Pizza Sales Data Analysis SQL Project

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Executive Summary

This report analyzes pizza sales data to identify the most popular pizza categories, the highest revenue-generating pizzas, and understand daily and monthly order trends. The primary objective is to enhance and optimize sales strategies for a fictional pizza restaurant chain. Key findings indicate that Fridays and Saturdays are peak days for orders, with July being the busiest month. Classic and Supreme pizzas are the top-performing categories, while large pizzas are the most popular size.

About the Project

We are analyzing pizza sales data to identify the most popular pizza categories, the highest revenue-generating pizzas, and to understand daily and monthly order trends. The primary objective is to enhance and optimize sales strategies for a fictional pizza restaurant chain.

Data Description

The dataset contains 12 columns and 48,620 rows:

Column	Description	Data Type
Pizza_ID	Unique identifier for each pizza sold	VARCHAR(30)
Order_ID	Unique identifier for each order	VARCHAR(30)
Pizza_Name_ID	Unique identifier for each pizza name	VARCHAR(30)
Pizza_Name	The name of the pizza	VARCHAR(30)
Quantity	The quantity of pizza ordered	INT
Order_Date	The date on which the order was made	DATETIME
Order_Time	The time at which the order was made	TIME
Unit_Price	The price of each pizza	DECIMAL(10, 2)
Total_Price	The total cost of the order	DECIMAL(12, 4)
Pizza_Size	The size of the pizza	VARCHAR(5)
Pizza_Category	The category of the pizza	VARCHAR(30)
Pizza_Ingredients	The ingredients of the pizza	VARCHAR(30)

Table 1: Data Description

Purpose of the Project

The main goal is to provide insights and actionable information to help the pizza restaurant chain:

- Optimize operations

- Improve sales

- Enhance customer satisfaction

Methodology

1. Data Wrangling

- Examined the data for NULL or missing values.

- Implemented strategies for data replacement.

2. Build a Database

- Created a table and inserted the data.

- Ensured that NULL values were filtered out by specifying NOT NULL constraints during table creation.

3. Feature Engineering

- Added a new column `Order-Day` to extract the day of the week from the `Order_Date`.

- Added a new column `Month_Name` to extract the month from the `Order_Date`.

4. Exploratory Data Analysis (EDA)

- Conducted EDA to answer key business questions and achieve project objectives.

Business Questions and Insights

Product Analysis

- **Total Revenue:** $817,860.05

- **Total Orders Placed:** 21,350

- **Average Order Value:** $38.31

- **Average Pizzas per Order:** 2.32

Top 5 Pizzas by Revenue

- Thai Chicken Pizza: $43,434.25

- Barbecue Chicken Pizza: $42,768.00

- California Chicken Pizza: $41,409.50

- Classic Deluxe Pizza: $38,180.50

- Spicy Italian Pizza: $34,831.25

Top 5 Pizzas by Quantity

- Classic Deluxe Pizza: 2,453

- Barbecue Chicken Pizza: 2,432

- Hawaiian Pizza: 2,422

- Pepperoni Pizza: 2,418

- Thai Chicken Pizza: 2,371

Bottom 5 Pizzas by Revenue

- Brie Carre Pizza: $11,588.50

- Green Garden Pizza: $13,955.75

- Spinach Supreme Pizza: $15,277.75

- Mediterranean Pizza: $15,360.50

- Spinach Pesto Pizza: $15,596.00

Bottom 5 Pizzas by Quantity

- Brie Carre Pizza: 490

- Mediterranean Pizza: 934

- Calabrese Pizza: 937

- Spinach Supreme Pizza: 950

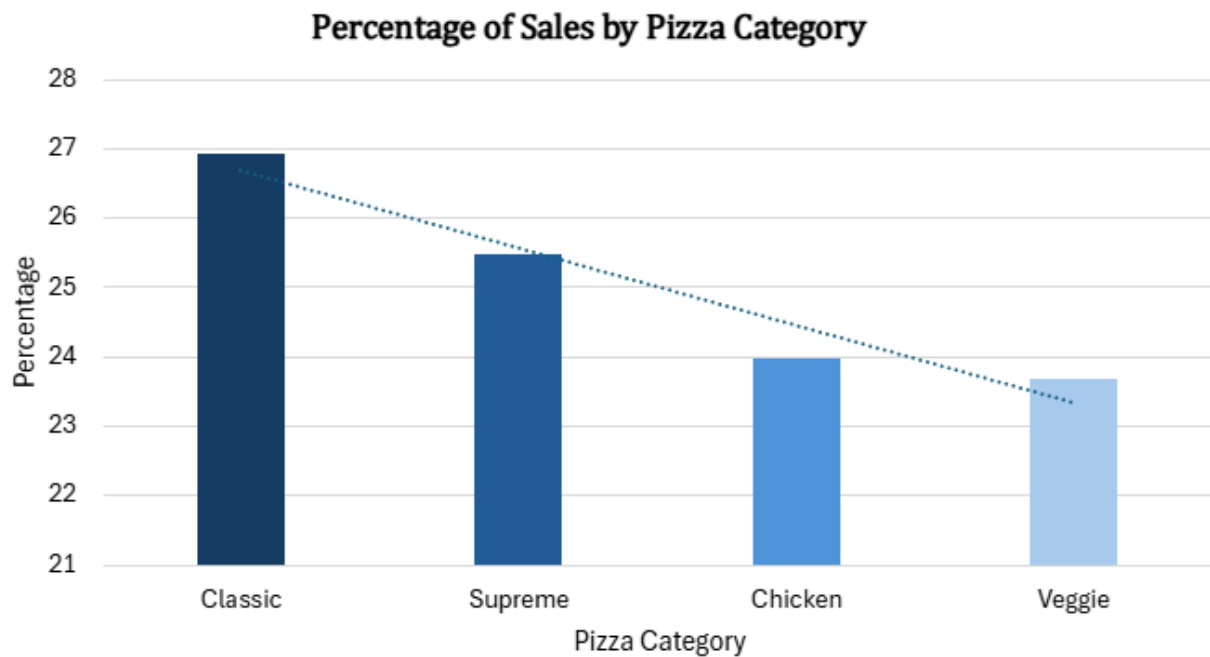- Soppressata Pizza: 961

Percentage of Sales by Pizza Category

Figure 1: Percentage of Sales by category

- **Classic** 26.91%   - **Supreme** 25.46%   - **Chicken** 23.96%   - **Veggie** 23.68%

Percentage of Sales by Pizza Size
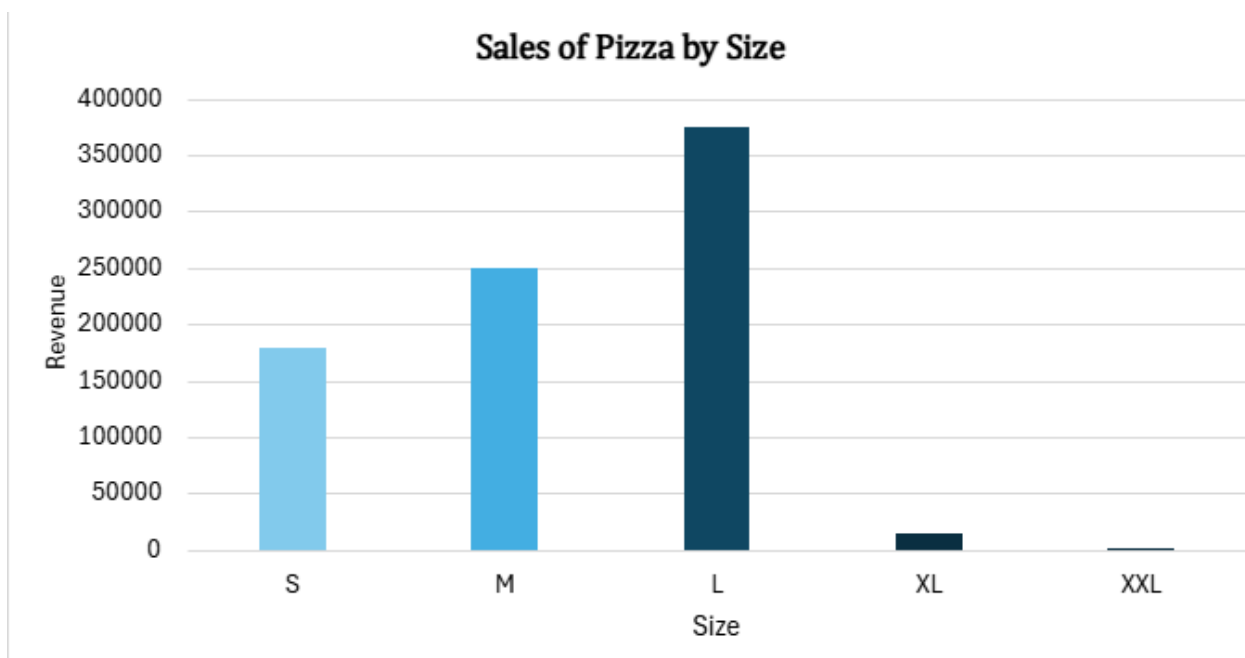

Figure 2: Sales of Pizza by Size

- **Large:** 45.89%   - **Medium:** 30.49%   - **Small:** 21.77%
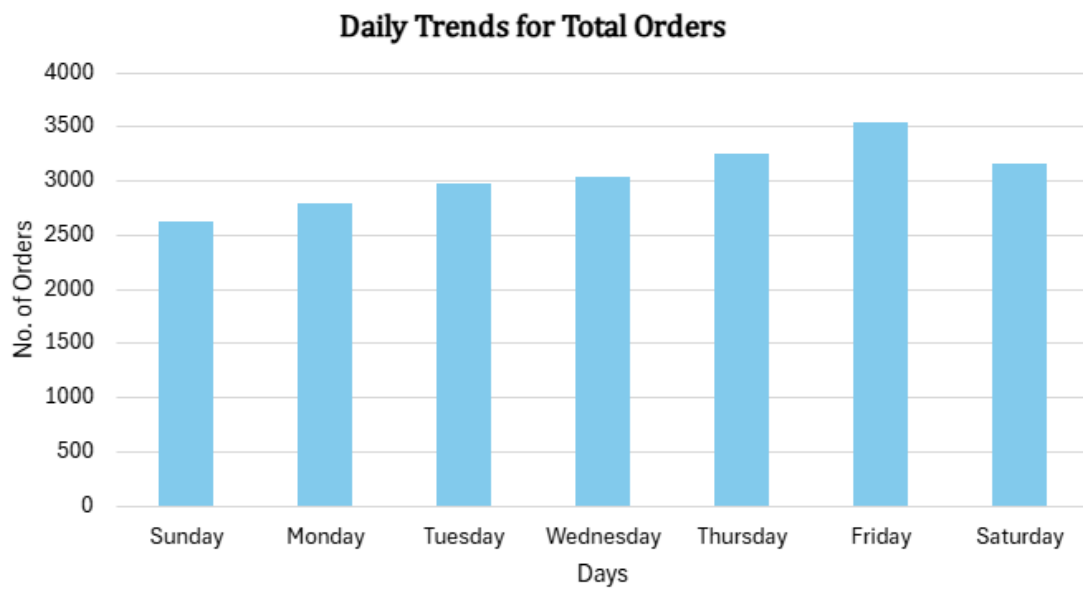
Sales Analysis

Daily Trends

Figure 3: Daily Trend for Orders

- Highest orders: Friday (3,538), Saturday (3,158), Thursday (3,239)

- Lowest orders: Sunday (2,624), Monday (2,794)

Monthly Trends

Figure 4: Monthly Trends for Orders

- Highest orders: July (1,935), May (1,853), January (1,845)

- Lowest orders: October (1,646), September (1,661)

Insights

1. **Total Revenue and Average Order Value**

   - The total revenue generated by the pizza sales is substantial, indicating a healthy demand for the products.
   - The average order value of $38.31 suggests customers are willing to spend a significant amount per order.

2. **Sales Volume**

   - A large number of pizzas have been sold across a considerable number of orders, with an average of approximately 2.32 pizzas per order.

3. **Daily and Monthly Trends**

   - Weekends, particularly Fridays and Saturdays, are the peak times for orders.
   - Mid-year periods see higher order volumes.

4. **Pizza Categories and Sizes**

   - Classic and Supreme categories dominate sales, contributing nearly half of the total revenue.
   - Large pizzas are the most popular size, accounting for almost half of the sales.

5. **Top and Bottom Performing Pizzas**

   - The Thai Chicken Pizza, Barbecue Chicken Pizza, and California Chicken Pizza are among the top revenue generators.
   - The Brie Carre Pizza and Green Garden Pizza are among the lowest revenue generators.

Recommendations

1. **Promote High-Performing Pizzas**

   - Increase marketing efforts for top-performing pizzas like The Thai Chicken Pizza, The Barbecue Chicken Pizza, and The California Chicken Pizza to boost sales further.
   - Consider creating combo deals or discounts for these popular items to encourage more purchases.

2. **Revise or Discontinue Low-Performing Pizzas**

   - Evaluate the bottom-performing pizzas such as The Brie Carre Pizza and The Green Garden Pizza. Consider revising their recipes, changing their marketing strategies, or even discontinuing them if they continue to underperform.

3. **Optimize Inventory for Popular Sizes**

   - Focus promotional campaigns around Fridays and Saturdays, as well as the high-order months of July, May, and January.
   - Consider special offers or events during slower days (Sundays and Mondays) and months (October and September) to balance the sales distribution

4. **Target Marketing for Peak Days and Months**

   - Focus promotions on peak days and months.
   - Offer special deals during slower periods.

5. **Enhance Customer Experience**

   - Since customers order an average of 2.32 pizzas per order, introduce family or group meal deals to cater to this buying pattern.
   - Improve delivery times and customer service during peak hours and days to enhance customer satisfaction.

6. **Seasonal and Limited-Time Offers**

   - Introduce seasonal pizzas or limited-time offers to create excitement and drive sales during off-peak periods.

Limitations

- The dataset is limited to a specific time period, which may not capture seasonal or long-term trends.
- The analysis assumes that the provided data is complete and accurate.
- External factors such as marketing campaigns, local events, or economic conditions are not considered in this analysis.

Conclusion

The analysis reveals valuable insights into the pizza sales patterns, customer preferences, and product performance. Classic and Supreme pizzas, particularly in large sizes, are the most popular. Fridays and Saturdays see the highest number of orders, with July being the peak month. These insights can help the pizza restaurant chain optimize inventory, staffing, and marketing strategies to enhance customer satisfaction and boost sales.