Optimizing Revenue Leakage & Profitability in the Hospitality Sector

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Introduction

In the competitive and dynamic hospitality industry, hotels and resorts frequently encounter revenue leakages, underutilized capacity, and fluctuating profitability. These challenges arise due to factors such as inefficient pricing strategies, inconsistent demand across weekdays and weekends, underperformance of specific room types or service offerings, and lack of actionable insights from available customer and booking data.

This project, conducted under the Consulting & Analytics Club, IIT Guwahati, aims to address these issues by leveraging historical booking data from a leading hotel chain to uncover patterns and inefficiencies. The objective is to design an end-to-end analytical framework that identifies root causes of revenue leakage, supports informed decision-making through actionable insights, and quantifies the business impact of strategic recommendations.

1. Data Analysis Module

This section focuses on identifying core booking patterns, customer behavior, and operational performance indicators using data from over 134,000 bookings, across 7 properties and 4 room classes over a 3-month period. All KPIs have been developed using Power BI, with dynamic filters, What-If parameters, and interlinked dashboards.

1.1. Booking Trends (Weekday vs. Weekend, Room Types)

- **Weekday vs. Weekend analysis revealed:**
  - Weekdays contributed 69.35% of bookings and 1185M in revenue.
  - Weekend bookings, though fewer, showed higher ADR (12,725) and better occupancy (62.6%) than weekdays (55.9%).
  - Realization % (revenue collected vs. expected) remained stable across both periods (70%).
- **Room Class Distribution:**
  - Standard rooms had the highest volume (38,446 bookings), contributing 310M in revenue.

- Premium and Presidential classes, though fewer in bookings, showed significantly higher ADRs (15,120 and 23,440 respectively), contributing over 839M combined, with similar realization and occupancy rates.
- Elite and Premium rooms showed the most stable performance, while Presidential rooms had the highest occupancy (59.22%).

1.2. Monthly & Weekly Trend Analysis

While the original scope suggested long-term seasonality analysis, the dataset contains only 14 weeks (May–July 2022). Therefore, this section focuses on weekly and monthly booking trends to understand performance dynamics across short periods.

Weekly Performance Overview

- Occupancy fluctuated between 50.69% (Week 31) and 65.31% (Week 32), showing notable dips in Weeks 23, 24, and 26.
- ADR remained largely stable between 12,600 and 12,800, with the highest value in Week 30 (12,752.74).
- Total Revenue peaked at 140M during multiple weeks (W24, W27, W28), indicating stable performance during mid-season.
- Lowest revenue (114M) was observed in Week 26, which also had the lowest occupancy (50.96%)—a likely indication of poor yield management or external demand drop.

Monthly Aggregation Summary

- May 2022 was the highest-performing month in both occupancy and revenue.
- July had the highest ADR but slightly lower occupancy.
- The differences between months are marginal, confirming stable short-term performance, but also indicating limited seasonality effects within the given time window.

1.3. Ancillary Service Usage Estimation (Spa, Meals, Transport)

- While explicit service-level data was unavailable, an industry-based approximation was made:
  - Based on Indian hospitality norms (F&B + Spa + Transport 20–30% of revenue), estimated ancillary revenue was projected at 164M (25% of total revenue).
  - Breakup:
    - Food & Beverage: 131M
    - Spa: 13M
    - Transport: 20M

- This indicates a substantial untapped potential in upselling and bundling these services.

1.4. Customer Segmentation Based on Spending Behavior

- Based on average ADR per booking, four segments were identified:
  - **Low Spend (3,420):** High cancellation rate (100%) and very low realized revenue.
  - **Budget (7,416):** High volume (47,545 bookings) but 46% cancellations—significant leakage zone.
  - **Mid Spend (15,120):** Stable segment with moderate volume (69,737) and low cancellation (4.14%).
  - **Luxury / High Spend (30,903):** Smallest segment (8,824 bookings) but 0% cancellations—extremely reliable customer base.
- Cancellation and no-show patterns across platforms and segments were deeply analyzed:
  - OTA platforms like makeyourtrip and tripster showed slightly higher no-show rates.
  - Direct bookings (online and offline) had lower cancellation variability.

1.5. Booking Platform & Channel Analysis

- This analysis categorized performance across 7 booking platforms including both OTA (e.g., makeyourtrip, tripster) and direct channels.
- Key Findings:
  - "Others" platform accounted for the highest volume (55,066 bookings) and revenue (699M), but cancellation % remained average (24.88%).
  - OTA platforms like makeyourtrip and tripster showed higher no-show rates (5.17%) and cancellation rates near 25%.
  - Direct offline bookings, although few (6,755), had a relatively higher no-show rate (5.31%), supporting the recommendation of deposit-based policies to prevent revenue leakage.

1.6. Property-Wise Performance Comparison

Each of the 7 properties was analyzed for revenue, occupancy, and cancellation KPIs.

- **Top performers:**
  - Atliq Exotica and Atliq Palace had the highest total revenue (320M and 304M respectively), with solid RevPAR and stable ADRs.
  - Atliq Blu had the highest occupancy (62.02%) and a low cancellation rate.
- **Underperformers:**

- Atliq Seasons had the lowest occupancy (44.62%) and the lowest rating (2.29)—indicating poor customer experience and/or demand misalignment.
- Despite having a competitive ADR (16.6K), its realization % and revenue remained low.

This analysis helped highlight underutilized capacity and flagged properties that need repositioning or operational interventions.

1.7. Cancellation Window-Based Revenue Loss Analysis

To identify critical leakage points, cancellation data was grouped by notice period:

- Over 299M of revenue was lost from cancellations, 64% of which were last-minute or short-notice.
- This formed the basis for the Cancellation Revenue Recovery Model, one of the key business strategies later simulated using What-If analysis.

2. Root Cause Analysis and Consulting Recommendations

This section outlines the key revenue leakages and operational inefficiencies identified through data-driven insights. Each issue is paired with targeted consulting recommendations and, where applicable, directly linked to the revenue impact simulations presented earlier. Root causes were derived from over 134,000 booking records across cities, room types, channels, and timelines.

2.1. Room Category Underperformance

Observation:

- Premium and Presidential rooms, despite ADRs of 15K–23K, have occupancy nearly equal to Standard rooms (57.8%).
- Realization % is flat across categories (70%), suggesting no pricing advantage in conversions.

Root Cause:

- Insufficient differentiation in amenities or value between room types.
- Lack of visible bundling, upselling, or experiential add-ons.
- No effective segmentation or exclusive targeting of premium travelers.

Recommendation:

- Implement bundled offers (e.g., breakfast, spa, late checkout) to boost premium room conversions.

- Launch targeted weekend getaway or couple packages with experiential themes.
- Use confirmation page cross-sell or upgrade prompts for Standard/Elite guests.

2.2. Revenue Leakage from Cancellations

Observation:

- Over 193M in revenue is lost due to cancellations, 65% of which occur within 3 days of check-in.
- Cancellation peaks are observed in Week 22 and Week 26, despite stable ADR.

Root Cause:

- Last-minute cancellations are prevalent among OTA traffic.
- Existing flexible cancellation policies do not penalize non-committed guests.
- Marketing promos may be attracting unqualified or deal-driven traffic.

Recommendation:

- Introduce non-refundable or partially refundable policies for last-minute (¡72h) bookings.
- Configure OTA settings to reduce free cancellations for promo traffic.
- Audit marketing spend during spike weeks (22, 26) to avoid attracting low-quality leads.

2.3. OTA vs. Direct Booking Channel Analysis

Observation:

- All platforms have similar realization (70%) and cancellation (25%) rates.
- OTA channels (e.g., makeyourtrip, tripster) represent significant booking volume, but lack margin advantage.

Root Cause:

- Guests see no benefit to booking direct due to uniform pricing and lack of incentives.
- The hotel chain is paying 20% commission per OTA booking with no value differentiation.

Recommendation:

- Introduce direct-booking-only perks: free early check-in, meal credits, loyalty points.
- Shift promotional budgets toward owned channels and direct re-engagement.
- Use remarketing to convert previous OTA users into direct bookers via email/app.

2.4. Spending Segment Behavior

Observation:

- Low-spend segment (ADR 3,400) has a 100% cancellation rate.
- High-spend guests (30K+) show 0% cancellations and longer stays (avg. 3–4 days).

Root Cause:

- Bargain-hunting traffic likely uses OTAs with no intent to convert.
- No segmentation exists for prioritizing loyal or high-value customers.

Recommendation:

- Apply prepaid or deposit conditions for low-ADR bookings to reduce fake demand.
- Launch a "Trusted Guest" loyalty tier with benefits for high-value repeat guests.
- Use booking history to block known cancellation-heavy traffic during peak windows.

2.5. Property & Location Performance

Observation:

- Properties in Delhi and Bangalore, especially Atliq Grands, show RevPAR below 6K and sub-55% occupancy.
- Atliq Seasons in Mumbai underperforms consistently with low ratings (2.29) and weak revenue yield.

Root Cause:

- Pricing strategies may not match regional demand sensitivity.
- Lack of geo-targeted campaigns or locally relevant value propositions.

Recommendation:

- Tailor pricing per city using micro-demand models and local competitor benchmarks.
- Repurpose underused inventory for long-stay or corporate use in IT corridors (e.g., Bangalore).
- Partner with event organizers to introduce event-week surge pricing or co-working models.

2.6. No-Show Behavior by Booking Platform

Observation:

- Average no-show rate = 5.02%, with direct offline highest (5.31%) and direct online lowest (4.74%).
- OTA platforms are mid-range but lack behavior enforcement.

Root Cause:

- No confirmation system or reminder triggers on offline or OTA bookings.
- Lack of deposit or commitment at time of booking across channels.

Recommendation:

- Introduce SMS/email confirmation with pre-auth hold for offline bookings.
- Offer a credit-back incentive for guests who show up on time.
- Consider a blacklist or flag system for repeat no-show offenders (if identity available).

2.7. Weekly Volatility & Booking Rhythm

Observation:

- Week 24 and Week 26 showed dips in revenue and booking volume.
- Cancellation % spikes in Weeks 22 and 26, indicating possible promo or holiday effect.

Root Cause:

- Uneven demand curves driven by external calendar factors or inconsistent promotions.
- No visible dynamic pricing response to known dips.

Recommendation:

- Apply dynamic staffing and pricing control based on WoW booking trends.
- Schedule flash offers or influencer promotions for dip weeks like Week 24.
- Monitor lead time + cancellation pattern to avoid over-discounting close to check-in dates.

3. Business Justification

This section presents a financial justification of the proposed interventions, based on dynamic ROI modeling using actual booking data, simulated adoption rates, and industry-standard assumptions. The aim is to determine whether the proposed strategies are economically viable and assess their impact under different adoption scenarios.

3.1. Summary of ROI Models

Strategy	**Monthly Revenue Uplift (at 10% uptake)**	**Estimated Cost**	**Payback Period**
Premium Room Bundling (1000/package)	4.66M	2–3M	∼1 month
Last-Minute Cancellation Recovery	13.56M	3–4M	∼1 month
OTA to Direct Margin Shift	15.09M	2–3M	∼1 month
Total ROI Impact (Gross)	**33.31M/month**	**7–10M combined**	**∼1 month (overall)**

Table 1: Summary of ROI Models for Proposed Strategies

All simulations were conducted at 10% uptake using a dynamic What-If parameter in Power BI, allowing future stakeholders to adjust assumptions interactively.

3.2. ROI as a Share of Total Revenue

- The hotel chain's total monthly revenue is approximately 1709M.
- The projected gain of 33.31M/month represents a 1.95% uplift driven entirely by strategic operational changes.
- In the context of the hospitality sector, this uplift is substantial. Margin improvements of even 1–2% are considered high-impact, especially without capital investment or structural expansion.

3.3. Scenario Analysis

To evaluate the resilience of the recommendations, three adoption scenarios were tested for all three strategies:

Scenario	Uptake %	Monthly ROI Gain	Remarks
Best Case	20–25%	60M–80M	Aggressive implementation and high guest engagement
Most Likely	10%	33.31M	Reasonable target with internal alignment
Conservative	5%	16M–17M	Partial rollout or early-stage uptake

Table 2: Scenario Analysis of ROI Gains

All three strategies break even within the first month under both most likely and best case scenarios. Even under conservative assumptions, the recovery of implementation cost is expected within 1.5 to 2 months.

3.4. Strategic Alignment and Justification

- **Scalability**: Strategies are adaptable across hotels, room types, and geographies.
- **Low-Capex Implementation**: No physical infrastructure investment required.
- **Behavior-Based ROI**: Each lever targets controllable customer actions such as booking channel, upgrade selection, or cancellation timing.
- **Bundling as a Long-Term Strategy**: Even if uptake starts low, the Premium Room Bundling strategy enhances guest experience, supports differentiation, and builds long-term loyalty.

These findings confirm that the proposed changes are not only operationally feasible, but also financially sound, with strong short-term returns and strategic value over time.

4. Conclusion

This project presented a comprehensive analysis of operational and revenue dynamics within the hospitality sector, using real-world booking data from a multi-city hotel chain. Through detailed examination of booking patterns, room category performance, guest spending behavior, platform-wise trends, and cancellation behavior, several key problem areas were identified.

Root cause analysis revealed underutilization of premium room inventory, high last-minute cancellations, and profit dilution due to reliance on OTA channels. To address these challenges, three strategic interventions were proposed and tested through simulation:

- Premium room bundling to increase value perception and room occupancy

- Non-refundable policies for last-minute cancellations to reduce revenue leakage
- Margin recovery through targeted shift from OTA to direct bookings

Each intervention was evaluated using actual data and projected through a What-If analysis framework. The combined revenue uplift across strategies amounts to 33.31 million per month at a modest 10% uptake rate—representing a 1.95% improvement over baseline revenue. All three interventions show favorable ROI and short payback periods, confirming both their economic viability and strategic alignment.

In conclusion, this project not only identifies core leakage areas but also delivers a scalable, data-driven roadmap for profitability enhancement in the hospitality industry. The dashboard and simulation models developed here can be readily extended to new geographies, seasons, or customer segments, providing long-term analytical value to hotel operators and decision-makers.