Delivery Delay Analysis

GUVI HCL Project

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Project Description

This project **" Delivery Delay Analysis Dashboard"**, is built to analyze the delivery performance of e-commerce platforms using order-level data. Using Power BI, the dashboard visually presents key insights by combining bar charts, line graphs, scatter plots, heatmaps, and KPI cards. It tracks how delivery delays vary across platforms, product categories, order values, and customer ratings over time. The dashboard also highlights the impact of delays on customer satisfaction and refund requests. Users can interact with filters for platform, product category, and time to explore specific areas of interest. This helps in identifying patterns of delays, understanding customer feedback, and measuring business impact, ultimately supporting data-driven improvements in logistics and service quality.

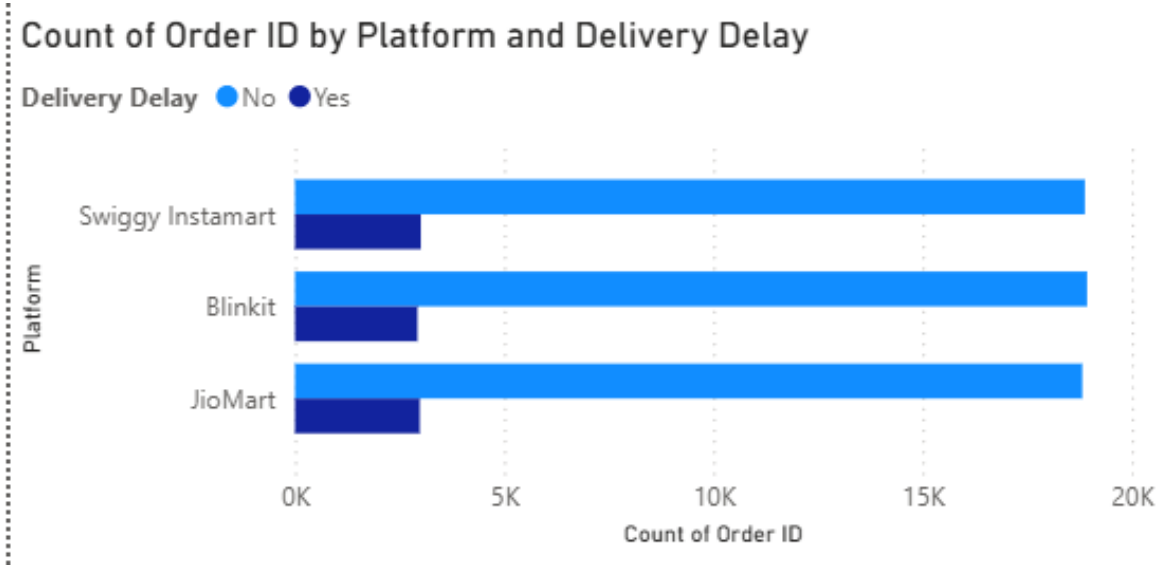
Data Cleaning & Preparation

- I obtained this dataset from an e-commerce platform. At the initial stage, the dataset contained a significant amount of **dirty data**, including outliers, missing values, duplicates, and irrelevant attributes that could affect the accuracy of analysis. To address these issues, I carried out a detailed **data cleaning and preprocessing process**, where missing values were handled, outliers were treated, and unnecessary fields were removed.
- In addition, I created a **new column essential for better insights and smoother visualization**. For instance, one of the raw fields contained a messy mix of date and time, which I carefully separated into two distinct variables—**Order Date** and **Order Time**—to enable more structured analysis. These transformations improved the dataset's consistency, made the visualizations clearer, and allowed trends to be interpreted with greater accuracy.
- Through this process, the dataset was transformed into a more **reliable, organized, and analysis-ready form**, laying the foundation for meaningful visual exploration and decision-making.

KPI Cards

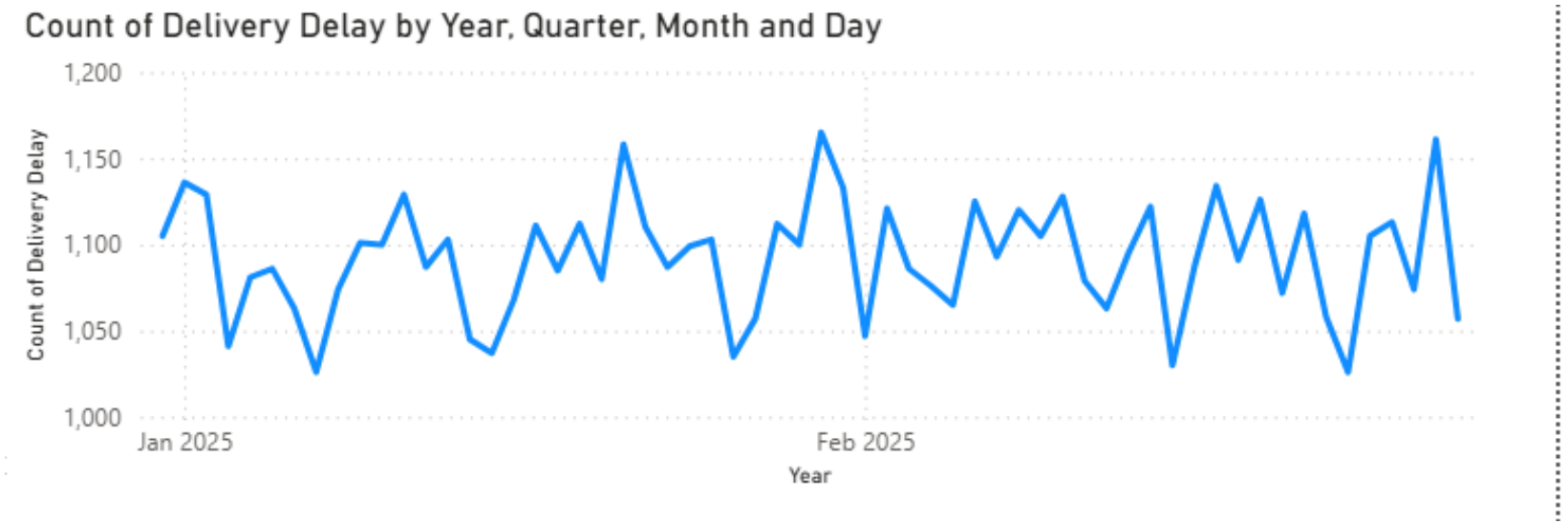
- **Count of Order (ID):** Total number of processed orders, indicating business volume. Higher counts reflect stronger sales and customer demand.
- **Average Delivery Time (Minutes):** Shows how quickly orders are fulfilled. Lower times mean better operational efficiency.
- **Delayed Orders (%):** Percentage of orders delivered late. Reflects reliability and punctuality in service.
- **Refund Rate (%):** Share of refunded orders due to issues or dissatisfaction. Highlights product or service quality concerns.
- **Sum of Order Value (MN):** Total revenue generated from orders in millions. Indicates financial performance and growth.

Bar Chart



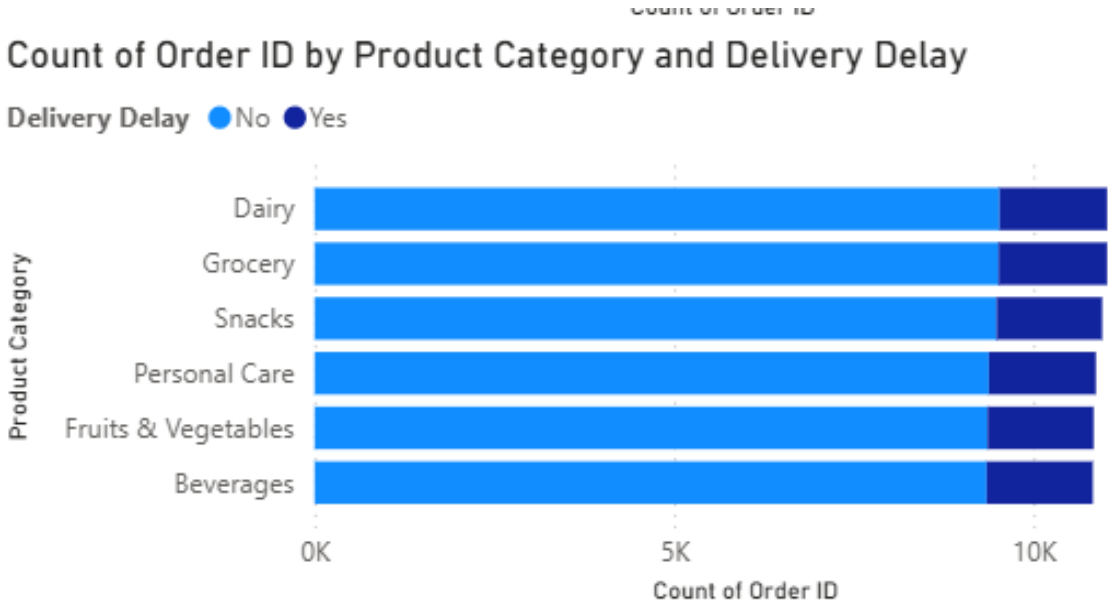
This bar chart visually compares **order volumes and delivery performance** across three major platforms—Swiggy Instamart, Blinkit, and JioMart. For each platform, two bars are displayed: one representing **on-time deliveries** and the other showing **delayed orders**, with clear color coding for easy distinction. The chart enables a quick assessment of which platform manages **higher order volumes** and highlights performance gaps by showing where **delivery delays are more frequent**, offering insights into both **market share and service efficiency**.

Line chart



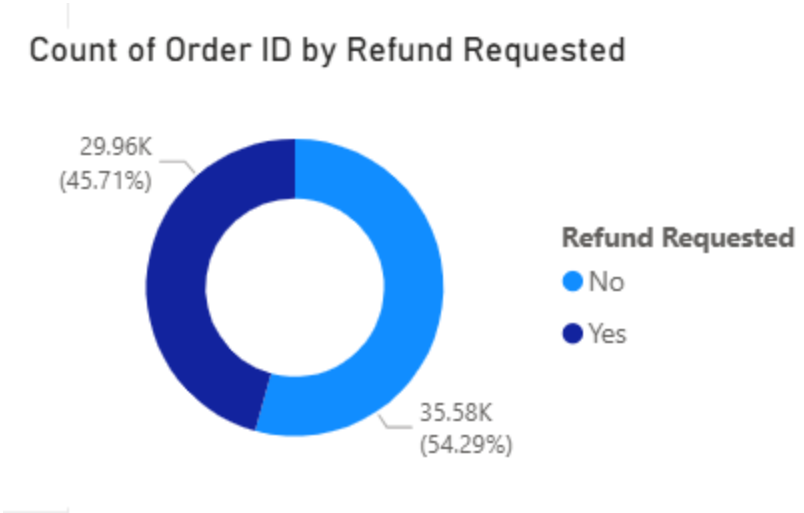
This line chart illustrates **delivery delay trends** from January 2015 to February 2016. The x-axis represents the timeline broken down into year, quarter, month, and day, while the y-axis shows the **number of delay incidents**. The fluctuating line highlights periods of **increased and reduced delays**, reflecting seasonal demand, holidays, or operational constraints. This visualization helps identify **peak delay periods, recurring challenges, and performance shifts**, making it a useful tool for **tracking historical trends and guiding improvements in logistics and supply chain management**.

Stacked Bar Chart



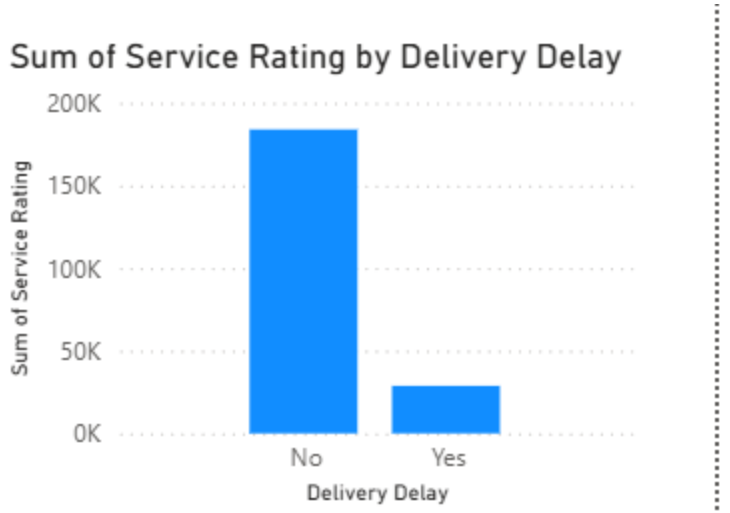
This **stacked bar chart** displays the **count of order IDs** across various **product categories**, segmented by **delivery delay status**. Categories like **Dairy**, **Grocery**, **Snacks**, and **Fruits & Vegetables** are shown on the **vertical axis**, while the **horizontal axis** represents the total number of orders. Each bar is split into two segments—**blue** for **on-time deliveries** and **purple** for **delayed deliveries**. This visual helps assess how different product types perform in terms of **delivery reliability**, making it useful for identifying categories that may need **logistics improvements** or **priority handling**.

Donut Chart



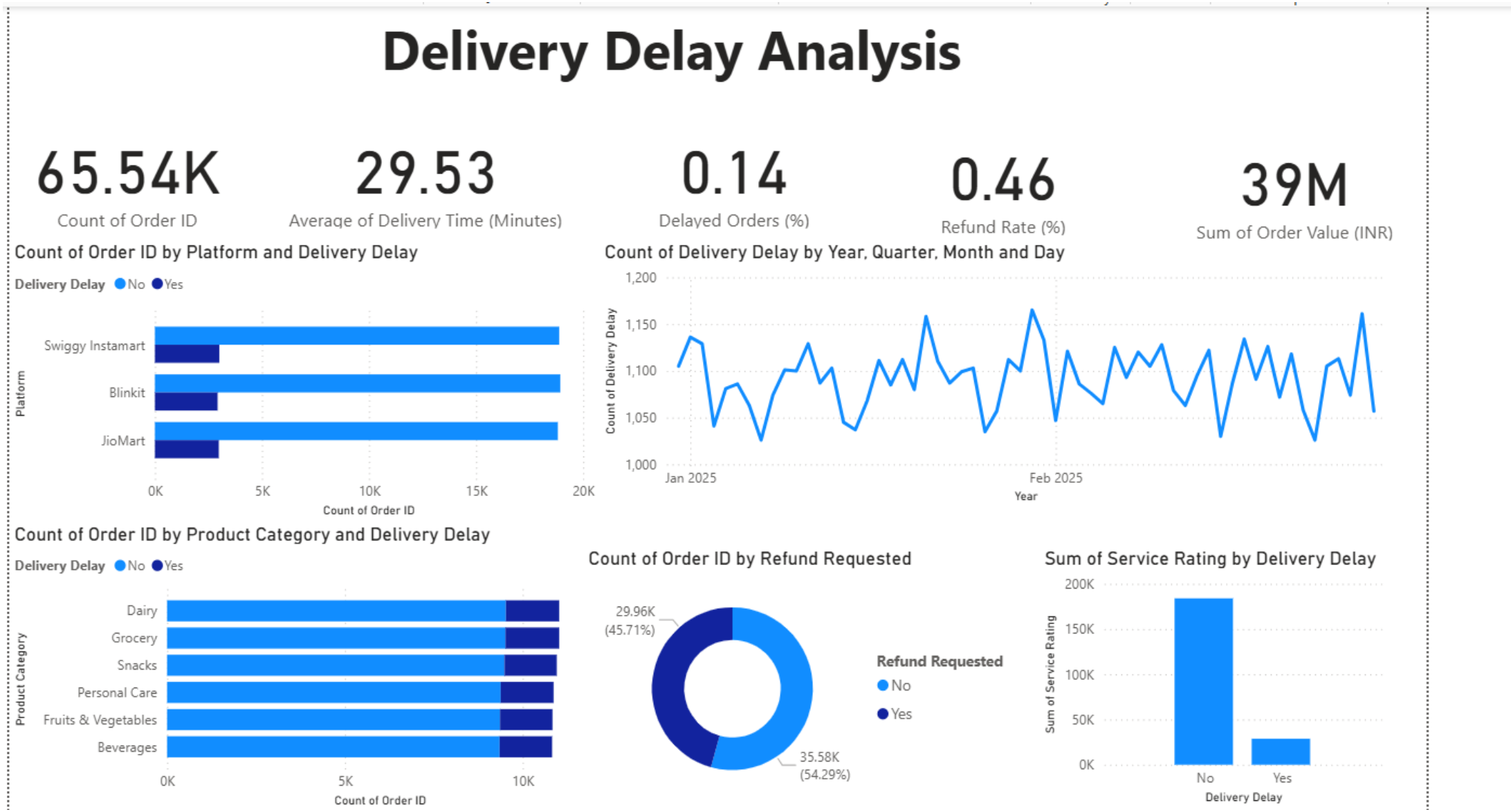
This **donut chart** visualizes the proportion of **orders with refund requests** versus those without. It's split into two segments: **light blue** for orders where a **refund was requested** and **dark blue** for those where it was **not**. The chart shows that **54.29%** of orders had a refund request, while **45.71%** did not. This breakdown is useful for understanding **customer behavior**, identifying potential **service or product issues**, and evaluating **business performance** in terms of **customer satisfaction**.

Bar Graph



This **bar graph** titled *"Sum of Service Rating by Delivery Delay"* compares the total **service ratings** between orders that were **delivered on time** and those that were **delayed**. The **x-axis** shows two categories—**No** and **Yes** for delivery delay—while the **y-axis** represents the **sum of service ratings**. The bar for **on-time deliveries** is significantly higher, indicating that **timely delivery** is strongly associated with **better customer ratings**, while delays tend to result in **lower satisfaction**. This visual emphasizes the impact of **delivery performance** on **customer experience**.

DashBoard


Delivery Delay Analysis
65.54K
Count of Order ID
29.53
Average of Delivery Time (Minutes)
0.14
Delayed Orders (%)
0.46
Refund Rate (%)
39M
Sum of Order Value (INR)
Count of Order ID by Platform and Delivery Delay
Delivery Delay No Yes
Swiggy Instamart
Blinkit
JioMart
Platform
0K
5K
10K
15K
20K
Count of Order ID
Count of Delivery Delay by Year, Quarter, Month and Day
1,200
1,150
1,100
1,050
1,000
Count of Delivery Delay
Jan 2025
Feb 2025
Year
Count of Order ID by Product Category and Delivery Delay
Delivery Delay No Yes
Dairy
Grocery
Snacks
Personal Care
Fruits & Vegetables
Beverages
Product Category
0K
5K
10K
Count of Order ID
Count of Order ID by Refund Requested
29.96K
(45.71%)
35.58K
(54.29%)
Refund Requested
No
Yes
Sum of Service Rating by Delivery Delay
200K
150K
100K
50K
0K
Sum of Service Rating
No
Yes
Delivery Delay