Food Delivery Analytics: SQL Case Study

A comprehensive SQL project simulating real-world business scenarios for a food delivery company. This case study demonstrates advanced SQL proficiency through analyzing customer behavior, restaurant performance, delivery efficiency, and business growth using data-driven insights.

Project Mission & Objectives

Core Focus

This project tackles real-world challenges faced by food delivery platforms, focusing on four critical areas: customer behavior analysis, restaurant performance metrics, delivery efficiency optimization, and overall business growth tracking.

Technical Goals

- Structure relational databases with proper schema design
- Clean and prepare datasets for analysis
- Solve complex business problems through analytical SQL
- Derive actionable insights for decision-making

Project Architecture

01

Database Setup

Designed relational schema and created tables for customers, restaurants, orders, deliveries, and riders

02

Data Import

Populated tables using CSV files representing different aspects of the food delivery system

03

Data Cleaning & Validation

Checked for missing values, ensured referential integrity, verified data types, and updated incomplete fields

04

Exploratory Analysis

Conducted descriptive exploration to understand order volume, demographics, and performance metrics

05

Business Analysis

Addressed 20 real-world questions using advanced SQL techniques like window functions and ranking

Technology Stack

PostgreSQL

Primary database management system for SQL analytics and query execution

pgAdmin 4

Query execution interface and data visualization platform

Excel

Initial data preparation and cleaning workflows

GitHub

Version control and comprehensive project documentation

Database Schema & Relationships

Five Core Tables

Customers: Stores customer details including ID, name, and registration date

Restaurants: Contains restaurant name, city, rating, and location data

Orders: Tracks order details including items, timestamps, and total amounts

Deliveries: Records delivery status, delivery time, and associated rider

Riders: Stores information about delivery personnel

Data Quality & Validation

Data Verification

Imported datasets and validated record counts, ensuring all data types matched schema requirements

Handling Missing Values

Identified and corrected null entries while ensuring referential integrity across all tables

Quality Checks

Validated delivery status, numeric field accuracy, and timestamp consistency throughout the dataset

Initial Observations

Discovered top-performing cities, daily order trends, and key delivery performance metrics

Key Business Questions Analyzed

This project addresses 20 real-world business questions across operations, customer behavior, and growth. Here are the critical analyses performed:

Customer Analytics

- Top 5 most ordered dishes by customer
- High-frequency customer AOV
- High-value customers (>175K spending)
- Customer churn analysis
- Customer Lifetime Value (CLV)

Restaurant Performance

- Revenue ranking by restaurant
- Most popular dish by city
- Restaurant growth ratios
- Peak days for each restaurant
- City revenue ranking

Operations & Delivery

- Peak time slots (2-hour intervals)
- Failed delivery analysis
- Rider delivery time averages
- Rider efficiency evaluation
- Rider ratings by delivery time

Business Trends

- Cancellation rate comparison
- Customer segmentation (Gold/Silver)
- Monthly sales trends
- Seasonal order patterns
- Rider monthly earnings

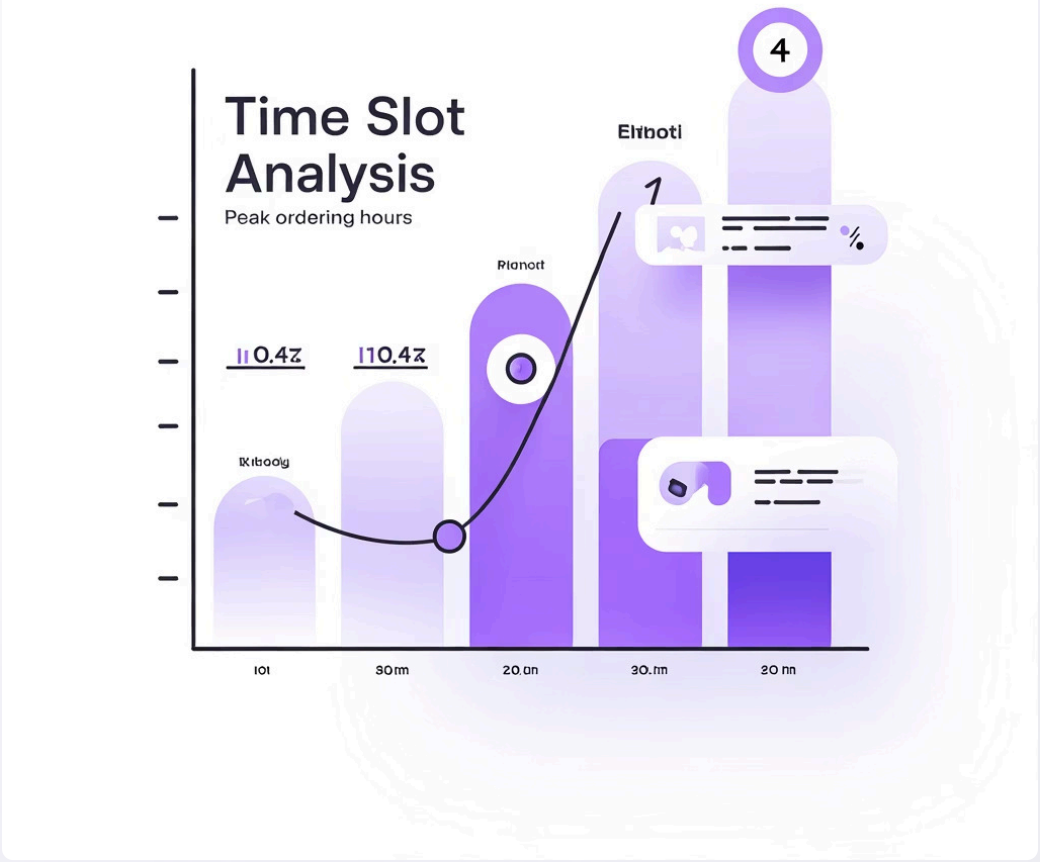
Sample Analysis: Customer Insights

Top Ordered Dishes

Query identifies the top 5 most frequently ordered dishes by customer "Arjun Mehta" in the last year, revealing customer preferences and ordering patterns.

Peak Time Analysis

Identifies time slots with highest order volume based on 2-hour intervals, enabling optimal staffing and resource allocation decisions.



High-Value Customers

Lists customers who spent more than 175K total on food orders, identifying VIP customers for retention campaigns and personalized marketing.

Customer Segmentation

Segments customers into 'Gold' or 'Silver' groups based on total spending compared to average order value, enabling targeted marketing strategies.

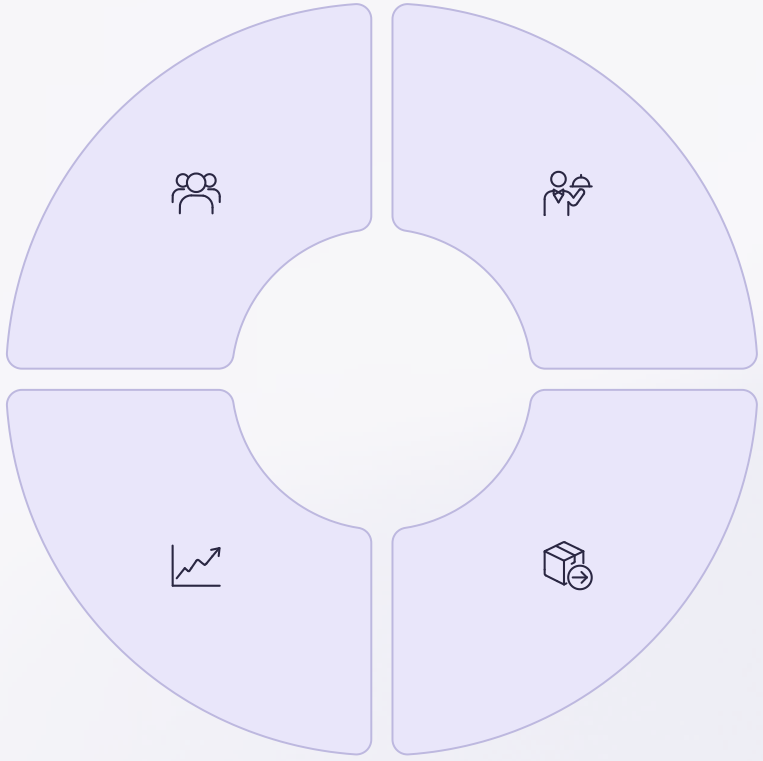
Key Insights & Business Impact

Customer Insights

Identified top customers and most-ordered items. Segmented customers into Gold and Silver tiers. Computed CLV for retention campaigns.

Business Trends

Observed monthly revenue growth patterns. Tracked cancellation and churn rates over time. Identified seasonal demand spikes.



Restaurant Performance

Ranked restaurants by revenue and growth. Identified popular dishes and seasonal preferences. Measured month-over-month growth ratios.

Delivery Operations

Analyzed peak order hours and busiest weekdays. Measured rider efficiency and delivery performance. Estimated earnings and classified riders by speed.

Skills Demonstrated & Contact

Technical Expertise

- SQL query design and optimization
- Analytical problem-solving using CTEs and window functions
- EDA, data validation, and transformation
- Data storytelling and KPI extraction
- Real-world business reasoning through data insights

Connect With Me

Mukesh Gopi Nandh

📧 mukeshudatha7@gmail.com

🔗 LinkedIn Profile

📂 GitHub Repository