
PIZZA SALES
PRESENTATION
Slide Members

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PROJECT OVERVIEW

- **OBJECTIVE**: The primary objective of this project is to analyze pizza sales data to uncover in sights and trends that can help improve business decisions and strategies. By leveraging SQL for data extraction and transformation, and Power BI for data visualization, we aim to provide a comprehensive view of sales performance, customer behavior, and operational efficiency.
- **TOOLS**: For the project, Microsoft Excel, MySQL, and Power BI applications are used.
- **APPROCH**: Employ data analysis, SQL Analysis and Power BI visualization of the data for be tter understanding.
- **DATASET**: Make use of an extensive dataset that records pertinent attributes.
- **METHODOLOGY**: Investigate different SQL queries to get accurate results and to visualize trends and patterns more clearly.
- **OUTCOME**: Gain practical SQL & Power BI Visualization skills through hands-on experience in Pizza Sales Analysis.

PROJECT'S STEPS

- **Data Extraction:** Extract the necessary dataset from KAGGLE . Load the dataset in MySQL . Use SQL queries to get a overview of the dataset.
- **Data Cleaning:** Address any missing, duplicate, data type conversion or inconsistent data. This includes writing SQL scripts to clean the data.
- **Data Transformation:** Transform the raw data into a format suitable for analysis. This includes normalizing data, creating new calculated fields.
- **SQL Queries**: Multiple SQL Query for better understanding of data and then take the data for visualizations.
- **Connect to Data Sources:** In Power BI, connect to the SQL database and import the prepared table.
- **Data Loading:** Load the data into Power BI, ensuring that it is refreshed regularly if the data is dynamic.
- **Measure Creation:** Create DAX measures to calculate key performance indicators (KPIs) and other metrics required for the analysis.
- **Design Dashboards:** Create interactive dashboards in Power BI. Include visualizations such as charts, graphs, and maps that effectively communicate the data.
- **Customize Visuals:** Customize the visuals to align with the company's branding and make them easy to interpret.
- **Interpret Data:** Analyze the visualizations to draw meaningful insights
- **Generate Recommendations:** Based on the insights, generate actionable recommendations for the business.

DATA ANALYSIS DOMAINS

A. **SALES ANALYSIS**:- Pizza sales analysis using SQL and Power BI is a robust approach for gaining insights into sales performance and customer behavior. SQL is utilized to query the sales database, extracting relevant data such as Unit Price, Quantity and pizza specifics. This data is then cleaned and aggregated to identify trends, patterns, and anomalies in pizza sales, such as peak sales times, Percentage sales by size & Category. Once the data is prepared, Power BI is employed for visualization, enabling the creation of dynamic dashboards and interactive reports. This data is then processed to calculate key performance indicators (KPIs) such as Total Revenue, Average Order value, Total Pizza Sold, Total Orders and Average Pizza per order. The combination of SQL for data extraction and Power BI for visualization provides a comprehensive solution for effective pizza sales analysis.

B. **BEST/WORST SELLERS**:- Analyzing the best and worst pizza sellers using SQL and Power BI involves a systematic approach to uncovering performance metrics and identifying top-performing and underperforming sellers. SQL is first employed to query the sales database, retrieving data on individual seller transactions, sales volumes, and Total Revenue.. Using Power BI, these KPIs are visualized through interactive dashboards and detailed reports, highlighting the best and worst performers. Visualizations such as Stacked bar charts enable stakeholders to quickly grasp which sellers excel in terms of revenue and customer satisfaction and which ones lag behind. This analysis helps businesses to recognize successful strategies employed by top sellers, provide targeted support and training to underperformers, and ultimately improve overall sales performance and customer experience.

DATA DESCRIPTION

“pizza_sales”

NAME & DESCRIPTION OF THE COLUMNS:-

- **pizza_id** - A unique identifier assigned to each distinct pizza variant available for ordering.
- **Order_id** - A unique identifier for each order made, which links to multiple pizzas.
- **Pizza_name_id** - An identifier linking to a specific name of the pizza.
- **Quantity -** The number of units of a specific pizza variant ordered within an order.
- **Order_date** - The date when the order was placed.
- **Order_time** - The time when the order was placed.
- **Unit_price** - The cost of a single unit of the specific pizza variant.
- **Total_price** - The aggregated cost of all units of a specific pizza variant in an order.
- **Pizza_size** - The aggregated cost of all units of a specific pizza variant in an order.
- **Pizza_category** - Indicates the category of the pizza, such as vegetarian, non-vegetarian, etc.
- **Pizza_ingredients** - Provides a list or description of the ingredients used in the pizza.
- **Pizza_name** - Specifies the name of the specific pizza variant ordered.

SQL ANALYSIS (QUERIES)

- This dataset contain detailed information about pizza orders, including specifics abo ut

  the pizza variants, quantities, pricing, dates, times, and categorization details.
- The final result is displayed below after the raw data is fed into SQL and certain columns, such as order_date and order_time, have had their data types altered.

pizza_id	order_id	pizza_name_id	quantity	order_date	order_time	unit_price	total_price	pizza_size	pizza_category	pizza_ingredients	pizza_name
1	1	hawaiian_m	1	2015-01-01	11:38:36	13.25	13.25	M	Classic	Sliced Ham, Pinea…	The Hawaiian Pizza
2	2	classic_dlx_m	1	2015-01-01	11:57:40	16	16	M	Classic	Pepperoni, Mushr…	The Classic Deluxe Pizza
3	2	five_cheese_l	1	2015-01-01	11:57:40	18.5	18.5	L	Veggie	Mozzarella Chees…	The Five Cheese Pizza
4	2	ital_supr_l	1	2015-01-01	11:57:40	20.75	20.75	L	Supreme	Calabrese Salami,…	The Italian Supreme Pizza
5	2	mexicana_m	1	2015-01-01	11:57:40	16	16	M	Veggie	Tomatoes, Red P…	The Mexicana Pizza
6	2	thai_ckn_l	1	2015-01-01	11:57:40	20.75	20.75	L	Chicken	Chicken, Pineappl…	The Thai Chicken Pizza
7	3	ital_supr_m	1	2015-01-01	12:12:28	16.5	16.5	M	Supreme	Calabrese Salami,…	The Italian Supreme Pizza
8	3	prsc_argla_l	1	2015-01-01	12:12:28	20.75	20.75	L	Supreme	Prosciutto di San …	The Prosciutto and Arugula Pizza
9	4	ital_supr_m	1	2015-01-01	12:16:31	16.5	16.5	M	Supreme	Calabrese Salami,…	The Italian Supreme Pizza
10	5	ital_supr_m	1	2015-01-01	12:21:30	16.5	16.5	M	Supreme	Calabrese Salami,…	The Italian Supreme Pizza
11	6	bbq_ckn_s	1	2015-01-01	12:29:36	12.75	12.75	S	Chicken	Barbecued Chicke…	The Barbecue Chicken Pizza
12	6	the_greek_s	1	2015-01-01	12:29:36	12	12	S	Classic	Kalamata Olives, …	The Greek Pizza
13	7	spinach_supr_s	1	2015-01-01	12:50:37	12.5	12.5	S	Supreme	Spinach, Red Oni…	The Spinach Supreme Pizza
14	8	spinach_supr_s	1	2015-01-01	12:51:37	12.5	12.5	S	Supreme	Spinach, Red Oni…	The Spinach Supreme Pizza
15	9	classic_dlx_s	1	2015-01-01	12:52:01	12	12	S	Classic	Pepperoni, Mushr…	The Classic Deluxe Pizza

IMPORTANT KPI'S CALCULATIONS

1. **Total Revenue**: The sum of the total price of all pizza orders.
2. **Average Order value**: The average amount spent per order, calculated by dividing the total revenue by the total number of orders.
3. **Total Pizzas Sold**: The Sum Of the quantities of all pizza sold.
4. **Total Orders**: The total number of orders placed.
5. **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.

```
19    -- A. KPI's Reqiurement --
20    -- 1. Total Revenue --
21    SELECT round(sum(total_price),2) AS Total_Revenue FROM pizza_sales;
22
23    -- 2. Average Order value --
24    SELECT round(sum(total_price) / count(DISTINCT order_id),2) AS Avg_Order_value FROM pizza_sales;
25
26    -- 3. Total Pizza Sold --
27    SELECT sum(quantity) AS Total_Pizza_solds FROM pizza_sales;
28
29    -- 4. Total Orders --
30    SELECT count(DISTINCT order_id) AS Total_Orders FROM pizza_sales;
31
32    -- 5. Average Pizza Per Order --
33    SELECT round(sum(quantity) / count(DISTINCT order_id),2) AS Avg_Pizza_Per_order FROM pizza_sales;
```

OUTPUTS:-

Total_Revenue
817860.05

Avg_Order_value
38.31

Total_Pizza_solds
49574

Total_Orders
21350

Avg_Pizza_Per_order
2.32

TRENDS OVERVIEW

- **Daily Trends for Total Orders**: The number below displays the daily trend over a specific time period. This will help us to identify any pattern in order volumes on a daily basis.
- **Monthly Trends for Total Orders**: The number below displays monthly trend over a specific time period . This will help us to identify and pattern in order volumes on a monthly basis.

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

```sql
SELECT monthname(order_date) AS month_name, count(DISTINCT order_id) AS Total_orders
FROM pizza_sales
GROUP BY monthname(order_date)
ORDER BY Total_orders DESC;
```

order_day	total_orders
Friday	3538
Monday	2794
Saturday	3158
Sunday	2624
Thursday	3239
Tuesday	2973
Wednesday	3024

Daily Trends

OUTPUTS:-

Monthly Trends

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

PERCENTAGE SALES CALCULATIONS

- **Percentage of Sales by Pizza Category**: The percentage in output shows the distribution of sales across different pizza category. This will provide insights into the popularity of various pizza categories and their contribution to overall sales.
- **Percentage of Sales by Pizza Size**: The percentage in output shows the distribution of sales across different pizza Size. This will provide insights into the popularity of various pizza size and their contribution to overall sales.

```
SELECT pizza_category, CAST(SUM(total_price) AS DECIMAL(10,2)) AS total_Sales,
CAST(SUM(total_price) * 100 / (SELECT SUM(total_price) FROM pizza_sales) AS DECIMAL(10,2)) AS PCT
FROM pizza_sales
GROUP BY pizza_category;
```

```
SELECT pizza_size, CAST(SUM(total_price) AS DECIMAL(10,2)) AS Total_Sales,
CAST(SUM(total_price) * 100 / (SELECT SUM(total_price) FROM pizza_sales) AS DECIMAL(10,2)) AS PCT
FROM pizza_sales
GROUP BY pizza_size
ORDER BY PCT DESC;
```

OUTPUTS:-

pizza_category	total_Sales	PCT
Classic	220053.10	26.91
Veggie	193690.45	23.68
Supreme	208197.00	25.46
Chicken	195919.50	23.96

pizza_size	Total_Sales	PCT
L	375318.70	45.89
M	249382.25	30.49
S	178076.50	21.77
XL	14076.00	1.72
XXL	1006.60	0.12

TOTAL SALES BY PIZZA CATEGORY

- **Total Pizza Sold by Pizza Category:** It represents the total number of pizzas sold for each pizza category. This will allow us to compare the sales performance of different pizza categories.

```
SELECT pizza_category, SUM(quantity) AS Total_Quantity_Sold
FROM pizza_sales
GROUP BY pizza_category
ORDER BY Total_Quantity_Sold DESC;
```

OUTPUT:-

pizza_category	Total_Quantity_Sold
Classic	14888
Supreme	11987
Veggie	11649
Chicken	11050

BEST/WORST SELLERS BY TOTAL REVENUE

- **Top 5 Best Sellers by Revenue**: This SQL code shows the top 5 best pizzas sold based on total Revenue. This numbers will help us identify the most popular pizza options.
- **Bottom 5 Best Sellers by Revenue**: This SQL code shows the bottom 5 pizzas sold based on total Revenue. This numbers will help us to identify the not so popular pizza options.

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

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

OUTPUTS:-

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

pizza_name	Total_Revenue
The Brie Carre Pizza	11588.4999999999
The Green Garden Pizza	13955.75
The Spinach Supreme Pizza	15277.75
The Mediterranean Pizza	15360.5
The Spinach Pesto Pizza	15596

BEST/WORST SELLERS BY TOTAL QUANTITY

- **Top 5 Best Sellers by Quantity**: This SQL code shows the top 5 best pizzas sold based on total quantity. This numbers will help us identify the most popular pizza options.
- **Bottom 5 Best Sellers by Quantity**: This SQL code shows the bottom 5 pizzas sold based on total quantity. This numbers will help us to identify the not so popular pizza options.

```sql
SELECT  pizza_name, SUM(quantity) AS Total_Pizza_Sold
FROM pizza_sales
GROUP BY pizza_name
ORDER BY Total_Pizza_Sold DESC
LIMIT 5;
```

```sql
SELECT  pizza_name, SUM(quantity) AS Total_Pizza_Sold
FROM pizza_sales
GROUP BY pizza_name
ORDER BY Total_Pizza_Sold asc
LIMIT 5;
```

OUTPUTS:-

pizza_name	Total_Pizza_Sold
The Classic Deluxe Pizza	2453
The Barbecue Chicken Pizza	2432
The Hawaiian Pizza	2422
The Pepperoni Pizza	2418
The Thai Chicken Pizza	2371

pizza_name	Total_Pizza_Sold
The Brie Carre Pizza	490
The Mediterranean Pizza	934
The Calabrese Pizza	937
The Spinach Supreme Pizza	950
The Soppressata Pizza	961

BEST/WORST SELLERS BY TOTAL ORDERS

- **Top 5 Best Sellers by Total Orders**: This SQL code shows the top 5 best pizzas sold based on total Orders. This numbers will help us identify the most popular pizza options.
- **Bottom 5 Best Sellers by Total Orders**: This SQL code shows the bottom 5 pizzas sold based on total Orders. This numbers will help us to identify the not so popular pizza options.

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

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

OUTPUTS:-

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

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

SQL SERVER → CONNECT → POWER BI

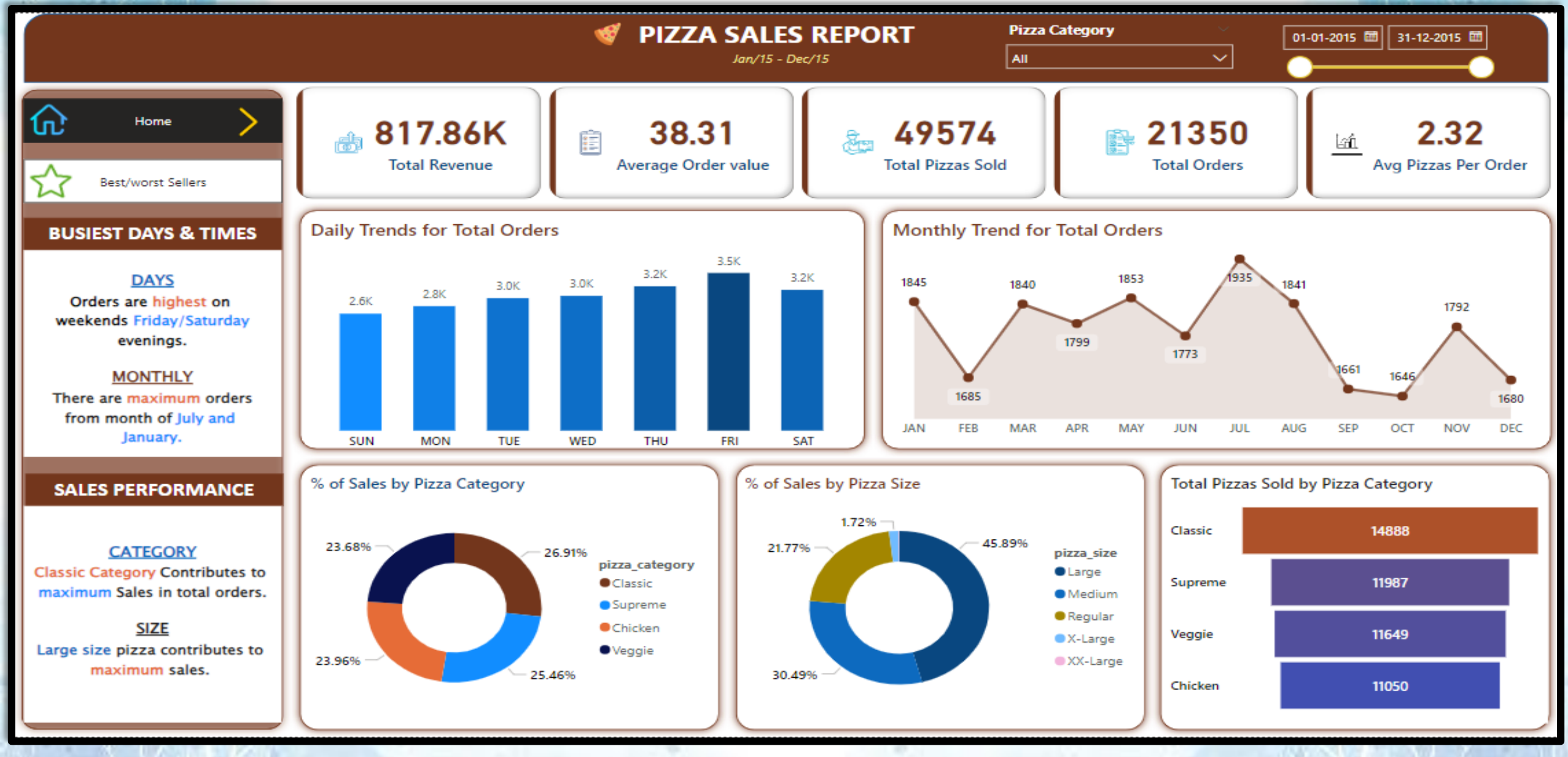
Connecting SQL Server to Power Bi is an essential step in leveraging the powerful data visualization capabilities of Power BI to analyze Pizza sales data stored in SQL server. This connection allows for the seamless integration of robust data management with interactive reporting, provide valuable insights into Sales trend, pizzas performance and customer's pizza preferences.

Benefits:

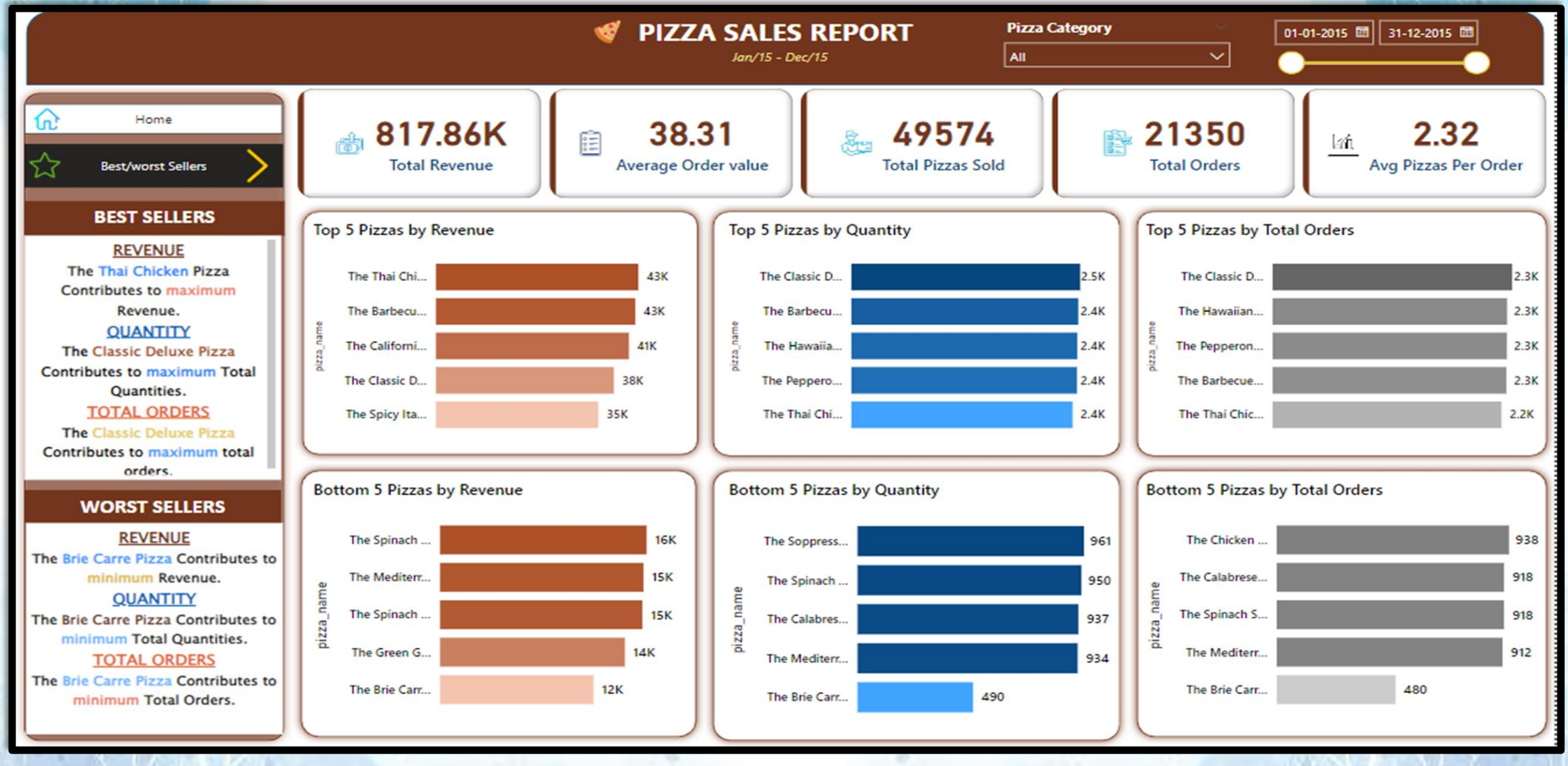
- **Real-time Data Analysis**: With DirectQuery, Power BI can query data directly from SQL Server, providing up-to-date insights without the need for frequent data imports.
- **Comprehensive Reporting**: By combining queries and views from SQL Server, Power BI enables the creation of detailed and comprehensive reports that cover various aspects of pizza sales.
- **Interactive Dashboards**: Power BI's interactive features allow users to filter data dynamically, drill down into details, and uncover hidden trends in pizza sales data.
- **Improved Decision-Making**: The insights derived from Power BI reports can inform strategic decisions such as inventory management, marketing campaigns, and customer engagement strategies.

We can construct new measures and columns using the DAX function after connecting SQL to Power Bi, and we can also make interactive reports after that.In summary, the integration of SQL Server with Power BI for pizza sales analysis empowers businesses to transform raw sales data into actionable insights, driving better decision-making and enhancing overall business performance

REPORT – 1: Sales Analysis



REPORT – 2: Best/worst Sellers



REPORT 1- Sales Analysis

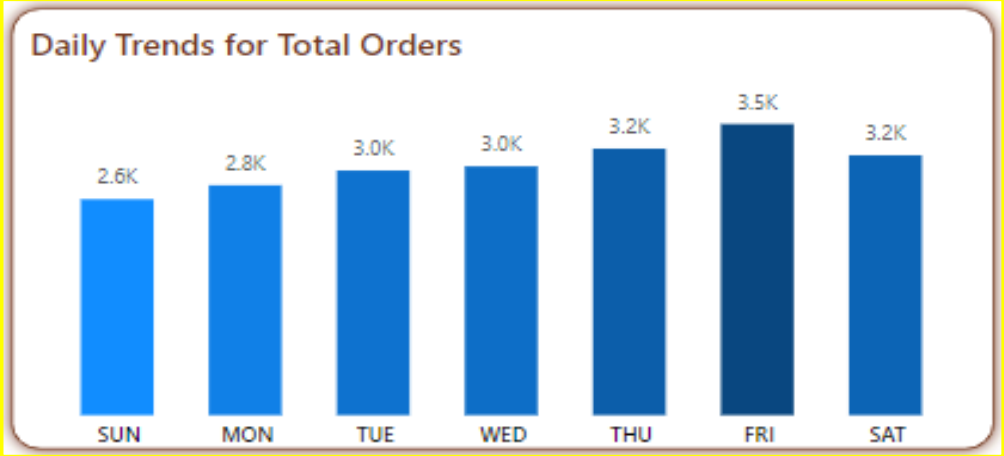
KEY INSIGHTS

1. KPI'S REQUIREMENT:

KEY PERFORMANCE INDICATOR:-

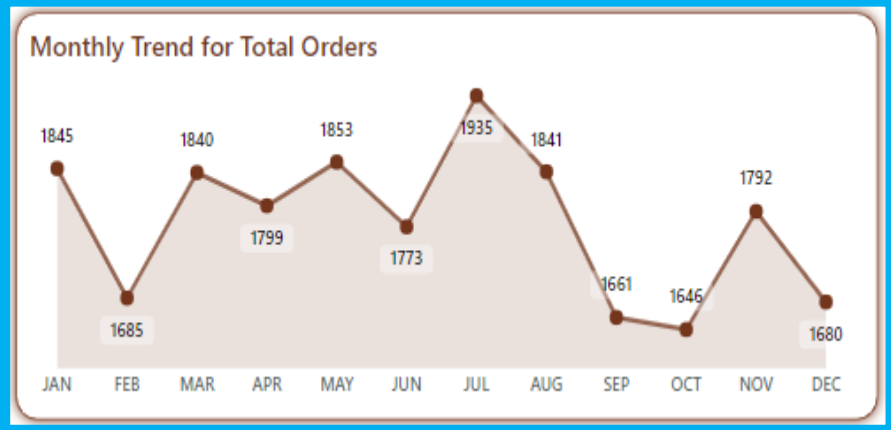
- **Total Revenue**: The sum of the total price of all pizza orders is **817.86K.**
- **Average Order value**: The average amount spent per order is **38.31.**
- **Total Pizzas Sold**: The Sum Of the quantities of all pizza sold is **49,574**.
- **Total Orders**: The total number of orders placed is **21,350**.
- **Average Pizzas Per Order**: The average number of pizzas sold per order is **2.32**.

2. STACKED COLUMN CHART: Daily Trends for Total Orders



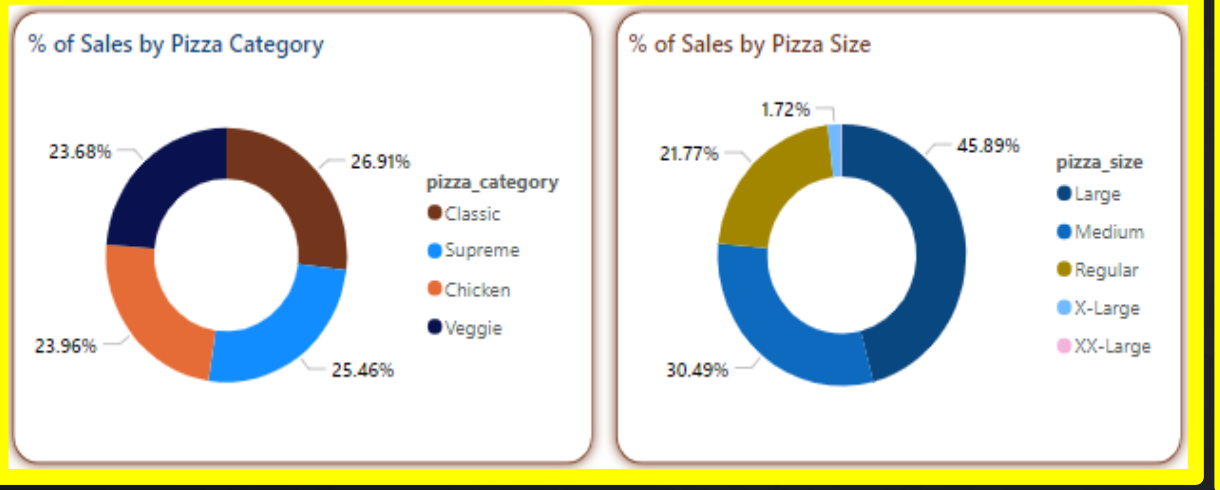
The purpose of this stacked column chart is to display daily trends by total orders. It is evident from the chart that THURSDAY, with **3.5k** orders, is the **highest** day of the week, followed by FRIDAY & SATURDAY with **3.2k** orders, and **SUNDAY** & MONDAY, with **2.6k** and **2.8k** orders are the **lowest**.

3. AREA CHART: Monthly Trend for Total Orders



This Stacked Column Chart was created to display the trends for each month broken down by Total Orders. The graph makes it evident that the top three months of the year are JULY (1,935 orders), JANUARY (1845 orders) & MAY (1853 orders). September & October saw the fewest orders placed during the month, at 1,661 & 1,646 respectively. This indicates that the majority of pizza orders will be placed in JULY.

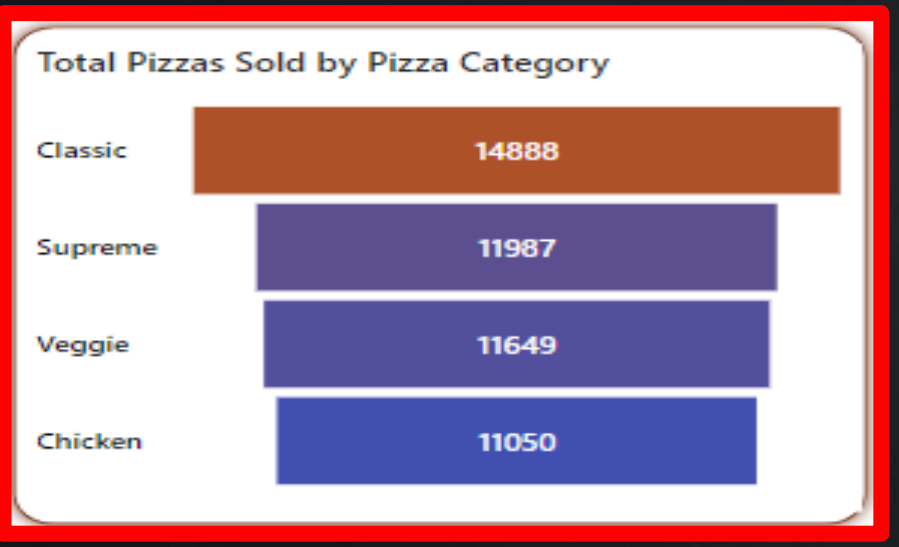
4 & 5 PIE CHART: Percentage Sales by Pizza Category & Size



To show the distribution of sales across various pizza categories and sizes, pie charts were constructed. The first graphic makes it quite evident how sales are broke n down by type of pizza; the most popular varieties are CLASSIC (26.91%) & SUPREME(25.46%), followed chicken & vegetable.

In the second graphic, it is evident that sales are broken down by pizza size, with LARGE(45.89%) & MEDIUM (30.49%) pizzas having the highest sales, followed by normal and x-large pizzas.

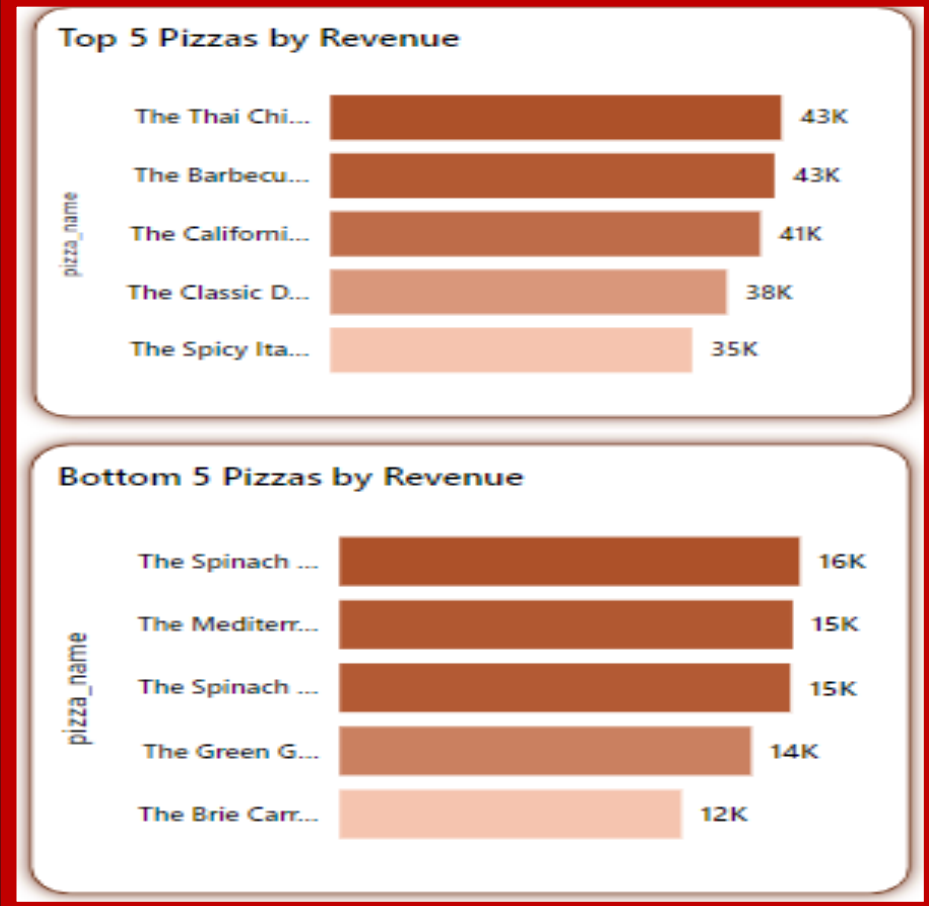
6. FUNNEL: Total Pizzas Sold by Pizza Category



Analyzing the total number of pizzas sold by category provides valuable insights into customer preferences and sales performance across different pizza types.
The total number of pizzas sold by category is shown in this figure; the most popular categories are CLASSIC with (14, 888 sold) & SUPREME with (11,987 sold).

1 & 2 STACKED BAR CHART: Top & Bottom 5 Pizzas By Revenue

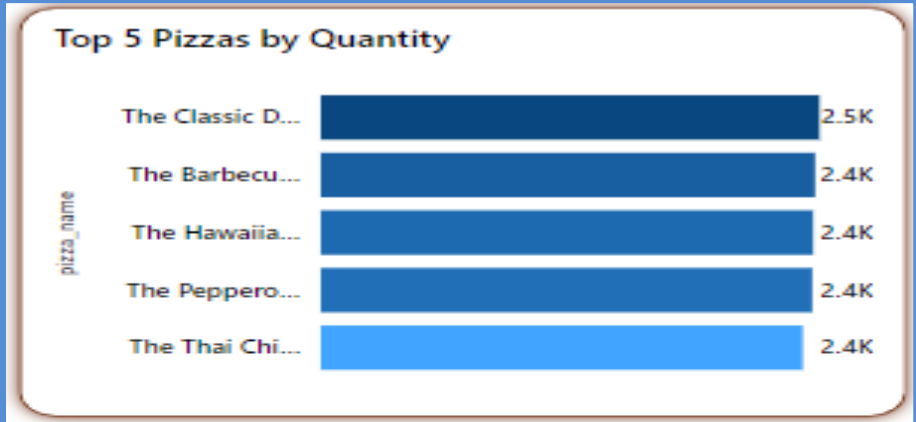
Report 2 - Best/Worst sellers

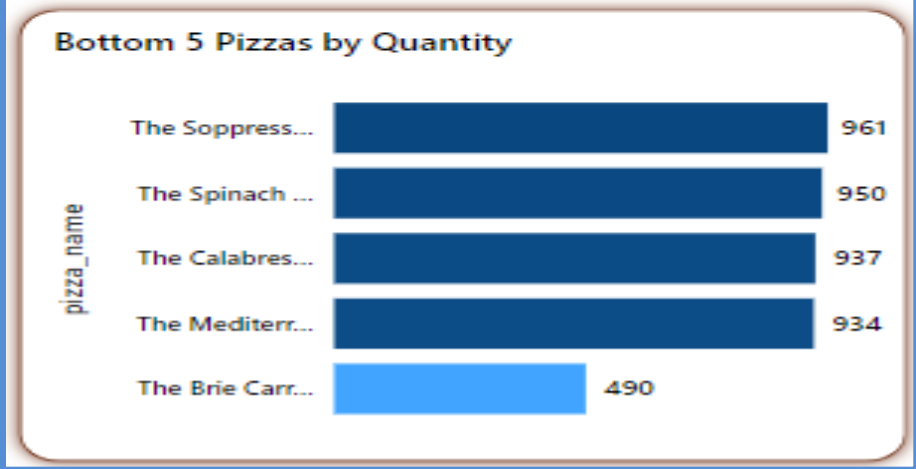


The top five pizzas in terms of revenue are displayed in the first visual expression. With **43K**, THAI & BARBECUE CHICKEN pizzas bring in the most money. California chicken (**41k**), classic deluxe (**38k**), & spicy Italian (**35k**) pizzas are next in line.

In the second visual expression, the lowest five pizzas in terms of revenue are shown. The SPINACH PESTO makes the least money, with **16k**. The next in line, in minimum revenue, are the Mediterranean (**15k**), Spinach Supreme (**15k**), Green Gar den (**14k**), & Brie Carrie pizzas (**12k**).

3 & 4 STACKED BAR CHART: Top & Bottom 5 Pizzas by Quantity

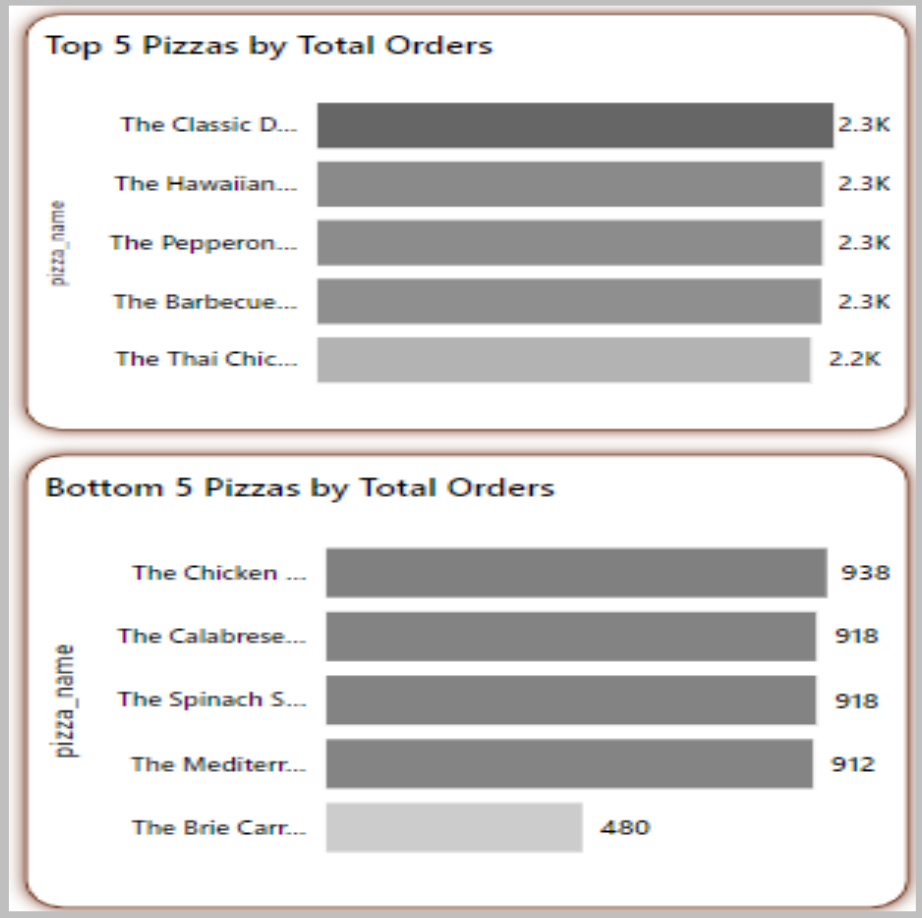




The first visual representation shows the top five pizzas in terms of Quantity. The m ost popular pizza, total pizzas sold for 2.5K , is the classic deluxe pizza. Next in line are the Hawaiian, Pepperoni, and Thai chicken pizzas, & barbecue chicken each with 2.4k pizzas sold.

In the second visual expression, the bottom five pizzas in terms of Quantity are shown. The BRIE CARRIE makes the least sold pizza, with **490**. The next in line, in minimum pizzas sold, are the Spinach Supreme (**950**), Calabrese (**937**),Mediterran ean (**934**), & Soppressata (**961**) pizzas.

5 & 6 STACKED BAR CHART : Top & Bottom 5 Pizzas by Total Orders



In the first visual expression, the top five pizzas in terms of total orders are shown. The pizzas with the most orders are the CLASSIC DELUXE , HAWAIIAN, PEPPERONI, & BARBECUE CHICKEN, each with **2.3K**. With **2.2k** orders, Thai pizza is the second best ordered type of pizza.

In the second visual expression, the lowest fiv e pizzas in terms of total orders are shown. The BRIE CARRIE PIZZA makes the least orders, with **480**. The next in line, in minimum orders, are the Mediterranean (**912**) ,Spinach Supreme & Calabrese pizza with **918** . Then at last The chicken Pesto pizza with **938** orders.

REFERENCES

Data Source:
Next Millionaire. "Pizza Sales Dataset.” Kaggle, 2023. Available at: Kaggle Pizza Sales Dataset

Data Access Method:
The dataset was directly downloaded using the Kaggle with the following link:
www.kaggle.com/datasets/nextmillionaire/pizza-sales-dataset/data

The dataset can also be accessed and downloaded using the Kaggle API with the following command:
kaggle datasets download -d nextmillionaire/pizza-sales-dataset

This commands allows for easy programmatic access and integration of the dataset into data analysis workflows.


THANK
YOU