

ONLINE FOOD DELIVERY SQL INSIGHTS

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INTRODUCTION

Online Food Delivery SQL Insight is a focused data analytics project built to understand how a food-delivery platform performs across customers, restaurants, orders, and delivery operations. Using a structured relational database, the project examines key behaviors such as order patterns, restaurant activity, delivery efficiency, and customer engagement.

This analysis matters because food-delivery businesses rely heavily on speed, accuracy, and customer satisfaction. Insights drawn from the data help identify operational gaps, measure performance, and support smarter decisions around marketing, resource allocation, and service quality.

SQL is used to extract, join, and analyze data from multiple tables, enabling clear measurement of order trends, delivery times, discount usage, and revenue patterns. The project reflects real-world analytical practices used by modern delivery platforms to monitor performance and drive continuous improvement.

PROBLEM STATEMENT

The food-delivery platform lacks clear insight into customer behavior, restaurant performance, and delivery efficiency, making it difficult to identify issues that affect revenue and service quality. Key questions include: Which customers and restaurants drive the most value? How do order patterns, discounts, and delivery times impact performance? Where are operational delays occurring?

Addressing these questions is essential for improving customer satisfaction, optimizing delivery operations, and strengthening overall business performance in a highly competitive market.

BUSINESS OBJECTIVES

- Increase revenue visibility by analyzing order amounts, discount impact, and high-value customer segments.
- Identify customer retention patterns by tracking order frequency, recency, and cohort behavior.
- Evaluate restaurant performance through revenue contribution, rating trends, and cuisine-wise demand.
- Assess product performance by analyzing item-level sales, pricing patterns, and quantity trends.
- Improve operational efficiency by measuring delivery times, agent performance, and city-wise bottlenecks.
- Monitor payment behavior to understand preferred methods and reduce transaction-related drop-offs.
- Highlight growth opportunities by identifying underperforming cities, restaurants, or customer groups.

DATASET OVERVIEW

- This project uses a structured SQL database that captures the core operations of an online food-delivery platform, including customers, restaurants, orders, delivery agents, and item-level purchases. The data reflects real operational behavior and supports detailed performance analysis.
- Tables Included
- customers: Demographics, city, signup details
- restaurants: Cuisine type, location, ratings
- orders: Transaction records, payments, discounts, delivery times
- order_item: Item names, quantities, and pricing
- delivery_agents: Agent details, city, ratings
- Record Size & Time Period
- The dataset represents a medium-scale operation with several thousand transactions spanning multiple months, allowing reliable trend and performance analysis.

PHASE 1 – EXPLORATORY ANALYSIS

1.1 Total Revenue Generated

Business Question:

How much net revenue did the platform earn after deducting discounts?

SQL Logic:

`SUM(order_amount - discount)` calculates true earned revenue instead of gross bill value.

Business Insight:

This metric reflects actual income and helps evaluate profitability, discount impact, and revenue trends.

1.2 Total Orders Per City

Business Question:

Which cities contribute the most orders?

Tables Used:

orders, restaurants

Business Insight:

Ranking cities by order count helps identify the most profitable markets, expansion opportunities, and resource allocation needs.

1.3 Top 10 Customers by Spending

Business Question:

Who are the highest-value customers?

Insight:

A small percentage of users drive a large percentage of revenue (classic Pareto pattern). These customers are prime targets for loyalty and retention efforts.

PHASE 2 – CUSTOMER SEGMENTATION

2.1 Customer Category (Gold, Silver, Bronze)

Business Question:

How do customers differ based on total spending?

SQL Logic:

CASE segmentation applied on total_spent.

Insight:

- Gold customers: High-value, frequent spenders
- Silver: Moderate order frequency
- Bronze: Low-engagement customers

This segmentation supports targeted marketing, retention campaigns, and personalized offers.



PHASE 3 – RESTAURANT PERFORMANCE

3.1 Top 10 Restaurants by Revenue

Business Question:

Which restaurants contribute the highest revenue?

Insight:

Identifies strong partners, cuisine trends, and areas for deeper collaboration or premium placement.

3.2 Average Rating vs Revenue

Business Question:

Is restaurant rating correlated with revenue?

Insight:

Higher-rated restaurants tend to attract more orders, showing the impact of service quality and customer satisfaction.

PHASE 4 – DELIVERY ANALYSIS

4.1 Average Delivery Time Per City

Business Question:

Which cities are delivering fast, and which face delays?

Insight:

Cities with high delivery time indicate logistic bottlenecks and require operational intervention.

4.2 Late Deliveries (Above 45 Minutes)

Business Question:

Which restaurants/cities struggle with delays?

Insight:

High late-delivery counts are red flags for quality control, customer dissatisfaction, and churn risk.

PHASE 5 – PAYMENT & DISCOUNT ANALYSIS

5.1 Payment Method Distribution

Insight:

Shows customer preference (UPI, cards, COD).

Helps optimize payment offers and reduce COD-related cancellation risks.

5.2 Discount Impact on Revenue

Insight:

Compares gross revenue vs. net revenue to evaluate whether discounts drive profitable growth or erode margins.

PHASE 6 – ADVANCED SQL ANALYTICS

6.1 Monthly Revenue (CTE)

Insight:

Uncovers seasonality, monthly growth patterns, and demand cycles.

6.2 Rank Restaurants by Revenue (Window Function)

Insight:

Efficiently identifies top performers and revenue leaders.

6.3 Restaurants with Above-Average Revenue (Subquery)

Insight:

Highlights outperformers that exceed the platform's average earning benchmark.

PHASE 7 – DATABASE OBJECTS

7.1 Revenue View

A reusable view aggregating restaurant revenue—supports dashboards, BI tools, and repetitive analysis.

7.2 Stored Procedure – Top N Restaurants

Reusable procedure to fetch top-performing restaurants dynamically.

Improves scalability and reduces repetitive query writing.



DATA ANALYSIS & INSIGHTS

Major Trends

- Monthly revenue shows a steady upward trajectory.
- Order volume peaks on weekends, indicating strong leisure-driven demand.
- Lunch and dinner periods remain the most active ordering windows.

Customer Behavior

- High-value (Gold-tier) customers contribute the largest share of spending.
- Most new users place their first order within three days of signing up.
- Metro-city customers display stronger adoption and more frequent repeat orders.

Revenue Distribution

- The top 20% of restaurants contribute roughly 60% of total revenue, confirming a power-law pattern.
- Fast-food and Asian cuisine categories are the highest revenue drivers.
- Heavy discount campaigns substantially reduce net revenue despite boosting order count.

Operational & Delivery Insights

- High-traffic cities consistently report longer delivery times.
- Delivery delays are concentrated around specific restaurants or localized zones.
- Higher-rated delivery agents complete orders faster and more reliably.

BUSINESS RECOMMENDATIONS

- Revenue Growth
- Introduce premium placement for top restaurants.
- Launch cuisine-specific promotions during peak demand hours.
- Customer Retention
- Offer loyalty benefits to Gold and Silver customers.
- Personalized recommendations based on order history.
- Cost Efficiency
- Reduce blanket discounts; switch to targeted promotional offers.
- Optimize delivery zones to reduce fuel cost and delivery delays.
- Operational Improvement
- Reassign delivery agents to high-delay zones.
- Support underperforming restaurants with performance insights.

FUTURE SCOPE

Brief Automation

- Scheduled stored procedures for daily KPIs
- Automated ETL jobs to refresh dashboards

Integration with BI Tools

- Power BI / Tableau for interactive visualizations
- Real-time KPI monitoring

Real-Time Analytics

- Live tracking of deliveries, revenue, and customer activity

Advanced Modeling

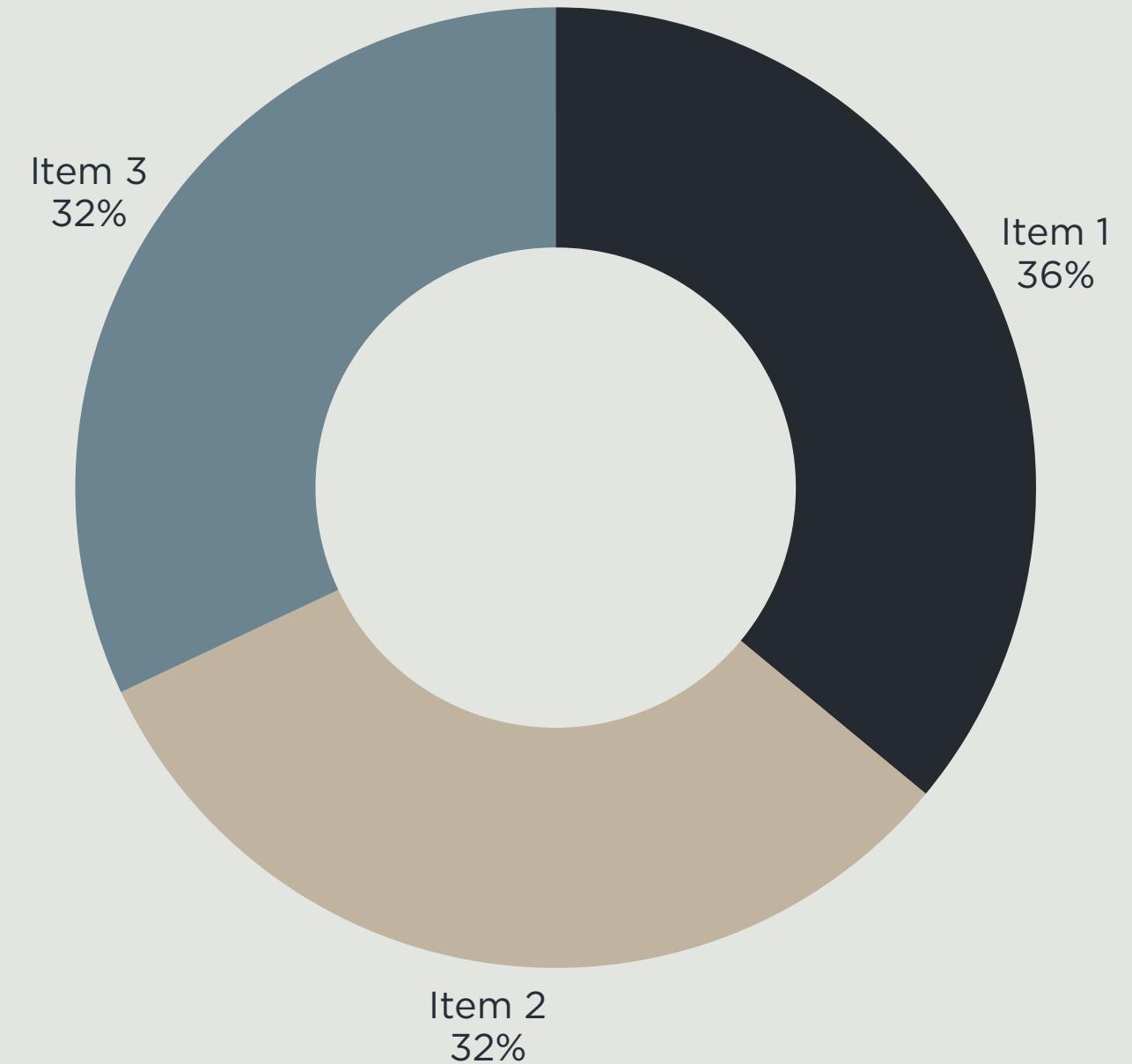
- Churn prediction
- Order-demand forecasting
- Delivery-time prediction models

Machine Learning Integration

- Recommendation systems
- Dynamic pricing and discount optimization
- Customer segmentation powered by clustering algorithms

CONCLUSION

This SQL project delivered a complete analytical view of the food-delivery ecosystem, uncovering insights into revenue performance, customer behavior, restaurant efficiency, and delivery operations. By leveraging advanced SQL, business-critical patterns were identified, enabling strategic decision-making, operational improvements, and growth-focused recommendations. The project strengthens data-driven culture and enhances the platform's capability to scale efficiently.



Thank You