

An aerial photograph of a large cargo ship sailing on the ocean. The ship's deck is filled with numerous shipping containers stacked in various configurations. The containers are primarily white, blue, and red. The ship is moving from left to right, leaving a white wake in the blue water. The sky above is clear and light blue.

SUPPLY CHAIN ANALYSIS

Group:

Mariam Ashraf
Rowan Ahmed
Sara Mohamed
Rowan Mohamed
Mostafa Elhagri

Date: 7/12/2025

Dataset Overview

- Name: Supply Chain Dataset for an Indian cosmetics operation.
- Columns: **25** columns
- Rows: **100** rows
- Operating in **5** cities & partnering with **5** suppliers.
- Data discusses revenue, operations, and quality.

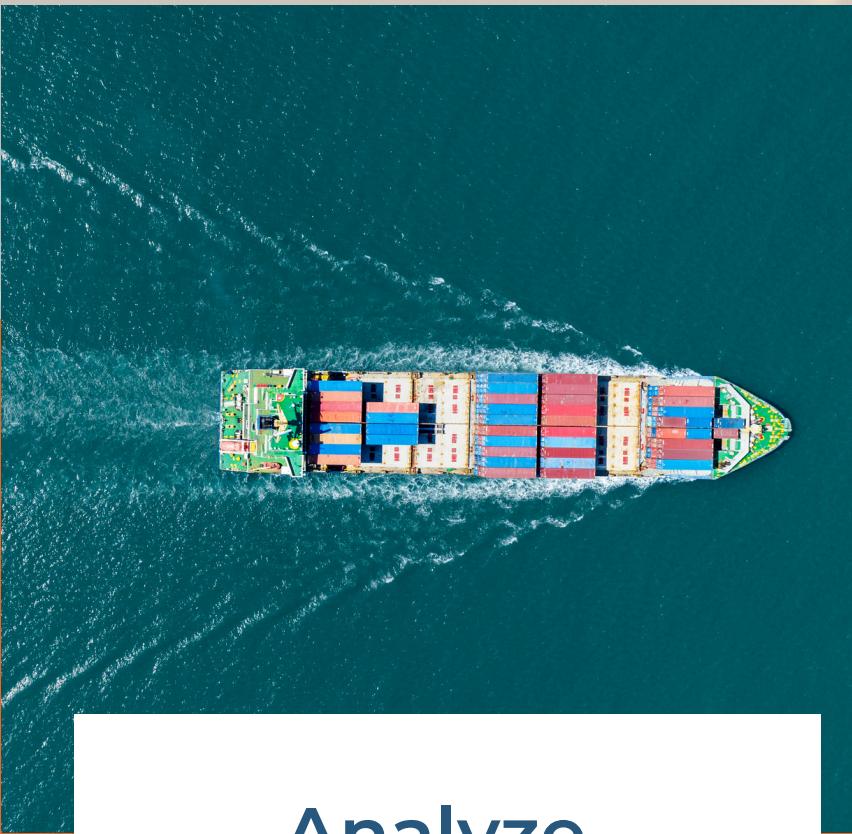


Executive Summary

- Strong revenue and profit performance
- Major operational weaknesses
 - High defect & inspection failure rates
 - Supplier quality & cost issues
 - Logistics delays & route inefficiencies
- Improvements needed in logistics, forecasting & supplier management



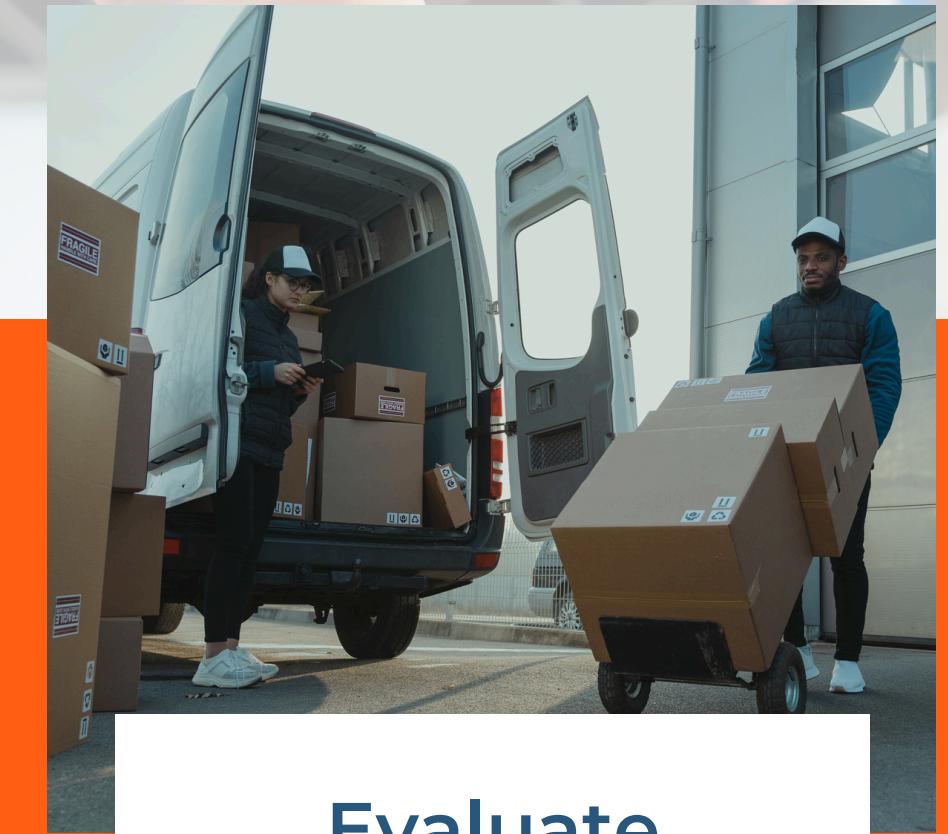
Why This Analysis was conducted



Analyze
logistics
performance



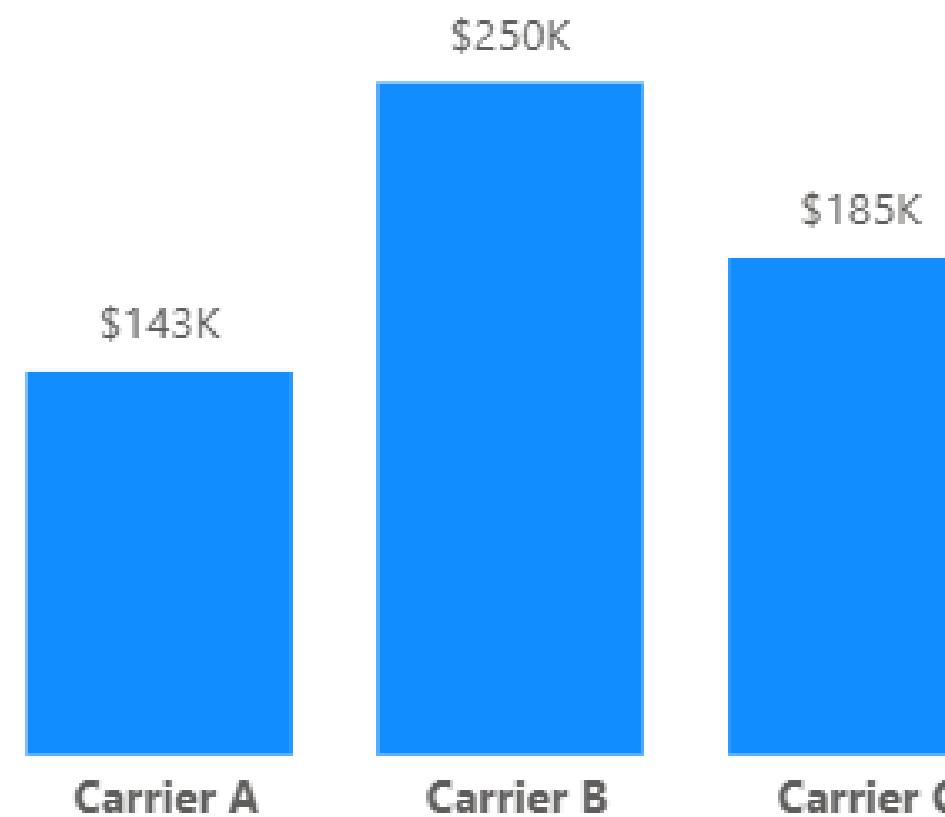
Support
data-driven
decision
making



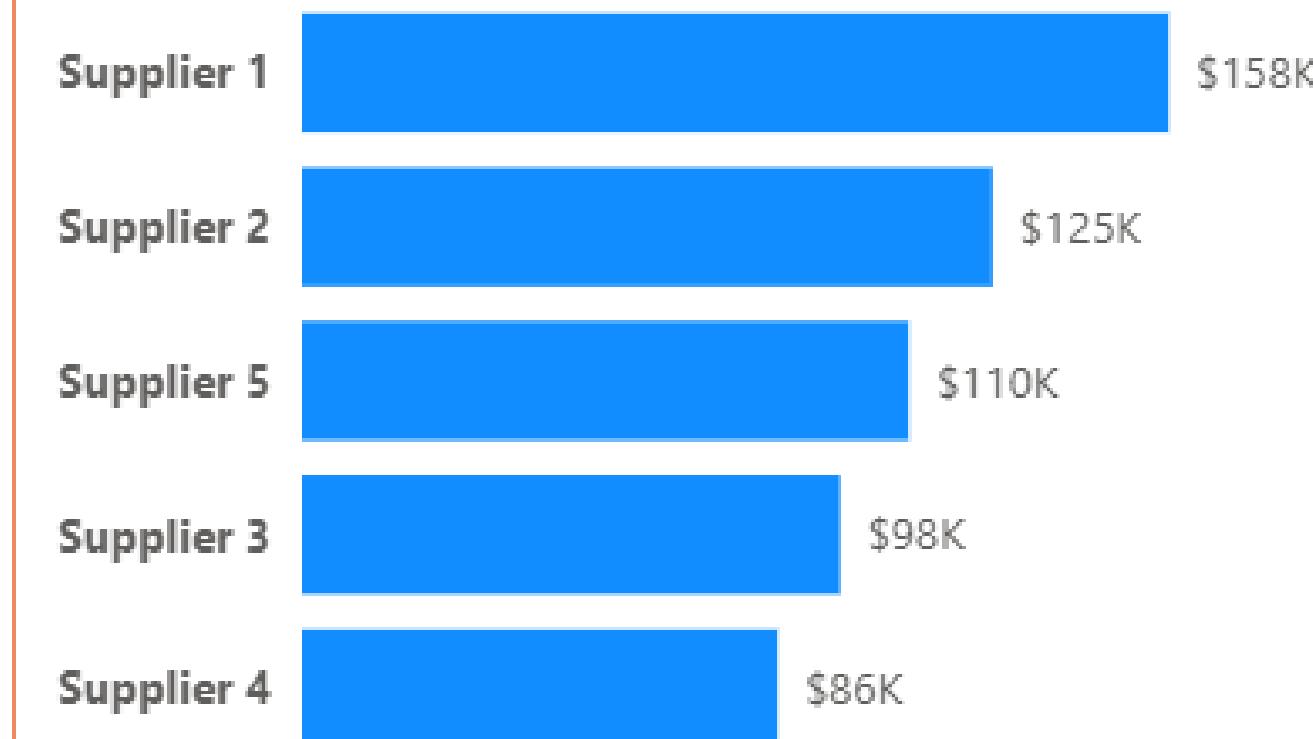
Evaluate
supplier
reliability & costs

Revenue Findings

Which shipping carrier brings in the most revenue?



Which supplier generates the highest revenue?



- Carrier B is the top performer (**\$250k**)
- Carrier A is the lowest at (**\$143K**)

- Supplier 1 generates the highest revenue at (**\$158K**)
- Supplier 4 is the lowest performer with (**\$86K**)

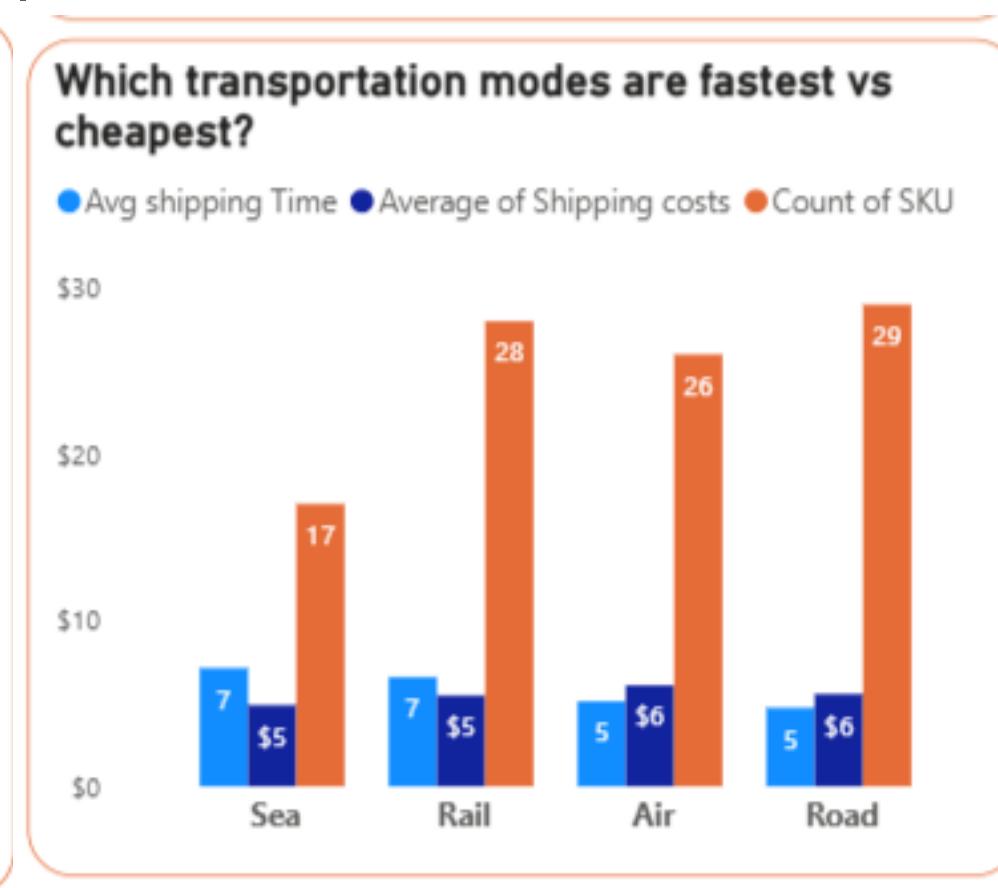
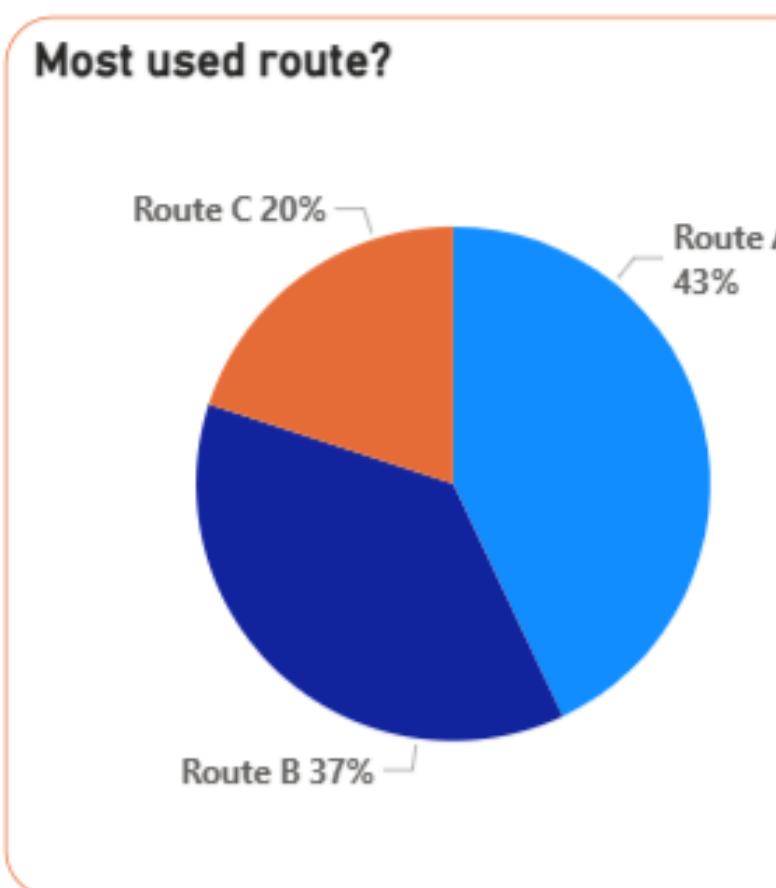
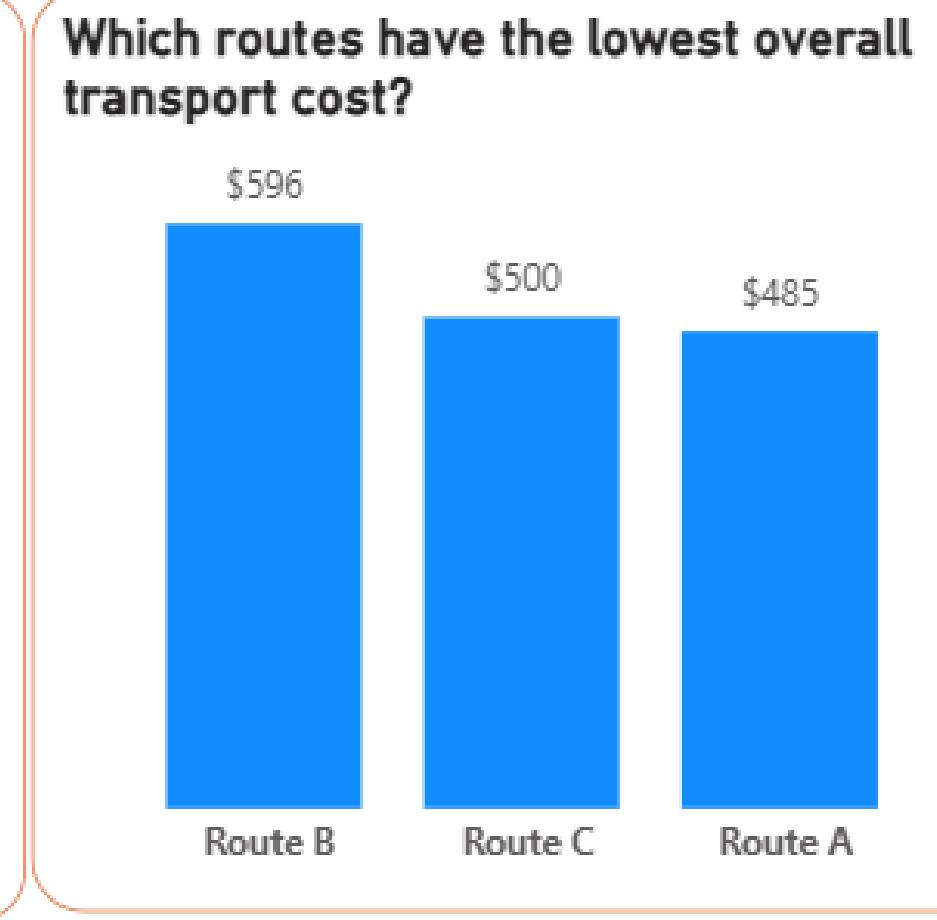
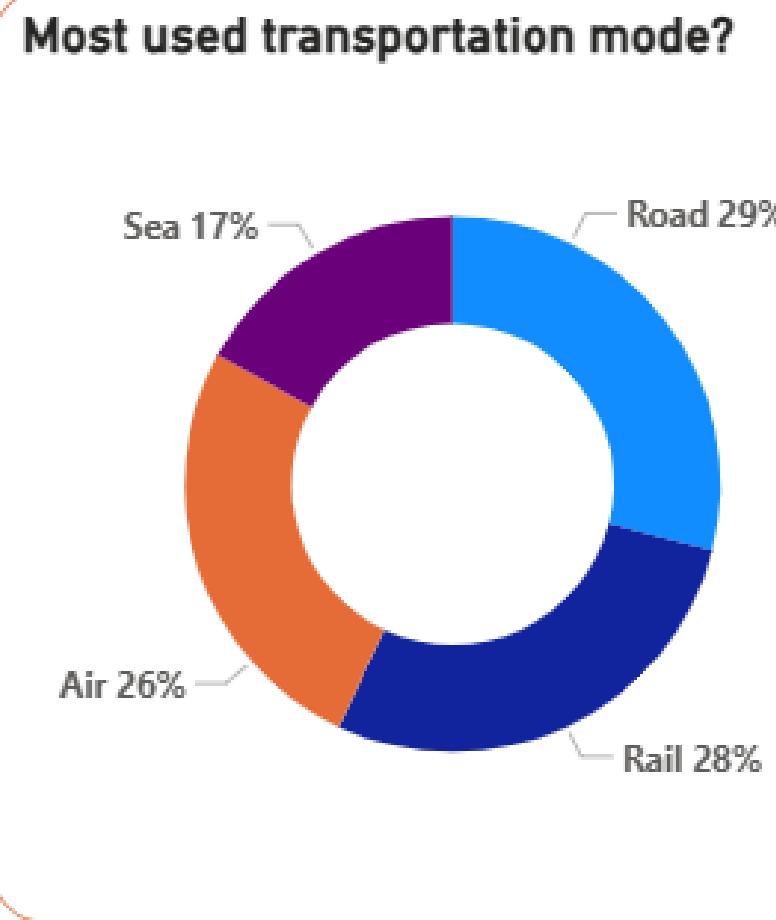
Recommendations

- Strengthen partnership with **Carrier B** and try extending its model to other carriers.
- Analyze why **Carrier A** underperforms—look into delays, customer dissatisfaction, or limited regions.
- Audit **Supplier 4** immediately.



Logistics Findings

- Cosmetics & haircare have the highest shipping cost.
- Route A is cheapest, Route B is most expensive.
- Kolkata and Mumbai have the longest lead times; Delhi is fastest.
- Road is most used, but Rail is cheaper and Air is fastest.
- Route A is most frequently used and cost-efficient.



Recommendations

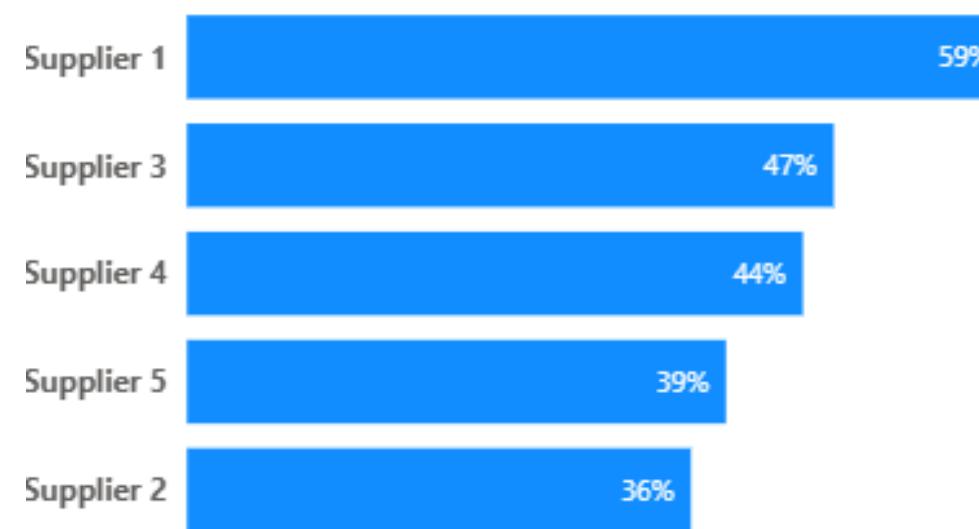
- Increase use of Rail for cost savings.
- Reduce dependence on Road transport.
- Prioritize Route A and review cost issues in Route B.
- Fix delays in Kolkata and Mumbai to improve lead times.
- Streamline handling and processing to shorten total lead time.
- Match transport modes to shipment priority (Air for urgent, Rail for cost).



Supplier Findings

- On-Time Delivery Rate: **46%**
- Average Defect Rate: **2.29%**
- Supplier 1** leads in on-time delivery.
- Supplier 4 & 2** deliver the highest production volumes
- Supplier 3 & 5** show the highest defect rates
- Manufacturing costs vary significantly, with **Supplier 1 & 4** being highest

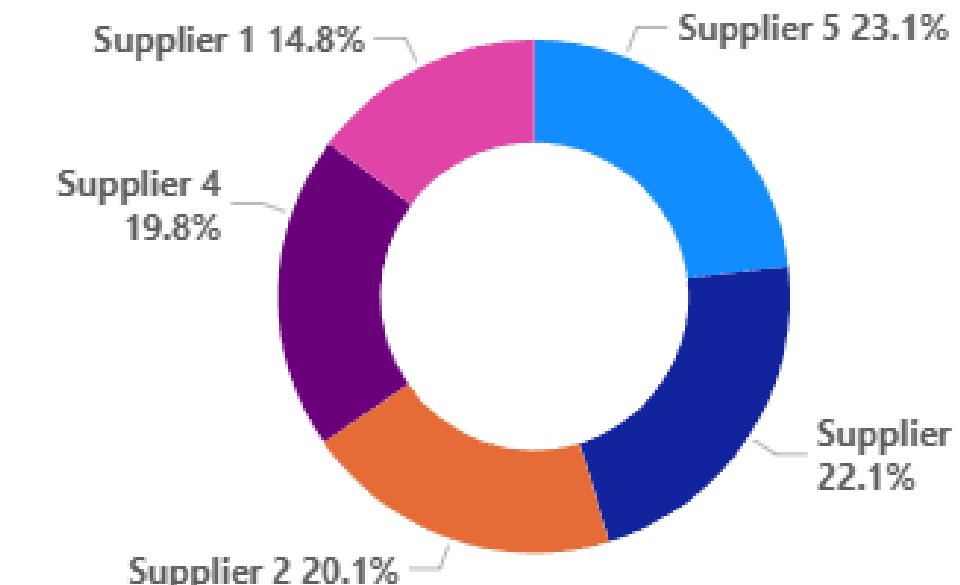
On-time delivery by Supplier



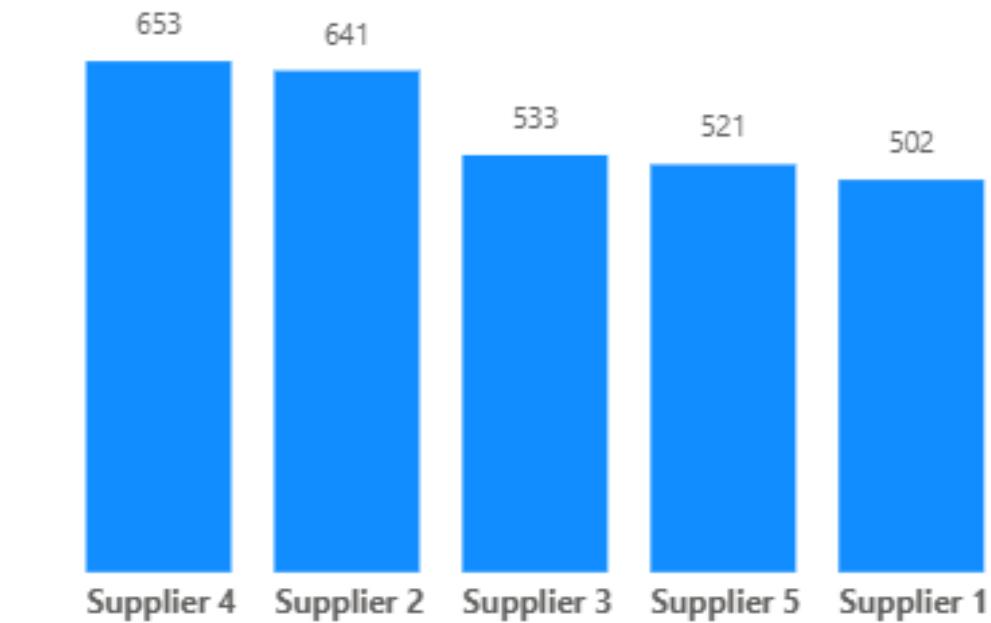
Total Manufacturing costs by Supplier



Average of Defect rates by Supplier name



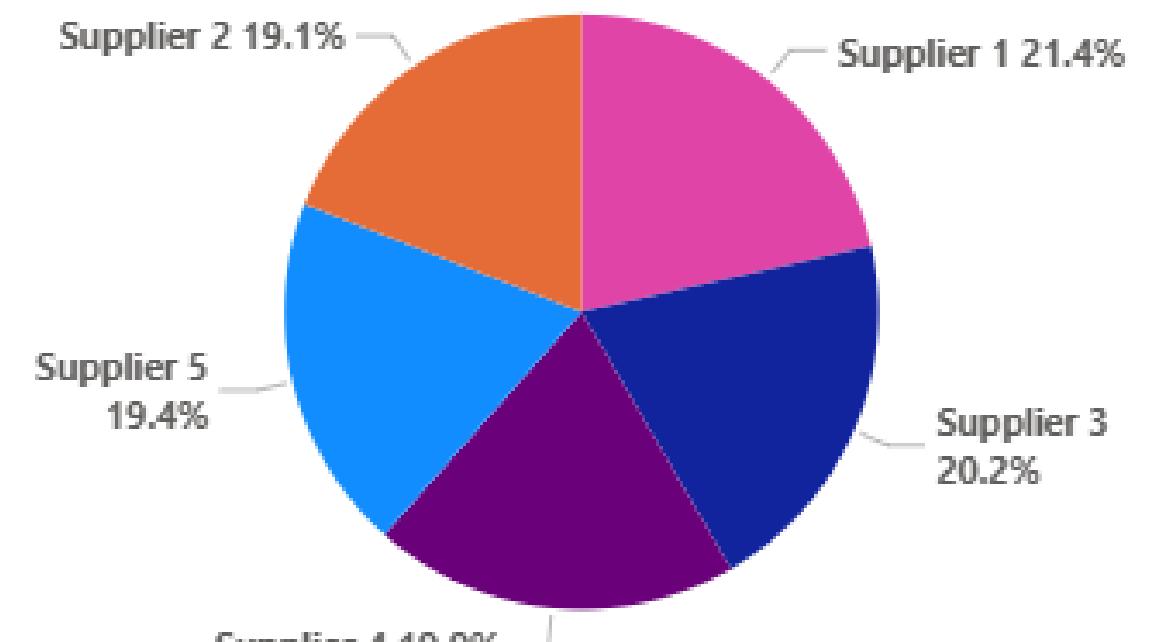
Average of Production volumes by Supplier name

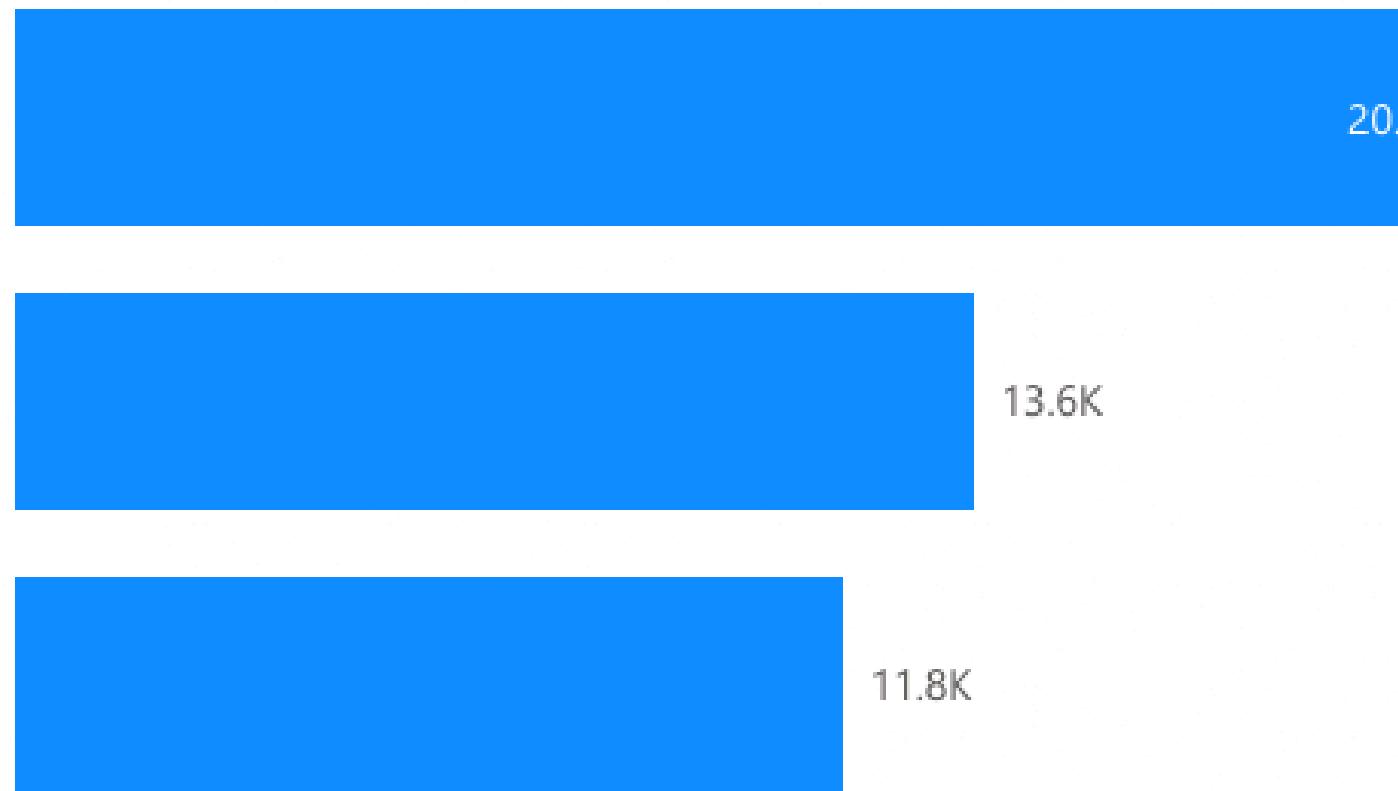


Recommendation

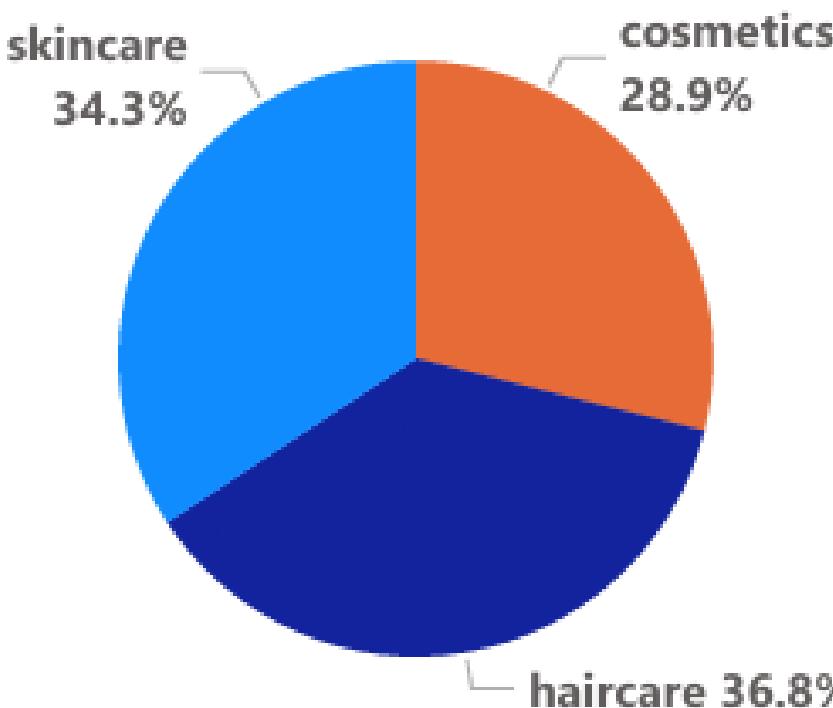
- Main risks: low delivery performance (**Supplier 2 & 5**), high defects (**Supplier 3 & 5**)
- High-cost suppliers may require cost negotiation
- Improve quality control & delivery reliability
- Strengthen relationships with high-performing suppliers

performance score by Supplier name





Average Defect rates by Product type

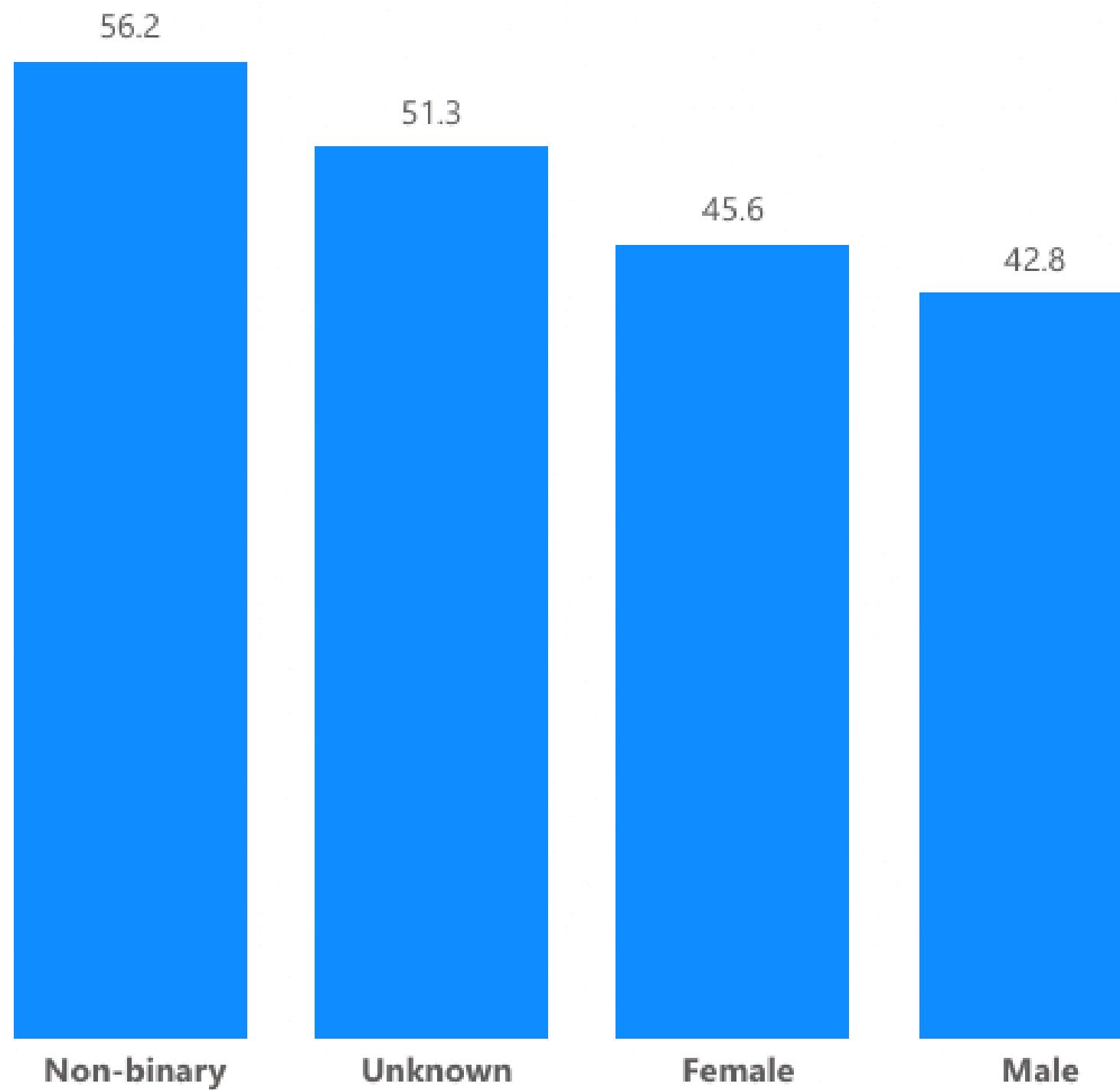


Product Findings

- Skincare
 - highest production,
 - highest sales,
 - strongest turnover.
- Haircare
 - highest defect rate (**36.8%**)
 - moderate sales.
- Cosmetics
 - highest price
 - lowest turnover (**potential overpricing**)

Customer Findings

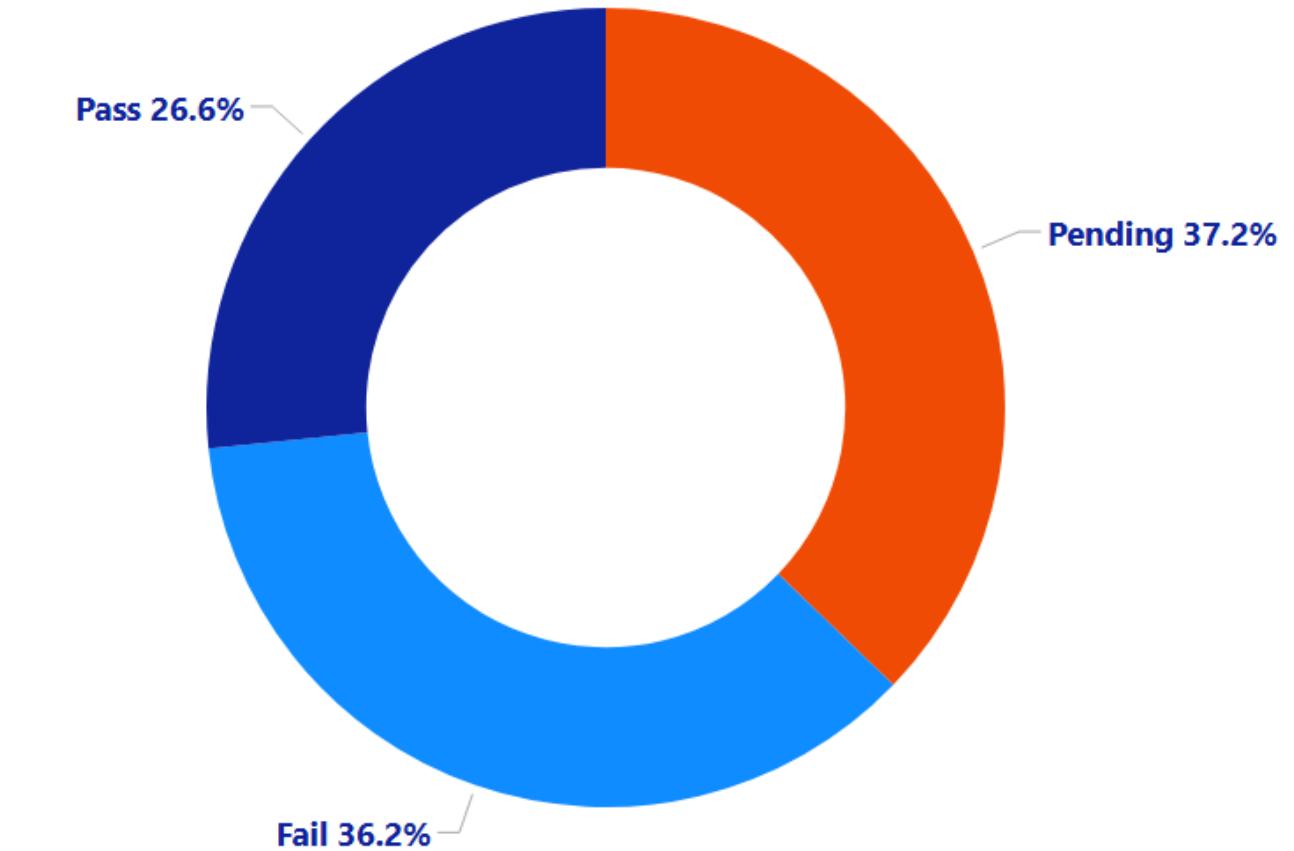
Average order quantities per Customer Segment



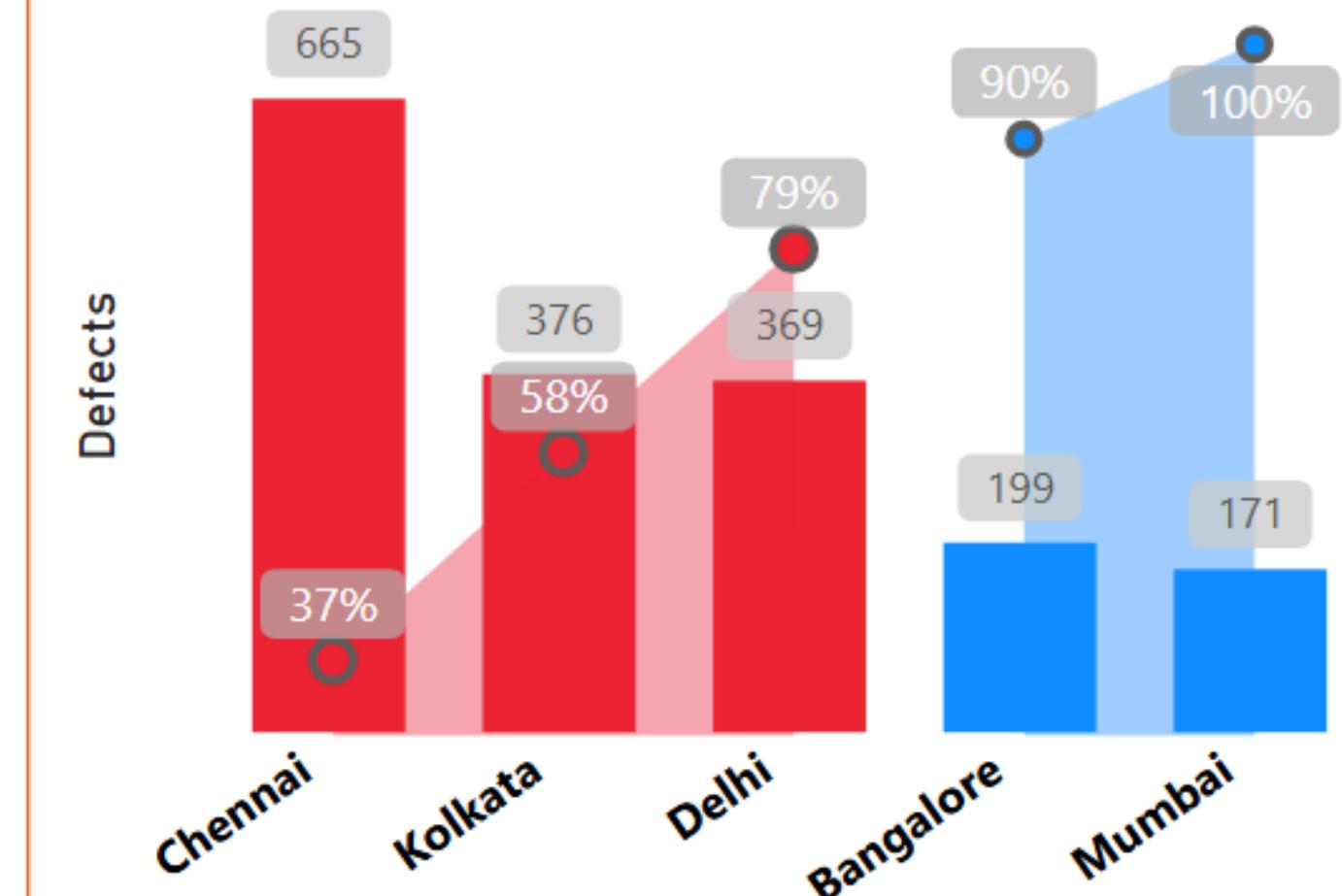
- Defect rates are similar across all customer segments
- Non-binary customers place the largest orders (**56** units on average)

Product Quality

- 36% of the product fails quality inspection; thus, further investigation for the supplier issues required.
- 37% of the product is pending quality inspection results.
- Our operation is most at risk in **Chennai & Kolkata** since they combined contribute to **58%** of the defected products.

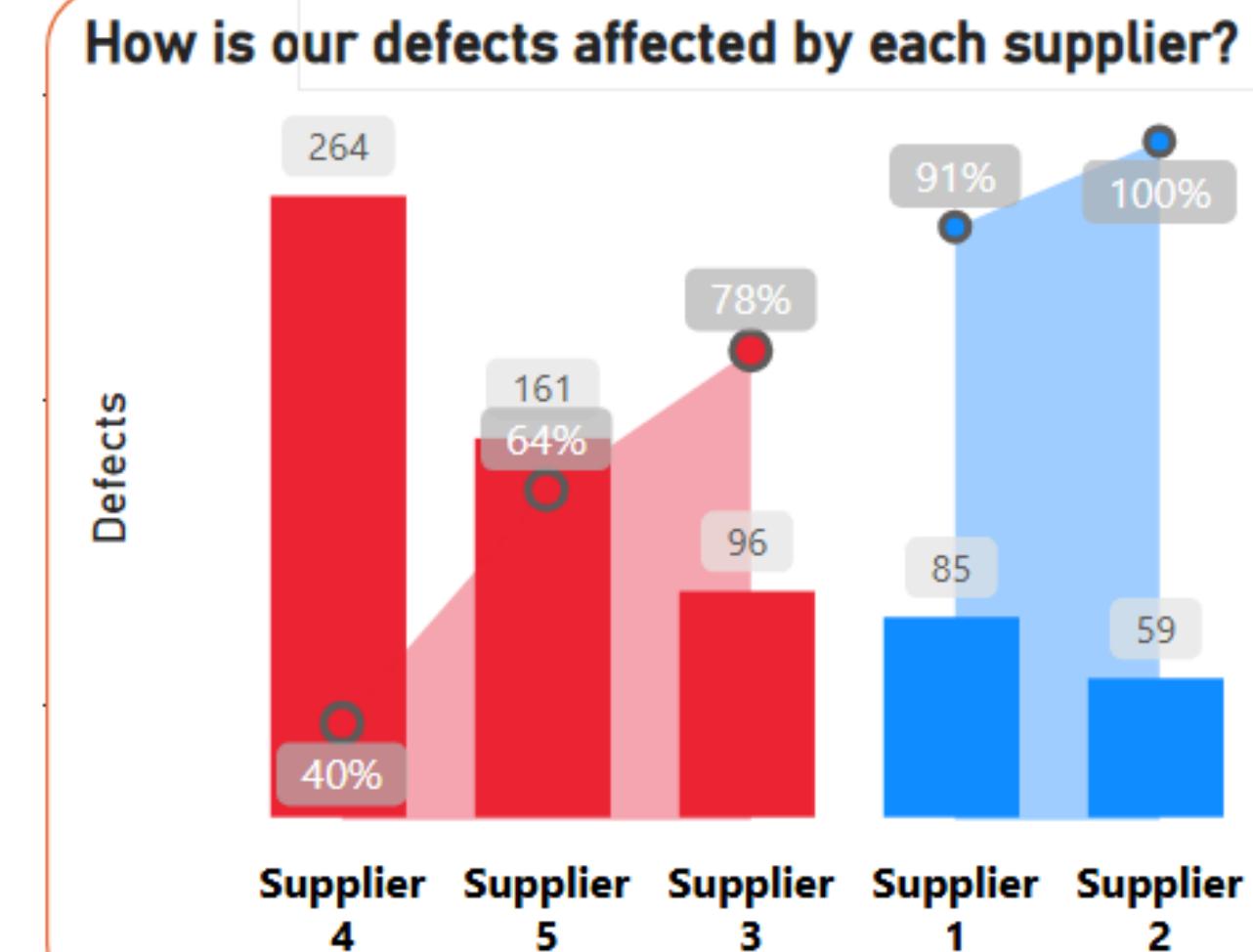
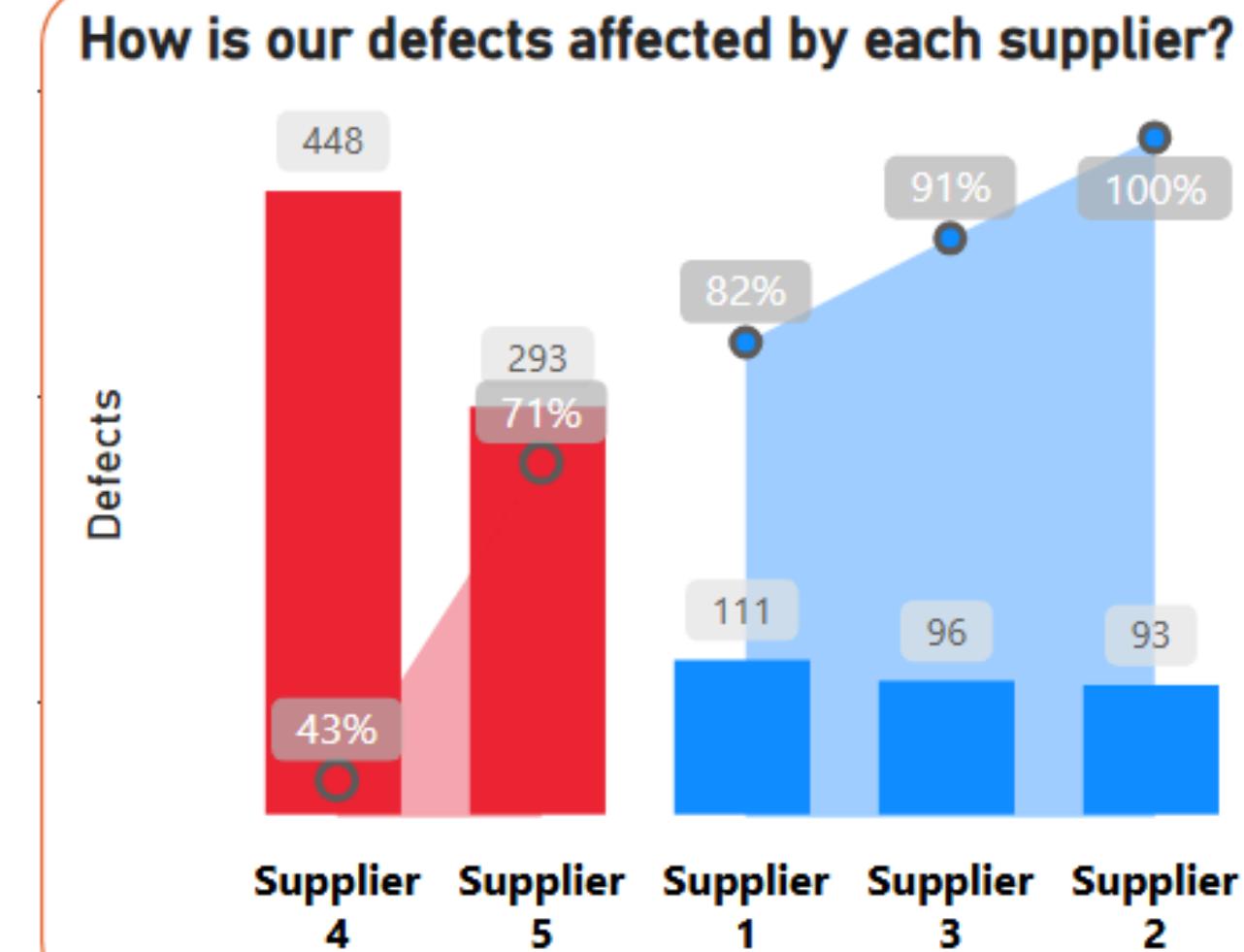


Where is our operation most defects-prone?



Product Quality

- Overall, Suppliers 4 & 5 contribute with 64% of the defected products.
- Simultaneously, Suppliers 4 & 5 contribute 71% to the total defects detected in Chennai & Kolkata.



Product Quality

DAX

1. Defect = CALCULATE(SUM(supply_chain_data[Order quantities]),
supply_chain_data[Inspection results] = "Fail")
2. Percentage for each location from the total defects.
3. Running_total = RUNNINGSUM([Percent of grand total], ORDERBY([Defect], DESC))

Conclusion

- Strong commercial performance
- Operational weaknesses create financial risk
- Implementing recommendations will:
 - Reduce operational costs
 - Improve delivery reliability
 - Strengthen long-term competitiveness





Supply Chain Analysis Project
Track: Power BI Specialist
DEPI 2025



**THANK
YOU**