INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.488

Digital Restaurants: An Android Application

Chirag Dhameja[1], Prof. Nirupma Singh[2]

U.G. Student, School of Engineering, Ajeenkya DY Patil University, Pune, Maharashtra, India[1]

Assistant Professor, School of Engineering, Ajeenkya DY Patil University, Pune, Maharashtra, India[2]

ABSTRACT: Generally in restaurants one always has to wait for a waiter to come over to their table and take their order for food. This situation can become a long wait in bigger restaurants where there are a lot of tables and a limited number of staff members. In such a booming era of network and computing, these conditions can be resolved by a system of ordering the food online on android devices which will then directly be displayed into the kitchen can come handy. Customers can place their orders on the android devices provided on their tables which will have the app installed. The app will show the menu of the restaurant where customers can choose their dishes and place the order which will be displayed in the kitchen with their respective table numbers.

KEYWORDS*:* Restaurants, Android, Menu.

I. INTRODUCTION

Everyone in their lifetime has faced a long wait to place an order in a restaurant. This long wait can be reduced by implementing a system of online ordering in the restaurants so that whenever any person reaches their table they can simply order their meals online on a app/website handled by the restaurant which will directly display that order into the kitchen so that the meal preparation can begin sooner and the waiting time for the meal for the customer is reduced. The people seated in the restaurant can order their meals using the tablet which will get registered into the master computer and forwarded to the kitchen where there will be another screen to display the orders. The master computer will also keep a record of the meals ordered by each table and generate the bill for the following which will be then passed to the exit point of the restaurant so that when the customer is about to leave the restaurant, they will pay at the exit using their table number. The exit gate will receive the data from the master computer and ask the customer to pay the required amount of their meals.

II. LITERATURE SURVEY

1. Bhargave et. al. in their research paper showed the concept of how Android (Java) can be used to make life easier in daily situations like waiting for a waiter in a restaurant. This paper shows how an android application can eliminate/reduce the waiting time in restaurants. This system can increase the quality and speed of the service provided to customers in a restaurant. There are multiple reasons leading to the feeling of dissatisfaction of the customer including attention received by the waiter for taking the order and for meal serving. This issue of getting lessattention by the waiters can be solved with the help of modern technologies of communication using android.

2. Liuska et. al. imposed that digital technology is transforming types of businesses in many sectors which includes restaurant systems and services provided to customers. Customers may feel much more comfortable using tablet based food ordering menus than the regular menus printed on papers over a period of time. This will be because of the transformation of all forms of media from physical to digital. People nowadays feel a lot more comfortable using an electronic device. So, replacing the traditional on-paper menus with an interactive digital menu on a tablet or any such electronic device will grab much more attention to the restaurant which will indeed lead to its success.

3. De Koster et. al. addressed that In many service industries around the world, customers have to wait for service. The time that a restaurant has to stall the customers for a table to get vacant may influence their service experience, appetite, their will to spend and their chances to return to the restaurant. This paper collected data from over 94 thousand customers visiting a famous Indian restaurant over a period of 12 months. The results was that increased waiting times relates to a longer time until a customer returns to the restaurant again, and a lesser dining duration. Without any delay in service, the total revenue collected by any restaurant would increase by approximately 15% as compared to the current situation.

4. Bhandopia et. al. in their paper focused on when a restaurant is too crowded, they will be exhausted, anxious about the service. This system perfects the solution, provides cost & time efficiency benefits and is easy for management staff and the customer. Each and every table contains a QR Code stand where customers will have to scan the QR Code using their mobile

phones and they can view the menu of the restaurant. On the manager side they have created a web application which is connected to the router to manage whole functionalities of the restaurant.

5. Bharadiet. al. implied that the simplicity and ease of access of a restaurant menu are the main things that enhance the food ordering procedure. A menu on a digital device completely revolutionizes the customer's dining experience. Existing systems provide applicationsthat restaurants can use to upload their menus in Android based devices and make it simpler for the customers to place anorder through the menu. Whatever the choice of the customer, the admin first receives the order, approves it and sends it to the kitchen. A bill for the order will be generated at the admin's system. This bill can be paid online or by cash.

6. Jakhete et. al. said thatthis era consists majorly of technology. Many efforts are taken by restaurant owners to adapt with these new information and communication technologies. E-menu cards provide certain advantages like reducing the time taken in a restaurant, providing a decent format of a menu, reducing human error, and no language barriers with globally accepted language that is English. It is also cost efficient as it is just a one-time investment for the gadgets. These gadgets can be mobiles, tablets or even arduino and raspberry pi with display screens.

7. Tembhekar et. al. in their paper mentioned that human errors occur in every restaurant no matter how systematic and fancy a restaurant is. But a digital system can reduce such human errors as the order is placed on an android device. Food ordering through an application from the restaurant reduces the chances of manual error as multiple orders can be handled easily by anapplication and it also decreases the queue for billing as the bill is actively made by application. This will also reduce paper consumption as the menus won't be printed and will rather be available digitally.

III. FLOWCHART

The flowchart shows the flow in which data will be proceeding forward from customer to admin to the kitchen. The customer inputs their table number and is provided with a menu, items chosen from the menu will be displayed in a cart. When order is placed the cart will be visible to the admin who will then check the cart and approve it. This approved cart moves on to the kitchen where the order can be seen, prepared and departed to the respective table numbers.
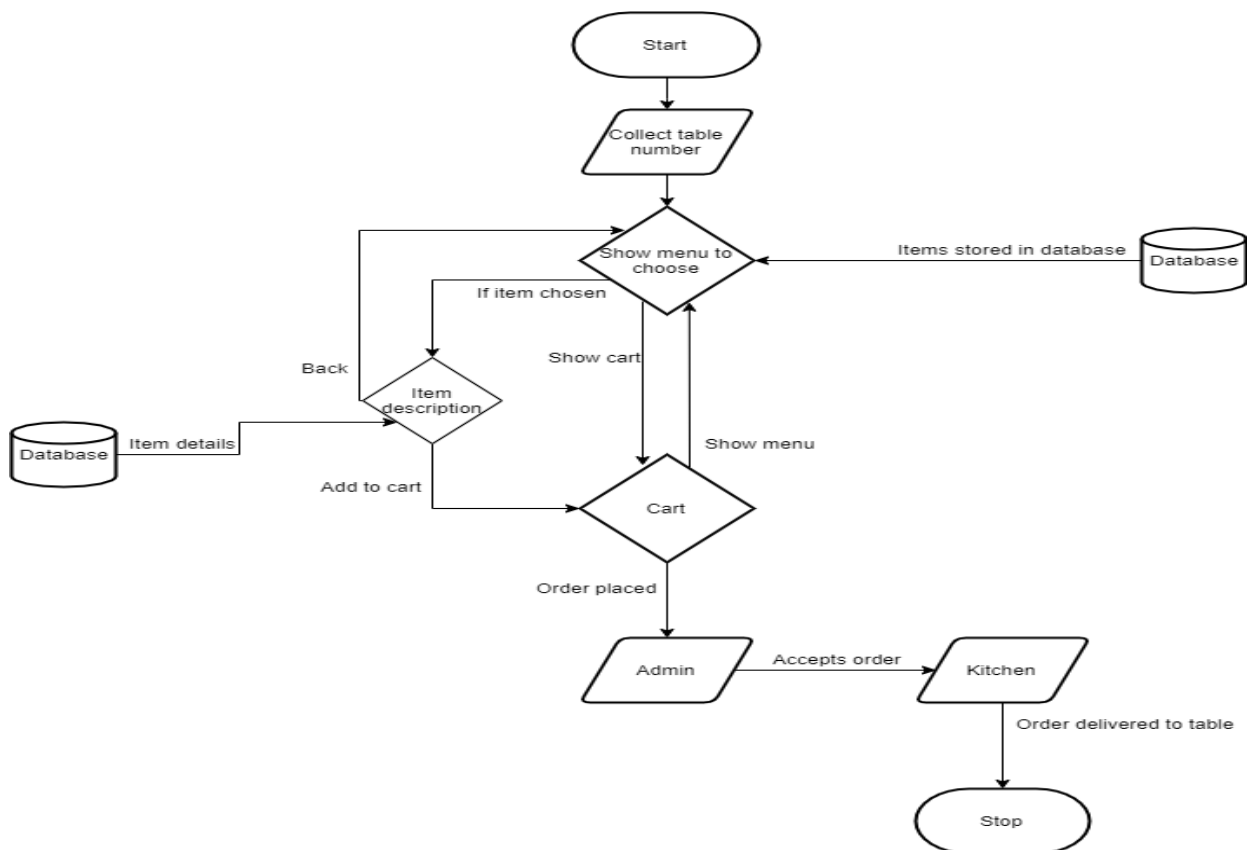

Fig.1. Flow Chart for the proposed system.

IV. METHODOLOGY

This project is based on general real life communications made over an application. The project includes concepts like firebase admin and kitchen login authentication, storing data from the restaurant menu over a firebase database, posting and fetching data entries from firebase database. For authentication, certain login credentials will already be stored on the database and will be known to the admin and the kitchen respectively.

Firebase Authentication for admin and kitchen login:
Admin and kitchen have different pages in the application, to prevent customers to access their screens there is a login procedure. When correct credentials are used, the app will direct them to their respective screens where the admin can manage all incoming orders and the kitchen can view various orders from respective table numbers.

Firebase Recycler view and Card view:
To view the menu of the restaurant, the items are stored in the database and viewed in a card view which will be displayed on a recycler view which is much more versatile than list view. Recycler view also adds a functionality to overflow the page with a scroll function which is a necessity for a menu page.

Firebase Realtime database:
For the menu of the restaurant, all the items on the menu with their descriptions will be stored on a realtime database where items can be modified by the admin on the backend and the changes will be visible to all table android devices. The menu will be visible to customers and they can click the items and see their descriptions and add to cart if needed.

Firebase Storage:
To use images for the menu items the images have to be stored on a storage module provided by Firebase. All menu images and icons are stored on Firebase Storage where a link is generated for the images which can be used for easier access in the Firebase Realtime Database.

V. IMPLEMENTATION

This application provides an easy user interface and benefits both, the customers as well as the restaurant. The customer first is presented with a splash screen of the restaurant's name/logo.Then they are asked to input their table number. Then they are directed to a menu page from where they can choose what to order. On click of any item, the details of that item loads on a page where the customer can read about the item and can add it to their cart. This cart when placed is forwarded to the admin who then approves the cart and forwards it to the kitchen. On the kitchen display, items of the cart are shown. Also, there are the kitchen and admin login pages. Here are some screenshots of the prototype.
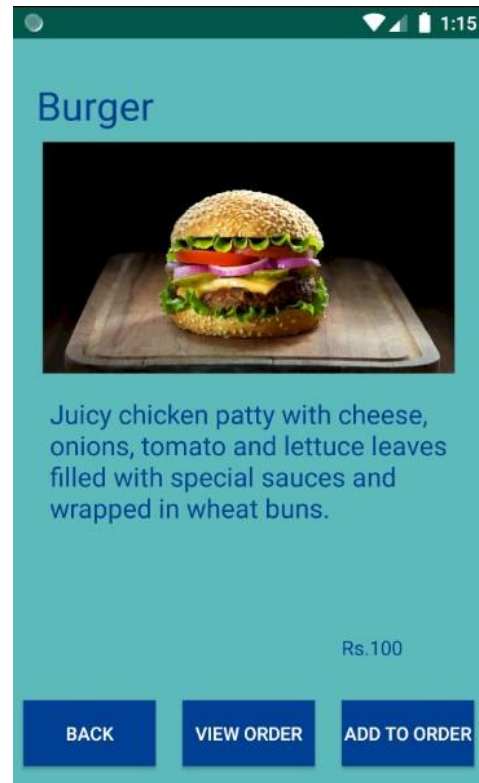

Screenshot 1.1 (Splash screen)
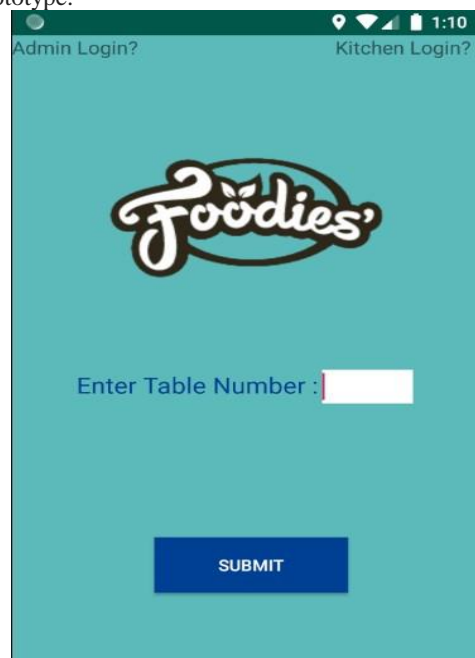
Screenshot 1.2 (Main Page)

Screenshot 1.3 (MenuPage)

Screenshot 1.4 (Item Details Page)

VI. RESULT

This application is targeted to reduce the time taken by customers at every table in a restaurant. It benefits the customer to get faster service and benefits the restaurant by getting their tables empty sooner for new customers and also reduces human error of miscommunication among the staff. The app should be maintained by the admin and the menu database must be updated if any new dishes are to be added or any dishes are removed for any reason. The admin and the kitchen will have their own IDs and Passwords for their logins to view their respective screens. When any order is placed by the customer, the admin will first view the order on their screen, and if the items is available and valid then the admin approves the order which will then be displayed on the kitchen screen. Once the order is completed, it has to be taken to the respective table number provided by the customer to complete the delivery.

VII. CONCLUSION

This research paper covers all the functions of the restaurant application. This application is not for publishing on app stores but can be provided to restaurants on requests. With this application, restaurants that have a lot of customers and sometimes a waiting line or customers will be the most impacted as even 10-20seconds saved from each table can bring in a significant amount of change for the restaurant as well as the customers as they would not have to wait that extra time outside.

REFERENCES

1.Bhargave, A., Jadhav, N., Joshi, A., Oke, P., &Lahane, S. R. (2013). Digital ordering system for restaurant using Android. *International journal of scientific and research publications*, *3*(4), 1-7.
2. Pieskä, S., Liuska, M., Jauhiainen, J., Auno, A., & Oy, D. (2013, December). Intelligent restaurant system Smartmenu. In *2013 IEEE 4th International Conference on Cognitive Infocommunications (CogInfoCom)* (pp. 625-630). IEEE.
3. De Vries, J., Roy, D., & De Koster, R. (2018). Worth the wait? How restaurant waiting time influences customer behavior and revenue. *Journal of operations Management*, *63*, 59-78.

4. Paul, R., Bhandopia, R. R., Patil, D. R., Raut, J. D., &Gotmare, A. D. An Efficient Digital Ordering System for Restaurant.

5. Bharadi, V. A., Ranjan, V., Masiwal, N., & Verma, N. (2013). e-Restaurant: Online restaurant management system for android. In *IJACSA Special Issue on Selected Papers from International Conference & Workshop on Advance Computing* (pp. 48-54).

6. Jakhete, M. D., &Mankar, P. C. (2015). Implementation of Smart Restaurant with e-menu Card. *International Journal of computer applications*, *119*(21).

7.Tembhekar, N., Singh, P., Mate, A., Gurve, K., &Rahate, M. Digital Food Ordering System for Restaurant.

INTERNATIONAL JOURNAL
OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING