

Pizza Sales Analysis Report (SQL + Power BI)

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Project Overview:

Objective:

The objective of the Pizza Sales Analysis project is to leverage SQL for data extraction and transformation, coupled with Power BI for visualization, to gain insights into the business performance of a restaurant's pizza sales for the year 2015. The project aims to calculate key performance indicators (KPIs), visualize trends, and provide actionable recommendations based on the analysis.

Executive Summary:

The Pizza Sales Analysis project involves the integration of SQL and Power BI to analyze pizza sales data. The process begins with data extraction from the MySQL database, followed by SQL queries to calculate KPIs such as Total Revenue, Total Orders, Average Order Value, Total Pizzas Sold, and Average Pizzas Per Order. Power BI is then used to create visualizations, including daily and monthly trends, sales distribution by category and size, and performance analysis of top and bottom-selling pizzas. The insights gained from this analysis provide a foundation for informed decision-making.

Data Overview:

Data Source: The dataset comprises pizza sales data for the year 2015, sourced from Kaggle. The data includes information on orders, pizza categories, sizes, quantities, and total prices.

Data Preparation: MySQL Workbench was utilized to create the database and tables, and the CSV datasets were imported into the corresponding tables. Data cleaning was performed to ensure accuracy and consistency.

Problem Statement:

The pizza business has been thriving, but to sustain and enhance the growth, we need a deeper understanding of the sales data, which aim to address the following questions:

1. What is the total revenue over a specific period?
2. How many pizzas have sold in total?
3. What is the average order amount?
4. Which pizza names are the most and least popular by order?
5. Which pizza names have the highest and lowest quantity sold?
6. Which pizza sizes are most preferred by our customers?
7. Which pizza categories generate the most sales?
8. What are the daily and monthly sales trends?
9. How do sales vary across pizza categories and sizes?

Data Exploration:

To kickstart my analysis, I first take a look at the dataset. It provides information about pizza orders, including the total price, quantity sold, order date, pizza name, size, and category.

- ✓ **Total Revenue**: This gives an overview of the earnings.
- ✓ **Total Orders**: It provides the count of distinct orders, giving an idea of order volume.
- ✓ **Total Pizza Sold**: This metric tells the total number of pizzas sold.
- ✓ **Average Order Value**: The average order amount helps understand the spending patterns of our customers.
- ✓ **Average Pizzas Per Order**: The average number of pizzas sold per order, calculated by dividing the total number of pizzas sold by the total number of orders.

Results:

The following are some of the key findings from the analysis:

- The total revenue from pizza sales was **\$817,860.05**.
- The total number of pizza orders was approximately **21,350**.
- The average order value was approximately **\$38.31**.
- The total sales of pizza were approximately **49574**.
- The average pizzas per order was **2.32**.

Analysis Processes:

- ✓ **Daily Trend for Total Orders**: To identify the daily trend of total orders over a specific time period. This will help us identify any patterns or fluctuations in order volumes on a daily basis.
- ✓ **Monthly Trend for Total Orders**: To identify the monthly trend of total orders throughout the year. This will allow us to identify peak hours or periods of high order activity.

- ✓ **Percentage of Sales by Pizza Category:** To identify the distribution of sales across different pizza categories. This will provide insights into the popularity of various pizza categories and their contribution to overall sales.
- ✓ **Percentage of sales by Pizza size:** To identify the percentage of sales contributed to different pizza sizes. This will help us understand customer preferences for pizza sizes and their impact on sales.
- ✓ **Total Pizzas sold by Pizza Category:** To identify the total number of pizzas sold for each pizza category. This will allow us to compare the sales performance of different pizza categories.
- ✓ **Top 5 Pizza names by Total Revenue, Total Quantity and Total Orders:** To identify the top 5 pizza names (which is the best-selling pizzas) based on the Total Revenue, Total Quantity, Total Orders. This will help us identify the most popular pizza options.
- ✓ **Bottom 5 Pizza names by Total Revenue, Total Quantity and Total Orders:** To identify the bottom 5 pizza names (which is the Least-selling pizzas) based on the Total Revenue, Total Quantity, Total Orders. This will enable us to identify underperforming or less popular pizza options.

Key Findings:

The following are some of the key findings from the data analysis:

- ✓ **Daily Trend:**
 - Orders are Highest on **Friday** (3538 orders) and **Thursday** (3239 orders).
- ✓ **Monthly Trend:**
 - Orders are Highest on the Month of **July** (1935 orders) and **May** (1853 orders).
- ✓ **Sales Performance:**
 - Pizza Category: **Classic Category** Contributes to Maximum sales (26.91%).
 - Pizza Size: **Large Size** Pizza Contributes to Maximum sales (45.89%).
- ✓ **Total Pizzas sold by Category:**
 - **Classic Category** Contributes to the Most number of pizzas sold (14888).
- ✓ **Best Selling Pizzas:**
 - Revenue: **The Thai Chicken Pizza** Contributes to Maximum Revenue (\$43.43K).
 - Quantity: **The Classic Deluxe Pizza** Contributes to Maximum Quantities (2.453K).
 - Orders: **The Classic Deluxe Pizza** Contributes to Maximum Orders (2329).
- ✓ **Least Selling Pizzas:**
 - Revenue: **The Brie Carre Pizza** Contributes to Minimum Revenue (\$11.59K).
 - Quantity: **The Brie Carre Pizza** Contributes to Minimum Quantities (0.49K).
 - Orders: **The Brie Carre Pizza** Contributes to Minimum Orders (480).

Recommendations:

Revenue Maximization Strategy:

- The total revenue for the specified period is \$817,860.05. To sustain growth, need to focus on maintaining or increasing this figure.

Optimized Inventory and Production Planning:

- They have sold a total of 49,574 pizzas. This data can guide inventory and production planning.

Strategic Pricing and Promotions:

- The average order amount is \$38.31, indicating the customers spending habits. This could inform pricing and promotions.

Staffing and Marketing Optimization:

- Sales show a noticeable Trend by Day (Friday) and Trend by Month (July), which could help with staffing and marketing efforts.

Promotion Strategy:

- Focus on promoting top-selling pizzas, such as The Thai Chicken Pizza and The Classic Deluxe Pizza, to further boost revenue.

Size Optimization:

- Consider running promotions or introducing new options in the Large Size category, as it significantly contributes to sales.

Marketing Emphasis:

- Allocate marketing efforts toward Classic Category, given its significant contribution to both revenue and quantity sold.

Inventory Management:

- Evaluate the inventory and production strategy for less popular pizzas, like Brie Carre Pizza, to minimize costs.

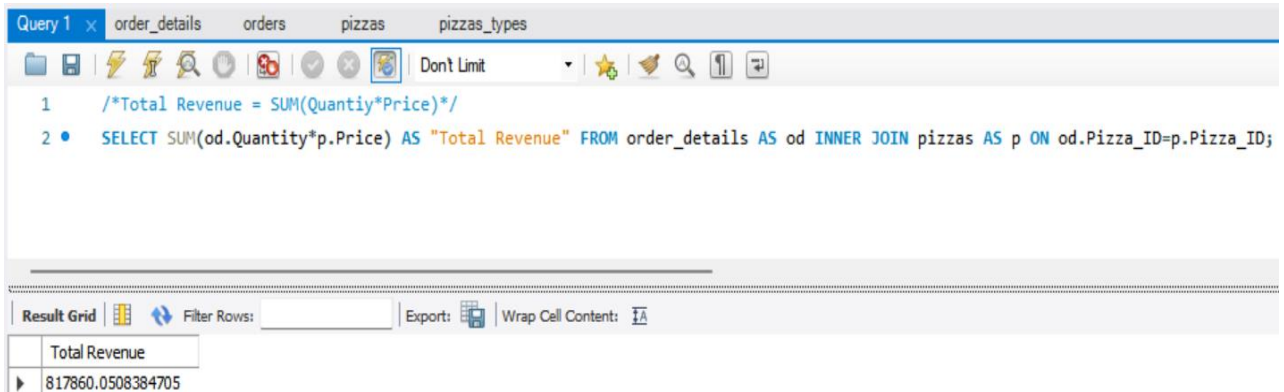
Conclusion:

The Pizza Sales Analysis project successfully utilized SQL and Power BI to uncover valuable insights into the restaurant's performance. By calculating key metrics and visualizing trends, the project provides a comprehensive understanding of customer preferences, sales patterns, and the overall success of different pizza options. The recommendations derived from the analysis can guide decision-makers in optimizing product offerings, marketing strategies, and operational efficiency, ultimately enhancing the restaurant's business strategy.

MySQL Queries:

1. Total Revenue:

```
SELECT SUM(od.Quantity*p.Price) AS "Total Revenue" FROM order_details AS od  
INNER JOIN pizzas AS p ON od.Pizza_ID=p.Pizza_ID;
```



The screenshot shows the MySQL Workbench interface. The query editor contains the following SQL query:

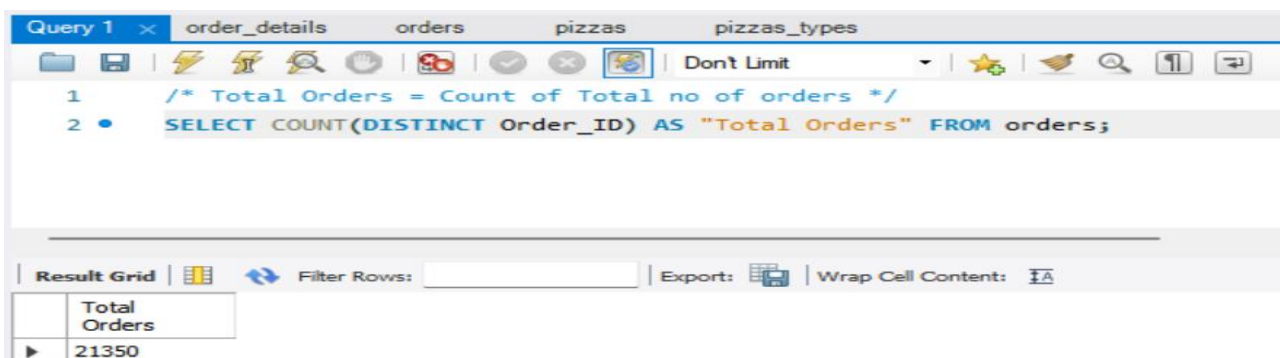
```
1 /*Total Revenue = SUM(Quantity*Price)*/  
2 • SELECT SUM(od.Quantity*p.Price) AS "Total Revenue" FROM order_details AS od INNER JOIN pizzas AS p ON od.Pizza_ID=p.Pizza_ID;
```

The results grid shows the following data:

Total Revenue
817860.0508384705

2. Total Orders:

```
SELECT COUNT(DISTINCT Order_ID) AS "Total Orders" FROM orders;
```



The screenshot shows the MySQL Workbench interface. The query editor contains the following SQL query:

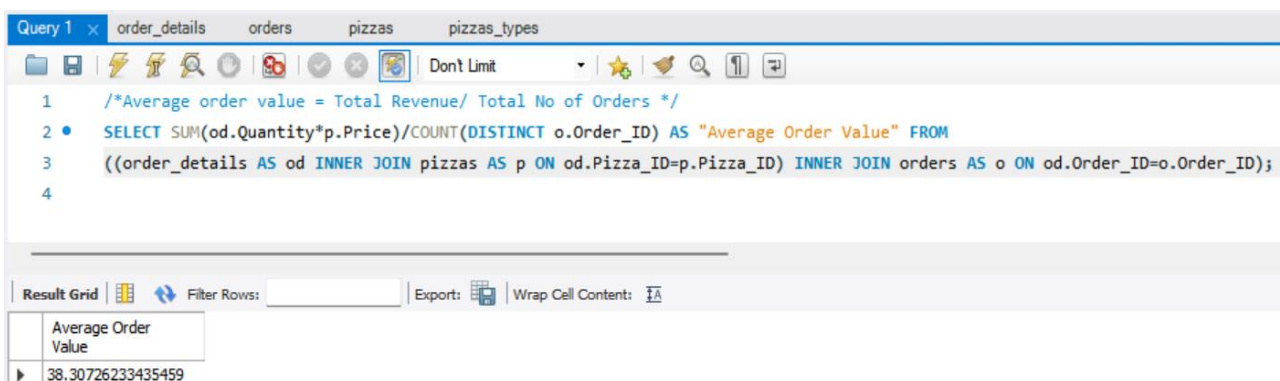
```
1 /* Total Orders = Count of Total no of orders */  
2 • SELECT COUNT(DISTINCT Order_ID) AS "Total Orders" FROM orders;
```

The results grid shows the following data:

Total Orders
21350

3. Average Order Value:

```
SELECT SUM(od.Quantity*p.Price)/COUNT(DISTINCT o.Order_ID) AS "Average  
Order Value" FROM ((order_details AS od INNER JOIN pizzas AS p ON  
od.Pizza_ID=p.Pizza_ID) INNER JOIN orders AS o ON od.Order_ID=o.Order_ID);
```



The screenshot shows the MySQL Workbench interface. The query editor contains the following SQL query:

```
1 /*Average order value = Total Revenue/ Total No of Orders */  
2 • SELECT SUM(od.Quantity*p.Price)/COUNT(DISTINCT o.Order_ID) AS "Average Order Value" FROM  
3 ((order_details AS od INNER JOIN pizzas AS p ON od.Pizza_ID=p.Pizza_ID) INNER JOIN orders AS o ON od.Order_ID=o.Order_ID);  
4
```

The results grid shows the following data:

Average Order Value
38.30726233435459

4. Total Pizzas Sold:

Select SUM(Quantity) AS "Total Pizzas Sold" FROM order_details;

Query 1 x order_details orders pizzas pizzas_types

1 /*Total Pizzas Sold = SUM(Quantity)*/
2 • Select SUM(Quantity) AS "Total Pizzas Sold" FROM order_details;

Result Grid | Filter Rows: | Export: | Wrap Cell Content: |

Total Pizzas Sold
49574

5. Average Pizzas per Order:

SELECT SUM(Quantity)/COUNT(DISTINCT Order_ID) AS "Average Pizzas per order" FROM order_details;

Query 1 x order_details orders pizzas pizzas_types

1 /*Average Pizzas per order = SUM(Quantity) which is Total pizzas ordered / Count of Total no of orders*/
2 SELECT SUM(Quantity)/COUNT(DISTINCT Order_ID) AS "Average Pizzas per order" FROM order_details;
3

Result Grid | Filter Rows: | Export: | Wrap Cell Content: |

Average Pizzas per order
2.3220

6. Daily Trend for Total Orders:

SELECT DAYNAME(Date) AS "Order Day", COUNT(DISTINCT Order_ID) AS "Total Orders" FROM orders

GROUP BY DAYNAME(Date);

Query 1 x order_details orders pizzas pizzas_types

1 /*Daily Trend for Total Orders*/
2 SELECT DAYNAME(Date) AS "Order Day", COUNT(DISTINCT Order_ID) AS "Total Orders" FROM orders
3 GROUP BY DAYNAME(Date);
4

Result Grid | Filter Rows: | Export: | Wrap Cell Content: |

Order Day	Total Orders
Friday	3538
Monday	2794
Saturday	3158
Sunday	2624
Thursday	3239
Tuesday	2973
Wednesday	3024

7. Monthly Trend for Total Orders:

```
SELECT MONTHNAME(Date) AS "Month", COUNT(DISTINCT Order_ID) AS "Total Orders" FROM orders
```

```
Group BY MONTHNAME(Date);
```

The screenshot shows a database query editor with a toolbar and a result grid. The query is as follows:

```
1 /*Monthly Trend for Total Orders*/  
2 SELECT MONTHNAME(Date) AS "Month", COUNT(DISTINCT Order_ID) AS "Total Orders" FROM orders  
3 Group BY MONTHNAME(Date);
```

The result grid displays the following data:

Month	Total Orders
April	1799
August	1841
December	1680
February	1685
January	1845
July	1935
June	1773
March	1840
May	1853
November	1792
October	1646
September	1661

8. Percentage of Sales by Pizza Category:

```
SELECT pt.Category AS "Pizza Category", ROUND(SUM(od.Quantity*p.price),3) AS  
"Total Sales",
```

```
ROUND((SUM(od.Quantity*p.Price)/(SELECT SUM(od.Quantity*p.Price) FROM  
order_details AS od INNER JOIN pizzas AS p ON od.Pizza_ID=p.Pizza_ID))*100,2) AS  
"Percentage of Total Sales"
```

```
FROM ((order_details AS od INNER JOIN pizzas AS p ON od.Pizza_ID=p.Pizza_ID)  
INNER JOIN pizzas_types AS pt ON p.Pizza_Type_ID=pt.Pizza_Type_ID)
```

```
GROUP BY pt.Category;
```

The screenshot shows a database query editor with a toolbar and a result grid. The query is as follows:

```
1 /*Percentage of sales by Pizza Category and Total sales by Category*/  
2 SELECT pt.Category AS "Pizza Category", ROUND(SUM(od.Quantity*p.price),3) AS "Total Sales",  
3 ROUND((SUM(od.Quantity*p.Price)/(SELECT SUM(od.Quantity*p.Price) FROM order_details AS od  
4 INNER JOIN pizzas AS p ON od.Pizza_ID=p.Pizza_ID))*100,2) AS "Percentage of Total Sales"  
5 FROM ((order_details AS od INNER JOIN pizzas AS p ON od.Pizza_ID=p.Pizza_ID)  
6 INNER JOIN pizzas_types AS pt ON p.Pizza_Type_ID=pt.Pizza_Type_ID)  
7 GROUP BY pt.Category;
```

The result grid displays the following data:

Pizza Category	Total Sales	Percentage of Total Sales
Chicken	195919.5	23.96
Classic	220053.1	26.91
Supreme	208197	25.46
Veggie	193690.451	23.68

9. Percentage of Sales by Pizza Size:

SELECT p.Size AS "Pizza Size", ROUND(SUM(od.Quantity*p.price),3) AS "Total Sales",

ROUND((SUM(od.Quantity*p.Price)/(SELECT SUM(od.Quantity*p.Price) FROM order_details AS od INNER JOIN pizzas AS p ON od.Pizza_ID=p.Pizza_ID))*100,2) AS "Percentage of Total Sales"

FROM order_details AS od INNER JOIN pizzas AS p ON od.Pizza_ID=p.Pizza_ID

GROUP BY p.Size;

The screenshot shows a database query editor with the following SQL query:

```
1 /*Percentage of sales by Pizza Size and Total sales by Pizza size*/
2 SELECT p.Size AS "Pizza Size", ROUND(SUM(od.Quantity*p.price),3) AS "Total Sales",
3 ROUND((SUM(od.Quantity*p.Price)/(SELECT SUM(od.Quantity*p.Price) FROM order_details AS od
4 INNER JOIN pizzas AS p ON od.Pizza_ID=p.Pizza_ID))*100,2) AS "Percentage of Total Sales"
5 FROM order_details AS od INNER JOIN pizzas AS p ON od.Pizza_ID=p.Pizza_ID
6 GROUP BY p.Size;
```

The result grid shows the following data:

Pizza Size	Total Sales	Percentage of Total Sales
L	375318.701	45.89
M	249382.25	30.49
S	178076.5	21.77
XL	14076	1.72
XXL	1006.6	0.12

10. Total Pizzas sold by Pizza Category:

Select pt.Category AS "Pizza Category", SUM(od.Quantity) AS "Total Pizzas Sold"

FROM ((order_details AS od INNER JOIN pizzas AS p

ON od.Pizza_ID=p.Pizza_ID) INNER JOIN pizzas_types AS pt ON p.Pizza_Type_ID=pt.Pizza_Type_ID)

GROUP BY pt.Category;

The screenshot shows a database query editor with the following SQL query:

```
1 /*Total Pizzas sold by Pizza Category*/
2 Select pt.Category AS "Pizza Category", SUM(od.Quantity) AS "Total Pizzas Sold" FROM ((order_details AS od INNER JOIN pizzas AS p
3 ON od.Pizza_ID=p.Pizza_ID) INNER JOIN pizzas_types AS pt ON p.Pizza_Type_ID=pt.Pizza_Type_ID)
4 GROUP BY pt.Category;
5
```

The result grid shows the following data:

Pizza Category	Total Pizzas Sold
Chicken	11050
Classic	14888
Supreme	11987
Veggie	11649

11. Top 5 Pizza names by Revenue, Total Quantity and Total Orders:

○ Top 5 Pizza names sold by Total Revenue

```
SELECT pt.Name AS "Pizza Name", SUM(od.Quantity*p.Price) AS "Total Revenue"
FROM
```

```
((order_details AS od INNER JOIN pizzas AS p ON od.Pizza_ID=p.Pizza_ID) INNER
JOIN pizzas_types AS pt ON p.Pizza_Type_ID=pt.Pizza_Type_ID)
```

```
GROUP BY pt.Name
```

```
ORDER BY SUM(od.Quantity*p.Price) DESC LIMIT 5;
```

The screenshot shows a database query editor with the following SQL query:

```
1 /*Top 5 Pizzas sold by Revenue*/
2 SELECT pt.Name AS "Pizza Name", SUM(od.Quantity*p.Price) AS "Total Revenue" FROM
3 ((order_details AS od INNER JOIN pizzas AS p ON od.Pizza_ID=p.Pizza_ID) INNER JOIN pizzas_types AS pt ON p.Pizza_Type_ID=pt.Pizza_Type_ID)
4 GROUP BY pt.Name
5 ORDER BY SUM(od.Quantity*p.Price) DESC LIMIT 5;
```

The result grid displays the following data:

Pizza Name	Total Revenue
The Thai Chicken Pizza	43434.25
The Barbecue Chicken Pizza	42768
The California Chicken Pizza	41409.5
The Classic Deluxe Pizza	38180.5
The Spicy Italian Pizza	34831.25

○ Top 5 Pizza names sold by Total Quantity:

```
SELECT pt.Name AS "Pizza Name", SUM(od.Quantity) AS "Total Quantity" FROM
```

```
((order_details AS od INNER JOIN pizzas AS p ON od.Pizza_ID=p.Pizza_ID) INNER
JOIN pizzas_types AS pt ON p.Pizza_Type_ID=pt.Pizza_Type_ID)
```

```
GROUP BY pt.Name
```

```
ORDER BY SUM(od.Quantity) DESC LIMIT 5;
```

The screenshot shows a database query editor with the following SQL query:

```
1 /*Top 5 Pizzas sold by Total Quantity*/
2 SELECT pt.Name AS "Pizza Name", SUM(od.Quantity) AS "Total Quantity" FROM
3 ((order_details AS od INNER JOIN pizzas AS p ON od.Pizza_ID=p.Pizza_ID) INNER JOIN pizzas_types AS pt ON p.Pizza_Type_ID=pt.Pizza_Type_ID)
4 GROUP BY pt.Name
5 ORDER BY SUM(od.Quantity) DESC LIMIT 5;
```

The result grid displays the following data:

Pizza Name	Total Quantity
The Classic Deluxe Pizza	2453
The Barbecue Chicken Pizza	2432
The Hawaiian Pizza	2422
The Pepperoni Pizza	2418
The Thai Chicken Pizza	2371

- **Top 5 Pizza names sold by Total Orders**

```
SELECT pt.Name AS "Pizza Name", COUNT(DISTINCT o.Order_ID) AS "Total Orders" FROM
```

```
((order_details AS od INNER JOIN pizzas AS p ON od.Pizza_ID=p.Pizza_ID) INNER JOIN pizzas_types AS pt ON p.Pizza_Type_ID=pt.Pizza_Type_ID)
```

```
INNER JOIN orders AS o ON od.Order_ID=o.Order_ID)
```

```
GROUP BY pt.Name
```

```
ORDER BY COUNT(DISTINCT o.Order_ID) DESC LIMIT 5;
```

The screenshot shows a SQL query editor with the following query:

```
1 /*Top 5 Pizzas sold by Total Orders*/
2 SELECT pt.Name AS "Pizza Name", COUNT(DISTINCT o.Order_ID) AS "Total Orders" FROM
3 (((order_details AS od INNER JOIN pizzas AS p ON od.Pizza_ID=p.Pizza_ID) INNER JOIN pizzas_types AS pt ON p.Pizza_Type_ID=pt.Pizza_Type_ID)
4 INNER JOIN orders AS o ON od.Order_ID=o.Order_ID)
5 GROUP BY pt.Name
6 ORDER BY COUNT(DISTINCT o.Order_ID) DESC LIMIT 5;
```

The results are displayed in a table with the following data:

Pizza Name	Total Orders
The Classic Deluxe Pizza	2329
The Hawaiian Pizza	2280
The Pepperoni Pizza	2278
The Barbecue Chicken Pizza	2273
The Thai Chicken Pizza	2225

12. Bottom 5 Pizza names by Revenue, Total Quantity and Total Orders:

- **Bottom 5 Pizza names sold by Total Revenue:**

```
SELECT pt.Name AS "Pizza Name", SUM(od.Quantity*p.Price) AS "Total Revenue" FROM
```

```
((order_details AS od INNER JOIN pizzas AS p ON od.Pizza_ID=p.Pizza_ID) INNER JOIN pizzas_types AS pt ON p.Pizza_Type_ID=pt.Pizza_Type_ID)
```

```
GROUP BY pt.Name
```

```
ORDER BY SUM(od.Quantity*p.Price) ASC LIMIT 5;
```

The screenshot shows a SQL query editor with the following query:

```
1 /*Bottom 5 Pizzas sold by Revenue*/
2 SELECT pt.Name AS "Pizza Name", SUM(od.Quantity*p.Price) AS "Total Revenue" FROM
3 ((order_details AS od INNER JOIN pizzas AS p ON od.Pizza_ID=p.Pizza_ID) INNER JOIN pizzas_types AS pt ON p.Pizza_Type_ID=pt.Pizza_Type_ID)
4 GROUP BY pt.Name
5 ORDER BY SUM(od.Quantity*p.Price) ASC LIMIT 5;
```

The results are displayed in a table with the following data:

Pizza Name	Total Revenue
The Brie Carre Pizza	11588.499813079834
The Green Garden Pizza	13955.75
The Spinach Supreme Pizza	15277.75
The Mediterranean Pizza	15360.5
The Spinach Pesto Pizza	15596

- **Bottom 5 Pizza names sold by Total Quantity:**

```
SELECT pt.Name AS "Pizza Name", SUM(od.Quantity) AS "Total Quantity" FROM
((order_details AS od INNER JOIN pizzas AS p ON od.Pizza_ID=p.Pizza_ID) INNER
JOIN pizzas_types AS pt ON p.Pizza_Type_ID=pt.Pizza_Type_ID)

GROUP BY pt.Name

ORDER BY SUM(od.Quantity) ASC LIMIT 5;
```

The screenshot shows a database query editor with the following SQL query:

```
1 /*Bottom 5 Pizzas sold by Total Quantity*/
2 SELECT pt.Name AS "Pizza Name", SUM(od.Quantity) AS "Total Quantity" FROM
3 ((order_details AS od INNER JOIN pizzas AS p ON od.Pizza_ID=p.Pizza_ID) INNER JOIN pizzas_types AS pt ON p.Pizza_Type_ID=pt.Pizza_Type_ID)
4 GROUP BY pt.Name
5 ORDER BY SUM(od.Quantity) ASC LIMIT 5;
```

The results are displayed in a table with the following data:

Pizza Name	Total Quantity
The Brie Carre Pizza	490
The Mediterranean Pizza	934
The Calabrese Pizza	937
The Spinach Supreme Pizza	950
The Soppressata Pizza	961

- **Bottom 5 Pizza names sold by Total Orders**

```
SELECT pt.Name AS "Pizza Name", COUNT(DISTINCT o.Order_ID) AS "Total
Orders" FROM
(((order_details AS od INNER JOIN pizzas AS p ON od.Pizza_ID=p.Pizza_ID) INNER
JOIN pizzas_types AS pt ON p.Pizza_Type_ID=pt.Pizza_Type_ID)

INNER JOIN orders AS o ON od.Order_ID=o.Order_ID)

GROUP BY pt.Name

ORDER BY COUNT(DISTINCT o.Order_ID) ASC LIMIT 5;
```

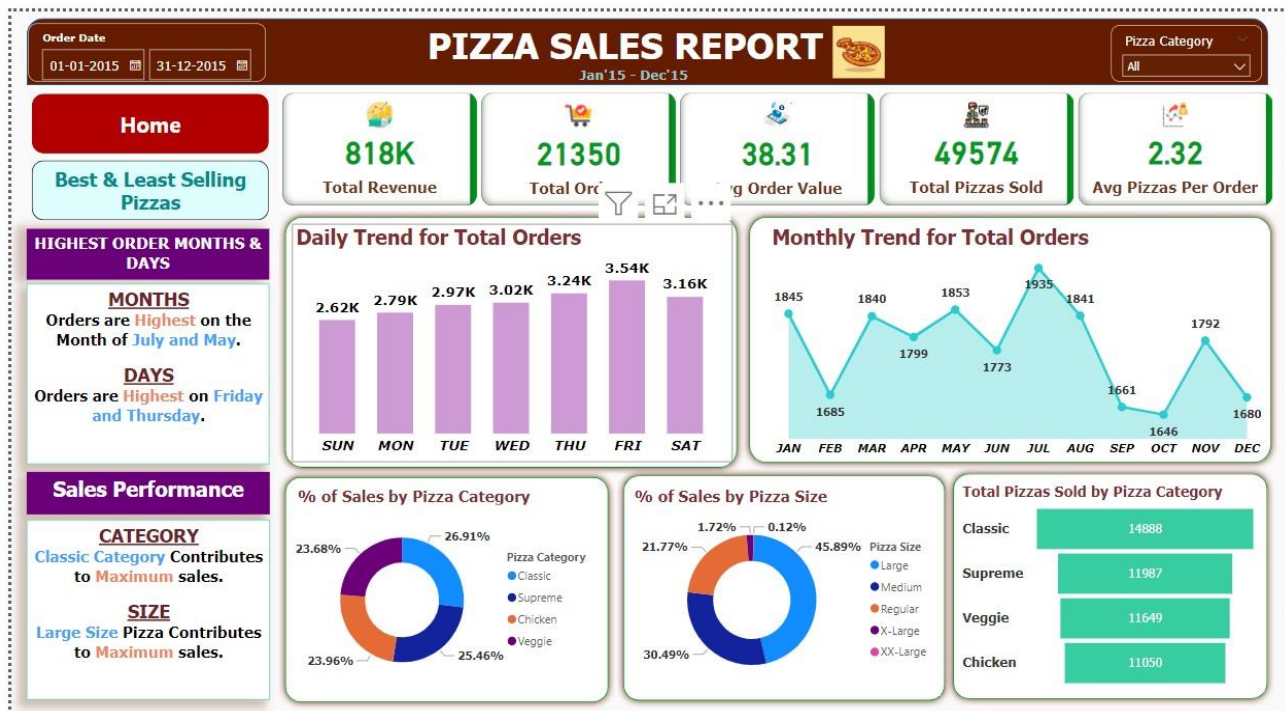
The screenshot shows a database query editor with the following SQL query:

```
1 /*Bottom 5 Pizzas sold by Total Orders*/
2 SELECT pt.Name AS "Pizza Name", COUNT(DISTINCT o.Order_ID) AS "Total Orders" FROM
3 (((order_details AS od INNER JOIN pizzas AS p ON od.Pizza_ID=p.Pizza_ID) INNER JOIN pizzas_types AS pt ON p.Pizza_Type_ID=pt.Pizza_Type_ID)
4 INNER JOIN orders AS o ON od.Order_ID=o.Order_ID)
5 GROUP BY pt.Name
6 ORDER BY COUNT(DISTINCT o.Order_ID) ASC LIMIT 5;
```

The results are displayed in a table with the following data:

Pizza Name	Total Orders
The Brie Carre Pizza	480
The Mediterranean Pizza	912
The Calabrese Pizza	918
The Spinach Supreme Pizza	918
The Chicken Pesto Pizza	938

Power BI Report:



Home x Best & Least Selling Pizzas +



Home x Best & Least Selling Pizzas +