Edgistify.

Innovation Challenge 2025

Team Cubit

Optimizing supply chain

Problem statement

- A mid-sized Indian brand currently fulfills all B2B and D2C orders from a centralized Mother Warehouse (MW) located in Indore (assumed).
- The company seeks to explore regional fulfillment using RDCs (Regional Distribution Centers) to optimize cost and service.

Assumptions

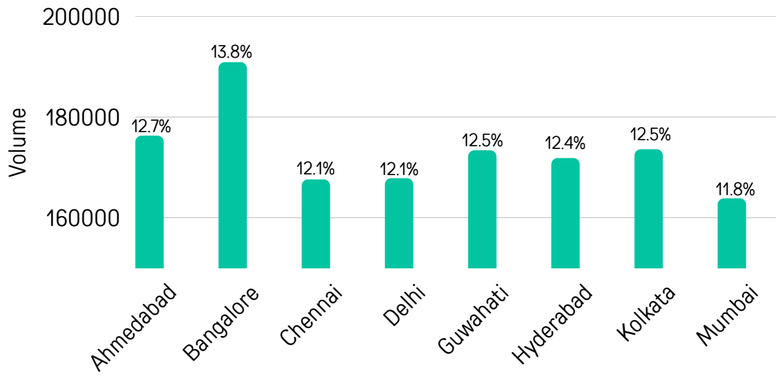
- **Mother Warehouse (MW) Location**: it is assumed to be located in Indore, based on guidance received from the Edgistify organizing team regarding synthetic data usage.
- **Distance b/w cities** : Distances between MW and delivery cities are considered as-the-crow-flies road distances
- **Data** ; All demand data is assumed to represent monthly order quantities per city (B2C + B2B combined).
- **Overhead Price** : MW overhead is modeled as a variable cost per unit (₹1–₹2/unit), while RDCs have fixed monthly labor + storage costs.

RDC Cost

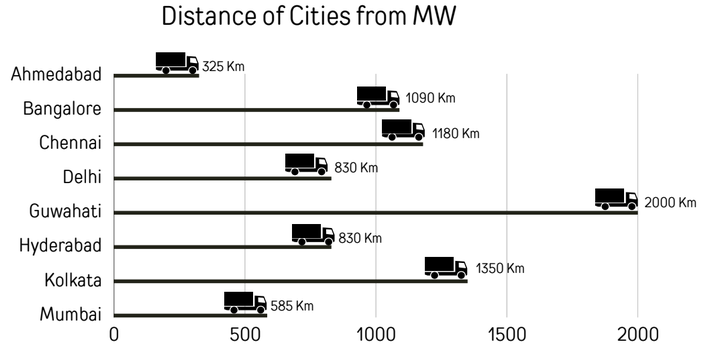
City	Local RDC transit cost/unit	RDC labor cost	RDC Storage cost
Ahmedabad	10	1100	850
Bangalore	10	1400	1000
Chennai	10	1150	880
Delhi	10	1300	950
Guwahati	10	1000	800
Hyderabad	10	1300	900
Kolkata	10	1250	920
Mumbai	10	1200	900

Key Statistics

MONTHLY DEMAND PER CITY:



DISTANCE AND TRANSIT COST:

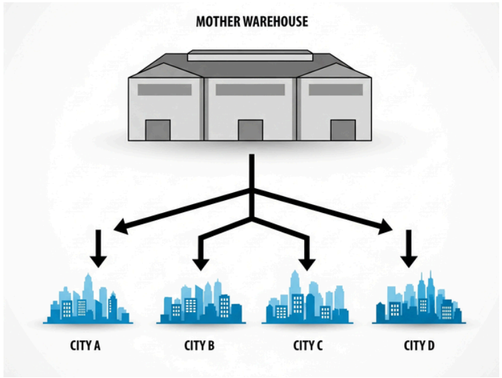


**Note: we have assumed the mother warehouse to be in indore*

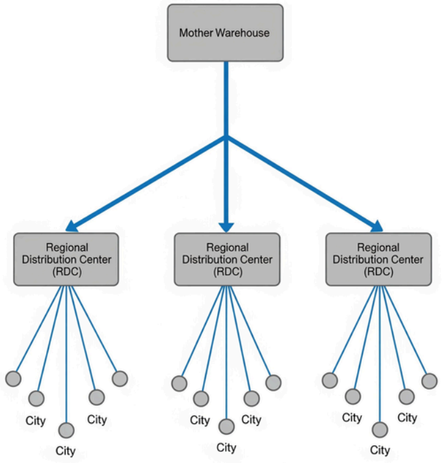
The RDC Shift

We propose a shift from the current One-to-Many centralized model to a Hub-and-Spoke fulfillment network — selectively deploying Regional Distribution Centers (RDCs) in cities that meet our volume-based break-even criteria.

ONE TO MANY MODEL:



HUB AND SPOKE MODEL:



OUR SOLUTION

We propose a hybrid model where only orders above the break-even volume are fulfilled via Regional Distribution Centers (RDCs)

- orders below the break -even point continue to be fulfilled from the Mother Warehouse (Indore) to avoid unnecessary RDC costs.
- This approach ensures RDCs are utilized only where they yield cost efficiency.

City	Break-even Qty	Orders Above BE	Orders Below BE	% of orders above threshold	Recommend RDC?	Comments
Ahmedabad	490	12	616	2%	NO	Fulfill from MW
Bangalore	400	168	509	25%	Yes	Setup RDC
chennai	315	378	255	60%	Yes	Setup RDC
Delhi	410	455	135	77%	Yes	Setup RDC
Guwahati	210	215	413	34%	Yes	Setup RDC
Hyderabad	435	534	90	86%	Yes	Setup RDC
Kolkata	304	328	288	53%	Yes	Setup RDC
Mumbai	420	505	99	84%	Yes	Setup RDC

**Break-even volume shows the point where fulfilling from RDCs becomes more cost-effective than the Mother Warehouse*

Strategic RDCs Locations

- Bangalore
- Chennai
- Delhi
- Kolkata
- Guwahati
- Hyderabad
- Chennai

Approach: Finding the Break-even Point

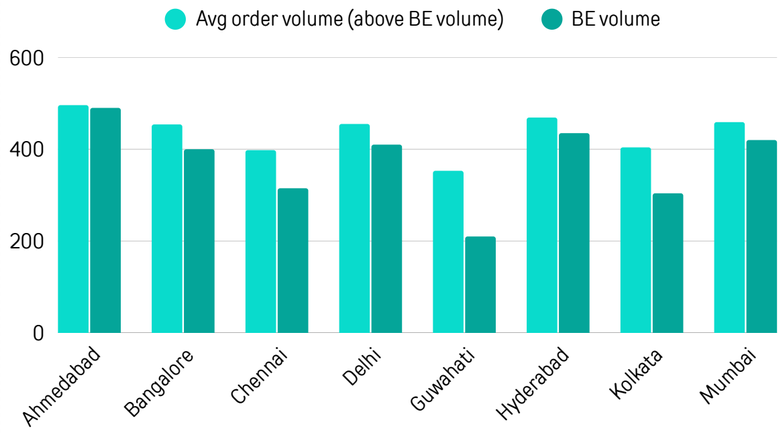
- We identified the break-even point by analyzing order volume data city-wise and visualizing cost trends.
- Using cost vs volume graphs, we pinpointed the threshold at which the RDC model becomes more cost-effective than the MW model.
- This break-even volume serves as the minimum order quantity a city must cross for RDC deployment to yield savings.

Detailed break-even graph available in Appendix Slide X

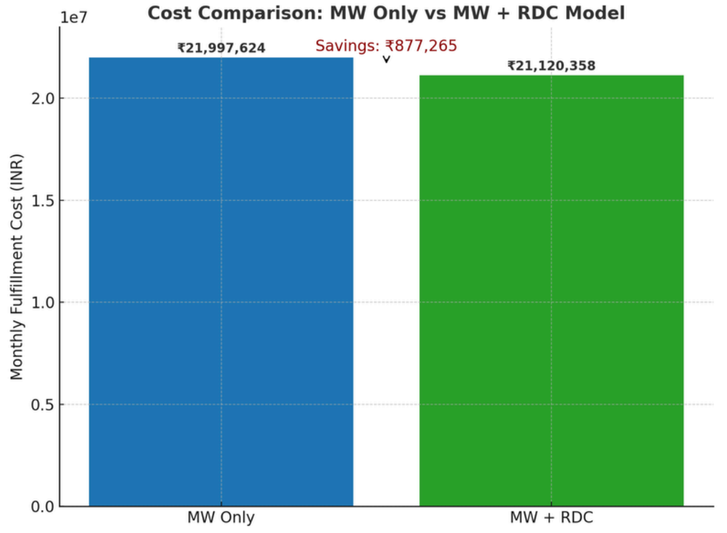
Final Fulfillment Strategy

- Deploy RDCs in 6 cities exceeding break-even volume
- Retain MW fulfillment in low-volume zones
- Target monthly savings of ₹8.77L (↓ 4%)
- Enable scalable, regionally optimized network

Average Volume(Above BE) V/S BE



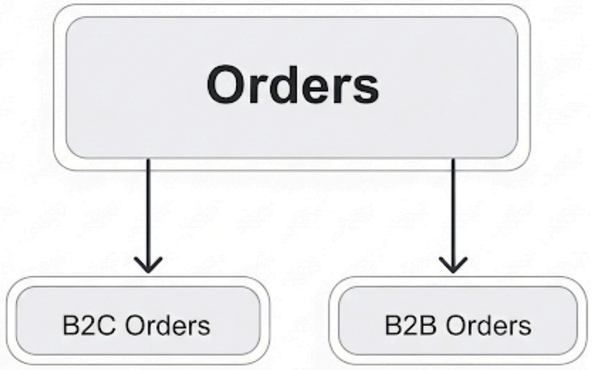
Cost-Saving Overview

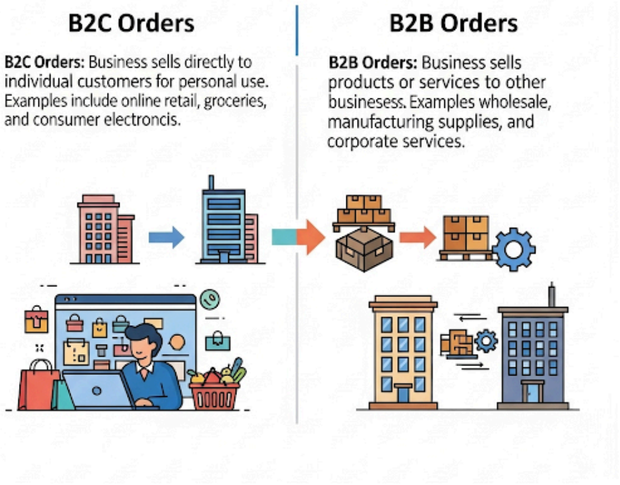


Fulfilling orders via RDCs in cities where volume exceeds the break-even point results in monthly savings of ₹8.77 lakh

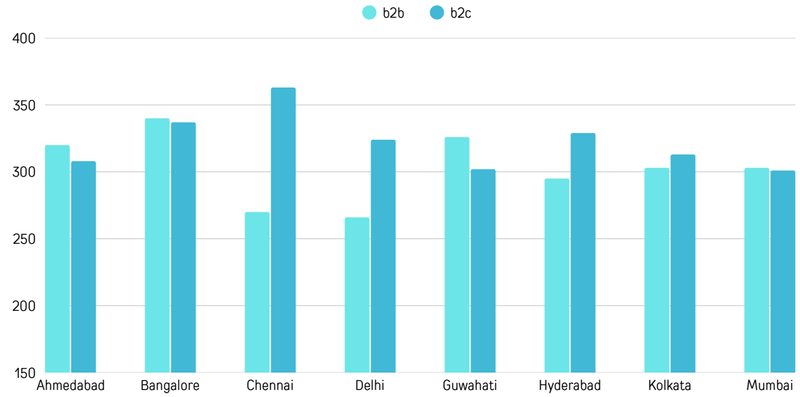
Understanding Demand Type

While our RDC rollout was primarily volume-driven, analyzing B2B and B2C order distribution helped us understand demand behavior across cities.





Order Type Segmentation: B2B vs B2C



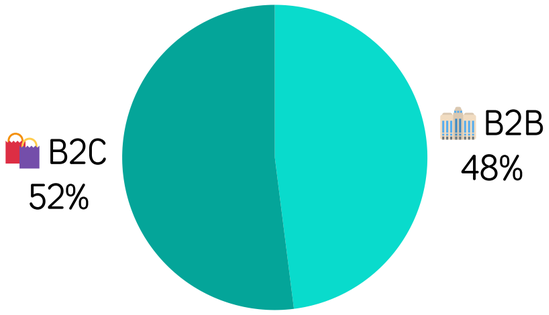
B2B Dominant Cities

- Ahmedabad
- Bangalore
- Guwahati
- Mumbai

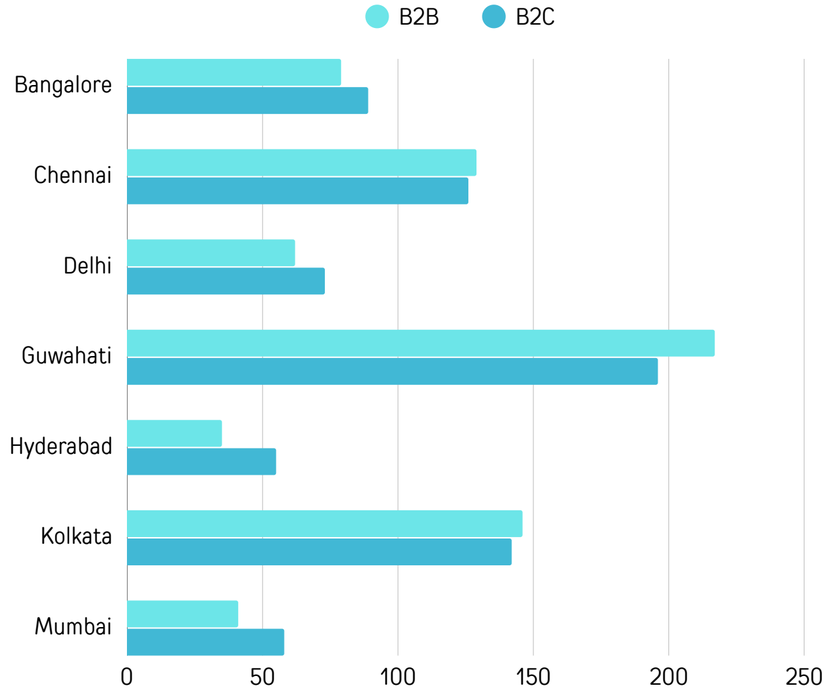
B2C DOMINANT CITIES

- Chennai
- Delhi
- Hyderabad
- Kolkata

Distribution of Total Orders by Type



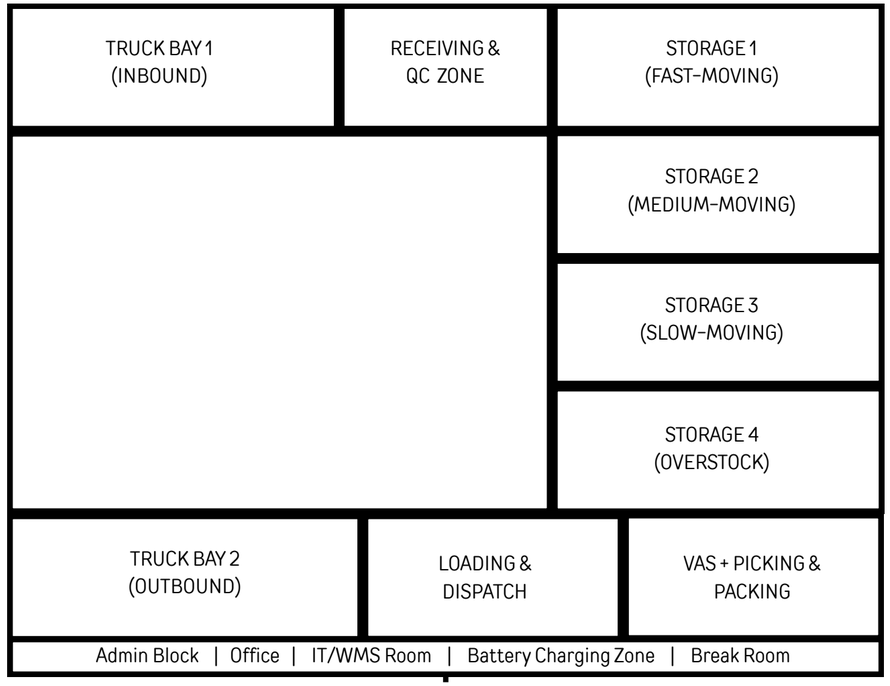
B2B vs B2C Orders in Proposed RDC Cities



- Guwahati, Chennai, and Kolkata show strong B2B volumes — these cities are ideal for RDC routing of bulk, high-volume orders.
- Bangalore and Delhi have a more balanced B2B:B2C split, allowing for a hybrid fulfillment approach.

Understanding order types (B2B/B2C) didn't influence current rollout decisions but strengthens our long-term strategic lens.

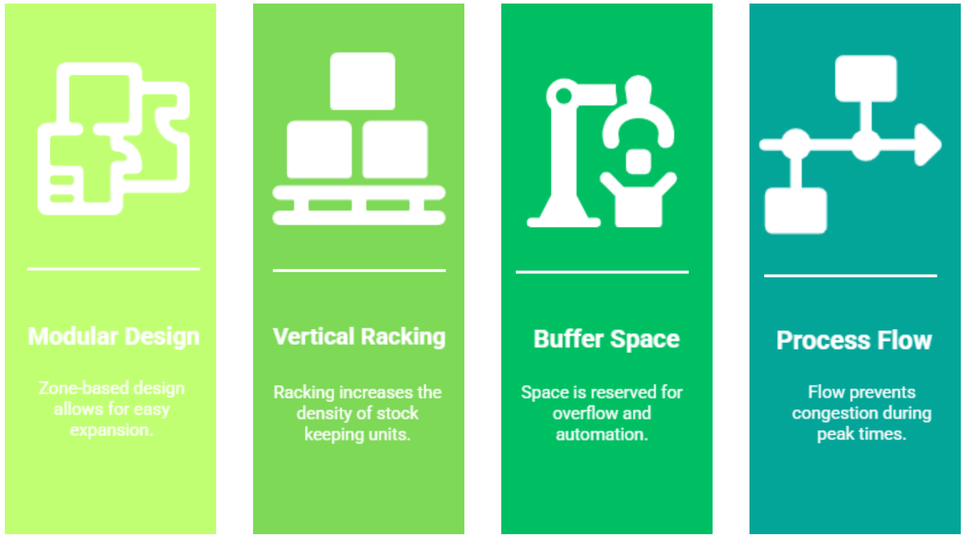
Mother Warehouse Layout



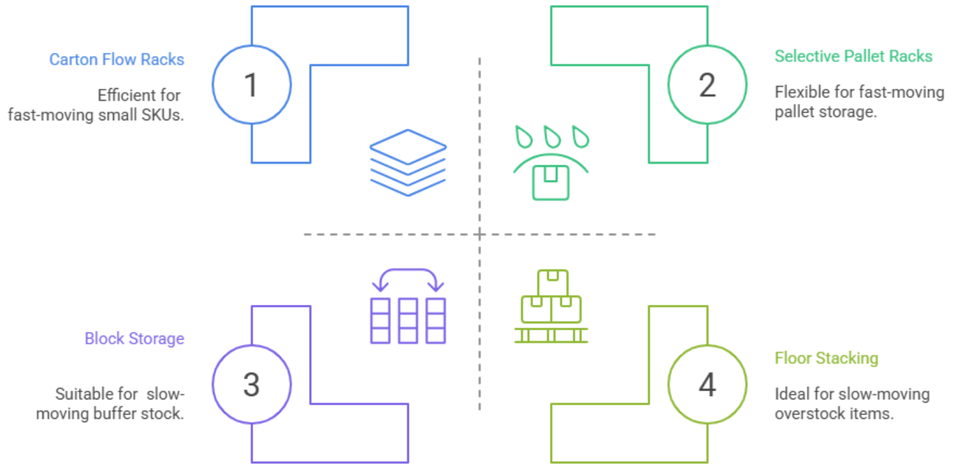
Why this layout supports 3× scale:

- Modular zone-based design allows lateral expansion
- Vertical racking enables higher SKU density
- Buffer space reserved for overflow & automation
- Process flow prevents congestion under high load

Mother Warehouse Features



Storage Zone Type vs. Racking Type



Man Model (avg v/s peak)

- We modelled peak manpower based on the expected 3× future throughput

ROLE	AVERAGE (CURENT)	PEAK x3 (FUTURE)
no. of picker	93	279
no. of packer	154	462
no. of unloader	46	138
total labouur	293	879
no of supervisor	12	36

ASSUMPTIONS IN MAN MODEL

- Average Order : 46,178 units/day
- 1 picker can handle 500 orders/shift
- 1 Packer can handle 300 orders/shift
- 1 Unloader: can handle 1,000 orders/day
- Supervisor Ratio : 1 per 25–30 workers
- Shift Planning:
  - Avg: 1 shift/day
  - Peak: 2–3 shifts for full load handling
- Scaling: Linear scaling assumed

Process Flow & Shift Capacity

Streamlining Warehouse Operations: A Process Flow

Goods arrive at Bay 1
Inbound Receiving

Items scanned and entered into WMS
Putaway

Order triggered via WMS
Order Processing

Picked items verified at packing station
Packing

Loaded into outbound vehicle via Bay 2
Loading & Dispatch

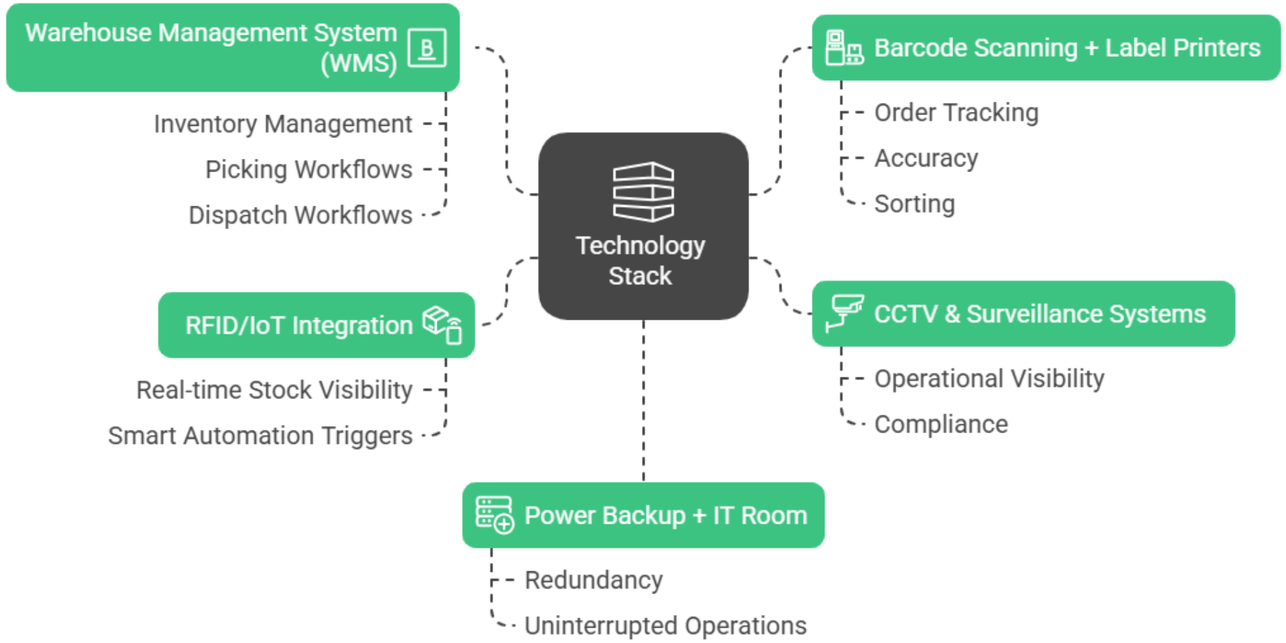
**A Warehouse Management System (WMS) is a software platform used to manage and optimize day-to-day warehouse operation*

Warehouse Operations Across Shifts

Shift 1: 45,000 units/day (current+base peak)	Shift 2: +45,000 units/day (peak day)	Shift 3: +45,000 units/day (only during surges)
8 AM – 4 PM	4 PM – 12 AM	12 AM – 8 AM

Infrastructure Blueprint: Tech & Equipment

Technology Stack for Warehouse Operations



Warehouse equipment categorized by movement distance and automation level