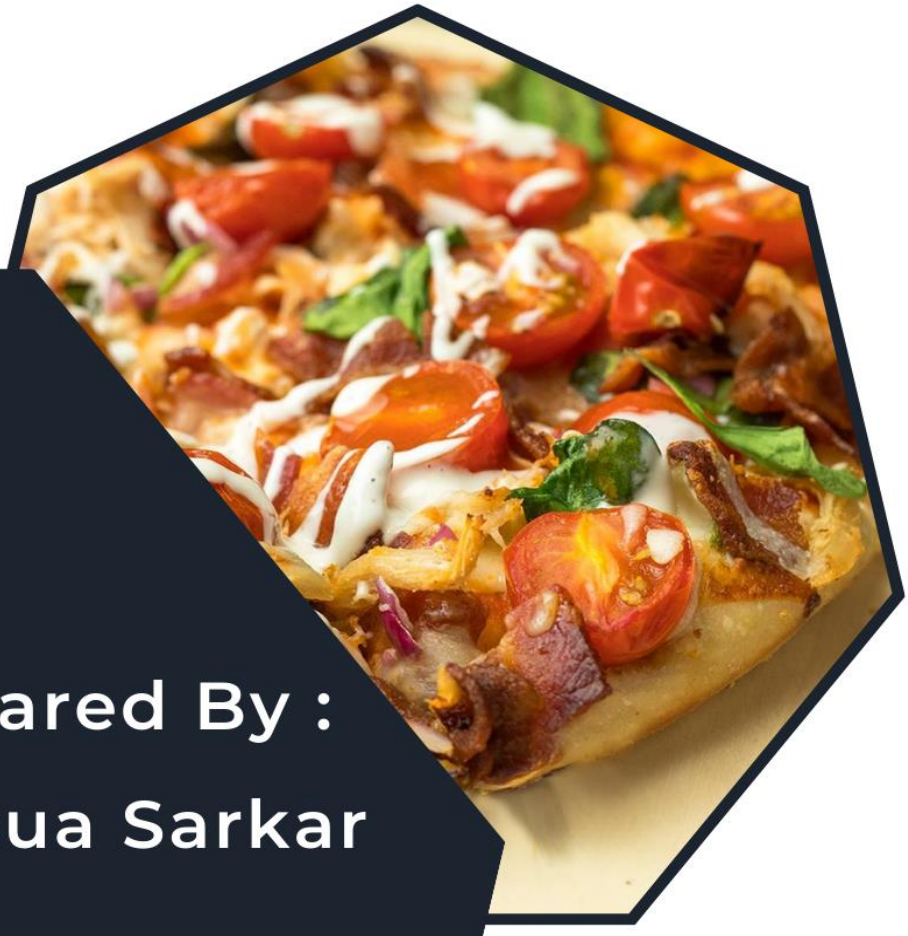
PIZZA SALES ANALYSIS REPORT

THE PIZZERIA

USING MYSQL



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Introduction

In the competitive food industry, data-driven decision-making is essential for businesses to stay ahead. This project analyses pizza sales data to uncover valuable insights that can enhance a pizzeria's operational efficiency and profitability. By examining various aspects of sales, such as order frequency, revenue generation, and customer preferences, this analysis will provide a detailed understanding of the factors driving sales performance.

The project is structured into three levels of analysis: Basic, Intermediate, and Advanced. The Basic analysis addresses foundational questions such as total orders, revenue, and popular pizza types. The Intermediate analysis delves deeper into sales patterns, including hourly order distribution and category-wise pizza preferences. Finally, the Advanced analysis provides a more granular view of revenue contributions and the performance of pizza types within specific categories. Through this structured approach, the project aims to equip stakeholders with actionable insights that can guide menu optimisation, marketing strategies, and operational improvements, ultimately driving the business toward greater success.

Problem statement

The primary goal of this project is to conduct a comprehensive analysis of pizza sales data to gain insights into customer preferences, sales trends, and revenue generation. By leveraging SQL queries in MySQL, the project aims to address key questions that can inform business decisions, such as understanding which pizzas are most popular, identifying peak sales periods, and analyzing the revenue contribution of different pizza types. The insights derived from this analysis will help the business optimize its menu offerings, pricing strategy, and marketing efforts to maximize profitability and customer satisfaction.

Project Objectives:

The primary objectives of this project are to analyse the pizza sales data to achieve the following:

- Understand the overall sales performance and revenue generation.
- Identify customer preferences in terms of pizza types and sizes.
- Determine the distribution of sales over different times and categories.
- Analyse revenue contributions of various pizza types and categories.

Analysis Questions:

To achieve these objectives, the following specific questions will be addressed:

Basic Analysis:

1. Order Volume: What is the total number of orders placed? Revenue Calculation: How much total revenue has been generated from pizza sales?
2. Pricing Insight: Which pizza is the highest-priced?
3. Size Popularity: What is the most commonly ordered pizza size?
4. Top Pizza Types: Which are the top 5 most ordered pizza types and their respective quantities

Intermediate Analysis:

1. Category-Wise Sales: What is the total quantity of each pizza category ordered?
2. Hourly Sales Distribution: How are orders distributed by the hour of the day?
3. Category Distribution: How do pizza orders distribute across different categories?
4. Daily Order Trends: What is the average number of pizzas ordered per day, grouped by date?
5. Top Pizza Revenue: Which are the top 3 most ordered pizza types based on revenue.

Advanced Analysis:

1. Revenue Contribution: What is the percentage contribution of each pizza type to total revenue?
2. Cumulative Revenue: How has the cumulative revenue generated from pizza sales evolved over time?
3. Category-Specific Top Pizzas: What are the top 3 most ordered pizza types based on revenue within each pizza category?

Setting Up the Database for Pizza Sales Analysis

In this project, I initiated the process of analyzing pizza sales by setting up a MySQL database to store and organize the relevant data.
The steps taken are as follows:

1. Creating the Database:

I started by creating a new database named PIZZERIA to hold all the tables and data required for the analysis.

```
1 • CREATE DATABASE PIZZERIA;
2 • USE PIZZERIA;
```

2.Verifying Data Import:

After importing the data, I performed an initial check by selecting all records from the pizzas and pizza_types tables to ensure that the data was correctly loaded.

```
SELECT * FROM pizzas;
SELECT * FROM pizza_types;
```

3.Creating the orders Table:

Next, I created a table named orders to store details of each pizza order. This table includes columns for order_id, order_date, and order_time. The order_id column is set as the primary key to uniquely identify each order.

```
• CREATE TABLE orders(
  order_id int NOT NULL,
  order_date DATE NOT NULL,
  order_time TIME NOT NULL,
  PRIMARY KEY(order_id)
  );
```

5 Oreating the order_details Table:

```
CREATE TABLE order_details(
order_details_id int NOT NULL,
order_id int NOT NULL,
pizza_id TEXT NOT NULL,
quantity INT NOT NULL,
PRIMARY KEY(order_details_id)
);
```

To capture the details of each order, I created the order_details table. This table stores information such as order_details_id, order_id, pizza_id, and quantity. The order_details_id is the primary key, ensuring each record is unique, while order_id acts as a foreign key to link to the orders table

5. Verification of Data Structure:

Finally, I verified the structure of the order_details and orders table by selecting all its records to ensure that ,the tables are correctly created and ready to store the data.

```
SELECT * FROM orders;
SELECT * FROM order_details;
```

Basic Analysis

1. Order Volume: What is the total number of orders placed? Revenue Calculation: How much total revenue has been generated from pizza sales?

```
-- Retrieve the total number of orders placed. --
SELECT (count(*))AS TOTAL_ORDERS FROM orders;
```

Total Order: 21350

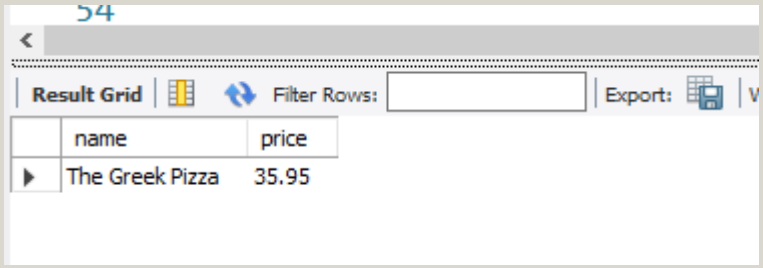
2. Calculate the total revenue generated from pizza sales.

```
SELECT SUM(order_details.quantity * pizzas.price) AS TOTAL_SALES
  FROM order_details
   JOIN
   pizzas
   ON order_details.pizza_id =pizzas.pizza_id;
```

Total Revenue: 817860 pounds

3. Pricing Insight: Which pizza is the highest-priced?

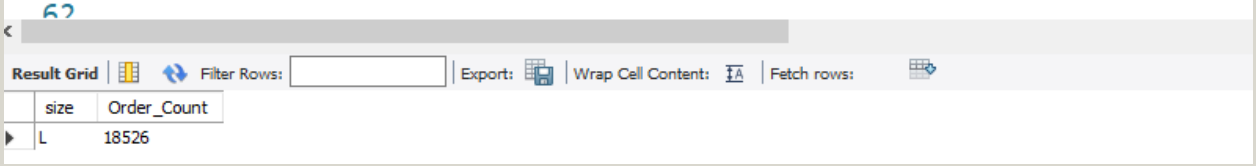
```
47      --  Identify the highest-priced pizza. --
48 •    SELECT pizza_types.name, pizzas.price
49      FROM pizza_types
50      JOIN
51      pizzas
52      ON pizza_types.pizza_type_id = pizzas.pizza_type_id
53      ORDER BY pizzas.price DESC LIMIT 1;
54
```



The highest priced pizza is:"The Greek Pizza"

4. Size Popularity: What is the most commonly ordered pizza size?

```
54      --  Identify the most common pizza size ordered.--
55 •    SELECT pizzas.size,COUNT(order_details.pizza_id) AS Order_Count
56      FROM pizzas
57      JOIN
58      order_details
59      ON pizzas.pizza_id = order_details.pizza_id
60      GROUP BY pizzas.size
61      ORDER BY Order_Count DESC LIMIT 1;
62
```



Most popular pizza size is “Large”

5. Top Pizza Types: Which are the top 5 most ordered pizza types and their respective quantities

```
63    -- List the top 5 most ordered pizza
64    -- types along with their quantities. --
65 •  SELECT pizza_types.name AS Pizza_Name,
66    SUM(order_details.quantity) AS Total_order
67    FROM pizza_types
68    JOIN pizzas
69    ON
70    pizza_types.pizza_type_id = pizzas.pizza_type_id
71    JOIN order_details
72    ON
73    order_details.pizza_id =pizzas.pizza_id
74    GROUP BY  pizza_types.name
75    ORDER BY Total_order DESC LIMIT 5;
76
```

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

Pizza_Name	Total_order
The Classic Deluxe Pizza	2453
The Barbecue Chicken Pizza	2432
The Hawaiian Pizza	2422
The Pepperoni Pizza	2418
The Thai Chicken Pizza	2371

The top five pizza type ordered is-

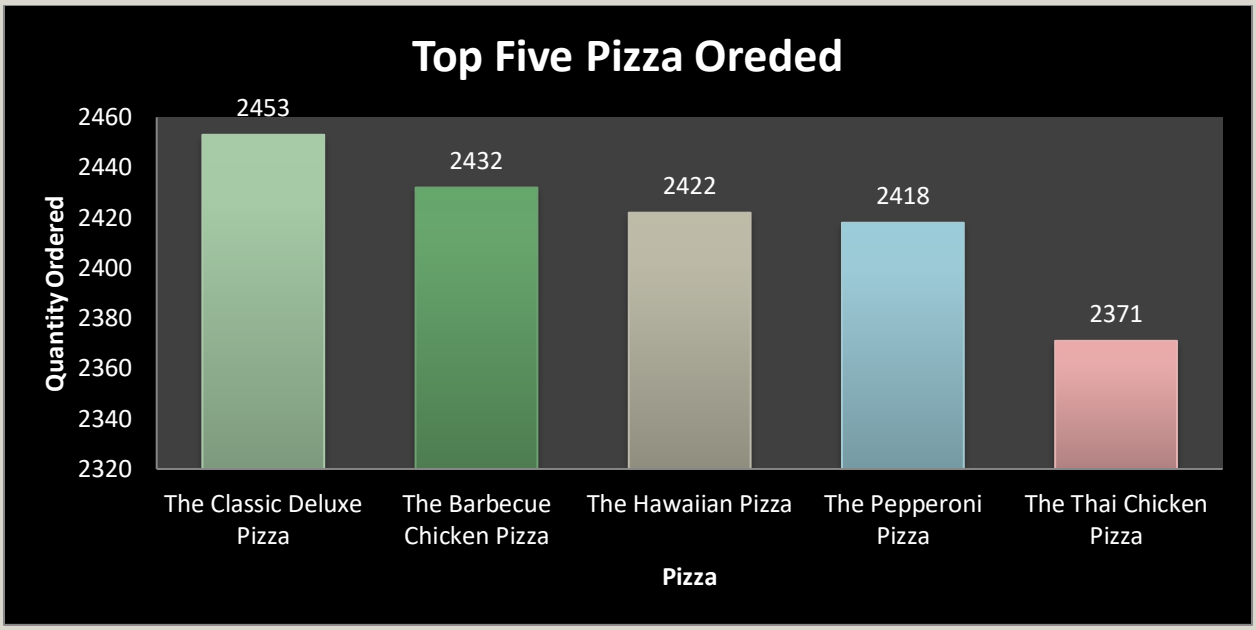
First is “The Classic Deluxe Pizza” with total number of order - 2453 pizzas.

Second “The Barbecue Chicken Pizza” with total number of order - 2432 pizzas.

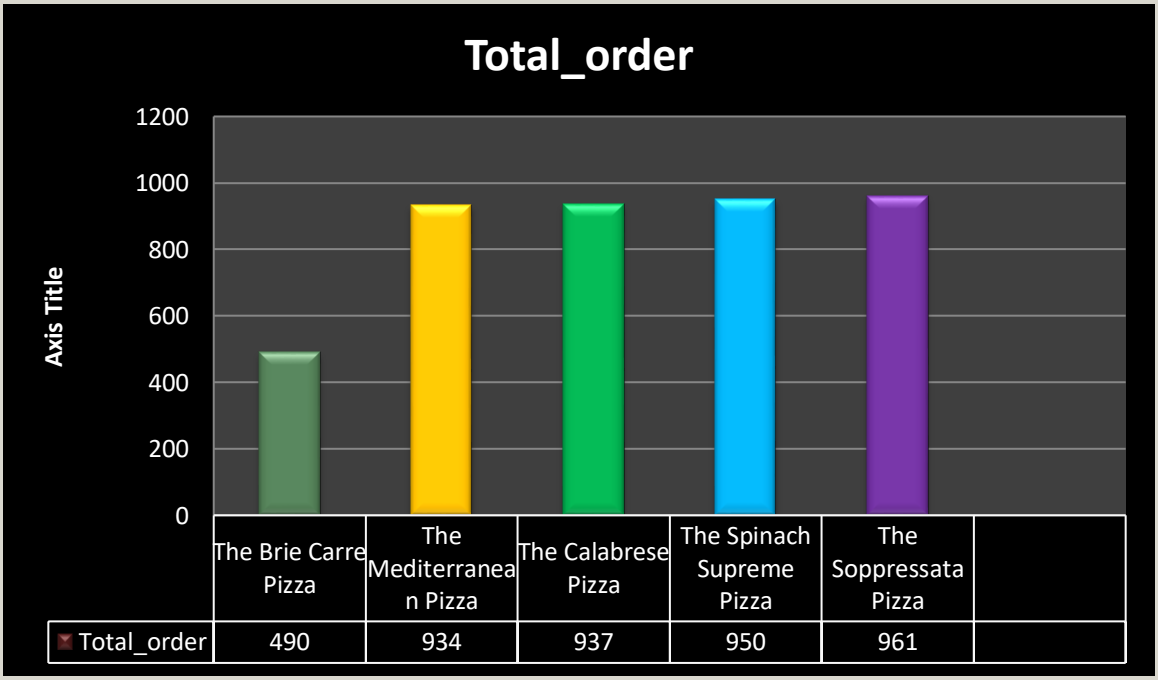
Third “The Hawaiian Pizza” with total number of order - 2422 pizzas.

Fourth “The Pepperoni Pizza” with total number of order - 2418 pizzas.

Fifth “The Thai chicken Pizza” with total number of order - 2371 pizzas.



List Ordered Pizzas



The list orderd pizzas are –

The Brie Carre Pizza with 490 orders only, The Mediterran Pizza with 934 orders only, The Calabrese Pizza with 937 orders only, The Spinach Supreme Pizza with 950 orders onl and The Soppressat Pizza with 961 orders only.

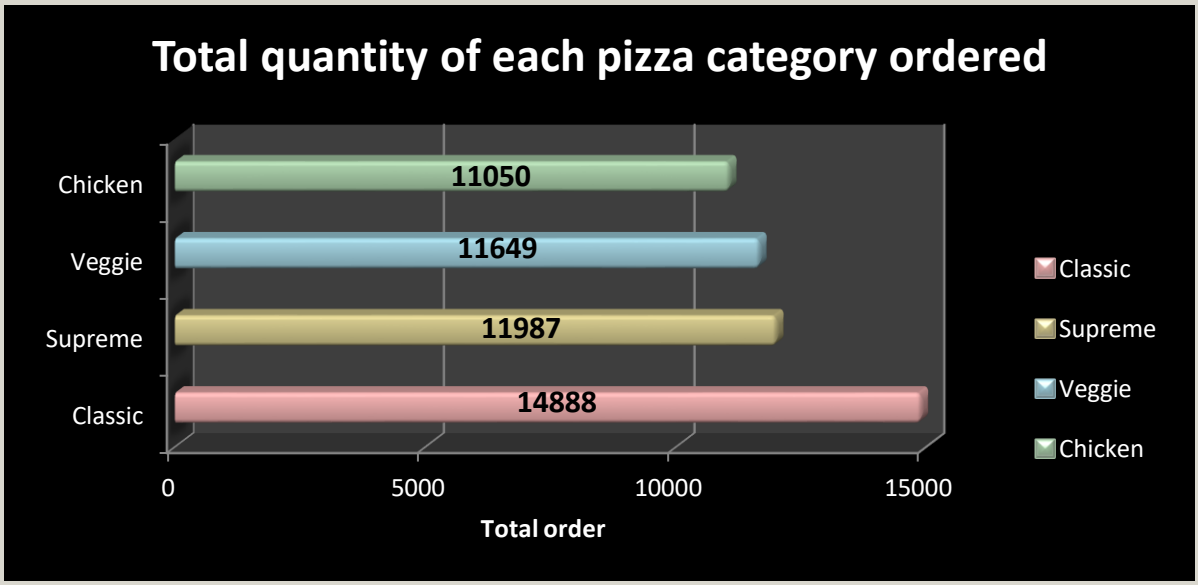
Intermediate Analysis

1. What is the total quantity of each pizza category ordered?

```
92 •  SELECT pizza_types.category ,
93    SUM(order_details.quantity) AS order_quantity
94    FROM  pizza_types
95    JOIN pizzas
96    ON pizza_types.pizza_type_id = pizzas.pizza_type_id
97    JOIN order_details
98    ON order_details.pizza_id = pizzas.pizza_id
99    GROUP BY pizza_types.category
100   ORDER BY order_quantity DESC;
101
```

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

category	order_quantity
Classic	14888
Supreme	11987
Veggie	11649
Chicken	11050

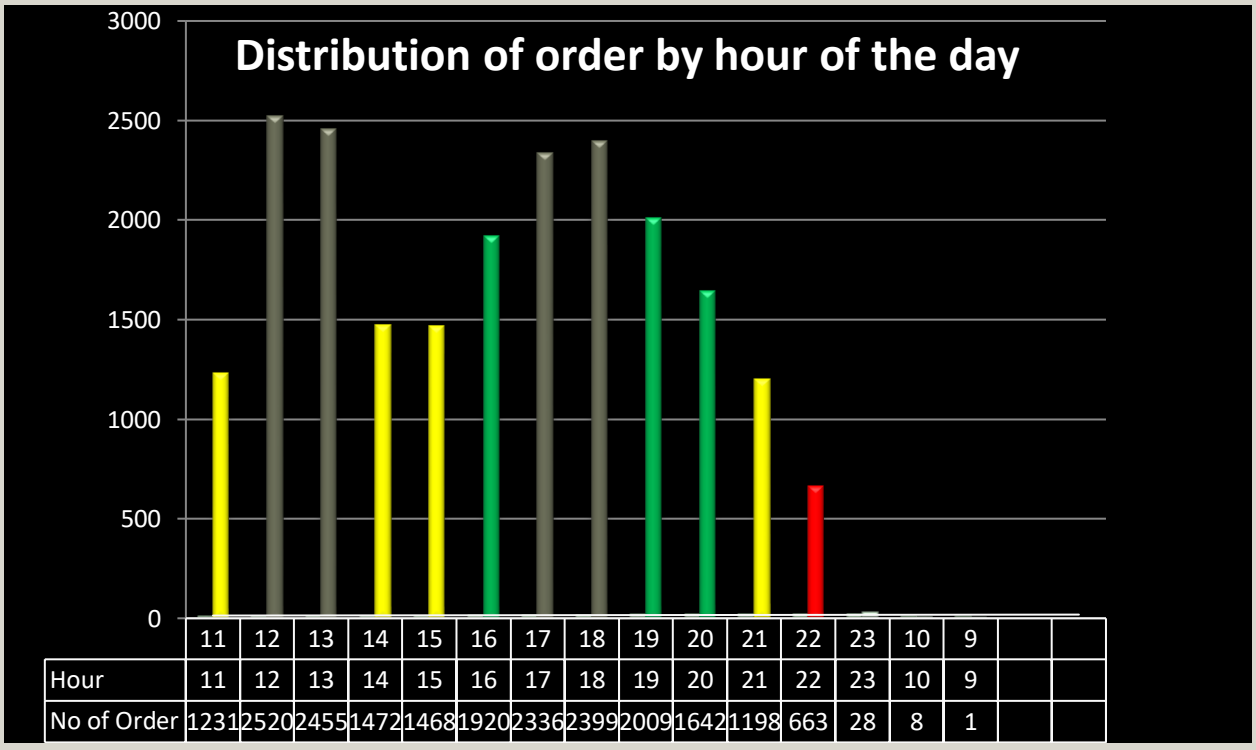


2. How are orders distributed by the hour of the day?

```
101    -- Determine the distribution of
102    --  orders by hour of the day. --
103 •  SELECT hour(order_time) AS Hour,
104     count(order_id) AS Number_of_Order
105    FROM orders
```

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

Hour	Number_of_Order
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
10	8
9	1



The busiest hours of the day are 12 pm to 2pm in the afternoon and 4 pm to 9pm.

1. Category Distribution: How do pizza orders distribute across different categories?

```
108    -- categoriwise distribution of pizza --
109 •  SELECT category,
110    COUNT(name) As Number_of_Diffrent_pizza_in_this_Category
111    FROM pizza_types
112    GROUP BY category;
113
```

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

category	Number_of_Diffrent_pizza_in_this_Category
Chicken	6
Classic	8
Supreme	9
Veggie	9

2. Daily Order Trends: What is the average number of pizzas ordered per day, grouped by date?

```
107   -- Group the orders by date and calculate
108   -- the avarage number of pizza ordered by date --
109 • SELECT round(avg(quantity),0) AS avarage_order_per_day FROM
110   (SELECT orders.order_date,sum(order_details.quantity) AS quantity
111    FROM  orders JOIN order_details
112    ON orders.order_id = order_details.order_id
113    GROUP BY
114    orders.order_date) AS order_quantity;
```

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

avarage_order_per_day
138

Average Per day order is 138.

3. Pizza Revenue: Which are the top 3 most ordered pizza types based on revenue.

```
115     -- Determine  top 3 most ordered pizza type base on revenue --
116 •   SELECT pizza_types.name AS Pizza_Name,
117     sum(order_details.quantity*pizzas.price) AS revenue
118     from pizza_types
119     JOIN
120     pizzas
121     ON pizza_types.pizza_type_id=pizzas.pizza_type_id
122     JOIN order_details
123     ON order_details.pizza_id = pizzas.pizza_id
124     GROUP BY pizza_types.name
125     ORDER BY revenue DESC LIMIT 3;
```

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

Pizza_Name	revenue
The Thai Chicken Pizza	43434.25
The Barbecue Chicken Pizza	42768
The California Chicken Pizza	41409.5

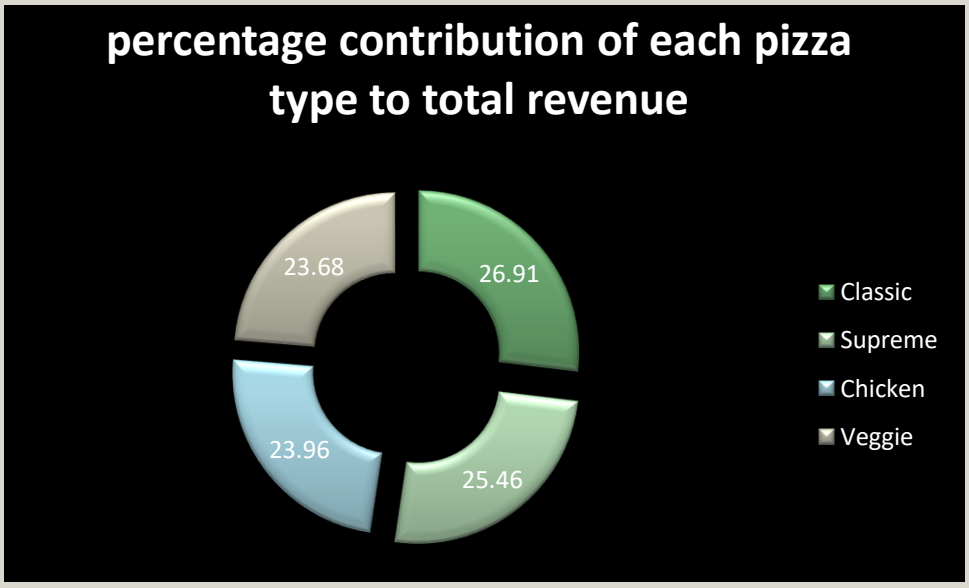
Top three revenue generating pizza is

1. The Thai Chicken Pizza
2. The Barbecue Chicken Pizza
3. The California Chicken Pizza

Advanced Analysis:

1. Revenue Contribution: What is the percentage contribution of each pizza type to total revenue?

```
SELECT pizza_types.category,
 round(sum(order_details.quantity*pizzas.price)/ (SELECT
round(sum(order_details.quantity * pizzas.price),
2) AS TOTAL_SALES
  FROM order_details
   JOIN
   pizzas    ON order_details.pizza_id =pizzas.pizza_id)*100,2) AS revenue
from pizza_types
JOIN
pizzas
ON pizza_types.pizza_type_id=pizzas.pizza_type_id
JOIN order_details
ON order_details.pizza_id = pizzas.pizza_id
GROUP BY pizza_types.category
ORDER BY revenue DESC;
```



2. Cumulative Revenue: How has the cumulative revenue generated from pizza sales evolved over time?

Step -1

Revenue by day:

```
153 •  SELECT orders.order_date,
154    sum(order_details.quantity * pizzas.price)as revenue
155    FROM order_details JOIN pizzas
156    ON order_details.pizza_id = pizzas.pizza_id
157    JOIN
158    orders
159    ON orders.order_id = order_details.order_id
160    GROUP BY orders.order_date;
```

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

order_date	revenue
2015-01-01	2713.8500000000004
2015-01-02	2731.8999999999996
2015-01-03	2662.3999999999996
2015-01-04	1755.4500000000003
2015-01-05	2065.95
2015-01-06	2428.95
2015-01-07	2202.2000000000003
2015-01-08	2838.3499999999995
2015-01-09	2127.3500000000004
2015-01-10	2463.95

Step -2
Cumulative Revenue:

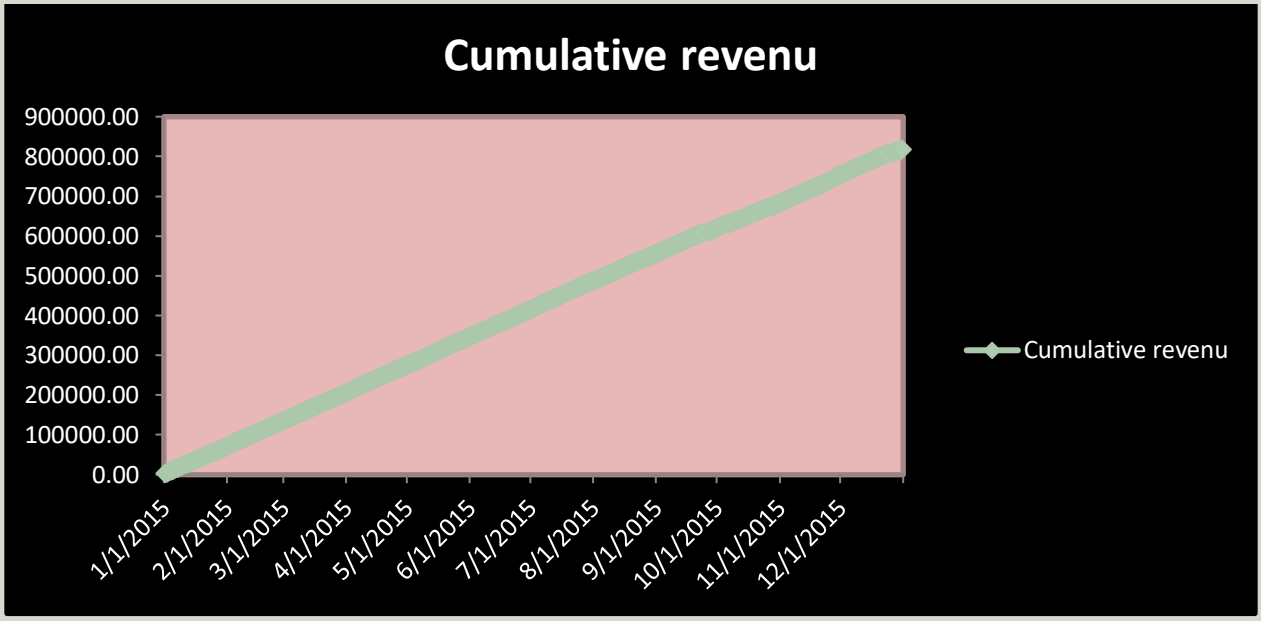
```
161    -- step 2--
162 •  SELECT order_date,
163    SUM(revenue) OVER(ORDER BY order_date) as cumulative_revenue
164    FROM
165    (SELECT orders.order_date,
166    sum(order_details.quantity * pizzas.price)as revenue
167    FROM order_details JOIN pizzas
168    ON order_details.pizza_id = pizzas.pizza_id
169    JOIN
170    orders
171    ON orders.order_id = order_details.order_id
172    GROUP BY orders.order_date) AS Sales;
```

Result Grid | Filter Rows:

order_date	cumulative_revenue
2015-01-01	2713.8500000000004
2015-01-02	5445.75
2015-01-03	8108.15
2015-01-04	9863.6
2015-01-05	11929.55
2015-01-06	14358.5
2015-01-07	16560.7
2015-01-08	19399.05
2015-01-09	21526.4
2015-01-10	23990.350000000002
2015-01-11	25862.65
2015-01-12	27781.7
2015-01-13	29831.300000000003
2015-01-14	32358.700000000004
2015-01-15	34343.50000000001
2015-01-16	36937.65000000001
2015-01-17	39001.75000000001
2015-01-18	40978.600000000006
2015-01-19	43365.75000000001

The cumulative revenue data tracks the total revenue generated by the business over a specific period. This metric is crucial for understanding the overall financial performance and growth trajectory of the business.

The data indicates a consistent increase in cumulative revenue over the specified period. This upward trend suggests a steady flow of sales, which is a positive sign for the business's financial health.

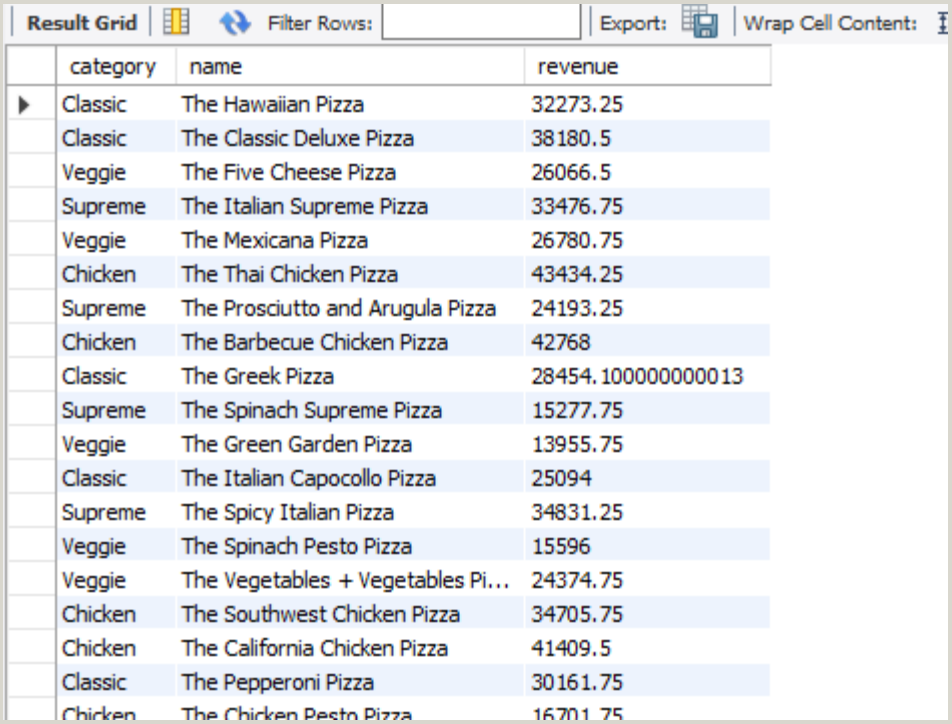


2. Category-Specific Top Pizzas: What are the top 3 most ordered pizza types based on revenue within each pizza category?

Step-1: **Calculating Revenue for Each Pizza Type**

In this step, the revenue for each pizza type was calculated by summing the product of the quantity ordered and the price of each pizza. This was done for each pizza type within its respective category. The SQL query for this step is as follows:

```sql
-- Determine the top 3 most ordered pizza type
 -- Based on revenue for each pizza category
 -- Step - 1
SELECT pizza_types.category,pizza_types.name,
 sum((order_details.quantity)*pizzas.price) AS revenue
 FROM pizza_types JOIN pizzas
ON pizza_types.pizza_type_id = pizzas.pizza_type_id
 JOIN order_details
 ON order_details.pizza_id = pizzas.pizza_id
 GROUP BY pizza_types.category,pizza_types.name;
```



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

category	name	revenue
Classic	The Hawaiian Pizza	32273.25
Classic	The Classic Deluxe Pizza	38180.5
Veggie	The Five Cheese Pizza	26066.5
Supreme	The Italian Supreme Pizza	33476.75
Veggie	The Mexicana Pizza	26780.75
Chicken	The Thai Chicken Pizza	43434.25
Supreme	The Prosciutto and Arugula Pizza	24193.25
Chicken	The Barbecue Chicken Pizza	42768
Classic	The Greek Pizza	28454.100000000013
Supreme	The Spinach Supreme Pizza	15277.75
Veggie	The Green Garden Pizza	13955.75
Classic	The Italian Capocollo Pizza	25094
Supreme	The Spicy Italian Pizza	34831.25
Veggie	The Spinach Pesto Pizza	15596
Veggie	The Vegetables + Vegetables Pi...	24374.75
Chicken	The Southwest Chicken Pizza	34705.75
Chicken	The California Chicken Pizza	41409.5
Classic	The Pepperoni Pizza	30161.75
Chicken	The Chicken Pesto Pizza	16701.75

Step-2: **Ranking Pizzas by Revenue Within Each Category**

After calculating the revenue, pizzas were ranked within their categories based on the revenue generated. This was done using the RANK() function,

which assigns a rank to each pizza type within its category according to its revenue. The SQL query for this step is:

```
184     -- Step -2
185 •   SELECT category,name, revenue,
186     RANK() OVER(PARTITION BY category ORDER BY revenue DESC) AS revn
187   FROM
188   (SELECT pizza_types.category,pizza_types.name,
189     sum((order_details.quantity)*pizzas.price) AS revenue
190     FROM pizza_types JOIN pizzas
191   ON pizza_types.pizza_type_id = pizzas.pizza_type_id
192     JOIN order_details
193     ON order_details.pizza_id = pizzas.pizza_id
194     GROUP BY pizza_types.category,pizza_types.name) AS table_a;
```

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

category	name	revenue	revn
Chicken	The Thai Chicken Pizza	43434.25	1
Chicken	The Barbecue Chicken Pizza	42768	2
Chicken	The California Chicken Pizza	41409.5	3
Chicken	The Southwest Chicken Pizza	34705.75	4
Chicken	The Chicken Alfredo Pizza	16900.25	5
Chicken	The Chicken Pesto Pizza	16701.75	6
Classic	The Classic Deluxe Pizza	38180.5	1
Classic	The Hawaiian Pizza	32273.25	2
Classic	The Pepperoni Pizza	30161.75	3
Classic	The Greek Pizza	28454.100000000013	4
Classic	The Italian Capocollo Pizza	25094	5
Classic	The Napolitana Pizza	24087	6
Classic	The Big Meat Pizza	22968	7
Classic	The Pepperoni, Mushroom, ...	18834.5	8
Supreme	The Spicy Italian Pizza	34831.25	1
Supreme	The Italian Supreme Pizza	33476.75	2
Supreme	The Sicilian Pizza	30940.5	3
Supreme	The Pepper Salami Pizza	25529	4
Supreme	The Prosciutto and Arugula ...	24193.25	5
Supreme	The Soppressata Pizza	16425.75	6

Step: 3: **Selecting the Top 3 Pizzas per Category**

Finally, the top 3 pizzas in terms of revenue for each category were selected. This step filtered the ranked pizzas to include only those with a rank of 1, 2, or 3. The SQL query used is:

```sql
SELECT category,name, revenue,pizza_rank
FROM
(SELECT category,name, revenue,
RANK() OVER(PARTITION BY category ORDER BY revenue DESC) AS pizza_rank
FROM
(SELECT pizza_types.category,pizza_types.name,
sum((order_details.quantity)*pizzas.price) AS revenue
FROM pizza_types JOIN pizzas
ON pizza_types.pizza_type_id = pizzas.pizza_type_id
JOIN order_details
ON order_details.pizza_id = pizzas.pizza_id
GROUP BY pizza_types.category,pizza_types.name) AS table_a) AS table_b
WHERE pizza_rank<=3;
```

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

category	name	revenue	pizza_rank
Chicken	The Thai Chicken Pizza	43434.25	1
Chicken	The Barbecue Chicken Pizza	42768	2
Chicken	The California Chicken Pizza	41409.5	3
Classic	The Classic Deluxe Pizza	38180.5	1
Classic	The Hawaiian Pizza	32273.25	2
Classic	The Pepperoni Pizza	30161.75	3
Supreme	The Spicy Italian Pizza	34831.25	1
Supreme	The Italian Supreme Pizza	33476.75	2
Supreme	The Sicilian Pizza	30940.5	3
Veggie	The Four Cheese Pizza	32265.70000000065	1
Veggie	The Mexicana Pizza	26780.75	2
Veggie	The Five Cheese Pizza	26066.5	3

The query successfully returned the top 3 most ordered pizza types based on revenue for each category. These results can now be used to gain insights into which pizzas are driving the most revenue and could help in making informed business decisions such as menu adjustments, targeted promotions, or inventory prioritization.

The analysis identified the top 3 most ordered pizza types based on revenue for each category. Below is a summary of the findings:

Chicken Category:
1. The Thai Chicken Pizza - $43,434.25
2. The Barbecue Chicken Pizza - $42,768.00
3. The California Chicken Pizza - $41,409.50

Classic Category:
1. The Classic Deluxe Pizza - $38,180.50
2. The Hawaiian Pizza - $32,273.25
3. The Pepperoni Pizza - $30,161.75

Supreme Category:
1. The Spicy Italian Pizza - $34,831.25
2. The Italian Supreme Pizza - $33,476.75
3. The Sicilian Pizza - $30,940.50

Veggie Category:
1. The Four Cheese Pizza - $32,265.70
2. The Mexicana Pizza - $26,780.75
3. The Five Cheese Pizza - $26,066.50

Explanation

The results show that each category has a distinct set of top performers. For example, in the Chicken category, The Thai Chicken Pizza leads with the highest revenue, followed closely by The Barbecue Chicken Pizza and The California Chicken Pizza. Similarly, in the Classic category, The Classic Deluxe Pizza generates the most revenue, while in the Supreme category,

The Spicy Italian Pizza ranks first. For the Veggie category, The Four Cheese Pizza is the top-seller.

The query successfully returned the top 3 most ordered pizza types based on revenue for each category. These results can now be used to gain insights into which pizzas are driving the most revenue and could help in making informed business decisions such as menu adjustments, targeted promotions, or inventory prioritization.

Conclusion

The pizzeria sales analysis provided insightful data that can significantly inform business strategies and decision-making processes.

Order Volume & Revenue: The pizzeria has achieved a substantial total order volume of 21,350 orders, resulting in total revenue of £817,860. These figures demonstrate a strong market demand and effective sales strategies.

Top Performers: The analysis revealed that "The Greek Pizza" is the highest-priced item on the menu, while "The Classic Deluxe Pizza" is the most popular, with 2,453 orders. Additionally, the "Large" size is the most commonly ordered, indicating customer preference for larger portions. The top five pizzas, led by "The Classic Deluxe Pizza," collectively dominate the menu, highlighting key products that drive sales.

Category Insights: The sales data indicates a fairly balanced distribution across different pizza categories, with the "Classic" category

leading in total orders (14,888 pizzas). The chicken-based pizzas, particularly "The Thai Chicken Pizza," have emerged as significant contributors to revenue, underlining the popularity of this flavor profile among customers.

Hourly and Daily Trends: Peak order times were identified between 12 PM to 2 PM and 4 PM to 9 PM, aligning with typical lunch and dinner hours. The average daily order volume stands at 138, providing a baseline for operational planning and staffing.

Revenue Contribution: Each pizza category contributes significantly to the total revenue, with "Classic" pizzas contributing the most (26.91%), followed closely by "Supreme," "Chicken," and "Veggie" categories. This distribution suggests that while all categories are important, focusing on the top-performing categories could yield greater financial benefits.

Strategic Implications

The findings highlight the need to possibly prioritize inventory for top-selling pizzas and consider promotional strategies for the less popular ones. Additionally, the distinct peak order hours suggest a targeted approach in staffing and resource allocation during these times to optimize customer service and operational efficiency.

Final Thoughts

This analysis has provided a clear picture of the pizzeria’s sales dynamics, revealing both strengths and opportunities for growth. By leveraging these insights, the pizzeria can enhance its product offerings, optimize operations, and ultimately increase profitability.