

## Executive Summary

This report provides a structured analysis of hotel booking performance based on the Hotel\_bookings\_final.csv dataset. The platform recorded strong booking activity across multiple channels and property types, with most customers leaning toward mid range hotels and standard room categories. At the same time, cancellations remain a meaningful operational challenge, representing nearly one in five bookings. Understanding these behaviors is essential to improving profitability, forecasting accuracy, and guest experience.

### Key Highlights

- Confirmed booking rate: approximately 72 percent across the dataset
- Cancellations: around 20 percent of total bookings
- Leisure stays dominate the dataset at roughly 60 percent
- Standard rooms account for more than half of all bookings
- Web remains the largest booking channel at 53 percent
- Refunds were processed in 78 percent of cases where cancellations occurred

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## Performance Metrics

### Booking Volume

Total Booking Requests: Dataset shows a broad mix of confirmed, cancelled, and failed bookings.

Confirmed Bookings: Represent roughly 72 percent of all requests, showing a healthy conversion pattern.

Cancelled Bookings: About 20 percent, which creates uncertainty in forecasting and operational planning.

Failed Bookings: Nearly 7.5 percent, suggesting technical, payment, or customer verification issues.

### Financial Overview

Average selling prices vary across room categories and star ratings, with mid range properties forming the majority of revenue generating activity. Coupon usage is relatively low at 21 percent,

indicating that most customers book without depending on discounts. This provides room for rethinking promotional strategies.

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### Service Reliability

Cancellation Rate: Approximately 20 percent

This suggests one in five bookings does not complete. These cancellations contribute to:

Customer dissatisfaction

Revenue leakage

Increased load on refund systems

Inventory unpredictability

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### Booking Channel Analysis

Understanding channel preferences helps identify user behavior and revenue potential.

#### Channel Distribution

Web: 53 percent

Android: 32 percent

iOS: 15 percent

#### Interpretation

The web platform remains the largest contributor, but mobile channels combined represent nearly half of all confirmed bookings. This indicates a strong mobile-first behavior trend similar to broader industry patterns.

### Payment and Refund Behavior

Refunds Processed: 78 percent

This high share of refunds points toward generous cancellation policies or customer driven booking volatility. It also indicates that refund systems must stay optimized for speed and accuracy.

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### Customer Segmentation Insights

#### Two Distinct Customer Segments

Leisure Travelers

Roughly 60 percent of all stays

More likely to cancel

Often choose standard and mid range accommodations  
Exhibit higher sensitivity to pricing and flexibility

#### Business Travelers

Represent 40 percent  
Tend to book longer stays  
Show lower cancellation likelihood  
Contribute steady, predictable revenue

#### Room Type and Property Performance

##### Three Main Room Categories

Standard Rooms  
53 percent of bookings  
Also account for about 64 percent of cancellations  
High volume leads to high cancellation exposure

##### Deluxe Rooms

37 percent of bookings  
28 percent of cancellations  
Moderately stable

##### Suites

10 percent of bookings  
9 percent of cancellations  
Niche but stable segment

##### Star Rating Distribution

4 star hotels: around 40 percent  
3 star hotels: around 35 percent  
5 star hotels: about 15 percent  
2 star hotels: about 10 percent

##### Interpretation

Mid range hotels drive most of the platform's activity and also account for most cancellations.  
Premium and budget hotels generate smaller but more stable volumes.

##### Trend Analysis

##### Temporal Patterns

Average booking value fluctuates modestly throughout the year, with peaks around February and July.  
Average stay length remains consistent at around four days, with slight increases during December holiday periods.

## Booking Behavior Patterns

Most bookings occur on web and mobile channels during periods where leisure travel demand peaks.

Cancellation rates remain stable across channels, with no platform showing materially higher cancellation behavior.

## Strategic Recommendations

### Priority 1: Reduce Cancellation Rate

Aim to reduce cancellations through:

- Clearer refund conditions for long lead time bookings

- Reminder notifications for early booked stays

- Incentives for leisure travelers to retain bookings

- Stricter or semi flexible policies for high risk segments

### Expected Impact

Reducing cancellations improves revenue predictability and reduces refund processing overhead.

### Priority 2: Improve Profitability and Repeat Bookings

#### Suggested Actions

- Strengthen loyalty programs for business travelers who already show reliable booking patterns

- Provide personalized offers that reward repeat stays rather than single-use coupon activity

- Optimize mobile user experience to increase conversions on Android and iOS

### Expected Impact

Higher retentions, more consistent revenue, and better lifetime value.

### Priority 3: Optimize Pricing and Promotions

#### Insights

Cancellation behavior stays flat across price quartiles (21 to 22 percent). This means price is not a strong predictor of cancellations.

Mobile channels, specifically Android, produce slightly higher net revenue.

#### Recommendations

- Use dynamic pricing during high demand periods without fear of increasing cancellations

- Allocate promotional budget toward Android acquisition

- Reduce blanket discounts and adopt more targeted promotional strategies

- Test value-added offers (early check-in, late checkout) instead of monetary discounts

### Priority 4: Enhance Channel Strategy

#### Actions

Improve web conversion funnels, as the channel has the highest traffic but slightly higher

cancellation tendencies

Refine Android and iOS app UX to maximize stable revenue patterns

Offer tailored incentives based on channel performance and customer type

## Risk Assessment

### Operational Risks

Speculative bookings leading to cancellations

High refund frequency creating operational load

Seasonal volatility affecting occupancy and pricing power

### Mitigation Strategies

Introduce optional non-refundable rates for price sensitive segments

Encourage users to commit through loyalty bonuses

Optimize communication around stay reminders and itinerary management

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## Conclusion

The hotel booking dataset reflects strong operational patterns across room types, channels, and star ratings. With most bookings concentrated in mid range hotels and standard room types, the platform has a reliable customer base but must address cancellation rates and refund volumes to improve profitability.

## Path Forward

1. Reduce cancellations through targeted policies and customer nudges
2. Increase profitability through loyalty driven strategies and selective promotions
3. Optimize channel performance with focused improvements in mobile and web behavior patterns

The insights in this report build a foundation for future optimization, helping the platform enhance customer experience, drive sustained revenue, and refine operational efficiency.

### For Questions or Deep-Dive Analysis:

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