Eatseasy Canteen Management Application

Abin Biju P[1], Sanjay P V[2], Sapthasree N K[3], Sreya Rajesh[4], Vanimol Sajan[5]

[1]*DEPT OF CSE(ARTIFICIAL INTELLIGENCE AND DATA SCIENCE)& VIMAL JYOTHI ENGINEERING COLLEGE,CHEMPERI,KANNUR,KERALA*
[2]*DEPT OF CSE(ARTIFICIAL INTELLIGENCE AND DATA SCIENCE)& VIMAL JYOTHI ENGINEERING COLLEGE,CHEMPERI,KANNUR,KERALA*
[3]*DEPT OF CSE(ARTIFICIAL INTELLIGENCE AND DATA SCIENCE)& VIMAL JYOTHI ENGINEERING COLLEGE,CHEMPERI,KANNUR,KERALA*
[4]*DEPT OF CSE(ARTIFICIAL INTELLIGENCE AND DATA SCIENCE)& VIMAL JYOTHI ENGINEERING COLLEGE,CHEMPERI,KANNUR,KERALA*
[5]*DEPT OF CSE(ARTIFICIAL INTELLIGENCE AND DATA SCIENCE)& VIMAL JYOTHI ENGINEERING COLLEGE,CHEMPERI,KANNUR,KERALA*

Abstract - Introduced as a solution to the progressively increasing demands of efficiency and time-saving solutions in college canteens, "EatsEasy" is a cross-platform AI-based system aimed at canteen operations management for the students, staff, and administrators. The application will allow students to browse menus, place orders, and pay efficiently on a simple user interface, thus reducing waiting time in queues and improving the canteen operations. Offline ordering with QR codes, multiple options for payment, and meal recommendations based on what someone has in their cart will all be just-a-few clicks away. On the customer side, it also collects customer feedback to allow administrators to work on improving the quality of services and analyzing how satisfied their users are. Other functionalities include real-time sales, inventory, and profit/loss tracking done through graphical representation such as pie charts and graphs. It further facilitates cash on delivery through QR scanning payment option. "EatsEasy" is an essential modern-day adjunct able to make life easier in college, able to cut down manual paperwork and improve the overall cafeteria experience of all users. It is a special tool designed for individual or group meal planning.

***Key Words*:** AI-based system, cross-platform application, offline ordering, QR code payment, data analysis, inventory management, customer feedback, collaborative meal planning, college canteen, and cart-based meal recommendations.

1.INTRODUCTION

Now that many aspects of everyday life are going digital, people are demanding more efficacious and less time-consuming services concerning the college canteen. Canteens usually take long service queues for placing an order, manual processing of orders, and traditionally very few options for payments: this creates much inefficiency and great dissatisfaction among the customers. Because of the unserviceable system, there are delays, miscommunication, and operational problems; these affect both the students and the staff solving them. We here present EatsEasy, a cross-platform mobile application that intends to revolutionize the canteen management system through the application of brilliant state-of-the-art technology, so as to give the user an excellent experience. "EatsEasy" makes ordering in the canteen easy by allowing students and staff to see what is on the menu, order it, and pay for it through very easy, very user-friendly interaction. A key feature of the application is multi-payment options, including QR code payments, to give all users options and access to their services. The aims of the system are that it will minimize waiting times for customers as well as optimize the order process, thus increasing general operational efficiency and customer satisfaction. EatsEasy, in addition to streamlining order management, offers intelligent meal recommendations based on the items in a user's cart. This further equips the user to make informed decisions while selecting meals for a more personalized and efficient ordering experience. Unlike typical meal recommendation systems which depend on historical preferences, this recommendation model dynamically suggests appropriate items based on the order at hand, rendering them utterly

relevant and adjustable to the user's needs. EatsEasy provides a real-time tracking system for admin's sales, stock, and financial performance, among other information. With pie charts and other trending analysis graphical presentations, canteen managers can oversee operations and make informed decisions. This data-driven approach helps the system analyze its bestsellers, stock distribution, and forecast needs of supply and demand while ensuring the environment is taken into consideration-a more sustainable and orderly canteen system. Another important part of "EatsEasy" is the customer feedback mechanism. Collecting user reviews and analyzing them are keys for administrators to improving the quality of service and to address potential problems. The feedback system provides the means for students and staff to rate their experience, suggest improvements along with consideration for menu offerings. The aforementioned direct communication channels between customers and management help them become more responsive and continuously evolve. "EatsEasy" integrates a number of payment methods, optimizes order management, and utilizes data analytics to help modernize college canteen operations. The application makes sure the days of manual paperwork are behind everyone; efficiency has become reduced, and the general cafeteria experience has been significantly upgraded for all participants. In view of colleges going for a digital turnaround, "EatsEasy" is a significant tool for improving convenience, efficiency, and satisfaction in the dining experiences on campuses.

2. LITERATURE REVIEW

The evolution of canteen management systems in educational institutions has been driven by the need for efficiency and convenience. Traditional manual systems in college canteens have often led to long waiting times, inefficient order management, and errors in inventory tracking. As a result, digital solutions have become increasingly essential to streamline these operations and improve overall user experience. Several studies and existing projects have explored automated systems for canteen management, indicating significant improvements in efficiency, customer satisfaction, and administrative control. One key area of focus in recent studies is the automation of the ordering process to reduce wait times and streamline operations. The automated canteen system, in a study on its implementation, is proposed to reduce the rate of human error significantly while improving the service speed and the efficiency of managing a canteen by automating the process of taking orders and integrating mobile applications [1]. This validates the design of the "EatsEasy" application, which has been aimed at reducing wait times for the users through online placement of orders, scanning QR codes, and voice-assisted ordering. Such studies highlight the integration of AI-based systems with canteen management applications to facilitate comfort and personally tailored service to users. For example, the research paper explaining the way AI could serve as an intermediary in recommending food choices based on previous preferences and choices aligns with the personalized recommendation function of "EatsEasy" [2]. The ability to personalize food recommendations not only improves customer satisfaction but also boosts user engagement, encouraging them to place more orders based on their preferences. Multi-language support is another critical feature in modern canteen management applications, especially in diverse educational environments. Research has shown that offering multi-language interfaces in food ordering systems improves accessibility for users from different linguistic backgrounds. By incorporating multi-language support, canteen management applications can serve a wider range of students and staff, ensuring inclusivity and convenience [3]. This aligns with the "EatsEasy" app's goal of providing a user-friendly platform that supports various languages. Another prime feature that has been studied within many researches is the implementation of real-time data analytics for the administrators. For instance, a research paper on inventory management and sales tracking in canteen systems explains how the real-time data analytics would assist the canteen administrator to understand the sales patterns, inventory level trends, and financial trends as well for more suitable decisions and management of its operations [4]. "EatsEasy" takes advantage of the idea by introducing data visualization tools, such as pie charts and graphs, to assist administrators to keep track of sales, manage profits, and execute inventory control. The cash on delivery through QR codes has even been discussed lately in various published literature as an efficient and safe process to conduct transactions in canteen management systems. A study on online food ordering systems suggests that QR code payments offer a contactless and quick solution for processing transactions, improving convenience for customers and ensuring smooth payments [5]. This feature is incorporated in "EatsEasy" to enable offline payment through QR code scanning, enhancing both security and convenience for users. Additionally, the role of customer feedback in improving canteen services has been highlighted in various research papers. Collecting real-

time feedback from users allows canteen administrators to identify areas for improvement and respond promptly to any issues. One study points out that integrating customer feedback into canteen management applications can significantly enhance service quality and customer satisfaction [6]. "EatsEasy" utilizes a feedback system to ensure continuous improvement and a better overall experience for users. Another feature, gaining popularity among educational institutions for group events, meetings, or large gatherings is collaborative meal planning. Research reveals that canteen systems permitting group meal planning can make it easier to order food for big groups, more efficient, and time-saving in organizing the order [7]. "EatsEasy" brings about the benefits of collaborative meal planning where people can plan their meals for the large group. This enhances operational efficiency in running the canteen. Several studies have explored the need for cross-platform solutions in modern canteen management, ensuring accessibility across various devices and operating systems. A cross-platform approach provides flexibility, as users can access the system from smartphones, tablets, or computers. This is especially crucial in environments like colleges, where students and staff use different devices. The development of cross-platform canteen management applications is gaining traction as it ensures that users can interact with the system from multiple devices without compatibility issues [8]. The integration of all these features—AI-driven recommendations, real-time data analytics, offline payments via QR codes, multi-language support, customer feedback, and collaborative meal planning—positions the "EatsEasy" application as a comprehensive solution for modern canteen management. By automating manual tasks, enhancing the user experience, and providing valuable insights for administrators, "EatsEasy" aims to revolutionize the way canteens operate in educational institutions. In conclusion, the literature highlights the significant potential of digital and automated systems to optimize canteen management. The features discussed in the studies align closely with the functionalities of "EatsEasy," which helps to reduce inefficiencies, improve customer satisfaction, and provide administrative insights. By building upon existing research and technology, the "EatsEasy" application aims to offer an innovative, user-centric solution for modern canteen management.

3. PROPOSED SYSTEM

A. Admin (Fig. 1. admin)

1. The admin logs in using a unique ID and security code stored in the system.
2. If credentials match, the admin is redirected to the Dashboard. Otherwise, the admin is given the option to retry or proceed to reset the password.
3. If the admin chooses to reset the password, the system checks if the ID exists in the database. If yes, an email with a reset link is sent.
4. The admin clicks the link, enters a new password, and confirms it. If the ID is incorrect or does not exist, the system prompts "Invalid Credentials".
5. Once logged in, the admin can access various functionalities such as Daily Report of Orders/Sales to view sales and order statistics, Order History to monitor completed and pending orders, Analytics to access a graphical representation of sales.
6. Admin can check total ordered items by individuals. If an order is completed, it is marked as "Order Completed". Otherwise, the admin may take necessary actions.
7. The system provides graphical analytics to help the admin track sales trends

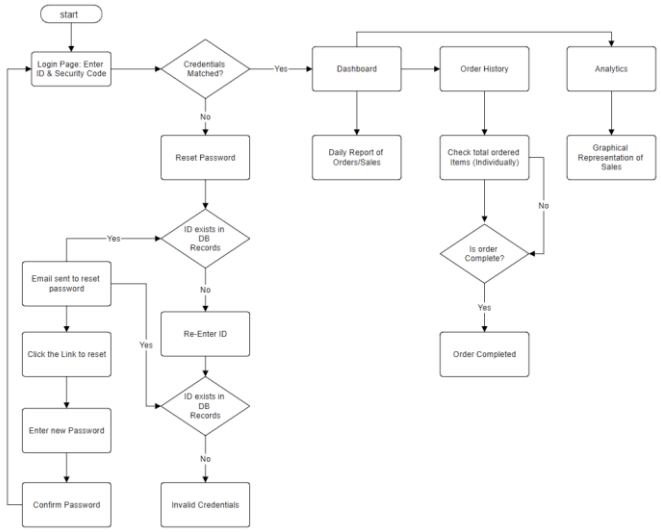

Fig. 1. admin

B. User (Fig. 2. user)

1. Users need to log in with a User ID and a password that is encrypted and safely stored in the database.
2. If the credentials match, the user is taken to the dashboard. Otherwise, an option to try again or to reset the password is provided.
3. The system will check if the ID exists in the database if the user has chosen an option to reset the password and sends an email containing a reset link if it does.

4. The user clicks on the link, enters a new password, and confirms it. If the ID is wrong or does not exist, the system will state “Invalid Credentials”.
5. After logging in, users are taken to the dashboard where they can access different Options such as Browse Menu, which allows them to see available food items, and Order History, where they can check orders placed in the past and re-order items.
6. Users can browse the menu and add food items onto the cart.
7. Users are able to see their previous orders and easily re-order any item, and they can give any feedback and ratings about their orders.
8. The cart contains all the food items selected. Users can change their order by adding or removing items.
9. Users then choose how they will pay. On the successful payment, the user is redirected to the Order Confirmation Page.
10. After payment is made, the user will receive an order confirmation.

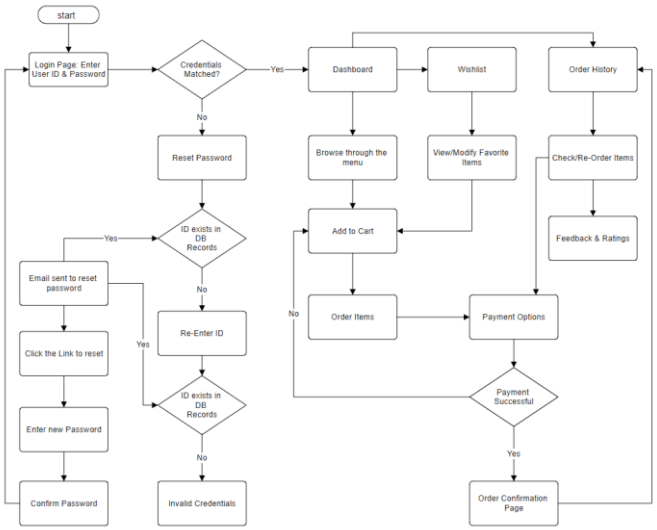

Fig. 2. user

4. CONCLUSIONS

The “EatsEasy” mobile application represents a complete solution aimed at modernizing and streamlining the canteen operations in college environments. The system addresses key challenges such as long queues, manual order processing, and limited payment options, while improving efficiency and user experience. With an easily accessible interface, users will be able to browse menus, place orders, and make payments, among other features. This will include the ability to make payments using multiple methods, including transactions based on QR codes. On top of this, cart-based meal recommendations will personalize the ordering process by helping users make informed meal choices from a selection of options available. “EatsEasy,” moreover, is important for improving operational efficiencies in an administrative sense, whereby insights into sales, inventory, and financial data can be seen timely. Its charting and analytic features direct canteen managers to steer resource management to ensure service is of the highest quality. Further, the built-in feedback mechanism allows users to share how they enjoyed their meal and what suggestions they may have regarding how this is done, which enables continuous service improvement. Thus, with the removal of manual paperwork, the improvement of a digital solution allows for a more organized and efficient canteen management system. Using technology to facilitate ordering, payment, and feedback processes improves the cafeteria experience for the student, the staff, and administrators. The application delivers on demands of convenience and sustainability by propelling away from the operational inefficiencies. Solutions such as “EatsEasy” are an essential ingredient as our educational institutions move further along the digital transformation line. Further enhancements will include AI-driven order prediction, loyalty programs, and integration with the college ID payment system so usability and efficiency can be improved upon. “EatsEasy” shall be thus an interactive feature assuring smooth eating experiences to all stakeholders in the functional evolutionary approach of the college canteen.

REFERENCES

[1] Tejas Raibagi, Ashwin Vishwakarma, Jahnavi Naik, Rujata Chaudhari and Geetanjali Kalme, “Orderista - AI-based Food Ordering Application,” Proceedings of the International Conference on Artificial Intelligence and Smart Systems (ICAIS-2021). ieeexplore.ieee.org
[2] J. Anuj Pal Kapoor and Madhu Vij, ”Technology at the dinner table: Ordering food online through mobile apps”, Journal retailing and Consumer Services 43(2018) 342-351. www.sciencedirect.com
[3] Utkarash Maniratnam, Saket Kumar Pandey, Ujjwal Srivastava, Pawanesh Kumar and Parul Sharma, ”Automated Canteen Ordering System using Android”, International Journal for Research in Applied Science and Engineering Technology (IJRASET) ISSN: 2321-9653 Volume-08 Issue 05 May 2020. doi.org
[4] Chanchal Antony, Adon Biju, Amal Kuriakose, Amal Mathew, and Jismon M U, “Canteen Food Ordering and Managing System”, International Journal of Current Science Research and Review, Volume-05, Issue-06, June 2022, International Journal of Current Science

Research and Review
[5] Monik Shah, Shalin Shah, Mohd Danish Shaikh and Kaustubh Tiwari, ”Canteen Automation System”, International Research Journal of Engineering and Technology(IRJET) volume-05 Issue 01 Jan 2018, www.irjet.net
[6] Rupali B. Kale , Ruchika K. Balwade, Vipin B. Gawai, ”Online Food Ordering System for College Canteen”, SAMRIDDHI Volume 12, Special Issue 2, 2020 www.smsjournals.com
[7] Nur Syazwani Zul1 and Nur Ariffin Mohd Zin, ”Canteen Food Ordering and Management Application”, Applied Information Technology and Computer Science Vol. 3 No. 2 (2022) 1094-1112 publisher.uthm.edu.my
[8] Wong Chin Rong and Noryusliza Abdullah, ”Development of Food Ordering Application in School Canteen”, Applied Information Technology and Computer Science(AITCS) Vol. 3 No. 1 (2022) 341-349 publisher.uthm.edu.my
[9] Nikhil Sahani1 , Darshan Kadam2 , Atharva Kulkarni3 , Saurabh Shahapure4 and Prof. Tejal Shinde5, ”Canteen Automation System using Android”, © January 2019 — IJIRT — Volume 5 Issue 8 — ISSN: 2349-6002 ijirt.org