



# Pizza Sales & Operations Analysis

(SQL | MySQL)

---

## Project Overview

This project analyzes pizza sales and kitchen operations data using **SQL (MySQL)** to uncover insights related to **revenue performance, customer preferences, peak demand patterns, and operational efficiency**.

The analysis simulates a real-world pizza business environment where **customer demand, menu composition, and preparation efficiency** directly impact sales performance and service quality. The project demonstrates how SQL can be used not only to analyze sales metrics, but also to identify **operational bottlenecks** and support **data-driven improvements in staffing, menu design, and workflow optimization**.

---

## Business Objectives

- ★ Measure overall pizza sales and revenue performance
  - ★ Identify peak demand hours and high-traffic days
  - ★ Understand customer preferences across pizza types, sizes, and categories
  - ★ Evaluate operational efficiency through preparation time analysis
  - ★ Detect revenue loss from cancellations and delayed orders
  - ★ Provide actionable recommendations to improve kitchen operations and revenue realization
- 



## Dataset Description

The project uses four relational tables designed to reflect a realistic pizza ordering and operations workflow:

---



### Orders Table

Column Name	Description
order_id	Unique order identifier
order_date	Date when the order was placed
order_time	Time of order placement
order_status	Order lifecycle status (Completed, Processing, Cancelled)

---



### Order Details Table

Column Name	Description
order_id	Linked order identifier
pizza_id	Ordered pizza identifier
quantity	Number of pizzas ordered

---



### Pizzas Table

Column Name	Description
pizza_id	Unique pizza identifier
pizza_name	Name of the pizza
pizza_category	Pizza category (Classic, Chicken, Spicy, Supreme, etc.)
pizza_size	Pizza size (S, M, L, XL)
price_usd	Price per pizza in USD

---

## Operations Table

Column Name	Description
order_id	Linked order identifier
prep_start_time	Preparation start timestamp
prep_end_time	Preparation completion timestamp

Note: Cancelled orders are intentionally excluded from the operations table to reflect real operational tracking practices.

---

## Analysis Workflow

### Step 1: Data Understanding & Sanity Checks

- ❖ Validated table relationships and constraints
  - ❖ Checked for duplicates, null values, and data consistency
  - ❖ Verified operational data coverage
- 

### Step 2: Sales & Revenue Analysis

- ❖ Measured total revenue and average order value
  - ❖ Identified revenue-generating vs non-revenue orders
  - ❖ Analyzed revenue by pizza category and size
  - ❖ Quantified revenue loss due to cancellations
- 

### Step 3: Peak Demand & Time-Based Analysis

- ❖ Identified peak ordering hours and busiest days
  - ❖ Compared weekday vs weekend demand
  - ❖ Linked peak demand periods with processing and cancellations
-



## Step 4: Customer Preferences & Menu Performance

- ❖ Identified top-selling and top-revenue pizzas
  - ❖ Analyzed category and size preferences
  - ❖ Compared high-volume vs high-value menu items
  - ❖ Detected underperforming pizzas for menu optimization
- 



## Step 5: Operations & Preparation Time Analysis

- ❖ Calculated average preparation time per order
  - ❖ Identified peak-hour operational delays
  - ❖ Analyzed prep time by category and day
  - ❖ Detected operational bottlenecks
- 



## Step 6: Advanced Insights

- ❖ Identified revenue concentration among select pizzas
  - ❖ Analyzed trade-offs between profitability and prep time
  - ❖ Quantified revenue stuck in Processing orders
  - ❖ Linked operational stress with revenue impact
- 



## SQL Concepts Used

- ★ Joins (INNER JOIN, LEFT JOIN)
  - ★ Aggregations (SUM, AVG, COUNT)
  - ★ Date & time functions
  - ★ CASE WHEN logic
  - ★ Grouping and segmentation
  - ★ Operational KPI derivation
- 



## Project Skills Demonstrated

- ★ Business-focused SQL analysis
  - ★ Revenue and sales performance evaluation
  - ★ Time-based demand analysis
  - ★ Operational efficiency assessment
  - ★ Translating SQL output into executive insights
- 



## Tools Used

- ★ MySQL Workbench
  - ★ SQL
  - ★ Relational database design
- 



## Author

### Anirudha Das

Aspiring Data Analyst | Business Intelligence Enthusiast

Focused on solving business and operational problems using data analytics



Bolpur, WB, India

---