

Hotel Business Understand and Improve Revenue



Project Statement:

Hotels must understand their occupancy patterns, guest demographics, and pricing effectiveness to improve revenue. This project builds an analytical solution in Power BI to track room bookings, average daily rates, guest profiles, and seasonal trends. It helps hotel management make decisions around promotions, upselling, pricing strategies, and room optimization.

Outcomes:

- Occupancy rate and booking trend dashboards
- ADR (Average Daily Rate) and RevPAR (Revenue Per Available Room) metrics
- Customer segmentation by stay purpose and demographics
- Forecasting of occupancy and revenue based on historical data
- Branch-level performance comparisons
- Strategic dashboard for pricing and marketing actions
- Model scalability across hotel chains and geographies

Modules to be Implemented:

1. Data Modeling and Ingestion

- Load booking, customer, and room data
- Build a star schema with Date, Room, Customer, Hotel branches
- Calculate booking duration, room category, and stay type

2. Occupancy & Revenue Metrics

- Occupancy %, ADR, and RevPAR over time
- Visualize daily, weekly, and seasonal performance
- Compare direct bookings vs. OTA bookings

3. Guest Analysis Module

- Analyze guest types: business, family, solo
- Visuals for nationality, booking source, and duration
- Cluster customers into first-timers, loyal guests, and high spenders

4. Forecasting and Cancellation Trends

- Predict future occupancy using trend lines
- Cancellation rate analysis and lead time distribution
- No-show and refund trend visuals

5. Revenue Strategy Dashboard

- Identify upsell potential (spa, dining, services)
- Recommend pricing tiers by season and room type
- Final interactive dashboard for GMs and revenue managers

Week-wise Module Implementation Plan with Deliverables

Week | Module | Deliverables

1–2 | Data Modeling | Booking and customer data with schema

3–4 | Occupancy & Revenue | KPI visuals with drilldowns

5–6 | Guest Analysis | Demographic segmentation visuals

7–8 | Forecasting | Booking and cancellation trends

9–10 | Strategy Dashboard | Complete dashboard with pricing insights

Evaluation Criteria (Milestone-Based)

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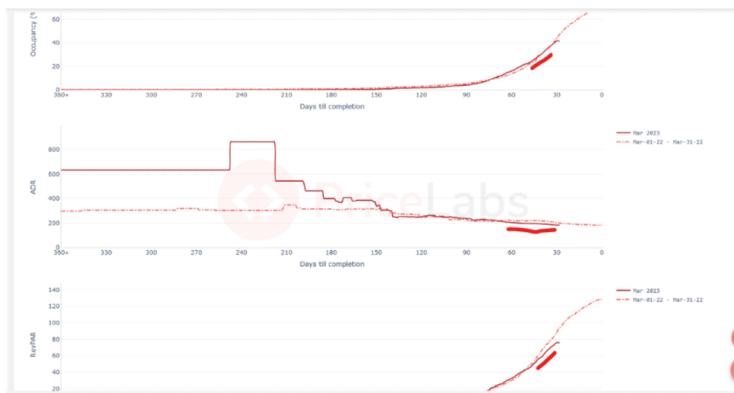
- **Milestone 1 (Week 2):**

Clean and transformed booking and room data ingested into a star schema. Relationships among customer, booking, and hotel branches are tested and validated.

The screenshot shows the Power BI Data Editor interface. A query named 'Sales_Orders' is selected. The preview pane shows a table with columns: Order ID, Date, Day, Month, Year, Customer ID, Customer Name, Room Type, Room Number, and Room Status. The ribbon at the top has sections for View, Tools, Help, Properties, Advanced Editor, Choose Columns, Manage Columns, Data Type Test, Merge Queries, Append Queries, Continue Query, AI Insight, and others. A tooltip for 'Data Type Test' is open, showing options for Decimal Number, Percentage, Date/Time, Duration, Text, True/False, and Binary. The main area shows the raw data from the query step.

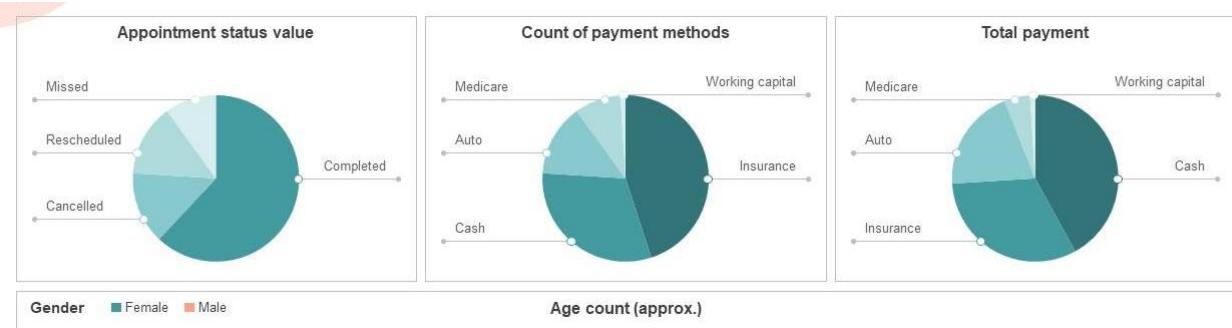
- **Milestone 2 (Week 4):**

Occupancy % and revenue metrics (RevPAR, ADR) are visualized over time. Interactive filtering by room type, location, and booking source is fully functional.



- **Milestone 3 (Week 6):**

Guest segmentation is operational based on purpose of visit, demographics, and loyalty. Persona insights are available in dashboard view



- **Milestone 4 (Week 8):**

Forecasting of future occupancy and cancellations using historical data is complete. Dashboard includes booking lead time analysis and refund/cancellation heatmaps.

- **Milestone 5 (Week 10):**

Revenue strategy dashboard includes recommendations for pricing tiers, upsell offers, and seasonal promotions. Final reports and delivery assets are ready.



4. Forecasting & Cancellation

- ⚡ Predict future occupancy using trend lines
- 📅 Cancellation rate analysis and lead time distribution
- ⚡ No-show and refund trend visuals



5. Revenue Strategy Dashboard

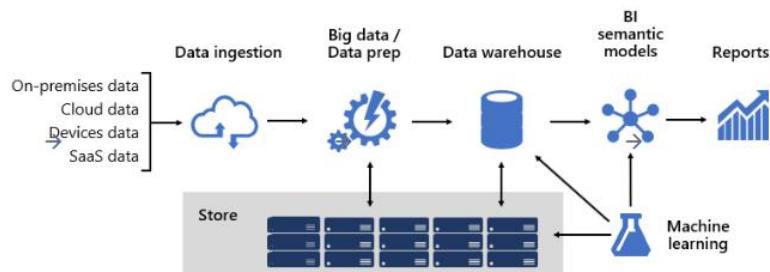
- 🛒 Identify upsell potential (spa, dining, services)
- ⌚ Recommend pricing tiers by season and room type
- 📊 Final interactive dashboard for GMs and revenue managers



Architecture Diagram

- **Data Sources:** Booking engines, Hotel CRM, Channel managers
- **Transformation:** Power Query
- **Modeling Layer:** Guest, Booking, Room, Date
- **Visualization Layer:** Occupancy, Revenue, Guest Profiles

Architecture Diagram



Data Sources

Booking engines, Hotel CRM,
Channel managers



Transformation

Power Query for data cleaning
and preparation



Modeling Layer

Guest, Booking, Room, Date
dimensions



Visualization Layer

Occupancy, Revenue, Guest
Profiles