

HOTEL REVENUE ANALYSIS



PROBLEM

- Hotels struggle with data-driven decision-making because essential information (bookings, guest demographics, pricing, seasonal trends) is fragmented across multiple systems and lacks unified analysis.
- This scattering results in poor visibility into key metrics like occupancy and rate performance, which hinders management's ability to optimize pricing, plan promotions, identify upsell opportunities, and maximize revenue.
- The core need is for an integrated analytical solution that consolidates this data and delivers actionable insights via interactive dashboards to support strategic revenue decisions.



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Module 1: Data Modeling and Ingestion

Module 2: Occupancy & Revenue Metrics

Module 3: Guest Analysis

Module 4: Forecasting & Cancellation Trends

Module 5: Revenue Strategy Dashboard

Module 1: Data Modeling & Ingestion

Transforming raw hotel booking data into a reliable, analytics-ready foundation that powers strategic decision-making across the organization.

Project Objective

Build a scalable, enterprise-grade data model that converts fragmented booking information into actionable business intelligence, enabling faster queries and consistent reporting across all departments.

Booking Transactions

Reservation records, payment history, and booking channels

Customer Profiles

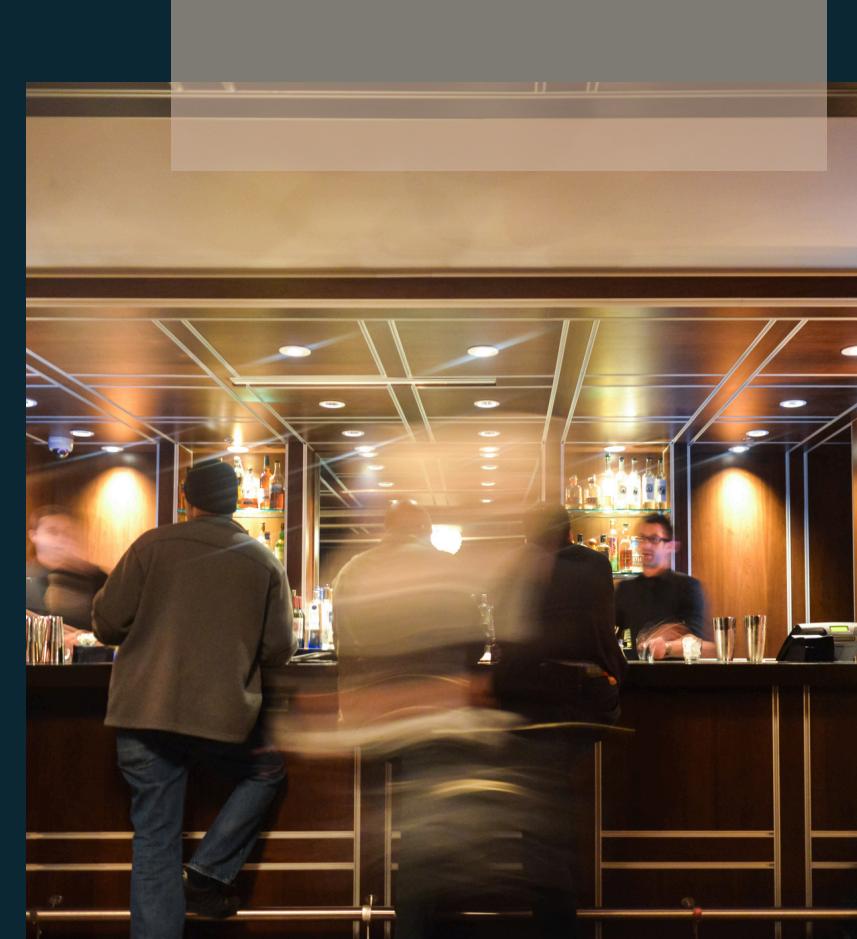
Guest demographics, preferences, and loyalty status

Room Inventory

Room types, amenities, and availability data

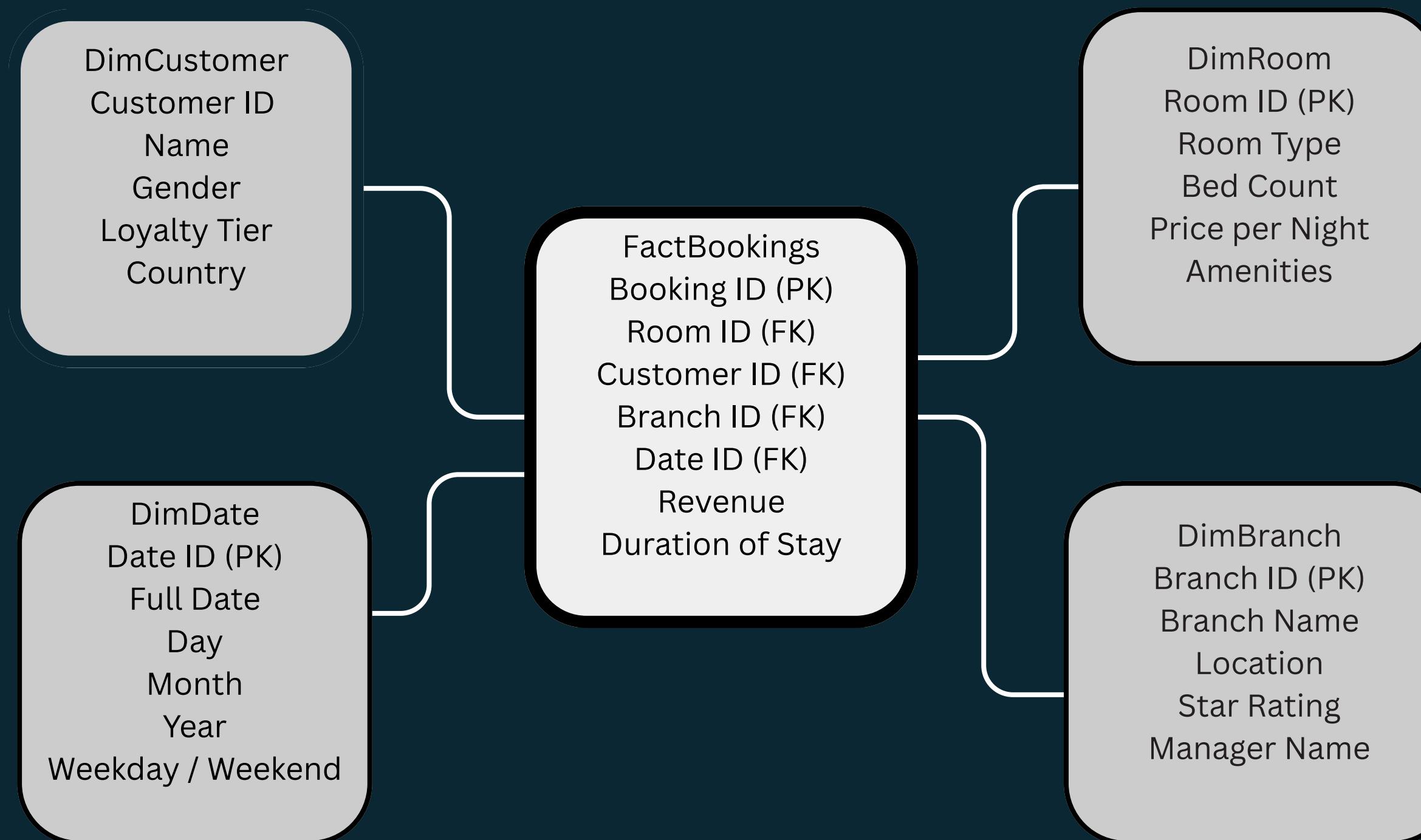
Hotel Branch Information

Location details, capacity, and property attributes



Data Model (Star Schema)

A star schema organises data with a central fact table linked to dimension tables, enabling faster queries, simpler analysis, and scalable reporting.



Business Rules & Derived Fields

1

Stay Duration Calculation

Formula: Stay Duration =
Check-out Date - Check-in Date

Automatically computed for
every booking to enable
downstream analytics and
customer segmentation.

2

Stay Type Formula

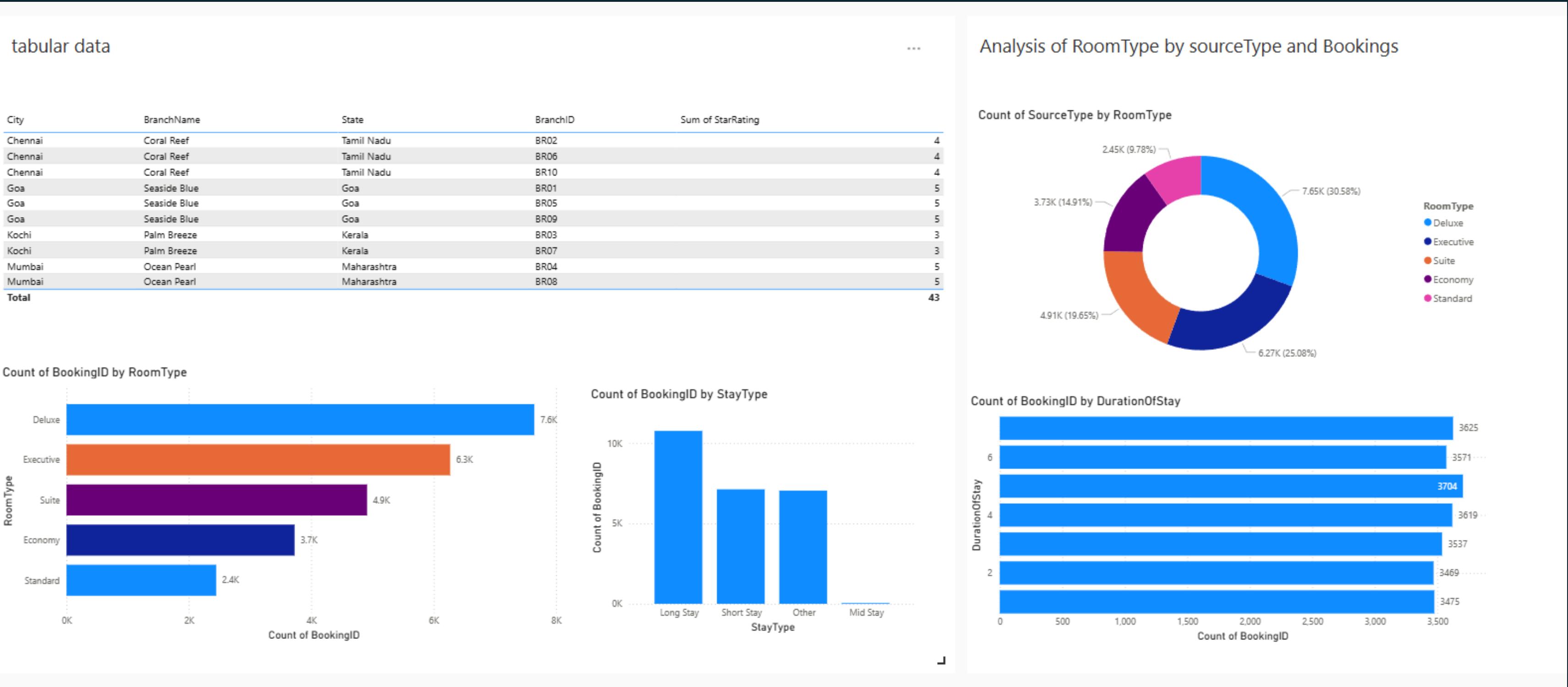
- Day Use: 1 day (business travellers, hourly bookings)
- Short Stay: ≤ 3 days (weekend getaways)
- Extended Stay: 4–7 days (vacation travellers)
- Long Stay: ≥ 8 days (corporate relocations, extended trips)

3

Room Category Logic

- Standard: ≤ 3 days capacity (economy segment)
- Deluxe: ≤ 6 days capacity (mid-tier comfort)
- Premium: ≤ 10 days capacity (luxury experience)
- Suite: > 10 days capacity (executive-level accommodations)

Module 1 Dashboard



MODULE 2 - OCCUPANCY & REVENUE METRICS

MODULE 2 EVALUATES HOTEL PERFORMANCE USING OCCUPANCY AND REVENUE KPIS LIKE OCCUPANCY %, ADR, AND REVPAR. IT ANALYZES TRENDS OVER TIME AND COMPARES BOOKING CHANNELS TO SUPPORT DATA-DRIVEN REVENUE DECISIONS.

KEY PERFORMANCE INDICATORS (KPIs):

01 Occupancy % = (Rooms Sold ÷ Rooms Available) × 100

Shows how many hotel rooms are occupied out of total available rooms.

→ Helps measure room utilization efficiency.

02 ADR (Average Daily Rate) = Total Room Revenue ÷ Rooms Sold

Average revenue earned per sold room.

→ Indicates pricing strength.

03 RevPAR (Revenue per Available Room) = ADR × Occupancy %

Combines Occupancy % and ADR to show overall revenue efficiency.

→ Most important hotel performance metric.

Performance Trend & Booking Trend Analysis

 Reset Filters

All
RoomType

All
Season

All
Branch

₹125.08

Average of ADR

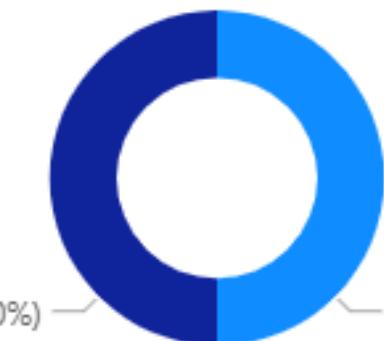
27.37

Average of Occupancy%

₹34.34

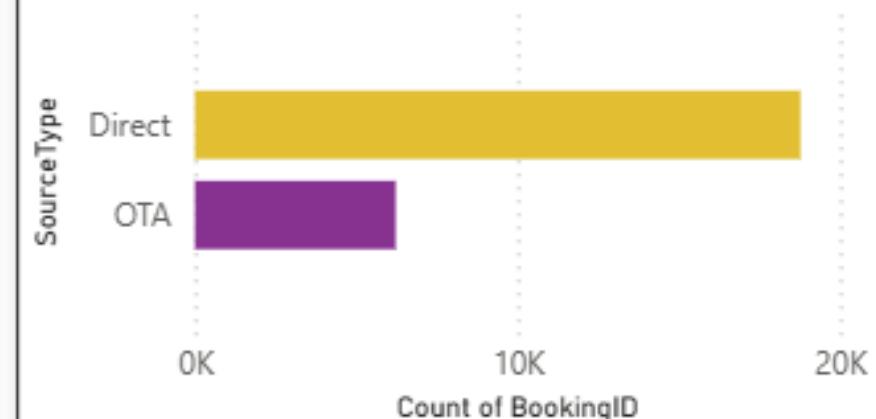
Average of RevPAR

Occupancy by Weekday vs Weekend

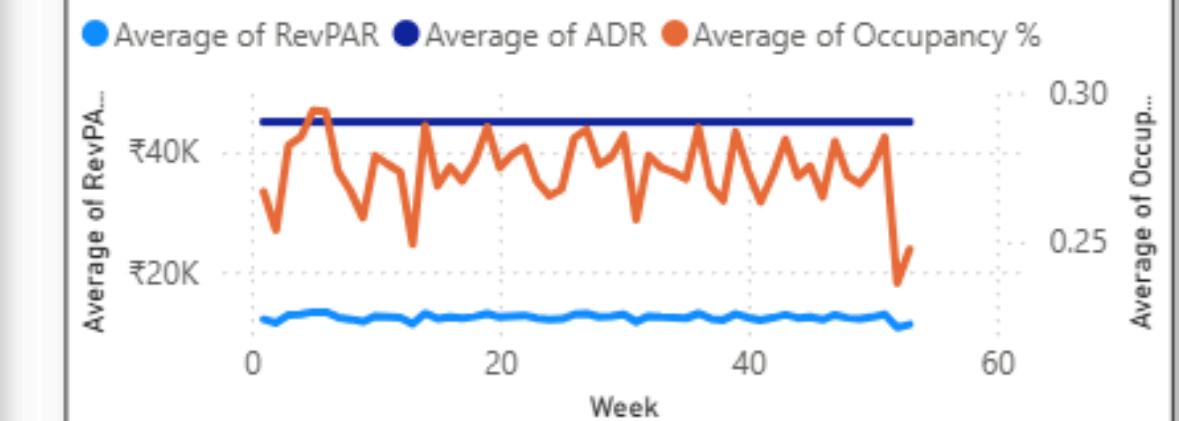


Day Type
● Weekday
● Weekend

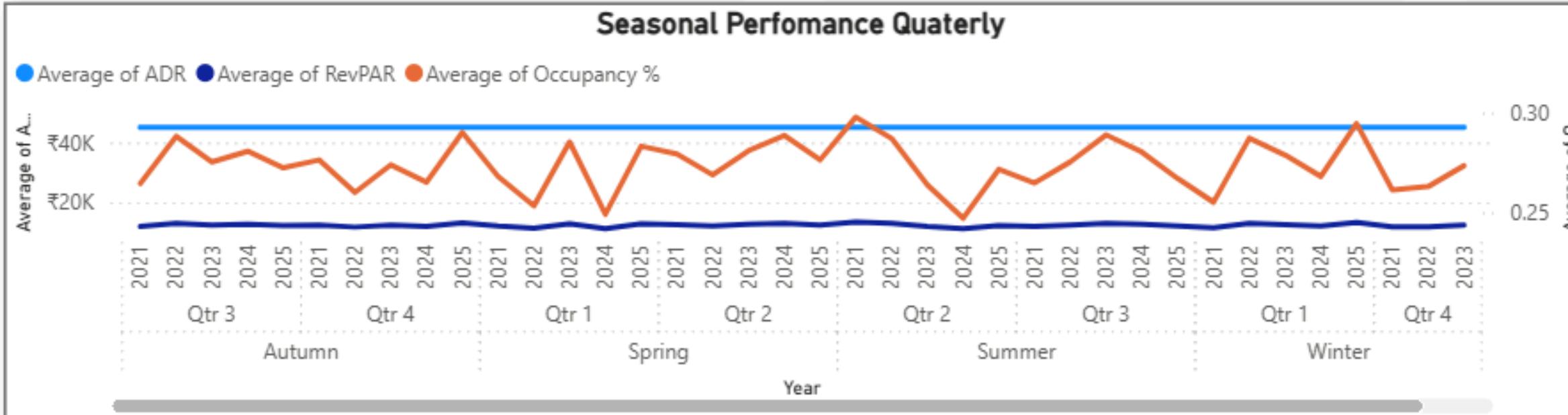
Bookings by Source Type



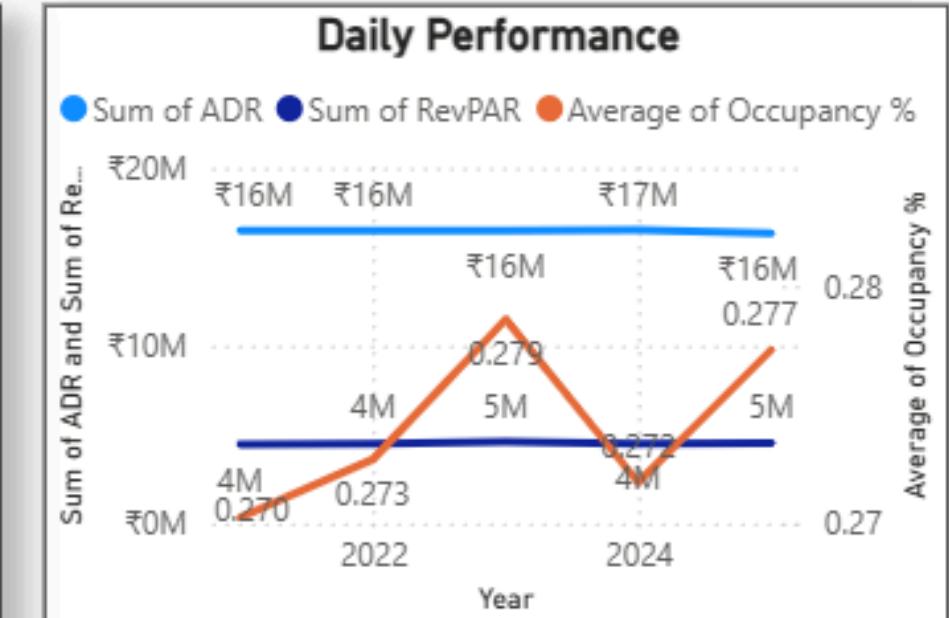
Weekly Performance



Seasonal Performance Quarterly



Daily Performance





Impact – How KPIs Guide Revenue Decisions

01

Pricing Optimization

Occupancy % and ADR help adjust room prices based on demand levels.

02

Revenue Efficiency Evaluation

RevPAR provides a combined view of pricing and occupancy performance.

03

Demand & Capacity Planning

Trend analysis supports forecasting and better room inventory planning.

04

Channel Strategy Improvement

Direct vs OTA insights help reduce commission costs and improve profitability.

MODULE 3: GUEST ANALYSIS

Objective:

To analyze guest behavior and identify valuable customer segments for better decision-making.

01

Guest Segmentation:

Guests classified as Couple, Family, or Single based on purpose of visit.

02

Customer Clustering:

Identified High Spenders, Loyal Guests, and First-time Guests using booking history.

03

Demographic Analysis:

Guests grouped by age (Child, Teen, Adult, Senior).

04

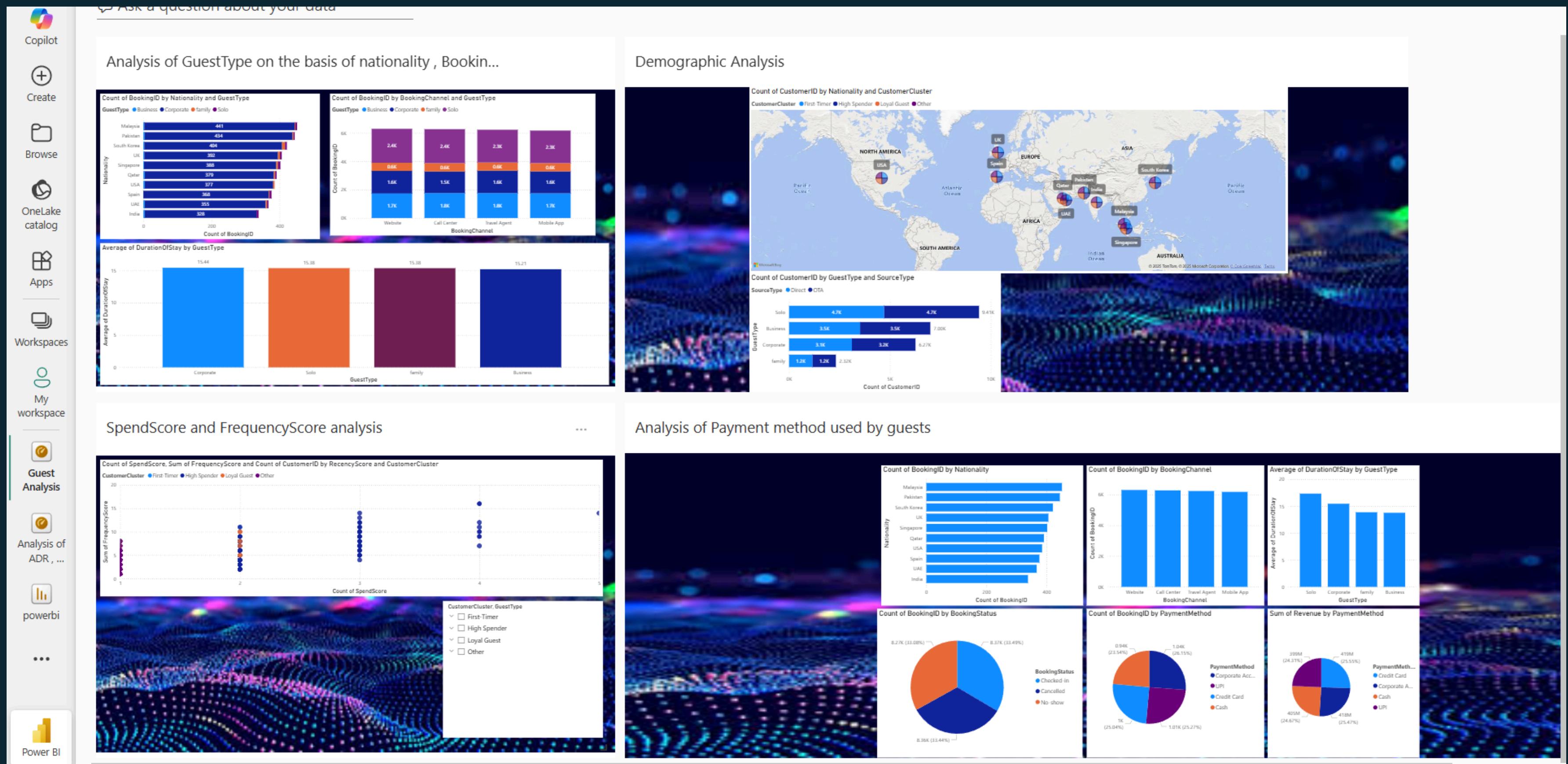
Guest Value Metrics:

Used Recency, Frequency, and Spending data to measure guest importance.

Business Impact:

Helps hotels improve personalization, increase guest retention, and optimize revenue strategies.

Module 3 Dashboard



POWER BI FORMULAS:

- `CustomerCluster =
SWITCH(TRUE(),
[NumberOfBookings] = 1 && [Revenue] < 5000, "First-Timer", [NumberOfBookings] >= 3 && [Revenue] < 15000, "Loyal
Guest", [Revenue] >= 15000, "High Spender", "Other")`
- `GuestType = SWITCH(Customer[Purpose],"Honeymoon","Couple","Family Visit","Family","Business
Trip","Single","Conference","Single","Tourism","Couple","Medical Visit","Single","Wedding","Family","Education
Visit","Single","Sports Event","Family","Transit Stay","Single","Couple")`

Key Insights:

- **High spenders contribute the highest revenue.**
- **Loyal guests show frequent repeat bookings.**
- **Couples and families are the dominant guest types.**
- **India, UK, and USA are top source markets.**
- **Digital payments are most preferred.**

MODULE 4 : FORECASTING AND CANCELLATION TRENDS

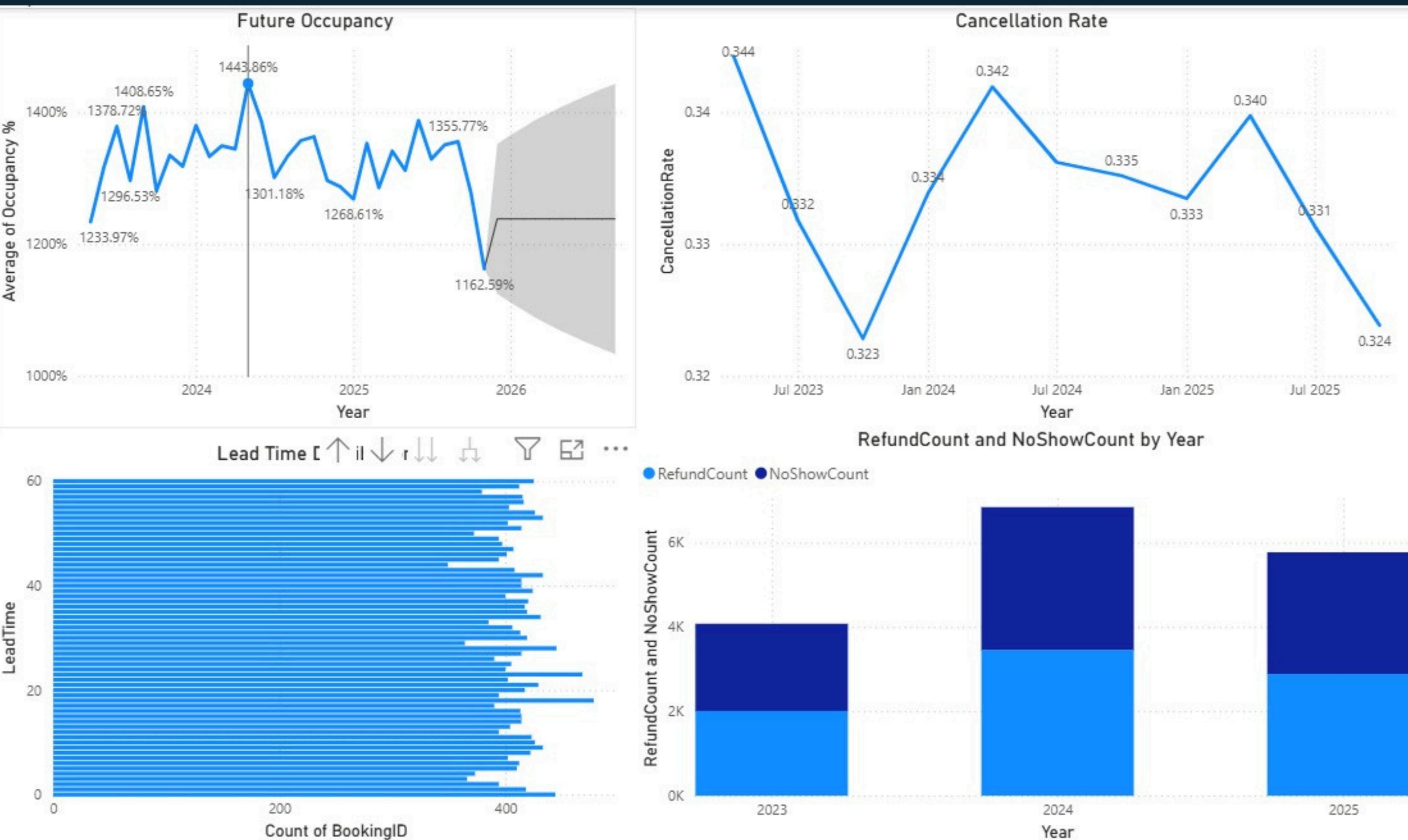
OVERVIEW OF MODULE:

This module focused on analyzing booking behavior and operational risks that directly impact hotel revenue realization. The analysis uses key metrics and visualizations to support proactive revenue management strategies.

KEY INSIGHTS DELIVERED:

- Occupancy Forecasting (Future Scope): Predicting future occupancy levels.
- Cancellation Rate: Tracking the proportion of canceled bookings.
- Lead Time Distribution: Understanding the duration between the booking date and check-in date.
- Refund and No-show Behavior: Quantifying lost revenue from refunds and guests who don't arrive.

FORECASTING AND CANCELLATION INSIGHT



- FUTURE OCCUPANCY: THE AVERAGE OCCUPANCY PERCENTAGE IS HIGHLY VOLATILE, WITH THE 2026 FORECAST FALLING BETWEEN APPROXIMATELY 1100% AND 1200%.
- CANCELLATION RATE: THE RATE FLUCTUATES MODERATELY, RANGING FROM ABOUT 0.323 TO 0.344 ACROSS THE PERIOD FROM JULY 2023 TO JULY 2025.
- LEAD TIME: THE MAJORITY OF BOOKINGS HAVE A SHORT LEAD TIME, TYPICALLY BETWEEN 0 AND 60 DAYS.
- REFUND/NO SHOW TREND: BOTH REFUND COUNT AND NO SHOW COUNT PEAKED IN 2024 BUT SHOW A DECREASE IN 2025.

KEY MEASURES & CALCULATIONS USED IN POWER BI

1. Occupancy %

Measures the percentage of available rooms that are occupied, indicating room utilization efficiency.

Occupancy % = DIVIDE([Room Booked], [Total Rooms]) * 100

2. Cancellation Rate

Measures the proportion of bookings that are cancelled, indicating booking reliability.

Cancellation Rate = DIVIDE(COUNTROWS(FILTER(Bookings,
Bookings[CancellationFlag] = "Yes")),
COUNTROWS(Bookings))

3. Lead Time

Measures the number of days between booking date and check-in date, reflecting customer booking behavior.

Lead Time = DATEDIFF(Bookings[BookingDate], Bookings[CheckInDate], DAY)

4. Refund Count

Measures the total number of refunded bookings, highlighting revenue leakage.

Refund Count = CALCULATE(COUNTROWS(Bookings),
Bookings[RefundAmount] > 0)

Module 4 Dashboard



Module 5: Revenue Strategy Dashboard

AI-Driven Pricing & Upsell Analytics for Hotels

Key Focus:

- Centralized Power BI dashboard for revenue decisions
- Combines room pricing and ancillary upsell analytics
- Designed for General Managers & Revenue Managers

What Problem It Solves:

- Identifies missed upsell opportunities
- Optimizes seasonal & room-type pricing
- Replaces guesswork with data-backed decisions

Upsell Potential – Ancillary Services

1. Upsell Potential (Ancillary Services)

- Analyzes guest spend on spa, dining, services
- Identifies high-value & repeat guests
- Highlights high-margin but underperforming outlets

2. Pricing Tiers (Seasonal + Room Type)

- Peak season → premium pricing
- Weekends → mid-tier pricing
- Off-season → discounts & bundles
- Different pricing logic per room category

Scenario Testing & Business Impact

Interactive Decision-Making

What-If Parameters

- Price Uplift %
- Occupancy Sensitivity (demand elasticity)

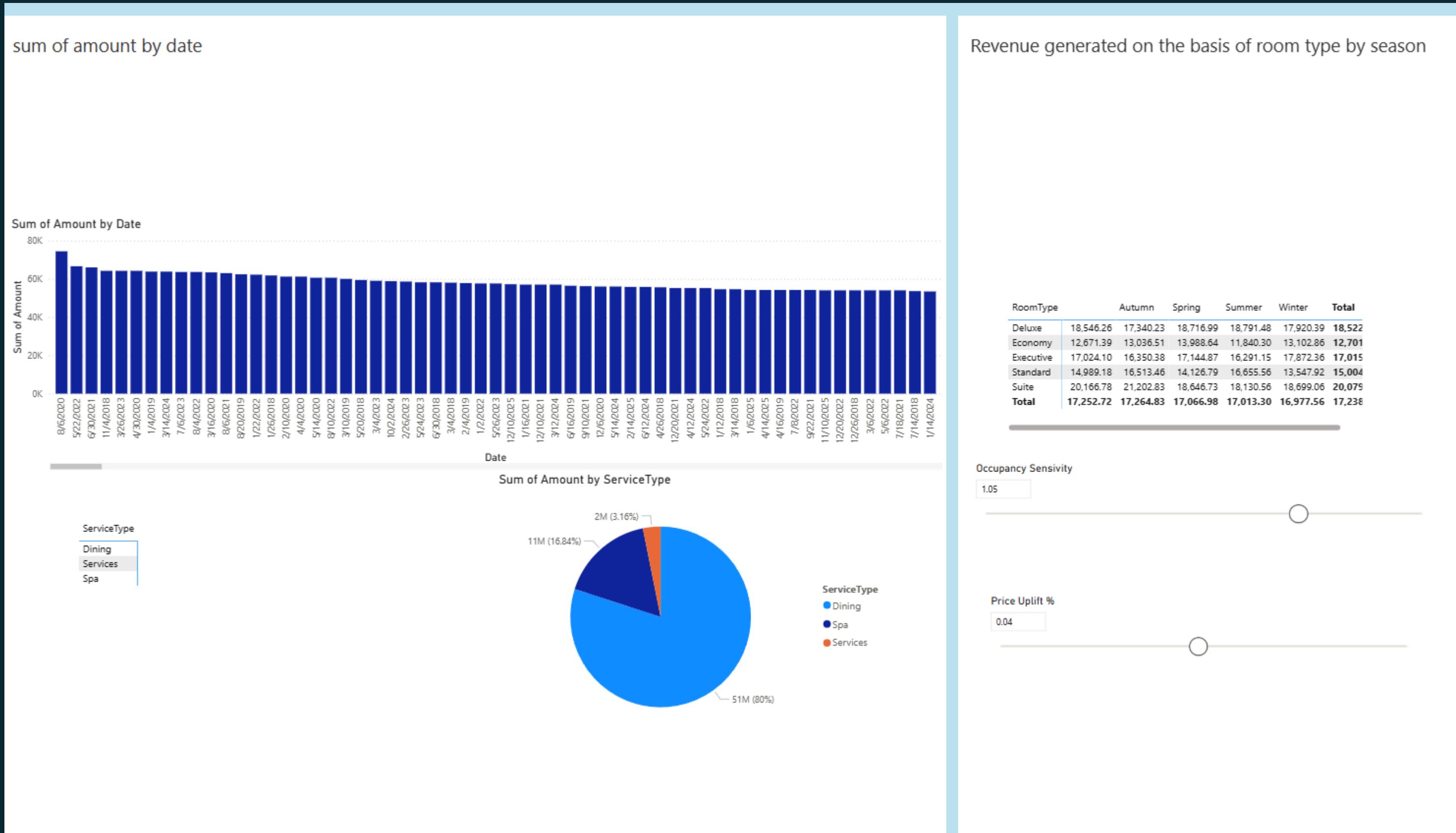
Scenario Demo

- Baseline vs adjusted ADR, Occupancy, RevPAR
- Real-time KPI updates using sliders

Impact for Managers

- Higher ADR & RevPAR
- Improved upsell conversions
- Faster, confident pricing decisions
- Reduced dependency on intuition

Module 5 Dashboard



Revenue Manager Dashboard

kpi

537.28K

Sum of ADR

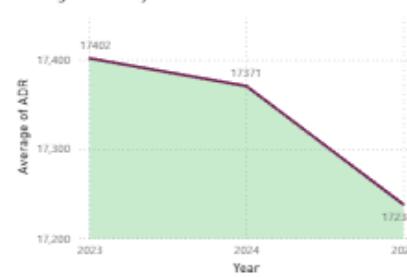
17.27K

Sum of RevPAR

99.64

Sum of Occupancy %

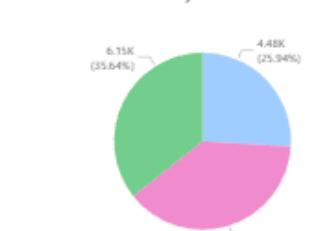
Average of ADR by Year



Sum of Occupancy % by Year



Sum of RevPAR by Year



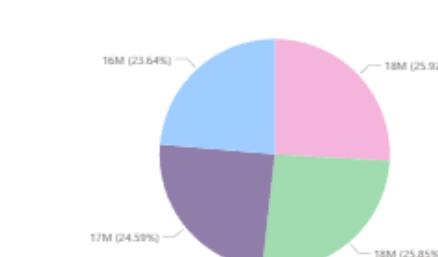
Revenue on the basis of customers

REVENUE ON THE BASIS OF CUSTOMERS

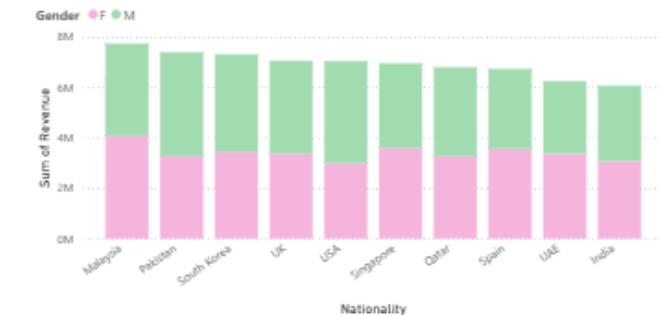
Sum of Revenue and First CustomerID by Nationality and BranchName



Sum of Revenue by LoyaltyLevel



Sum of Revenue by Nationality and Gender

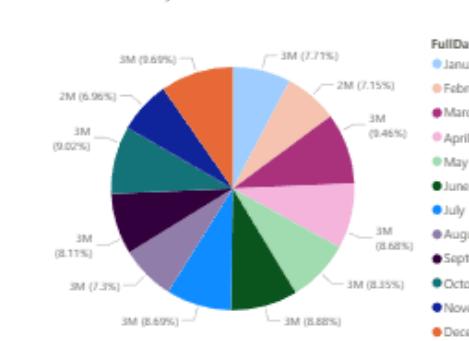


Revenue by seasonality

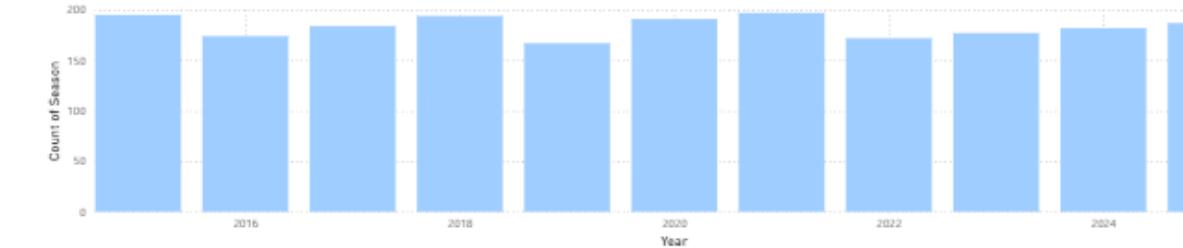
Sum of Revenue by Year



Sum of Revenue by Month



Count of Season by Year



Revenue analysis by Branch

101K

Sum of DurationOfStay

173K

Sum of RoomNightsSold

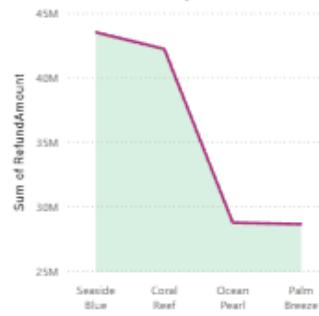
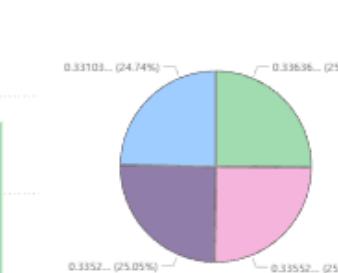
431M

Sum of Revenue

Sum of Revenue by BranchName



CancellationRate and CancellationRate by BranchName



BranchName Seaside Blue
Sum of Revenue 130896700

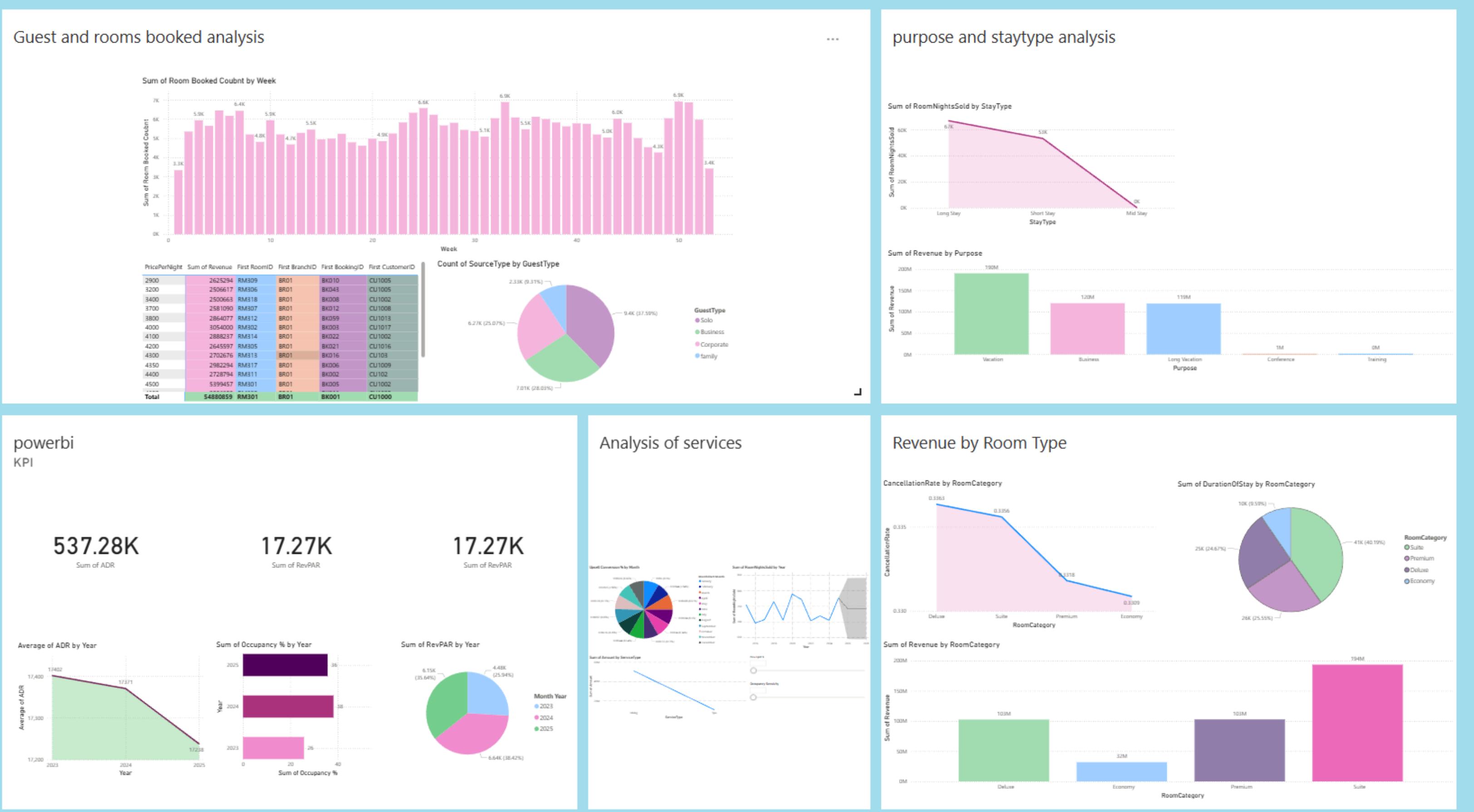
Revenue Manager Dashboard

- DESPITE A SLIGHT DECLINE IN ADR, STABLE REVPAR AND IMPROVING OCCUPANCY INDICATE EFFECTIVE ROOM UTILIZATION AND RESILIENT REVENUE PERFORMANCE.
- REVENUE GROWTH IS STEADY WITH MILD SEASONALITY, DRIVEN LARGELY BY HIGH-VALUE CUSTOMER SEGMENTS SUCH AS KEY INTERNATIONAL MARKETS AND GOLD/PLATINUM LOYALTY MEMBERS.
- PERFORMANCE VARIES ACROSS BRANCHES, AND HIGHER CANCELLATIONS AND REFUNDS AT CERTAIN LOCATIONS HIGHLIGHT OPPORTUNITIES TO IMPROVE BOOKING POLICIES AND CUSTOMER EXPERIENCE.

General Manager Dashboard

- Bookings are stable week-to-week with seasonal peaks, driven mainly by Solo and Business travelers, while Family and Corporate segments remain underutilized.
- Long stays and Vacation travel generate the highest value, contributing most to room nights sold and overall revenue.
- Suite and Premium rooms are the key revenue drivers, while Economy rooms offer stable but low-margin occupancy.

General Manager Dashboard



THANK
YOU

