QR Code Based Service Digitalisation

EaseInn

[1]Huda Javeed, [2]K Harshitha, [3]Faisal Kaladgi, [4]Prabhakar K.

[1,2,3] Department of Computer Science and Engineering

[4]Assistant Professor, Department of Computer Science and Engineering,

[1,2,3,4] CMR University, Bengaluru, India

Abstract: In today's fast-paced and competitive hospitality landscape, delivering exceptional guest experiences is paramount. One of the critical factors influencing guest satisfaction is the efficiency and responsiveness of hotel services. Traditional communication methods such as in-room telephones, intercom systems, or physical visits to the front desk are often time-consuming, prone to errors, and inconvenient for both guests and staff.

EaseInn is a QR code-based digital solution designed to modernize and streamline guest service management in hotels. By simply scanning a QR code placed in hotel rooms or common areas, guests are directed to a mobile-responsive web interface. This interface enables them to place requests for room service, housekeeping, checkout support, or technical assistance without the need for app installations or direct staff interaction.

The system automates the service request workflow by routing requests directly to the concerned department, minimizing delays and improving service quality. It not only enhances the guest experience through real-time updates but also optimizes staff productivity by digitizing request handling and tracking. This paper explores the system architecture, technical implementation, core functionalities, and the potential for scalability and integration with other smart hotel systems.

Keywords - Hospitality Technology; QR Code; Guest Service Automation; Contactless Service; Web-Based Interface; Operational Efficiency; Room Service Digitization; Hotel Management System.

I. INTRODUCTION

1.1 Background and Motivation

The hospitality industry is currently undergoing a significant digital transformation driven by rising guest expectations and the widespread adoption of smart technologies. Modern travellers no longer seek just accommodation; they expect personalized experiences, convenience, and instant service. However, traditional communication methods such as intercoms, physical visits to the front desk, or in-person service requests are often inefficient and prone to delays or miscommunication. These inefficiencies not only affect guest satisfaction but also reduce operational productivity for hotel staff. Furthermore, the COVID-19 pandemic intensified the need for contactless and hygienic service options, underscoring the urgency of implementing safe, technology-driven solutions within the hospitality sector.

To address these challenges, *EaseInn* was conceptualized as a QR code-based digital concierge platform. Guests can simply scan a QR code placed in rooms or common areas to access a web interface that allows them to request services such as room cleaning, food ordering, checkout assistance, or technical help. These requests are instantly routed to the appropriate department through a centralized dashboard, eliminating delays and

manual dependencies. The platform provides a seamless guest experience while optimizing backend hotel operations.

1.2 Objectives of the Study

The objective of this study is to develop and document a lightweight, web-based platform that streamlines the process of guest service requests in hotels through the use of QR codes. The platform aims to minimize human involvement in the request process, reduce turnaround times, and provide transparency through real-time status updates. It also seeks to improve guest satisfaction by offering a smooth, contactless user experience. Furthermore, this study emphasizes the creation of a scalable and cost-effective solution that can be implemented in both budget hotels and luxury chains.

1.3 Scope of the Platform

EaseInn is designed to serve as a plug-and-play digital layer for hotels looking to modernize their service infrastructure without heavy investments. The scope of the platform includes the generation and placement of unique QR codes for each room, a mobile-responsive web interface for guests, and an administrative dashboard for staff members to receive, manage, and fulfill requests. It covers a range of services including housekeeping, food delivery, maintenance support, and feedback submission. Future expansions of the platform envision integration with Property Management Systems (PMS), billing, analytics dashboards, multilingual support, and IoT-based automation for in-room devices. The platform's adaptability ensures it can scale with the growing needs of any hotel.

II. LITERATURE REVIEW

The growing demand for enhanced guest experiences and operational efficiency has driven digital transformation in the hospitality sector. Early studies by authors like Zeng and Chan [1] and Goh and Law [2] highlighted the challenges of traditional hotel service models, particularly the delays and inefficiencies caused by manual request systems and fragmented communication channels. These studies laid the groundwork for digital innovations aimed at improving service responsiveness and accuracy.

One promising technology that has gained attention in recent years is QR code-based solutions, which are seen as a lightweight, scalable method to address these inefficiencies. According to studies by Li and Kim [3], QR code technology provides a cost-effective means to streamline guest interactions and reduce reliance on staff, particularly in a post-pandemic world where contactless solutions have become essential. Similarly, research by Naylor and Toft [4] focused on QR-based ordering systems within the restaurant industry, suggesting that similar approaches could be effectively implemented in hotel room services to improve order accuracy and speed.

Recent literature also delves into the role of web-based platforms in enhancing guest interactions. A study by Anwar et al. [5] argued that browser-based platforms offer superior adoption rates and ease of use compared to app-based systems, especially in short-stay accommodations where guests are often hesitant to download new applications. In line with this, Kapoor and D'Souza [6] investigated the combined use of QR codes and progressive web applications (PWAs), noting that they enhance accessibility across various devices, making them ideal for diverse guest demographics.

In addition to improving guest experiences, digital transformation also supports hotel staff in becoming more efficient. Verma et al. [7] explored the integration of real-time dashboards with QR-based systems, demonstrating that staff productivity improved when guest requests were automatically logged and tracked through centralized interfaces. Further research by Saxena and Deshmukh [8] revealed that incorporating feedback loops into guest platforms led to a notable increase in overall guest satisfaction, by up to 28%.

While major hotel chains have successfully adopted digital technologies such as CRM and IoT, smaller and independent hotels continue to face barriers in implementing these solutions. Batra and Menon [9] called for the development of modular, cost-effective digital tools tailored to mid-sized establishments, emphasizing that QR code-based solutions could serve as an accessible entry point for digital adoption. Moreover, Yadav

et al. [10] highlighted the importance of language customization and low-code deployment in making digital solutions more feasible across various geographic regions.

Despite the widespread use of QR codes in industries like food delivery and event management, their application in hotel room service digitization remains limited in academic literature. The current study aims to address this gap by documenting the design, implementation, and scalability of **EaseInn**, a QR code-based guest service platform that prioritizes speed, accessibility, and seamless integration.

III. METHODOLOGY

The development and implementation of EaseInn, a QR code-based hotel guest service system, followed the Agile Software Development Life Cycle (SDLC) model. This methodology allowed for iterative enhancements, continuous integration of stakeholder feedback, and adaptive planning to meet evolving user needs in the hospitality sector. The following subsections describe the core technical components and workflow involved in the system's design.

3.1 Agile Development Approach

The EaseInn platform was developed using the Agile methodology, emphasizing collaborative, time-boxed development cycles known as sprints. During each sprint, prototypes were tested by stakeholders primarily hotel staff and sample guests to collect feedback on functionality and usability. This iterative process ensured that the product continuously evolved based on real-world feedback, with user stories translated into development tasks using tools like Trello and GitHub.

3.2 System Overview

EaseInn is built as a lightweight, browser-based platform to maximize compatibility and user accessibility. It consists of three major components: (1) QR codes for access, (2) a guest-facing dashboard for service selection, and (3) a backend management portal for hotel staff. The QR codes are unique to each hotel room and allow guests to access their dashboard instantly without needing to download a mobile application. Once accessed, guests can request services such as housekeeping, food delivery, or maintenance directly from the dashboard.
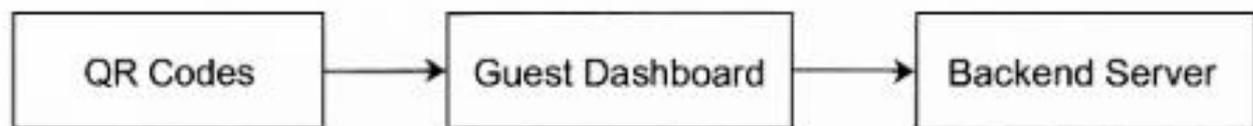

Figure 1: System Flow Diagram

3.3 QR Code-Based Guest Interaction

Each room in the hotel is assigned a distinct QR code that, when scanned, redirects the guest to a dynamic, room-specific dashboard hosted on a web browser. This approach eliminates the dependency on native mobile applications and ensures seamless interaction for short-stay guests who are typically reluctant to install new apps. The dashboard displays a curated list of available services with action buttons for immediate request submission. This reduces the need for phone calls or front desk interactions, improving service accuracy and speed.

3.4 Service Request Workflow

The guest service request process begins with the scanning of the QR code. After selecting a service from the dashboard, the request is logged in the backend database and simultaneously notifies the assigned hotel staff through a centralized dashboard. Each request is tagged with a timestamp, room number, and service category. As the service is fulfilled, the status is updated in real time, which is visible to both the staff and the guest, ensuring transparency and traceability in service management.
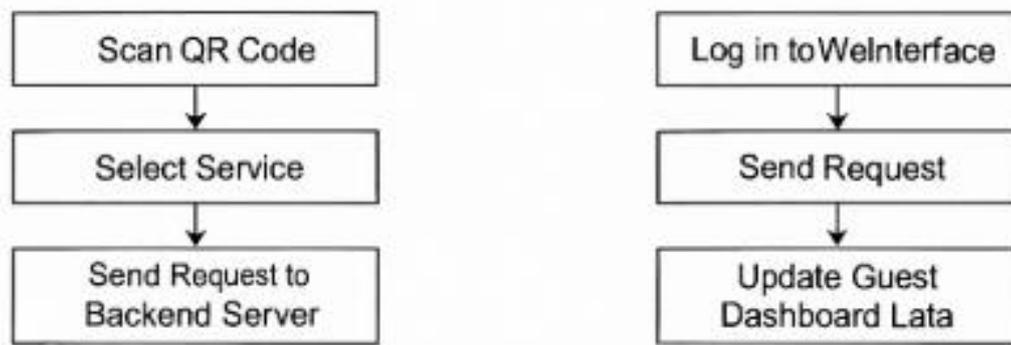
Figure 2: Guest Service Request Flowchart.

3.5 System Architecture

EaseInn uses a three-tier architecture composed of the presentation layer, application layer, and database layer. The **presentation layer** includes the guest-facing dashboard and staff interface, both developed using HTML, CSS, and JavaScript with responsive design principles. The **application layer** is built using Node.js, which handles business logic, manages sessions, and routes service requests. The **database layer** stores all persistent data, including room-service mappings, request logs, and staff assignments. The modularity of this architecture ensures that EaseInn can be deployed in both small and large hotel environments with minimal configuration.
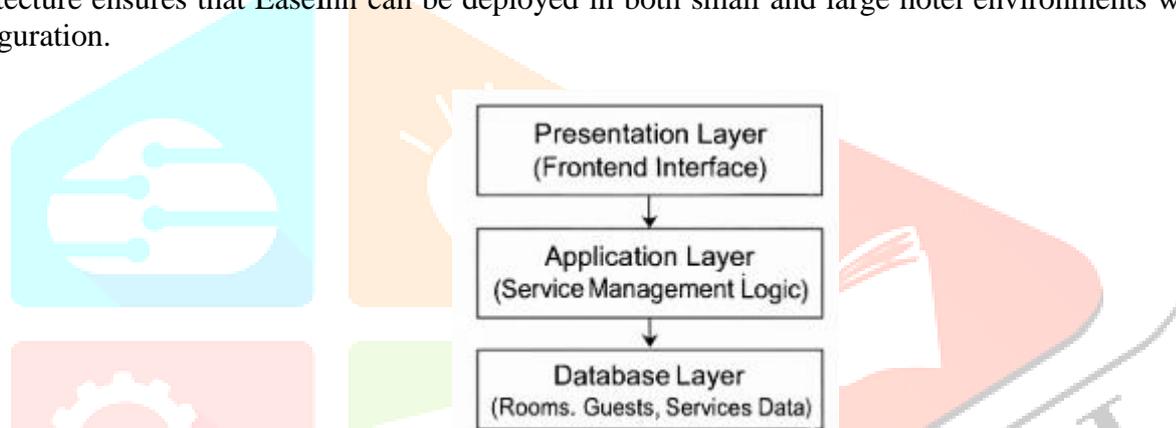

Figure 3: Architecture Diagram.

3.6 Centralized Staff Dashboard

The staff dashboard is designed to automate task management and enhance operational efficiency. Once a request is generated by a guest, it appears on the dashboard categorized by urgency (e.g., High, Medium, Low). Staff members can update the service status, mark requests as resolved, and provide internal notes if needed. This centralized interface not only reduces manual tracking but also enables analytics on service response times, common requests, and staff performance.

IV. FEATURES

The EaseInn platform offers a range of practical features tailored to address the evolving demands of modern hotel operations and guest convenience.

One of the most prominent advantages is its app-free architecture. Guests can access the service dashboard directly through a QR code scan using their smartphone browsers, eliminating the friction often associated with downloading and installing mobile applications, especially for short-stay visitors.

The system supports multi-category service requests, allowing users to initiate tasks such as food ordering, room cleaning, laundry services, and checkout requests through a unified interface. This not only streamlines the guest experience but also reduces the dependency on traditional front-desk communication.

To ensure operational efficiency, EaseInn includes a robust admin panel for hotel staff. This panel provides real-time visibility into incoming guest requests, allowing tasks to be assigned, tracked, and completed systematically. The dashboard supports status updates and prioritization to optimize service fulfillment.

In addition, the platform incorporates QR code analytics, enabling hotel administrators to monitor QR scan frequency, peak usage times, and guest interaction patterns. These insights can be leveraged to improve service offerings and enhance user engagement strategies.

The system also facilitates notification delivery, where guests receive alerts upon successful completion of their requested services. This promotes transparency and reduces uncertainty, contributing to higher satisfaction rates.

Lastly, the EaseInn platform integrates a feedback form that appears post-service completion. This feature allows guests to rate their experience and provide suggestions, thereby creating a continuous feedback loop that supports quality improvement and data-driven decision-making for hotel management.

V. SYSTEM ARCHITECTURE.

The EaseInn platform is designed with a modular system architecture that ensures flexibility, real-time interaction, and ease of integration into existing hotel workflows. By separating the system into distinct functional components frontend, backend, database, administrative dashboard, and cloud hosting the architecture allows independent scaling, faster development cycles, and fault isolation. This modularity is particularly beneficial in hospitality settings where real-time guest service and ease of deployment are essential. The following sections describe each component in detail.

5.1 Frontend: Guest Web Interface

The guest interface acts as the initial touchpoint between the hotel and its customers. It is built using **HTML, CSS, and vanilla JavaScript**, with a strong focus on responsive design principles to ensure compatibility across mobile phones, tablets, and desktop devices. This choice of web technologies allows for a lightweight user experience and eliminates the need for guests to download mobile applications an important consideration for short-stay or first-time users who may hesitate to install third-party apps. The interface dynamically displays service categories such as room cleaning, food orders, and laundry requests, offering a user-friendly layout with clear icons, quick-access buttons, and intuitive form fields. The front end communicates with the backend via secure HTTP requests to ensure that service requests are processed instantly and accurately.

5.2 Backend Server : API and Logic Layer

The backend server is developed using **Node.js** and **Express.js**, two widely adopted technologies in building scalable, event-driven web applications. The backend handles request routing, data validation, guest authentication, and response generation. Every time a guest submits a service request, the backend assigns it a unique ID along with metadata such as timestamp, room number, and request type. This layer also manages input sanitation to avoid injection attacks and malformed data. In addition, business logic such as request prioritization (e.g., emergencies first) and notification triggering is managed here. Express.js simplifies API development and ensures that endpoints remain RESTful and well-structured, which is essential for future upgrades and third-party integration..

5.3 Database Layer: MongoDB for Flexible Storage

To store guest requests, service logs, room IDs, staff response times, and feedback forms, the platform utilizes **MongoDB**, a NoSQL database known for its document-oriented storage model and high scalability. Each hotel can maintain separate collections for rooms, service types, requests, and feedback entries, enabling efficient query performance and simplified maintenance. MongoDB's JSON-like structure aligns naturally with the data exchanged between frontend and backend, reducing the need for complex data transformation. Additionally, MongoDB supports geospatial queries, analytics, and time-based indexing,

which can be leveraged in future iterations of EaseInn to provide deeper operational insights and automation features for hotel administrators.

5.4 Admin Panel: React-Based Dashboard

The administrative interface is built using **React.js**, a component-based JavaScript library ideal for creating interactive and real-time web applications. The dashboard allows hotel staff to monitor incoming guest requests through a centralized interface that displays request type, time received, room number, and completion status. Admins can mark tasks as completed, assign service categories to specific staff, or escalate urgent issues. The dashboard uses WebSocket or polling-based techniques to update in real time, ensuring that no request goes unnoticed. The interface also provides visual metrics such as service resolution times and staff efficiency graphs. This not only improves internal accountability but also fosters faster, more accurate service delivery to guests.

5.5 Hosting and Deployment: Cloud Integration

The entire EaseInn system is deployed on cloud platforms such as **Heroku** or **Amazon Web Services (AWS)**. Cloud deployment ensures the system is highly available, fault-tolerant, and capable of handling spikes in user traffic, which is particularly important during peak travel seasons or in large hotel chains. Deployment scripts and Continuous Integration/Continuous Deployment (CI/CD) pipelines are used to roll out updates without downtime. Heroku's container-based infrastructure supports instant scaling for small to medium-sized hotels, while AWS offers additional tools for advanced security, monitoring, and data backup. This cloud-first deployment model reduces the need for on-site infrastructure and lowers the total cost of ownership for hotel operators.

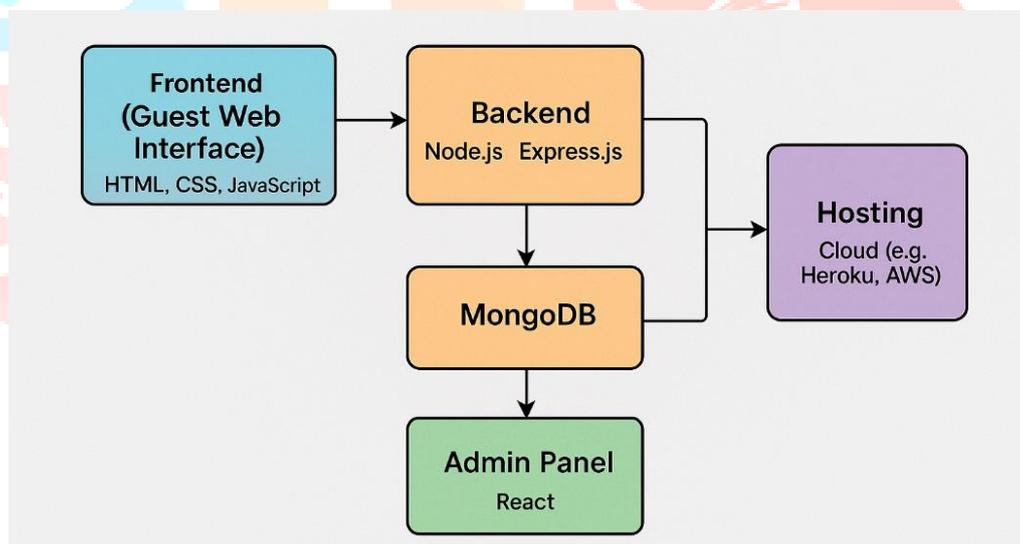## 5.6 System Architecture Summary and Diagram

Figure 4: EaseInn System Architecture

The diagram below shows how each module connects and communicates. Guest devices interact with the web interface via QR code, which routes their requests through the API layer into the database and admin panel. Real-time updates and analytics flow back to both the guest and hotel staff seamlessly.

VI. USE CASE SCENARIOS

The EaseInn platform introduces **digitized workflows** tailored to handle frequently recurring guest service interactions in hotels, all facilitated through a **user-friendly QR code-based interface**. This system eliminates the need for app downloads, enabling instant access to services across all types of devices with minimal friction. By converting traditional manual processes into structured, automated service flows, EaseInn not only reduces response time but also enhances the overall guest experience.

The following subsections outline real-world use case scenarios that demonstrate the application of EaseInn's key features. These examples illustrate how the platform supports efficient service management, real-time updates, and actionable analytics, ultimately leading to **greater guest satisfaction, improved staff coordination**, and better operational outcomes. Each use case highlights the practical relevance of the system in enhancing both the **guest's comfort** and the **hotel's service efficiency**.
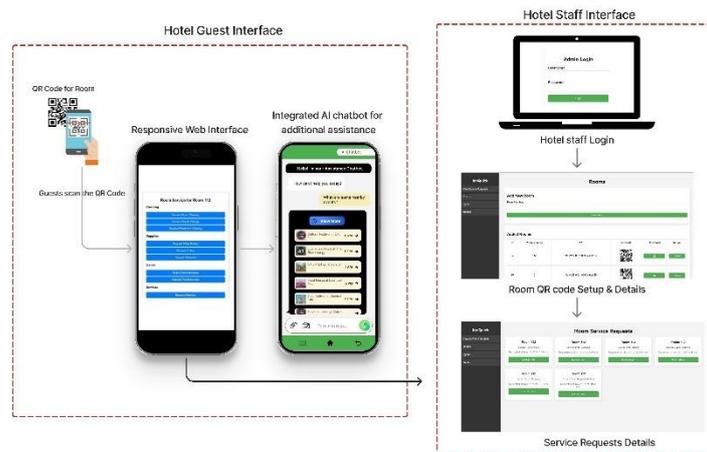
Figure 5: Room-Service Flow.

6.1 Room Service Order

In a typical room service request, a guest begins by scanning the QR code assigned to their room, which links them directly to a personalized dashboard hosted on a web-based interface. This dashboard eliminates the need to download a mobile application, thus increasing adoption across guests with varying tech-savviness. The guest selects the "Order Food" category, which loads a dynamically generated menu sourced from the backend database. Menu items are displayed with images, descriptions, and prices, allowing guests to make informed selections.

Once the order is finalized and submitted, it is pushed to the kitchen's admin dashboard through a backend API call. The admin panel logs the request along with the timestamp and room number. Kitchen staff then prepare the order, and upon delivery, they update the order status as "Completed." This real-time status update is reflected on the guest's dashboard, keeping them informed without the need to call the reception. The use of automated logging and timestamping also provides valuable data for tracking kitchen performance and optimizing turnaround times.

6.2 Housekeeping Request

For housekeeping-related needs, the guest navigates to the same web dashboard and selects the "Request Cleaning" option. This triggers a backend service that logs the request and immediately sends a notification to the housekeeping team via the admin interface. Each request is categorized based on type (e.g., general cleaning, towel change, or bathroom service), enabling better task allocation among staff members.

The admin dashboard offers a visual queue of pending tasks, allowing supervisors to assign requests based on staff availability and urgency. Once a staff member fulfills the cleaning request, the status is updated from "Pending" to "Completed" in the system. The guest, in turn, receives a visual confirmation on their dashboard. This process significantly reduces miscommunication and manual coordination while creating a traceable record for accountability. Over time, this digital record also helps management identify peak service hours and plan shifts accordingly.

6.3 Feedback Submission

Customer feedback is vital for service improvement, and EaseInn integrates this feature directly into its platform. After the guest checks out or completes their final service request, the system automatically prompts them with a feedback form. The form includes rating sliders for different aspects such as

cleanliness, response time, food quality, and overall satisfaction, along with an optional comments section for specific suggestions or complaints.

This structured data is stored securely in a MongoDB database and can be accessed via the admin panel's analytics section. Hotel managers can sort feedback by date, room, or service type, enabling more targeted improvements. The real-time nature of feedback also allows hotels to rectify any dissatisfaction quickly, thereby turning potentially negative experiences into positive brand impressions. Furthermore, feedback trends can guide strategic decisions such as staffing, training, or even vendor selection.

6.4 Emergency Call Assistance

EaseInn's architecture also includes an emergency request feature designed for critical scenarios requiring immediate attention. The guest interface contains a clearly labeled "Emergency Assistance" button, accessible from all pages of the dashboard. When activated, this button sends a high-priority alert to the front desk, marked distinctly from regular service requests.

This alert contains the room number, request timestamp, and a flag indicating an emergency, which appears in red or with a distinct icon on the admin panel. Staff can acknowledge the alert through the dashboard, and optionally send a predefined message like "Help is on the way" to reassure the guest. This feature is essential for situations such as medical emergencies, security concerns, or equipment malfunctions, and reduces the time it takes for staff to respond. By integrating such functionality, EaseInn ensures not only comfort and efficiency but also safety and emergency preparedness.
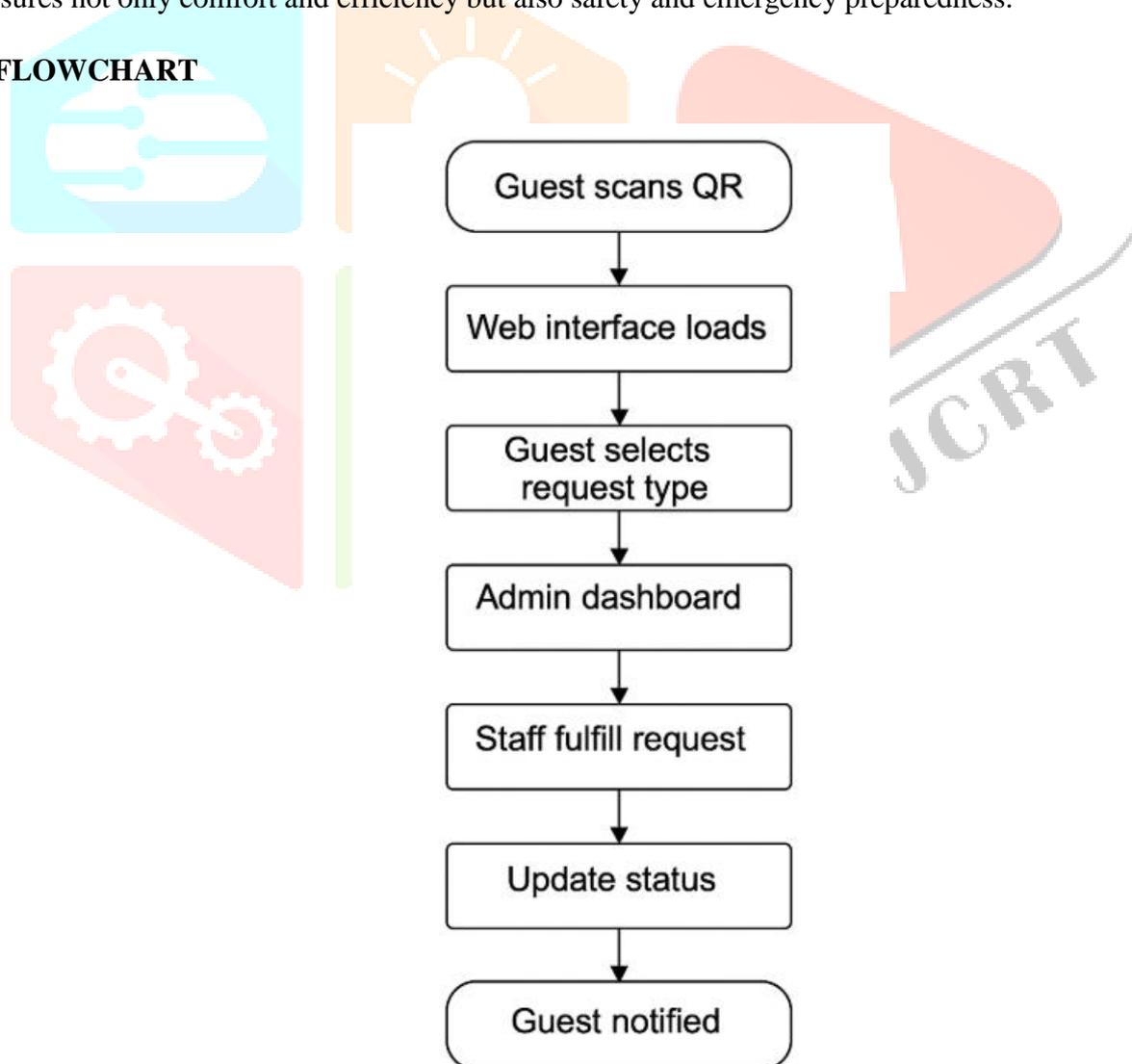
VII. FLOWCHART

Figure 6: System Flowchart

The EaseInn platform follows a streamlined, step-by-step workflow for handling guest service requests efficiently. The flowchart illustrated above presents the logical sequence of user interaction and backend processing that ensures requests are managed promptly and transparently.

The process begins when a guest scans the QR code displayed in their room. This QR code is uniquely linked to their room profile and loads the guest-specific web interface directly on their browser. Unlike traditional apps, this eliminates the need for installation and supports instant onboarding.

Next, the guest selects a request category such as food, housekeeping, laundry, or an emergency service from the available options. The intuitive interface ensures that users can navigate the options with minimal effort, regardless of their technical proficiency.

Once a service is selected, the request is transmitted to the backend, where it is logged into the system database and instantly reflected on the admin dashboard. The admin panel is accessible to authorized staff, who can view, categorize, and prioritize requests in real time.

The assigned staff then fulfills the request, after which they update the service status through the admin interface. This update is immediately reflected on the guest interface, providing real-time feedback on request progress.

Finally, once the request is marked complete, the guest receives a notification and is prompted to provide feedback via a short form. This helps the hotel collect insights for service improvement while closing the request loop in a structured manner.

This flowchart-based model ensures clarity, automation, and two-way transparency crucial for enhancing guest satisfaction and maintaining service excellence in modern hospitality environments.

VIII. ADVANTAGES

The EaseInn system introduces numerous improvements that benefit both hotel guests and management staff. The platform supports operational excellence, guest satisfaction, and technological adaptability, making it a compelling digital solution for hospitality businesses. Below are key advantages elaborated under relevant sub-headings:

8.1 Faster Service Turnaround

Traditional service models in hospitality rely on direct human interaction via phone calls, in-person conversations, or logbooks which often cause delays due to miscommunication or staff unavailability. EaseInn overcomes this by enabling guests to submit service requests directly via a QR code-based web interface. The requests are instantly routed to the backend system and reflected in the admin dashboard. This digital flow reduces response time significantly, allowing services such as food delivery, cleaning, and checkouts to be handled more swiftly and efficiently.

8.2 Eliminates Language Barriers

A major challenge in serving international or multilingual guests is effective communication. Language discrepancies can result in confusion, incorrect orders, or incomplete service. EaseInn addresses this by offering a universally understandable, icon-driven UI and the flexibility to include multiple language options. This ensures that guests from diverse backgrounds can interact with the system easily, without relying on verbal instructions or human translators, thereby improving accessibility and comfort for all.

8.3 Reduces Staff Workload

By automating routine communication and eliminating the need for constant back-and-forth between guests and staff, the system reduces manual overhead. Housekeeping, kitchen, and front desk teams receive clear, timestamped requests in a centralized dashboard, which helps prioritize tasks and manage workflows more efficiently. This automation not only improves staff productivity but also helps reduce errors and burnout associated with repetitive manual tasks.

8.4 Scalable for Small and Large Hotels

EaseInn's modular design and cloud-based deployment model make it highly scalable. Small and mid-sized hotels can implement the system without needing heavy infrastructure investments, while larger chains can integrate it into their existing digital ecosystem. Its performance remains stable regardless of the number of rooms or concurrent users, which makes it suitable for properties of varying sizes and guest volumes.

8.5 Enhances Customer Satisfaction and Ratings

Guest satisfaction is one of the most critical success metrics in the hospitality industry. With EaseInn's user-friendly interface, faster service delivery, and feedback collection mechanisms, guests enjoy a more responsive and personalized experience. The ability to track service progress and provide feedback creates a sense of empowerment and transparency. In turn, this positively influences online reviews and overall brand reputation, giving hotels a competitive edge in a digitally driven marketplace.

IX. FUTURE ENHANCEMENTS

The EaseInn platform, while functionally robust in its current iteration, holds significant potential for expansion through emerging technologies. The following proposed enhancements aim to elevate user experience, operational intelligence, and smart hospitality integration in the near future:

9.1 Real-Time Chat Support

To further bridge the communication gap between guests and hotel staff, a real-time chat feature will be integrated into the platform. This feature will allow guests to have instant conversations with designated staff members, enabling clarification of service-related concerns, personalized requests, or general inquiries. Real-time chat not only enhances interactivity but also ensures that issues are addressed promptly, reducing wait times and increasing guest satisfaction.

9.2 Voice Command Integration

For increased accessibility and convenience, future versions of EaseInn aim to support voice command functionality. Leveraging speech-to-text technologies and virtual assistants, guests will be able to navigate the interface and place service requests through voice input. This feature will particularly benefit differently-abled guests and reduce friction in interaction for users who may find manual input less intuitive.

9.3 AI-powered Feedback Analysis

Collecting feedback is crucial, but deriving actionable insights from it is even more valuable. To this end, AI-powered sentiment analysis tools will be integrated into the platform's backend. These tools will evaluate guest feedback, identify patterns of dissatisfaction or praise, and present summarized reports to hotel managers. This enhancement will enable data-driven decision-making and targeted service improvements.

9.4 IoT Integration (Smart Lights, AC)

The roadmap includes incorporating Internet of Things (IoT) capabilities that will allow guests to control in-room appliances such as lighting, air conditioning, and entertainment systems directly through the EaseInn interface. Such smart integrations not only improve guest comfort but also promote energy efficiency and personalized room settings based on guest preferences.

9.5 Multilingual Support

To further support global travelers, the platform will be extended with dynamic multilingual capabilities. This includes both text translations and region-specific content customization. By auto-

detecting the device's language or allowing manual language selection, EaseInn can provide a seamless and inclusive experience for non-native speakers, which is especially valuable in international hotel chains.

9.6 Loyalty Program Integration

Another key enhancement involves integrating hotel loyalty or rewards programs into the guest interface. Guests will be able to view and redeem points, receive personalized offers, and track their membership status through the platform. This not only increases user engagement but also builds brand loyalty, encouraging repeat visits and long-term relationships between guests and the hotel.

X. RESULTS AND DISCUSSION

The EaseInn web platform was developed to enhance the in-room experience of hotel guests by offering a QR-based, no-download-needed digital service interface. The goal was to create a minimalistic yet functional web application that allows guests to access various services conveniently through their mobile browsers.

10.1 User Journey and Interface Overview

Upon scanning the QR code provided in each room, guests are directed to the Room Number Entry Screen (Fig. 7). This acts as a lightweight verification mechanism that links the guest to their room, enabling room-specific service delivery without additional logins or credentials.
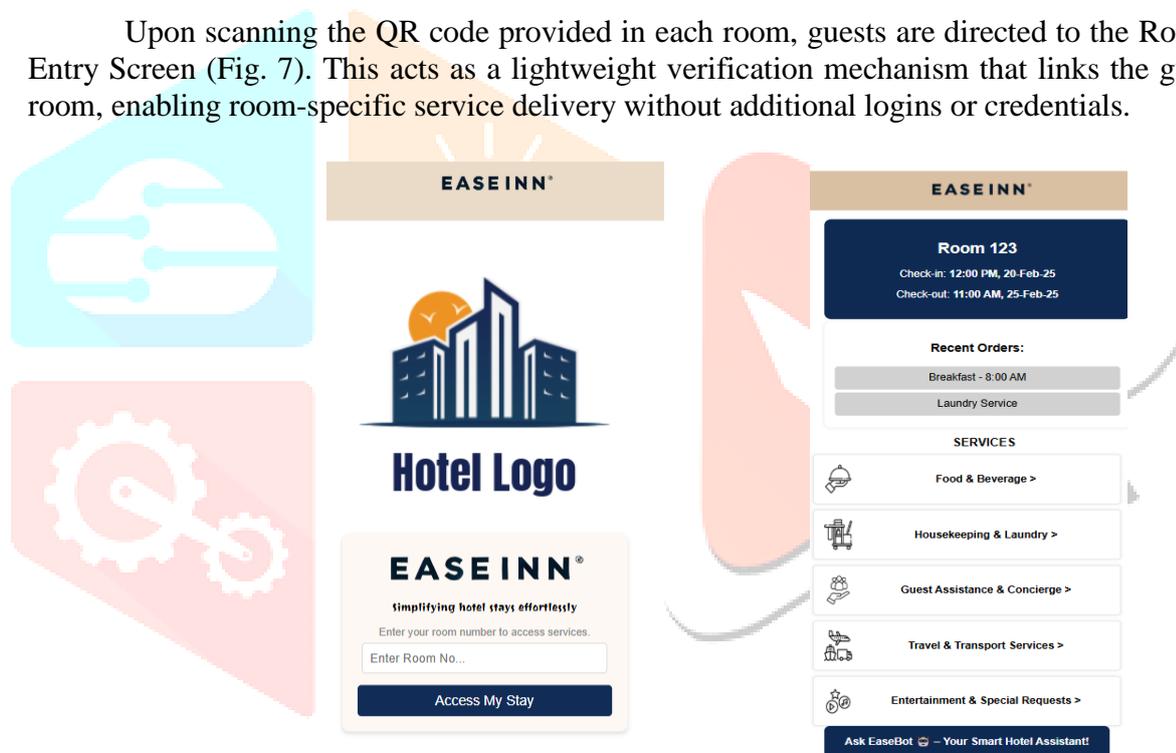
Figure 7: Room Number Entry Screen   Figure 8: Home Page with Service Shortcuts

Post-verification, guests arrive at the Home Page with Service Shortcuts (Fig. 8), which presents all available services in a dashboard-style layout. Services include food ordering, laundry, housekeeping, guest assistance, and checkout, designed with a user-friendly, icon-based interface for clarity and ease of access.

10.2 Food Ordering and Checkout Flow

Guests can explore the food ordering section via an intuitive UI that displays available items, categorized by meal type and preferences (Fig. 9). The Checkout Cart interface (Fig. 10) allows users to review, modify, or remove items before confirming their order. Once the order is placed, a confirmation screen (Fig. 11) provides real-time feedback, including estimated delivery time and contactless service information.
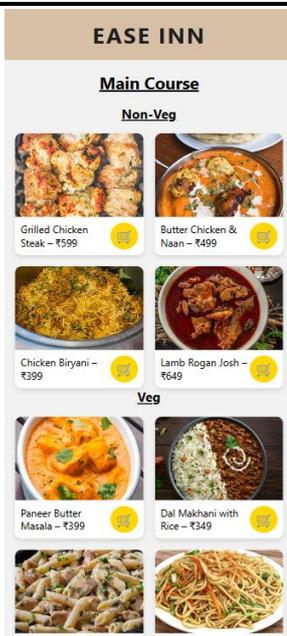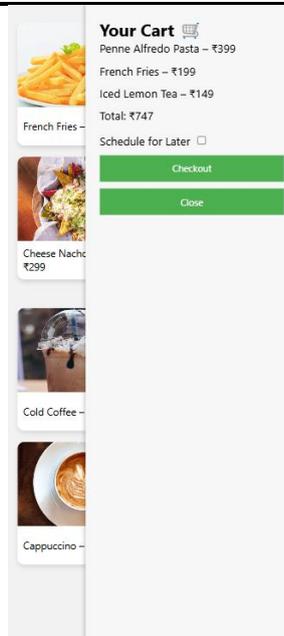
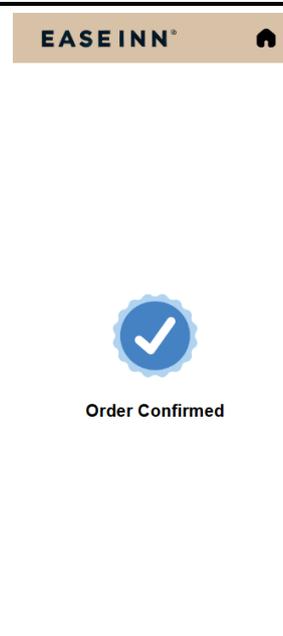**Figure 9: Food Ordering Interface   Figure 10: Checkout Cart   Figure 11: Order Confirmed**

10.3 Additional Guest Services

Other essential services are consolidated under a unified interface for Laundry Service & Housekeeping Requests (Fig. 12). Guests can schedule laundry pickups, request fresh linen, or notify the staff about cleaning needs all from a single, integrated page.
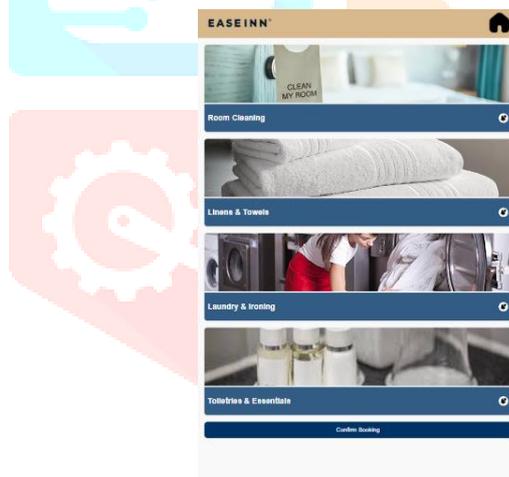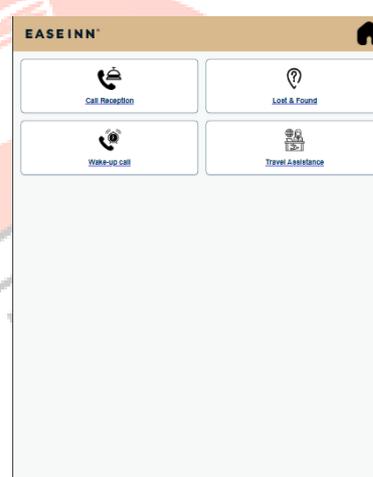

Figure 12: Laundry Service & Housekeeping Page Services

Figure 13: Guest Assistance

The Guest Assistance Services page (Fig. 13) includes important features like Wi-Fi credentials, emergency contact numbers, front desk communication, and FAQs, offering quick access to help and information without needing to call reception.

XI. CONCLUSION

The development of **EaseInn** marks a significant advancement in simplifying hotel guest service management through QR-based web access. By eliminating the need for app downloads or complex logins, the system promotes ease of use and broad accessibility. Its modular interface streamlines essential services such as food ordering, housekeeping, laundry, and guest support all within a unified platform.

The project demonstrates how digital transformation in hospitality can enhance user experience while also reducing operational overhead for hotel staff. With a lightweight design and scalable architecture, **EaseInn** offers strong adaptability for hotels of various sizes and service tiers. Moreover, the platform supports the growing global emphasis on **contactless, hygienic, and convenient** interactions in post-pandemic hospitality settings.

Future improvements like real-time tracking, chatbot integration, and multilingual support will further enrich the platform and expand its usability. Thus, **EaseInn stands out as a practical, future-ready, and industry-relevant innovation** with high potential for real-world implementation.

XII. ACKNOWLEDGMENT

REFERENCES

[1] Zeng, B. and Chan, C. 2015. Digital Transformation in the Hospitality Industry: A Review. Journal of Hospitality & Tourism Technology, 6(3): 234–248.

[2] Goh, C. and Law, R. 2016. The Role of Technology in Enhancing Hotel Service Quality. Tourism Management Perspectives, 20: 61–69.

[3] Li, X. and Kim, Y. 2020. The Use of QR Code Technology in Post-Pandemic Hotel Services. Journal of Hospitality and Tourism Research, 44(6): 907–923.

[4] Naylor, G. and Toft, P. 2021. QR Ordering Systems in the Restaurant Industry: Implications for Hotel Services. International Journal of Hospitality Management, 95: 102–110.

[5] Anwar, M., Ahmad, M. and Rashid, S. 2022. Web-based Platforms vs. App-based Systems for Hotel Guest Interactions: A Comparative Study. Journal of Hospitality Information Technology, 11(2): 45–58.

[6] Kapoor, A. and D'Souza, S. 2021. Enhancing Accessibility through QR Codes and Progressive Web Apps in Hospitality. International Journal of Hospitality Management, 98: 104–111.

[7] Verma, S. and Kaushik, A. 2019. Improving Hotel Staff Efficiency with QR-based Guest Systems. Journal of Service Research, 22(3): 233–247.

[8] Saxena, M. and Deshmukh, S. 2020. The Impact of Integrated Feedback Loops on Hotel Service Satisfaction. Journal of Hospitality Marketing & Management, 29(7): 725–740.

[9] Batra, P. and Menon, M. 2020. Developing Modular, Cost-Effective Digital Tools for Mid-sized Hotels. Tourism and Hospitality Research, 20(1): 15–28.