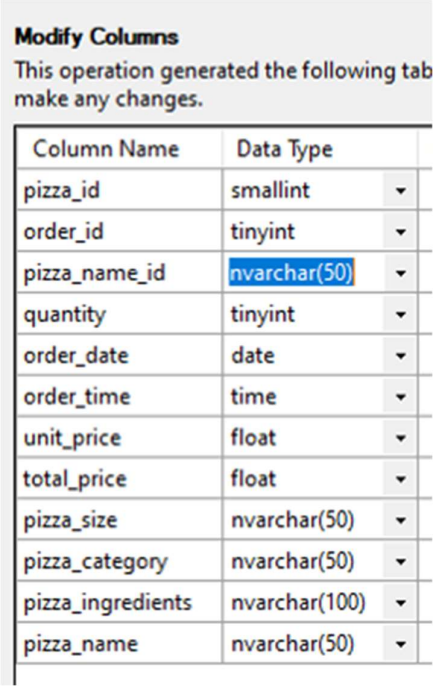
Pizza Sales Analysis

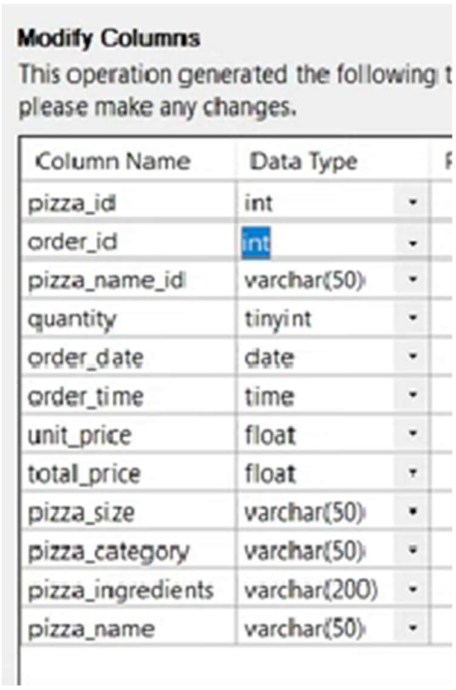
To analyze the Pizza sales Dataset, first we would analyze our data in the SQL Server and write queries for the given requirements than we would use excel for the visualization and the validation of the retrieved results.

SQL Analysis:

- Firstly we would create a database for pizza sales in our database server.
- After creation of the database, import the data files in the SQL database.
- Now, if the dataset don't has column data type appropriate, change the datatypes as it would be suitable for processing.



Original Dataset column datatypes



Modified datatype of the columns

Now start analysis of the data.

SQL Queries for the Analysis

KPI's REQUIREMENT

1. **Calculate Total Revenue**

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

Output:

	Total_Revenue
1	817860.05083847

2. **Calculate Average Order Value**

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

Output:

Results Messages

	Average_Order_Value
1	38.3072623343546

3. **Find Out the Number of Total Pizza Sold**

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

Output:

Results Messages

	Total_pizza_sold
1	49574

4. **Find Total Orders Placed**

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

Output:

Results Messages

	Total_Order
1	21350

5. **Find Average number of Pizza 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_pizza_per_Order
FROM pizza_sales
```

Output:

Results | Messages

	Avg_pizza_per_Order
1	2.32

Chart's Requirements

1. **Retrieve 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

2. **Retrieve Hourly Trends for Total Orders**

```
SELECT DATEPART(HOUR, order_time) AS Order_Hours, COUNT(DISTINCT order_id) AS Total_Orders
FROM pizza_sales
GROUP BY DATEPART(HOUR, order_time)
ORDER BY DATEPART(HOUR, order_time)
```

Output:

Results | Messages

	Order_Hours	Total_Orders
1	9	1
2	10	8
3	11	1231
4	12	2520
5	13	2455
6	14	1472
7	15	1468
8	16	1920
9	17	2336
10	18	2399
11	19	2009
12	20	1642
13	21	1198
14	22	663
15	23	28

3. **Retrieve % of Sales by Pizza Category**

```
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_Sales
FROM pizza_sales
GROUP BY pizza_category
```

Output:

Results | Messages

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

Note: If we want to apply the Month, Quarter, Week filters to the above queries we can use WHERE clause.

Examples:

Query:

```
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 WHERE MONTH(order_date) = 1) AS DECIMAL(10, 2)) AS PCT_Sales
FROM pizza_sales
WHERE MONTH(order_date) = 1
GROUP BY pizza_category
```

Output:

Results | Messages

	pizza_category	Total_Sales	PCT_Sales
1	Classic	18619.40	26.68
2	Chicken	16188.75	23.20
3	Veggie	17055.40	24.44
4	Supreme	17929.75	25.69

Here MONTH (order_date) = 1 indicates that the output is for the month of January.

```
SELECT DATENAME(DW, order_date) AS order_day, COUNT(DISTINCT order_id) AS
total_orders
FROM pizza_sales
WHERE DATEPART(QUARTER, order_date) = 1
GROUP BY DATENAME(DW, order_date)
```

Here DATEPART (QUARTER, order_date) = 1 indicates that the output is for the Quarter 1.
MONTH (order_date) = 3 indicates output for Quarter 3.

4. **Retrieve % of Sales by pizza size**

```
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_Sales
FROM pizza_sales
GROUP BY pizza_size
ORDER BY PCT_Sales
```

Output:

Results | Messages

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

5. **Calculate Total Pizza sold by pizza category**

```
SELECT pizza_category, SUM(quantity) AS Total_pizza_sold
FROM pizza_sales
GROUP BY pizza_category
```

Output:

Results | Messages

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

6. **Calculate Top 5 Best Selling pizzas by Total pizza sold**

```
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:

Results | Messages

	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

7. **Calculate Bottom 5 wrost selling pizza names**

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

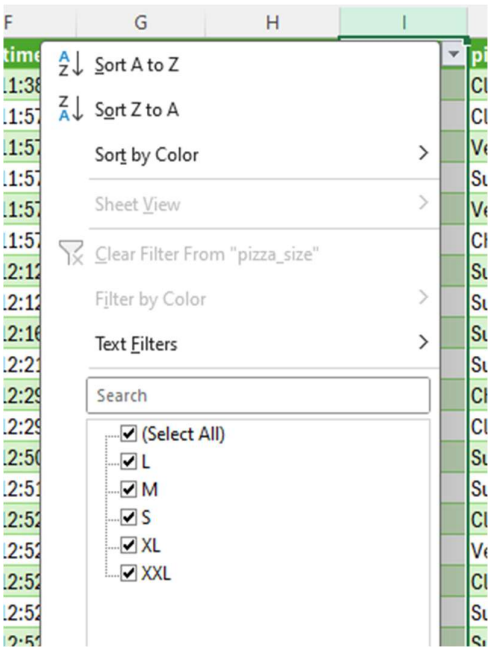
Output:

Results | Messages

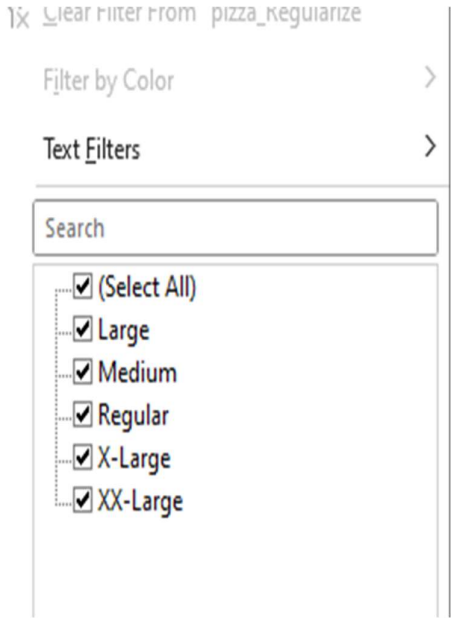
	pizza_name	Total_pizza_sold
1	The Brie Carre Pizza	490
2	The Mediterranean Pizza	934
3	The Calabrese Pizza	937
4	The Spinach Supreme Pizza	950
5	The Soppressata Pizza	961

Excel Analysis and Visualization

- In the process of the Data analysis with Excel, first import the dataset to Excel by either direct csv file or by import the data from the SQL Server to the Excel.
- After importing the dataset to the Excel, perform **Data Cleaning** if needed.
    - Change pizza size names for the better understanding

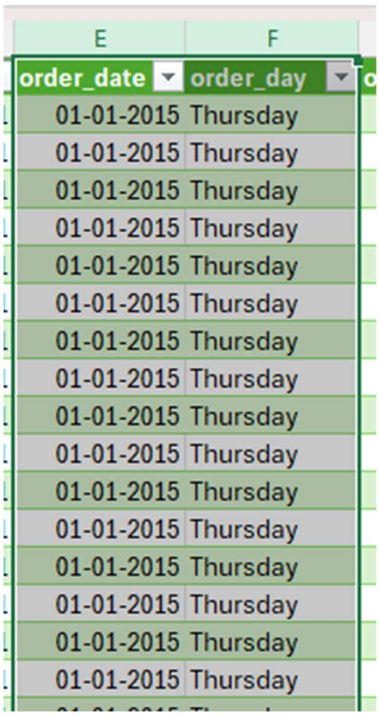


Size name before change



size name of the pizza after name change

- Perform **Data Processing** for the further steps.
    - Extract order day of the pizza from the order_date column using TEXT() function for the better understanding and data analysis.



E	F
order_date	order_day
01-01-2015	Thursday
01-01-2015	Thursday
01-01-2015	Thursday
01-01-2015	Thursday
01-01-2015	Thursday
01-01-2015	Thursday
01-01-2015	Thursday
01-01-2015	Thursday
01-01-2015	Thursday
01-01-2015	Thursday
01-01-2015	Thursday
01-01-2015	Thursday
01-01-2015	Thursday
01-01-2015	Thursday
01-01-2015	Thursday

- **Data Transformation**: Form a new column total_order from the order_id column which will keep the record how many times a specific order_id appear using COUNTIF function and convert the total_order values in distinct count to avoid the use of repeating order id's.
- **Data Analysis:** Calculate the Total revenue, Total Orders, Total Number of Pizza sold, Average Order Value and Average Pizza Per Order using Functions.

KPI's through EXCEL

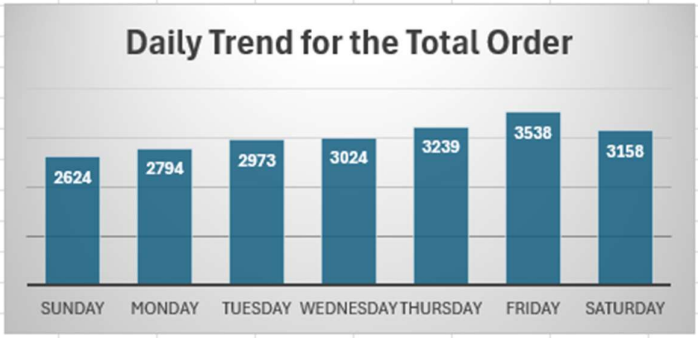
Total Revenue	Total Orders	Total Pizzas sold		
Sum of total_price	**Sum of total_orders**	**Sum of quantity**	Average Order Value	Average Pizzas Per Order
817860.0508	21350	49574	$38.31	2.32

CHARTS REQUIREMENT

We are creating the visualizations using the pivot tables in the Excel.

1. Daily Trend for Total Orders:

Daily Trend for Total Order	
Row Labels	**Sum of total_orders**
Sunday	2624
Monday	2794
Tuesday	2973
Wednesday	3024
Thursday	3239
Friday	3538
Saturday	3158
Grand Total	**21350**



This visualization shows how the order of the pizza varies with respect to the days. Here we can see that the on the **weekends pizza order is highest among the normal days.**

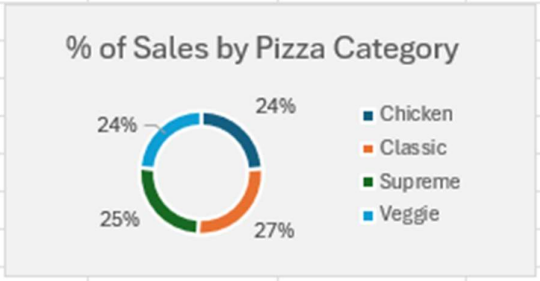
2. Hourly Trend for Total Orders:

Hourly Trend for Total Order	
Row Labels	**Sum of total_orders**
09	**1**
10	**8**
11	**1231**
12	**2520**
13	**2455**
14	**1472**
15	**1468**
16	**1920**
17	**2336**
18	**2399**
19	**2009**
20	**1642**
21	**1198**
22	**663**
23	**28**
Grand Total	**21350**

This visualization clearly shows that from **12:00pm – 1:00pm and 5:00pm – 6:00pm the** pizza order is highest compare to the other times in a day.

3. **Percentage of Sales by Pizza Category:**

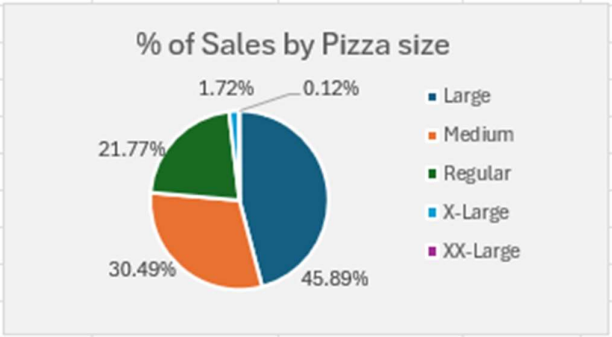
% of Sales by Pizza Category	
Row Labels	**Sum of total_price**
Chicken	23.96%
Classic	26.91%
Supreme	25.46%
Veggie	23.68%
Grand Total	**100.00%**



This visualization shows that the **Chicken and Classic category pizza** has highest percentage of the sells among all other categories.

4. **Percentage of Sales by Pizza Size:**

% of Sales by Pizza Size	
Row Labels	**Sum of total_price**
Large	45.89%
Medium	30.49%
Regular	21.77%
X-Large	1.72%
XX-Large	0.12%
Grand Total	**100.00%**

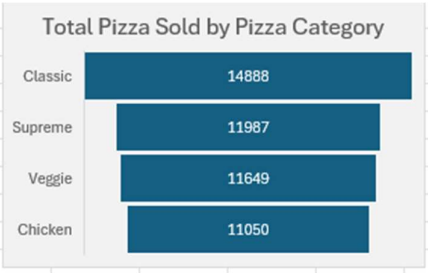


This visualization and table clearly show that the **Large and medium** size pizza has highest sales percentage than other pizza types.

5. **Total Pizzas Sold by Pizza Category:**

Total Pizza Sold by Pizza Category	
Row Labels	**Sum of quantity**
Classic	14888
Supreme	11987
Veggie	11649
Chicken	11050
Grand Total	**49574**

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



The table and funnel chart clearly shows the total pizzas sold by different categories in which the **classic category** has highest number of pizza sold among all categories.

6. **Top 5 Best Sellers by Total Pizzas Sold:**

Top 5 Best Selling Pizzas	
Row Labels	**Sum of quantity**
The Thai Chicken Pizza	2371
The Pepperoni Pizza	2418
The Hawaiian Pizza	2422
The Barbecue Chicken Pizza	2432
The Classic Deluxe Pizza	2453
Grand Total	**12096**

7. **Bottom 5 Worst Sellers by Total Pizzas Sold:**

Bottom 5 wrost selling pizzas	
Row Labels	**Sum of quantity**
The Brie Carre Pizza	490
The Mediterranean Pizza	934
The Calabrese Pizza	937
The Spinach Supreme Pizza	950
The Soppressata Pizza	961
Grand Total	**4272**