REVOLUTIONIZING FOOD DELIVERY WITH FROKER

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*Abstract—**Froker: a cutting-edge food delivery app with 10,000+ downloads and 3,000 weekly active users. Its robust backend ensures security and performance, while its innovative Shots section lets users earn Furos for discounts. With a focus on tech and user experience, Froker leads the food delivery scene, offering convenience and trust to users and restaurants.***
Keywords— Fullstack development,MERN,App development,Backend,Frontend

I.   INTRODUCTION

Froker, a leading food delivery platform in India, innovatively blends technology and user-centric design for a revolutionary experience. Its comprehensive app simplifies ordering, enhances engagement, and fosters loyalty. Through strategic partnerships, Froker ensures expanded offerings and timely fulfillment. Prioritizing user experience with intuitive interfaces and personalized recommendations, it maintains leadership through continuous evolution.

II.   MOTIVATION AND OBJECTIVE

Froker aims to meet the evolving needs of busy urban consumers by offering a seamless food delivery experience. It recognizes the growing preference for online ordering and leverages smartphones and the internet to cater to customers seeking convenience, variety, and efficiency. By addressing shortcomings like limited restaurant options and long delivery times through thorough market research, Froker aims to innovate and provide a comprehensive solution. Ultimately, it seeks to become a market leader by offering a satisfying experience for both consumers and restaurant partners.

This project focuses on seizing the opportunity in India's booming online food delivery market, projected to reach $43.78 billion by 2024 with a 16.14% annual growth rate. We aim to develop an intuitive and feature-rich food delivery app that simplifies ordering and engages users. The motivation stems from the fast-paced urban lifestyle and the growing reliance on online food delivery. We aim to address this demand by offering a comprehensive solution that enhances user experience.
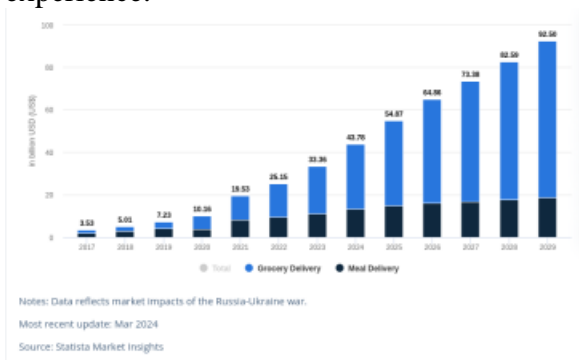

Fig. 1   History and projection of revenue generated by online meal & grocery delivery industry in India in billion USD

III.   LITERATURE SERVERY

A. *History of food delivery and globalization*

Food delivery has a rich history, dating back to 1889 when Italy witnessed its first documented pizza delivery to King Umberto and Queen Margherita. Across the globe, colonial India saw the rise of

"dabbawalas" in the 1890s, delivering home-cooked meals to workers. Chinese restaurants in America embraced food delivery in the early 20th century, with Los Angeles' Kin-Chu Cafe using telephones to take orders and deliver meals. The 1950s marked a turning point with the rise of television, making home delivery even more popular as families could enjoy meals while watching their favorite shows.

In the post-1960s era, food delivery accelerated with the widespread use of cars. Domino's famously promised pizza delivery within 30 minutes. The 1990s saw the emergence of digital ordering, with Pizza Hut launching a web-based system and Worldwide Waiter offering online delivery. The true revolution came with smartphones in the 2000s, as apps like DoorDash and Grubhub made ordering from various restaurants incredibly convenient. This era showcases how speed, technology, and smartphones have made food delivery a ubiquitous service today.

B. History of food delivery and globalization

Food delivery in India has come a long way, especially in cities like Mumbai, where lunch delivery services catered to busy office workers, prioritizing efficiency. In the 2000s, phone orders gained popularity, making it easier for people to enjoy restaurant meals at home. Today, with smartphones and the internet, ordering food on-the-go has become effortless. Online platforms benefit both restaurants and customers, offering convenience and a wider range of options. With a projected growth rate exceeding 25% by 2025, food delivery in India is a revolution that's here to stay, offering convenience and variety to customers.
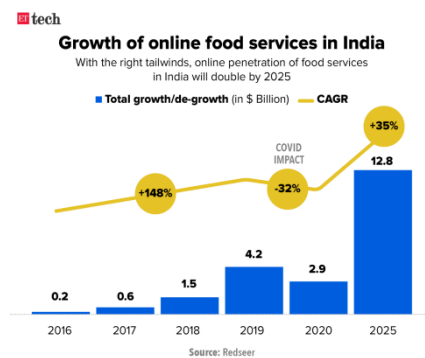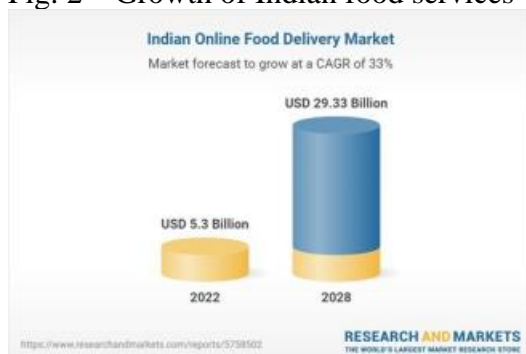

Fig. 2   Growth of Indian food services

Fig. 3   Comparison of Indian food delivery market between 2022 and 2028

IV.   METHODOLOGY

Successful software projects rely on careful execution of methodologies from conception to maintenance. This approach ensures the final product meets user expectations and remains adaptable. Starting with requirements gathering, the process progresses through design, development, and testing stages, with attention to detail and industry best practices. Maintenance follows deployment, ensuring the application's longevity and relevance. This report explores the methodologies used in the Froker project, highlighting their role in its success in the online food delivery market.
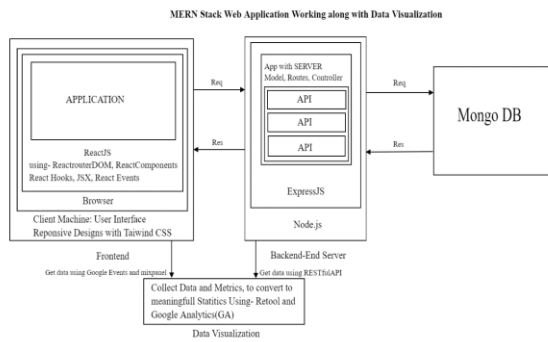
Fig. 4   Working of   MERN STACK web application and Data Visualization

A. Requirements Gathering

The Froker project began with a thorough requirements gathering phase, involving stakeholders like end-users and restaurant partners. Techniques such as interviews and market analysis helped prioritize features for the app. Detailed requirement documents were created, outlining functional and non-functional aspects, and constraints like budget and timeline were identified early on. Key functional requirements included user authentication, order placement, restaurant management, delivery tracking, payment processing, and user feedback. Non-functional requirements covered aspects like performance, security, reliability, usability, scalability, and compliance. This meticulous process laid a strong foundation for Froker, ensuring it would exceed user expectations in the competitive online food delivery market.

B. Requirements Gathering

Froker embraced Agile methodology for flexibility and collaboration. It involved iterative development with short sprints focusing on delivering prioritized features. Cross-functional teams ensured seamless communication and faster decision-making. User feedback was incorporated throughout, refining requirements and ensuring alignment with user needs. Adaptive planning allowed for adjustments based on feedback and changing priorities. Continuous integration and delivery practices ensured rapid, reliable releases. Quality assurance practices maintained high-quality functionality. Transparent communication channels kept stakeholders informed. Agile methodologies embraced change, facilitating flexibility in responding to evolving requirements and market dynamics. Overall, this approach positioned Froker as a leader in online food delivery.
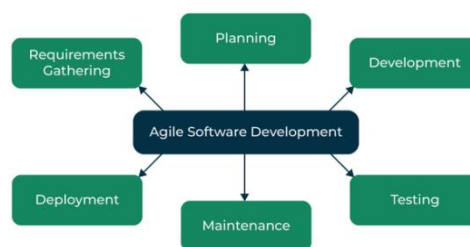

Fig. 5   Software development methodology using Agile approach

C. Design and Architecture

Froker's design and architecture were carefully crafted for scalability, performance, and maintainability, using cutting-edge technologies. For the backend, Node.js and Express.js were chosen for their event-driven architecture and flexibility. MongoDB was selected as the NoSQL database for its scalability. React Native was used for frontend development, providing a seamless experience across iOS and Android devices. RESTful API endpoints were designed with security in mind, utilizing authentication mechanisms like JWT. MongoDB was employed as the primary database, with a schema optimized for performance and data integrity. The architecture was designed to be horizontally scalable, with containerization technologies like Docker for deployment.

Continuous integration and deployment pipelines ensured fast and reliable releases. This tech stack enabled Froker to build a robust and feature-rich food delivery application, meeting the needs of modern users.
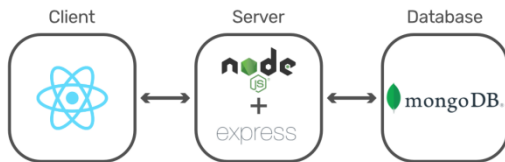

Fig. 6   Software development methodology using Agile approach

C. Development and Coding

The development phase of Froker focused on creating a strong and scalable application. This involved choosing the right technologies, following coding standards, using version control, and integrating continuous deployment practices. The aim was to deliver a high-quality app that meets user needs in the food delivery market. Robust user authentication and authorization mechanisms were implemented for secure access to the platform's features. Both frontend and backend components were designed to ensure a smooth and secure authentication process for users.
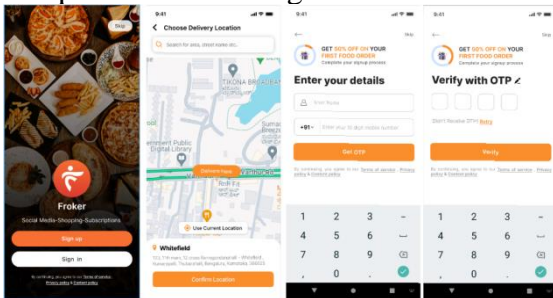

Fig. 7   Software development methodology using Agile approach

Froker prioritized secure user authentication and authorization, ensuring seamless access to its features. The frontend offered intuitive sign-up, log-in, and password recovery screens. Backend-wise, Node.js with Express.js managed authentication endpoints, while MongoDB securely stored user credentials. Middleware enforced access control, and security measures like bcrypt for password hashing and JWT for authentication tokens were implemented.

In the Explore section, Froker optimized frontend navigation with pagination and seamlessly integrated with Petpooja for real-time restaurant data retrieval. Redis cache boosted performance, and robust integration practices ensured reliability, enriched by user reviews and location-based recommendations.

The Restaurant Details and Menu Page provided a user-friendly interface for exploring and customizing orders. Frontend simplicity allowed easy navigation, while the backend managed real-time data retrieval and efficient order processing.

The Cart Section streamlined ordering and checkout with an intuitive frontend interface. Users could manage orders, apply customizations, and complete transactions seamlessly, aided by features like address selection and coupon application.

By simplifying complex processes and focusing on user-friendly interfaces, Froker ensures a seamless and enjoyable dining experience for its users.
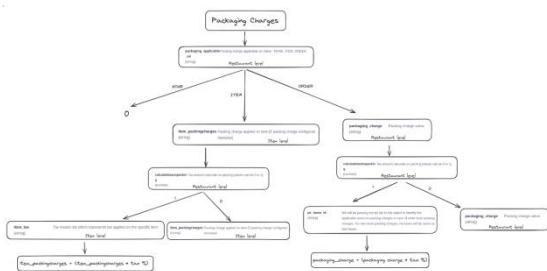
Fig. 7   Flow of calculating packaging charges for ordering food

Froker's backend manages complex tasks like price calculations, coupon validation, and order processing seamlessly, addressing challenges with locking mechanisms and performance optimizations.

Payment processing, handled through PhonePe's gateway, ensures security and flexibility. The frontend offers multiple payment options, while the backend integrates with PhonePe's API for transaction management and real-time tracking.

Integration with Porter for order tracking and billing details simplifies user experience. Frontend updates and backend data management ensure transparency and reliability.

The Shots feature combines videos with interactive ordering, enhancing engagement. The frontend offers smooth playback and integrated ordering, while the backend efficiently handles video storage and tagging.

Testing and Maintenance strategies, including in-house testing and user feedback, ensure ongoing platform quality and user satisfaction.
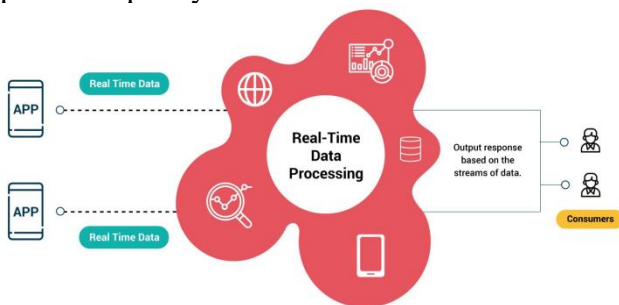

Fig. 8   Backend structure visualization

In Froker's Restaurant Details and Menu Page, users embark on a delightful culinary journey, exploring a variety of dishes and customizing their dining experience with ease. Through a user-friendly interface and seamless integration with backend systems, Froker offers a hassle-free way for users to discover, personalize, and enjoy their favourite meals.
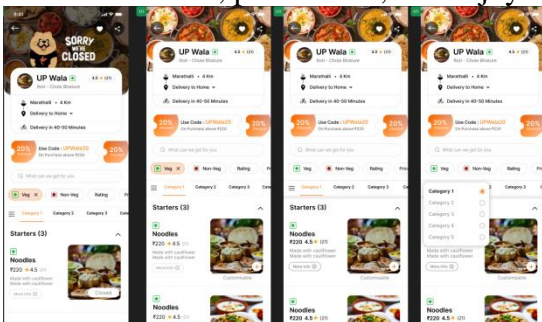

Fig. 9   Restaurant Details and Menu Page

V.   RESULT AND DISCUSSION

Froker utilized Retool for data visualization, creating interactive dashboards to showcase metrics and trends. Google Analytics integration tracked website traffic and user engagement, providing insights for optimization.

Middleware and validation libraries ensured data integrity and graceful handling of invalid requests. Express.js with MVC architecture laid the foundation for a scalable backend.

MongoDB integration facilitated flexible data storage. Data from frontend events and APIs were aggregated for analysis using Retool and Google Analytics.

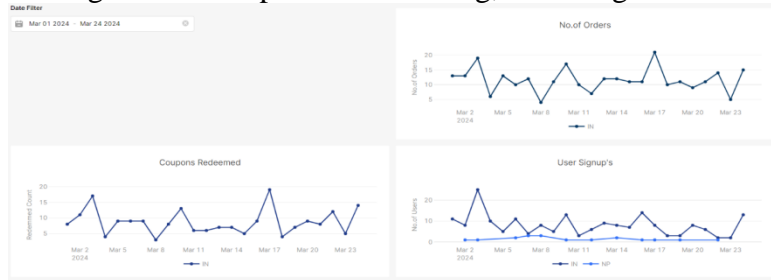Performance optimization techniques like code minification and caching were applied for fast loading times. Comprehensive testing, including unit and end-to-end testing, ensured reliability.

Fig. 10   Stats provided by retool thorough the Backend API's

VI.   CONCLUSION AND FURTHER WORK

This project highlights India's online food delivery market potential and innovation opportunities. It addresses consumer needs with user-centric design and insights, paving the way for future advancements. Ethical considerations like food waste and fair labor practices are crucial as the sector expands. Froker's unique value proposition lies in its tech-driven approach, including features like Shots and the Furos reward system. With over 10,000 downloads and 3,000 weekly users, Froker demonstrates its appeal. Using technologies like React Native and Node.js, Froker aims to expand its offerings and enhance user experience, solidifying its position in the market.

Froker can enhance personalization by using advanced algorithms to analyze user behavior and suggest tailored food options. Machine learning models can predict preferences and offer personalized deals based on order history and frequency. Expanding restaurant partnerships will broaden Froker's culinary offerings, with streamlined menu and inventory management systems improving user experiences. Gamification elements and social media integration can boost user engagement, incentivizing participation and fostering community.
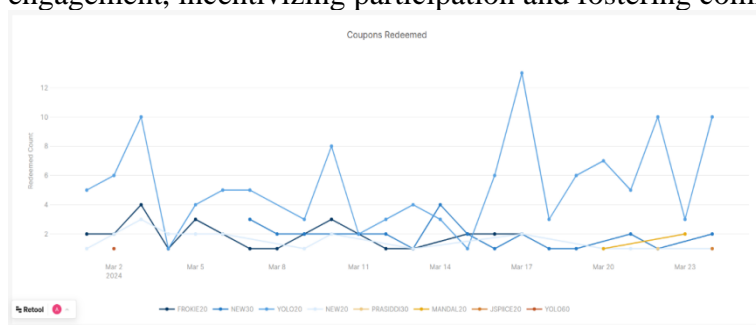

Fig. 11   Stats provided by retool thorough the Backend API's.

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