# 📄 Swiggy: Strategic Delivery Time & Customer Satisfaction Analysis

## Executive Summary

Swiggy, India’s leading food delivery platform, wanted to understand **how delivery time impacts customer ratings** and identify **new cuisine and regional partnership opportunities** to expand market share.

The goal was to **quantify the relationship between operational efficiency and customer satisfaction**, segment performance by region and cuisine, and simulate how tactical improvements could drive loyalty and revenue.

## Business Problem Statement

Swiggy’s rapid growth highlighted an urgent need to answer:

* Does **longer delivery time significantly lower customer ratings**?
* Which **cuisine types and regions consistently earn high customer satisfaction**?
* Are there **under-served cuisine gaps** in high-demand zones?
* How much could **faster delivery directly uplift customer satisfaction**?

Without clear, data-driven answers, decisions on **partnerships, fleet investments, and promotions** risk underperforming.

## Challenges Identified

* **Data Gaps:** Delivery time and customer ratings live in separate data streams — Orders, Restaurants, Customers.
* **Regional Complexity:** Performance varies across cities, traffic conditions, weather, and local cuisine demand.
* **Operational Levers:** The link between speed and ratings is **not linear** — needed robust statistical validation.
* **Scenario Testing:** Management needed **What-If scenarios** — for example, *“If we cut delivery time by 10%, what’s the likely impact on ratings and repeat orders?”*

## Our Solution Approach

To answer these critical questions, we designed a **multi-step, integrated analytics solution**:

### ✅ Data Modeling (PostgreSQL)

* Built a clean relational schema for **Orders**, **Restaurants**, and **Customers**.
* Loaded realistic delivery data, regional cuisine information, and customer segments.

### ✅ Exploratory Data Analysis (Python)

* Cleaned and merged data for robust insights.
* Ran **correlation tests** to quantify the relationship between delivery time and ratings.
* Conducted **ANOVA tests** to check if cuisine significantly impacts average ratings.

### ✅ Operational Segmentation (Excel Pivot Tables)

* Created pivot tables and slicers to break down performance by **region, cuisine, age group, traffic levels, and delivery bands**.
* Modeled **What-If scenarios** to see how a 10% reduction in delivery time could shift customer ratings city-wise.

### ✅ Strategic Dashboarding (Power BI)

* Built a **3-page dynamic dashboard**:
  + **Executive Summary:** Core KPIs, city map, delivery vs ratings overview.
  + **Cuisine & Region Insights:** Best-performing cuisines, regional opportunities, demographic splits.
  + **What-If Scenario:** Live slider to simulate reduced delivery time and project impact on ratings.

## Technology & Tools Used

* **Database:** PostgreSQL for schema design, realistic data inserts, complex SQL (CTEs, window functions, ROLLUP, RANK).
* **Programming:** Python (Pandas, Seaborn, SciPy) for EDA, visualizations, and hypothesis tests.
* **Visualization:** Excel (Pivot Tables, Slicers, What-If tables).
* **Dashboard:** Power BI (Dynamic cards, DAX measures, What-If parameter, advanced visuals).

## Final Outcome

This end-to-end analysis and scenario model gives Swiggy’s leadership:

* A clear view of **how operational speed directly impacts customer ratings**.
* A breakdown of **which cuisines and regions are prime for new partnerships**.
* An actionable **What-If scenario model** to test investments in fleet, traffic partnerships, or operational shifts.

**In short, this solution turns disconnected data into a strategic roadmap for operational improvement, customer loyalty, and market expansion.**