IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

Grihasta: Empowering Health-Conscious Consumers and Culinary Enthusiasts Through a Mobile Food-Sharing Platform

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Abstract: The significance of food-related choices on one's health cannot be overstated. Often, individuals find themselves away from home due to various reasons, resorting to fast food or restaurant meals, which can lead to various health issues such as obesity, diabetes, and metabolic diseases. To address this issue and promote healthier eating habits, we aim to create a mobile application that allows users to access quality, home-cooked meals as if they were prepared in their own kitchens. This innovative platform will facilitate interaction between the health-conscious food seeker, referred to as the "foodie," and the home food provider, known as the "chef." Our project's primary objective is to develop a user-friendly application that enables food providers to share their home-cooked dishes, complete with pricing information while allowing foodies to effortlessly locate and select the meals they desire within their geographical proximity. Chefs and foodies will have dedicated user accounts to manage their food listings, view order histories, and track transactions. This system not only benefits users but also empowers food providers, particularly women, by offering them a financial opportunity to showcase their culinary skills. The application has been developed using Java version 11 and is integrated with Google Firebase for seamless functionality.

Keywords: **Mobile application, home-cooked meals, women, health.**

I. Introduction

In a world increasingly driven by convenience and rapid lifestyles, the consumption of fast food has become a pervasive trend, contributing to a growing concern over health-related issues. This phenomenon is especially pronounced in India, where recent research indicates that a staggering 81% of the population prefers to order meals through online delivery apps. Strikingly, the most ordered item on these platforms is Biryani, as reported by Zomato, a prominent online food delivery company, which dispatched two servings of this beloved dish every two seconds in 2022. The implications of this trend are clear: There is an urgent need for a solution that not only provides people with healthier dining options but also empowers women by creating employment opportunities in the culinary domain.

This paper introduces the "GRIHASTA" Home Food Ordering System, an innovative platform designed to address these pressing concerns. The Grihasta system is a testament to the changing landscape of food consumption, offering homemade meals prepared by skilled homemakers directly to individuals through a user-friendly Android application. The technology underpinning Grihasta is based on the Android Studio platform, leveraging the robust Gradle build system and the Android plugin for Gradle to ensure a seamless user experience. Additionally, Firebase Analytics and Authentication are integrated into the application to enhance its functionality and security.

The primary objective of this paper is to delve into the multifaceted impact of the Grihasta Home Food Ordering System. It aims to shed light on how this innovative platform promotes healthier dietary choices, contributes to the economic empowerment of homemakers, and fosters a sense of culinary community. By presenting a comprehensive analysis of Grihasta's mission and technological foundations, this paper seeks to underscore its potential as a transformative force in India's food industry and socio-economic landscape. In doing so, it aspires to encourage further research and discussions surrounding similar initiatives aimed at striking a balance between modern convenience and traditional, health-conscious culinary practices. It's aim is to illuminate how this innovative platform not only provides healthier dietary

options but also contributes to the economic empowerment of homemakers while fostering a vibrant culinary community. The subsequent sections will undertake a comprehensive analysis of Grihasta's mission, technological foundations, and the social implications it carries. Through this analysis, the paper seeks to underscore the immense potential of Grihasta as a transformative force within India's food industry and socio-economic landscape.

The Grihasta Home Food Ordering System emerges as a beacon of innovation in India's food industry and socio-economic landscape. By presenting healthier dining alternatives and creating opportunities for economic empowerment, Grihasta is poised to usher in a new era of healthier living and social transformation. Through an in-depth exploration of its mission, technological foundations, and societal implications, this paper aims to shed light on the potential of Grihasta to shape the future of food consumption in India. It is our hope that this paper will inspire further research and discussions centred around similar initiatives that seek to strike a harmonious balance between modern convenience and traditional, health-conscious culinary practices.

II. RELATED WORK

1. The Food Delivery Application [1] revolutionizes the food and beverage sector by automating and streamlining food ordering and delivery processes. It addresses the inefficiencies of manual procedures, enabling efficient and adaptable meal delivery from restaurants to consumers. Rising operational costs due to inflation highlight the urgency of innovation in the industry. Traditional menu card updates often lead to customer dissatisfaction and decision-making challenges. This application empowers customers to order from local eateries, ensuring prompt delivery of their preferred dishes. User-friendly features include registration, login, and password recovery functionalities, as well as order tracking and profile management. Chefs can showcase their creations and manage orders, while delivery personnel efficiently handle pending orders. Key libraries enhance the user experience, making this initiative a catalyst for restaurant growth and success.

2. The online food ordering system [2] is a contemporary service that allows customers to order and receive food through the Internet, facilitated by electronic payment methods. As the internet and associated technologies gain widespread popularity, many businesses, including restaurants, have adopted online food ordering systems. In today's fast-paced world, where quick food and takeout are prevalent, this system offers a convenient alternative to traditional dining experiences. Historically, most food delivery orders were placed over the phone, leading to limitations and disadvantages. However, this online system simplifies the ordering process for both customers and restaurants, with orders entered a database and retrieved in near real-time on the restaurant's end. It enables restaurant employees to process orders efficiently, reducing delays and confusion, and its flexibility makes it applicable across various food delivery businesses.

3. The study [3] explores the impact of Mobile Food Ordering Apps (MFOAs) on restaurant brands, focusing on brand satisfaction and loyalty. It leverages the Technology Acceptance Model (TAM) framework and extends it to investigate the consequences of MFOA usage. With the proliferation of smartphones and mobile apps, MFOAs have gained prominence, particularly during the COVID-19 pandemic. The research recognizes the role of MFOAs in the food service industry, which remains relatively unexplored. Through a quantitative survey of 217 participants, the study establishes a connection between MFOA satisfaction, restaurant brand satisfaction, and loyalty. The findings underscore the importance of collaboration between brands and MFOA providers in today's technology-driven landscape.

4. The food industry, a consistently profitable sector, has seen significant shifts due to increased internet usage, necessitating the adoption of online food delivery systems[7]. Proposed real-time online food ordering system addresses the shortcomings of traditional queuing methods. Users can effortlessly order food from restaurants and mess services through our user-friendly platform. The system enhances order-taking processes, streamlining customer interactions with an online food menu. Users can conveniently track their orders and provide feedback, influencing recommendations for new customers and improvements for restaurants and mess services. To ensure security, separate user accounts with unique IDs and passwords are maintained. The system initially employs a pay-on-delivery payment system for added convenience and trust.

5. The academic paper[8] discusses the implementation of a digital restaurant system called the "Customizable Online Food Ordering System" using web-based applications and mobile devices. The system aims to streamline the food ordering process by allowing customers to place orders, view menus, and receive real-time updates via smartphones and tablets. It introduces modules for user tablets, manager tablets, and kitchen displays, each serving specific functions within the system. The technology stack includes Visual Studio 2010, Android 2.2 or later for tablets, and SQL 2008 for database management. The system also incorporates SMS integration for sending offers to customers. Overall, it offers a convenient and efficient solution for improving restaurant management and customer service.

6. The study [5] discusses the implementation of an automated food ordering system in restaurants to enhance user experience and improve efficiency. In this system, tablets are placed on each table, allowing customers to log in using OTP or as guests. They can browse the menu, place orders, check bills, and receive recommendations based on previous orders. Orders are directly sent to the kitchen, and customers are informed about preparation time. Bills are presented on the tablet, and feedback can be provided. The system's non-functional requirements include scalability, traceability, transparency, and a user-friendly interface. Hardware requirements include a touch screen computer or tablet with a minimum of 4 GB RAM. The automated system offers benefits for both small and large restaurants, improving management and service quality.

III. Proposed Method

In this section, we delve into the methodology and architectural design of our proposed system.

A. Architecture

The proposed system model effectively encapsulates the holistic framework of the entire application, encompassing its inception, development, and final execution. Figure 1 shows the architecture of the system.

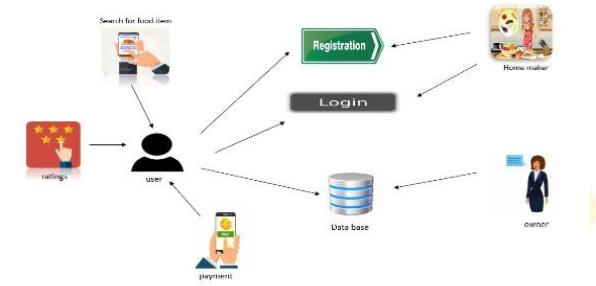

Figure 1. Architecture diagram

B. Methodology

Grihastha Home Foods App offers a seamless user experience with login or registration options. Users can browse a variety of food items on the home page, view details, and add them to the cart. After selecting items and specifying the delivery address, users can make payments via WhatsApp, and orders are sent to the seller for preparation. A convenient and efficient way to enjoy home-cooked meals.

1. Client Side

1.1 User Registration Module

Figure 2.1 represents the Registration page, a crucial component of the application's onboarding process. New users are required to complete this page to gain access to the application. During registration, users are prompted to provide essential details, including their name, email address, password, and phone number. These details are used to create a user account within the system. Once the registration process is successfully completed, the user is automatically redirected to the application's home page.

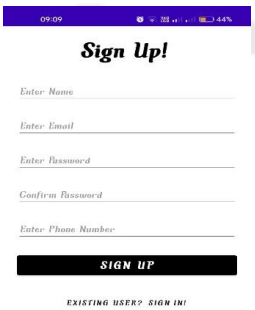

Figure 2.1 Sign up page

1.2 Item Selection Module

Within the Item Selection module of the application:

After successfully logging in, users are directed to the Home Page. Here, they can browse a wide range of available food items, each displaying the item name, price, and picture. Items that are currently unavailable are clearly marked as "sold." Users can select any dish from this page to proceed. Figure 2.2 shows the home page of the user side application Upon selecting an item on the Home Page, users are taken to the Details Page Figure 2.3 for that specific item. This page primarily showcases images of the dish uploaded by the seller. Users also find essential information such as the price, quantity, category, and item description. At the bottom of the page, there is an "ADD TO CART" button, allowing users to easily add the item to their shopping cart.

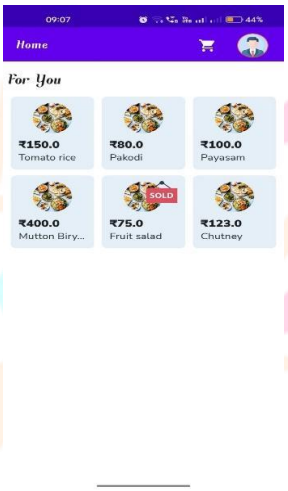

Figure 2.2 Home Page

Figure 2.3 Details Page

Once users have added items to their cart, they can access the Cart Page Figure 2.4. Here, users are given the opportunity to specify the quantity of each dish they wish to order. At the bottom of the page, there is a prominent "PROCEED" button, accompanied by a display of the total amount to be paid. To move forward with their order, users simply need to click the "PROCEED" button, streamlining the ordering process.

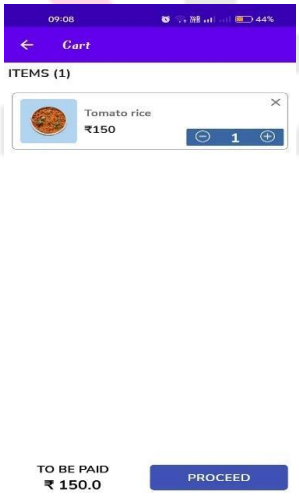

Figure 2.4 Cart Page

1.3 payment module

Upon clicking the "Submit Order" button on the Address Page, users are redirected to the Payment Page. Here, they find the contact information of the seller, facilitating direct communication. Additionally, a message is displayed, specifying the total amount to be paid for the order. Users are required to complete the payment to the seller using WhatsApp's payment feature. Once the payment is successfully made, the order is transmitted to the seller. The seller then acknowledges the order and proceeds to prepare the food items requested by the user. This straightforward process ensures a smooth and efficient ordering experience within the "Grihasta Home Foods Application."

2. Supplier Side

2.1 Sign up Page

Figure 3.1 shows the Admin Sign Up page. If the supplier is new user to the application then the supplier must register in to the application. This can be done by clicking 'new user sign up!'. After clicking that, it will take supplier to sign up page. There the supplier must sign up by providing some details. The user should provide her name, mail id and password to register. For reconfirmation it is asked to enter password once again. If supplier entered any other different error, it shows an error.

Figure 3.1 Sign Up Page

2.2 Login Page

Figure 3.2 shows Log in page. On opening on Grihasta client-side app, it shows login. if user already registered in the application, then she can log in to app by giving credentials i.e., username, and password. If the supplier is new user to the application, then the supplier must register in to the application. This can be done by clicking 'new user sign up!'.

Figure 3.2 Login page

2.3 Admin Page

Figure 3.3 shows the admin page. After clicking sign up button. After clicking the sign-up button, it will take the supplier to the admin page. In this page supplier can add an item to the stock or can update the available stock and can see the available orders what were ordered by the users.

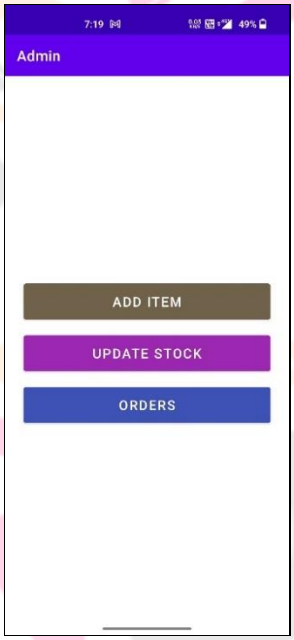

Figure 3.3 Admin Page

2.4 Item Upload Page

Figure 3.4 shows Add Item Page. When the supplier clicks the add item button it will take the supplier to the next page to upload the food item. Here the suppliers can add the food item pictures that were made by them by clicking pick images. Supplier can add any number of pictures of her wish. Supplier must enter the product details. Details of the product include name of the product and brief description about the product, quantity, and price of the product. And the supplier has specified the product is available or not available button. After entering all the details, the supplier must click the

submit button. After clicking the submit button the food item will be added to the stock.

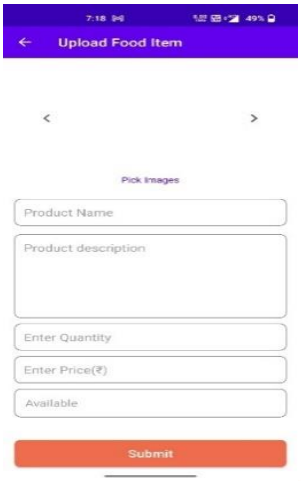

Figure 3.4 Item Upload Page

2.5 Update Stock Page

Figure 3.5 shows Update stock page. By clicking the update stock button, the supplier will get the list of all the products that are posted by her. By clicking on any of the product the supplier will get the two options. Those two options are out of stock and delete. It the food item is temporary unavailable then she can click the out-of-stock button or if she wants delete the food item permanently then she can click the delete button.

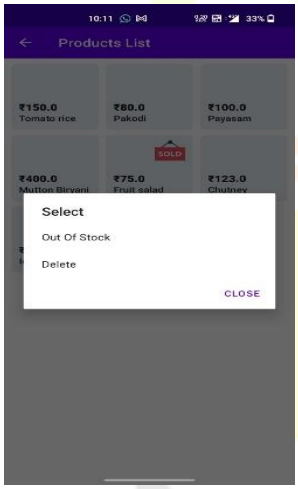

Figure 3.5 Update Stock Page

2.6 Orders

Figure 3.6 shows Orders Received Page. By clicking orders button in the admin page, it will direct to the orders page. In this the supplier can see all the order that were placed by the users. The details of an order will be visible by clicking on order details. The order details include order ID date of the placement of order. Payment details include total number of items and total amount paid. And the customer details include customer name phone number email and address of the customer.

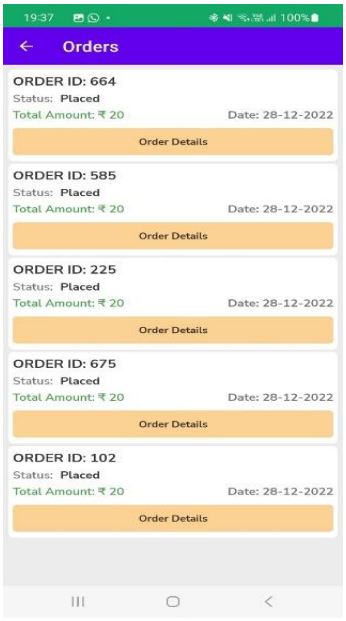

Figure 3.6 Orders Received Page

2.7 Order Details

Figure 3.7 shows orders details page. This page gives the detailed description of the ordered items. Once, the client clicks the order, it will be directed to the order details page where it provides the details about the item order like Order ID, Date and Payment Details which includes Total Number of Items ordered, Total Amount. It will also provide the Customer Details Customer Name, Phone Number, Email and Address of the Customer.

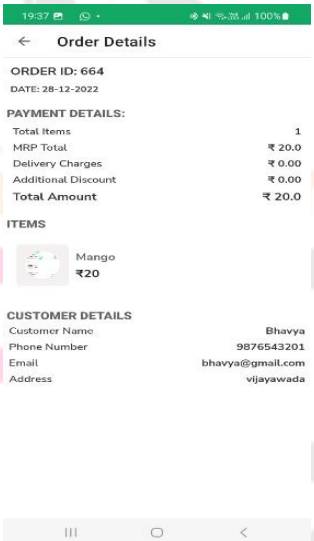

Figure 3.7 Orders details page

VI Conclusion

In conclusion, the implementation of a home food ordering system for a startup promises increased customer convenience for ordering home food. By leveraging technology and user-friendly interfaces, this system can streamline the ordering process, offer personalized recommendations, and facilitate seamless payments, thereby enhancing the overall dining experience for customers. It is a valuable asset in today's fast-paced, technology-driven world and will likely result in higher sales and customer satisfaction

for the startup. Looking ahead, the startup should consider expanding its market reach, enhancing the user experience, and integrating emerging technologies. Additionally, sustainability initiatives, data analytics for personalization, and quality control remain pivotal. Furthermore, diversifying services, robust marketing and branding, regulatory compliance, and continuous feedback adaptation should be key areas of focus to ensure the sustained growth and success of the home food ordering system and the startup as a whole.

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