“Bronxder: Enhancing Order Management Efficiency and Customer Experience through an iPad-Based Ordering System at Bronx Cafe"

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6. **Related Works**

Several studies have examined the adoption and impact of tablet-based ordering systems in restaurants. Huang et.al (2019) found that customers' adoption of mobile self-ordering systems was influenced by factors such as perceived usefulness, ease of use, social influence, and perceived risk. Gao and Bai (2014) developed a tablet-based prototype system that improved the efficiency of the order-taking process. Raza et al. (2019) discussed the advantages and challenges of implementing mobile-based ordering systems, including improved order accuracy and customer experience. Xiao et.al (2018) highlighted that customers' intentions to use tablet menus were influenced by perceived usefulness, enjoyment, ease of use, and perceived risk. Ryu and Jang (2017) investigated how different aspects of tablet menu design affected customers' intentions and behaviors. Hasan et.al (2019) found that mobile-based food ordering apps positively impacted customer satisfaction. Tu and Chen (2019) integrated the unified theory of acceptance and use of technology to identify factors influencing consumers' intention to use tablet-based menu systems. Cho et.al (2016) explored the impact of tablet menus and self-ordering systems on various aspects of restaurant performance. Wang and Park (2019) studied the influence of tablet-based menu ordering systems on customer satisfaction and service quality. Go and Lee (2017) examined the effect of different tablet menu types on customers' behavioral intentions, considering variations across restaurant types.

**Gaps**

The current manual order management system at Bronx Cafe suffers from inefficiencies, including longer wait times, potential order errors, and difficulty in tracking and prioritizing orders. The lack of a digital solution hinders effective communication between customers, waitstaff, kitchen staff, and the cashier, impacting overall operational efficiency and customer experience. Implementing a digital order management system would address these gaps, streamlining the process, improving accuracy, and enhancing communication channels, leading to improved operational efficiency and customer satisfaction.

**Problem of the Study**

The current manual order management system at Bronx Cafe relies on pen-and-paper methods, leading to inefficiencies in the order-taking process. This traditional approach results in longer wait times, potential errors in order communication, and difficulty in tracking and prioritizing orders. The lack of a digital solution hinders effective communication between customers, waitstaff, kitchen staff, and the cashier, impacting overall operational efficiency and customer experience.

**Specific Problem**

Limited Order Visibility and Communication. Bronx Cafe lacks a digital ordering system, causing a lack of real-time order visibility and effective communication between different stakeholders. The absence of an iPad-based ordering system results in challenges such as delays in order transmission, potential mistakes in order fulfillment, and limited tracking of order status. This specific problem highlights the need for a solution that can streamline order management, enhance communication, and optimize the overall ordering process for improved customer satisfaction and operational effectiveness.

**III. Objective of the Study**

The objective of this thesis project is to develop and implement the Brxder iPad-based ordering system at Bronx Cafe. The system aims to automate the order management process, enhance communication, and improve the overall efficiency of the restaurant's operations. The goal is to provide a seamless and convenient ordering experience for customers while enabling effective order tracking and integration with the cashier system.

**Specific Objective:**

1. Develop the Brxder iPad-based ordering system: Create a user-friendly and intuitive iPad application that allows customers to browse the menu, select items, customize orders, and submit them digitally.
2. Improve operational efficiency: Increase the efficiency of the order management process, reducing wait times, minimizing errors, and optimizing resource allocation.
3. Enhance customer experience: Provide customers with a modern and convenient ordering experience through the Brxder system, allowing them to easily browse the menu, customize orders, online payment and track the progress of their orders in real-time.

**IV. Scope and Limitation**

The scope of this project includes the development and implementation of the Brxder iPad-based ordering system at Bronx Cafe, focusing on streamlining the order management process and enhancing customer experience. The project encompasses the creation of a user-friendly iPad application that enables customers to browse the menu, customize their orders, and submit them digitally. It also involves the integration of the system with the existing cashier display system to relay order details and table numbers for efficient order processing. The scope further includes testing, training of staff members, and deployment of the system within the premises of Bronx Cafe.

**Limitation**

One limitation of this project is that it does not encompass the integration of the ordering system with the payment processing system. While the Brxder system facilitates the order placement and transmission, the actual payment handling remains a manual and separate process. Also, the need of stable network access is very important for the application to work, Additionally, the project does not cover advanced features such as inventory management, as it primarily focuses on optimizing the ordering process. Furthermore, the system's performance may be subject to limitations related to the hardware and software capabilities of the iPads used. Lastly, the project assumes that the provided cashier display system is capable of receiving and displaying the order information, and any necessary modifications or adjustments to the system are outside the project's scope.

**V. Tech Stack**

1. React Native is a popular framework for developing cross-platform mobile applications. It allows you to build native-like applications for iOS and Android using a single codebase, which can significantly expedite the development process. With React Native, you can leverage a wide range of pre-built UI components and libraries to create a visually appealing and user-friendly iPad ordering app.
2. Node.js is a JavaScript runtime environment that enables server-side development. Combined with Express.js, a lightweight web application framework, you can build a robust backend for handling order management, communication with the cashier system, and real-time updates. Node.js and Express.js provide a scalable and efficient solution for managing the server-side components of the Brxder system.
3. Firebase is a comprehensive cloud-based platform that offers a suite of tools and services to support various aspects of your application development. It provides features such as real-time database, authentication, and cloud messaging, which can be utilized to enable real-time order transmission, user authentication, and push notifications. Firebase's ease of use and integration capabilities can simplify the development process and accelerate the implementation of crucial features.

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