Thorough Assessment of the Supply Chain Data Analysis

This report offers an in-depth look at the supply chain's performance, focusing on both operational flow and cost efficiency. It utilizes a wide range of charts and data summaries to highlight key aspects like shipment volume, route optimization, expense distribution, delivery consistency, how well vehicles are being utilized, cold chain oversight, and future demand forecasting with models like ARIMA and LSTM and Prophet.

Key Observations:

1. **Delivery Performance is a Critical Issue:**
    - OTIF (On-Time In-Full) rate is alarmingly low at (almost 20%)
    - -- Delays affect around 60% of deliveries, severely undermining service quality and customer satisfaction.
    - -- Delay and cancellation rates for most products hover around 25%, indicating some reliability problems.
2. **Cost Efficiency Has Room for Optimization:**
    - Average transport cost per delivery is MAD 3,485.16, with a per km cost of MAD 8.12 and per kg cost of MAD 0.85.
    - Rigid vehicles under FTL(full truck load) mode are the most expensive; LTL(less than truckload) modes offer a slightly better efficiency in volume per shippment (even though minor but can be a significant number in monthly/yearly shipments).
    - Cold chain shipments contribute significantly less to revenue (around 27M MAD) but surprisingly maintain similar cost structures.
3. **Forecasting Signals Stability but No Growth:**
    - ARIMA and LSTM forecasts for shipment volumes, weight, and cost indicate a relativly stable trend through 2025.
    - Minor downward trends in cost, but no volume increase suggests static demand.
4. **Vehicle Utilization Is Generally Good but Not the best:**
    - 80% of trips are optimally loaded.
    - However, 10% are underutilized and another 10% overloaded—both of which might indicates suboptimal fleet deployment.
    - High utilization even among cancelled trips implies issues may stem from planning or execution, not loading.

5. **Route and Regional Performance:**

    - Casablanca and Rabat dominate shipment volumes, with a non-significant better cost efficiencies.
    - Tanger-Tétouan, despite high volume, shows high cancellation trends.
    - Cold chain(tepmerature controlled positive) utilization is consistently low (~20%) and appears under-leveraged, calling for a retassessment of investments in temperature-controlled logistics.

Recommended Actions / Strategic Conclusions

1. **Prioritize Delivery Performance Overhaul (Critical):**

    - Implement tighter dispatch controls, dynamic routing, and predictive delay management to raise the OTIF rate.
    - Focus on root causes of delays (maybe warehousing lagsor other probable reasons).

2. **Rationalize Fleet and Mode Allocation:**

    - Rethinking usage of Rigid vehicles in FTL mode—shift marginal loads to LTL where it is doable.
    - consideration of dynamic load consolidation tools to boost cost efficiency without impacting timelines.

3. **Optimize Cold Chain Strategy:**

    - With low utilization and profitability, reassessement of the cold chain management is strongly advisable.
    - Either ramp up usage through aligned demand generation (e.g : sensitive SKUs) or redirect investment to ambient(temperature controlled negative) channels.

4. **Improve Data Quality and Monitoring:**

    - The 2025 volume drop might be linked to lack of data, data truncation or system gaps. Audit data pipelines to prevent misinterpretations in future forecasting and planning to have an enhanced assessment.

5. **Develop Targeted Forecasting Response Plans:**

    - Use the forecasted flat trends in volume and cost to plan for efficiency-based improvements rather than capacity expansion.

- This could involve automation, renegotiation of transport deployement, or regional warehouse placement reviews (if data available).

By addressing the operational weaknesses, especially in timing and vehicle deployment, the company can improve cost-efficiency, service quality, and supply chain resilience while maximizing returns on logistics infrastructure.