Hotel Demand & Price Forecasting

Contents

Introduction

Company Overview:

Atliq Rooms is a leading hotel management company operating across four major Indian metropolitan cities — **Delhi, Mumbai, Hyderabad, and Bangalore**. Established with a mission to provide seamless hospitality experiences, Atliq Rooms currently owns and operates **25 hotels**, catering to a diverse clientele including business travellers, tourists and long-stay guests. Over the years, the company has built a reputation for consistent service, competitive pricing and strategic expansion across key urban centers.

Industry Challenges:

The hospitality industry in India is undergoing significant transformation, driven by changing customer expectations, rising operational costs, intense competition and unpredictable travel trends. One of the core challenges is maintaining profitability in a dynamic market influenced by **seasonality**, **cancellations** and **fluctuating demand**. Additionally, booking behaviour has shifted dramatically with the rise of online travel agencies (**OTAs**), direct bookings and **third-party aggregators**, making it vital for hoteliers to track which channels are yielding the highest returns.

Project Purpose:

To overcome these hurdles and gain a competitive edge, Atliq Rooms embarked on a performance analytics initiative. This involved the development of two interactive **Power BI dashboards** focused on tracking key performance indicators (KPIs) like ADR, Revenue per Available Room (RevPAR), Occupancy %, revenue, booking channel performance, room-type preferences and cancellations. The goal is to enable **Level 1 & Level 2** analysis for strategic decisions based on real-time data insights and enhance operational efficiency across all properties.

KPI Overview

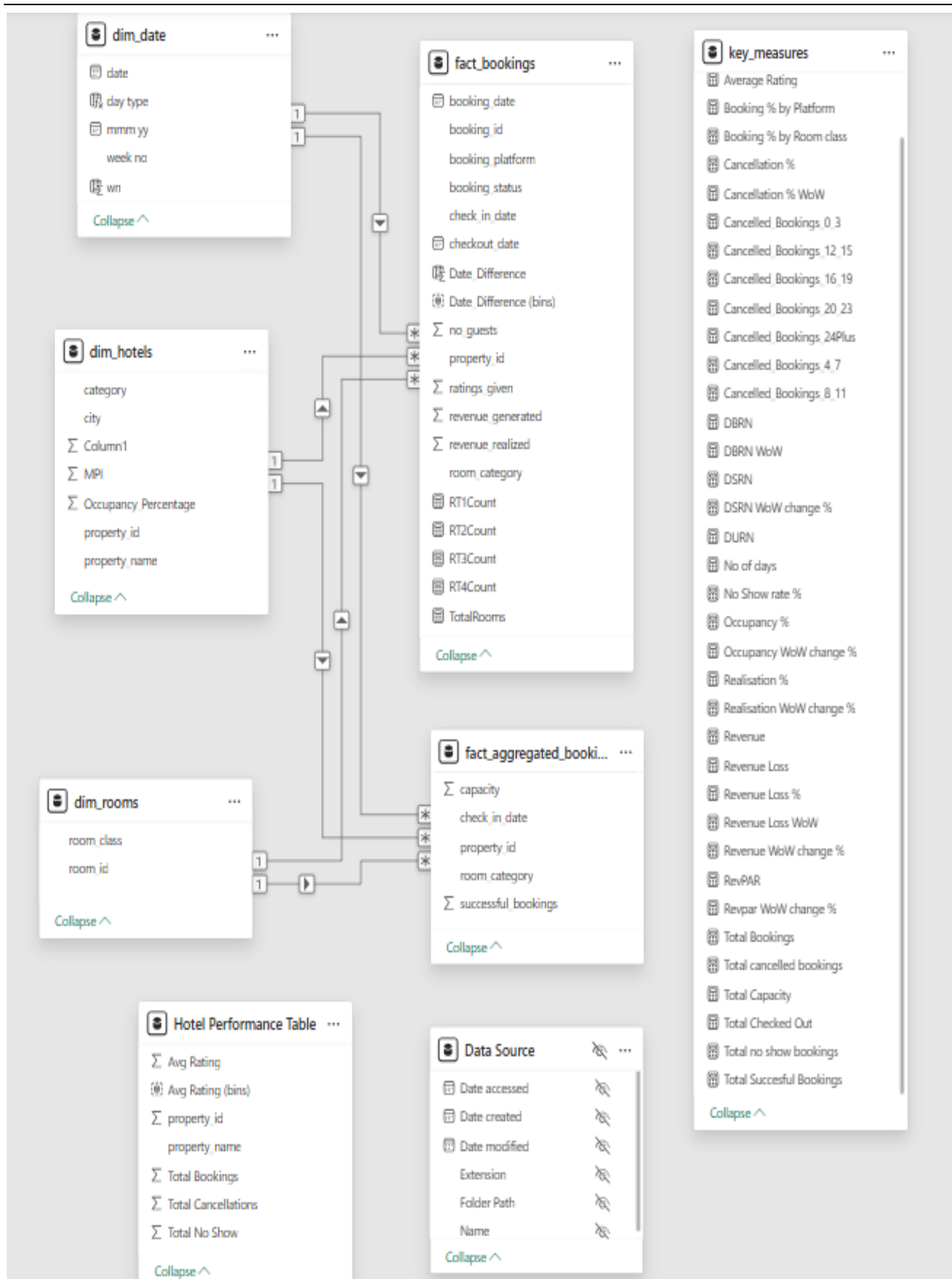| KPI	Formula	Description
Average Daily Rate (ADR)	Total Revenue / Number of Rooms Sold	Indicates the average earning per occupied room.
Revenue per Available Room (RevPAR)	Total Revenue / Total Available Rooms	Measures revenue generated per available room, blending occupancy and pricing.
Occupancy Rate (%)	(Rooms Sold / Total Available Rooms) × 100	Reflects the percentage of rooms occupied over a period.
Total Revenue	Sum of revenue from all bookings (per hotel or overall)	Tracks gross earnings from hotel operations.
Cancellation Rate (%)	(Cancelled Bookings / Total Bookings) × 100	Helps understand lost opportunities and booking reliability.
Realization %	URN (Utilized Room Nights) / BRN (Booked Room Nights)	Helps to analyse No shows & Cancellation
Booking Rate %	(Successful Bookings / Total Bookings) × 100	Percentage of rooms booked
Booking Lead Time	Check in Date - Booking Date	Helps in demand forecasting and pricing strategies.
Market Penetration Index (MPI)	(Hotel's Occupancy / Market Average Occupancy) × 100	Is the hotel outperforming or underperforming the market?

Data Description

Dimention Tables :

1. dim_date

2. dim_hotels

3. dim_rooms

4. fact_aggregated_bookings

5. fact_bookings

Table Name	No. of Records
dim_date	92
dim_hotels	25
dim_rooms	4
fact_aggregated_bookings	9200
fact_bookings	134590

Star Schema

dim_date
- date
- day type
- mmm yy
- week no
- wn

Collapse ∧

dim_hotels
- category
- city
- Σ Column1
- Σ MPI
- Σ Occupancy_Percentage
- property_id
- property_name

Collapse ∧

dim_rooms
- room class
- room id

Collapse ∧

fact_bookings
- booking_date
- booking_id
- booking_platform
- booking_status
- check_in_date
- checkout_date
- Date_Difference
- Date_Difference (bins)
- Σ no_guests
- property_id
- Σ ratings_given
- Σ revenue_generated
- Σ revenue_realized
- room_category
- RT1Count
- RT2Count
- RT3Count
- RT4Count
- TotalRooms

Collapse ∧

fact_aggregated_booki... ···
- Σ capacity
- check_in_date
- property_id
- room_category
- Σ successful_bookings

Collapse ∧

Hotel Performance Table ···
- Σ Avg Rating
- Avg Rating (bins)
- Σ property_id
- property_name
- Σ Total Bookings
- Σ Total Cancellations
- Σ Total No Show

Collapse ∧

Data Source ···
- Date accessed
- Date created
- Date modified
- Extension
- Folder Path
- Name

Collapse ∧

key_measures
- Average Rating
- Booking % by Platform
- Booking % by Room class
- Cancellation %
- Cancellation % WoW
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- Cancelled_Bookings_12_15
- Cancelled_Bookings_16_19
- Cancelled_Bookings_20_23
- Cancelled_Bookings_24Plus
- Cancelled_Bookings_4_7
- Cancelled_Bookings_8_11
- DBRN
- DBRN WoW
- DSRN
- DSRN WoW change %
- DURN
- No of days
- No Show rate %
- Occupancy %
- Occupancy WoW change %
- Realisation %
- Realisation WoW change %
- Revenue
- Revenue Loss
- Revenue Loss %
- Revenue Loss WoW
- Revenue WoW change %
- RevPAR
- Revpar WoW change %
- Total Bookings
- Total cancelled bookings
- Total Capacity
- Total Checked Out
- Total no show bookings
- Total Succesful Bookings

Collapse ∧

Dashboard : Hotel Level 1 Analysis

Bangalore	Delhi	Hyderabad	Mumbai

May 22	Jun 22	Jul 22	W 19	W 20	W 21	W 22	W 23	W 24	W 25	W 26	W 27	W 28	W 29	W 30	W 31

Revenue
1.69bn
⬆ 0.2%

RevPar
7,337
⬆ 0.2%

DSRN
2528
⬆ 0.2%

Occupancy %
57.8%
⬆ 0.0%

ADR
12.70K
⬆ 0.2%

Realisation
70.1%
⬇ -0.0%

Revenue Loss
295.23M
⬆ 14.89

Cancellation %
24.8%
⬇ -0.01

DBRN
1461
⬆ 0.00

% Values in bottom are Week on Week Change

Day Type	RevPAR	Occupancy %	ADR	Realisation %
Weekend	7,972	62.6%	12,725	70.6%
Weekday	7,083	55.8%	12,682	69.9%
Total	**7,337**	**57.8%**	**12,696**	**70.1%**

% Revenue by category

38.38%
61.62%

category
- Luxury
- Business

Trend by Key Metrics

● RevPAR　● ADR　● Occupancy %

10K
5K
60%
40%
20%
0%

W 19　W 20　W 21　W 22　W 23　W 24　W 25　W 26　W 27　W 28　W 29　W 30　W 31
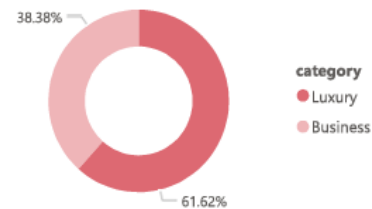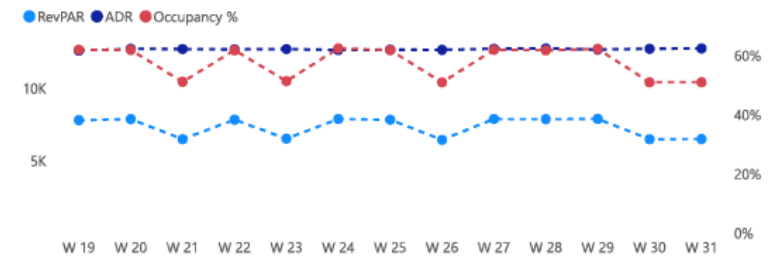
Property by Key Metrics

Property ID	Property Name	City	Revenue	RevPAR	Occupancy %	ADR	Realisation %	Cancellation %	Revenue Loss
16563	Atliq Palace	Delhi	88M	8,269	66.3%	12,480	70.0%	25.2%	16M
17561	Atliq Blu	Mumbai	73M	9,447	66.2%	14,271	70.1%	24.4%	13M
17563	Atliq Palace	Mumbai	100M	10,592	66.1%	16,016	70.7%	24.4%	17M
17559	Atliq Exotica	Mumbai	93M	10,107	66.1%	15,293	70.8%	24.0%	16M
18560	Atliq City	Hyderabad	60M	6,068	66.1%	9,185	70.9%	24.1%	10M
16559	Atliq Exotica	Mumbai	117M	10,629	65.9%	16,141	70.4%	24.6%	20M
16558	Atliq Grands	Delhi	36M	7,525	65.8%	11,436	70.0%	25.1%	6M
18562	Atliq Bay	Hyderabad	68M	6,216	65.8%	9,446	70.2%	24.7%	12M
16561	Atliq Blu	Delhi	57M	8,612	65.7%	13,115	69.9%	25.6%	11M
Total			**1688M**	**7,337**	**57.8%**	**12,696**	**70.1%**	**24.8%**	**295M**

RevPAR - Revenue per available room | **DSRN** - Daily sellable room nights | **ADR** - Average Daily Rate | **DBRN** - Daily Booked Room Nights | **DURN** - Daily Utilized Room Nights

Description & Insights

This interactive hotel performance dashboard provides a comprehensive view of key operational and financial metrics across major Indian cities, including Bangalore, Delhi, Hyderabad, and Mumbai. Developed for **Level 1 analysis**, the dashboard is designed to help stakeholders quickly identify performance trends, spot potential issues, and support strategic decision-making.

Overall Performance Summary

- **Total Revenue**: ₹1.69 billion

- **RevPAR** *(Revenue per Available Room)*: ₹7,337

- **DSRN** *(Daily Sellable Room Nights)*: 2,528

- **Occupancy Rate**: 57.8%

- **ADR** *(Average Daily Rate)*: ₹12,700

- **Realization Rate**: 70.1%

- **Cancellation Rate**: 24.8%

- **Revenue Loss from Cancellations**: ₹295.23 million

Each of these metrics is accompanied by **week-on-week trend indicators**, allowing for continuous monitoring and proactive management.

Revenue Contribution by Category

- **Luxury Hotels**: 38.38%

- **Business Hotels**: 61.62%

This breakdown provides insights into the contribution of each category, supporting strategy alignment and portfolio balancing.

Key Analytical Features

Strategic Use Cases:

- Pinpoint low-occupancy periods to adjust pricing strategies.

- Detect properties with high cancellation rates and explore underlying causes.

- Compare weekday vs. weekend booking trends to optimize marketing and discounting plans.

- Evaluate individual hotel performance to identify operational gaps or opportunities for support.

- Leverage category-wise revenue contribution for informed strategic planning.

Insights & Observations

- **Weekday vs. Weekend Trends**:
  Occupancy rates show clear differences between weekdays and weekends, particularly in the **luxury hotel segment**, where there is a **6–8% higher occupancy on weekends** due to increased leisure demand. This suggests an opportunity for differentiated pricing and promotions.

- **Static ADR Despite Fluctuating Occupancy**:
  Analysis of weekly trends reveals that many hotels are not utilizing **dynamic pricing strategies** effectively. For example, in properties such as **Atliq Bay Delhi**, **Atliq Palace Bangalore**, and **Atliq City Delhi**, **ADR remains constant** even as occupancy falls, leading to missed revenue opportunities. On 100% occupancy days, ADR matches RevPAR, highlighting untapped potential for revenue growth through more responsive pricing.
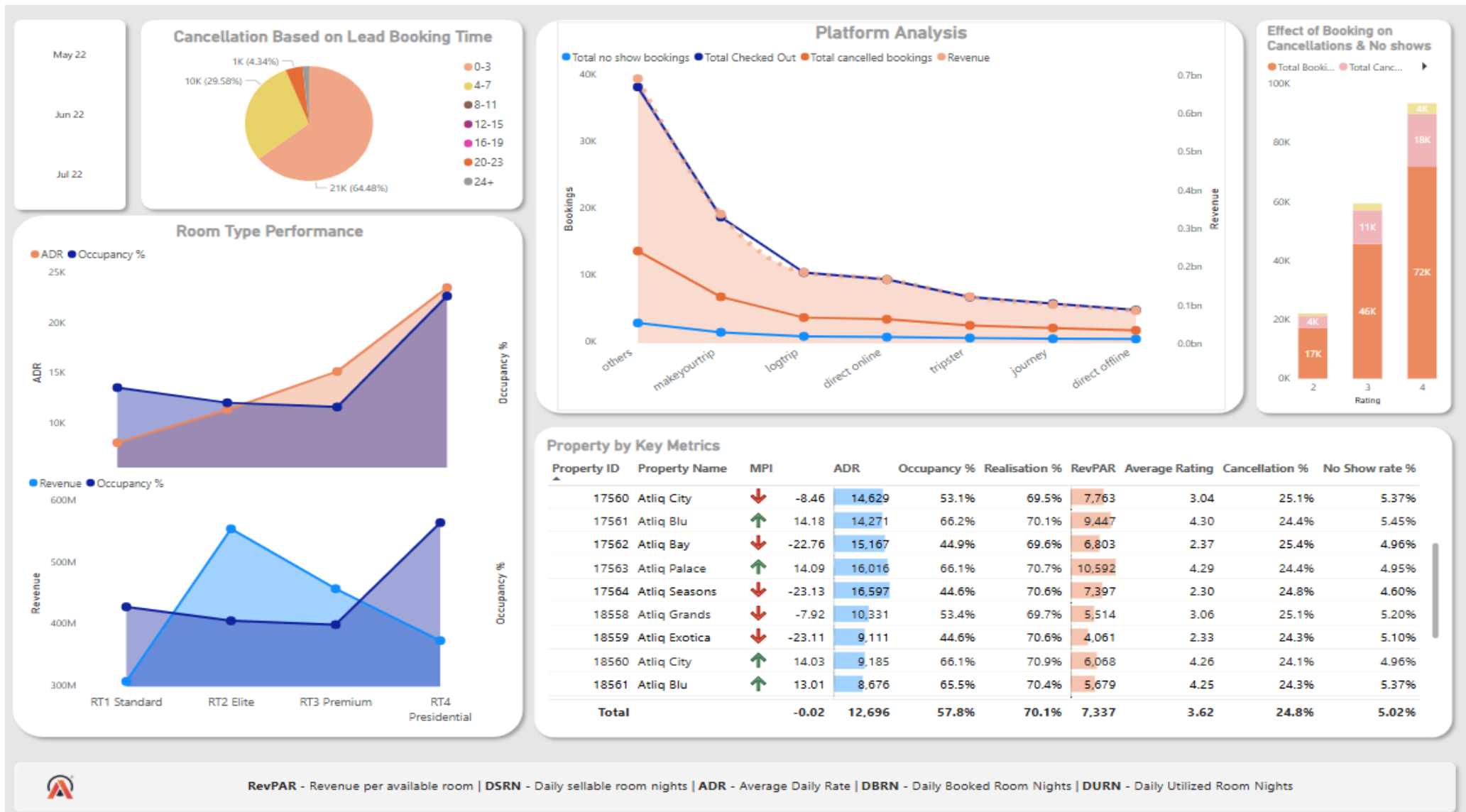
- **Seasonal Demand Trends (e.g., May)**:
  Some hotels with typically lower occupancy levels have performed better due to increased seasonal demand. As **occupancy rises**, **RevPAR tends to increase and approach ADR**, indicating more efficient room utilization and the importance of capitalizing on peak demand periods.

Revenue Loss Analysis (Level 2 Preview)

Significant revenue loss is attributed to **last-minute cancellations**, which currently incur a 60% cost burden on hotels. This highlights a need for deeper **Level 2 analysis** to identify cancellation patterns and develop mitigation strategies (e.g., stricter cancellation policies, prepayment incentives, or targeted communication).

Dashboard : Level 2 & Channel Analysis

Property by Key Metrics

Property ID	Property Name	MPI		ADR	Occupancy %	Realisation %	RevPAR	Average Rating	Cancellation %	No Show rate %
17560	Atliq City	↓	-8.46	14,629	53.1%	69.5%	7,763	3.04	25.1%	5.37%
17561	Atliq Blu	↑	14.18	14,271	66.2%	70.1%	9,447	4.30	24.4%	5.45%
17562	Atliq Bay	↓	-22.76	15,167	44.9%	69.6%	6,803	2.37	25.4%	4.96%
17563	Atliq Palace	↑	14.09	16,016	66.1%	70.7%	10,592	4.29	24.4%	4.95%
17564	Atliq Seasons	↓	-23.13	16,597	44.6%	70.6%	7,397	2.30	24.8%	4.60%
18558	Atliq Grands	↓	-7.92	10,331	53.4%	69.7%	5,514	3.06	25.1%	5.20%
18559	Atliq Exotica	↓	-23.11	9,111	44.6%	70.6%	4,061	2.33	24.3%	5.10%
18560	Atliq City	↑	14.03	9,185	66.1%	70.9%	6,068	4.26	24.1%	4.96%
18561	Atliq Blu	↑	13.01	8,676	65.5%	70.4%	5,679	4.25	24.3%	5.37%
Total			-0.02	12,696	57.8%	70.1%	7,337	3.62	24.8%	5.02%

RevPAR - Revenue per available room | **DSRN** - Daily sellable room nights | **ADR** - Average Daily Rate | **DBRN** - Daily Booked Room Nights | **DURN** - Daily Utilized Room Nights

Description & Insights

This dashboard is crucial for conducting an in-depth analysis of issues identified in the Level 1 dashboard.
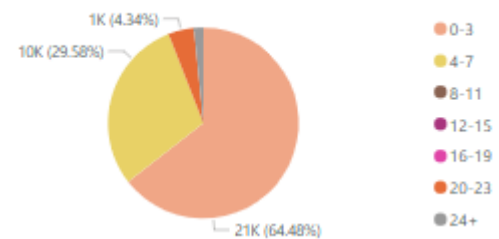
Revenue Loss

- **Last-minute cancellations** are a significant contributor to revenue loss. These often occur because customers make backup bookings and cancel based on preferences.
- **Resolution Strategy**: Improve cancellation policies on booking platforms that offer flexible cancellations (e.g., MakeMyTrip), such as limiting refunds to 60% for last-minute cancellations.
- **Platform Optimization**: Delisting underperforming platforms like *Journey* and *Tripster*, which contribute minimal revenue, can be beneficial.
- **Seasonal Impact**: Vacation months (May–June) experience higher cancellation rates due to travel uncertainty and last-minute changes.
- **Platform-specific Impact**: MakeMyTrip alone accounts for **15%** of total revenue loss.
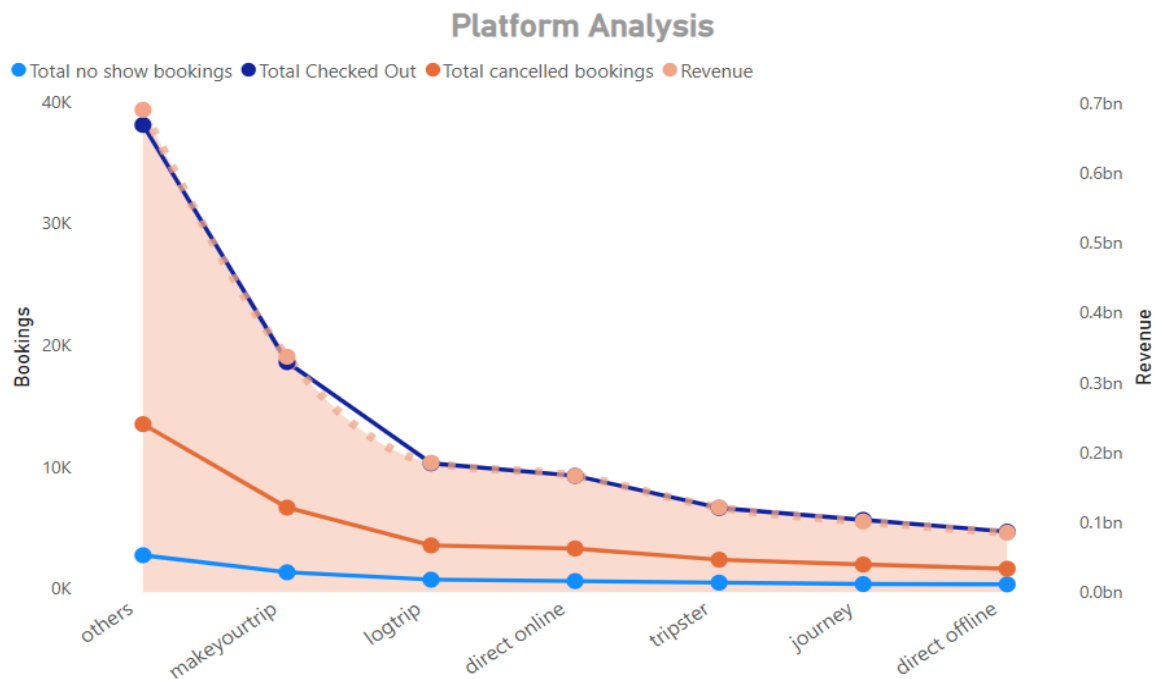
Booking Patterns & Pricing Strategy

- Bookings made **0–7 days prior** to the stay are more likely to be canceled. Applying a **dynamic pricing strategy** and enforcing stricter cancellation charges during this window can help reduce losses.

Cancellation Based on Lead Booking Time

- Hotels with their **own websites** are struggling to attract direct bookings due to low customer awareness and platform policies that penalize pricing discrepancies (e.g., through lower ratings or blacklisting).

- Introducing **exclusive promotions and offers** for direct bookings can increase online traffic to official websites, reducing dependency on third-party platforms and saving on commissions.

Room Conversion Recommendations

- **Standard, Elite, and Presidential suites** show higher occupancy and generate greater revenue.

- **Premium rooms** are underperforming. Converting them into more profitable categories could improve space utilization and overall revenue.

Room Type Performance

- One contributing factor to higher occupancy in Presidential and Premium rooms is their **limited availability**, making them more desirable.

- **Regional anomalies** exist, with some hotels (e.g., in Hyderabad) not following this trend.

- **Standard and Elite rooms** also face higher cancellation rates. Implementing a **no-refund policy** for these categories could help mitigate this.
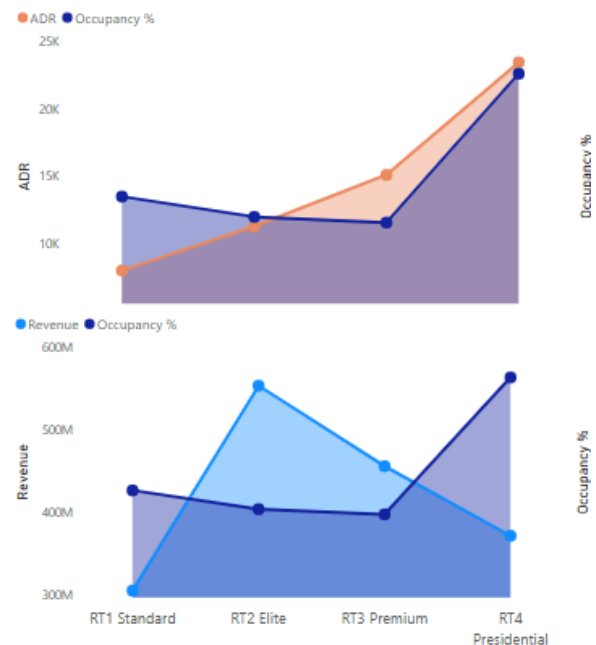
Market Penetration & Customer Feedback

- The **Market Penetration Index (MPI)** is a key metric for assessing a hotel's performance relative to competitors in the same city.
- **No-show Analysis**: While no-shows may seem profitable due to prepayment, they often indicate deeper issues like poor service or misalignment with customer expectations. Notable examples include *Atliq Grand*, *Atliq City*, and *Atliq Blu*.
- Today's no-shows can lead to tomorrow's cancellations or lack of bookings.
- Hotels should **regularly update their listings**, maintain transparency, and **use customer reviews as feedback** to enhance service quality and ratings.