Why should we do this? (Or why should we minimize total cost (production + transport)?

1. **Maximize Profitability:** Better costs directly impact margins, even when sales do not increase.
2. **Ensure Competitive Pricing:** Better costs give flexibility to create more competitive prices.
3. **Improve Resource Allocation:** Efficient production and transportation routes lead to optimized resources, including labor, machines, and planning.
4. **Support Scalable Growth:** A lean cost structure prepares us to scale production without proportionally increasing costs should demand increase.
5. **Mitigate Risk in Supply Chain:** Optimizing the supply chain reduces financial and operational risk.
6. **Free Up Capital for Innovation:** This creates a buffer that can be redirected towards research and development, technological advancements, or enhancing the customer experience—elements that contribute to sustainable long-term value.

What issues might arise?

1. **Data Quality or Availability:** The solution assumes accurate cost, capacity, and demand data. With Bad data, recommendations might be off. **Solution**: Implement a validation step and work with ops and finance teams for precise input data.
2. **Operational Resistance:** Teams may be attached to old workflows or suppliers and resist change — especially if the optimized solution suggests reallocating production or changing partners. **How to deal with it**: Involve stakeholders immediately, explain the decision (cost savings, efficiency), and show that the model supports their goals.
3. **Supply Chain Rigidity:** Contracts, lead times, or supplier relationships may limit our ability to implement the optimal plan fully. **How to deal with it**: Offer alternatives like phased or hybrid options and include sensitivity analysis to show robustness under different constraints.
4. **Model Skepticism or Complexity:** Some people may not trust the model or find it too abstract. **How to deal with it**: Make the logic transparent (clear assumptions, inputs, outputs) through real-world scenarios that they can relate; Show quick wins — even partial implementation can show the value