Pizza Sales Analysis

Status Completed ▾

Timing Jul 5, 2025 10:00 AM to Jul 5, 2025 12:00 PM

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Overview

In this project, I analyzed pizza sales data by combining multiple datasets orders, order details, pizza sizes, and pizza types to uncover key business insights. The goal was to understand customer preferences, sales trends, and revenue drivers.

Through detailed EDA, I identified the best-selling pizzas, most profitable categories, peak sales hours, and size preferences. Visualizations revealed that large-sized pizzas and classic/chicken categories dominate both sales volume and revenue. I also observed that most orders happen during evening hours, especially on weekends.

This analysis helps drive data-backed decisions for marketing, inventory, and menu optimization.

Objective:

To analyze pizza sales data by combining multiple datasets to uncover trends in customer preferences, revenue patterns, and product performance.

Datasets Used:

- `orders.csv` – Order-level data with timestamps

- `order_details.csv` – Order line items with pizza quantity

- `pizzas.csv` – Pizza size and price

- `pizza_types.csv` – Pizza names, categories, ingredients

Data Merging:

Merged all 4 datasets using appropriate keys:

- `order_id`, `pizza_id`, `pizza_type_id`

Created additional fields:

- `revenue = price × quantity`

- `hour` and `date` extracted from time column

Key Insights:

1. Top 5 Best-Selling Pizzas

- **Most ordered pizzas include *Classic Deluxe*, *BBQ Chicken*, and *Pepperoni*.**

- **Indicates strong preference for meaty and spicy pizzas.**

2. Category Preference

- **Classic and Chicken categories lead in both order volume and revenue.**

- **Vegetarian and Supreme categories are less popular but still contribute.**

3. Pizza Size Analysis

- **Large (L) pizzas are the most frequently ordered size.**

- **Suggested customers often buy for sharing or group meals.**

4. Revenue Distribution

- **A small group of pizzas (top 5) contribute to a major share of total revenue.**

- **Focused marketing on these can improve sales further.**

5. Sales Trend Over Time

- **Clear weekly sales pattern with peaks around weekends.**

- **Useful for inventory planning and promotional timing.**

6. Time of Day Analysis

- **Highest number of orders placed between 6 PM and 9 PM.**

- **Reinforces the dinner-time sales peak for pizza business.**

7. Quantity Distribution

- **Most orders contain 1–2 pizzas per order.**

- **Very few bulk orders, indicating individual or small-group consumption.**

8. Correlation Insights

- **Strong positive correlation between price, quantity, and revenue.**

- **Higher-priced pizzas tend to sell in moderate quantities but contribute more to revenue.**

Data Cleaning Performed:

- **Handled missing values and inconsistent formats (e.g., time parsing).**

- **Removed any duplicate or null rows.**

- **Converted `date` and `time` columns into proper datetime objects.**

Visualizations Used:

- **Bar plots for top products, categories, and revenue**

- **Line plots for daily/weekly trends**

- **Histograms for quantity and order time distribution**

- Heatmap for correlation among numerical features

Business Recommendations:

1. Promote high-revenue pizzas more on weekends.

2. Introducing combo offers around 6–9 PM to boost basket size.

3. Focus on Large size pizzas and Classic/Chicken categories for deals.

4. Monitor underperforming categories like Supreme for potential removal or repositioning.