The Smart Restaurant

Anju C P, Austin Larson, Jenish Joy P, Maritta Stephen

Abstract: In this fast growing world where technology has made its way into every walk of life our effort is to make the time consuming traditional process in restaurants easier and efficient. The traditional process was that when a customer enters into the restaurant he has to wait for the waiter to come to him and to get the menu list. After that he has to wait for another couple of minutes again for the waiter to come and take the order. Finally he has to wait for the food too. This is a highly time consuming process. So in order to tackle this problem we have introduced the idea of smart restaurant. Our project is a much simpler replacement of traditional process in restaurants. In this system a customer can scan a QR code given by the restaurants which will direct the customer to the website of the restaurant. The menu will be provided by the restaurants such that customer can order the food as soon as he reached the restaurant without any delay. Customer can also request our interest too which may or may not be granted. The payment option is also provided in the website through which the customer can pay the cash.

Keywords: Growing world where Technology, Traditional Process, The Menu Will Be Provided, Website Through Cash Payment

I. INTRODUCTION

The smart restaurant is a concept where a restaurant working is based on using state of the art technology from reservation to ordering and storing customer records. The traditional restaurant system working is replaced by use of smart phones, tablets or graphical user interface interactive touch screens. Customers will order their meal through tablets, so that the order is directly rooted to the kitchen via a central server. Also customer's records are permanently maintained in the central server which can be used later for marketing, accounts and sales purposes. The smart restaurant reduces the staff employed for hospitality services thus increasing the profit margins. The kitchen will have an interface where orders will be served according to priority (first come first serve). The customers will order from an android app installed on a tablet either from the hotel or their home. An application on android will also help customers to know more about the restaurant and its services, and will facilitate online ordering and prior reservation of table.

Anju C P, Department of Computer Science and Engineering, Sahrdaya College of Engineering and Technology, APJ Abdul Kalam Technological University, Kodakara Thrissur (Kerala), India. E-mail: anjucp97@gmail.com

Austin Larson, Department of Computer Science and Engineering, Sahrdaya College of Engineering and Technology, APJ Abdul Kalam Technological University, Kodakara Thrissur (Kerala), India. E-mail: austinlarson1998@gmail.com

Jenish Joy P, Department of Computer Science and Engineering, Sahrdaya College of Engineering and Technology, APJ Abdul Kalam Technological University, Kodakara Thrissur (Kerala), India. E-mail: jenishjoyp@gmail.com

Maritta Stephen, Department of Computer Science and Engineering, Sahrdaya College of Engineering and Technology, APJ Abdul Kalam Technological University, Kodakara Thrissur (Kerala), India. E-mail: marittastephen@gmail.com

II. DRAWBACKS OF EXISTING SYSTEM

Nowadays, many restaurants manage their business by manual customer ordering. The restaurant waiters take the customer ordering by manual system with using paper. This makes the problem for restaurant waiter the probability of lost and duplicates customer information. Additionally, it would affect to reputation restaurant in operate management of ordering. Hides, the restaurant waiter information also by manual system kept use paper and this is difficult for restaurant administrator to find waiter information, probability missing the paper and difficult to arrange the schedule. In some situations, the waiter information and customer information are important to restaurant administrator for reference in the future. Furthermore, the restaurant side needs management in the section menu. This is the importance of restaurant waiter to manage the menu. Besides this the section is for customer viewer the menu that restaurant prepared and make their ordering. As a result, the current system which means the manual system is not effective and efficient tousle anymore because the current system cannot save, manage and monitor the restaurant waiter information, menu, customer ordering and generate report well.

Therefore the major drawbacks of existing system are

- Wasting of time on waiting for waiter.
- Chance of losing customer information
- Sometimes waiters tend to miss out tables and customer calls during busy hours.

III. METHOD

The smart restaurant is a simpler replacement of traditional process in restaurant. Customer can scan QR code using mobile. Leads to the site of restaurant Site consist of menu list, price and availability of food. Customer can order the food by himself. Ordering a food will send signal to the kitchen. Signal includes food name, quantity and customer's table number.

The group of users that had been identified to use the system are customer and administrator. This user will register to be a member to use the online system of this online restaurant management system (ORMS). This online ordering is divided into two type of customer; they are customer dine-in ordering and takeaway ordering. For dine-in ordering, customer will view menu, make online ordering and make a reservation table. But in case of take away ordering, customer can view menu and online ordering without reservation table. After customer make online ordering, customer can take ordering the date that customer was choose during make online ordering. Event though,

customer must confirm online ordering with restaurant three days before customer take the ordering for dine-in customer and for take-away customer will be confirm one hour before it whether by email or phone. The administrator will manage the entire system and this type of user will also perform maintenance and control the application of this system. Administrator takes responsibility to register new customer, register new waiter, register new menu into database, and etc. This system will be placed at restaurant.

Within the restaurant sector, customers are likely to return to the restaurant depending on the service they get such as receiving quality food, the customer service the waiter delivers to the customer. However, the problem arises if they had to wait for an unreasonable amount of time which results to the food being cold, or a mistake in the order. These problems make it unlikely for the customer to return.

Therefore a solution to this problem would be to minimize mistakes within the bill and order. Another solution is to reduce delays; this comes through team work and communication within the team.

- An increase in efficiency
- Reduce communication between the waiter and the kitchen
- Elevated profits
- Better controlled order logging
- Productive restaurant-kitchen communication
- Good quality stock management
- Unlimited statistical output
- Construct reports that can be utilized to determine value of electronic resources as well as training needed by staff members

Figure 3.1 shows the use case diagram of the smart restaurant. The smart restaurant is a simpler replacement of traditional process in restaurant. Customer can scan QR code using mobile. Leads to the site of restaurant Site consist of menu list, price and availability of food. Customer can order the food by himself. Ordering a food will send signal to the kitchen. Signal includes food name, quantity and customer's table number. The use case diagram of the smart restaurant consist of use cases such as select food, create order, submit order, check order, check waiting time, check availability and cancel order.Customer,waiter and chief are the actors in the system. Here in this proposed system the customer can make use of the facilities such as select order, create order, submit order, check waiting time, check availability and cancel order. Whereas the waiter can make use of only two facilities such as check order and check waiting time. At the same time the chief can make use of facilities such as checking order, availability and waiting time.
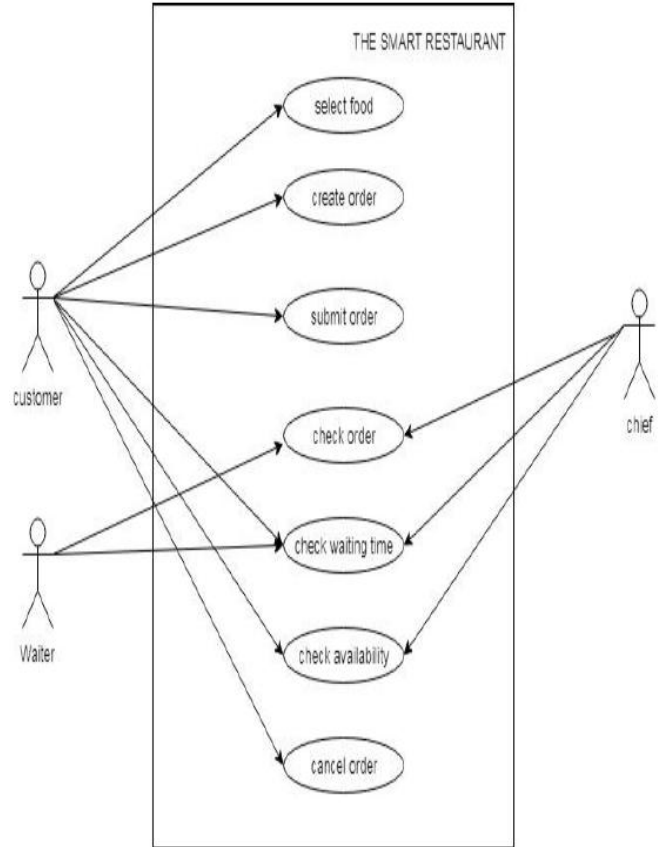

Figure 3.1

Figure 3.2 shows the uml class diagram the smart restaurant. The class diagram consists of three classes such as restaurant, customer and kitchen.

The different modules of the smart restaurant system restaurant module, customer module and kitchen module. The brief descriptions about these modules are given below:

A. Restaurant Module

Server module is a web based module which is handled by the admin (restaurant manager) for managing the database and controlling the entire system. Here the entire details of the item ordered by the customer, time of ordering, bill amount, bill status etc. is maintained. Also the admin can anytime add and modify menus for example Today's Special, their prices and advertise specific food item including special discount and combo offers. Server Module is being implemented in XAMPP server where database management is done in MySQL and programming is done using java server pages.

B. Customer Module

The customer module includes all the activities including ordering ,making preferences .These are the activities which comes under the module that makes the system customer friendly. The above activities are through which customer interacts with the kitchen module. It interacts with the admin module through giving reviews.

Customer online ordering and reservation module provides a form that needs to be fulfilling in term of ordering food and reservation table via online.

Waiter Module. The customer module is an android based application that provides a user friendly graphical user interface. With the help of this module the customer can order the meal.

This module contains the details of the food to be ordered which includes price of the menu, ingredients and a visual display of the food items. Special dishes (e.g. the Chef's Choice) if any could be changed and modified easily at any time by the admin/manager and displayed. Any personalization required by the customer in the food item can easily be implemented under this module. The customer module is run on a tablet and the application to be run on it is made in Eclipse and Android Studio using Java programming. The customer module is connected to the server module through a wireless fidelity network.

C. Kitchen Module

Kitchen module is a graphical user interface which would be used by the chef. This module will display the food item to be prepared by the chef and the orders will be in first come first serve basis. Kitchen module will also provide a feedback on order completion and this information will be notified to the admin as well as the customer.

D. Admin Module

Admin module interacts with the kitchen and customer module. It interacts with the kitchen to get the details and with the customer to get the reviews. Server module is a web based module which is handled by the admin (restaurant manager) for managing the database and controlling the entire system. Here the entire details of the item ordered by the customer, time of ordering, bill amount, bill status etc. is maintained. Also the admin can anytime add and modify menus for example Today's Special, their prices and advertise specific food item including special discount and combo offers. Server Module is being implemented in XAMPP server where database management is done in MySQL and programming is done using java server pages.

E. QR Code

The customer can scan the QR code to place the order and avail the facilities offered by the restaurant. The QR code is generated by a QR code generator and can be scan by using user's smart phone. **QR code** which is abbreviated from **Quick Response Code** is the trademark for a type of matrix barcode (or two-dimensional barcode) first designed in 1994 for the automotive industry in Japan. A barcode is a machine readable label that contains information about the item to which it is attached. A QR code uses four standardized encoding modes such as numeric, alphanumeric, byte/binary, and kanji to store data efficiently; extensions may also be used.
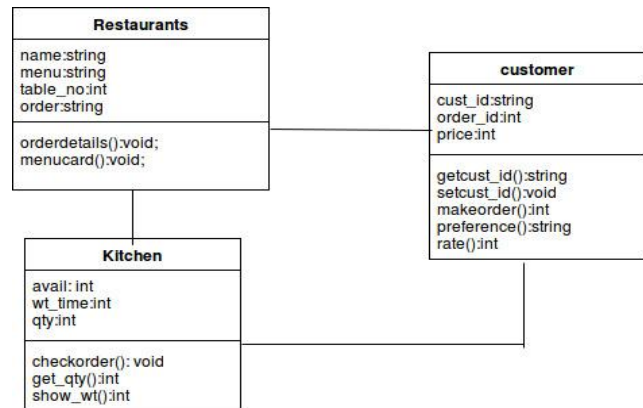

Figure 3.2

The advantages of smart restaurant system are:

- Kitchen automation software will helps chefs to see what needs to be cooked and when the dishes are required. This level of information affects the number of time diners wait for their meals. Streamlining kitchen operations will reduces the table turn in your restaurant so that you can serve more food.
- Kitchen automation software will also provide your customers with a highly pleasant dining experience because they won't be interrupted by front of house staff shouting at the chef. Automation technology also helps to time meals so that everyone in a group gets served at the same time.
- An advantage of investing in restaurant technology is more revenue. Using kitchen automated software enables workers to streamline the ordering process so that they can serve more customers. Therefore it results in cost-saving for your restaurant.
- Implementing new technologies for your restaurant will help to improve your employees' morale.

IV. RESULTS

The smart restaurant is a concept where a restaurant working is based on using state of the art technology from reservation to ordering and storing customer records. Customers will order their meal through tablets, so that the order is directly rooted to the kitchen via a central server. The smart restaurant reduces the staff employed for hospitality services thus increasing the profit margins.

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V.   CONCLUSION

The smart restaurant represents an automated food ordering system which is convenient, effective and easy to use thereby improving the performance of restaurant's staff. This smart restaurant system will also provide quality of service and customer satisfaction. Overall conclusion is that, this is a smart food ordering system for the restaurant sector, made by combining the Android and Wireless technology. In the next phase, we will be working on providing provisions to customers for reservation in the hotel from their homes as well as parcel ordering to enhance the automated system. The project will reduce workload of the servicemen who take orders and hence guarantee more attention towards each and every customer. It will increase the speed of order with real time monitoring along with minimum ambiguity, fault or cheat for an instance, no mislead of customers by waiters or change in orders by the customers etc. A calculator will not be required if one's budget is limited. There are possibilities of further additional automated sub-systems like banking system which will be able to provide bill payment online using net banking or a credit card.

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