Courier Performance & Productivity Analysis Dashboard Report

1. Introduction

1.1 Objective

The purpose of this dashboard is to analyze courier performance by evaluating delivery speed, workload distribution, and movement efficiency. This analysis aims to identify top-performing couriers, detect inefficiencies, and optimize task allocation for enhanced operational efficiency.

2. Key Performance Indicators (KPIs) & Formulas

2.1 Total Deliveries Per Courier

Formula:

Total Deliveries = COUNT('Deliveries'[package_id])

Measures the number of deliveries completed by each courier.

2.2 Average Delivery Time Per Courier

Formula:

Avg Delivery Time = AVERAGE('Deliveries'[delivery_time] - 'Deliveries'[accept_time])

Analyzes courier efficiency in completing tasks.

2.3 Average Acceptance to First Movement Time Per Courier

Formula:

Avg First Movement Time = AVERAGE('Deliveries'[accept_gps_time] - 'Deliveries'[accept_time])

Evaluates how quickly couriers start moving after accepting a task.

2.4 Peak Delivery Hours Per Courier

Formula:

Peak Delivery Hour = HOUR(MAX('Deliveries'[accept_time]))

Identifies the busiest working hours for each courier.

2.5 Regional Efficiency of Couriers

Formula:

Regional Efficiency = AVERAGE('Deliveries'[delivery_time] - 'Deliveries'[accept_time])

Compares courier efficiency across different regions.

2.6 Delivery Density Per Courier

Uses GPS coordinates (delivery_gps_lng, delivery_gps_lat) to map delivery locations per courier.

2.7 Average Idle Time Per Courier

Formula:

Avg Idle Time = AVERAGE('Deliveries'[accept_time] -

CALCULATE(LAG('Deliveries'[delivery_time],1,0),PARTITION BY 'Deliveries'[courier_id] ORDER BY 'Deliveries'[accept_time]))

Determines the amount of idle time between deliveries.

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3. Filters & Slicers

✓ **Date (ds)**
✓ **Courier ID**
✓ **City**
✓ **Region**
✓ **AOI Type**

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4. Visualizations

📌 **KPI Cards:** Displays Total Deliveries, Average Delivery Time, and Idle Time.

📌 **Bar Chart:** Shows Total Deliveries Per Courier.

📌 **Line Chart:** Tracks Average Delivery Time Per Courier Over Time.

📌 **Geo Heatmap:** Plots Delivery Density Per Courier using GPS coordinates.

📌 **Box Plot:** Displays Variability in Acceptance to First Movement Time Per Courier.

📌 **Scatter Plot:** Compares Idle Time vs. Total Deliveries Per Courier.

📌 **Histogram:** Shows Peak Delivery Hours Per Courier.

Pickup Demand Forecasting Dashboard Report

1. Introduction

1.1 Objective

This dashboard aims to analyze demand trends, pickup efficiency, and courier responsiveness to optimize last-mile delivery performance.

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2. Key Performance Indicators (KPIs) & Formulas

2.1 Average Pickup ETA

Formula:

Avg Pickup ETA = SUM('Pickups'[ETA]) / COUNT('Pickups'[package_id])

Measures the average time from task acceptance to pickup.

2.2 On-Time Pickup Rate

Formula:

On-Time Pickup Rate = DIVIDE(COUNTROWS(FILTER('Pickups','Pickups'[ETA] <= 'Pickups'[time_window_end])), COUNT('Pickups'[package_id])) * 100

Percentage of pickups completed within the expected time window.

2.3 Regional Pickup Efficiency

Formula:

Regional Pickup Efficiency = SUM('Pickups'[ETA])

Compares pickup time trends across different regions.

2.4 Pickup Volume by AOI

Formula:

Pickup Volume = COUNT('Pickups'[package_id])

Shows package volume distribution by AOI (Area of Interest).

2.5 City-Level Pickup Performance

Formula:

City Pickup Performance = AVERAGE('Pickups'[ETA])

Measures pickup time efficiency across different cities.

2.6 Courier Response Time

Formula:

Courier Response Time = AVERAGE('Pickups'[accept_time] - 'Pickups'[pickup_time])

Analyzes how quickly couriers complete pickups after accepting tasks.

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3. Filters & Slicers

✓ **Date Range Selection**
✓ **City & Region Filter**
✓ **AOI Type Filter**
✓ **Courier Filter**

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4. Recommended Visualizations

📌 **Pickup ETA Trend (Line Chart):** Shows pickup efficiency over time.
📌 **On-Time Pickup Rate (Gauge Chart):** Displays the percentage of on-time pickups.
📌 **City-Wise Pickup Performance (Bar Chart):** Compares average pickup time by city.
📌 **Pickup Volume by AOI (Pie Chart):** Shows distribution of pickups.
📌 **Regional Pickup Efficiency (Heatmap):** Identifies regions with slow or fast pickups.
📌 **Courier Response Time (Scatter Plot):** Analyzes courier efficiency.

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6. Conclusion

This report provides a detailed analysis of courier performance and pickup demand forecasting using advanced Power BI visualizations and DAX formulas. By leveraging these insights, businesses can enhance operational efficiency, optimize resource allocation, and improve delivery reliability.