BTech Summer Research Internship
KitchenConnect- A Cross Platform Mobile Application

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***Abstract*—This is a summer research internship project for the development of KitchenConnect, a centralized platform that enhances the efficiency of tiffin services. KitchenConnect aids in bridging the gap between tiffin service providers and their customers through an integrated solution for meal management. The platform offers tiffin service providers listing facilities, menu management, and subscription plans; customers can browse different providers, select meal plans, and manage subscriptions. Equipped with modern technologies, KitchenConnect holds the key to improving service reliability, user satisfaction, and operational efficiency with valuable insights into the application of digital solutions in the food service industry.**

I. Introduction

Online food ordering systems have become a staple in city life, especially with companies like Zomato, Uber Eats, and Swiggy transforming access to restaurant meals. However, these platforms focus primarily on restaurant-based deliveries, leaving a gap in the market for home-cooked meal services. KitchenConnect bridges this gap by providing a specialized platform for ordering homemade tiffins, catering to customers who prefer healthy and nutritious home-cooked food over restaurant meals. Traditional tiffin services, despite their popularity, often struggle with order management, delivery logistics, and payment issues. These challenges underscore the need for a modern solution to streamline and enhance the tiffin service experience.

A. Motivation

The motivation behind KitchenConnect is to modernize the tiffin service industry, meeting the growing demand for fast, hassle-free meal solutions and personalized meal choices. As part of a Summer Research Internship, this project describes the development of KitchenConnect—a centralized platform designed to overcome the limitations of traditional tiffin services. By providing direct connectivity between tiffin service providers and customers, KitchenConnect offers features like subscription management, secure payments, and a user-friendly interface. This project aims to improve the operational aspects of tiffin services and demonstrate how digital solutions can revolutionize service industries, making them more efficient and adaptable to changing consumer needs.

B. Problem Statement

Some of the various issues that lower the efficiency and hinder the growth of the traditional tiffin service industry include the following:

- No centralized system for ordering and subscription management leads to inefficiency and miscommunication.
- Low visibility to the customer concerning tiffin providers available and what they offer.
- Inconsistent and unreliable delivery options; most of these cause inconvenience to customers.
- In great measure, the non-efficient modes of payment mostly lead to payment delays and even fraud.

KitchenConnect desires to answer this by providing a single platform where, on the one hand, tiffin providers can work in regards to their services, and on the other hand, customers can easily find and subscribe to meal plans. Besides, it will provide secure payment solutions, real-time updates, and flexible delivery options to improve the whole experience for both tiffin providers and customers.

C. Relevant Solutions

In [1], **Zomato** is a leading global food delivery platform that connects users to various restaurants, allowing them to order and track deliveries in real-time. While Zomato excels in offering diverse restaurant choices, it does not cater to home-cooked meal services or customized meal plans typical of tiffin services.

In [2], **Uber Eats** is another major player in the global food delivery market, enabling users to order from numerous restaurants via a mobile app. Despite integrating its ridesharing technology for delivery, Uber Eats, like Zomato, focuses on restaurant meals and lacks features for home-cooked meal subscriptions or tiffin services.

In [3], **Swiggy** is one of India's top food delivery services, providing extensive restaurant delivery options and real-time order tracking with customer reviews. While Swiggy enhances the convenience of ordering restaurant meals, it does not offer solutions for home-cooked meal services or subscription-based plans.

In [4], **Dabbawala** is a local tiffin service app in Mumbai, India, digitizing the traditional tiffin service model with a mobile app for managing meal subscriptions and delivery schedules. Despite offering real-time updates and some meal customization, it faces scalability issues and lacks advanced features like digital wallets and comprehensive fraud prevention.

In [5], **Cookzy** connects users with local chefs for personalized meal experiences, allowing bookings for home-cooked meals directly from chefs. Although it introduces subscription plans and secure payment options, Cookzy is more focused on single meals rather than recurring tiffin services.

II. Proposed Approach

Our platform offers a unique solution for home-cooked meal subscriptions, distinguishing itself from traditional restaurant-focused services. Unlike Zomato and Uber Eats, which concentrate on restaurant meals, and Swiggy, which also lacks subscription-based meal services, our service specializes in providing regular tiffin deliveries along with the flexibility for single orders. While Dabbawala digitizes traditional tiffin services, it struggles with scalability and advanced features. Cookzy focuses on personalized meals from local chefs but lacks a recurring service model. Our platform not only ensures a steady supply of home-cooked meals but also provides robust features for providers to manage their operations and detailed analytics. The admin site enhances efficiency by centralizing information, resolving issues, and allowing for real-time adjustments to commissions and discounts, ensuring a superior user experience and operational adaptability.

A. Customer Journey and Functionalities

- **Login/Signup :** Customers can create a new account or access an existing one.
- **Browse Kitchen :** Customers can view available tiffin providers (kitchen) and check details and ratings or reviews.
- **Browse Tiffins :** Customers can view available tiffins offered by different providers.
- **Browse Menus :** Customers can view detailed menus for each tiffin.
- **Subscription :** Customers can subscribe to regular tiffin deliveries. They can also manage or cancel their existing subscriptions.
- **Single-Orders :** Customers can place one-time orders for immediate needs.
- **Subscription and Order Management** Customers can access their past, current and upcoming orders and subscriptions.
- **Wallet Management :** Customers can create a wallet, deposit and withdraw funds, and manage automatic deductions for deliveries using a simulated payment system.
- **OTP-Based Payment System :** Customers receive an OTP upon delivery and provide it to the provider to confirm and complete the order.
- **Transaction History Management :** Customers can view a detailed history of their transactions, including deposits, withdrawals, and automatic deductions for deliveries, using the simulated payment system.

B. Providers Journey and Functionalities

- **Login/Signup :** Providers can create or access their account
- **Tiffin Management** Providers can add new tiffin offerings and also can edit ore remove. They can set and update prices for their tiffins.
- **Menu Management :** Providers can create and add detailed menus for their tiffins and update or remove existing tiffin menus.
- **Subscription-Plan Management :** Providers can create subscription plans for their tiffins. They can set and update prices for their subscription plan.
- **Subscription Management :** Providers can view, accept, or reject customer subscriptions.
- **Order Notifications :** Providers receive notifications for new orders and subscription requests.
- **Order Preparations :** Providers receive daily lists of tiffins to prepare and deliver.
- **Single Order Management :** Providers can manage and get notified about single orders.
- **Delivery History :** Providers can access their delivery history and monitor sales.
- **Wallet Management:** Automatically add funds upon delivery, handle deposits and withdrawals, and manage wallet transactions using a simulated payment system.
- **OTP-Based Payment System :** Providers generate an OTP upon order delivery and store it locally. They verify the OTP provided by the customer to mark the order as completed.
- **Revenue Management:** Track revenue, view earnings, and manage financial performance using detailed reports and analytics.
- **Transaction History Management :** Providers can view a detailed history of their transactions, including deposits, withdrawals, and automatic credits for deliveries, using the simulated payment system.

C. Admin Functionalities

- **Customer Management :** Admins can view detailed information about all customers to address queries and manage accounts.
- **Provider Management :** Admins can view detailed information about all tiffin providers to handle queries and manage provider profiles.
- **Tiffin Management :** Admins can view all tiffin details, including menus, to resolve queries related to specific tiffins.
- **Subscription Management :** Subscription Management: Admins can view all subscription details and subscriber information to handle related queries.
- **Order Management :** Admins can access and manage all order details to address specific order-related issues.
- **Wallet Management :** Admins can check wallet details for all users to resolve wallet-related queries.

- **Commission and Discount Management :** Admins can adjust commissions and discounts for tiffins, both for single orders and subscription plans, to manage pricing strategies effectively.

III. IMPLEMENTATION

A. Technology Overview

The need for scalability, reliability, and user experience guided the selection of technologies for the KitchenConnect project. The key technologies chosen are:

- **React Native:** The mobile application is developed using React Native, allowing for a single code base to create native experiences on both iOS and Android platforms, thereby saving development time and costs.
- **Node.JS:** Node.js is used for the backend development due to its non-blocking and event-driven nature, which is well-suited for handling multiple simultaneous requests efficiently.
- **MongoDB:** MongoDB is chosen as the NoSQL database because it effectively manages unstructured data and supports dynamic horizontal scaling to meet the platform's growing demands.
- **Expo:** Expo is utilized to simplify the building and deployment processes, providing tools and libraries that enhance development productivity and streamline the app's deployment.
- **Firebase Cloud Messaging (FCM):** FCM is employed for sending push notifications to both customers and providers, offering reliable and efficient notification services.

B. Sprint-Based Development Progress

To ensure a structured and efficient development process, we implemented the Kitchen Connect project in eight sprints, each lasting one week. This agile methodology allowed us to break down the project into manageable tasks and deliver incremental progress, ensuring timely feedback and continuous improvement.

Our platform is divided into two parts: Customer and Provider. The customer side of the application was mostly developed by Mihir Paija (202101205), while the provider side was mostly managed by Dhruv Shah(202101208). Both of us contributed to developing the admin dashboard. Below are the weekly sprints.

Sprint I

- **Customer**
  1) **SignUp:** Customers can create a new account by providing personal details such as name, email, and password. The password is securely hashed using bcrypt, and customer details, including the hashed password, are stored in the database.
  2) **Login:** Existing customers can log in by providing their email and password. Upon successful authentication, a new JWT is generated and returned to the customer for secure session management, allowing access to protected routes and functionalities within the application.
- **Provider**
  1) **SignUp:** Providers can create a new account by entering personal details and additional information about their kitchen, such as kitchen name, address, and contact details. The password is securely hashed using bcrypt, and provider details, including the hashed password and kitchen information, are stored in the database.
  2) **Login:** Existing providers can log in by providing their email and password. Upon successful authentication, a new JWT is generated and returned to the provider for secure session management, allowing access to protected routes and functionalities within the application, including managing tiffin listings and viewing orders.

Sprint II

- **Customer**
  1) **Browse Providers:** Customers can browse through a list of available tiffin providers, viewing key details such as kitchen name, address, and contact information, allowing compare different providers and make informed decisions.
  2) **Select City:** Customers can filter tiffin providers based on their city, ensuring they view only providers who deliver to their location. The selected city is stored in the customer's profile for future use.
- **Provider**
  1) **Landing Page:** Upon login, the provider is directed to the landing screen, which displays an overview of their account, including tiffin listings, subscriptions, and recent orders.
  2) **Add/Edit Tiffin:** Providers can add new tiffin listings by entering details such as tiffin name, description, price, dietary type and delivery details. They could also edit existing tiffins. This feature allows providers to manage their offerings and ensure accurate information is available to customers.

Sprint III

- **Customer**
  1) **Browse Tiffins:** Customers can browse through a list of available tiffins offered by different providers, viewing key details such as name, description, price, and available menu items, allowing them to explore various tiffin options and choose the best fit.
  2) **Check Availability of Delivery:** Customers can check if a particular tiffin provider delivers to their location, ensuring they only view tiffins deliverable to their specified address. This is integrated with the customer's profile and location settings.
  3) **Filter Tiffins:** Customers can filter tiffin listings based on criteria such as price, cuisine type, and dietary

preferences, helping them narrow down choices and find suitable tiffins.
4) **Sort Tiffins:** Customers can sort tiffin listings by price, rating, or popularity, making it easy to find the best options according to their preferences.

- **Provider**
1) **Delete /Deactivate Tiffin:** Providers can delete tiffin listings that they can no longer deliver. They could also temporarily decativate tiffins.
2) **Sort and Filter Tiffins:** Providers can sort and filter their tiffin listings based on criteria such as ratings, price, and dietary types. This feature helps providers manage their offerings more effectively.
3) **Add/Edit Weekly Menu:** Providers can add and edit the weekly menu for each tiffin listing, specifying the items available for each day of the week.

Sprint IV

- **Customer**
1) **View Menu:** Customers can access the detailed menu of a tiffin, including daily items and weekly specials. The menu displays all available items for each day, helping customers make informed choices..
2) **View Subscription Plan:** Customers can review different subscription plans offered by tiffin providers, including details such as duration, price, and benefits.
3) **View Subscription Details:** Customers can see details of their current subscriptions, including the tiffin provider, plan, and status, to keep track of active and past subscriptions.
4) **Subscribe to Tiffin:** Customers can subscribe to a tiffin plan by selecting the desired plan and providing subscription details like personal information and delivery address. The request is sent to the provider for approval.

- **Provider**
1) **Create/View Subscription:** Providers can create subscription plans by specifying details such as duration, price, and benefits and manage them. This feature allows providers to offer flexible options to their customers and manage subscriptions efficiently.
2) **Accept/Reject Subscriber Requests:** Providers can accept or reject subscription requests based on availability and other criteria. Accepted subscriptions are activated, and the customer is notified of the approval.
3) **Subscription Management:** Providers can view all their subscriptions categorized as ongoing, pending, or completed. This list helps providers keep track of their ongoing and past commitments.

- **Notification Feature**
Providers receive real-time notifications on new subscription and order requests, enhancing communication with customers and improving overall user experience.

Sprint V

- **Customer**
1) **View Subscription List:** Customers can view their subscription history, including details of past subscriptions. Each subscription entry includes information such as provider name, plan, start and end dates, and status.
2) **View Current Subscription List:** Customers can view details of their active subscriptions, including provider, plan specifics, delivery schedule, and status.
3) **View Subscription Details:** Customers can view detailed information about any subscription they have, whether current or past.This feature provides comprehensive details, ensuring transparency and clarity for the customer.
4) **View Status of Current Subscription:** Customers can check the status of their current subscriptions, including whether it is active, pending, or completed.This helps customers stay informed about the progress and status of their ongoing subscriptions.
   a. Customers can check the status of their current subscriptions, including whether it is active, pending, or completed.
   b.

- **Provider**
1) **View Subscriber Details:** Providers can view detailed information about their subscribers and track the progress of that particular subscription. Provider can see details such as a delivery address, per order price, days remaining, and days completed, etc.
2) **Sort and Filter Subscribers:** Providers can sort and filter their subscribers based on various criteria such as subscription status, date, or customer name. This feature helps providers manage their subscribers more efficiently.
3) **Preparation Screen:** Providers have access to a preparation screen where they can view the number and types of tiffins they need to prepare along with delivery details. This feature helps providers organize and streamline their preparation and delivery process.
4) **Inform Rejection Reason:** When rejecting a subscription request, providers can inform the customer of the reason for rejection. This feature ensures clear communication and helps manage customer expectations.

Sprint VI

- **Customer**
1) **Take Days Off from Subscription :** Customers can now take specific days off from their subscription, allowing them to pause their subscription for selected days to avoid receiving tiffins and paying for them on those days.
2) **Order One-Time Tiffin Meals:**
   a. Customers have the option to order one or more tiffin meals for a single day. This feature caters to those who wish to enjoy home-cooked meals on a one-time basis, providing an alternative to the regular subscription model.

   b. For one-time tiffin meal orders, customers can select whether they want the meal delivered or prefer to pick it up.
3) **View and Edit Profile:** Customers can view and edit their profile information, including personal details and contact information. This feature ensures that users can keep their profiles up-to-date and make necessary changes easily.
4) **Cancel/Withdraw Subscription:**
   a. Customers have the ability to cancel their current active subscription if they wish to stop receiving tiffins immediately. This feature provides an easy way to discontinue service without delay.
   b. Customers can withdraw their pending subscription requests if they have not been processed yet. This option allows users to cancel their request before it is confirmed, giving them the freedom to explore other options.

- **Provider**

1) **Edit Personal Profile:** Providers can edit their personal profile information such as contact details.
2) **Edit Kitchen Profile:** Providers can edit their kitchen profile details such as kitchen address and kitchen contact details.
3) **One-Time Orders:**Providers can accept or reject one-time orders for tiffins. Accepted orders will be reflected in the preparation screen.
4) **Dummy Wallet:** Providers can create a dummy wallet within the app. During the wallet creation, providers set a PIN, which is stored in the database in a hashed format using bcrypt. To withdraw money from the wallet, providers must enter their PIN.

Sprint VII

- **Customer**

1) **View Order History:** Customers can view their complete order history, including details of past orders and payments. This feature enables users to track their previous transactions and manage their spending effectively.
2) **Track Current Subscription Order History:** Customers can track the order history for their current subscription, including delivery days and amounts debited from their wallet. This feature provides transparency and helps users monitor their subscription activity.
3) **Hassle-Free Wallet-Based Payment System:** Payments for tiffin orders are automatically deducted from the customer's wallet, offering a seamless and convenient payment experience.
4) **OTP-Based Order Confirmation:** Charges are only deducted from the wallet after the customer confirms receipt of their order through an OTP-based system. This feature ensures accurate billing and prevents unauthorized charges.
5) **Wallet Management:** Customers can create a wallet and set a PIN, which is securely stored in the database in a hashed format using bcrypt. They can also add and withdraw money from their wallet using this PIN, offering flexibility in managing their wallet balance and making transactions.
6) **Low Wallet Balance Notifications:** Customers receive notifications when their wallet balance falls below a minimum threshold. This helps users stay informed and add funds to their wallet before running out.

- **Provider**

1) **OTP-Based Payment System:** Providers generate an OTP upon delivering an order that is sent to the customer. The OTP is stored in the provider's local storage. Providers verify the OTP provided by the customer against the one stored in their local storage. If the OTP is correct, the order is marked as completed.
2) **Order History:** Once the order is completed, a record of the order is made in the provider's order history. Providers can view their order history, which includes details of past orders.
3) **Line Graph for Tiffin Orders:** Providers can view a line graph showing the number of tiffins sold over different durations (last week, last month...). Providers can filter upon tiffins, time (lunch, dinner), and type(one-time, subscription). This feature helps providers track their sales patterns and frequency.

Sprint VIII

- **Customer**

1) **Customer Feedback and Ratings:** Customers who have placed an order can give feedback and ratings for the tiffin services and individual tiffins. This ensures that only users with actual experience can leave a review, while any customer can read these reviews to help in making informed decisions.
2) **Location Detection and Manual Entry:** Customers can choose to either have the application automatically detect their location or manually enter their address for delivery. This provides flexibility and accuracy in specifying the delivery location.
3) **View Transaction History:** Customers can access a detailed history of all wallet transactions, including deposits, withdrawals, and automatic deductions for subscriptions. This feature provides transparency and helps users keep track of their wallet activities and financial transactions.

- **Provider**

1) **Transaction System:** When an order is completed, the payment is automatically processed, and money is credited to the provider's account. The transfer is recorded as a transaction in the provider's account.
2) **Line Graph for Revenue:** Providers can view a line graph showing their revenue over different durations such as last week, last month, etc. This feature helps providers track their earnings patterns and trends.
3) **Rating and Reviews:** Providers can view ratings and reviews given by customers for their tiffins. This feed-

back helps providers understand customer satisfaction and areas for improvement.

4) **Google Maps Integration:** Providers can view the delivery route for the day directly from the preparation screen This integration helps providers efficiently plan and execute their delivery routes.

Sprint IX - Development of Admin Website

1) **Customer Details:** Admins can view detailed information for every customer, including personal details and subscription history, to address specific queries and issues.
2) **Provider Details:** Admins can access all information related to tiffin providers, including their profiles and offerings, to resolve provider-specific queries.
3) **Tiffin Details:** Admins can view detailed information about all tiffins offered by each provider, helping in resolving issues related to specific tiffin items.
4) **Menu Details:** Admins can access and review the menus of every tiffin, including daily and weekly options, to address queries related to specific menus.
5) **Subscription Details:** Admins can view all subscription details for every tiffin, including subscriber information and subscription status, to handle subscription-related queries.
6) **Subscriber Details:** Admins can access information about subscribers for specific tiffin subscriptions, helping to resolve issues related to individual subscriptions.
7) **Order Details:** Admins can view comprehensive details of all orders, including status and history, to address queries about specific orders.
8) **Wallet Details:** Admins can check the wallet details of every user, including transaction history, to handle queries related to wallet balances and transactions.
9) **Commission and Discount Management:** Admins can adjust the commission rates and discounts for specific tiffins, applicable for single orders or subscription plans. This feature allows for dynamic pricing strategies and promotional adjustments to optimize revenue and customer satisfaction.

IV. Results

In this project, we developed KitchenConnect—a platform bridging the gap between customers and providers of home-cooked meals. According to our sprint-wise implementation plan, all core functionalities, starting from user registration and meal ordering and including subscription management and secure payment processing, were realized. The user interface, designed in Figma, will ensure ease of use on the user side, while the website on the administrative side will help in effective management of the service. While the project was able to meet most of its main objectives, some advanced features, like very customizable meal options and real-time analytics, remain in development. This means there is still completion ahead, which attests to the commitment to doing better for online food ordering experiences that specialize in homemade meals.

V. Future Work

The KitchenConnect project has established a robust platform for ordering home-cooked food online. To further enhance user experience, operational efficiency, and service offerings, the following developments are planned:

- *Menu customization features:* Users will have the ability to personalize their meals, including options for portion sizes, ingredient modifications, and special dietary needs.
- *Advanced Analytics and Recommendations:* Improved data analytics will enable personalized meal suggestions based on user preferences and behaviors. Continuous feedback collection will drive data-driven service improvements.
- *Provider Interaction :* Providers will be able to respond to customer reviews, fostering better communication and service enhancement.
- *Flexible Payment Options :* Users will have the option to choose from multiple payment methods, including cash on delivery or prepaid subscriptions, providing greater flexibility in managing their payments.

VI. Conclusion

KitchenConnect has enormous potential for disrupting the traditional tiffin service model and making it current, digital, and modern. Smooth navigation of the platform, flexible subscription options, and safe online choices for payments have really made a difference in the ordering of home-cooked meals. Positive user reviews and strong performance metrics establish the efficiency of the platform. Further enhancements and expansion are planned to realize the full potential of the service. KitchenConnect is thus a sea change in tiffin services digitization, a serious alternative to restaurant-based food delivery services, and truly illustrative of the transformative power that digital solutions can have on service industries.

References

[1] Info Edge (India) Ltd., “Zomato.” https://www.zomato.com, 2008.
[2] Uber Technologies Inc., “Uber eats.” https://www.ubereats.com, 2014.
[3] Swiggy, “Swiggy.” https://www.swiggy.com, 2014.
[4] Dabbawala, “Dabbawala.” https://mumbaidabbawala.in, 2016.
[5] Cookzy, “Cookzy.” https://cookzy.in/, 2019.