

## **End-to-End Order Fulfilment Process Analysis**

This report presents a business process analysis of the Order-to-Delivery process using the Brazilian E-Commerce Public Dataset by Olist. The objective is to identify process bottlenecks, evaluate delivery performance, and propose improvement actions.

### **1. Business Problem**

Order fulfilment is a critical operational process in e-commerce. Delays between order placement and delivery negatively affect customer satisfaction and increase logistics costs. This study examines how the fulfilment process operates in practice and where inefficiencies occur.

### **2. Data and Methodology**

Transactional order data was transformed into a process event log. Each order represents a process case, and key timestamps define process activities. Time-based metrics were calculated to evaluate performance and Service Level Agreement (SLA) compliance.

### **3. Process Description**

The analysed Order-to-Delivery process consists of the following steps:

- Order Placed
- Order Approved
- Handed to Carrier
- Delivered to Customer

### **4. Bottleneck Analysis**

Analysis of processing times indicates that the longest delays occur during the Handed to Carrier to Delivered to Customer phase. This stage represents the primary bottleneck of the process.

### **5. SLA Performance**

A comparison between actual and estimated delivery dates shows that a significant portion of orders breach the SLA. Late deliveries are associated with longer end-to-end fulfilment times.

### **6. Recommendations**

- Monitor last-mile delivery performance using KPIs.
- Improve delivery time estimation using historical data.
- Identify high-risk orders early based on order characteristics.
- Use SLA breach rate as a continuous performance metric.

### **7. Conclusion**

This project demonstrates how business process analysis can be applied to transactional data to identify inefficiencies and support data-driven operational decision-making.