International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 09 Issue: 10 | Oct - 2025 SJIF Rating: 8.586 ISSN: 2582-3930

QuickStay: A Flexible and Affordable Short-Term Accommodation Booking System

Authors: Antima Yadav, Kaveri Sahu, Ishita Prajapati, Yashi Gupta, Tanzeel Fatima

Department of Computer Science and Engineering, Prasad Institute of Technology, Jaunpur, Uttar Pradesh, India

- **Guide by-** Mr. Shadab Anwar

ABSTRACT

Quickstay : An Analysis of Short-Term Housing Solution, We explore the growing demand for short-term housing option in Urban environments and tourist destinations. This research introduces the term "Quick Stay," which encapsulates diverse short-term housing models, and seeks to answer the question: "How do different short-term housing models impact local economies and communities?" Through a comprehensive literature review, I identify existing studies and theoretical frameworks, while pinpointing gaps that necessitate a thorough exploration of the socioeconomic effects of these housing solutions. Utilizing both qualitative and quantitative methodologies.

QuickStay is a proposed solution that provides flexible hourly bookings, daily options, and subscription models. It integrates modern technologies like React/Angular for frontend, Node.js for backend, and databases like MySQL/MongoDB for efficient data management. Additional features include GPS-based search, secure payment gateways, and future scope such as IoT-enabled contactless check-in and AI-driven recommendations. QuickStay benefits customers with reduced costs and flexibility, while hotels gain better room utilization and steady revenue.

Keywords: QuickStay, Hotel Booking, Flexible Stays, Subscription based, Hourly based booking system, Contactless Check-in, Urban Economics, Travel Tech.

INTRODUCTION

In recent years, urban areas and tourism destinations around the globe have witnessed a burgeoning demand for short-term housing solutions. This demand is driven by a variety of factors, including increased mobility, the rise of the digital economy, and shifting travel habits. As cities grow and evolve, they become hubs of activity, attracting visitors from all walks of life-tourists looking to explore new cultures, professionals on business trips, and even locals seeking temporary accommodations during transitions in their lives.

The concept of "Quick Stay" has emerged as a term encompassing the plethora of short-term housing options available today, ranging from Airbnb rentals and corporate housing to hostels and shared accommodations. The push for short-term housing solutions is not just a trend; it is a reflection of broader societal changes. As digital platforms like Airbnb have made it easier to find and book accommodation, the barriers to entry have lowered, allowing more individuals to participate in the short-term rental market. According to Swor (2018), cities are facing unique challenges with the rise of short-term rentals, highlighting a need for thoughtful analysis and strategic planning. This evolution in housing has sparked significant interest among policymakers, urban planners, and researchers alike, as they seek to understand the implications of these changes on local economies and communities.

By delving deeper into "non-short-term housing," we can gain a deeper understanding of how it uniquely impacts the lives of local residents and communities. This in-depth exploration of this topic

opens our eyes to the "mysterious terrain" of short-term rentals, truly revealing their complex nature. Since urban development inevitably balances economic benefits with potential negative impacts (such as rising housing prices and community disruption), a deep understanding of the various factors that influence them is crucial. As Nieuwland and Van Melik (2020) have increasingly pointed out, the rise of short-term rentals is gradually replacing traditional housing options, significantly impacting both the local housing market and tourist spending habits. Through an in-depth analysis of short-term housing, we have gained a more comprehensive understanding of its increasingly prominent trend. We first comprehensively review the current state of research on short-term housing, then delve into its profound socioeconomic impacts. By further exploring the theoretical foundations of urban economics and social geography and conducting in-depth analysis of related issues, we will gain a deeper understanding of the underlying laws and mechanisms.

Finally, the results will be synthesised and discussed with reference to the implications of short-term housing solutions. The article will explore possible future developments and innovations within the area of short-term accommodation, make policy and market development recommendations for policymakers and market players as to ensure their sustainable, inclusive expansion. Gurran and Phibbs (2017) reflect on the necessity of planned locations for short-term accommodation's availability within the fabric of existing urban environments.

LITERATURE REVIEW

The short-term housing market is dramatically different than it was just a few short years ago, with more platforms like Airbnb changing the way folks travel and where they stay (Swor, 2018). The rapid growth of short-term rentals has ignited bitter debates Z split over the impact on local economies, housing markets and communities. This section examines studies of these socioeconomic impacts that have already been carried out, to provide a picture where research now stands. By enabling homeowners to rent Contents es to tourists, Airbnb has created new revenue streams for individuals and local businesses. However, this shift has also raised concerns about the affordability and availability of housing for local residents. The influx of tourists can drive up rental prices, making it challenging for locals to find affordable housing. Conversely, Keable (2017) explores how innovative housing solutions, such as mobile homes, are being employed to meet zoning requirements and address the housing crisis. While these solutions provide temporary relief, they often fall short of addressing long-term housing needs. The study suggests that mobile homes, despite their cost-effectiveness, may not be sustainable in the face of growing demand for permanent housing solutions.

Lee (2016) examines the impact of short-term housing policies on affordable housing supply, particularly in urban areas. The study highlights the tension between promoting tourism through short-term rentals and ensuring affordable housing for residents. Policies that prioritize short-term rentals can exacerbate the affordability crisis, leading to displacement and community disruption.

Existing hotel booking systems include OYO, Airbnb, and MakeMytrip.

Platform	Feature	Limitations
OYO Rooms	Budget-friendly hotels with daily booking	In which no hourly or Subscription booking
Airbnb	Long-term home stays	Not suitable for short stays
MakeMyTrip	Travel packages and hotels	Focused on full day booking

PROPOSED SYSTEM

The proposed system, QuickStay, is a smart and flexible hotel booking platform that focuses on solving the limitations of traditional booking models.

Unlike existing systems that mainly operate on a per-day basis, QuickStay introduces hourly and subscription-based stays to meet the needs of modern travellers who require short and affordable accommodation.

The system is built on a modular architecture, meaning each part of the platform has its own specific responsibility but works together seamlessly through secure APIs.

This structure makes the application more scalable, reliable, and easier to maintain in the long run.

1. **System Overview:**

QuickStay is developed using a combination of **frontend**, **backend**, and **database technologies**:

- The frontend uses React or Angular, which helps in creating an interactive and responsive interface that allows users to search, filter, and book rooms quickly.
- The backend uses Node.js, Python, or Java to handle core operations like authentication, payment processing, and booking management.
- The database is managed using MySQL or MongoDB to store all essential data including user profiles, hotel details, room availability, booking history, and payment records.

External APIs are integrated for additional features:

- **GPS API** helps users find hotels near their current location.
- **Payment Gateway API** (Razorpay, PayPal, or UPI) ensures secure and encrypted transactions.
- **IoT integration** allows digital check-in through smart locks and QR codes.

2. Hourly Booking Mechanism:

One of the most innovative parts of QuickStay is its **hourly booking system**.

This feature allows users to pay only for the number of hours they actually use a room instead of being charged for a full 24-hour period.

For example, a traveler waiting for a connecting flight or a student attending a short seminar can book a room for 3–4 hours and pay a reduced amount.This model benefits both the customer, who pays less, and the hotel, which can utilize vacant rooms more efficiently throughout the day.

A **dynamic pricing algorithm** automatically calculates the total amount based on room category, location, and duration of stay.

This real-time pricing ensures fairness and transparency while maximizing hotel occupancy rates.

3. Subscription-Based Booking System:

The subscription model is another unique element of QuickStay.

It is designed for regular travelers such as business professionals or students who frequently require short-term stays.

Here's how it works:

- Users can purchase a monthly or quarterly plan that offers a fixed number of hours or credits
- These credits can be used across partner hotels anywhere in the country
- Different plans (Basic, Standard, Premium) are offered to suit different budgets and hotel categories
- When a user books a room in a higher-rated hotel (e.g., a 5-star property), more credits are deducted compared to a 3-star stay.
- QuickStay maintains a revenue-sharing model with hotels, ensuring that every partner receives fair payment for their services.

This approach keeps customers loyal to the platform while providing hotels with a steady flow of guests and income.

4. Contactless Check-In and Smart Access:

QuickStay also incorporates an **IoT-enabled contactless check-in** feature to improve user safety and convenience.

After confirming a booking, the system generates a **unique digital key or QR code** that is sent directly to the user's registered mobile application.

Upon arrival, the user can simply scan the QR code or enter the provided PIN on a smart lock installed at the hotel room door.

The lock verifies the code from the central server, and if valid, it opens automatically.

Each key or code is time-bound — it expires once the user's booking period ends.

This feature removes the need for physical keys and minimizes face-to-face interaction, which also supports hygiene and privacy.

5. Data Flow and Functionality:

The data flow in the QuickStay system follows these steps:

1. The user registers and logs into the platform.

2. The user searches for available hotels based on location, date, and duration.

3. The backend checks room availability in the database and fetches real-time options.

4. After selecting a room, the user completes payment through the integrated gateway

5. A confirmation message and digital check-in key are generated instantly

6. The booking details are updated in the hotel's dashboard for reference.

All modules communicate through **secure REST APIs**, ensuring smooth data transfer between users, hotels, and the system administrator.

6. Advantages of the Proposed System:

- Reduces the overall cost of travel for customers.
- Helps hotels make use of underutilized rooms.
- Provides a smooth and contactless check-in experience.
- Offers transparent pricing with digital payment options.
- Encourages eco-friendly and paperless hotel operations
- Supports easy scalability through its modular microservices structure.

SYSTEM METHODOLOGY

User Management: This part manages new user registration, login, and personal profiles. It keeps track of user information such as contact details, past bookings, and preferences.

Hotel Management: It allows hotel partners to add or update their room details, availability, and hourly or daily rates. The hotel owners can also manage their booking history and customer reviews here.

Booking & Scheduling: This module processes both hourly and subscription-based bookings. It checks room availability in real time and ensures that the same room is not allotted to multiple users.

Payment and Billing: Handles secure online payments using integrated gateways like Razorpay, UPI, or PayPal. It also generates digital invoices and stores transaction details for future reference.

Feedback and Rating: Collects user reviews after every stay. These ratings help other travellers choose hotels and improve service quality.

Administration Panel: The admin section monitors all system activities — new hotel approvals, user management, complaints, and reports. It ensures smooth operation and data security across all modules.

All these parts are developed as small, independent services. If one service temporarily fails (for example, payment), the rest of the system continues to run without interruption.

This design approach makes QuickStay more scalable, reliable, and easy to maintain.

FUTURE SCOPE

In the future, QuickStay can evolve into a complete digital ecosystem for travel and accommodation.

Several new technologies can be integrated to enhance performance, safety, and global accessibility.

1. Artificial Intelligence (AI): AI can study user behaviour and recommend hotels or offers based on previous bookings and preferences. It can also help

in dynamic pricing, adjusting rates according to demand.

2. Augmented and Virtual Reality (AR/VR): Users will be able to view 360° virtual tours of hotel rooms before booking, which will help them make better decisions.

3. IoT and Smart Devices: The system can include IoT-based features like digital room keys, automatic check-in, and smart temperature or lighting control for guests.

4. Multilingual Interface: By supporting multiple regional and international languages, QuickStay can expand globally and make the platform accessible to non-English users.

5. Eco-Friendly Stays: The platform can highlight sustainable hotels that follow green practices such as solar energy, waste recycling, and plastic reduction.

6. Complete Travel Integration: QuickStay can connect with APIs of flight, train, and cab services so that users can plan their entire journey — from travel to stay — in one place.

These developments will help QuickStay stand out as a modern, environment-friendly, and AI-powered accommodation platform.

CONCLUSION

QuickStay represents a new step in the evolution of hotel booking systems.

It changes the traditional one-day booking model by introducing **hourly and subscription-based stays**, giving travelers more freedom and affordability.

The platform is built using secure, scalable, and modern web technologies that make the experience smoother for users and more profitable for hotels.

With features like **contactless check-in, real-time availability**, and **transparent pricing**, QuickStay offers a balanced solution that benefits both sides of the hospitality industry.

The inclusion of technologies such as **AI, IoT** and **AR/VR** will make it even more futuristic and competitive.

By supporting sustainability and convenience, QuickStay is not just a booking system — it is a vision for the future of digital travel and smart hospitality.

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