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A Review on Smart Canteen Management System

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Abstract: ***The Smart Canteen App is a cutting-edge digital solution designed to revolutionize the traditional canteen experience in educational institutions, corporate offices, and other food service environments. This innovative mobile application leverages technology to streamline the entire process of ordering, payment, and food pickup, enhancing convenience and efficiency for both customers and canteen operators. By integrating modern technology, the Smart Canteen App offers an efficient, convenient, and user-centric dining experience, benefiting both customers and canteen operators. In today's fast-moving world, there is a need of quick and efficient service in every sector of life for public in general. There are many employees and students use canteen and food facilities in their workplace and institutions on daily basis, there is a need to provide quick service at billing counters. This work is focused at developing an efficient smart canteen management system. As canteen in colleges get extremely crowded nowadays, so in this project, concentrate on fast service of food to the users to reduce paper work and save the time of the student by avoiding long queue and to keep things organized. This will satisfy all the customers need and overall sale of the canteen will increase. This application program reduces the manual work for managing the Canteen. Students can place their order through the emenu available on the mobile application which would be further transferred to the canteen. The student can therefore know their order details and the order progress through the mobile application. The canteen manages the students order and keeps updating the progress of the order through their web application. The admin manages the student and canteen through the web application. The app boasts an intuitive user interface that enables users to browse through menus, select food items, and customize their orders with ease. The app facilitates online ordering, enabling customers to place their orders remotely, reducing waiting times, and ensuring their meals are ready when they arrive. Users can customize their orders to accommodate dietary restrictions, allergies, and personal preferences, ensuring a personalized dining experience. Secure payment options are integrated into the app, allowing users to make cashless.***
Keywords: ***Android, canteen app, dining, food, table reservation, notification, recommendation system.***

I. INTRODUCTION

Smart Canteen App is a revolutionary digital solution designed to enhance the dining experience within canteens, cafeterias, and food service establishments. This innovative application leverages cutting edge technology to streamline the process of ordering, payment, and food management, making it a gamechanger for both customers and canteen operators. In today's fast-paced world, traditional canteen systems often lead to long queues, inefficiencies in food preparation, and challenges in managing inventory. The Smart Canteen App addresses these issues by providing a seamless and convenient platform for customers to access and enjoy their favorite meals while empowering canteen operators to optimize their operations. The Smart Canteen App is not just a convenience tool but also a powerful tool for canteen operators to enhance their efficiency and profitability. It represents the fusion of technology and gastronomy, offering a smarter, more convenient, and enjoyable way to dine. Whether you're a hungry student on a college campus, a busy professional at work, or a canteen operator seeking to modernize your establishment, the Smart Canteen App is poised to revolutionize the way you experience and manage canteen dining. Traditional canteen systems often suffer from long queues, limited menu options, and inefficient payment processes, causing frustration and wasted time for both customers and canteen staff. The Smart Canteen App addresses these challenges by integrating technology into every aspect of the dining experience. In today's fast-paced world, traditional canteen ordering and payment processes in educational institutions, corporate offices, and various food service establishments are plagued by inefficiencies, inconvenience,and a lack of transparency. Customers often face long queues, limited menu visibility, and cash handling issues, while canteen operators struggle with order management and accurate financial tracking. There is a pressing need for a modern and user-friendly mobile application that revolutionizes the canteen experience. This app should enable customers to conveniently browse menus, place orders, make payments, and provide real-time information on order status. Simultaneously, it should empower canteen operators with efficient order management tools, inventory control, and financial tracking capabilities. This 'Smart Canteen App' aims to enhance the overall dining experience, reduce waiting times, and promote transparency and accountability in canteen operations.

With the Smart Canteen App, users can browse a comprehensive menu and place orders from the convenience of their smartphones. This eliminates the need to stand in long lines and provides a hassle-free way to select and customize their meals. The app offers secure and convenient payment options, including digital wallets, credit/debit card integration, and prepaid accounts. This minimizes the need for cash transactions, promoting hygiene and reducing waiting times. Users receive real-time updates on the status of their orders, ensuring they are aware of the estimated wait times and can plan their schedules accordingly. The app uses user preferences and order history to suggest personalized menu items, making it easier for individuals to discover new dishes and enjoy a tailored dining experience. The Smart Canteen App represents a significant leap forward in the way people access and enjoy meals in communal dining spaces.

II. LITERATURE REVIEW

1) Sujata Joshi, Bivek Kasaju, Pratik Karki, et al.; “Smart Canteen Management System” [2022], In this paper author purposes that the study aims to develop an efficient smart canteen management system using radio frequency identification to counter billing delays. The system can be used in large industries, universities, and government offices, offering cost-effectiveness and quick, easy-to-use service. It detects and authenticates users, automatically debits at the end of the month, and is less time-consuming than existing systems.

2) Misbah Dalal, Zaid Barmare, et al.; “Android Based Canteen Management System” [2021], In this paper author says that as canteen in colleges get extremely crowded nowadays, so in this project, we concentrate on fast service of food to the users to reduce paper work and save the time of the student by avoiding long queue and to keep things organized. This will satisfy all the customers need and overall sale of the canteen will increase. This application program reduces the manual work for managing the Canteen. Students can place their order through the e-menu available on the mobile application which would be further transferred to the canteen. The student can therefore know their order details and the order progress through the mobile application. The canteen manages the students order and keeps updating the progress of the order through their web application. The admin manages the student and canteen through the web application.

3) Mrs.A.Gowthami, Ms.T.Banupriya, et al.; “Mobile Application for Canteen Automation System Using Android” [2020], In this paper author purposes that the project “Canteen Automation System Using Android” enables to register online, read, and select the food from E-menu card and the user wants to use android application. The result after choosing the food from the E-menu card will directly seem on the screen near the chef. The gadget is the mixture of android as nicely as internet application. The barcode system is used for reading the products. By the usage of this application the work of the waiter is decreased and we can also say that the paintings are nullified. The benefits of this are that if there is a rush in the canteen then there will be change that the waiter will be unavailable and the user can at once order the food to the chef on-line using this application. The user will have username and password, by using which they can login into the system. This means that the purchaser is the regular consumer of the canteen.

4) Dando Xiao, in 'Research On The Application Of Internet Of Things Technology In The Construction Of University Intelligent Health Canteen' [2020], discusses the potential of Internet of Things (IoT) technology in shaping the future of university canteens. While IoT offers numerous advantages for creating intelligent health canteens, there are potential disadvantages to consider. Implementing IoT technology may require substantial investments in infrastructure, staff training, and equipment. Additionally, privacy and data security concerns become paramount when handling sensitive health and dietary information through IoT devices.

5) Giteshri Kale and Sharad Dube's 'Web-based E-wallet Canteen Management System using RFID' [2020] present an innovative system to modernize canteen management, leveraging web-based software and radio frequency identification (RFID). While this system offers multiple advantages, it also has potential disadvantages. It requires users to have access to the internet and smartphones, which could be limiting for some individuals. Implementing and maintaining such a system may also require financial investments and staff training. Privacy and security concerns related to cashless payments and data storage need to be addressed for user trust and data protection. Furthermore, the transition from a manual system to an automated one may face resistance and require time for adjustment.

6) Zixuan Xu, Zhenhua Zhuang, et al.; 'The design of a nutrition ordering system without queuing in the college canteen' [2020], explore the development of a nutrition ordering system in college canteens to enhance students' dietary experience and dining efficiency. The use of information technology and mobile platforms can offer significant benefits. However, potential disadvantages may involve the need for access to smartphones and digital literacy, which not all students may possess.

Implementing such a system requires investment in technology and training, and it may face resistance from those who prefer traditional dining methods. Additionally, privacy and security concerns regarding the user's personal health data and dietary preferences need to be addressed to gain user trust and ensure the success of the system.

7) Petr Tykal1 , Diana Brnovik1, et al.; in 'Creating a Food Menu Application For Mendel University In Brno' [2020], proposed a system that details the development of a mobile application module that displays the cafeteria's current menu. The menu is now available to university employees and students via a static webpage. The solution that is being given functions as a dynamic menu display for all cafeterias. Earlier, RESTful architectures were used by menu apps to access the server backend. The use of the Google Firebase Realtime database as a server backend is the paper's contribution. In contrast to conventional REST design, users always have access to the most recent information, and data, such as meal ratings, is updated instantly.

8) Alfiya M. Shaikh, Aditya C. Shetgaonkar, et al.; in 'Food Ordering Management using Recommendations'[2019], proposed a system such that the consumer may place an order for meals by choosing products from an electronic menu and registering on the institute's website or intranet thanks to the suggested food ordering management system. The method is helpful for canteens that deal with high traffic during break times and for those where manual tasks like collecting orders for food at the counter and figuring out the price are performed. Customers are also not happy with order delays and extended wait times for their orders. The suggested system addresses and resolves these problems. project can automate most of the manual tasks in the canteen, such as ordering and billing.

9) Ali Ibrahim, Aris Pratiwi, et al.; in 'Measuring Customer Satisfaction Using CRM Scorecard in Canteen' [2018], discuss the use of customer relationship management (CRM) to measure and improve customer satisfaction in Fasilkom canteen. While this approach is valuable for enhancing the customer experience, it's essential to consider potential disadvantages. Implementing CRM requires a significant commitment of resources, including time, staff, and potentially technology. Addressing customer concerns and improving various aspects of service may require changes in canteen operations, which can be challenging and costly. Additionally, the results of the CRM evaluation may reveal areas of dissatisfaction, which may be initially met with resistance from staff or reluctance to change. It's important to ensure that the CRM approach is carefully implemented to achieve the desired improvements in customer satisfaction.

10) Prashant Avhad, Harsh Bhanushali, et al.; in 'Canteen Automation System with Payment Gateway' [2016], propose an automated web-based system to streamline the canteen ordering process. While this system offers several advantages, potential disadvantages should be considered. Implementing and maintaining an automated system may require financial investments in hardware, software, and staff training. Ensuring data privacy and security for online transactions and customer information is crucial. Some individuals may be hesitant to transition from traditional manual methods to the automated webbased platform, which could require time for adaptation. Additionally, the availability of internet access and digital literacy is necessary for both canteen staff and customers, which may not be universally accessible. Ensuring a smooth and secure user experience while addressing these challenges is essential for the successful adoption of this system in canteens.

III. OBJECTIVES

1) To create a user-friendly mobile application for students to efficiently browse the canteen menu, select items, and place orders, thereby reducing food procurement time and effort.
2) To provide real-time updates of the menu, including daily specials, dietary information, and pricing. This helps users make informed choices.
3) To implement a feature allowing students to schedule food orders in advance, ensuring meals are prepared and ready for pickup or delivery at specified times.
4) To provide a table delivery option for students to request their orders at specific tables within the canteen, reducing waiting times and seating issues.
5) To integrate a user feedback mechanism within the application to collect input from students, allowing continuous improvement of the canteen services based on user suggestions and preferences.

IV. LIMITATIONS

1) *Dependency on Technology:* The system relies on stable internet connectivity and modern smartphones. Users without access to these resources may face challenges in using the app.

2) *Initial Setup Costs:* Implementing the system may require investments in hardware, software, and staff training. These initial costs should be factored into the budget.
3) *Security Concerns:* Handling customer data and payments means that security is of utmost importance. Security breaches or data leaks could have serious consequences, so robust security measures are essential.
4) *User Adoption:* Encouraging users to adopt the app and transition from traditional ordering methods may require marketing and educational efforts.
5) *Maintenance and Updates:* Ongoing maintenance and updates are necessary to address bugs, improve features, and stay current with changes in technology and user preferences.

V. CONCLUSION

In conclusion, the "Smart Canteen Automation System using Android" project embodies a forward-looking approach to addressing the evolving needs and expectations of college students. It not only promises to enhance the dining experience but also sets a precedent for technological integration and innovation within the educational sector. By prioritizing efficiency, convenience, safety, and user satisfaction, this project represents a significant step towards modernizing and improving campus dining for the benefit of students and institutions a like.

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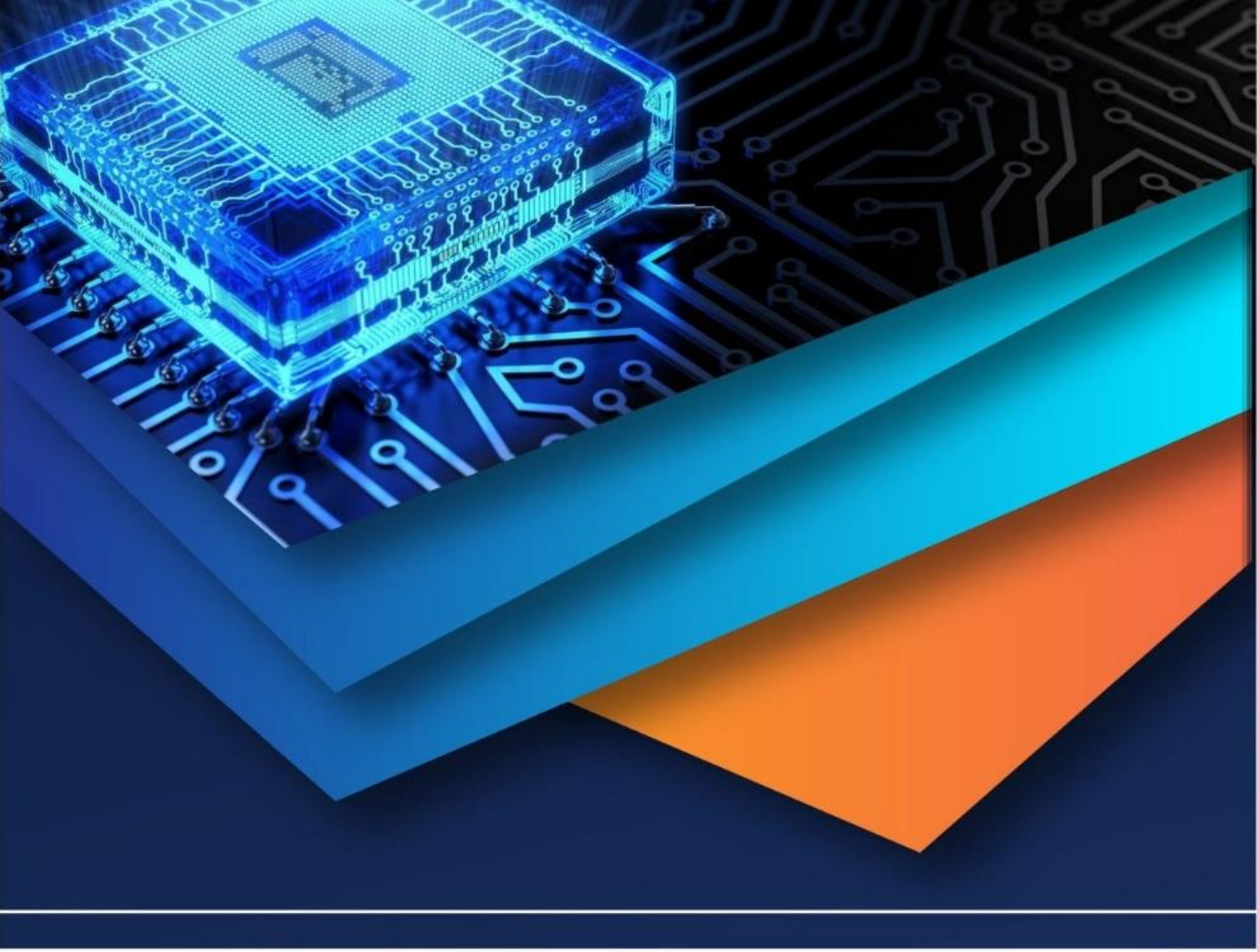

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