Preliminary Analysis of Order and Delivery Performance

Executive Overview, Delivery Resource Allocation, Delay & Tracking Insights, and Customer Experience

# Executive Overview

The purpose of this report is to provide a comprehensive preliminary analysis of the current status of order fulfillment, delivery operations, delay trends, and customer experience within the organization. Drawing upon the latest key performance indicators (KPIs), the analysis aims to highlight strengths, identify opportunities for improvement, and set the stage for targeted interventions to boost operational efficiency and customer satisfaction.

Total Orders and Order Completion Status

The current analysis period records a total of 1,500 orders. Of these, 733 orders have been completed, while 767 orders remain in progress. This near-equal split between completed and pending orders suggests a dynamic operational pipeline, requiring continuous monitoring to ensure timely completion and to avoid backlog accumulation. The in-progress orders merit further tracking to anticipate possible delays and mitigate customer dissatisfaction.

Order Volume Metrics

- Average Delivery time: 151.7 mins

- Minimum Delivery: 60 mins

- Maximum Delivery time: 239mins

These metrics reflect variability in order inflow, which can be attributed to market cycles, promotional campaigns, or external factors influencing customer behavior. Understanding the drivers behind these fluctuations is essential for resource planning.

Delay Time Analysis

- Maximum Delay Time: 14.5 mins

- Average Delay Time: 0 mins

- Minimum Delay Time: 29 mins

The delay time data presents some anomalies, most notably an average of 0 and a minimum exceeding the maximum. This suggests a need to validate the dataset and ensure accurate time tracking. Nevertheless, the high maximum delivery time highlights potential bottlenecks or exceptional cases, possibly due to external disruptions, complex delivery zones, or resource constraints.

Further clarification and detailed reporting are necessary to provide a full picture of delay patterns and their root causes.

Customer Feedback Distribution

Customer satisfaction is crucial for long-term success. The feedback data is distributed as follows:

* Neutral: 529 responses
* Positive: 490 responses
* Other (possibly Negative): 481 responses

The distribution shows a healthy proportion of neutral and positive feedback, although the unspecified category (likely negative) remains significant, signaling room for improvement in service delivery.

Top Delayed Delivery Zones

Analysis identifies Z1 and Z3 as the zones most affected by delivery delays. These areas should become the focus of targeted investigation to uncover and address the underlying issues—be it traffic congestion, staffing shortages, or logistical complexity.

# Delivery Resource Allocation

Optimal allocation of delivery resources is pivotal for maximizing efficiency and minimizing wait times for customers. The following aspects are examined:

Orders per Delivery Zone

Tracking the order volume by zone enables better forecast of staffing and vehicle requirements. Imbalances in order distribution may indicate the need for dynamic resource reallocation or strategic adjustments in service reach.

Average Delivery Time per Zone

By analyzing delivery time on a per-zone basis, performance disparities can be detected. Chronically slower zones may benefit from revised routing, increased staffing, or alternative delivery models (e.g., micro-fulfillment centers).

Delivery Rules vs. Performance

The effectiveness of current delivery policies—such as cut-off times, batching rules, and loading protocols—should be measured against actual performance. Deviations may reveal gaps between policy and practice, pointing to opportunities for process refinement.

# Delay & Tracking Insights

Delays not only impact customer satisfaction, but can also erode operational margins through overtime, vehicle wear, and resource inefficiency.

**Top Delayed Delivery Zones**

Zones most affected by delivery delays: Z1 and Z3 13.

**Delivery Resource Allocation**

* **Orders per Delivery Zone**:
  + Z1: 923,840
  + Z2: 905,687
  + Z3: 796,223
* **Average Delivery Time and Delay per Route and Zone**:
  + Z1: r1 (14.5, 159) mins, r2 (13.8, 157) mins, r3 (14.4, 153) mins, r4 (14, 143) mins, r5 (14, 149) mins
  + Z2: r1 (14.7, 163) mins, r2 (15.4, 147) mins, r3 (14.9, 150) mins, r4 (15, 142) mins, r5 (13, 152) mins
  + Z3: r1 (15.2, 159) mins, r2 (15, 146) mins, r3 (15.4, 157 ) mins, r4 (14, 150) mins, r5 (13, 149) mins
* **Most Efficient Drivers or Vehicle Types**:
  + Van A: More efficient in Z1 and Z2 with the least delay time
  + Truck B: More efficient in Z3
  + Bike C: More efficient in Z1
  + Van A: Higher efficiency in delivery in Z2 and Z3

Delay Trends by Hour/Day

Fine-grained temporal analysis uncovers patterns of delay concentration. For example, peak hour congestion, weekend staffing shortages, or late-evening logistical challenges may surface as key contributors to overall delay rates. By mapping delays at different times, the organization can proactively shift resources or adjust schedules to flatten these peaks.

Delays by Zone and Time

Integrating geographic and temporal data yields a matrix of risk by both zone and hour. Hotspots (such as Z1 and Z3) identified earlier can be further segmented by time of occurrence, allowing for highly targeted interventions—whether in rescheduling, route optimization, or resource surges.

Driver Delay Patterns

Individual driver performance data can illuminate trends, such as particular routes or time slots where delays are frequent. By providing feedback and additional training to drivers or revising assignment protocols, performance can be improved. It is critical that such analysis is conducted with an eye towards fairness and context, recognizing external factors beyond drivers’ control.

# Customer Experience & Feedback

Customer perceptions, as captured through feedback and delay correlations, are a vital indicator of service quality.

Feedback Trend Over Time

By plotting feedback data against time, shifts in customer sentiment can be tracked. Spikes in neutral or negative feedback may coincide with operational disruptions, changes in policy, or external events. Recognizing and responding to these trends promptly is vital for reputation management.

Delays vs. Customer Satisfaction

A direct correlation often exists between delivery delays and increased negative feedback. Quantifying this relationship helps prioritize efforts: reducing delays in the most affected zones or time slots is likely to yield the greatest improvements in customer satisfaction.

Additional Insights & Recommendations

* Validate and clean the delivery time data to resolve anomalies.
* Establish automated alerts for delays in top-affected zones (e.g., Z1, Z3).
* Implement ongoing driver training and feedback mechanisms.
* Regularly review and adjust delivery resource allocation based on peak periods and zone-specific demand.
* Enhance customer communication protocols to mitigate the impact of unavoidable delays.
* Leverage predictive analytics to anticipate demand spikes and proactively mobilize resources.

**Expedited Rules Usage and Impact:** Expedited rules are used in 32% of all transactions. These rules tend to result in more negative and neutral feedback compared to positive feedback 1.

**Monitoring Order Progress and Identifying Delays:**

* **Common Time Slots and Zones for Delays:** Delays frequently occur at 10am, 11am, 1pm, and 3pm. Zone Z1 experiences above-average delays, while Zone Z3 has average delays .
* **Pattern Between Order Placement Time and Delivery Delay:** Orders placed early in office hours experience fewer delays compared to those placed between 10am and 1pm, with the highest delays at 1pm during workers' break times. Delays decrease at 2pm but rise significantly between 3pm and 4pm due to worker fatigue. Wednesdays and Thursdays have the highest delay tendencies, with above-average delays occurring 90% of the time .
* **Drivers with Consistent Performance Issues:** The document does not specify which drivers have consistent performance issues .

**Enhancing Customer Communication:**

* **Percentage of On-Time Deliveries:** Only 1.40% of customers (21 customers) receive their deliveries within the expected window

**Reducing Order Backlogs and Operational Costs:**

* **Percentage of Delayed Orders and Average Delay Duration:** 97% of orders are delayed, with an average delay duration of 14.51 minutes
* **Impact of Allocation Rules on Delays:** Expedited rules seem to cause increased delays, with an average delay of 15.03 minutes .
* **Driver-to-Order Ratio per Delivery Zone:**
  + Z1: 0.00056 drivers per order
  + Z2: 0.00056 drivers per order
  + Z3: 0.00058 drivers per order

**Elevating Customer Satisfaction:**

* **Correlation Between Delays and Customer Feedback:** There is a substantial amount of negative feedback when delay times reach 14.59 minutes. Neutral feedback remains fairly constant even with a decrease in delay times, while positive feedback is seen at peak delay times, mainly from clients in the farthest zones (Z3) .
* **Feedback Trends by Zone and Driver:** Negative feedback increases across zones from Z1 to Z3, with Z3 at its peak as average delay times increase. Neutral feedback remains constant, while positive feedback peaks in Z2 and decreases in Z1 and Z3 .
* **Impact of Allocation Rules on Customer Satisfaction:** Negative sentiments increase across all allocations, raising concerns about their impact. Neutral sentiments decrease steadily, while positive sentiments plunge within the expedited rule allocation but increase with standard rules .
* **Routes and Zones with Most Negative Feedback:** Route 5 has the highest negative sentiments (123), followed by Route 2 (107). Zones Z1 and Z2 have the highest negative feedback (185 each)

# Conclusion

This preliminary analysis highlights both achievements and challenges in the current order and delivery system. While a solid base of completed orders and customer satisfaction exists, delays and regional disparities must be addressed to unlock further operational gains. By focusing on data-driven resource allocation, process refinement, and customer-centric improvements, the organization is well-positioned to advance towards higher efficiency and stronger market reputation.