**CHALLENGE PROJECT – 1**

**PROBLEM STATEMENT:**

AtliQ Grands owns multiple five-star hotels across India. They have been in the hospitality industry for the past 20 years. Due to strategic moves from other competitors and ineffective decision-making in management, AtliQ Grands are losing its market share and revenue in the luxury/business hotels category. As a strategic move, the managing director of AtliQ Grands wanted to incorporate “Business and Data Intelligence” to regain their market share and revenue. However, they do not have an in-house data analytics team to provide them with these insights.  
  
Their revenue management team had decided to hire a 3rd party service provider to provide them with insights from their historical data.

**META DETA:**

This file contains all the meta information regarding the columns described in the CSV files. we have provided 5 CSV files:

1. dim\_date

2. dim\_hotels

3. dim\_rooms

4. fact\_aggregated\_bookings

5. fact\_bookings

Column Description for dim\_date:

1. date: This column represents the dates present in May, June and July.

2. mmm yy: This column represents the date in the format of mmm yy (monthname year).

3. week no: This column represents the unique week number for that particular date.

4. day\_type: This column represents whether the given day is Weekend or Weekeday.

Column Description for dim\_hotels:

1. property\_id: This column represents the Unique ID for each of the hotels.

2. property\_name: This column represents the name of each hotel.

3. category: This column determines which class[Luxury, Business] a particular hotel/property belongs to.

4. city: This column represents where the particular hotel/property resides in.

Column Description for dim\_rooms:

1. room\_id: This column represents the type of room[RT1, RT2, RT3, RT4] in a hotel.

2. room\_class: This column represents to which class[Standard, Elite, Premium, Presidential] particular room type belongs.

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Column Description for fact\_aggregated\_bookings:

1. property\_id: This column represents the Unique ID for each of the hotels.

2. check\_in\_date: This column represents all the check\_in\_dates of the customers.

3. room\_category: This column represents the type of room[RT1, RT2, RT3, RT4] in a hotel.

4. successful\_bookings: This column represents all the successful room bookings that happen for a particular room type in that hotel on that particular date.

5. capacity: This column represents the maximum count of rooms available for a particular room type in that hotel on that particular date.

Column Description for fact\_bookings:

1. booking\_id: This column represents the Unique Booking ID for each customer when they booked their rooms.

2. property\_id: This column represents the Unique ID for each of the hotels

3. booking\_date: This column represents the date on which the customer booked their rooms.

4. check\_in\_date: This column represents the date on which the customer check-in(entered) at the hotel.

5. check\_out\_date: This column represents the date on which the customer check-out(left) of the hotel.

6. no\_guests: This column represents the number of guests who stayed in a particular room in that hotel.

7. room\_category: This column represents the type of room[RT1, RT2, RT3, RT4] in a hotel.

8. booking\_platform: This column represents in which way the customer booked his room.

9. ratings\_given: This column represents the ratings given by the customer for hotel services.

10. booking\_status: This column represents whether the customer cancelled his booking[Cancelled], successfully stayed in the hotel[Checked Out] or booked his room but not stayed in the hotel[No show].

11. revenue\_generated: This column represents the amount of money generated by the hotel from a particular customer.

12. revenue\_realized: This column represents the final amount of money that goes to the hotel based on booking status. If the booking status is cancelled, then 40% of the revenue generated is deducted and the remaining is refunded to the customer. If the booking status is Checked Out/No show, then full revenue generated will goes to hotels.

**INSIGHTFUL QUESTIONS TO TACKLE:**

1. **REVENUE PERFORMANCE AND OPTIMISATION**
   * Total revenue



* + Which city has the highest revenue?



* + Room categories that generate highest revenue?



* + Number of cancellations of which hotel type caused most loss in revenue?
  + What is the average revenue per guest across hotel categories?



1. **OCCUPANCY AND BOOKING TRENDS**



* + Total Occupancy Percentage



* + Booking platform with occupancy and rating?



* + Weekday/Weekend, which has highest occupancy?



* + Patterns in booking leads (from booking-date to check-in date)



* + Weekly occupancy per hotel



* + How many weekly bookings?
  + Under-utilised room types in Luxury and Business hotel categories?
  + Which city has highest occupancy?

1. **PLATFORM AND CUSTOMER BEHAVIOUR**
   * Booking platform with highest revenue?
   * What is the average rating we got?
   * Do customers from certain platforms tend to cancel most often?
   * How customer rating varies by city and hotel category?
   * Booking platform with highest rating?
2. **CAPACITY UTILISATION AND FORCASTING**
   * Which room types have most unused capacity across all hotels?
   * On which days hotel run at full capacity (100% utilization)?

**Q) Can we forecast the demand for a specific type of room based on past record?**

* + Which all room types have 100% utilization? 🡪 What is the average rating for those room types? 🡪 Higher the rating, higher the demand in the future.

**Q) Are hotels constantly under-booked as compared to their available capacity?**

* + Hotel type VS capacity (we can use Avg. Occupancy Rate as a mid-line) 🡪 If a hotel has too less average occupancy rate as compared to the capacity of that hotel type then we can say that the hotel is under-booked.

1. **HOTEL AND ROOM PERFORMANCE COMPARISION**

**Q) Compare the performance of Hotel VS Room**

* + Compare the performance (rating, revenue and occupancy) of Business VS Luxury hotels.
  + Compare the performance (rating, revenue and occupancy) of different types of rooms.
  + Now, plot a chart of some sort which compares the rating, revenue and occupancy of Hotel Types with Room Types in those hotels.

1. **STRATEGIC DECISION MAKING**
   * Which cities or hotels should be prioritized for marketing investments based on ROI Potential?
   * Is there any relation between customer rating and revenue generation?
   * What is the impact of day\_type on customer rating and booking frequency?
   * How much revenue is being lost due to Cancelled booking across properties?
   * What is the projected revenue increase if the cancellation rates drop by 10%?

**ADVANCED INSIGHTS:**

1. **PROFIT LEAKAGE DETECTION**
   * Which hotels are currently showing high volumes of booking but low realised revenue?   
     (Identify leaky funnels or poor monetization practices)
   * What is the revenue impact of low-rated customer experiences across hotels (ratings <2)?  
     (Correlate poor ratings with rebooking drop-offs or revenue hits)
   * What percentage of total revenue is lost due to 'No Show' vs 'Cancelled' vs 'Underutilized Capacity'?  
     (Triangulate total opportunity loss)
2. **STRATEGIC PERFORMANCE SEGMENTATION**
   * Which 20% of properties contribute to 80% of total revenue? (Pareto Analysis)
   * Is there any city-hotel-category in which the average rating is high but the realised revenue is low?  
     (Hinting at high delight but low pricing – opportunity to raise rates)
   * What is the average stay duration across hotel categories and how does it impact revenue per room?  
     (Helps identify long-stay vs short-stay profitability)
3. **ANOMALY AND BEHAVIOUR ANALYSIS**
   * Which hotels show unusually high cancellations on weekdays?  
     (Could indicate bad service, misaligned pricing or competitor action)
   * Are there any booking platforms disproportionately skewed towards Cancellations?  
     (Time to renegotiate partnerships)
   * Are weekend bookings cannibalising weekdays bookings or visa-versa for specific hotels?  
     (Optimise weekday/weekend pricing)
4. **ROOT CAUSE & CORRELATION MAPPING**
   * What is the correlation between room class and booking lead time?  
     (Are higher priced rooms booked in advanced or at the last time?)
   * Does early booking lead to more cancellations or higher rating?  
     (Behavioural Pattern Insight)
   * Which city shows the strongest correlation between guest count and revenue per booking?  
     (Family Friendly VS Corporate Crowd Segmentation)
5. **COMPETITIVE INTELLIGENCE SIMULATION**
   * If occupancy was increased by 15% across all business hotels, how will it affect the total revenue as compared to Luxury?
   * Which hotel would benefit the most if we introduced flash discounts campaign only for weekdays?
   * Simulate the potential revenue gain if the top 3 underperforming properties are brought to average rating level?
   * Can we identify the number of guests that are likely to cancel based on booking date, platform and room\_type?