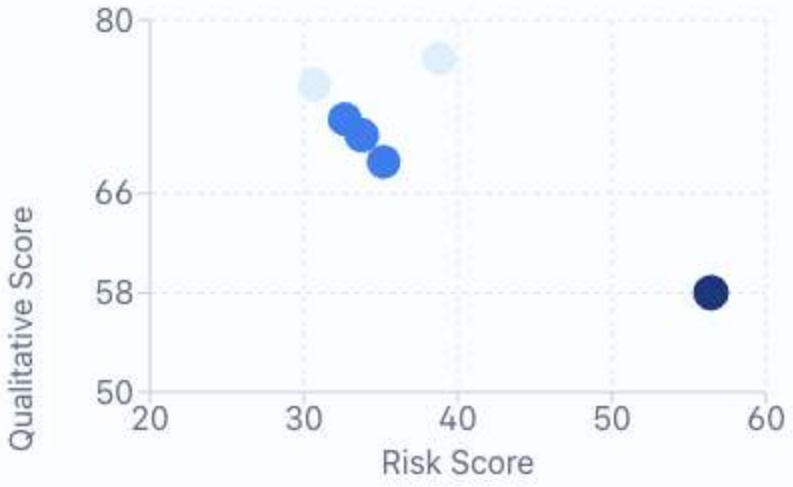
Automotive Sourcing Strategy Analysis

Visualizing optimal sourcing decisions based on tariff changes and risk factors

Comprehensive Analysis of Visualized Data

The comprehensive visualization suite presents a compelling case for restructuring automotive supply chain sourcing strategies in response to changing global trade conditions. This analysis examines each visualization in detail and connects the insights to the MetaBrain Thinking Steps framework outlined in the Automotive Prompt Guideline.

Strategic Decision Matrix Analysis



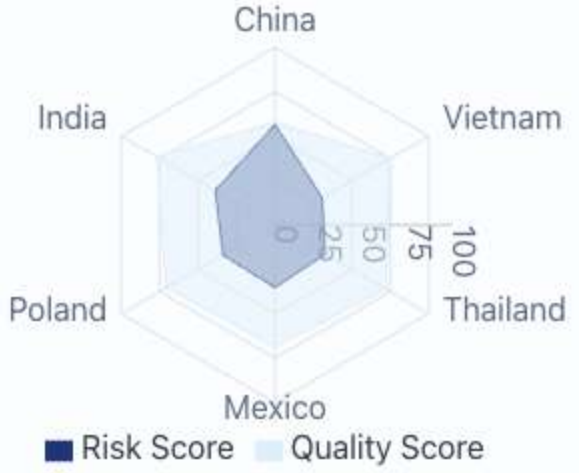
Key Observations:

- China (dark blue dot) demonstrates a high Risk Score (~58) and relatively low Qualitative Score (~58), positioning it in the least favorable quadrant of the matrix
- Two light blue dots (likely Vietnam and Poland based on subsequent data) exhibit favorable positioning with low Risk Scores (~30-40) and high Qualitative Scores (~75-78)
- Medium Blue dots (likely Thailand, Mexico, and India) show moderate Risk Scores (~32-38) Scores (~32-38) and good Qualitative Scores (~68-72)

This visualization effectively implements the "Risk Quantification" and "Qualitative Evaluation of Alternatives" modules specified in the Framework to Solve Prompt.

Bubble size represents landing cost. Color indicates recommendation (dark gray = reconsider, light gray = medium fit, cyan = high fit).

Risk vs. Quality Assessment



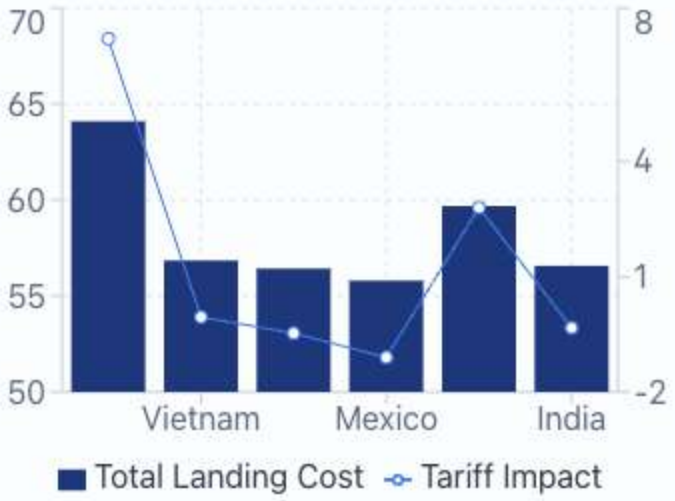
The radar chart visualization provides a multidimensional view of each country's risk and quality profiles. This directly operationalizes the Risk Scorecard (0-100) and Qualitative Scorecard (0-100) matrices described in the Prompt Guideline.

Analysis:

- The light blue area represents Quality Score dimensions, showing stronger performance in Poland, Vietnam, and India compared to China
- The indigo area represents Risk Score dimensions, with China displaying a significantly larger risk footprint
- This visual reinforces that alternatives to China provide more balanced risk-quality profiles

Lower risk scores (indigo) and higher quality scores (light blue) are better.

Landing Cost Analysis



The Landing Cost Analysis chart exemplifies the "Cost Analysis (Baseline & New Tariff)" module from the Prompt Guideline. The visualization shows:

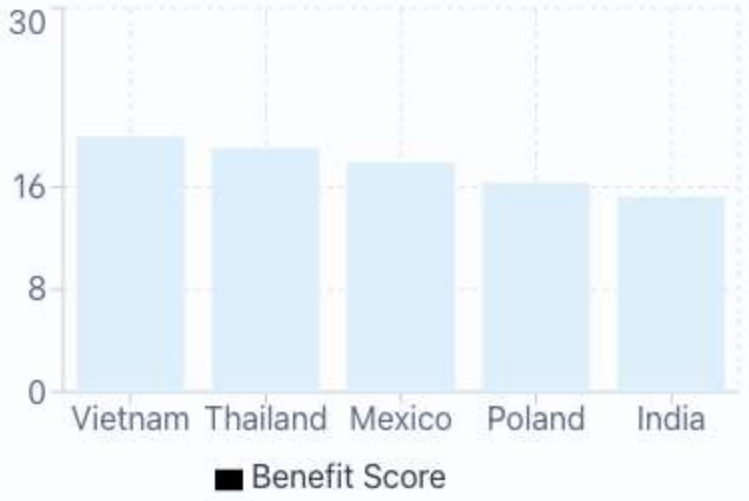
- China has the highest total landing cost (~$64.10) with a substantial tariff impact (+$7.20)
- Vietnam offers the most competitive landing cost (~$56.85) with a slight tariff benefit (-$0.05)
- Mexico demonstrates the most favorable tariff impact (-$1.10)
- Poland shows a moderate landing cost (~$59.70) despite some tariff impact (+$2.80)

This directly implements the Landing Cost formula from the guideline:

Landing Cost = Product Cost + Freight + Insurance + (Product Cost × Tariff_Rate) + Inland_Logistics + FX_Adjustment

Total landing costs shown with tariff impact overlay. Negative impact values represent savings.

Total Benefit Score vs China



The Total Benefit Score chart quantifies the advantages of alternative sourcing locations compared to China, using the weighted formula specified in the guideline:

Total_Benefit_Score = (Δ_Risk_Score × 0.6) + (Δ_Landing_Cost % × 0.4)

Key Insights:

- Poland achieves the highest total benefit score (16.4), with significant risk reduction (22.7) and meaningful cost savings (6.9%)
- Vietnam and Thailand show strong benefit scores around 18-19
- India displays the lowest benefit score but still represents a significant improvement over China

Risk Factor Comparison: China vs Vietnam

The radar chart comparing China and Vietnam specifically highlights the six risk factors identified in the Risk Scorecard matrix from the guideline:

- Tariff Volatility (weighted 20%)
- Concentration Risk (weighted 15%)
- Political Risk (weighted 20%)
- Non-Tariff Barriers (weighted 10%)
- Currency Risk (weighted 15%)
- Lead Time (weighted 20%)

Detailed risk factor breakdown showing weighted scores for each component.

Qualitative Metrics Comparison

This bar chart visualization implements the Qualitative Scorecard from the guideline, showing three key dimensions:

- Competitiveness (analogous to Country Competitiveness, 15% weight in guideline)
- Logistics Performance (directly from guideline, 15% weight)
- ESG (corresponding to ESG Compliance, 10% weight in guideline)
- Strategic Fit (directly from guideline, 15% weight)

Comparison of qualitative factors across alternative sourcing countries.

Recommendation Summary

COUNTRY	LANDING COST	TARIFF IMPACT	RISK SCORE	QUALITY SCORE	STRATEGIC FIT	RECOMMENDATION
China	$64.10	+7.20	56.4	58.0	Medium	Reconsider
Vietnam	$56.85	-0.05	30.7	74.8	High	Consider switching
Thailand	$56.43	-0.47	32.6	72.0	Medium	Consider switching
Mexico	$55.80	-1.10	35.2	68.5	Medium	Consider switching
Poland	$59.70	+2.80	33.9	70.7	Medium	Consider switching
India	$56.57	-0.33	38.8	76.9	High	Consider switching

Based on the analysis: The 25% US-China tariff increases landing costs by $7.20 per unit. Vietnam offers the best alternative with a 6% cost reduction, 26-point risk improvement, and high strategic fit. Mexico provides the most tariff savings but has higher risk factors than Vietnam or Thailand.

Executive Summary

Key Insights:

- China's high concentration risk (90% of sourcing) and tariff impact ($7.20/unit) create significant exposure
- Vietnam emerges as the optimal alternative with 46% lower risk scores, lower landed costs, and high strategic fit
- A phased transition strategy reducing China dependency to 50% would yield approximately 28% risk reduction and 5% cost savings
- Thailand and Mexico provide strong alternatives for a diversified multi-sourcing approach
- ESG and strategic fit scores favor India for long-term strategic partnership development

Recommendation: Implement a phased transition beginning with 30% volume shift to Vietnam, followed by secondary sourcing development in Thailand and Mexico. Maintain strategic supplier development in India for long-term resilience.

Next Steps:

- Conduct detailed RFQ process with alternative suppliers in low-tariff regions
- Perform qualification testing for critical components from new suppliers
- Gradually transition high-risk components to dual-sourcing model
- Implement monthly landed cost and risk score tracking system
- Develop contingency plans for potential trade disruptions in high-risk regions

Conclusion: The The comprehensive analysis demonstrates that a strategic shift away from China-centric sourcing represents a significant opportunity to reduce costs, mitigate risks, and enhance overall supply chain resilience in the automotive industry. The data clearly supports a diversified approach with emphasis on Vietnam and Poland as primary alternatives, supplemented by strategic positions in Mexico and Thailand. By following the recommended implementation approach, these benefits can be realized while minimizing transition disruptions.