

SMART ORDERING SYSTEM

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Abstract: The project mainly aims in designing completely automated menu system in restaurants with the help of touch screen and LCD to provide a user friendly environment. There is no need of a person to take the order from the customer's table. The menu will be displayed automatically on the customer's table and we can directly order the menu with the help of touch screen. Touch screens provide fast access to all types of digital media, with no text-bound interface getting in the way. Using a touch interface it can effectively increase operator accuracy, reduce training time, and improve overall operational efficiencies. Transmission of data is through Wi-Fi which is a wireless technology developed as an open global standard to address the unique needs of low-cost, low-power, wireless sensor networks

Key Words: Micro Controller, Pic 18F46K22, PC, Wi-Fi module, LCD, Tablet, RS 232.

1. INTRODUCTION

The biggest challenge for businesses is the reduction of operational costs as well as increased productivity. Focus on business process efficiency and minimization of human-related errors may influence costs and productivity positively. In this scope, automation might lead to faster process execution and to reduced error rate caused by the human factor, especially in environments with multiple hops that information or data has to pass from customer to employee, and the other way round. Such an environment may be found in restaurants where a need for high customer Quality-of-Experience (QOE), low operational costs as well as high turnover is mandatory in order to achieve high degree of customer satisfaction as well as high level of productivity.

In general, people go to restaurants for relaxing, chatting and having food/drinks pleasantly. Usually on the weekends the restaurant are fully occupied. At this time, people have to wait for someone (typically a waiter) from the restaurant to order food/drinks. In addition, waiters are very busy when the restaurant is crowded. Sometimes they might forget to take orders from customers, forget the orders, serve wrong order and deliver after long time. When the restaurant introduces a new menu or some recipes are new for customers, they do not understand it well by just seeing the menu card printed with a food/drink name.

Since man power is one of the most important cost factors in restaurants, and at the same time a key reason for altered performance, an automated order taking process might work as a solution. An automated solution can be assumed to

facilitate an increase in overall productivity by decreasing the time and effort involved in this procedure, while keeping customer satisfaction at the same level, or even increasing it.

2. PROPOSED SYSTEM

2.1 Technical Details:

The chart-1 gives the general description of system block diagram in which each block has following description. This system divided into main 3 sections as follows:

INPUT: A Tablet is available at the customer's table, which displays the menu card. This card contains various cuisines that the customer wants. Customer selects various items on the touch screen.

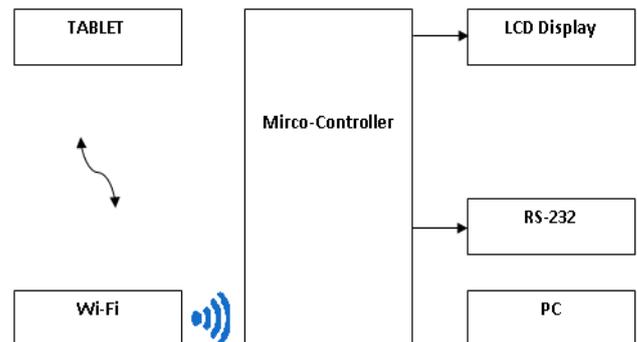


Chart -1: -System Block Diagram

MAIN PROCESSING UNIT: The ordered item is given to the micro-controller via wi-fi module. Which includes Pic Microcontroller. The ordered items are displayed on the LCD due to which the customer knows what he has ordered.

OUTPUT: In this section two parts consist are VB DATA BASE on manager PC and order display on kitchen section. In this section all processed input are stored in the VB database and which stored data is access through the app.

I. The Hardware System:-

Micro controller: This section forms the control unit of the whole project. This section basically consists of a Microcontroller with its associated circuitry like Crystal with capacitors, Reset circuitry, Pull up resistors (if needed) and so on. The Microcontroller forms the heart of the project because it controls the devices being interfaced and communicates with the devices according to the program being written.

Pic18F46K22: The PIC18F46K22-I/P is a Microcontroller, high computational performance with the addition of high-endurance, flash program memory. On top of these features, introduces design enhancements that make these microcontrollers a logical choice for many high performance and power sensitive applications.

Wi-Fi: Wi-Fi module shows connectivity with Smartphone through small LED on it Wi-Fi is a wireless technology that uses radio frequency to transmit data through the air. Wi-Fi has initial speed of 1mbps to 2mbps. Wi-Fi transmits data in the frequency band of 2.4 GHz. It implements the concept of frequency division multiplexing technology. Range of Wi-Fi technology is 40-300 feet.

LCD: A liquid crystal display (LCD) is a thin, flat electronic visual display that uses the light modulating properties of liquid crystals. Liquid crystal display is very important device in embedded system. It offers high flexibility to user as he can display the required data on it. Here we have used to check initialization or to check program flow.

Tablet : A tablet, commonly shortened to **tab**, is a portable PC, typically with a mobile operating system and LCD touchscreen display processing circuitry, and a rechargeable battery in a single thin, flat package. Modern tablets largely resemble modern smartphones, the only differences being that tablets are relatively larger than smartphones, with screens 7 inches (18 cm) or larger, measured diagonally, and may not support access to a network. The touchscreen display uses gestures by finger or stylus instead of the mouse, track pad and keyboard of larger computers. Tablet changes the way to serve customers. It rapidly integrates into existing environment. Makes the very best customer experience possible. It is a Meal ordering platform, which offers the opportunity to enrich and enhance the dining experience for customers.

Android App: The Digital Menu is an application that enables the creation and management of menus in digital format. Consists of two parts: first, the back office management of menus and the second the application itself. Management area (back office) can create or import from some popular software restore market your articles, families, etc.. You can also manually create families and products that are not in your restoration software compatible. Can operate in mode 'stand alone' and manually create families and products. The management of menus it is so intuitive and so it is most convenient for your business. Ability to add sponsors visible in mobile application that allows disclosure extra marks, etc.. Completely customizable and tailored to the needs of each client.

3. SYSTEM REQUIREMENT ANALYSIS

To overcome the limitations of above systems, we propose this integration of touch technology in restaurants based on android technology. It is a wireless food ordering system using android devices. Android devices, in the past few years, have reached the pinnacle of popularity and have revolutionized the use of mobile technology in the automation of routine task in wireless environment. Android

is an open-source, Linux based operating system for mobile devices such as smart-phones and tablets. The promising future of Android market makes the concept of writing applications for android beneficial and worthwhile.

As a remedy for the above-mentioned systems, we propose a restaurant with a touch technology system. Our system aims at providing the following features:

- Combining of Wireless technology and Android OS to automate food-ordering process.
- Allow the restaurant to operate faster (faster seating, faster order preparation, faster turnaround on food).
- Reduce employee error, thereby increasing customer happiness. This also reduces waste as when the wrong item is ordered, the food must be discarded.
- To minimize the flaws in conventional system by atomizing the working of a restaurant.
- To provide a mechanism for obtaining feedback from the customers and provide the restaurant a means of review of their service.

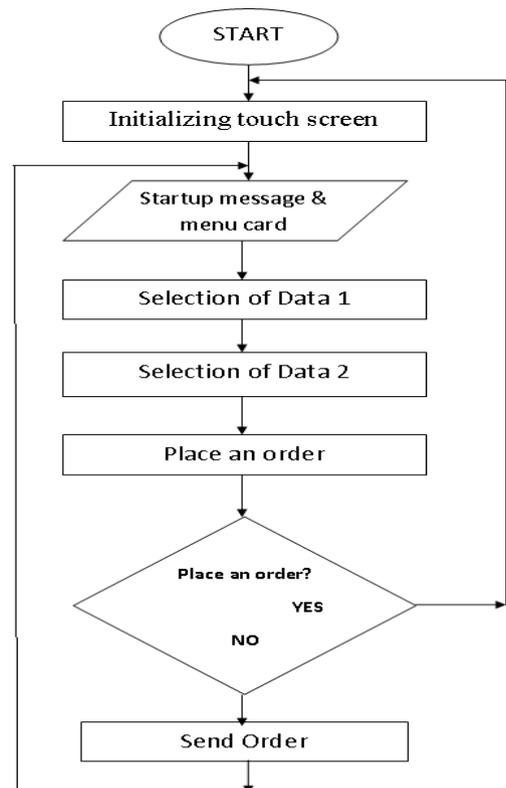


Fig.3.1Flow of order placing on Tablet

The architecture attempts at a full coverage of the three main areas of restaurant: the customer, the Kitchen, and the Cashier counter. The main components of this system are:

The android application on tablets at the tables. The tablets will be provided to customers, at their tables, allowing them to directly view the menu card and order immediately from

their respective tablets. The tablets are the property of the establishment and are kept at each table.

The server application on the restaurant-owner's laptop/tablet to customize menu and keep track of customer records.

The central database for restaurant-owner to store updated menu information, order details and broadcast various offers and promotions.

Wireless connectivity between the three main areas of restaurant.

The main modules of this project are as follows:

Tablets at the customer's table (module 1): These tablets are designed for the use of normal users arriving at the restaurant. These tablets display the whole menu of the restaurant. The menu contains text and pictures that describe each item to an average customer. The items in the menu are non-editable for these types of the tablets. They will work efficiently by enabling Wi-Fi connectivity. The customer can view the menu of the restaurant and add menu items to cart, see total price, and specify quantity. The menu also displays a brief description of the item when selected. Customers can also go through the features of the restaurant, take a look at the facilities provided by the restaurant and check for various offers available. When the desired list of dishes is finally selected, customer can click on „Confirm Order“. This order is then sent to the chef via the kitchen display and to the cashier's desk as well. The tablet also provides a feature for providing real-time feedback.

updates like changing the price of a particular item or disabling a particular item, which is not available at that particular time.

Kitchen Display Interfaces (module 3): These displays are set up at the kitchen near chef so that he is able to view the orders requested from customer. All the ordered items along with their table numbers are displayed punctually at the chef's interface. The resolution and font size is sufficiently large to be seen by chef at a reasonable distance. The display allows the chef to update the estimated time of completion of each order once he starts cooking it. The chef's screen displays two-three orders simultaneously, which updates the chef about what to expect once the current order is closed. Chef is able to notify and close an order when a particular item is ready.

4. SYSTEM DESIGN & IMPLEMENTATION

User Tablet:

This type of the tablets is especially for the use of normal users coming in the restaurant. These tablets will consist of the whole menu of the restaurant. They will be enabled with the Wi-Fi connectivity. The items in the menu are non-editable for these types of the tablets. So, the user cannot interfere in the menu and make changes in it. The tablets should be able to display all the items of the menu with sufficient visibility. Customer from any layer of the society should be able to handle and operate all the functions easily.

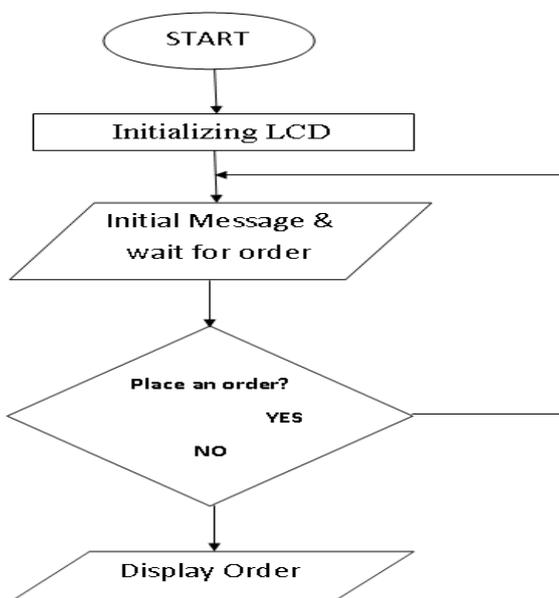


Fig.3. 2Flow of order received at kitchen and Manager PC

Manager Desktop (module 2): These desktops cater to the needs of the restaurant manager. The manager controls the functioning of whole restaurant from a single desktop. He is authorized to access any tablet and is provided the authority to make changes to the menu. He can perform various

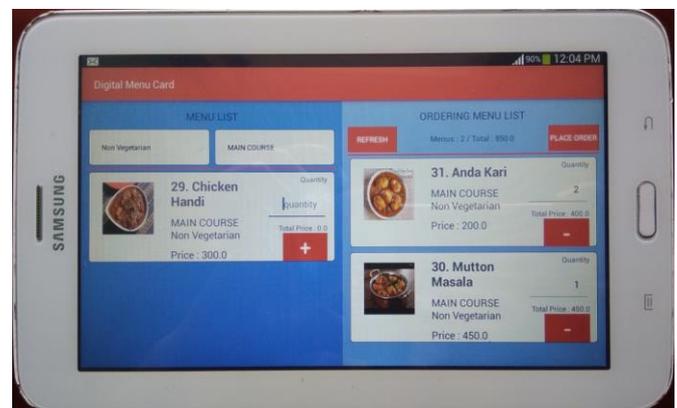


Fig. 4.1 User Tablet

Fig.4.1 shows the user tablet from which customer place the order

Display at Kitchen:

These are present at the kitchen near chef so that he should be able to see what a particular has ordered. All the ordered items are displayed on the screen giving the table number below. They should be sufficiently large to be seen by chef at a reasonable distance. Chef should be able to denote a particular item that is ready.

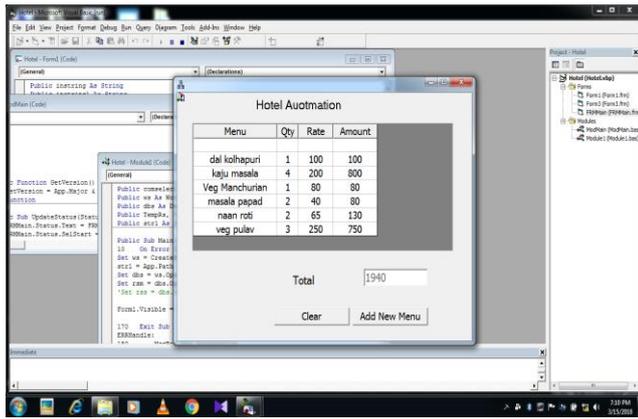


Fig. 4.2 Kitchen Display



Fig.5.2 Selected Menu Select the menu from given list with quantity & then click on '+' sign to add the menu.

Manager PC:

These tablets are especially for the use of the restaurant manager..The manager should be able to control the function of whole restaurant from a single tablet. He can access any tablet and should be able to make changes to the menu. Like he can change price of particular item or he can disable particular item, which is not available at that particular time.

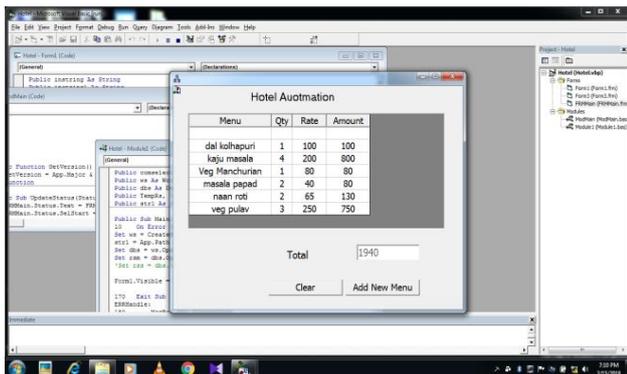


Fig. 4.3 Manager PC Display

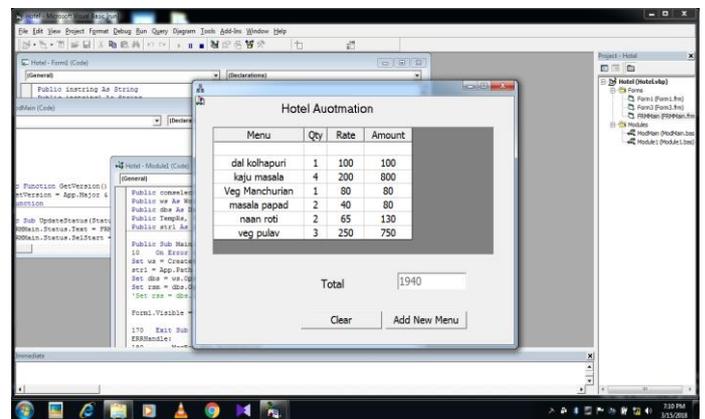


Fig.5.3 display on kitchen and billing side

5. RESULT

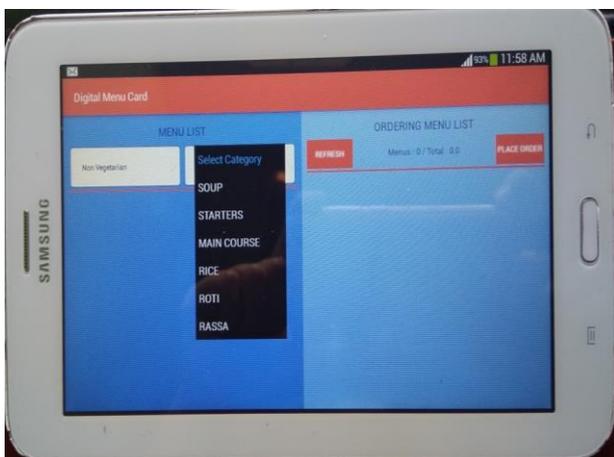


Fig.5.1 Selection of menu category like veg., non-veg. and subcategory like soup, starter, main coure, rice, roti, rassa etc

6. CONCLUSION

In this paper the space management, ambience, serving and merchandise are the main coordinators in running the business of restaurants. But along with these, menu is also one of the important elements, which directly affect on customers satisfaction and the business. Along with the development of the restaurants, the development of a menu, which is one of the spearhead of the restaurants, needs to be developed.

Technology has redefined, redesigned and reframed the service process with an innovative manner in hospitality organizations. Lately, electronic-tablet devices are changing our daily communication. Being aware of the functionalities and affordances of electronic-tablet (e.g., iPad), restaurant operators adopt electronic-tablet devices into restaurant operation for better service quality.

Menu is no longer in paper form but also thrive in a digital form in many restaurants. Digital Menu is the next evolutionary step for restaurants that are looking for to increase customer awareness and loyalty, and offer their valued guests a modern and interactive way to order food as well as receive personalized and interactive service.

It has been proved that Indian restaurants lacks interactivity and also revealed that there is a concern for digital menu design with smart features, which includes detail

information, video, books, games, etc, which card menu does not provides. Customers want such digital menu interaction in Indian restaurants.

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