Executive Summary

Team Details

Team Name - Fulfillkaro
Team Members
1. Ashutosh Kushwaha
   National Institute of Technology Raipur
   +91-7828734599

2. Satyam Barle
   National Institute of Technology Raipur
   +91-8349863343

Case Track Chosen

Problem Statement 2: Regional vs Central Fulfillment – The Scale Strategy ("Beyond the Mother Warehouse: Designing a Regional Fulfillment Network That Scales")

Problem Statement

- The client, a mid-to-large Indian brand, currently fulfills all B2B and B2C orders via a centralized Mother Warehouse (MW).
- Rising regional demand has led to increasing transit costs, delivery delays, and inventory imbalance — especially in cities far from the MW.
- The need: A scalable, efficient fulfillment model that enables cost savings and operational agility.

Key Assumptions

- The dataset used is synthetic, generated by our team to simulate realistic order-level data; it is not based on the sample file provided.
- Mother Warehouse Location was assumed to be Indore for simulation purposes (as clarified by the organizing team).
- RDCs are virtual simulations based on city-wise cost-volume analysis; no actual RDC infra currently exists..
- Break-even volume thresholds were derived using Tableau-based cost vs. volume visualizations.
- Manpower productivity: Picker – 500 orders/day, Packer – 300 orders/day, Unloader – 1,000 orders/day.
- Warehouse operates in 1 shift (current) and scales to 3 shifts for future 3× throughput.

Executive Summary

Our Approach

- Analyzed 5,000+ order records with volume, location, and cost logic
- Built a break-even volume model to simulate RDC deployment decisions
- Compared MW-only vs hybrid fulfillment (MW + RDC) city-wise
- Incorporated B2B/B2C segmentation and transit cost curves
- Validated savings (~₹8.7 lakh/month) using optimized RDC rollout
- Developed MW blueprint with 3× future demand readiness

Tools & Methods
Excel | Tableau | Pivot Modelling | Cost-volume Analysis | WMS Concepts | Warehouse Planning

Our Solution & Business Impact

Strategy:

- Implemented a hybrid fulfillment model by identifying city-wise break-even volumes to route high-volume orders through RDCs for cost optimization.
- orders below break-even volume → served by MW
- orders above break-even volumne → routed through RDCs
- RDC rollout based on city-wise break-even volume thresholds

Cost Impact:

- MW-only model: ₹2.20 Cr/month
- MW + RDC hybrid: ₹2.11 Cr/month
- Net Savings: ₹8.77 lakh/month

Mother Warehouse Layout

- Modular layout: Receiving → Storage Zones → VAS → Packing → Dispatch
- Racking planned by SKU velocity (fast/medium/slow movers)
- Shift-wise manpower model scaling from 1× to 3× throughput
- Inbound-to-outbound process mapping
- Infra plan: forklifts, scanners, labelers, staging bays