Pizza Sales Analysis in Power BI and MS SQL Server

Contents

PROBLEM STATEMENT

KPI Requirements

We need to create key indicators form a pizza sales data to gain insights into the business performance. Thus calculate the following metrics:

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 pizzas 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.

These KPIs will help in understanding sales performance, customer spending behavior, and operational efficiency.

Charts Requirements

We also have to visualize various aspects of the pizza sales data to gain insights and understand key trends. We have identified the following requirements for creating the charts:

1. Daily Trend for Total Orders:
    - Create a bar chart that displays the daily trend of total orders over a specific time period. This chart will help us identify any patterns or fluctuations in order volumes on a daily basis.
2. Monthly Trend for Total Orders:
    - Create a line chart that illustrates the hourly trend of total orders throughout the day. This chart will allow us to identify peak hours or periods of high order activity.
3. Percentage of Sales by Pizza Category:
    - Create a pie chart that shows the distribution of sales across different pizza categories. This chart will provide insights into the popularity of various pizza categories and their contribution to overall sales.

These charts are designed to provide a visual representation of sales trends and category performance, which can inform business decisions and strategy adjustments.

SOFTWARES USED TO DEVELOPTHE REPORT

- Power BI - Version: 2.116.966.0, 64-bit
- MS SQL Server – 19.0.2
- Excel

DATA SOURCE

The primary dataset was obtained from Kaggle website (https://www.kaggle.com/datasets/ylenialongo/pizza-sales)

IMPORT DATA INTO MS SQL SERVER

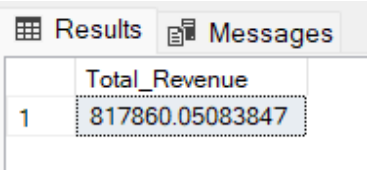
The datasets were imported into the Microsoft SQL server to query the data according to our KPI and chart requirements. The results which serve as check on the Power BI analysis are shown below.

SQL Queries

KPI's

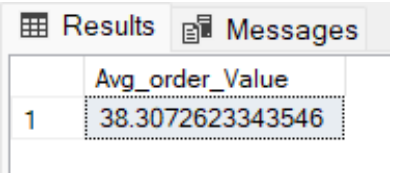
1. Total Revenue:

```
SELECT SUM(total_price) AS Total_Revenue FROM pizza_sales;
```



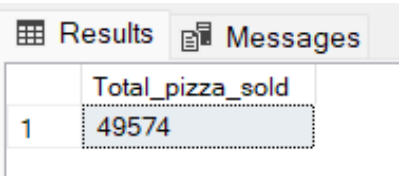
2. Average Order Value

```
SELECT (SUM(total_price) / COUNT(DISTINCT order_id)) AS Avg_order_Value FROM pizza_sales
```



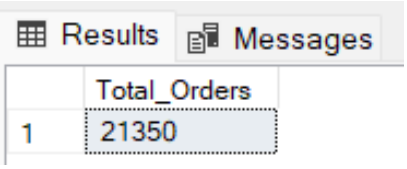
3. Total Pizzas Sold

```
SELECT SUM(quantity) AS Total_pizza_sold FROM pizza_sales
```



4. Total Orders

```
SELECT COUNT(DISTINCT order_id) AS Total_Orders FROM pizza_sales
```



5. 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

B. 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)
```

Output:

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

C. Monthly Trend for Orders

```
select DATENAME(MONTH, order_date) as Month_Name, COUNT(DISTINCT order_id) as
Total_Orders
from pizza_sales
GROUP BY DATENAME(MONTH, order_date)Output
```

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

D. % of Sales by Pizza Category

```
SELECT 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 PCT
FROM pizza_sales
GROUP BY pizza_category
```

Output

Results Messages

	pizza_category	total_revenue	PCT
1	Classic	220053.10	26.91
2	Chicken	195919.50	23.96
3	Veggie	193690.45	23.68
4	Supreme	208197.00	25.46

E. % of Sales by Pizza Size

```
SELECT 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 PCT
```

```
FROM pizza_sales
GROUP BY pizza_size
ORDER BY pizza_size
```

Output

Results | Messages

	pizza_size	total_revenue	PCT
1	L	375318.70	45.89
2	M	249382.25	30.49
3	S	178076.50	21.77
4	XL	14076.00	1.72
5	XXL	1006.60	0.12

F. Total Pizzas Sold by Pizza Category

```
SELECT 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
```

Output

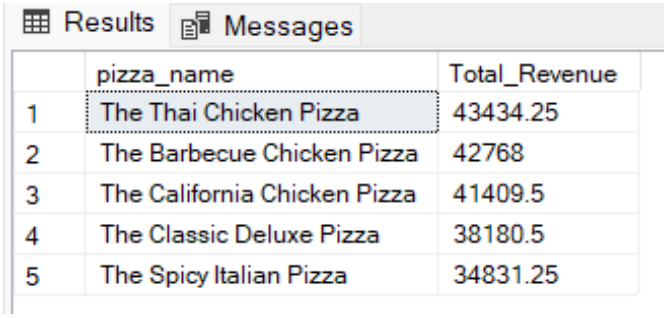
Results | Messages

	pizza_category	Total_Quantity_Sold
1	Classic	14888
2	Supreme	11987
3	Veggie	11649
4	Chicken	11050

G. Top 5 Pizzas by Revenue

```
SELECT Top 5 pizza_name, SUM(total_price) AS Total_Revenue
FROM pizza_sales
```

```
GROUP BY pizza_name
ORDER BY Total_Revenue DESC
```



Results | Messages

	pizza_name	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

H. Bottom 5 Pizzas by Revenue

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

	pizza_name	Total_Revenue
1	The Brie Carre Pizza	11588.4998130798
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

I. Top 5 Pizzas by Quantity

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

Output

	pizza_name	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

J. Bottom 5 Pizzas by Quantity

```
SELECT TOP 5 pizza_name, SUM(quantity) AS Total_Pizza_Sold

FROM pizza_sales

GROUP BY pizza_name

ORDER BY Total_Pizza_Sold ASC
```

Output

Results Messages

	pizza_name	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

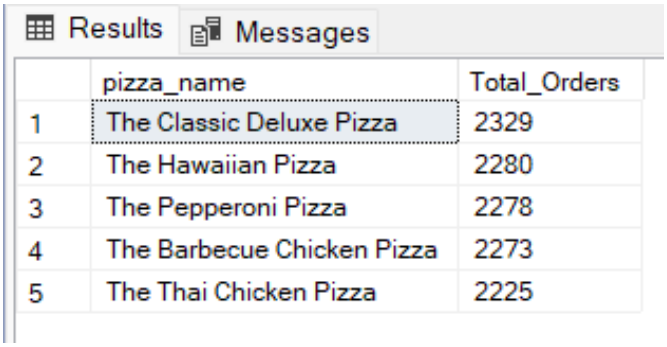
K. Top 5 Pizzas by Total Orders

```
SELECT Top 5 pizza_name, COUNT(DISTINCT order_id) AS Total_Orders

FROM pizza_sales

GROUP BY pizza_name

ORDER BY Total_Orders DESC
```

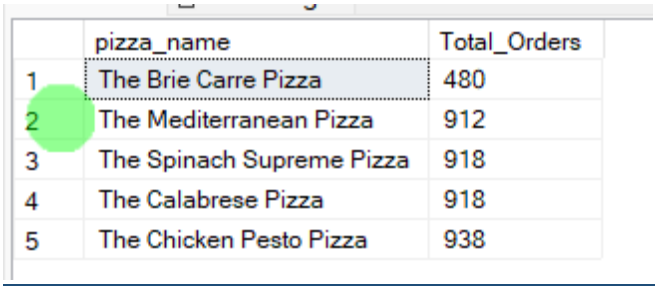


Results | Messages

	pizza_name	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

L. Borrom 5 Pizzas by Total Orders

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



	pizza_name	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

CONNECTING POWER BI TO MS SQL Database

Power BI was connected to MS SQL Database for Exploratory Data Analysis and building of the Dashboard.

Power BI Functionalities Used

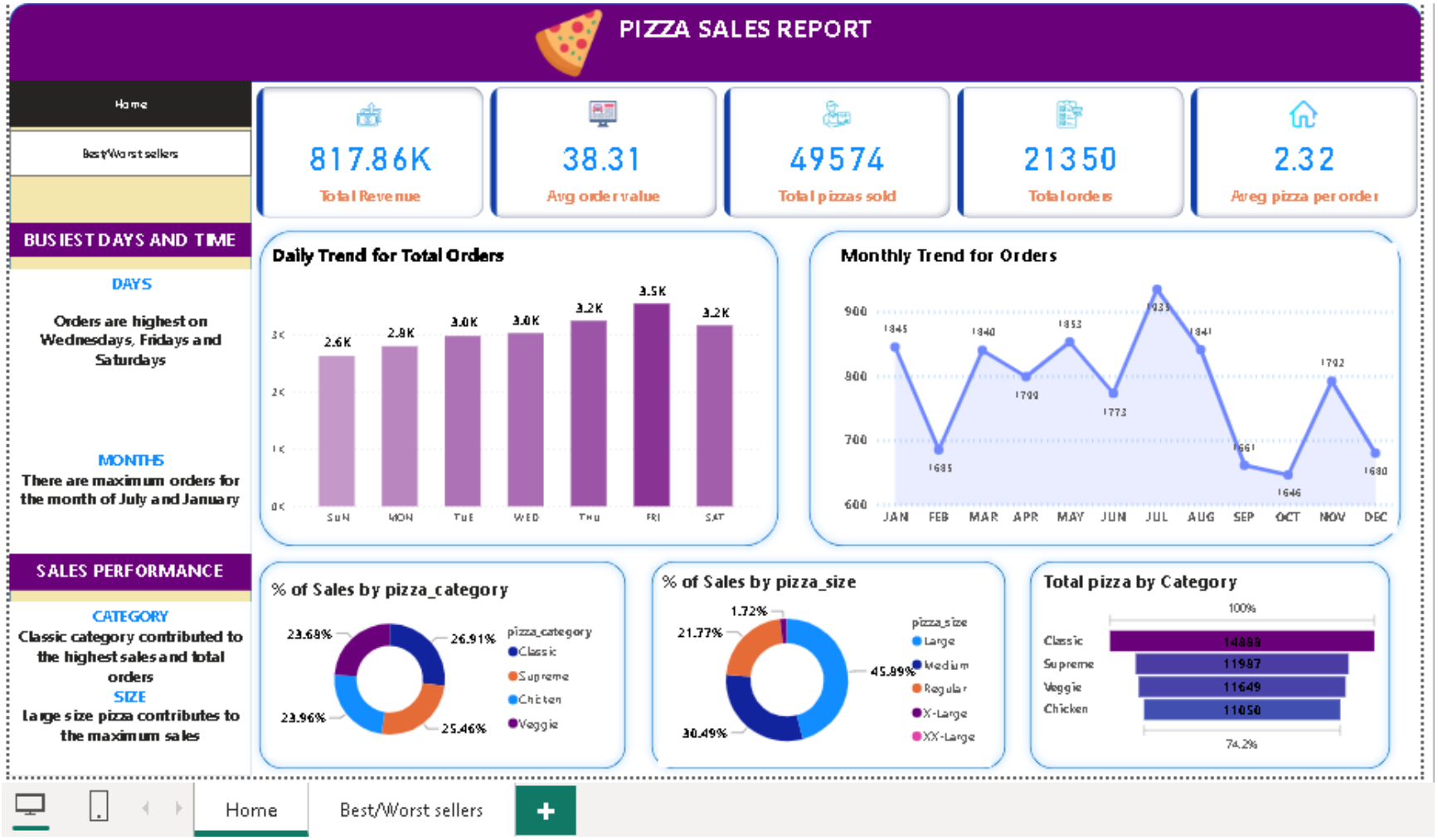
- How to connect Power BI to MS SQL server and Flat Files
- Data cleaning in Power Query
- How to create a Date Table in Power BI
- Creating Dynamic and Complex KPI's
- Basic to Advanced Dax Queries
- Conditional Formatting's, Adding dynamic icons in Power BI
- Creating different charts and formatting them

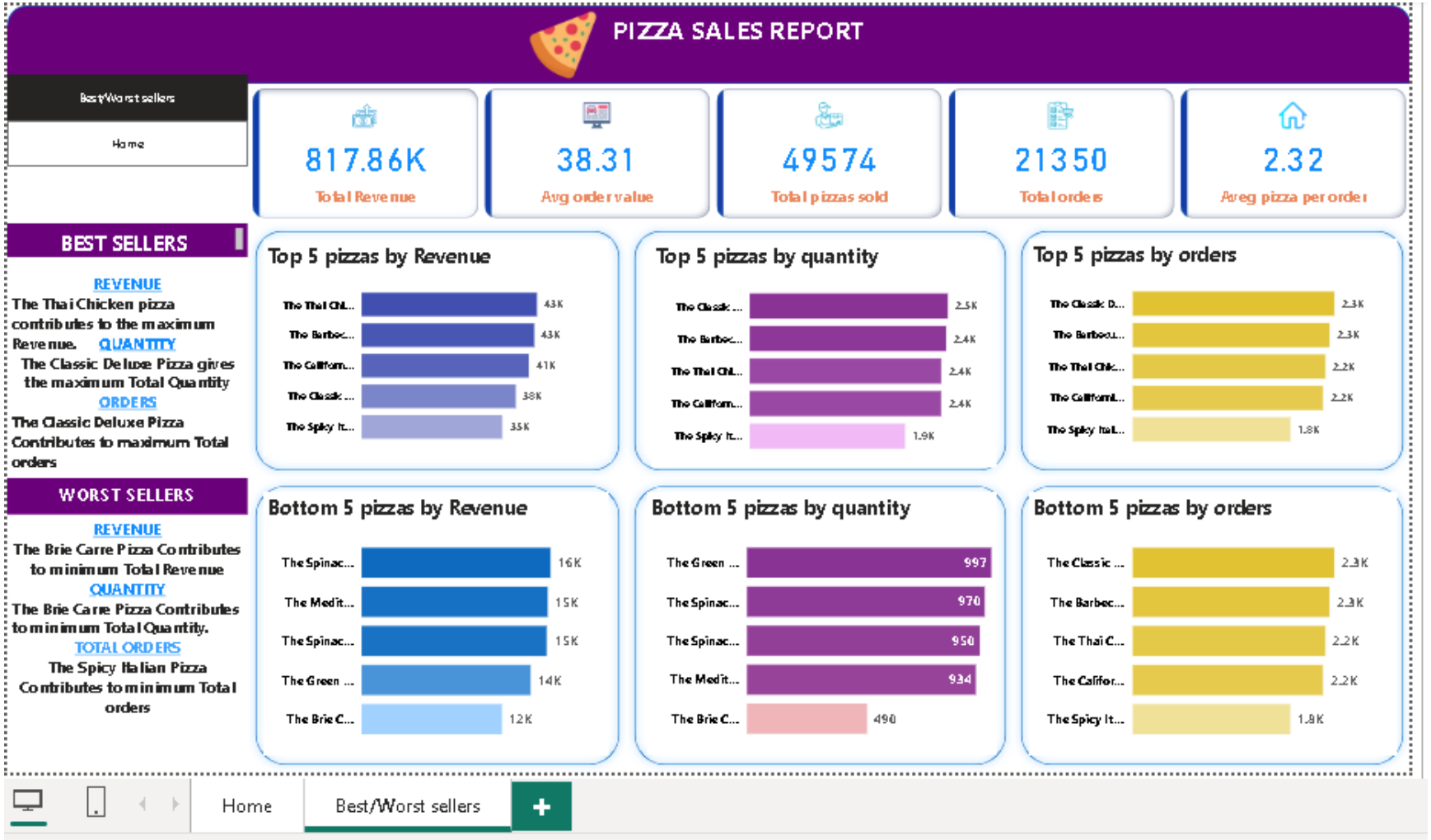
DAX Queries

1. Aveg pizza per order = [Total pizzas sold]/[Total orders]
2. Avg order value = [Total Revenue]/[Total orders]
3. order_day = UPPER(LEFT(pizza_sales[Day Name], 3))
4. order_month = UPPER(LEFT(pizza_sales[Month Name], 3))
5. Total orders = DISTINCTCOUNT(pizza_sales[order_id])
6. Total pizzas sold = SUM(pizza_sales[quantity])
7. Total Revenue = SUM(pizza_sales[total_price])

VISUALIZATION AND DASHBOARD

The final dashboards are shown below:


PIZZA SALES REPORT
Home
Best/Worst sellers
817.86K
Total Revenue
38.31
Avg order value
49574
Total pizzas sold
21350
Total orders
2.32
Avg pizza per order
BUSIEST DAYS AND TIME
DAYS
Orders are highest on Wednesdays, Fridays and Saturdays
MONTHS
There are maximum orders for the month of July and January
SALES PERFORMANCE
CATEGORY
Classic category contributed to the highest sales and total orders
SIZE
Large size pizza contributes to the maximum sales
Daily Trend for Total Orders
2.6K
2.8K
3.0K
3.0K
3.2K
3.5K
3.2K
SUN
MON
TUE
WED
THU
FRI
SAT
Monthly Trend for Orders
1845
1685
1840
1700
1853
1773
1933
1841
1661
1646
1792
1680
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
% of Sales by pizza_category
23.68%
26.91%
23.96%
25.46%
pizza_category
Classic
Supreme
Chicken
Veggie
% of Sales by pizza_size
1.72%
21.77%
45.99%
30.49%
pizza_size
Large
Medium
Regular
X-Large
XX-Large
Total pizza by Category
100%
Classic
14888
Supreme
11987
Veggie
11649
Chicken
11050
74.2%
Home
Best/Worst sellers


PIZZA SALES REPORT
Best/Worst sellers
Home
817.86K
Total Revenue
38.31
Avg order value
49574
Total pizzas sold
21350
Total orders
2.32
Avg pizza per order
BEST SELLERS
REVENUE
The Thai Chicken pizza contributes to the maximum Revenue.
QUANTITY
The Classic Deluxe Pizza gives the maximum Total Quantity
ORDERS
The Classic Deluxe Pizza Contributes to maximum Total orders
WORST SELLERS
REVENUE
The Brie Carre Pizza Contributes to minimum Total Revenue
QUANTITY
The Brie Carre Pizza Contributes to minimum Total Quantity.
TOTAL ORDERS
The Spicy Italian Pizza Contributes to minimum Total orders
Top 5 pizzas by Revenue
The Thai Chi... 43K
The Barbec... 43K
The Californ... 41K
The Classic ... 38K
The Spicy It... 35K
Top 5 pizzas by quantity
The Classic ... 2.5K
The Barbec... 2.4K
The Thai Chi... 2.4K
The Californ... 2.4K
The Spicy It... 1.9K
Top 5 pizzas by orders
The Classic D... 2.3K
The Barbecu... 2.3K
The Thai Chic... 2.2K
The Californi... 2.2K
The Spicy Ital... 1.8K
Bottom 5 pizzas by Revenue
The Spinac... 16K
The Medit... 15K
The Spinac... 15K
The Green ... 14K
The Brie C... 12K
Bottom 5 pizzas by quantity
The Green ... 997
The Spinac... 970
The Spinac... 950
The Medit... 934
The Brie C... 490
Bottom 5 pizzas by orders
The Classic ... 2.3K
The Barbec... 2.3K
The Thai C... 2.2K
The Califor... 2.2K
The Spicy It... 1.8K
Home
Best/Worst sellers

INSIGHTS

Based on the analysis of the pizza sales data, the key performance indicators are as follows:

- Total Revenue: $817,860.05
- Average Order Value: $38.31
- Total Pizzas Sold: 49,574 pizzas
- Total Orders: 21,350 orders
- Average Pizzas Per Order: 2.32 pizzas per order
- Best Days: Orders are highest on Wednesdays, Fridays and Saturdays.
- Best Months: There are maximum orders for the month of July and January
- Category: The Classic category contributed to the highest sales and total orders
- Size: The Large size pizza contributes to the maximum sales
- Total Revenue: The Thai Chicken pizza contributes to the maximum Revenue whilst the Brie Carre Pizza contributes to minimum Total Revenue
- Total Quantity: The Classic Deluxe Pizza gives the maximum Total Quantity whiles the Brie Carre Pizza Contributes to minimum Total Quantity
- Total Orders: The Classic Deluxe Pizza Contributes to maximum Total orders whiles the Spicy Italian Pizza Contributes to minimum Total orders