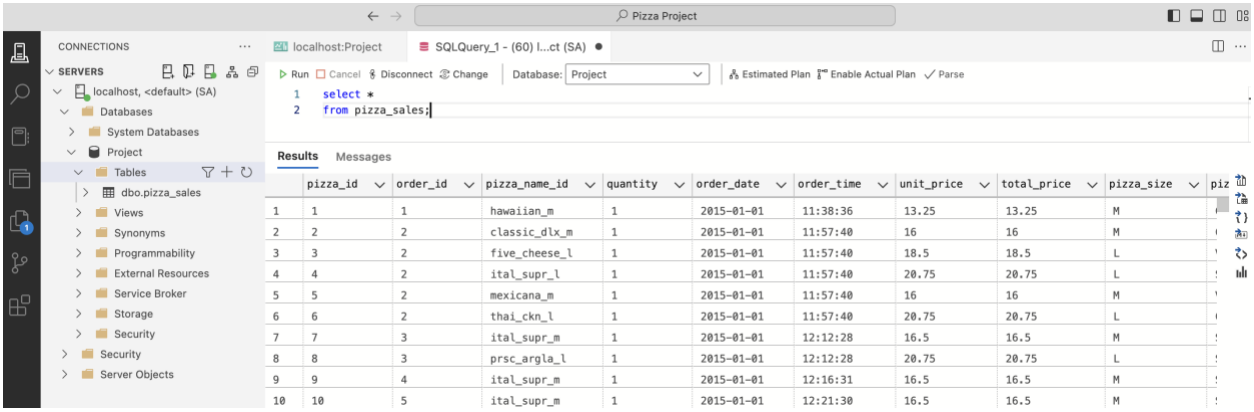
Pizza Sales Report using SQL and Power Bi

Used Microsoft SQL Server (Azure Data Studio)

In the csv file, order_date column is in “dd-mm-yy” format and so changed it to “mm-dd-yy” using python code.

```
import pandas as pd
from google.colab import files

# Step 1: Upload your CSV file
uploaded = files.upload()

# Step 2: Read the CSV file into a DataFrame
import io
df =
pd.read_csv(io.BytesIO(uploaded['pizza_sales.csv
']))

# Step 3: Convert the Date Format
# Assuming the column with dates is named
'order_date' and is in the format 'dd-MM-yyyy'
df['order_date'] =
pd.to_datetime(df['order_date'], format='%d-%m-
%Y')
df['order_date'] =
df['order_date'].dt.strftime('%m-%d-%Y')

# Step 4: Save the Modified DataFrame to a New
CSV file
# Save the modified DataFrame to a new CSV file
df.to_csv('modified_file.csv', index=False)

# Step 5: Download the modified CSV file
files.download('modified_file.csv')
```

After this conversion uploaded it to the DB-Project.



- To find the total revenue:

```
select SUM(total_price) AS Total_Revenue
from pizza_sales;
```

Results Messages

	Total_Revenue
1	817860.049999993

- Finding the average order value, in here order must be counted with unique values and so use DISTINCT.

```
select SUM(total_price) / COUNT(DISTINCT order_id) AS
AVG_Ord_val
from pizza_sales;
```

Results Messages

	AVG_Ord_val
1	38.30726229508155

- Total Pizzas Sold

```
select SUM(quantity) AS tot_pizzas_sold
from pizza_sales;
```

Results Messages

	tot_pizzas_sold
1	49574

- Total Orders

```
select COUNT(DISTINCT order_id) AS tot_orders
from pizza_sales;
```

Results Messages

	tot_orders
1	21350

- Average Pizzas per Order

```
select CAST(CAST(SUM(quantity) AS DECIMAL(10,2)) /
CAST(COUNT(DISTINCT order_id) AS DECIMAL(10,2)) AS
DECIMAL(10,2))
AS Avg_Pizzas_per_order
from pizza_sales;
```

Results Messages

	Avg_Pizzas_per_order
1	2.32

- Daily Trend for total orders

```
SELECT DATENAME(DW, order_date) AS order_day,
COUNT(DISTINCT order_id) AS total_orders
FROM pizza_sales
GROUP BY DATENAME(DW, order_date);
```

Results Messages

	order_day	total_orders
1	Saturday	3158
2	Wednesday	3024
3	Monday	2794
4	Sunday	2624
5	Friday	3538
6	Thursday	3239
7	Tuesday	2973

- Monthly Trend for total orders

```
SELECT DATENAME(MONTH, order_date) as Month,
COUNT(DISTINCT order_id) as Total_Orders
from pizza_sales
GROUP BY DATENAME(MONTH, order_date)
ORDER BY Total_Orders DESC;
```

Results Messages

	Month	Total_Orders
1	July	1935
2	May	1853
3	January	1845
4	August	1841
5	March	1840
6	April	1799
7	November	1792
8	June	1773
9	February	1685
10	December	1680
11	September	1661
12	October	1646

% of Pizza sales by Category

```
SELECT pizza_category as Pizza_Category, CAST(SUM(total_price) AS DECIMAL(10,2)) as Total_Revenue,
CAST(SUM(total_price) * 100 / (SELECT SUM(total_price) from pizza_sales) AS DECIMAL(10,2)) AS
Percentage_Category
FROM pizza_sales
GROUP BY pizza_category;
```

Results Messages

	Pizza_Category	Total_Revenue	Percentage_Category
1	Classic	220053.10	26.91
2	Chicken	195919.50	23.96
3	Veggie	193690.45	23.68
4	Supreme	208197.00	25.46

% of Pizza sales by Size

```
SELECT pizza_size as Pizza_Size, CAST(SUM(total_price) AS DECIMAL(10,2)) as Total_Revenue,
CAST(SUM(total_price) * 100 / (SELECT SUM(total_price) from pizza_sales) AS DECIMAL(10,2)) AS
Percentage_Category
FROM pizza_sales
GROUP BY pizza_size;
```

Results Messages

	Pizza_Size	Total_Revenue	Percentage_Category
1	L	375318.70	45.89
2	XXL	1006.60	0.12
3	M	249382.25	30.49
4	XL	14076.00	1.72
5	S	178076.50	21.77

Total Pizzas sold by pizza category

```
SELECT pizza_category AS Pizza_Category, SUM(quantity) as Total_Quantity_Sold
FROM pizza_sales
WHERE MONTH(order_date) = 2
GROUP BY pizza_category
ORDER BY Total_Quantity_Sold DESC;
```

Results Messages

	Pizza_Category	Total_Quantity_Sold
1	Classic	1178
2	Supreme	964
3	Veggie	944
4	Chicken	875

Top 5 pizzas by Revenue

```
SELECT Top 5 pizza_name AS Pizza, SUM(total_price) AS Total_Revenue
FROM pizza_sales
GROUP BY pizza_name
ORDER BY Total_Revenue DESC;
```

Results Messages

	Pizza	Total_Revenue
1	The Thai Chicken Pizza	43434.25
2	The Barbecue Chicken Pizza	42768
3	The California Chicken Pizza	41409.5
4	The Classic Deluxe Pizza	38180.5
5	The Spicy Italian Pizza	34831.25

Top 5 pizzas by Quantity

```
SELECT Top 5 pizza_name AS Pizza, SUM(quantity) AS Total_Pizza_Sold
```

```
FROM pizza_sales
GROUP BY pizza_name
ORDER BY Total_Pizza_Sold DESC;
```

Results | Messages

	Pizza	Total_Pizza_Sold
1	The Classic Deluxe Pizza	2453
2	The Barbecue Chicken Pizza	2432
3	The Hawaiian Pizza	2422
4	The Pepperoni Pizza	2418
5	The Thai Chicken Pizza	2371

Top 5 Pizzas by Total Orders

```
SELECT Top 5 pizza_name AS Pizza, COUNT(DISTINCT order_id) AS Total_Orders
FROM pizza_sales
GROUP BY pizza_name
ORDER BY Total_Orders DESC;
```

Results Messages

	Pizza	Total_Orders
1	The Classic Deluxe Pizza	2329
2	The Hawaiian Pizza	2280
3	The Pepperoni Pizza	2278
4	The Barbecue Chicken Pizza	2273
5	The Thai Chicken Pizza	2225

Bottom 5 Pizzas by Revenue

```
SELECT Top 5 pizza_name AS Pizza, SUM(total_price) AS Total_Revenue
FROM pizza_sales
GROUP BY pizza_name
ORDER BY Total_Revenue ASC;
```

Results Messages

	Pizza	Total_Revenue
1	The Brie Carre Pizza	11588.4999999999
2	The Green Garden Pizza	13955.75
3	The Spinach Supreme Pizza	15277.75
4	The Mediterranean Pizza	15360.5
5	The Spinach Pesto Pizza	15596

Bottom 5 pizzas by Quantity

```sql
SELECT TOP 5 pizza_name, SUM(quantity) AS Total_Pizza_Sold
FROM pizza_sales
GROUP BY pizza_name
ORDER BY Total_Pizza_Sold ASC
```

Results Messages

	Pizza	Total_Pizza_Sold
1	The Brie Carre Pizza	490
2	The Mediterranean Pizza	934
3	The Calabrese Pizza	937
4	The Spinach Supreme Pizza	950
5	The Soppressata Pizza	961

Bottom 5 Pizzas by Total Orders

```sql
SELECT Top 5 pizza_name AS Pizza, COUNT(DISTINCT order_id) AS Total_Orders
FROM pizza_sales
GROUP BY pizza_name
ORDER BY Total_Orders ASC;
```

Results Messages

	Pizza	Total_Orders
1	The Brie Carre Pizza	480
2	The Mediterranean Pizza	912
3	The Spinach Supreme Pizza	918
4	The Calabrese Pizza	918
5	The Chicken Pesto Pizza	938

PowerBi Report

```
# Pizza Sales Report - Dashboard

### Dashboard Link : https://app.powerbi.com/groups/me/reports/a44ad9b6-
7706-4ec7-9ee2-727cd017a8e0/ReportSection

Certainly! Here's the revised problem statement with added steps followed
for creating the dashboard:

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#Problem Statement: Optimizing Pizza Sales Analysis through Power BI
Dashboard

###
Background:
In today's highly competitive food industry, understanding customer
preferences and sales trends is crucial for the success of any restaurant
business. Our hypothetical pizza restaurant faces the challenge of
efficiently analyzing sales data to make informed decisions and drive
growth. With vast amounts of transactional data accumulated over time,
there is a pressing need to harness the power of data analytics to gain
actionable insights.

Objective:
The objective of this project is to develop a comprehensive Power BI
dashboard tailored to the needs of the pizza restaurant owner. This
dashboard will provide a user-friendly interface for analyzing sales data,
identifying trends, and making data-driven decisions to optimize business
performance.

Key Challenges:
```

1. Data Complexity: The restaurant collects extensive data on sales transactions, including order details, customer preferences, and sales performance across different pizza categories and sizes.

2. Lack of Insights: Without a centralized system for data analysis, the restaurant owner struggles to extract meaningful insights from the data, leading to missed opportunities for improvement and growth.

3. Inefficient Decision-Making: The absence of real-time analytics hampers the owner's ability to respond promptly to changing market trends and customer preferences, resulting in suboptimal decision-making.

###Steps Followed for Creating the Dashboard:
1. Data Preprocessing:
   - Adjusted the CSV file to separate the 'order_date' column into new columns, including 'order_month_number', 'order_day', 'order_month_name', and 'order_day_name', for enhanced analysis.

2. Data Transformation:
   - Cleansed and transformed the data to ensure accuracy and consistency in insights.

3. Visualization Techniques:
   - Implemented various visualization techniques including bar charts, doughnut charts, area charts, and funnel charts to effectively represent sales trends and customer preferences.

4. Key Performance Indicators (KPIs):
   - Added KPIs as cards to highlight important metrics such as total revenue, average order value, and total pizzas sold, providing quick snapshots of business performance.

###Expected Outcomes:
1. Improved Business Performance: By gaining insights into sales trends, customer preferences, and operational efficiency, the restaurant owner will be better equipped to optimize business strategies and increase profitability.

2. Enhanced Decision-Making: Real-time analytics and interactive visualizations will enable the owner to make data-driven decisions with confidence, leading to more effective resource allocation and marketing strategies.

3. Streamlined Operations: With a centralized platform for data analysis, the restaurant can streamline operations, identify areas for improvement, and enhance the overall customer experience.

###Conclusion:
The development of a Power BI dashboard for analyzing pizza sales data represents a significant opportunity for the restaurant to leverage the power of data analytics to drive growth and success. By addressing key challenges and providing actionable insights, the dashboard will empower the owner to make informed decisions and stay competitive in the dynamic food industry landscape.

###What can be inferred from the dashboard?
From the Pizza Sales Report for January 2015 to December 2015, several insights can be inferred:

1. Revenue and Sales Performance:
   - The total revenue for the period was $817.86K, with an average order value of $38.31. This indicates a healthy revenue stream and average order value.
   - The Classic category of pizzas contributed the most to total revenue, sales, and total orders. This suggests that Classic pizzas are popular among customers and are driving significant sales.

- Total Revenue: $817,860
   - Average Order Value: $38.31
   - Total Pizzas Sold: 49,574
   - Total Orders: 21,350
   - Average Pizzas per Order: 2.32

2. Best and Worst Sellers:
   - The Thai Chicken Pizza was the best seller in terms of revenue, while the Classic Deluxe Pizza led in total quantities and total orders. On the other hand, the Brie Care pizza was the worst seller, contributing minimally to revenue, quantity, and orders. This highlights the importance of understanding customer preferences and adjusting the product offerings accordingly.

- Top 5 Pizzas by Revenue:
     - The Thai Chicken Pizza: $43,000
     - The Classic Deluxe Pizza: $38,000
     - The Spicy Italian Pizza: $35,000
   - Bottom 5 Pizzas by Revenue:
     - The Brie Care Pizza: $12,000

3. Pizza Category and Size Insights:
   - The report shows that the Classic category accounted for the highest percentage of sales, indicating its popularity among customers. Additionally, large-sized pizzas were the most preferred size, contributing significantly to total sales. Understanding these preferences can help in optimizing the product mix and marketing strategies.

- Total Pizzas Sold by Pizza Category:
     - Classic: 14,888
     - Supreme: 11,987
     - Veggie: 11,649
     - Chicken: 11,050
   - % of Sales by Pizza Size:
     - Large: 45.89%
     - Medium: 30.49%
     - Regular: 21.77%

4. Trends in Orders:

- The daily trend for total orders shows variations throughout the week, with higher orders on Fridays and Saturdays. This suggests that weekends are peak times for pizza sales. Moreover, the monthly trend indicates that July and January had the highest number of orders. Understanding these trends can help in staffing and inventory management to meet customer demand effectively.

- Daily Trend for Total Orders:
  - Highest: Thursday (3,500 orders)
  - Lowest: Monday (2,600 orders)
- Monthly Trend for Total Orders:
  - Highest: July (1,935 orders)
  - Lowest: April (1,646 orders)

5. Busiest Days and Times:
   - Orders are highest on weekends, particularly on Friday and Saturday evenings. This information can be utilized to plan promotions or special offers during peak times to maximize sales. Additionally, knowing the busiest months, such as July and January, can help in preparing for increased demand during these periods.

- Busiest Days: Weekends (Friday/Saturday evenings)
  - Busiest Months: July and January

In conclusion, the Pizza Sales Report provides valuable insights into revenue, sales performance, customer preferences, and ordering trends. By leveraging these insights, businesses can make informed decisions to enhance customer satisfaction, optimize sales strategies, and drive overall profitability.