

# FEASIBILITY STUDY

## 1. Objective

The main objective of the Restaurant Management System is to provide an automated platform for restaurant operations, including table reservations, menu management, order handling, and staff coordination, while delivering a seamless experience for customers and restaurant staff.

## 2. Scope of the Study

The feasibility study focuses on evaluating the technical, operational, economic, and schedule viability of the proposed system. It assesses whether the system can fulfill the following:

1. Provide an intuitive user interface for customers and staff.
2. Handle restaurant reservations and real-time table availability.
3. Manage orders efficiently with automated kitchen and inventory updates.
4. Support AI-based personalized suggestions for menu items and reservations.
5. Ensure scalability for future expansions like food delivery or additional branches.

## 3. Feasibility Analysis

### 3.1 Technical Feasibility

The technical feasibility evaluates the project's ability to use current technology to meet its objectives:

- **Technology Stack:** MERN stack (MongoDB, Express.js, React.js, Node.js) ensures robust and scalable system architecture.
- **Integration:**
  - AI-based recommendation systems.
  - Secure payment gateway integration.
  - APIs for geolocation services and real-time notifications.
- **Hardware Requirements:** Cloud hosting services such as AWS or Azure for database and server needs.
- **Conclusion:** The technical components are achievable and readily available.

### 3.2 Operational Feasibility

This assesses whether the system can function effectively:

- **Ease of Use:** User-friendly interface designed for all stakeholders (staff, customers, and admins).
- **Automation:**
  - Automated reservation and order processing.
  - Inventory alerts for low stock.
- **Training:** Minimal training required for restaurant staff due to intuitive design.
- **Conclusion:** Operationally feasible with existing workflows and available resources.

### 3.3 Economic Feasibility

This analyzes the cost and benefits:

- **Development Costs:**
  - Initial software development and hosting.
  - AI integration and testing expenses.
- **Operational Costs:**
  - Server maintenance.
  - Periodic updates and bug fixes.
- **Revenue Generation:**
  - Subscription models for premium services.
  - Advertising for local restaurants or vendors.
  - Partnerships with delivery aggregators.
- **Cost-Benefit Analysis:** The long-term benefits outweigh the initial investment, ensuring profitability.
- **Conclusion:** The system is economically viable.

### 3.4 Schedule Feasibility

This analyzes the timeline for development and deployment:

- **Development Phase:** 4-6 months for coding, testing, and initial setup.

- **Deployment Phase:** 1-2 months for deployment and training.
- **Testing Phase:** Overlapping with development to ensure stability.
- **Conclusion:** The timeline is realistic and achievable.

## **4. Proposed System**

### **4.1 System Objectives**

1. Enhance operational efficiency in restaurants.
2. Provide seamless customer experience from booking to checkout.
3. Automate inventory and kitchen workflows.

### **4.2 Functional Modules**

1. **User Management:** Handles customer and staff accounts.
2. **Reservation System:** Manages table availability and bookings.
3. **Menu Management:** Administers menu items and pricing dynamically.
4. **Order Management:** Tracks orders and communicates with the kitchen.
5. **Payment Integration:** Processes secure payments using online and offline methods.
6. **Admin Dashboard:** Allows admins to monitor and manage all operations.

### **4.3 System Features**

1. **AI Features:** Personalized menu recommendations and dynamic pricing.
2. **Notifications:** Real-time order updates for customers and staff.
3. **Reports:** Analytics for sales, reservations, and inventory.

## **5. Recommendations**

1. **Proceed with Development:** The study concludes that the system is feasible in all aspects.
2. **Focus on User Interface:** A clean and intuitive design will ensure ease of adoption.
3. **Integrate AI Capabilities:** Enhance customer experience and operational efficiency.
4. **Maintain Scalability:** Ensure the system can adapt to future needs like delivery integration.

## **6. Conclusion**

The feasibility study validates the technical, operational, and economic viability of the proposed Restaurant Management System. It is recommended to proceed with the implementation, ensuring alignment with the outlined objectives and features.

### **Feasibility study questionnaire**

#### **1. Project Overview?**

The IntelliStay Management System (IMS) is an advanced hotel management solution aimed at revolutionizing the hospitality industry. By integrating cutting-edge technologies such as AI, Machine Learning, Blockchain, and real-time communication tools, IMS provides a unified platform for hotel guests, staff, and administrators. It offers features like seamless hotel reservations, real-time communication, AI-driven personalization, and secure payment systems to optimize both guest experiences and internal operations.

#### **2. To what extent is the system proposed for?**

IMS aims to serve as a comprehensive hotel management platform for both customers and internal stakeholders (e.g., staff, administrators). It includes core functionalities like hotel reservations, staff management, guest services, and advanced analytics. The system is scalable and allows for future enhancements, such as loyalty programs, predictive analytics, and blockchain integration for secure financial transactions.

#### **3. Specify the Viewers/Public who is to be involved in the System?**

- Guests: Individuals seeking to book rooms, access hotel services, and receive personalized recommendations.
- Hotel Staff: Housekeeping, maintenance, and other staff responsible for service delivery and task management.
- Administrators: Hotel management overseeing operations, guest support, and system analytics.
- Suppliers: Vendors providing goods or services (e.g., food, amenities) to the hotel.

- District Operations Managers: Managers overseeing multiple hotel locations, managing inventory, and ensuring service standards.

#### **4. List the modules in your system:**

- Guest Management Module: Manages guest reservations, check-ins, check-outs, and personalized guest experiences.
- Room Management Module: Handles room availability, pricing, and status updates (e.g., reserved, cleaned, available).
- Restaurant Management Module: Manages orders, reservations, staff workflows, and performance analytics for the restaurant.
- Payment Module: Facilitates secure payments and integrates dynamic pricing based on occupancy and demand.
- Staff Management Module: Automates task assignments, tracks staff performance, and ensures timely service delivery.
- Admin Panel Module: Admin management of users, inventory, and hotel operations across multiple locations.
- Feedback and Review Module: Allows guests to leave reviews and feedback on services, contributing to continuous improvement.
- AI & Analytics Module: Provides predictive analytics for dynamic pricing, occupancy trends, and resource optimization.
- Blockchain Integration: Ensures secure and transparent transactions, especially for financial processes.

#### **5. Identify the users in your project?**

- Guests: Users who book rooms, check in/out, and utilize services offered by the hotel.
- Hotel Staff: Includes housekeeping, restaurant staff, and other service employees.
- Administrators: Hotel management responsible for overseeing day-to-day operations, guest services, and financial transactions.
- Suppliers: External vendors providing goods and services.
- District Operations Managers: Oversee operations for multiple hotels, manage regional tasks, and ensure consistency across locations.

## **6. Who owns the system?**

The IntelliStay Management System is owned and managed by the project's administrative team, which is responsible for all ongoing maintenance, updates, and integrations.

## **7. System is related to which firm/industry/organization?**

The system is directly related to the hospitality industry, specifically targeting hotel operations, customer service, and resource management.

## **8. Details of person that you have contacted for data collection?**

K.V Abraham, , Hotel Operations Manager at HillTop Group, Ph: 9744597449.

## **9. Questionnaire to collect details about the project:**

a. Are there any significant costs associated with developing IntelliStay as part of the project work?

- Answer: As this is part of an academic project, no major manual costs are incurred. All development resources (hardware/software) are provided within the student framework.

b. What is the estimated cost of hardware and software required for IntelliStay?

- Answer: The project utilizes existing resources, such as cloud-based servers and open-source software, ensuring low initial costs.

c. Are there any additional costs for operational expenses, such as maintenance or server hosting?

- Answer: Operational costs will be minimal, as cloud services and infrastructure are scalable and can be adapted to the project's needs.

d. Is the project feasible within the limits of current technology?

- Answer: Yes, the project is fully feasible with current technology, using the MERN stack and integrating modern tools like AI, real-time communication, and Blockchain.

e. What technical challenges have been identified during the investigation?

- Answer: No significant technical challenges have been identified so far, though integrating AI-driven recommendations and Blockchain for secure transactions will require careful planning.

f. Can the technology be easily applied to current problems in hotel management?

- Answer: Yes, the technology aligns well with current challenges in the hotel industry, such as real-time reservations, personalized guest experiences, and secure payment handling.

g. Does the technology have the capacity to handle the required functionalities of IntelliStay?

- Answer: Yes, the MERN stack, combined with technologies like AI, ML, and real-time communication, can handle the expected functionality efficiently.

h. Is the required technology readily available and accessible to the student team for developing IntelliStay?

- Answer: Yes, all required technologies (MERN stack, AI tools, etc.) are readily available and accessible for the student development team.

i. Does the student team possess the necessary technical skills and knowledge to design and develop the platform effectively?

- Answer: Yes, the student team possesses the necessary skills, including experience with React, Node.js, AI, and Cloud Infrastructure, to successfully develop IntelliStay.

j. Are the infrastructure requirements for IntelliStay, such as servers and hosting services, feasible and within the project's scope?

- Answer: Yes, the infrastructure is feasible within the project scope, with cloud hosting services providing scalability as needed.

k. Will users receive adequate support while using IntelliStay?

- Answer: Yes, user support will be available through FAQs, customer service, and real-time notifications.

l. Will users be exposed to any harmful elements or content while using IntelliStay?

- Answer: No, IntelliStay will follow strict security protocols, including user authentication, data encryption, and content moderation to ensure a safe environment.

m. Does IntelliStay offer user-friendly features and an intuitive interface?

- Answer: Yes, IntelliStay is designed with a user-friendly interface, ensuring that both guests and staff can easily navigate the platform.

n. Is there a mechanism in place for users to share their thoughts and suggestions?

- Answer: Yes, user feedback will be encouraged through reviews, surveys, and direct suggestions within the platform.
- o. What additional features or enhancements do users suggest for the IntelliStay platform?
  - Answer: User suggestions will be actively gathered to improve features such as AI-driven recommendations, loyalty programs, and enhanced staff management tools.