Pickup and Delivery Operations Analysis Dashboard Documentation

1. Data Loading and Preparation

a. Import Dataset

Home > Get Data > csv or text file and import the dataset.

b. Data Cleaning (most done in python)

Review dataset for missing or inconsistent data.

Ensure timestamps are correctly formatted.

Add conditional column contains a fake year to add it in ds to transfer it to date type.

2. Data Transformation

a. Convert Timestamp Columns to Date/Time Format

Open **Power Query Editor**.

Insure Converting Accept Time, Pickup Time, and Delivery Time to Date/Time format.

b. Create Calculated Columns

ETA Calculation: ETA = Pickup Time - Accept Time

Delivery Time Calculation: Delivery ETA = Delivery Time - Accept Time

Time Window Compliance: Categorize pickups as On-Time or Delayed based on defined time windows.

Region-Based Analysis: Assign region_id based on pickup/delivery locations.

Courier Efficiency: Calculate time taken by each courier for pickups and deliveries.

Add the year to ds and transforming it to date type and merge it to one column.

Add delivery target time base in 30 mins delivery by this dax equation :

Target time = average ETA time * .30

3. Data Modeling for(pickup and delivery)

a. Create Measures (for KPIs)

Pickup Performance KPIs:

Average ETA:

AvgETA = SUM('Data'[ETA]) / COUNT('Data'[Pickup ID])

Median ETA:

MedianETA = MEDIAN('Data'[ETA])

On-Time Pickup Rate:

OnTimePickupRate = (COUNTROWS(FILTER('Data', 'Data'[ETA] <= 'Data'[Time_Window_End])) / COUNTROWS('Data')) * 100

Delayed Pickup Rate:

DelayedPickupRate = (COUNTROWS(FILTER('Data', 'Data'[ETA] > 'Data'[Time_Window_End])) / COUNTROWS('Data')) * 100

ETA Variability (Standard Deviation):

ETAVariability = STDEV.P('Data'[ETA])

Courier Efficiency:

CourierEfficiency = SUM('Data'[ETA]) / COUNT('Data'[Courier ID])

Delivery Performance KPIs:

Average Delivery ETA:

AvgDeliveryETA = SUM('Data'[Delivery ETA]) / COUNT('Data'[Package ID])

On-Time Delivery Rate:

OnTimeDeliveryRate = (COUNTROWS(FILTER('Data', 'Data'[Delivery ETA] <= 'Data'[Target Time])) / COUNTROWS('Data')) * 100

Delayed Deliveries Percentage:

DelayedDeliveryRate = (COUNTROWS(FILTER('Data', 'Data'[Delivery ETA] > 'Data'[Target Time])) / COUNTROWS('Data')) * 100

4. Filters and Slicers (pickup and delivery)

Date Selector (ds) – Filter by date range.

City Filter – View performance across cities.

Region ID & AOI ID – Analyze delays by location.

Courier ID – Track individual courier performance.

Time Window Compliance – Filter on-time vs. delayed pickups.

ETA Range Selector – Identify trends within specific ETA ranges.

5. Dashboard Visualizations

Pickup Analysis Visuals:

Overall ETA Performance (KPI Cards): Displays Avg ETA, Median ETA, On-Time Pickup Rate, Delayed Pickup Rate.

ETA Distribution (Histogram/Box Plot): Visualizes the frequency and outliers in ETA data.

Trend Analysis (Line Chart): Displays ETA trends over time.

Courier Performance (Bar Chart): Compares average ETA per courier.

Region-Wise ETA Analysis (Choropleth Map): Shows ETA performance across regions.

On-Time vs. Delayed Pickups (Pie Chart): Percentage of on-time vs. delayed pickups.

Delivery Analysis Visuals:

Delivery KPI Cards: Displays Avg Delivery ETA, On-Time Delivery Rate, Delayed Delivery %.

City-wise Performance (Heatmap): Identifies regions with high delays.

Courier Delivery Efficiency (Bar Chart): Ranks couriers by their average delivery ETA.

On-Time vs. Delayed Deliveries (Pie Chart): Distribution of successful vs. late deliveries.

ETA Trend Over Time (Line Chart): Identifies seasonal fluctuations.

6. Conclusion and Insights

For pick up there wasn't a lot of delay it was about 1.15% and it is an acceptable percentage comparing to delivery delay percentage that exceeded 99% and ,most of it happened in April and the most city that have delay in delivery was Shanghai .