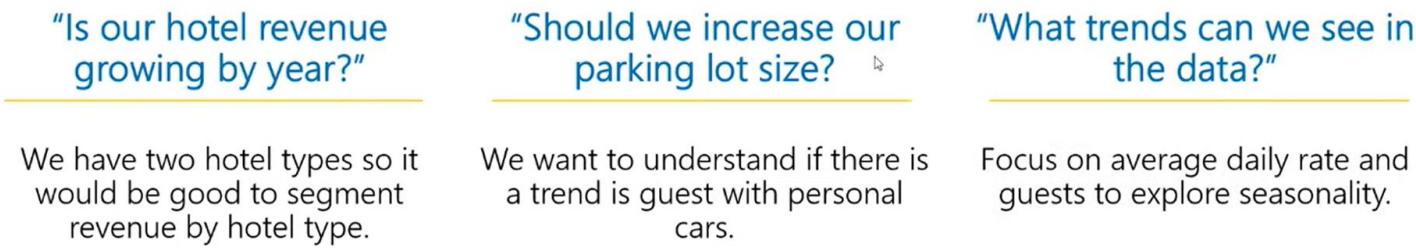
Introduction

Hi, in this project, we will analyze a hotel dataset. We will source data from a database that we will develop by joining and by making unions among tables from a uploaded excel file in MS SQL Server. Then we will connect the database with Power BI to make a dashboard. Our purpose is to answer three pressing questions:

1. **Is our hotel revenue growing by year?**
2. **Should we increase our parking lot size?**
3. **What trends can we see in the data?**



To answer question one, we have two hotel types so it would be good to segment revenue by hotel type. For question two, we want to understand if there is a upward trend in guests with personal cars. Lastly, for the third question, we're going to focus on average daily rate and guess to explore seasonality.

Project Pipeline

So how are we going to achieve these objectives? By building a data analysis pipeline.

1. **Build a Database**
2. **Develop the SQL Query**
3. **Connect Power BI to the Database**
4. **Visualize by making a dashboard**
5. **Summarize the findings.**

Let's complete these steps one by one:

Build a Database

- At first, we have to connect to MS SQL Server.
- Then right click on the Databases and select new database.
- Give a name to the database and press add. We will name as “Projects” to the database.
- Next, we will import our dataset (hotel_revenue_historical_full.xlsx) using SQL Server Import and Export Wizard.
    - We will choose Microsoft Excel as our data source.
    - Then we will browse our Excel file path.
    - We will use “Microsoft Excel 2016” version.
    - Next, we will use SQL Server Native Client 11.0 as Destination.
    - We will enter our database name as Projects.
    - Then, we will choose “Copy Data from one or more tables or views” option.
    - Now, it will bring us a list of all the tables, and we will select all.
    - Finally, we will select Run immediately to finish the process.
- Now we have to refresh the “Projects” database to see the table names showing up in the Projects database.
- Finally, we have created our database.

Develop the SQL Query

We will look into this step separately.

Connect Power BI to the Database

- From Get Data, we will choose SQL Server.
- Here we will enter our server’s name, database name, and then click on the Advanced Options.
- Under SQL statement title, we have to paste the SQL query that we created by combining all the five tables.
- After clicking the ok button, we will get the SQL Server Database window.
    - Her we will choose “Use my Current Credentials” and whatever security protocol I want to follow.
    - Then click Connect.
- Next, we will see a preview of the data. We can make necessary changes to have a proper set of data. We will just load the data, because our dataset is perfect.
- Now, we can start building our dashboard.

Building Dashboard

- For this part, we will show the visualizations in Power BI.
- Here we will describe additional transformations that we will made to the dataset like adding new columns or measures.
- Before making any visualization, we will create a new column.
  - We will go to Transform data and choose Add Column.
  - Next, we will choose Custom Column.
  - In the Custom Column window, we will name the Column as Revenue.
  - We will use this formula to calculate the revenue:
    = ([stays_in_weekend_nights]+[stays_in_week_nights])*[adr]*(1-[Discount]))
  - We will make no more changes now and apply the change.
- We will select line shape 2 times to divide the space into three boxes horizontally.
- In the top box, we will create five card visualizations. These Visualizations are:
  - Revenue
  - Average of ADR
  - Total Nights
  - Average Discount and
  - Car spaces
- We will have line chart with trend line for each of these card visualizations.
- In the middle box, we will make two line charts for the two hotels that we have associated with the reservation status date.
- In the bottom box, we will have two visualizations:
  - Matrix visualization
  - Donut chart visualization.
- In the matrix, we will have, reservation status date (year) and hotel type as row. And we will have revenue, required car parking spaces, and parking percentage as value.
- We have mentioned Total Nights for the top box: it is actually a measure that we will create. The formula is:
  =SUM(Query1[stays_in_week_nights])+SUM(Query1[stays_in_weekend_nights])

- We also mentioned parking percentage for the bottom box: it is also a measure.
- We will create it by using this formula:
  = sum(Query1[required_car_parking_spaces])/[Total Nights]

- So, in this way, we will create the dashboard. Please examine the completed dashboard for more information.

Findings

- **Is the revenue growing?**
  The answer is no. There was a upward trend in revenue for both hotels in the month of July 2019. Since then the revenue trend is downward. There was a little upward spike at the end of July 2020. After that the revenue for both of the hotel is again downward.
- **Should we increase our parking lot size?**
  The answer is no based on the evidence that we can derive from the dataset. We need additional data to have a decision, whether we should build an additional parking lot. The usage is not increasing. We can find this out by looking into the matrix on the bottom box.
- **What trends can we see in the data?**
  - The first thing that comes to mind, after watching the dashboard, is that the overall trend is going down.
  - City Hotel's total Revenue is higher than Resort Hotel.
  - If we look at the revenue trend, it appears that in 2019, the revenue of Resort hotel was higher. But now it is going much quicker than City hotel.