Hospitality Project

PROJECT CODE:P728

DATE:14/01/2025

Meet Our Team

TEAM MEMBERS :-

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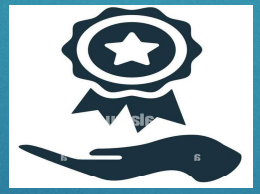
Agenda

Project Goal &
Hospitality Introduction

Dataset Description

KPI Analysis

Dashboard Design



Recommendations

Conclusion & Closure

Introduction

Project overview:

Hospitality analytics involves the process of collecting, analyzing, and interpreting data specific to the hospitality industry to improve guest experiences, optimize operations, and drive better business decisions. It leverages data to enhance customer satisfaction, manage resources efficiently, increase occupancy rates, and improve revenue management strategies. By analyzing booking trends, customer feedback, and operational metrics, businesses can provide personalized experiences and gain a competitive edge.

Objectives

1. **Analyze Operational Metrics:** Review key performance metrics such as occupancy rates, average daily rate (ADR), revenue per available room (RevPAR), and guest satisfaction scores.
2. **Identify Guest Trends and Anomalies:** Detect patterns in booking behaviors, seasonal demand shifts, and customer preferences while flagging unusual trends or operational inefficiencies.
3. **Highlight Areas of Excellence and Improvement:** Areas needing enhancement to improve guest experience and operational performance.
4. **Develop Analytical Dashboards:** Create intuitive dashboards using Excel, Power BI, Tableau, and SQL queries to monitor and visualize critical KPIs for decision-makers.

KPI Analysis

The project focuses on analyzing key performance indicators (KPIs) to monitor operations, identify trends, and provide actionable insights. These include:

- Provides insights into workload distribution, efficiency, and staff productivity.
- Highlights performance gaps or successes in metrics like occupancy rates, revenue per available room (RevPAR), and customer satisfaction.
- Evaluates engagement efforts through check-ins, customer feedback responses, and loyalty program touchpoints.

Total Revenue

Total revenue refers to the complete amount of income generated by a hospitality business during a specific time period. It includes revenue from various streams that are critical to the operation and growth of such businesses.

```
2
3       -- Total Revenue
4 •     select * from fact_bookings;
5 •     SELECT SUM(revenue_realized) AS total_revenue
6       FROM fact_bookings;
7
```

Occupancy Rate

The **occupancy rate** measures the percentage of available rooms or units that are occupied during a specific period. It is a key performance indicator (KPI) that reflects how efficiently a property utilizes its capacity to generate revenue. Occupancy rate is crucial for operational planning, marketing strategies, and benchmarking performance against competitors.

```
8     -- Occupancy Rate
9 •   Select * from fact_aggregated_bookings;
10 •  SELECT property_id,SUM(successful_bookings) / SUM(capacity) * 100 AS occupancy_rate
11    FROM fact_aggregated_bookings
12    group by property_id;
13
```

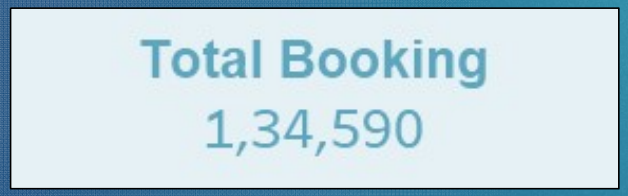
Cancellation Rate

Cancellation rate measures the percentage of bookings that guests cancel compared to the total bookings made over a specific period. A high cancellation rate can indicate inefficiencies or operational challenges, while managing it effectively can help maximize revenue and occupancy.

```
14    -- Cancellation Rate
15 •  Select * from fact_bookings;
16 •  SELECT SUM(CASE WHEN booking_status = 'Cancelled' THEN 1 ELSE 0 END) / COUNT(*) * 100 AS cancellation_rate
17    FROM fact_bookings;
18
```

Total Booking

Total booking refers to the total number of reservations or bookings made for accommodations, events, or services within a specific period. It is a fundamental metric for evaluating the performance of a hotel or hospitality business and planning resources effectively.




```
19      -- Total Booking
20 •    select * from fact_bookings;
21 •    SELECT COUNT(booking_id) AS total_bookings
22      FROM fact_bookings;
23
```

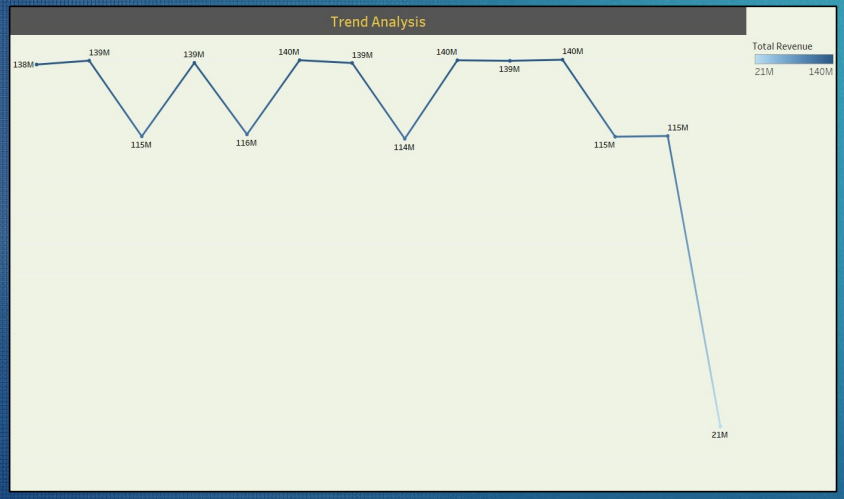
Utilized Capacity

Utilized capacity refers to the percentage of a property's total available capacity (rooms, event spaces, or other facilities) that is actively in use during a specific period. This metric indicates how efficiently a hospitality business uses its resources to generate revenue and meet guest demands.

```
24      -- Utilize Capacity
25 •    select * from fact_aggregated_bookings;
26 •    select  sum(successful_bookings) * 100.0 / sum(capacity) as Utilization_Rate
27      from fact_aggregated_bookings;
28
```

Trend Analysis

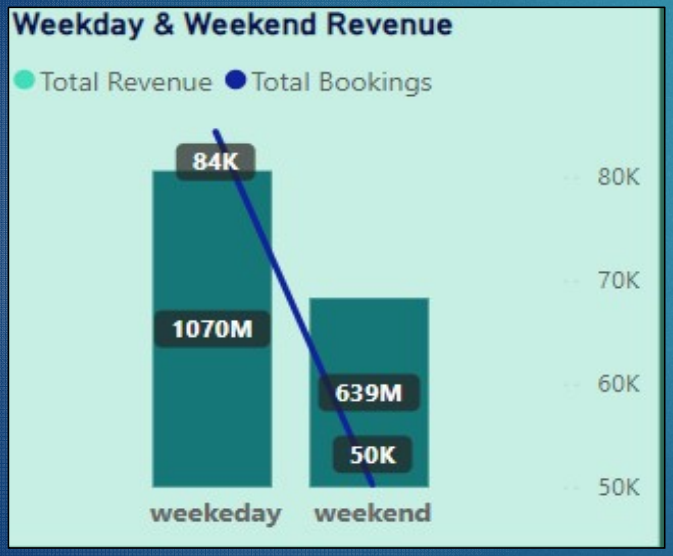
Trend analysis is the process of comparing data over a period to observe consistent patterns or irregularities that inform key business decisions. In hospitality, trends can relate to customer behavior, revenue generation, bookings, occupancy, seasonality, and market dynamics.




```sql
-- Trend Analysis
SELECT DATE_FORMAT(booking_date, '%Y-%m') AS month, SUM(revenue_realized) AS total_revenue
FROM fact_bookings
GROUP BY DATE_FORMAT(booking_date, '%Y-%m')
ORDER BY month;
```

Weekday & Weekend Revenue And Booking

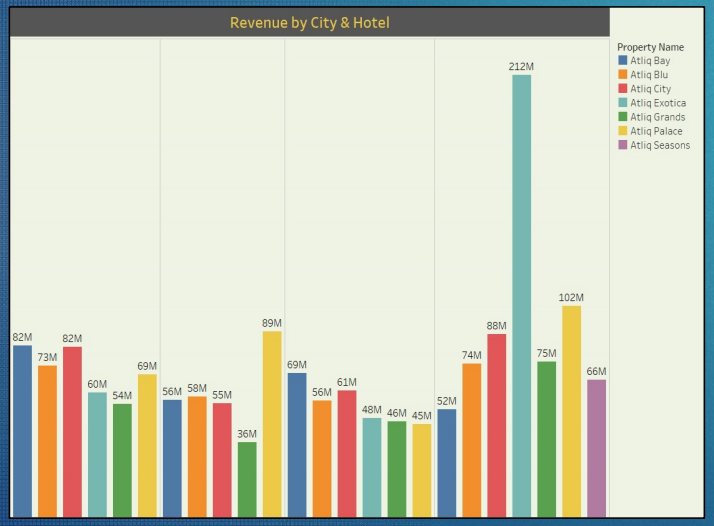
In the hospitality industry, analyzing revenue and booking trends for weekdays versus weekends is essential for optimizing strategies, understanding guest behavior, and increasing profitability.




```sql
-- weekday & weekend Revenue and Booking
SELECT
    CASE WHEN DAYOFWEEK(STR_TO_DATE(booking_date, '%Y-%m-%d')) IN (1, 7) THEN 'Weekend'ELSE 'Weekday'
    END AS day_type, COUNT(*) AS total_bookings, SUM(revenue_realized) AS total_revenue
FROM fact_bookings
GROUP BY day_type
ORDER BY FIELD(day_type, 'Weekday', 'Weekend');
```

Revenue By City & Hotel

Revenue by city & hotel is a critical performance metric in the hospitality industry, focusing on how revenue varies across locations (cities) and individual hotel properties. This analysis allows hospitality businesses to compare the performance of their hotels in different markets and optimize revenue strategies accordingly.



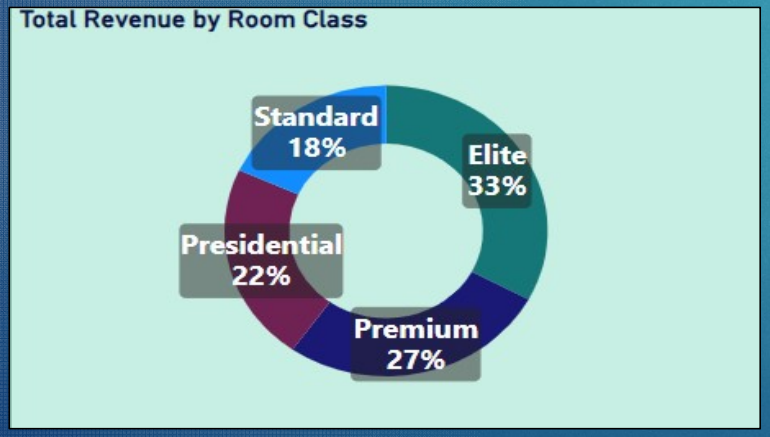

```sql
-- Revenue by state & hotel
SELECT h.city, SUM(f.revenue_realized) AS total_revenue
FROM dim_hotels h
JOIN fact_bookings f
ON h.property_id = f.property_id
GROUP BY h.city
ORDER BY h.city ASC, total_revenue DESC;

SELECT h.property_name, SUM(f.revenue_realized) AS total_revenue
FROM dim_hotels h
JOIN fact_bookings f
ON h.property_id = f.property_id
GROUP BY h.property_name
ORDER BY total_revenue DESC;
```

Class Wise Revenue

Class-wise revenue analysis involves evaluating the income generated by different types or classifications of rooms, services, or guest segments within a hospitality business. This metric helps understand the revenue contribution from each category, guiding pricing, marketing, and operational strategies.

Class-wise revenue refers to revenue broken down into different segments or categories.



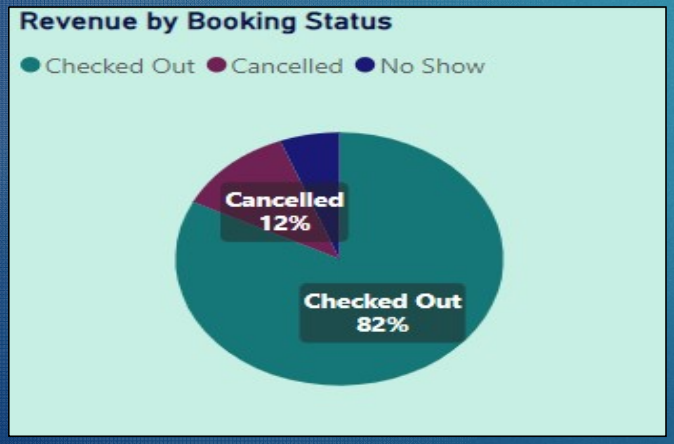

```sql
-- class wise Revenue
select * from dim_hotels;
select * from fact_bookings;

SELECT dh.category AS hotel_class,SUM(fb.revenue_realized) AS total_revenue
FROM dim_hotels dh
INNER JOIN fact_bookings fb
ON dh.property_id = fb.property_id
GROUP BY dh.category
ORDER BY total_revenue DESC;
```

Checked Out, Cancelled & No Show

In the hospitality domain, analyzing metrics like checked-out, cancellations, and no-shows is crucial for understanding guest behavior and managing operational efficiency. These metrics help optimize inventory management, revenue forecasting, and customer satisfaction.

1. CHECKED OUT
2. CANCELLED
3. NO SHOW

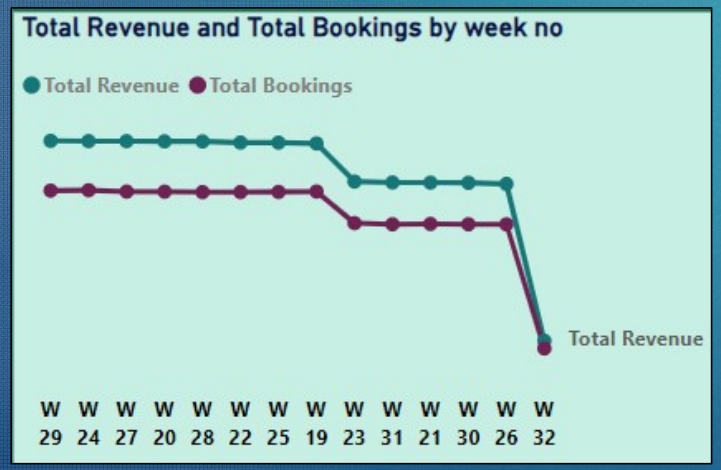



```
75      -- checked out cancel No show
76
77  •   select * from fact_bookings;
78
79  •   select booking_status, count(booking_status) as Count from fact_bookings
80      where booking_status in ('Checked Out', 'Cancelled', 'No show')
81      group by booking_status;
```

Weekly Trend Key Trend

It refers to the analysis and tracking of how different revenue streams fluctuate throughout the week. This analysis helps businesses better understand patterns and make informed decisions about pricing, staffing, marketing, and service offerings.

By identifying peak days and understanding fluctuations across revenue streams, businesses can optimize their **marketing** efforts, adjust **pricing** strategies, and plan **staffing** levels accordingly to meet customer demand and maximize profitability.




```sql
SELECT
    dd.`week_no` AS WeekNumber,
    dd.`mmm yy` AS MonthYear,
    COUNT(fb.booking_id) AS TotalBookings,
    SUM(fb.revenue_generated) AS TotalRevenue,
    AVG(fb.no_guests) AS AverageOccupancy
FROM
    fact_bookings fb
JOIN
    dim_date dd ON DATE(fb.booking_date) = DATE(dd.date)
GROUP BY
    dd.`week_no`, dd.`mmm yy`
ORDER BY
    dd.`mmm yy`, dd.`week_no`;
```

Dashboard Design

TOOLS USED:

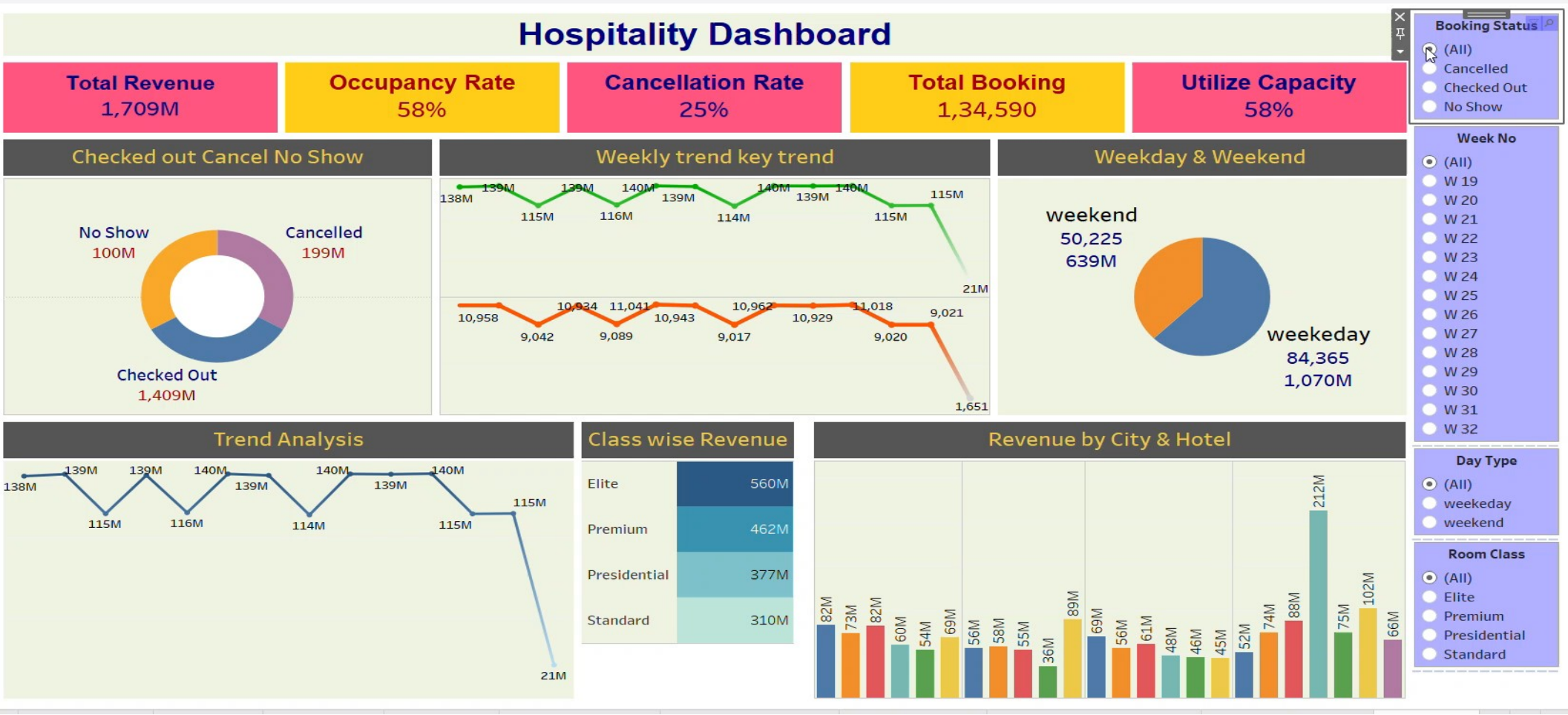
1. MS Excel
2. Power BI
3. Tableau
4. My Sql

FEATURES:

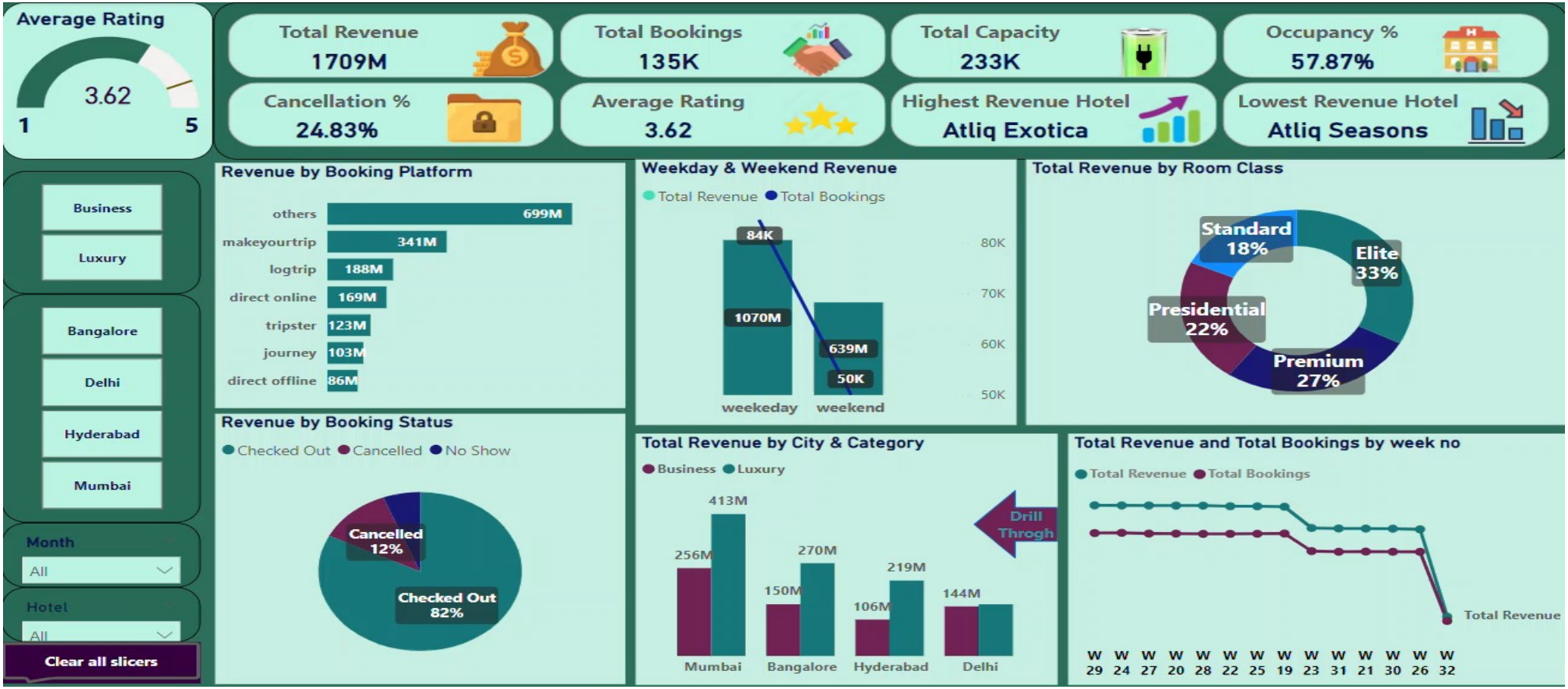
1. Data integration and centralization
2. Predictive and prescriptive analytics
3. Performance and productivity metrics

Excel Dashboard

Tableau Dashboard



Power Bi Dashboard



Sql Queries


```sql
Use hospitality;

-- Total Revenue
select * from fact_bookings;
SELECT SUM(revenue_realized) AS total_revenue
FROM fact_bookings;

-- Occupancy Rate
Select * from fact_aggregated_bookings;
SELECT property_id,SUM(successful_bookings) / SUM(capacity) * 100 AS occupancy_rate
FROM fact_aggregated_bookings
group by property_id;

-- Cancellation Rate
Select * from fact_bookings;
SELECT SUM(CASE WHEN booking_status = 'Cancelled' THEN 1 ELSE 0 END) / COUNT(*) * 100 AS cancellation_rate
FROM fact_bookings;

-- Total Booking
select * from fact_bookings;
SELECT COUNT(booking_id) AS total_bookings
FROM fact_bookings;

-- Utilize Capacity
select * from fact_aggregated_bookings;
select  sum(successful_bookings) * 100.0 / sum(capacity) as Utilization_Rate
from fact_aggregated_bookings;

-- Trend Analysis
 SELECT DATE_FORMAT(booking_date, '%Y-%m') AS month, SUM(revenue_realized) AS total_revenue
FROM fact_bookings
GROUP BY DATE_FORMAT(booking_date, '%Y-%m')
ORDER BY month;

-- weekday & weekend Revenue and Booking
SELECT
    CASE WHEN DAYOFWEEK(STR_TO_DATE(booking_date, '%Y-%m-%d')) IN (1, 7) THEN 'Weekend'ELSE 'Weekday'
    END AS day_type, COUNT(*) AS total_bookings, SUM(revenue_realized) AS total_revenue
FROM fact_bookings
GROUP BY day_type
ORDER BY FIELD(day_type, 'Weekday', 'Weekend');

-- Revenue by state & hotel
SELECT h.city, SUM(f.revenue_realized) AS total_revenue
FROM dim_hotels h
JOIN fact_bookings f
ON h.property_id = f.property_id
GROUP BY h.city
ORDER BY h.city ASC, total_revenue DESC;

SELECT h.property_name, SUM(f.revenue_realized) AS total_revenue
FROM dim_hotels h
JOIN fact_bookings f
ON h.property_id = f.property_id
GROUP BY h.property name
```

Key Insights

- **1.Revenue & Bookings:**
- Total revenue generated is **1709M** with **135K total bookings**.
- The cancellation rate is **24.83%**, indicating a significant loss of potential revenue.
- The occupancy rate is **57.87%**, suggesting underutilization of capacity (233K total capacity).
- **2.Performance by Hotels:**
- The **highest revenue-generating hotel** is **Atliq Exotica**, while the **lowest performer** is **Atliq Seasons**.
- Revenue distribution by room class:
  - **Elite (33%)** and **Premium (27%)** categories dominate revenue.
  - Standard (18%) and Presidential (22%) rooms contribute less comparatively.

Key Insights

3.City-wise Revenue Trends:

- **Mumbai** leads in total revenue (413M), followed by Bangalore (270M), Hyderabad (219M), and Delhi (144M).
- Business and luxury segments show variations, with Mumbai excelling in both.

4.Revenue by Booking Platform:

- Direct booking platforms contribute the most (699M), followed by other platforms.
- OTA platforms are significantly lower, indicating potential for growth.

Key Insights

5.Booking Status:

- 82% of bookings result in checkouts, while 12% are canceled. The no-show rate is low.

6.Weekday vs. Weekend Performance:

- Weekdays generate more revenue (1070M) than weekends (639M), with a much higher volume of bookings.

7.Weekly Trends:

- A sharp decline in both revenue and bookings is visible after week 27, suggesting possible seasonality or operational issues.

Recommendations

1.Reduce Cancellation Rate:

Introduce stricter cancellation policies or incentivize guests to modify dates instead of canceling outright.

Analyze reasons for cancellations and implement targeted solutions, such as offering flexible pricing or promotions.

2.Optimize Occupancy:

Improve marketing for underperforming hotels like **Atliq Seasons** to boost bookings.

Consider dynamic pricing strategies for low-demand periods to increase occupancy.

3.Focus on High-Performing Categories:

Upsell Elite and Premium room categories through targeted advertising.

Recommendations

4.Leverage City Insights:

- Focus more resources on cities like Mumbai and Bangalore, which have higher revenue potential.
- Explore reasons for lower performance in Delhi and consider localized promotions.

5.Expand OTA Platforms:

- Invest in improving visibility and partnerships with online travel agencies to capture more bookings.
- Monitor the performance of existing direct booking channels to ensure high ROI.

6.Address Week 27 Decline:

- Investigate reasons for the sharp fall after week 27 (seasonality, competition, etc.).
- Plan campaigns and promotional events around this period to revive performance.

Recommendations

7.Boost Weekend Bookings:

- Introduce weekend packages or exclusive offers to attract more bookings.
- Partner with local events or tourism boards to enhance demand for leisure travelers.

8.Regular Monitoring:

- Use dashboards to track KPIs weekly, such as occupancy, revenue per city, and cancellation trends, for proactive decision-making.

Conclusion

- This project showcases the power of data analytics in transforming the hospitality industry. By analyzing key metrics, guest feedback, and booking patterns, we uncovered actionable insights to enhance efficiency, elevate guest experiences, and boost revenue. These data-driven strategies position the business for sustained success, customer loyalty, and competitiveness in a dynamic market.

Thank You…

GROUP NO 6