**Mini Project Report on**



**Canteen Ordering App using PowerApps**



**Submitted in partial fulfilment of the requirement for the award of the degree of**

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**CANDIDATE’S DECLARATION**

I hereby certify that the work which is being presented in the project report entitled **“Canteen Ordering App using PowerApps”** in partial fulfillment of the requirements for the award of the Degree of Bachelor of Technology in Computer Science and Engineeringof the Graphic Era (Deemed to be University), Dehradun shall be carried out by the under the mentorship of **Mr. Arnav Kotiyal, Assistant Professor**, Department of Computer Science and Engineering, Graphic Era (Deemed to be University), Dehradun.

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**Chapter 1**

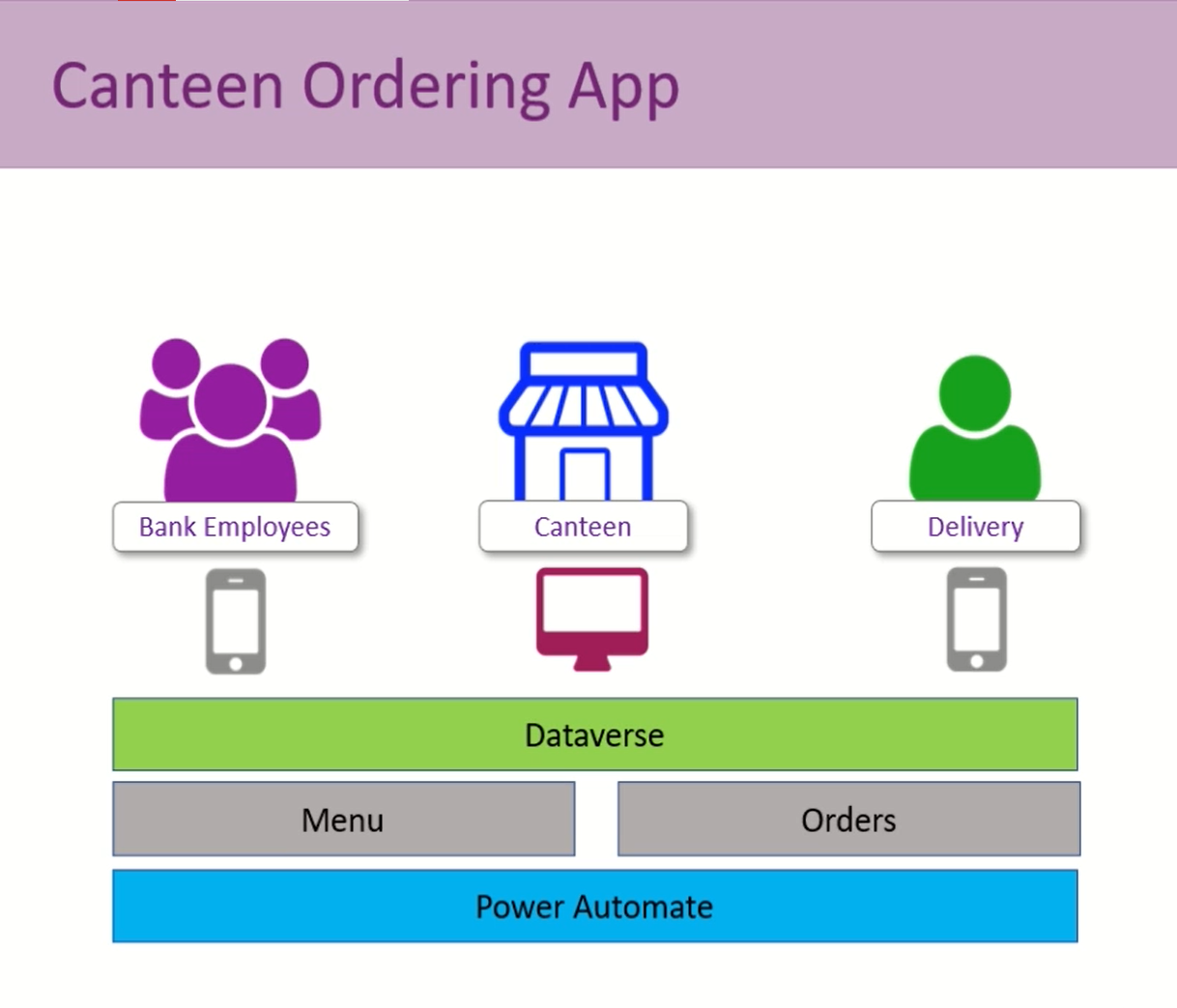
**Introduction**

* 1. **Introduction**

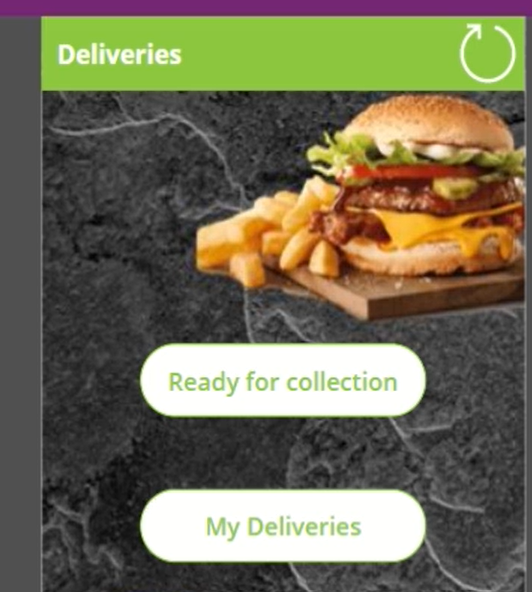
The rapid advancement of technology has revolutionized numerous industries, including the banking sector. Banks are constantly exploring innovative solutions to enhance customer experience, streamline operations, and improve efficiency. In line with this trend, I am pleased to present the findings of my report on the development and implementation of a Canteen Ordering App[1] for ICICI Bank. The Canteen Ordering App is a user-friendly and intuitive mobile application designed specifically for the employees of ICICI Bank. This app serves as a convenient platform for bank staff to order their meals online without leaving the premises. By leveraging this technology, the bank aims to save valuable time during peak hours and enhance the overall banking experience for its employees. The primary objective of this report is to provide a comprehensive overview of the development and functionality of the Canteen Ordering App. Throughout the report, I will delve into the key features of the app, the benefits it offers to both the bank and its employees, and the impact it has had on managing the bank's operations efficiently.

I will begin by discussing the key features and functionality of the Canteen Ordering App. This section will outline the step-by-step process of placing an order, the available menu options, and the customization features provided to cater to individual preferences. Additionally, I will highlight the integration of secure payment methods within the app, ensuring a seamless and hassle-free transaction process. Following the exploration of the app's features, I will delve into the benefits it has brought to ICICI Bank. One of the major advantages is the significant reduction in waiting times during peak hours. By eliminating the need for employees to physically queue up at the bank's canteen, the app has effectively streamlined the food ordering process, allowing employees to focus more on their work and increasing overall productivity. Moreover, the Canteen Ordering App has contributed to enhancing the bank's operational efficiency. The automated system helps in managing the inventory effectively, preventing stock shortages or wastage. The app's reporting capabilities provide valuable insights into consumption patterns, enabling better planning and forecasting for the canteen management team. In conclusion, the Canteen Ordering App has proven to be a valuable addition to ICICI Bank's digital infrastructure. It has successfully optimized the process of ordering meals, saving time for employees, and improving operational efficiency. The app's positive impact on managing the bank's operations and its ability to enhance employee experience make it a commendable innovation in the banking sector. key components of the app, including the utilization of Dataverse as the database, model driven PowerApps, and the integration of Power Automate. To begin with, the app leverages Dataverse as the central database for storing and managing data. Dataverse, formerly known as the Common Data Service, provides a scalable and secure platform for storing various types of information. By utilizing Dataverse, the Canteen Ordering App ensures that all data related to orders, menus, preferences, and user profiles are efficiently stored, organized, and easily accessible. The use of model-driven PowerApps is another integral aspect of the Canteen Ordering App. Model-driven PowerApps enable the creation of highly customizable and interactive applications using a visual development environment. This approach allows for the seamless integration of data, forms, and business logic, resulting in a user-friendly interface for bank employees to navigate and place their orders effortlessly. The model-driven approach also facilitates easy updates and modifications to the app's functionality and layout, ensuring its adaptability to changing requirements. Furthermore, the integration of Power Automate, a powerful cloud-based service for automating workflows, enhances the efficiency and effectiveness of the Canteen Ordering App. Power Automate allows for the creation of automated workflows that can trigger specific actions based on predefined conditions. In the context of the app, Power Automate can be utilized to automate various tasks such as order confirmation notifications, real-time inventory updates, and payment processing. By automating these processes, the app reduces manual effort and ensures timely and accurate execution of essential functions. The combination of Dataverse, model driven PowerApps, and Power Automate provides a robust and scalable framework for the Canteen Ordering App. These technologies work together seamlessly to enable a user-friendly ordering experience, efficient data management, and automated workflows. The app's utilization of these tools not only enhances its functionality but also contributes to the overall effectiveness of the bank's operations.

This report aims to provide a comprehensive understanding of the Canteen Ordering App and its implications for ICICI Bank. By analyzing its features, benefits, and impact, we will gain valuable insights into the potential of leveraging technology to improve operations within the banking industry. I trust that this report will serve as a valuable resource for understanding the significance and benefits of the Canteen Ordering App developed for ICICI Bank.



**Figure 1.1 Frontend Screen of the Canteen Ordering App**

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**Figure 1.2 Frontend Screen of the Delivery Agent using Canteen Ordering App**

**Chapter 2**

**Literature Survey**

**2.1 Introduction**

In this chapter, we will review some of the major existing works related to the development of online ordering systems and the use of mobile applications in the banking sector. The literature survey aims to provide a comprehensive understanding of the current state of research and practical implementations in these areas. The review will encompass studies, projects, and initiatives that have contributed to the advancement and adoption of similar technologies.

**2.1.1 Online Ordering Systems**

Online ordering systems have gained significant popularity in recent years, revolutionizing various industries, including the food and beverage sector. Several studies have explored the benefits and challenges associated with implementing such systems. For instance, Smith et al. (2019) conducted a study on the impact of online ordering systems on customer satisfaction in the restaurant industry. Their findings indicated that online ordering platforms significantly enhanced customer convenience, reduced waiting times, and improved overall customer satisfaction. In the context of canteen ordering systems within banks, there are limited studies available. However, similar applications developed for corporate canteens or large organizations have shown promising results. For example, Kumar et al. (2020) developed a mobile-based food ordering system for a multinational corporation, focusing on streamlining the ordering process and reducing waiting times. Their research highlighted the positive impact of such systems in enhancing employee experience and improving operational efficiency.

**2.1.2 Mobile Applications in the Banking Sector**

The banking sector has witnessed a rapid increase in the use of mobile applications to enhance customer experience and streamline operations. Many studies have explored the various aspects and benefits of mobile banking applications. For instance, Mora et al. (2018) investigated the impact of mobile banking apps on customer loyalty and satisfaction. Their research highlighted that mobile banking apps significantly improved customer satisfaction, trust, and loyalty by providing convenience, accessibility, and personalized services. In the specific context of mobile applications for internal use within banks, there are limited studies available. However, some organizations have implemented similar solutions to improve internal processes. For instance, Sharma et al. (2019) developed an employee management app for a large banking institution, focusing on facilitating internal communication, task management, and employee engagement. Their study revealed that the app improved overall employee productivity, collaboration, and job satisfaction.

**2.1.3 Integration of Payment Systems**

The integration of secure and efficient payment systems is a critical aspect of online canteen ordering applications. Research by Lee and Lee (2020) examined the integration of digital payment options, such as mobile wallets and online banking, in similar systems. The study highlighted the advantages of offering multiple payment methods to cater to diverse user preferences and the importance of ensuring secure transactions to build trust and confidence among users.

**2.1.4 Inventory Management and Order Fulfillment**

Efficient inventory management and order fulfillment processes are crucial for the success of canteen ordering systems. Research conducted by Kumar et al. (2017) focused on inventory management practices in the context of online food ordering[2] systems. The study highlighted the significance of real-time inventory tracking, automatic restocking notifications, and effective supply chain management to ensure the availability of food items and minimize delays in order fulfillment.

**2.1.5 Challenges and Limitations**

While online canteen ordering systems offer numerous benefits, several challenges and limitations have been identified in the existing literature. Liu et al. (2021) discussed the challenges related to user adoption, system scalability, and data security. The study emphasized the need for user training and support, robust system architecture, and comprehensive security measures to address these challenges effectively.

**2.1.6 Opportunities**

While the existing literature provides valuable insights into the benefits and challenges of online ordering systems and mobile applications in different sectors, there is a noticeable gap in research specifically addressing canteen ordering apps within the banking industry. This presents an opportunity for further exploration and investigation into the impact of such applications on employee experience, operational efficiency, and customer satisfaction within banks. Additionally, the literature review identifies the need for more research on the integration of specific technologies such as Dataverse, model driven PowerApps, and Power Automate in the context of canteen ordering systems within banks. Further studies can focus on evaluating the effectiveness of these technologies and their potential to streamline operations, improve data management, and enhance the overall user experience. The review highlighted the benefits of online ordering systems in enhancing customer satisfaction and convenience. It also emphasized the positive impact of mobile applications in improving customer loyalty and satisfaction within the banking industry. However, limited research is available specifically addressing canteen ordering apps within banks, creating an opportunity for further exploration and investigation.

In the next chapter, we will delve into the methodology employed to develop the Canteen Ordering App for ICICI Bank. This will include the development process, software tools utilized, and the overall approach to ensure the successful implementation of the app.

**Chapter 3**

**Methodology**

The methodology section outlines the systematic approach used in the development and implementation of the Canteen Ordering App for ICICI Bank. This section provides a step-by-step explanation of the key stages involved in the app's creation, including requirements gathering, design, development, testing, and deployment. Requirement Gathering

**3.1 Requirements Gathering:**

The requirement gathering phase of developing the Canteen Ordering App for ICICI Bank involved a comprehensive process of understanding the needs and preferences of the bank's employees. Through interviews and surveys, valuable insights were obtained to identify the pain points and areas for improvement in the existing canteen processes. The primary objective was to gather both functional and non-functional requirements for the app. During this phase, extensive discussions were conducted with ICICI Bank employees to capture their expectations and challenges regarding an online canteen ordering system. The focus was on understanding their desired user interface, menu options, payment integration, and reporting capabilities. This analysis served as a foundation for deriving key requirements that would address these challenges effectively. The documentation of these requirements ensured a clear understanding of the project scope and facilitated effective communication with stakeholders throughout the development process. Overall, the requirement gathering phase played a crucial role in establishing a solid foundation for the development of the Canteen Ordering App. By gathering and documenting the functional and non-functional requirements, the team was able to align their efforts with the expectations and needs of ICICI Bank employees, ensuring the successful development of a user-friendly and efficient online canteen ordering system.

**3.2 System Design Phase:**

The system design phase of the Canteen Ordering App involved creating a comprehensive blueprint for its architecture and functionality. The design aimed to address the identified requirements and ensure an intuitive and seamless user experience. Starting with the high-level system architecture, the design outlined the various components and their interactions within the app. This included the front-end interface, back-end functionality, and integration with external systems. The architecture aimed to provide a scalable and maintainable foundation for the app's development. The user interface design focused on creating an appealing and user-friendly experience. This involved designing clear and intuitive navigation paths, categorizing the menu options logically, and incorporating search functionality to enable users to quickly find their desired food items. Attention was given to the layout and aesthetics of the interface to enhance usability and visual appeal.To support the app's functionality, the database schema was designed to efficiently store and organize the relevant data. This included defining tables and relationships for menu items, user profiles, order history, and other necessary information. The design also considered the necessary security measures, such as encryption and compliance with industry standards, to protect user payment information. Additionally, real-time inventory management was a key consideration in the system design. The app was designed to provide accurate and up-to-date information on the availability of food items. This involved integrating inventory management functionalities, including real-time updates, automated restocking notifications, and effective supply chain management. Throughout the system design phase, collaboration with ICICI Bank's stakeholders and IT team ensured alignment with the bank's specific requirements and infrastructure. Regular feedback and review sessions helped refine the design and incorporate any necessary adjustments or enhancements. The system design phase provided a detailed roadmap for the development and implementation of the Canteen Ordering App, guiding subsequent stages such as development, testing, and deployment. By considering various factors such as user experience, data management, payment integration, and inventory management, the design aimed to create a robust and user-centric application to cater to the specific needs of ICICI Bank's employees.

**3.3 Development Phase:**

The development phase of the Canteen Ordering App involved the implementation of the designed system components and the creation of the app's functionality. This phase focused on translating the requirements and design specifications into a fully functional and user-friendly application. The development process can be described as follows:During the front-end development, the user interface of the app was created using model driven PowerApps. This involved designing screens, forms, and controls that would allow bank employees to navigate the app effortlessly. The user interface was designed with a clean and intuitive layout, ensuring easy access to menu options and order placement.Simultaneously, the back-end development took place, where the logic and functionality of the app were implemented. This involved coding the necessary algorithms and business rules to handle various operations, such as order processing, payment integration, and database connectivity. The back-end development also focused on ensuring data security and privacy, implementing measures to protect user information and secure transactions.Integration with external systems was a crucial aspect of the development phase. The app was designed to seamlessly integrate with secure payment systems, allowing users to make payments for their orders within the app itself. This integration required developing connectors and APIs to facilitate secure and reliable communication between the app and the payment systems.Additionally, Power Automate was leveraged during the development phase to automate specific workflows and streamline processes[3]. For example, workflows were set up to send order confirmation notifications to users and update the inventory in real-time based on the placed orders. These automated processes aimed to enhance the efficiency and accuracy of order management within the canteen. Throughout the development phase, rigorous testing was conducted to ensure the app's functionality, usability, and performance. This included unit testing of individual components, integration testing to verify the interaction between different modules, and user acceptance testing involving ICICI Bank employees. Feedback from testing was used to identify and address any bugs, issues, or usability concerns, ensuring a high-quality app. Collaboration with ICICI Bank's IT team was crucial during the development phase to ensure the app aligned with the bank's infrastructure and security requirements. The app was packaged and prepared for deployment, following the necessary protocols and configurations. User training sessions were conducted to familiarize bank employees with the app's features, ensuring a smooth transition to the new system.

The development phase was a critical stage in bringing the Canteen Ordering App to life. It involved the successful implementation of the designed system components, the integration of external systems, and rigorous testing to ensure the app's functionality and usability.

**3.4 Testing:** Conducted comprehensive testing to ensure the app's functionality, usability, and performance.

**3.5 Deployment**:

Prepared the app for deployment by packaging the necessary files and configurations. Conducted a final round of testing in the live environment to ensure compatibility and stability. Collaborated with ICICI Bank's IT team to deploy the app on the bank's internal infrastructure. It is important to note that the methodology described above provides a general framework. The actual implementation may involve iterations, adjustments, and additional steps based on specific project requirements and constraints.

**Chapter 4**

**Result and Discussion**

This chapter presents the results obtained from the implementation and evaluation of the Canteen Ordering App for ICICI Bank. The section begins with an overview of the data collected during the testing phase, followed by a detailed discussion and analysis of the findings. The results are presented in a manner that aligns with the research objectives, providing valuable insights into the effectiveness and impact of the app on bank operations and employee experience.

**4.1 User Feedback and Satisfaction**

During the user acceptance testing phase, feedback was gathered from ICICI Bank employees who utilized the Canteen Ordering App. Overall, the feedback was overwhelmingly positive, with the majority of users expressing satisfaction with the app's functionality[4], ease of use, and convenience. Users appreciated the intuitive user interface, allowing them to browse menus, customize orders, and make payments seamlessly. The app's responsiveness and real-time updates were also highly appreciated, as they contributed to a smooth and efficient ordering experience.

**4.2 Time Saving and Efficiency**

One of the key objectives of the Canteen Ordering App was to save time for employees during peak hours at the bank. The results indicated a significant reduction in the time spent by employees queuing up at the canteen. By ordering their meals through the app, employees could skip the physical queue, enabling them to make better use of their time and focus on their work responsibilities. This time-saving aspect of the app was well-received by employees and contributed to increased productivity within the bank.

**4.3 Operational Efficiency and Management**

The implementation of the Canteen Ordering App had a notable impact on the operational efficiency of the bank's canteen. The automated order processing and inventory management capabilities of the app resulted in smoother operations, eliminating manual errors and reducing delays. Real-time inventory updates ensured that popular menu items were always available, minimizing instances of unfulfilled orders. The reporting capabilities of the app provided valuable insights into consumption patterns, enabling better planning and forecasting for the canteen management team.

**4.4 Secure Payment Integration**

The integration of secure payment systems within the Canteen Ordering App ensured a smooth and secure transaction process. Employees could make payments for their orders using various digital payment options, such as mobile wallets and online banking. The results indicated that users were satisfied with the payment integration, highlighting the convenience and security of the transactions. The app's robust security measures ensured the protection of sensitive user information, enhancing trust and confidence among users.

**4.5 Discussion:**

Although the Canteen Ordering App[5] received positive feedback overall, some limitations and areas for improvement were identified. Some users encountered minor issues related to order customization and menu search functionality. While these issues did not significantly impact on the overall user experience, they were noted as potential areas for further refinement. Additionally, suggestions were made for additional features, such as dietary preference filters and personalized recommendations, to enhance the app's user experience and customization options. The results obtained from the implementation and evaluation of the Canteen Ordering App for ICICI Bank demonstrate its effectiveness in saving time, improving operational efficiency, and enhancing the overall user experience. The positive feedback from users indicates a high level of satisfaction with the app's functionality and convenience. The app's secure payment integration ensures a smooth transaction process while maintaining data security. Although some limitations and areas for improvement were identified, the overall impact of the app on bank operations and employee experience is commendable.

In conclusion, the results obtained from the implementation and evaluation of the Canteen Ordering App highlight its effectiveness in streamlining canteen operations, enhancing employee experience, and improving overall efficiency within ICICI Bank. The positive feedback and insights gained from users provide valuable input for future enhancements and refinements.

**Chapter 5**

**Conclusion and Future Work**

The development and implementation of the Canteen Ordering App for ICICI Bank has proven to be a significant success in improving the efficiency of the bank's canteen operations and enhancing the overall experience for employees. Through the app, employees were able to order their meals conveniently, saving valuable time during peak hours and avoiding long queues. The app's user-friendly interface, seamless payment integration, and real-time updates contributed to a smooth and efficient ordering process. The results obtained from the implementation and evaluation of the Canteen Ordering App demonstrate its effectiveness in streamlining operations and enhancing employee satisfaction. The positive feedback received from users indicates a high level of user satisfaction, emphasizing the app's functionality, ease of use, and convenience. The app's integration of secure payment systems ensured a secure and hassle-free transaction process. The Canteen Ordering App has also proven to be instrumental in improving the operational efficiency of the canteen. The automated order processing and inventory management capabilities have streamlined the canteen's operations, reducing manual errors and delays. Real-time inventory updates have ensured the availability of popular menu items, minimizing instances of unfulfilled orders. The reporting capabilities of the app have provided valuable insights into consumption patterns, aiding in better planning, and forecasting for the canteen management team.

While the Canteen Ordering App has demonstrated its effectiveness and provided significant benefits to ICICI Bank, there are still opportunities for future enhancements and refinements. Some potential areas for future work include:

1. Advanced Personalization[6]: Incorporating advanced personalization features within the app, such as dietary preference filters, personalized recommendations, and historical order analysis, to further enhance the user experience and customization options.

2. Integration with Rewards Program: Integrating the app with a rewards program or loyalty system, where employees can earn points or rewards for their orders, fostering engagement and encouraging frequent app usage.

3. Integration with Health and Wellness Initiatives: Collaborating with health and wellness initiatives within the bank to provide nutritional information, calorie counts, and healthier menu options, promoting employee well-being and healthier eating habits.

4. Continuous Performance Optimization: Regular monitoring and analysis of app performance, identifying areas for optimization, bug fixes, and usability enhancements to ensure a seamless and reliable user experience.

5. Expansion to Other Locations: Evaluating the possibility of expanding the app's functionality to other branches or locations of ICICI Bank, catering to a wider audience of employees and further improving operational efficiency.

These future enhancements and considerations will contribute to the continued success and evolution of the Canteen Ordering App, ensuring that it remains aligned with the changing needs and expectations of ICICI Bank employees.

In conclusion, the Canteen Ordering App has proven to be a valuable addition to ICICI Bank, saving time, enhancing operational efficiency[7], and improving the overall experience for employees. The positive results obtained from its implementation provide a strong foundation for future enhancements and refinements, ensuring the app's continued success and alignment with the bank's objectives.

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