



Innovation & Entrepreneurship Hub for Educated Rural Youth (SURE Trust – IERY)

QR code-based Restaurant food ordering Webapp - SnapMenu

The domain of the Project:

User research, User Experience & User Interface Design

Under the guidance of:

Mr. Sen Girri Sudhan (UX & UI Designer)

Team Member:

Mr. N.M.Sanjay (BBA) 3rd year pursuing

Period of the project

4 Months

April 2024toDecember 2024



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Declaration

The project titled "**“QR code-based Restaurant Food ordering Webapp - DineDash”**" has been mentored by **Mr. Sen Girri Sudhan**, organised by SURE Trust, from April 2023 to August 2023, for the benefit of the educated unemployed rural youth for gaining hands-on experience in working on industry relevant projects that would take them closer to the prospective employer. I declare that to the best of my knowledge the members of the team mentioned below, have worked on it successfully and enhanced their practical knowledge in the domain.

Team Members:



Mr. Sanjay

Signature

Mentor's Name:Signature

Mr. Sen Girri Sudhan —MetricStream

Seal & Signature

Prof. Radhakumari
Executive Director & Founder
SURE Trust



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Table Of Content

1. Executive summary
2. Introduction
3. Project Objectives
4. Methodology & Results
5. Social / Industry relevance of the project
6. Learning & Reflection
7. Future Scope & Conclusion



Executive Summary

Objectives

- **Streamline restaurant ordering with QR codes** – Allow customers to scan a QR code at their table to access the digital menu and place orders without waiting for a waiter.
- **Reduce wait times and enhance customer experience** – Eliminate the need for physical menus and manual order-taking, making the ordering process more efficient.
- **Provide a user-friendly digital menu for restaurants** – Enable restaurant owners to update menu items, prices, and availability in real time.
- **Improve operational efficiency** – Minimize miscommunication between staff and customers, reducing errors in order processing.

Methods

- **User Research**
 - Conducted interviews and surveys with **restaurant owners, waitstaff, and customers** to understand their pain points and expectations.
 - Identified common frustrations such as **long wait times, unresponsive staff, and outdated paper menus**.
- **Competitive Analysis**
 - Studied existing **food ordering apps and QR-based restaurant solutions** to identify industry best practices.
 - Noted that most apps focused on either dine-in or delivery, with few effectively combining both.
- **Wireframing & Prototyping**
 - Designed **low-fidelity wireframes** to define user flows and interface structure.
 - Created **high-fidelity prototypes in Figma**, implementing a **bento grid layout** for the digital menu to improve readability and accessibility.
- **Usability Testing**
 - Tested the prototype with **real users in a restaurant setting** to observe behavior and gather feedback.
 - Identified friction points such as **mandatory login causing drop-offs** and refined the design to introduce **session-based login** for better user retention.



Introduction

Background & Context

- The traditional restaurant ordering system relies on **physical menus and waitstaff**, leading to **delays, miscommunication, and inefficiencies** in customer service.
- Many restaurants, especially post-pandemic, have **shifted towards digital menus and contactless solutions**, but existing apps are often complex, require mandatory logins, or are not tailored for dine-in experiences.
- **Dine Dash** was conceptualized to provide a **seamless, QR code-based ordering experience** that allows customers to scan, browse, order, and pay directly from their smartphones, reducing dependency on staff and improving service speed.

Problem Statement / Goals

- **Problem:**
 - Customers experience **long wait times** to place orders and get service, especially during peak hours.
 - Physical menus are often outdated, unhygienic, and difficult to manage for restaurants.
 - Many digital ordering solutions require **app downloads or mandatory login**, causing friction in user adoption.
 - Restaurants struggle with **manual order management**, leading to errors and inefficiencies.
- **Goals:**
 - Provide a **fast, contactless** food ordering experience using QR codes.
 - **Reduce customer frustration** by minimizing wait times and simplifying the ordering process.
 - Enable restaurant owners to **update menus in real time** without printing new physical copies.
 - Create a **simple, user-friendly backend system** for restaurant staff to manage orders efficiently.
 - Offer a **guest checkout or session-based login** to remove unnecessary friction in the ordering process.

Scope & Limitations

- **Scope:**
 - Focuses on **dine-in customers** ordering through a QR code-based web app.
 - Enables **real-time menu updates, order tracking, and direct payments** from mobile devices.
 - Designed for **small to medium-sized restaurants** that want to digitize their ordering system without complex integrations.
- **Limitations:**



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- **Does not include delivery services** – The platform is built specifically for in-restaurant dining.
- **Limited to restaurant-managed menus** – Customers cannot modify items beyond the customization options provided.
- **Internet dependency** – Requires a stable internet connection for smooth operation.

Innovation Component

- **Seamless QR-Based Ordering:** Eliminates the need for downloading an app, providing instant menu access with a quick scan.
- **Bento Grid Menu Layout:** Enhances visual appeal and usability, making menu navigation faster and more engaging.
- **Session-Based Login:** Allows customers to place orders without the hassle of creating an account, reducing drop-offs.
- **Real-Time Menu Updates:** Restaurants can dynamically adjust availability, pricing, and promotions without needing printed menus.
- **Integrated Order Management System:** Provides restaurant staff with an intuitive backend for tracking orders and managing customer requests efficiently.
- **Future AI Integration Possibilities:** Potential to implement AI-powered dish recommendations based on customer preferences.



Project Objectives

Objectives & Goals

- 1. Enhance the Dining Experience**
 - Provide a **faster and seamless food ordering process** using QR codes.
 - Eliminate the need for physical menus and minimize waiter dependency.
- 2. Increase Operational Efficiency for Restaurants**
 - Enable restaurants to **update menus in real time** without reprinting physical copies.
 - Reduce order errors and miscommunication by automating the order-taking process.
- 3. Improve User Accessibility & Engagement**
 - Ensure a **frictionless ordering experience** with an intuitive UI.
 - Introduce **guest checkout and session-based login** to reduce barriers to entry.
- 4. Optimize Order Management & Restaurant Analytics**
 - Provide restaurant staff with a **simple dashboard** to track orders, update availability, and view sales insights.
 - Implement **real-time order tracking** for both customers and staff.
- 5. Support Contactless & Digital Payment Methods**
 - Integrate **multiple payment options** (UPI, card, digital wallets) for a **cashless, hassle-free checkout experience**.

Expected Outcomes

- A **fully functional high-fidelity prototype** of the SnapMenu QR-based food ordering web app.
- A **streamlined ordering experience** for customers, reducing wait times and enhancing convenience.
- A **user-friendly dashboard for restaurant owners** to manage menus and track orders efficiently.
- A **mobile-responsive, intuitive UI** with an accessible and visually engaging menu layout.
- Reduced dependency on waitstaff, leading to **faster service and increased restaurant efficiency**.

Deliverables

User Research Report – Findings from customer and restaurant owner interviews.

User Personas & User Journeys – Representing key user groups and their interactions.

Competitive Analysis – Insights from existing food ordering solutions.

Wireframes & High-Fidelity UI Designs – Designed using **Figma**, showcasing user flows and interactions.

Interactive Prototype – Clickable Figma prototype demonstrating end-to-end ordering.

Usability Testing Report – Feedback and design iterations based on real user testing.



Methodology and Results

Methods & Technology Used

Design Thinking Process – Followed a user-centered design approach including **empathizing, defining, ideating, prototyping, and testing**.

User Research & Analysis – Conducted interviews and surveys to understand pain points and needs.

Wireframing & Prototyping – Created low-fidelity and high-fidelity designs to visualize the solution.

Usability Testing & Iteration – Collected user feedback and refined the design accordingly.

Frontend Development (Future Scope) – Planning to use **React.js** for the web app's interface.

Backend Development (Future Scope) – Considering **Node.js** and **Firebase** for real-time order processing and database management.

Tools & Software Used

Figma – Wireframing, UI design, and prototyping.

FigJam – Brainstorming, user flow mapping, and ideation.

Miro – Visualizing research insights and competitor analysis.

Google Forms & Sheets – User surveys and data analysis.

Adobe Illustrator – Logo and branding assets.

Data Collection Approach

Primary Research (User Research & Interviews)

Conducted interviews with **restaurant owners, staff, and dine-in customers** to understand their needs.

Gathered feedback on existing **food ordering pain points** and user expectations from a digital system.

Secondary Research (Competitive Analysis & Market Study)

Analyzed existing QR-based ordering apps to identify strengths, weaknesses, and **opportunities for innovation**.

Studied **restaurant industry trends** to understand the growing need for **contactless dining solutions**.



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Usability Testing

Created an interactive prototype and tested it with **potential users** to gather feedback on **navigation, ease of ordering, and UI design**.

Observed user behavior and iterated based on insights.

Project Architecture (Conceptual Flow)

1. User Interaction Layer (Frontend – QR Code & UI)

Customers **scan a QR code** placed on the restaurant table.

They are redirected to the **SnapMenu web app** (no download required).

The app displays a **dynamic digital menu** with categories, images, and customization options.

Users **add items to the cart** and place their order.

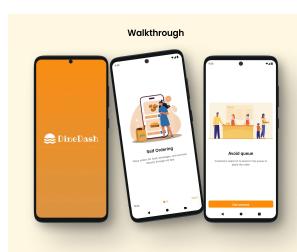
2. Order Processing Layer (Backend – Admin Dashboard & Order Management)

Order details are **sent to the restaurant's dashboard** for processing.

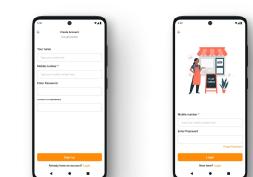
The **restaurant staff receives real-time notifications** on new orders.

Orders are **marked as 'In Progress' or 'Ready'**, updating the customer in real time.

3. Payment & Authentication Layer (Future Scope) Integration with UPI, credit/debit cards,



Sign up & Login



The user can create account if he is new.

The user can login if he already has an account.



MAIN FEATURES

- Table number
- Search Box
- Offers and promotions of offers and best sellers
- Menu
- Listings of dishes
- Profile



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Profile

The profile screen has following information

- Account Information can changed
- Order history can be seen too
- The user can logout their account here

Screenshots show the profile screen with a placeholder image, the 'Account Information' screen with fields for Old Password and New Password, the 'Order History' screen showing a list of recent orders, and a logout confirmation dialog.

Order process

Screenshots illustrate the order process:

- Home screen showing a 15% off offer on Chicken Burger.
- Search screen showing a search bar and a list of popular searches.
- Search results for 'Chicken Pizza' showing a promotional offer.
- Product detail screen for 'Chicken Pizza' showing toppings and price.
- Order summary screen showing the selected pizza and its total cost.
- Final order confirmation screen showing the total amount and a success message.



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Cart summary and Checkout

The image shows two smartphones side-by-side. The left phone displays the 'Cart Summary' screen, which lists three pizza items: Chicken Pizza (Rs. 300), Mushroom Pizza (Rs. 300), and Vegetable Pizza (Rs. 300). Each item has quantity minus and plus buttons. Below the list is a 'Payment Summary' table:

Item Total	Rs.300
Tax	Rs.10
Total Amount	Rs.360

At the bottom is an orange 'Proceed To Pay' button. The right phone displays the 'Checkout' screen, showing a payment form. It includes fields for card number (7654 **** 1234), cardholder first and last name (John Doe), expiration date (MM/YYYY), and CVV code. There are radio buttons for payment method: Credit/Debit card, Cash Payment, and Mobile Payments. At the bottom is an orange 'Total Payment Rs.360' button.

The user can view the cart summary here

The user can use the convenient option for making the payment

Other Screens

The image shows two smartphones side-by-side. The left phone displays the 'Order Placed Successfully' screen, featuring a large green checkmark icon and the text 'Order Placed Successfully'. At the bottom are two buttons: 'Place Another Order' and 'View Order Details'. The right phone displays the 'Order Getting Prepared' screen, which includes a cartoon illustration of a chef in a kitchen. Below the illustration is an orange 'Order Getting Prepared' button. Underneath is an 'Order Details' table:

1x Chicken Pizza	Rs.360
XXXX units	
Tomato Toppings	

At the bottom is an orange 'Go To Home Page' button.



New Learnings from the DineDash Project

UX/UI Design & Technology

1. **Improved Information Architecture** – Learned how to structure **menu layouts effectively** for quick navigation.
 Better Mobile UI/UX Design – Understood how to **design for responsiveness**, ensuring a smooth experience across different screen sizes.
 Session-Based Login Concept – Explored how **guest checkout** can improve user experience by eliminating unnecessary barriers.
 QR Code Integration Research – Learned about the **technical aspects** of generating and implementing QR codes for web-based applications.
2. **User Research & Testing**
 Conducting Effective User Interviews – Improved my ability to **ask the right questions** and extract meaningful insights from users.
 Usability Testing & Feedback Analysis – Understood how to **observe user behaviour** and iterate based on real-world interactions.
 Competitive Analysis – Learned how to **evaluate existing solutions** and find **opportunities for innovation**.
3. **Project Management & Collaboration**
 Task Prioritization & Time Management – Managed **multiple design tasks effectively** within deadlines.
 Using Trello for Organization – Helped me structure my workflow and **track project progress efficiently**.
 Stakeholder Communication – Learned how to **present my design decisions effectively** to different audiences (restaurant owners, users, and developers).
4. **Design Thinking & Problem Solving**
 Defining Clear User Pain Points – Understood how to **pinpoint key problems** and design around **real needs**.
 Iterative Design Approach – Learned the importance of **continuous improvement** based on real-world user testing.
 Balancing Aesthetics with Functionality – Focused on making the UI both **visually appealing** and **highly functional**.



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Overall Experience with the DineDash Project

1. **A Challenging but Rewarding Journey** – Working on DineDash was an exciting challenge as it required a **balance between user needs, business goals, and technology feasibility**.
2. **Deepened My UX/UI Knowledge** – This project pushed me to **think beyond visuals** and focus on **solving real-world problems through design**.
3. **Gained Hands-on Experience in Research** – I developed a deeper understanding of **how user behaviour impacts design** and how to **validate ideas through testing**.
4. **Improved Problem-Solving Skills** – Every design decision had to be backed by **logic, usability, and real-world application**, which strengthened my **critical thinking**.
5. **Enhanced My Collaboration & Communication Skills** – Whether it was **documenting insights, presenting my ideas, or collecting feedback**, I learned how to **effectively communicate with different stakeholders**.
6. **Understanding the Importance of Project Planning** – Managing multiple design aspects simultaneously helped me **improve my workflow efficiency** and **prioritize tasks better**.
7. **Excited for Future Enhancements!** – This project has inspired me to explore more **interactive, AI-driven restaurant solutions** and possibly **develop SnapMenu further** with **real-world testing and implementation**.



Conclusion and Future Scope

DineDash: Recap of Objectives & Achievements

Project Objectives (Recap)

1. **Enhance the Dining Experience** – Provide a seamless, **QR code-based ordering system** for restaurants.
 2. **Increase Operational Efficiency** – Reduce **wait times and miscommunication** by automating order-taking.
 3. **Improve User Accessibility** – Offer an intuitive, **mobile-responsive interface** with easy navigation.
 4. **Optimize Order Management** – Enable restaurants to **track and manage orders efficiently** via a dashboard.
 5. **Support Contactless Payments** – Integrate **multiple payment methods** for a hassle-free checkout experience.
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Achievements

1. **Designed a high-fidelity prototype** showcasing a seamless QR-based ordering flow.
 2. **Conducted extensive user research**, gaining insights from both **restaurant owners and customers**.
 3. **Created intuitive UI/UX designs** for easy order placement and restaurant management.
 4. **Developed a structured restaurant dashboard** to track orders in real time.
 5. **Implemented usability testing** and made improvements based on feedback.
 6. **Ensured an efficient, visually appealing, and user-friendly design** that enhances the overall dining experience.
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Future Scope of SnapMenu

1. **Real-Time Order Updates & Notifications** – Implementing a system for restaurants to update order statuses in real time, notifying customers when their food is ready.
2. **Integration with Payment Gateways** – Adding **UPI, credit/debit card, and wallet payment options** for a **fully digital** transaction experience.
3. **AI-Powered Personalized Recommendations** – Using **AI** to analyze user behaviour and suggest popular dishes or customized meal options.
4. **Multi-Restaurant Support** – Expanding SnapMenu's capabilities to allow **multiple restaurants on the same platform**, enabling users to switch between different menus easily.
5. **Data Analytics for Restaurants** – Providing insights on **customer preferences, best-selling items, and peak ordering hours** to help restaurant owners make data-driven decisions.
6. **Voice-Based & Gesture Ordering (Future Tech Integration)** – Exploring innovative features like **voice-assisted ordering** for a hands-free experience.
7. **Integration with Delivery Services** – Expanding the platform to **support food delivery**, allowing restaurants to handle both dine-in and takeaway orders.

Final Thought

The DineDash project has laid a **strong foundation for digital restaurant ordering**, and with further development, it has the potential to **become an industry-leading solution** for restaurant owners and diners alike.



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