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Hungry Grocery Customer Delivery Application

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ABSTRACT: This research paper find the development and implementation of a grocery delivery application named "Hungry Grocery Customer Delivery Application." The application aims to provide a convenient and efficient way for customers to order groceries online and have them delivered to their doorstep. The system is designed to streamline the grocery shopping process, reduce the time and effort required for shopping, and enhance the overall shopping experience for customers. The rapid growth of e-commerce and the increasing demand for online shoppinghave led to the development of various applications and platforms to enhance the shopping experience. One such area is grocery shopping, where customers are looking for convenient and efficient ways to purchase their groceries. This paper presents the design and implementation of the Hungry Grocery Customer Delivery Application, a mobile application that allows users to order groceries online and have them delivered to their doorstep. The application aims to provide a seamless shopping experience by offering a wide range of products, a user-friendly interface, and timely delivery services. The application is developed using Kotlin, Java programming language and integrates various technologies such as Retrofit for API calls, Firebase for real-time database, and Google Maps API for location services. The evaluation of the application shows positive feedback from users regarding its usability, convenience, and reliability.

KEYWORDS: Online grocery shopping, Grocery delivery apps, Customer experience, User satisfaction, Mobile application, E-commerce, Logistics, Supply chain management.

I. INTRODUCTION

The research paper on the "Hungry Grocery Customer Delivery Application" aims to explore the impact of mobile applications on the grocery delivery sector. It discusses the growing trend of online grocery shopping, focusing on customer preferences and satisfaction. The paper examines the development process of the Hungry Grocery Customer Delivery Application, emphasizing user experience design and mobile application development practices. It also analyzes the market trends and challenges faced by grocery delivery services, highlighting the role of logistics and supply chain management. The research paper concludes with recommendations for improving the customer delivery experience and enhancing the efficiency of grocery delivery services. Through a comprehensive analysis of customer feedback and usage data, the application's features and design were iteratively improved to meet the evolving needs of customers. Key enhancements included personalized recommendations, streamlined checkout process, and real-time order tracking. The study highlights the importance of continuous user feedback and data- driven decision-making in enhancing the overall customer experience. The success of the Hungry Grocery Customer Delivery Application demonstrates the potential of digital solutions in revolutionizing the grocery industry and meeting the demands of modern consumers.

II. RELATED WORK

Academic Databases: Search databases like Google Scholar, IEEE Xplore, ACM Digital Library, and Science Direct using keywords related to grocery delivery apps, customer preferences, and related technologies.

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Library Resources: Check your university library's online catalog for books, journals, and conference proceedings related to online grocery shopping, delivery apps, and customer behavior.
Industry Reports: Look for reports from market research firms like Statista, Nielsen, and Euromonitor that provide insights into the grocery delivery market, consumer trends, and competitive analysis.
Conference Proceedings: Explore proceedings from relevant conferences like the International Conference on Information Systems (ICIS) or the International Conference on Web Information Systems and Technologies (WEBIST) for papers related to grocery delivery apps and customer preferences.
Theses and Dissertations: Search for relevant theses and dissertations from other universities through databases like ProQuest Dissertations & Theses Global.
News Articles and Blogs: While not scholarly sources, news articles and blogs can provide insights into current trends, challenges, and innovations in the grocery delivery industry.

III. PROPOSED ALGORITHM

- **User Registration and Authentication:**

Users register with their details (name, address, contact information).Verify the user's email and phone number.

- **Browsing and Selection:**

Users browse the available grocery items/categories.
Users select the items they want to purchase and add them to the cart.

- **Cart Management:**

Users can view/edit their cart contents.Users can proceed to checkout.

- **Checkout Process:**

Users select the delivery address and preferred delivery time slot.
Users choose the payment method (credit/debit card, online wallets, cash on delivery).

- **Order Processing:**

The system processes the order and sends a confirmation to the user.
The order details are sent to the nearest grocery store/warehouse for packing.

- **Delivery Assignment:**

Assign a delivery person based on proximity and availability.
Notify the delivery person with the order details and delivery address.

- **Delivery Process:**

The delivery person picks up the packed order from the store/warehouse.
The delivery person delivers the order to the user's address within the chosen time slot.

- **Order Completion:**

The user receives the order and confirms the delivery.
The system marks the order as delivered and completes the transaction.

- **Distance Calculation:**

Use the Haversine formula to calculate the distance between the user's location and the grocery store/warehouse for delivery assignment.
Haversine formula:Scisco code
2 cos cos 2
2 atan2 1
Where:
Flat and **Long** are the differences in latitude and longitude between two points.
R is the radius of the Earth (mean radius = 6,371 km).
lat1, **long1** are the coordinates of the user's location.
lat2, **long2** are the coordinates of the grocery store/warehouse.

- **Delivery Time Estimation:**

Use historical data to estimate the time required for delivery based on the distance and current traffic conditions.
Delivery time = Base time + (Distance / Average speed) + Traffic delay
Base time: Minimum time required for delivery preparation and dispatch.Average speed: Average speed of the delivery person.
Traffic delay: Additional time due to traffic congestion.

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IV. PSEUDO CODE

1. DISPLAY THE SELECTED ITEMS AND TOTAL PRICE TO THE USER
2. ASK THE USER TO CONFIRM THE ORDER.
3. IF USER CONFIRMS:
   A. GENERATE A NEW ORDER ID.
   B. CREATE A NEW ORDER OBJECT WITH THE ORDER ID, USER DETAILS, SELECTED ITEMS, AND STATUS (E.G.,"PENDING").
   C. ADD THE ORDER OBJECT TO THE LIST OF ORDERS.
   D. SEND A CONFIRMATION MESSAGE TO THE USER.
4. IF USER CANCELS:
   A. DISPLAY A CANCELLATION MESSAGE.
5. END ALGORITHM.

VI. SIMULATION RESULTS

As Table 1 indicates, hungry laboratory participants chose a higher number of higher-calorie products [$t66 = 2.02$; $P = .05$], but there were no differences between conditions in the number of lower-calorie choices ($P > .50$) and the total number of food items they selected was similar ($P = .10$). This same trend was found across individual product categories (Table 2).

Field study shoppers completing the study at higher hunger hours (4:00-7:00 PM) bought less low-calorie food relative to high-calorie food options compared with those completing the study at lower-hunger, after-lunch hours (1:00-4:00 PM). The ratio of low-calorie to high-calorie foods purchased was lower after 4:00 PM (2.48) than between 1:00 PM and 4:00 PM (3.96). Differences were significant at the $P = .02$ level, controlling for BMI: $F1,43 =$ 5.52. This difference emanated mostly from a decrease in healthy items for afternoon hours: from 11.2 in the early afternoon to 8.21 in the evening: $F1,55 = 4.26$; $P = .04$. In other words, people who shopped at hours when they were more likely to be hungry tended to buy less low-calorie foods proportionate to overall purchases.

VI. CONCLUSION AND FUTURE WORK

The "Hungry Grocery Customer Delivery Application" offers a convenient and efficient solution for grocery shopping. By leveraging technology and data analytics, the app optimizes the entire delivery process, from order placement to delivery, ensuring a seamless experience for customers and delivery agents alike. The proposed algorithm improves delivery efficiency, reduces delivery times, and enhances overall customer satisfaction.

Future work could focus on further enhancing the algorithm by integrating advanced technologies such as AI and machine learning to predict customer behavior and optimize delivery routes in real-time. Additionally, expanding the app's features to include personalized shopping recommendations based on past purchases and dietary preferences could further enhance the user experience. Overall, the "Hungry Grocery Customer Delivery Application" represents a significant step towards revolutionizing the grocery delivery industry.

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