital Ordering System for Restaurant using Android) has three different devices namely, the manager tablet, the customer tablet and the Display in the kitchen. Each one has its own individual role and all of them are connected via Wi-Fi throughout the entire process. JSP and Servlets are used to process the data and to store in the database for further processing such as bill payment and preparation of food, etc. The database used in this case is the SQLite Database because of its high efficiency.

III. PROPOSED WORK

To overcome the traditional pen and paper method, many technological methods were adopted but none of them proved to be beneficial for both the customers and the restaurants. So, in order to establish a system beneficial for both the customers and the restaurant owners we proposed a system that is based on Android. The system is divided in two phases. First phase is a website that is only for administrator use. The second phase is of the Android application that is created for the customer to view the restaurant's food and beverage menu. Customers can order the food directly through the Android application, the application also provides features to pay the bill, provide feedback to the restaurant. This makes the customers dining experience more comfortable as well as less chaotic. It also becomes more convenient for the restaurant

manager as well since all the storage of orders and list of menus is stored in a centralized database. So, if the manager has to make any changes, a single change in the centralized database will lead to changes everywhere. Also, since the whole food ordering process gets automated there is less manpower required, thus leading to more economical situations for the restaurants.

The proposed System architecture has various phases and each phase has a very important role to play in. The system has a flow as mentioned in the further lines.

The customer first enters the restaurant. He occupies the desired table. Every table has a tablet fixed to it. The tablet consists of android software which assists the customer in the food ordering procedure. It has various sections like offers, menu, modes of payment, feedback etc. The customer can browse through the menu and select his desired food items. Once he's done, he can confirm his order. His

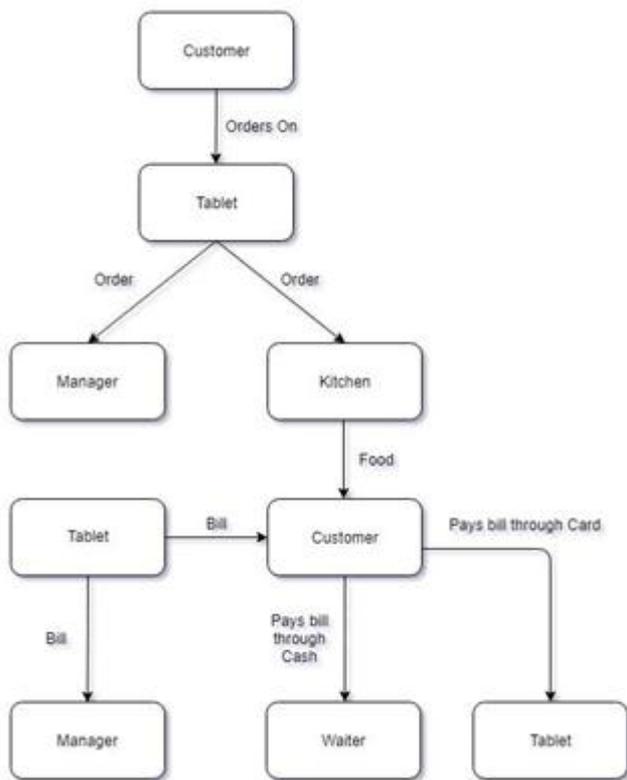


Figure 1: System Architecture

order is transferred directly to the LED screen placed in the chef's kitchen and also to manager. The LED monitor consists of grid structure, where in each section of the grid represents the table in the restaurant. Once the order is confirmed by the customer, it appears in that particular grid on the LED monitor.

The chef then cooks the meal and sends a confirmation signal to the waiter. The waiter then collects the meal and dispatches it to the corresponding table. Once the customer finishes his meal, the customer is then shown his total bill in the 'Payment' tab. The Payment tab consists of two choices, Cash or card. If the customer wishes to pay via cash, he is required to provide the respective amount to the waiter. If he wishes to pay via Card, he is required to complete his transaction at the table by swiping his card in the MSR Reader.

The entire flowchart of the system is shown below. This is how the system will work and give its best possible results. Various Steps to be followed are:

- Enter and take a comfortable seat.
- Decide and confirm order.
- Order reaches the manager area.
- Order reaches the chef area.
- Order is being Served.
- Reorder/ Order something new.
- If done, proceed for bill payment.
- Receives final amount for payment.
- Payment made.
- Done. Rebooking of the same table.

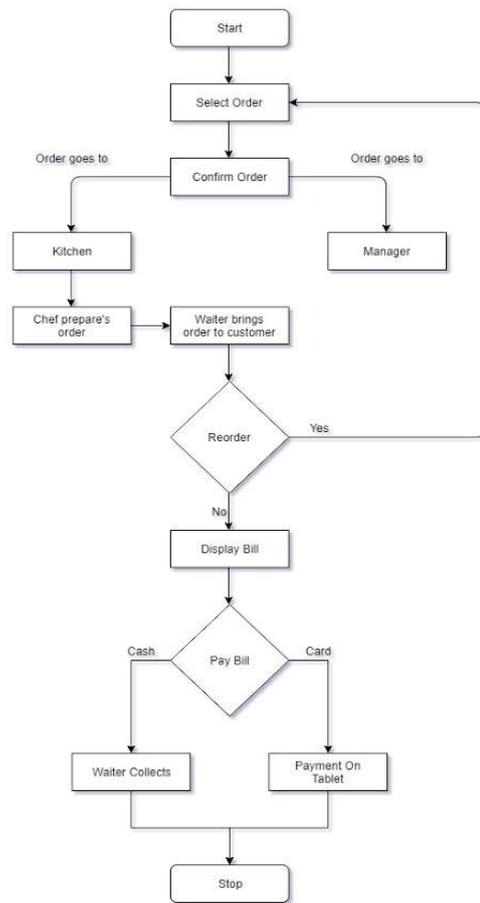


Figure 2: Flowchart

There are many different functionalities provided by the system and they are mentioned in the below table:

Table 1: Special Functionalities

Features	Present/Absent
Touch Based	Present
Wi-Fi	Present
Faster Services	Present
Status of Order	Present
Digital Menu	Present

IV. CONCLUSION

In this survey paper, different techniques and algorithms for making the entire food ordering system digitalized are discussed. It can be concluded that the techniques, technologies used in the proposed system are all meant to increase the efficiency of the system by achieving better results. Using android devices and wireless networks are tending to be very beneficial for the system and improving its throughput also. Normal system leads to wastage of time and the reputation of the hotel also does not speak up unless and until there is something new and unique. Features provided by the system help to increase efficiency as minute details related to the customer and the restaurant are taken into consideration. Thus, these techniques help in increasing the accuracy of the system and getting more desirable results.

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