Hanover Pizza

HANOVER PIZZA SALES INSIGHTS

www.HanoverPizza.com

Hanover Pizza

OVERVIEW OF THE COMPANY

~ HANOVER PIZZA ~

Hanover Pizzas, a US-based startup established in 2022, specializes in a variety of gourmet pizzas, including classic Margherita, Pepperoni, BBQ Chicken, and vegetarian options.

Known for their unique crust recipes and high-quality, locally-sourced ingredients, Hanover Pizzas aims to deliver an exceptional dining experience.

However, they are facing challenges in inventory management, pricing strategy, and understanding customer preferences, leading to inefficiencies and stagnant revenue growth.

By leveraging detailed data analysis of pizza sales, this project aims to optimize inventory, refine pricing strategies, enhance customer satisfaction, and drive overall revenue growth through informed decision-making.

This approach will help Hanover Pizzas address operational challenges and build a more profitable and sustainable business model.

PROBLEMS FACED BY HANOVER PIZZA ~

- ***Inefficient Inventory Management***: The company struggles with overstocking and understocking ingredients due to a lack of insight into order patterns.
- ***Unoptimized Pricing Strategy***: The company has not identified the optimal pricing for their pizzas, leading to potential revenue loss.
- ***Limited Understanding of Customer Preferences***: The company lacks detailed insights into customer ordering habits, impacting marketing and product development strategies.
- ***Revenue Growth Stagnation***: The company has seen stagnant revenue growth due to not leveraging data-driven insights for strategic decisions.

PROJECT GOALS

Order Trends Analysis:

- Identify peak ordering times to ensure adequate staffing and ingredient availability, reducing the risk of stockouts and improving customer satisfaction.

- Analyze seasonal order patterns to better predict demand and adjust inventory levels accordingly.

Revenue Optimization:

- Determine the most profitable pizzas and analyze their pricing strategy to maximize revenue.

- Identify underperforming pizzas to make decisions about removing or promoting them to improve sales.

Customer Preference Insights:

- Analyze the most popular pizza sizes and types to tailor marketing campaigns and promotions, targeting customer favorites to drive sales.

- Study order distributions by category to understand customer preferences and introduce new menu items that align with these insights.

Operational Efficiency:

- Monitor order distribution by hour of the day to optimize kitchen operations, reduce wait times, and improve overall efficiency.

- Evaluate daily average pizza orders to maintain consistent preparation and service quality.

Strategic Decision Making:

- Track cumulative revenue over time to identify growth trends and make informed business decisions.

- Calculate the percentage contribution of each pizza type to total revenue to focus on high-impact areas and strategize on less popular items.

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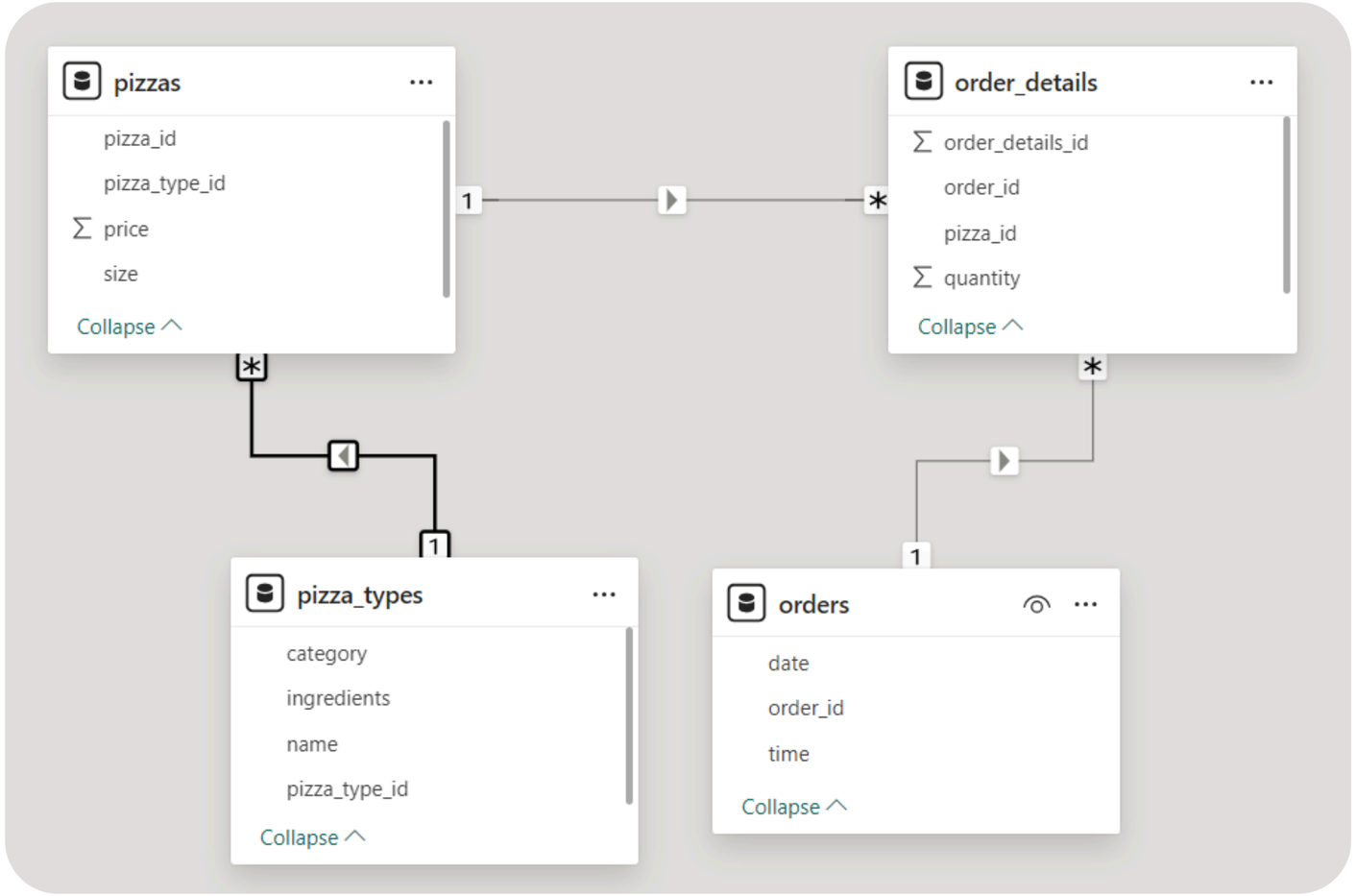
DATA MODEL ~ SCHEMA



THE GIVEN SCHEMA REPRESENTS A DATA MODEL FOR A PIZZA ORDERING SYSTEM.

- The schema consists of four tables: "pizzas", "order_details", "pizza_types", and "orders".

- The **"pizzas"** table contains information about individual pizza items, such as their type, price, and size.

- The **"pizza_types"** table stores details about different types of pizzas, like category, ingredients, and name.

- The **"order_details"** table holds order-specific information, including the order ID, pizza ID, and quantity.

- The **"orders"** table contains general order information, such as date, order ID, and time.

- The relationship between the tables is a combination of **one-to-many** and **many-to-many** relationships, forming a typical relational database schema.

- The schema represents a **relational data model**, which is a structured way to store and manage data in tables with predefined relationships.

TABLE OVERVIEW - 1

~ PZZA TYPES TABLE ~

pizza_type_id	name	category	ingredients
bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Peppe...
cali_ckn	The California Chicken Pizza	Chicken	Chicken, Artichoke, Spinach, Garlic, Jalapeno P...
ckn_alfredo	The Chicken Alfredo Pizza	Chicken	Chicken, Red Onions, Red Peppers, Mushrooms...
ckn_pesto	The Chicken Pesto Pizza	Chicken	Chicken, Tomatoes, Red Peppers, Spinach, Garl...
southw_ckn	The Southwest Chicken Pizza	Chicken	Chicken, Tomatoes, Red Peppers, Red Onions, ...
thai_ckn	The Thai Chicken Pizza	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, T...
big_meat	The Big Meat Pizza	Classic	Bacon, Pepperoni, Italian Sausage, Chorizo Sau...
classic_dlx	The Classic Deluxe Pizza	Classic	Pepperoni, Mushrooms, Red Onions, Red Peppe...
hawaiian	The Hawaiian Pizza	Classic	Sliced Ham, Pineapple, Mozzarella Cheese
ital_cpclo	The Italian Capocollo Pizza	Classic	Capocollo, Red Peppers, Tomatoes, Goat Chee...
napolitana	The Napolitana Pizza	Classic	Tomatoes, Anchovies, Green Olives, Red Onion...
pep_msh_pep	The Pepperoni, Mushroom, ...	Classic	Pepperoni, Mushrooms, Green Peppers

Column Details :

- **pizza_type_id:** Unique identifier for each type of pizza.
- **name**: Descriptive name of the pizza.
- **category:** Category of the pizza (e.g., Chicken, Classic).
- **ingredients:** List of ingredients used in the pizza.

Data Overview :

- The table contains information on various types of pizzas offered.
- Each row represents a specific pizza type with its unique identifier.
- Pizzas are categorized into different categories such as "Chicken" and "Classic".
- Ingredients for each pizza type are listed, providing detailed information on what each pizza contains.

TABLE OVERVIEW - 2

~ Orders Table ~

order_id	order_date	order_time
1	2015-01-01	11:38:36
2	2015-01-01	11:57:40
3	2015-01-01	12:12:28
4	2015-01-01	12:16:31
5	2015-01-01	12:21:30
6	2015-01-01	12:29:36
7	2015-01-01	12:50:37
8	2015-01-01	12:51:37
9	2015-01-01	12:52:01
10	2015-01-01	13:00:15
11	2015-01-01	13:02:59
12	2015-01-01	13:04:41

Column Details

- The table represents order information, likely from a sales or e-commerce system.
- It contains three columns: **order_id** (unique identifier for each order), **order_date** (the date of the order), and **order_time** (the time when the order was placed).
- All orders in this dataset were placed on a single day: January 1, 2015 (2015-01-01).
- The orders are sequential, ranging from order_id 1 to 11, suggesting these are the first 11 orders of the day.
- Order times span from 11:38:36 AM to 1:04:41 PM, indicating a busy period of about 1.5 hours.
- The consistent date and sequential IDs imply this could be a snapshot or sample of orders from the beginning of a new year or a new system's launch.

TABLE OVERVIEW - 3

Hanover Pizza

~ Orders Details Table ~

order_details_id	order_id	pizza_id	quantity
1	1	hawaiian_m	1
2	2	classic_dlx_m	1
3	2	five_cheese_l	1
4	2	ital_supr_l	1
5	2	mexicana_m	1
6	2	thai_ckn_l	1
7	3	ital_supr_m	1
8	3	prsc_argla_l	1
9	4	ital_supr_m	1
10	5	ital_supr_m	1
11	6	bbq_ckn_s	1
12	6	the_greek_s	1

Column Details

- The table represents order details for a pizza restaurant or delivery service.
- It contains four columns: **order_details_id** (a unique identifier for each row), **order_id** (linking to a specific order), **pizza_id** (the type of pizza ordered), and **quantity** (number of pizzas ordered).
- The pizza_id column uses descriptive codes for different pizza types, such as "hawaiian_m" (likely Hawaiian medium), "classic_dlx_m" (Classic Deluxe medium), "ital_supr_m" (Italian Supreme medium), etc.
- Most orders contain multiple pizza types, as evidenced by the same order_id appearing with different pizza_ids (e.g., order_id 2 has five different pizzas).
- The quantity for each pizza in this dataset is consistently 1, suggesting that each row represents a single pizza within an order.
- The data shows orders ranging from order_id 1 to 6, with a variety of pizza types, indicating diverse customer preferences.

Hanover Pizza

TABLE OVERVIEW - 4

~ ORDERS DETAILS TABLE ~

pizza_id	pizza_type_id	size	price
bbq_ckn_s	bbq_ckn	S	12.75
bbq_ckn_m	bbq_ckn	M	16.75
bbq_ckn_l	bbq_ckn	L	20.75
cali_ckn_s	cali_ckn	S	12.75
cali_ckn_m	cali_ckn	M	16.75
cali_ckn_l	cali_ckn	L	20.75
ckn_alfredo_s	ckn_alfredo	S	12.75
ckn_alfredo_m	ckn_alfredo	M	16.75
ckn_alfredo_l	ckn_alfredo	L	20.75
ckn_pesto_s	ckn_pesto	S	12.75
ckn_pesto_m	ckn_pesto	M	16.75
ckn_pesto_l	ckn_pesto	L	20.75

COLUMN DETAILS

- The table represents a pizza menu with pricing information for different pizza types and sizes.
- It contains four columns: **pizza_id** (a unique identifier for each pizza variation), **pizza_type_id** (the base type of pizza), **size** (S for small, M for medium, L for large), and **price** (in what appears to be dollars).
- Pizza types include bbq chicken (bbq_chn), California chicken (cali_chn), chicken alfredo (chn_alfredo), and chicken pesto (chn_pesto), showing a focus on chicken-based pizzas.
- Each pizza type is available in three sizes: Small (S), Medium (M), and Large (L), with consistent pricing across types (S: $12.75, M: $16.75, L: $20.75).
- The pizza_id is constructed by combining the pizza_type_id with the size abbreviation (e.g., bbq_chn_s for small BBQ chicken pizza).
- The pricing structure is straightforward, with a $4 increment between sizes, regardless of the pizza type.

PRELIMINARY ANALYSIS

The Total Number Of Orders Placed

QUERY

```
SELECT
 COUNT(order_id) AS Total_Orders_Placed
  FROM
   orders
```

RESULT

Total_Orders_Placed
21350

PRELIMINARY ANALYSIS

The Total Revenue generated from pizza sales.

QUERY

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

RESULT

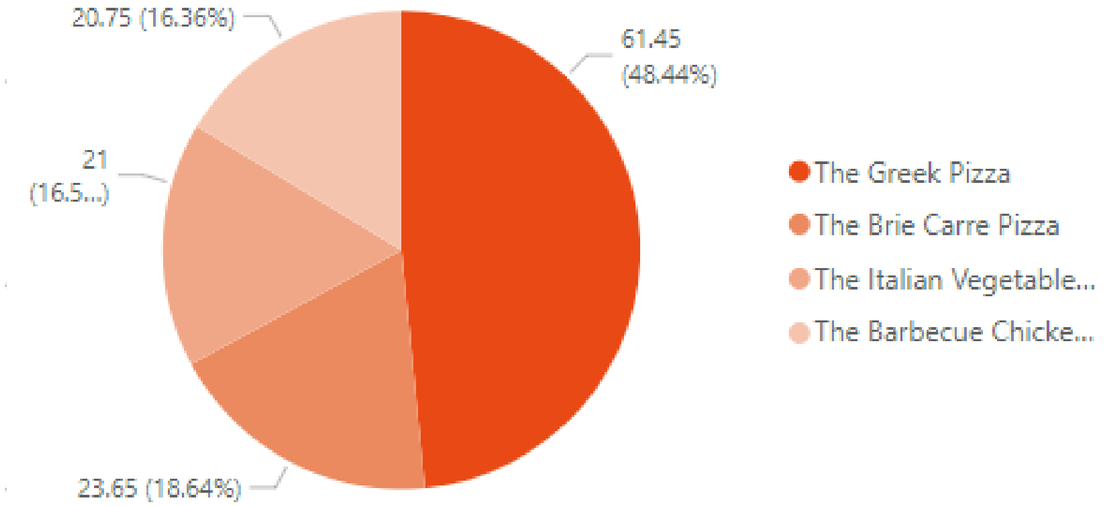
Total_Revenue_Generated
547138

PRELIMINARY ANALYSIS

Top 5 Highest Prized Pizzas

QUERY

```
#Identify the highest-priced pizza.
       SELECT
        pizza_types.name AS Highest_Priced_Pizza, pizzas.price AS Price
         FROM
          pizza_types
           JOIN
            pizzas
             ON
              pizza_types.pizza_type_id=pizzas.pizza_type_id
               ORDER BY
                pizzas.price  DESC
                 LIMIT 5
```



RESULT

Highest_Priced_Pizza	Price
The Greek Pizza	35.95
The Greek Pizza	25.5
The Brie Carre Pizza	23.65
The Italian Vegetables Pizza	21
The Barbecue Chicken Pizza	20.75

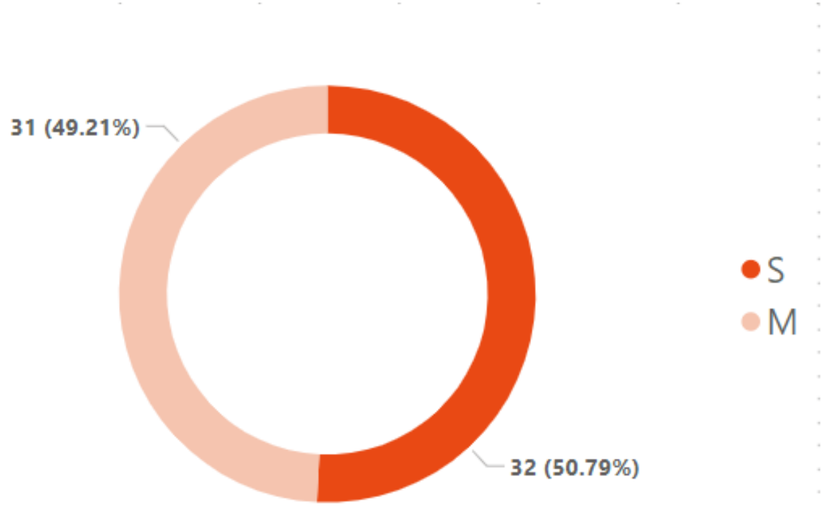
" IT IS SEEN THAT THE THE MOST EXPENSIVE PIZZA IS THE GREEK PIZZA HAVING A PRICE OF $35.95 , WHILE THE MOST AFFORDABLE ONE IS THE BARBEQUE CHICKEN PIZZA WHICH COSTS AROUND $20.75 "

PRELIMINARY ANALYSIS

Most Common Pizza Orders Sizes

QUERY

```
SELECT
 pizzas.size AS TOP_2_Most_Common_Pizza_Sizes,COUNT(pizzas.size) AS SIZES
  FROM
   pizzas
    GROUP BY
     size
      LIMIT 2
```



RESULT

TOP_2_Most_Common_Pizza_Sizes	SIZES
S	32
M	31

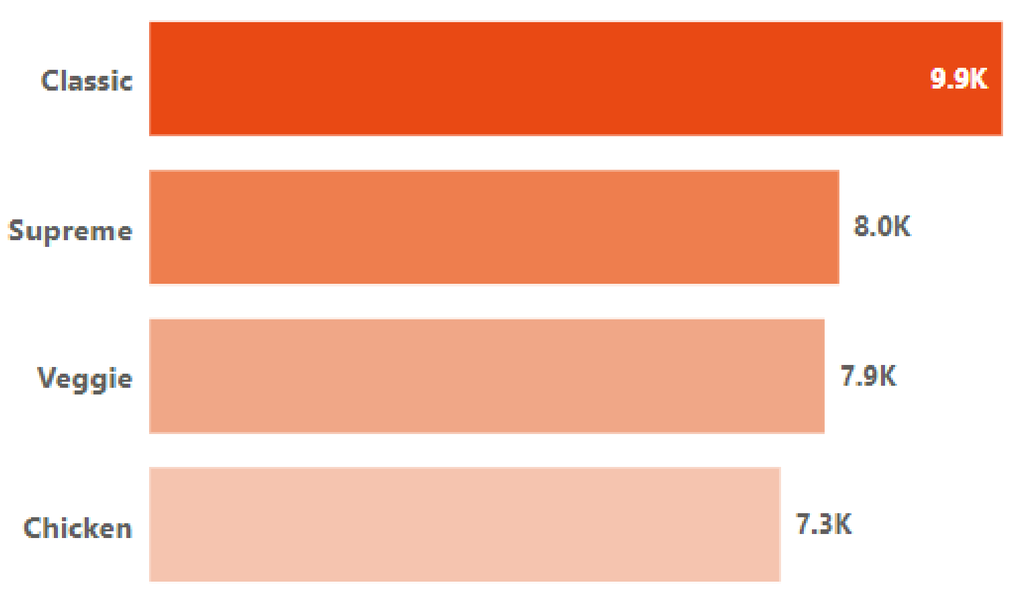
"SMALL & MEDIUM ARE THE ALL TIME COMMON PIZZA SIZES "

SALES & REVENUE ANALYSIS

The Total Quantity of each Pizza Category ordered

QUERY

```
SELECT
 pizza_types.category AS Pizza_Category , SUM(order_details.quantity) AS Total_Quantity
  FROM
   pizza_types
    JOIN
     pizzas ON pizza_types.pizza_type_id=pizzas.pizza_type_id
      JOIN
        order_details
         ON
           pizzas.pizza_id=order_details.pizza_id
            GROUP BY
             Pizza_Category
              ORDER BY
               Total_Quantity DESC
```



RESULT

Pizza_Category	Total_Quantity
Classic	9927
Supreme	8023
Veggie	7857
Chicken	7340

"CLASSIC BEING THE MOST POPULAR PIZZA ORDERS WHILE THE CHICKEN PIZZAS HAVE RELATIVELY LOW SALES "

SALES & REVENUE ANALYSIS

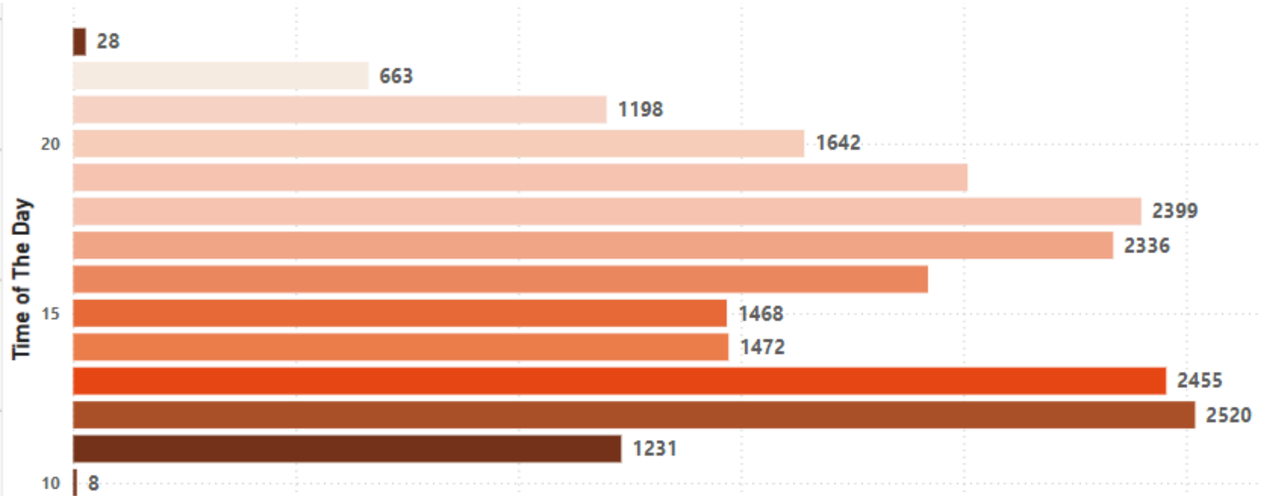
Busiest Buisness Hours

QUERY

```
#Determine the distribution of orders by hour of the day.
 SELECT
  HOUR(orders.order_time) AS Busiest_Hours,  COUNT(orders.order_id) AS Number_of_Orders
   FROM
    orders
     GROUP BY
      Busiest_Hours
       Order by
        Number_of_Orders DESC
```

RESULT

Busiest_Hours	Number_of_Orders
12	2520
13	2455
18	2399
17	2336
19	2009
16	1920
20	1642
14	1472
15	1468
11	1231



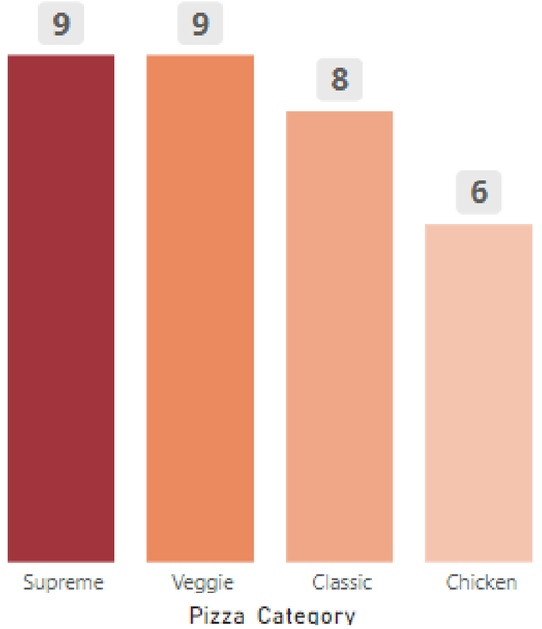
"IT IS OBSERVED THAT FROM 12 PM TO 7 PM HAS BEEN MOST BUSIEST BUISNESS HOURS RECIEVING MAXIMUM NUMBER OF ORDERS"

SALES & REVENUE ANALYSIS

Category Wise Distribution Of Pizza

QUERY

```
SELECT
 category AS Pizza_Category ,COUNT(name) AS Pizza_Name
 FROM
  pizza_types
   GROUP BY
    Pizza_Category
     ORDER BY
       Pizza_Name  DESC
```



RESULT

Pizza_Category	Pizza_Name
Supreme	9
Veggie	9
Classic	8
Chicken	6

"ACCORDING TO THE RESCENT SURVEYS SUPREME & VEGGIE CATEGORY HAS THE HIGHEST VARIETY OF PIZZAS , WHILE CHICKEN ITEMS DONT HAVE MUCH OF A CHOICE"

SALES & REVENUE ANALYSIS

Average Number Of Pizza Orders Per Day

QUERY

```
WITH ct AS (SELECT
 orders.order_date,SUM(order_details.quantity) AS TOTAL
 FROM
  order_details
   JOIN
    orders
     ON
      order_details.order_id=orders.order_id
       GROUP BY
        order_date)
         SELECT
          AVG(TOTAL)
           FROM
            ct
```

RESULT

Average_Pizza_Sold_Per_Day
138

"APPROXIMATELY AROUND 138 PIZZAS ARE SOLD EVERY BUISNESS WORKING DAY"

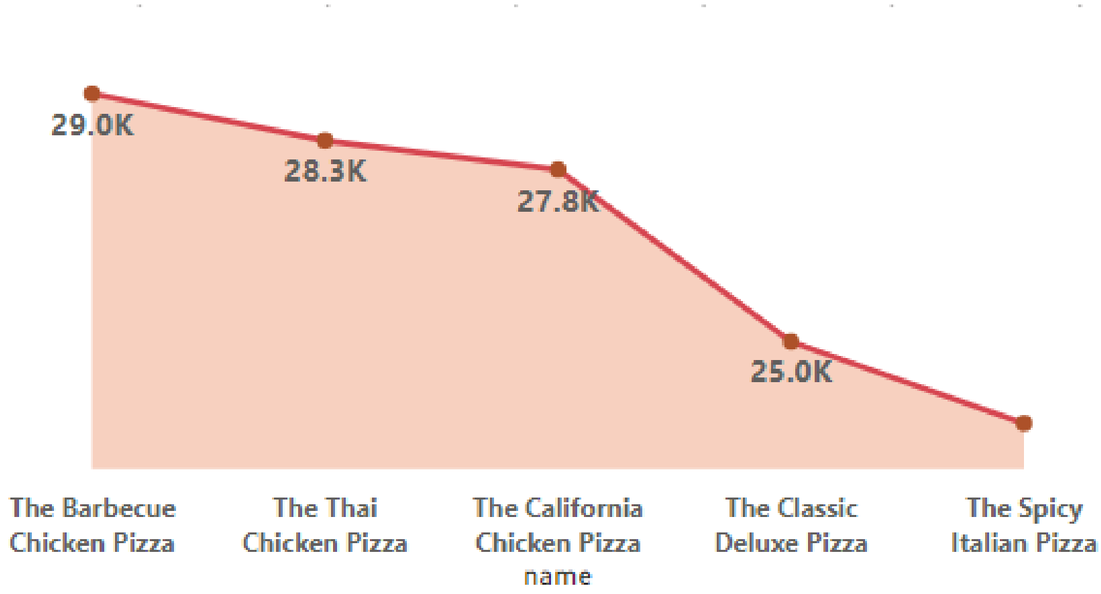
SALES & REVENUE ANALYSIS

Top 5 Pizzas Generating Maximum Revenue

QUERY

```
SELECT
 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 pizzas.pizza_id=order_details.pizza_id
       GROUP BY
        name
         ORDER BY
          Revenue DESC

         LIMIT 3
```



RESULT

name	Revenue
The Barbecue Chicken Pizza	29027.75
The Thai Chicken Pizza	28268.25
The California Chicken Pizza	27800.5

"IT HAS BEEN OBSERVE THAT THE THAI CHICKEN PIZZA & THE CALIFORNIA CHICKEN PIZZA HAS BEEN A CONSISTENT AND MAJOR CONTRIBUTORS TO THE RVENUE , WHILE THE BARBEQUE CHICKEN PIZZA GENERATING THE HIGHEST REVENUE OF $29K. ON THE OTHER HAND THE SPICY ITALIAN PIZZA HIAS FALLEN BACK IN REVENUE GENERATION"

TIME-SERIES ANALYSIS

Revenue Growth Over Time

QUERY

```
use pizza;
SELECT order_date ,
ROUND(SUM(REVENUE) OVER(ORDER BY order_date ASC ),1) AS cumulative_revenue
FROM
(SELECT
orders.order_date,
SUM(order_details.quantity*pizzas.price) AS REVENUE
FROM
orders
JOIN
order_details
ON orders.order_id=order_details.order_id
JOIN
pizzas
ON
order_details.pizza_id=pizzas.pizza_id
GROUP BY
order_date) AS sales
```

"IT HAS BEEN SEEN THAT THERE IS A STEADY AND CONSISTENT REVENUE GROWTH OVER THE MONTH OF AUGUST , INDICATING STEADY BUISNESS GROWTH"'

RESULT

order_date	cumulative_revenue
2015-08-28	547138.1
2015-08-27	546297.8
2015-08-26	544180.1
2015-08-25	541850.7
2015-08-24	539891.8
2015-08-23	538194.8
2015-08-22	536493.2
2015-08-21	534087.2
2015-08-20	531485.8
2015-08-19	529578.1
2015-08-18	527245.1
2015-08-17	525143.9
2015-08-16	522517.9
2015-08-15	520378.6
2015-08-14	518126.3
2015-08-13	515109.7
2015-08-12	513035.5
2015-08-11	510669.8
2015-08-10	508379.8
2015-08-09	506240.3
2015-08-08	504237.7

TIME-SERIES ANALYSIS

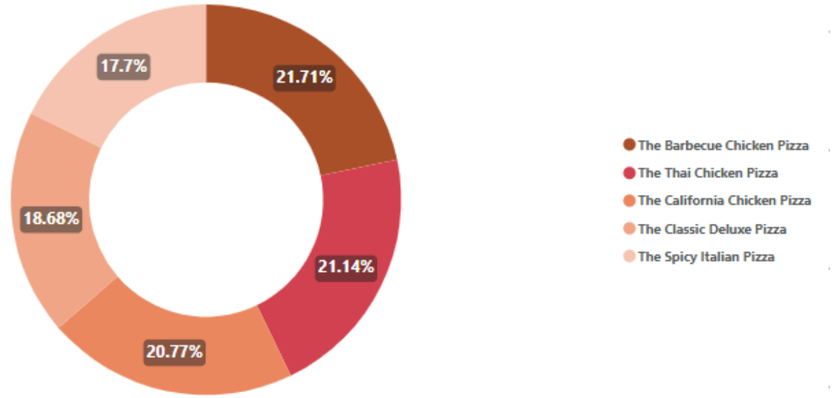
Revenue Contribution Of Each Pizza Type

QUERY

```
WITH ct1 AS (SELECT
pizza_types.name AS name,SUM(order_details.quantity*pizzas.price) AS p1
 FROM
  pizza_types
   JOIN pizzas ON pizza_types.pizza_type_id=pizzas.pizza_type_id
    JOIN  order_details ON pizzas.pizza_id=order_details.pizza_id
     GROUP BY
      name),
      ct2 AS
       (SELECT
        SUM(order_details.quantity*pizzas.price) AS p2
         FROM
          order_details
           JOIN pizzas
            ON order_details.pizza_id=pizzas.pizza_id)
             SELECT
              ct1.name,ROUND((ct1.p1*100/ct2.p2),2) AS percentage
               FROM
               ct1,ct2
```

RESULT

name	percentage
The Hawaiian Pizza	3.87
The Classic Deluxe Pizza	4.57
The Five Cheese Pizza	3.29
The Italian Supreme Pizza	4.13
The Mexicana Pizza	3.24
The Thai Chicken Pizza	5.17
The Prosciutto and Arugula Pizza	2.91
The Barbecue Chicken Pizza	5.31
The Greek Pizza	3.51
The Spinach Supreme Pizza	1.91
The Green Garden Pizza	1.75
The Italian Capocollo Pizza	3.1



"ITS IS SEEN THAT ABOUT 21.7% AND 21.14 % OF THE TOTAL REVENUE HAVE BEEN CONTRIBUTED BY THE BARBEQUE CHICKEN PIZZA AND THE THAI CHICKEN PIZZA RESPECTIVELY, EMERGING AS THE HIGHETS CONTRIBUTORS.ON THE OTHER HAND THE CALIFORNIA PIZZA ,THE CLASSIC DELUX ,THE SPICY HAWAIAN PIZZA HAVE BEEN A CONSISTANT CONTRIBUTORS WITH 20.77%,18.68%,17.7% RESPECTIVELY "

TIME-SERIES ANALYSIS

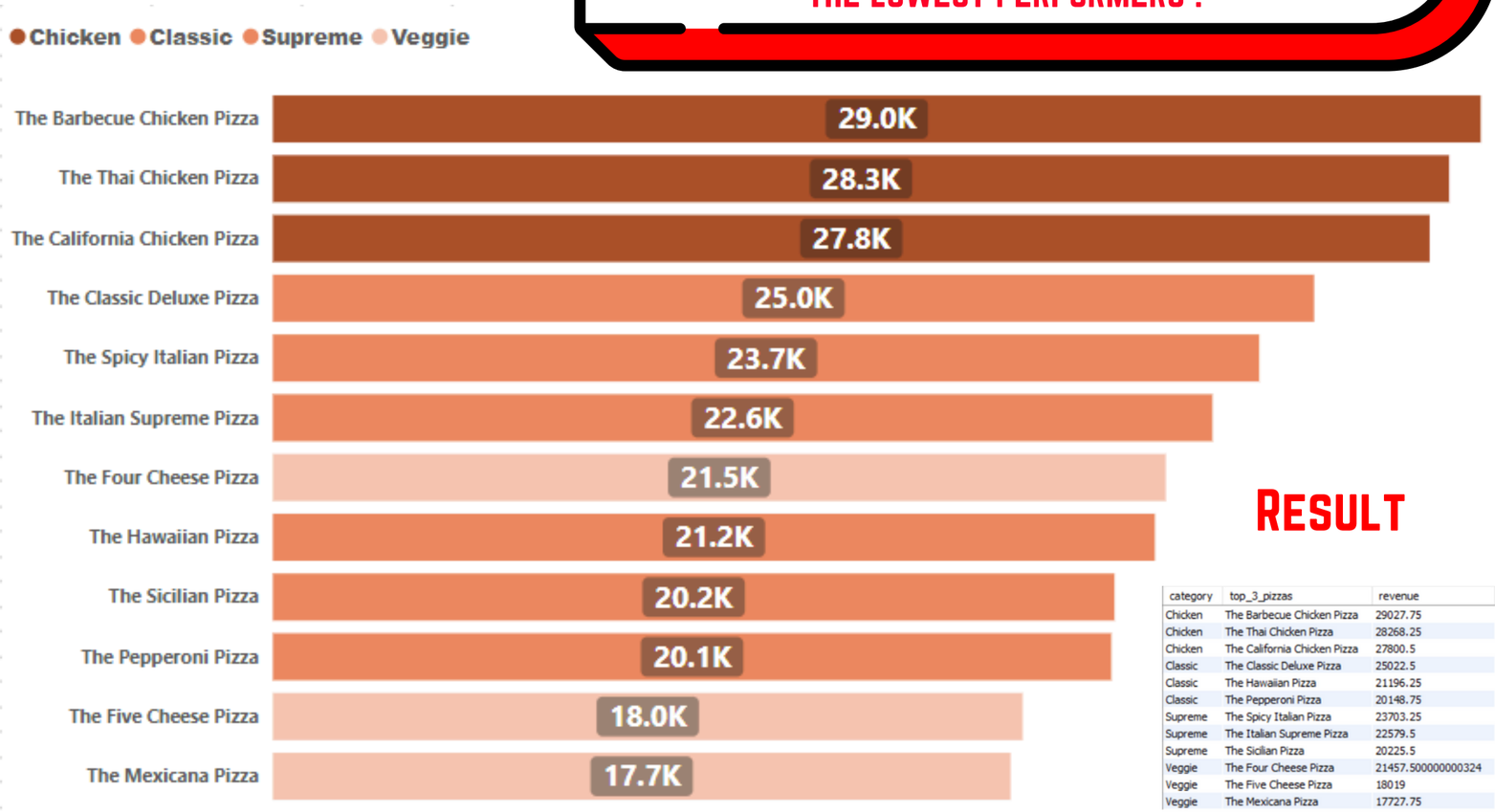
Top 3 Most Ordered Pizza Types based on Revenue for Each Pizza Category.

QUERY

```
use pizza;
WITH ct AS (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 pizzas.pizza_id=order_details.pizza_id
       GROUP BY
        category,name),

       ct1 AS  (SELECT
         category,name,revenue,
         RANK()OVER(PARTITION BY category ORDER BY revenue DESC) AS rk
          FROM ct )
          SELECT
          category,name AS top_3_pizzas,revenue
            FROM
             ct1
              WHERE
               rk<=3
```

"AMONG THE CHICKEN CATEGORY , THE BARBEQUE CHICKEN PIZZA AND THE THAI CHICKEN PIZZA ARE THE TOP PERFORMERS . ON THE OTHER HAND THE VEGGIE PIZZA CATEGORY HAVE BBEN LACKING IN REVENUE GENERATION , WITH THE FIVE CHEESE PIZZA AND MEXICAN PIZZA BEING THE LOWEST PERFORMERS ."



RESULT

category	top_3_pizzas	revenue
Chicken	The Barbecue Chicken Pizza	29027.75
Chicken	The Thai Chicken Pizza	28268.25
Chicken	The California Chicken Pizza	27800.5
Classic	The Classic Deluxe Pizza	25022.5
Classic	The Hawaiian Pizza	21196.25
Classic	The Pepperoni Pizza	20148.75
Supreme	The Spicy Italian Pizza	23703.25
Supreme	The Italian Supreme Pizza	22579.5
Supreme	The Sicilian Pizza	20225.5
Veggie	The Four Cheese Pizza	21457.500000000324
Veggie	The Five Cheese Pizza	18019
Veggie	The Mexicana Pizza	17727.75

RECOMMENDATIONS

~ To Maintain Efficient Workflow~

Strategic Pricing Review : Reevaluate the pricing strategy to ensure a balanced menu that caters to both high-end and budget-conscious customers.

Promotion of Affordable Options : Highlight the affordability of popular options like the Barbeque Chicken Pizza in marketing campaigns to attract budget-conscious customers.

Inventory Management: Focus on optimizing inventory for small and medium-sized pizzas.

Marketing Focus: Highlight small and medium-sized pizza deals in promotions to capitalize on their popularity.

Menu Diversification: Introduce new variations of chicken pizzas to increase their appeal.

Customer Feedback: Gather feedback on chicken pizzas to understand and address reasons for low sales.

Staffing Optimization: Ensure adequate staffing during peak hours to maintain service quality

.

Special Promotions: Offer time-specific promotions to maximize sales during these hours.

Promote Existing Variety: Highlight the diverse options in Supreme & Veggie categories to attract more customers.

Capacity Planning: Ensure kitchen capacity and staff are aligned with sales volume.

Sales Forecasting: Use sales data to forecast demand and optimize inventory.

Highlight Top Performers: Promote the top-performing pizzas to further boost sales.

Analyze Underperformers: Investigate reasons for the lower revenue of pizzas like the Spicy Italian Pizza.

Sustain Growth Momentum: Continue strategies that contributed to growth while exploring new avenues for revenue.

Customer Retention: Implement loyalty programs to retain customers and encourage repeat business.

Focus on High Contributors: Enhance the visibility and availability of high-revenue pizzas.

Balance Menu Offerings: Ensure a balanced menu that also promotes other consistent contributors.

Revamp Veggie Options: Refresh the veggie pizza offerings to enhance their appeal.

Targeted Marketing: Create targeted marketing campaigns to boost the sales of veggie pizzas.

FURTHER PLAN OF ACTION

TO IMPLEMENT THE LEARNINGS

Conduct a competitive pricing analysis to ensure our prices are aligned with market standards.

Implement promotional campaigns that highlight the value of the Barbeque Chicken Pizza.

Consider offering bundled deals that include a high-end pizza like the Greek Pizza paired with more affordable options.Adjust procurement strategies to ensure ample stock of ingredients for small and medium pizzas.

Create special offers and meal deals featuring small and medium-sized pizzas.

Monitor sales trends regularly to adjust inventory levels and marketing efforts accordingly
Develop and test new chicken pizza recipes based on popular trends and customer preferences.

Implement a limited-time offer for new chicken pizza variations to gauge customer interest.

Conduct surveys and focus groups to gather detailed feedback on chicken pizza offerings.

Adjust staff schedules to ensure peak hours are adequately covered.

Launch time-limited deals, such as lunchtime specials and happy hour discounts
.
Monitor peak hour sales and customer feedback to continuously improve service efficiency
Develop new chicken pizza recipes to broaden the chicken category.

Create marketing materials that showcase the variety in the Supreme & Veggie categories.

Introduce a monthly special featuring a new chicken pizza to continually refresh the menu.

Review kitchen operations to ensure they can handle the daily sales volume efficiently.

Implement a sales forecasting model to predict daily sales and adjust inventory accordingly.

Hanover Pizza

RECOMMENDATIONS ARE WELCOME

I WOULD LIKE TO RECIEVE SUGGESTIONS AND IMPROVEMENT IDEAD ON THIS PROJECT FROM ANALYTICS PROFESSIONALS AND PROFESSIONALS