Week 2 – Dashboard & Analysis Report

1. Objective

To build an interactive Power BI dashboard to analyze SLA performance, delivery delays, carrier efficiency, and cost patterns.

2. Data Source

Used cleaned dataset from Week 1 (week1_cleaned_data), ensuring all calculations are based on validated data.

3. KPIs Created

- Total Shipments: 200K
- SLA Breach Rate: ~47%
- On-Time Delivery Rate: ~53%
- Average Delivery Delay (Delayed Only): ~3.7 days
- Average Shipping Cost: ~$6.9K

4. Dashboard Development

Built the following visuals:

- SLA Breach Rate by Carrier (to identify underperforming carriers)
- SLA Breach Rate by Shipping Mode (using average of flag)
- Average Delay by Carrier (using delayed-only logic)
- Delivery Delay by Mode
- Shipment Volume Distribution (Donut chart)
- Cost Comparison by Shipping Mode
- Cost vs Reliability (On-time vs Breached)
- Route-level SLA risk table

Applied filters:

- Carrier
- Shipping Mode
- Region
- Origin & Destination

5. Key Calculations Logic

- SLA Breach Rate = Average of sla_breach_flag
- On-Time Rate = 1 - SLA Breach Rate
- Delay analysis used only positive delay values (>0)
- Ensured no use of SUM where percentage was required

6. Key Insights & Trends

- Around 47% of shipments breach SLA, indicating significant operational inefficiency
- Delay severity is consistent (~3.7 days) across carriers and modes
- Shipping mode does not significantly impact SLA breach (all ~47%)
- Road transport contributes higher cost and delay impact
- Air transport is costly but not completely reliable
- Rail shows relatively stable performance with lower variation
- Certain routes (e.g., international routes) show higher SLA risk

7. Business Interpretation

- SLA breaches are widespread and not limited to a single carrier or mode
- Performance improvement should focus on operational processes rather than just transport mode
- High-risk routes need monitoring and optimization
- Cost does not guarantee reliability, indicating inefficiencies

8. Validation

- All KPI values cross-checked with Excel
- Minor differences due to rounding (3.72 vs 3.73)
- Measures corrected (used AVERAGE instead of SUM where required)

9. Conclusion

The dashboard provides clear visibility into logistics performance, highlighting SLA risks, delay patterns, and cost inefficiencies. It enables better decision-making and forms a strong base for future predictive analysis.