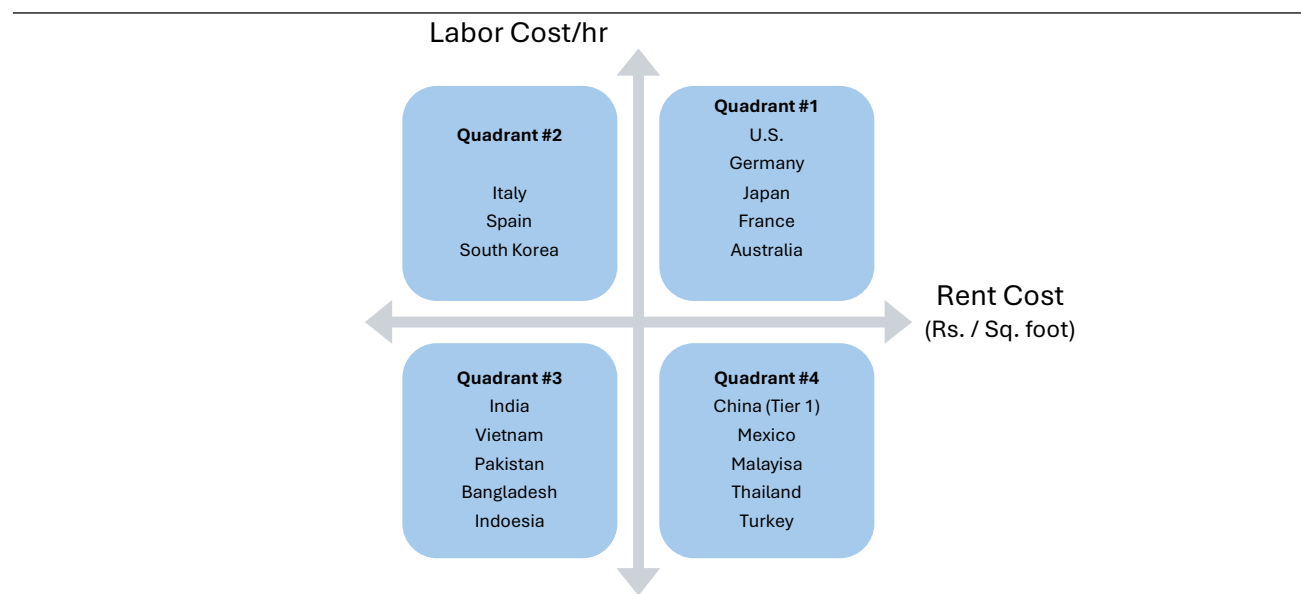## From Cost-Centric to Strategic: The Next Era of Warehousing in India

Over the last decade, India's warehousing industry has moved beyond its traditional focus on cost efficiency to become a critical enabler of business growth and customer experience. Historically, India operated closer to a cost-led, labor-intensive model, where warehouse networks were designed to minimize expenses through larger footprints and manual processes. However, a confluence of factors—evolving consumer expectations, rapid growth of e-commerce and D2C business models, government reforms such as GST, and rising operational costs in urban hubs—has compelled a reconfiguration of strategies.

Illustration #1. Classification of countries on rental and labor cost

Labor Cost/hr

Quadrant #2

Italy
Spain
South Korea

Quadrant #1
U.S.
Germany
Japan
France
Australia

Rent Cost
(Rs. / Sq. foot)

Quadrant #3
India
Vietnam
Pakistan
Bangladesh
Indoesia

Quadrant #4
China (Tier 1)
Mexico
Malayisa
Thailand
Turkey

This shift has placed India at an inflection point. While cost optimization continues to matter, the industry is increasingly adopting digital tools, distributed networks, and sustainability practices to align with new demands for faster fulfillment, transparency, and resilience. Compared to developed economies, which pursue a technology-first model, India is evolving toward a hybrid warehousing approach that blends affordability with agility and innovation.

This paper details the key changes in the past ten years and identifies the structural drivers—consumer behaviour, policy reforms, technology adoption, labor dynamics, and sustainability—that will shape the future of warehousing in India. The intent is to highlight how the sector is transitioning from a cost-centered support function to a strategic pillar of competitiveness, and what operating models are likely to define the next decade.

What has changed in last 10years in India

In the past decade, structural changes in government policies—such as GST implementation, the National Logistics Framework, and the E-way bill—along with the growth of e-commerce and manufacturing, have driven double-digit growth in warehousing and logistics. This has positively contributed to India's strong GDP growth of more than 6% (excluding the COVID period).

Furthermore, GDP growth is reshaping the Indian capital and labor markets, which have been key drivers of warehousing expansion. In recent years, labor availability and hourly wages have been changing significantly across different regions, with growth dispersed across tiers and cities, as summarized in the table below. –

Illustration #2

Tier	Wage 2015 (₹/day)	2025 Wage (₹/day)	Growth %
Tier 1	₹400–450	₹650–700	~60–75%
Tier 2	₹250–300	₹450–550	~80–100%
Tier 3/4	₹200–250	₹300–400	~60–80%

Growth is higher in T2 cities due to infrastructure upgrade, labor supply constraints, and platform business growth.

Source : Approx. wage basis on the minimum wage (central/state) and estimate industry nominal

The factors that have led to wage increases and warehousing growth in India over the past 10 years, apart from inflation, include:

1. **Re-orientation of labor migration**: The labor market, which was primarily driven by the migration of people from smaller cities (Tier-3/4) to larger towns, has shifted from permanent migration to a more circular pattern. This change has been influenced by the rising cost of living in big cities, increasing congestion, and post-COVID-19 preference shifts that have led to reverse migration.

Illustration #3

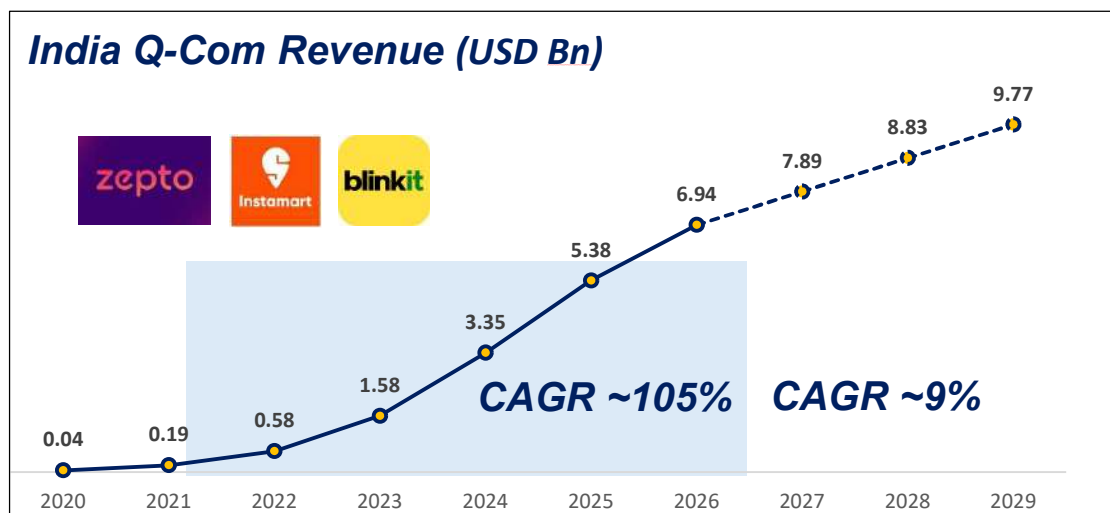| Tier	2015 (est.)	2025 (est.)	What is driving change?
Tier 1 (e.g., Delhi, Mumbai, Bangalore)	55%	40%	⬇️ Decreasing share due to high living costs and saturation
Tier 2 (e.g., Lucknow, Coimbatore, Patna)	25%	30%	⬆️ Gaining prominence with better infra + affordability
Tier 3 (e.g., Dhanbad, Siliguri,Belgaum)	15%	20%	⬆️ Emerging warehouse & factory hubs
Tier 4 (Small towns/rural clusters)	5%	10%	⬆️ Return migration & local MSME growth

Note: assumptions based on the Randstad talent report 2025, real estates development, and IT/tech decentralization.

2.Consistent improvement in literacy and skills: The steady improvement in literacy rates and government initiatives since 2015, such as the Skill India Mission and PMKVY, have increased the share of ITI/Diploma holders by more than 10% over the last decade. Furthermore, re-skilling and higher literacy levels have raised awareness around safety, security, and a preference for white-collar jobs.

This consistent rise in skill levels is creating pressure on the warehousing and logistics sector to redefine skill requirements and improve working conditions.

3. The rise of Q-commerce: Post-COVID, Q-commerce has witnessed explosive growth (CAGR ~100%). This has driven demand for unskilled workers in dark stores and as delivery partners. For instance, delivery partners grew by ~18–22% YoY in FY25 (based on Zomato and Swiggy annual reports), with nearly 1 million unskilled workers employed as riders.
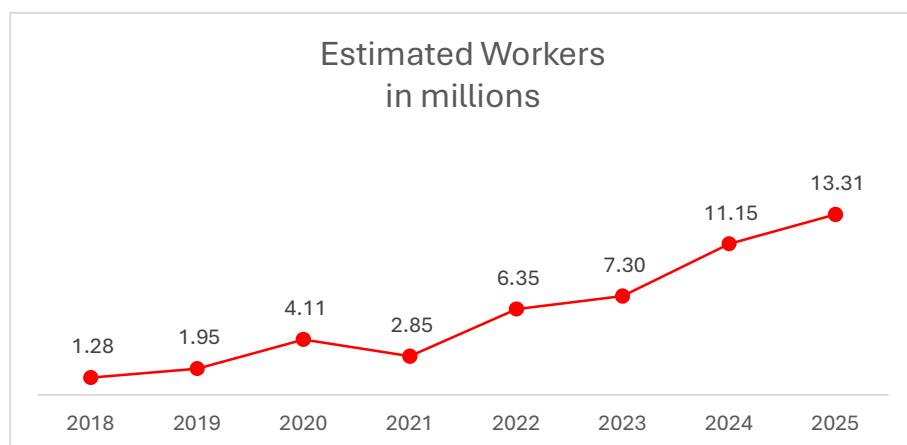
Illustration #4

Source: Statista Q-commerce report

The growth of Q-commerce relies on the same unskilled labor pool as warehousing, where the workforce has been growing at ~20%. When combined with warehousing demand, the overall requirement is expected to rise by 30–40%. However, the growth of the unskilled labor supply is forecasted to slow to below 10%.

This widening gap between supply and demand will create severe pressure on the labor pool and increase operational costs.

Illustration #5

Unskilled labor growth in Q-commerce is ~20%, driven primarily by the sector's heavy dependence on delivery partners.

Source: estimation based on the Zomato and Swiggy active riders and dark stores growth

Further, the rise of Q-commerce is expected to shift the business structure, as Illustration #6 shows that growth will be higher in Tier-2 and Tier-3 cities over the next five years. This will further strain the labor supply market in Tier-1 cities.

Illustration #6

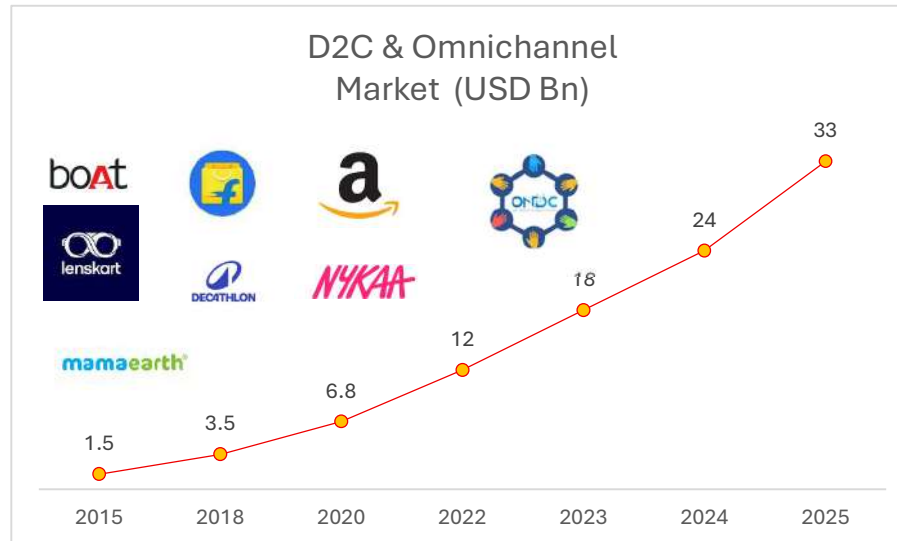Q-Commerce Growth Trajectories by City Tier in India (2020–2027)

The Q-comm growth will narrow between T2/3 and 1 city. Signals the shift in supply chain labor, logistics, and investment.

Source: estimation based on the Q-commerce penetration report and annual reports of Zomato and Swiggy.

4. Growth of D2C business and Omnichannel : In the last 10 years, the government's digitization push has increased internet penetration (~55% of the population in 2025). Combined with the widespread adoption of smartphones (over 1 billion users in 2025), this has fuelled the growth of e-commerce, influencer marketing, and live commerce, fundamentally shifting consumer behaviour—particularly among Gen Z and millennials, who increasingly prefer personalization.

Furthermore, technology has enabled cost transparency, lowered entry barriers, and extended business reach across states. Together, these factors have driven the transition from traditional brick-and-mortar stores to a "phy-gital" (physical + digital) retail model.

Illustration #7

D2C & Omnichannel Market (USD Bn)

The growth of D2C brands, along with the impact of COVID-19, improvements in infrastructure, and advancements in technology, has accelerated overall market expansion.

CAGR for D2C: ~27–30%

Omnichannel adoption: ~70%

Source: estimation based on the annual reports and articles

This growth has permanently reshaped warehouse structures, with implications that have led to changes in supply chain design strategies.

Illustration #8

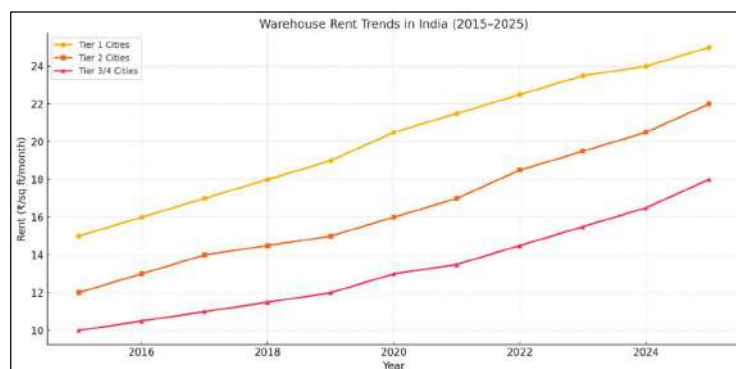| Area	Traditional Retail	2025 (D2C & Omnichannel)
Order Type	Bulk to distributor	High volume of small orders
Delivery Speed	~8 days B2B	1–2 days D2C, often same-day
SKU Handling	Pallet/carton	Each (unit) picking & sorting
Warehouse Role	Storage & replenishment	Fulfilment + returns hub

Shift from static warehouse to large dynamic fast moving and tech enabled fulfilment centre.

5. **Continuous growth on the rent**: the impact of technology growth, adoption of new business models, and government policies is also evident in the changes in warehousing rents.

Illustration #9

Period	Avg Rent (₹/sq ft/month)	Annual YoY Growth
~2015	₹15–18	—
2023	₹ 24.00	~10%
H1 2024	₹ 24.80	4.80%

Source: based on the Knight Frank & JLL report and secondary data research

Rent in Tier-1 cities is estimated to rise by 5–6%, while Tier-2 and Tier-3 cities are expected to experience higher growth of over 10%, driven by increasing demand and resource constraints in these regions.

6. Decline in the product-life cycle – rapid adoption of the digital technology has fuelled the growth of e-commerce and Q-commerce, this along with the rise of customer desire for novelty and relevance forced the companies to adopt to the faster innovation. Further, the D2C growth has reduced time to market and provided market to the small retailers and manufacturers.

This, with the diminishing boundaries for the competitors to enter the market has led the brands to focus on re-strategizing their product and supply chain strategy from innovation, planning to delivery cycle.

Illustration #10 (Product lifecycle of consumer goods)

Lifecycle Stage	Typical Duration (2015–19)	Duration (2022–24)	Key Drivers of Change
Introduction	~6–9 months	~3–4 months	Rapid prototyping, online-only pilots, influencer seeding
Growth	~12–18 months	~9–12 months	Premiumisation, D2C scale, viral marketing
Maturity	~18–24 months	~12 months	Quick commerce shelf space, frequent promotional resets
Decline/Phase-out	~2+ years	~12-18 months	SKU rationalization, consumer trend shifts

Summary: Based on the market research data of top consumer goods companies.

The changing product landscape has significantly impacted warehouse inventory management, order fulfillment, reverse logistics, and technology-enabled operational systems.
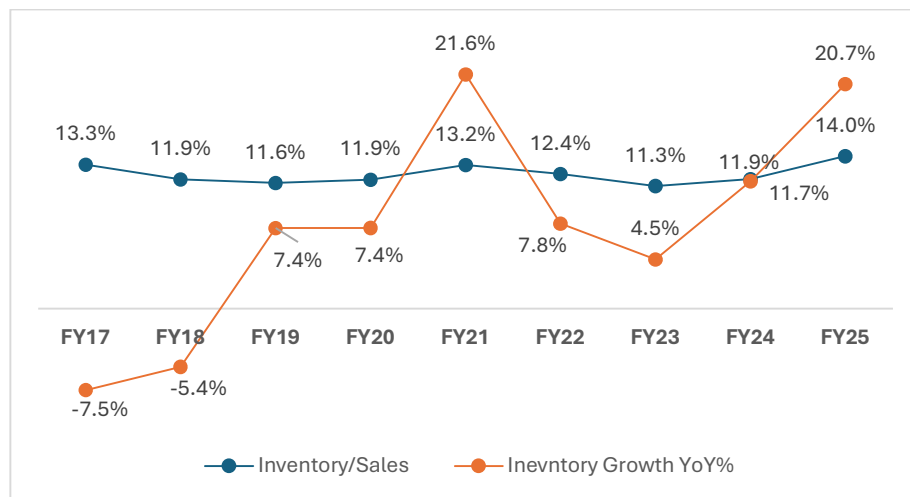
Illustration #11

Area	Traditional (Pre-2015)	Present Warehouse
Inventory Turnover	Low-to-moderate turnover	Higher turnover
Storage Strategy	Bulk storage, long replenishment cycles	Just-in-time, cross-docking, minimal storage buffer
SKU Management	Limited seasonal variants	Frequent SKU introductions, limited-edition variants
Demand Forecasting	Long-term (monthly/quarterly)	Weekly/daily forecasts; AI/ML-driven dynamic prediction
Returns Handling	Low product returns	Higher returns due to failed SKUs/short campaigns
Space Utilization	Fixed racking for long shelf-life	Flexible layouts, dynamic slotting for faster movement
WMS/Tech Adoption	Barcode-based basic WMS	WMS with AI/ML, real-time dashboards, SKU performance analytics
Reverse Logistics	Rarely a major concern	More common due to early withdrawal of SKUs

Warehouses have evolved from being inflexible to more flexible and dynamic, with the capability to support growth and meet customer expectations.

7. Growing global un-certainties: The COVID-19 pandemic significantly disrupted global supply chains, leading to material shortages, increased transportation costs, and shifts in customer demand that spurred the emergence of new business models. This disruption challenged traditional supply chain strategies, prompting a re-evaluation of the capabilities and infrastructure needed to maintain lean inventories.

Post-COVID, the rise of business models such as D2C, omnichannel, quick commerce, and e-commerce, coupled with changes in consumer buying behaviour, has further amplified demand uncertainty. Consequently, inventory levels across consumer goods sectors have increased—currently ~13% higher than pre-COVID levels—despite significant investments in digital transformation and supply chain optimization.

Illustration #12

Inventory levels in the FMCG sector are growing faster than sales, as reflected by the rising inventory-to-sales ratio.

Source: estimated based on the annual report of top FMCG companies

Illustration #13 How the Supply chain is transforming post Covid

Pre-Covid	Post-COVID
Lean inventory ("just-in-time")	Shift to **"just-in-case"** → increased **inventory holding** to counter lead time risks
Moderate safety stock	Increased **buffer stock** and **demand variability stock**
Warehouse	**Decentralization** to cater local demand
Digital transformation	**Accelerated** digital adoption across supply chain. (WMS, WCS, AI, Demand planning, Dashboards)
Global sourcing	Shift to **localization** and **multi-source strategies**

Shift from static warehouses to strategic nodes that ensure business continuity, with a focus on sourcing, transportation fallback, and multi-node inventory balancing.

8. Sustainable margins in a hyper-competitive market: over the past decade, India's warehousing landscape has been transformed by the rollout of GST, technology adoption (WMS, route planning, demand forecasting), and the rise of platform and D2C businesses. These changes have enabled warehouse consolidation, faster fulfillment, and higher inventory productivity—leading to improved EBITDA margins (100–250 bps) for early adopters such as HUL and Nestlé. Inventory days have declined, and logistics costs have fallen, demonstrating that smart warehousing drives profitability.
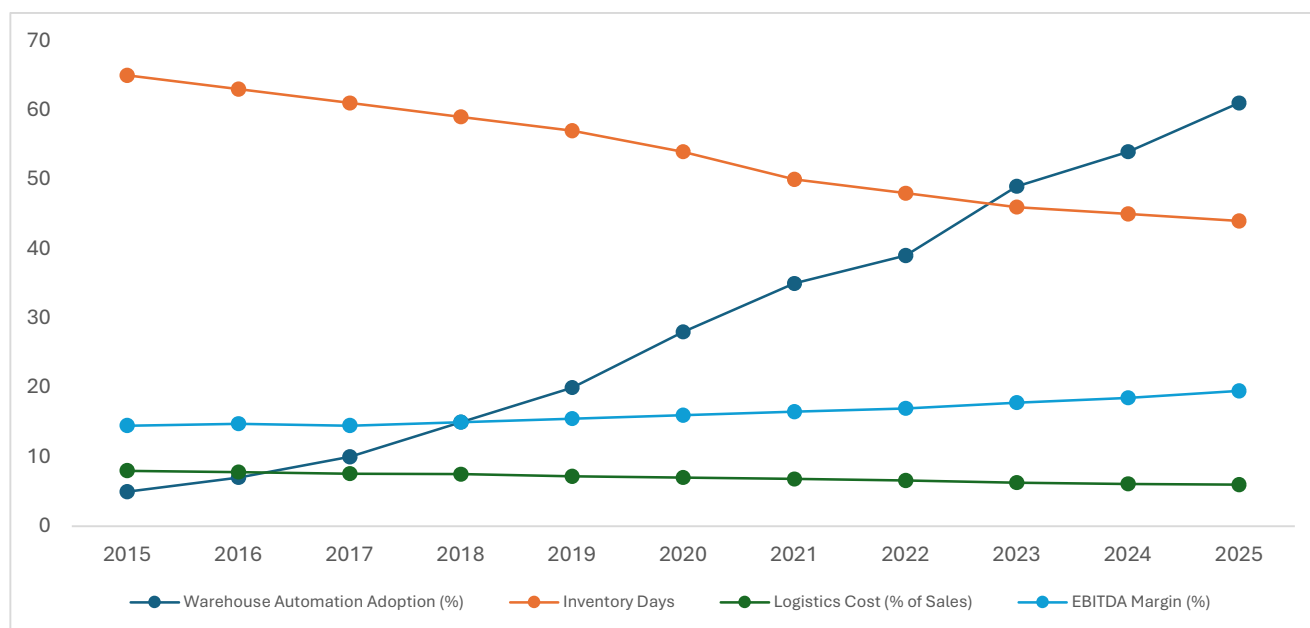
However, future gains will require a more aggressive strategy. Without continued investment, businesses may face rising warehousing costs, higher stockouts and returns, ESG compliance pressures, and competition from digital-native players. Warehousing is now a **margin lever**, not merely a cost center

Illustration #14

Risk Factor	Impact
Warehousing Cost Inflation	Rents, energy, labor costs may rise 4–7% CAGR (~2030)
Stockouts & Returns	Poor responsiveness → lost revenue & margins
Carbon Tax / ESG penalties	Older warehouses will face compliance cost
Competitive Disadvantage	Companies with smart fulfilment will gain share

This will reduce EBITDA margins, as distribution costs, inventory write-offs, and warehouse management expenses increase.

Illustration #15

Source: Estimated based on the annual reports of FMCG, industry reports. Warehouse automation is a digital adoption %.

What is the next transformation in warehousing?

1. Reimagine warehouse strategy by aligning with SKUs, Demand Patterns, and cost dynamics
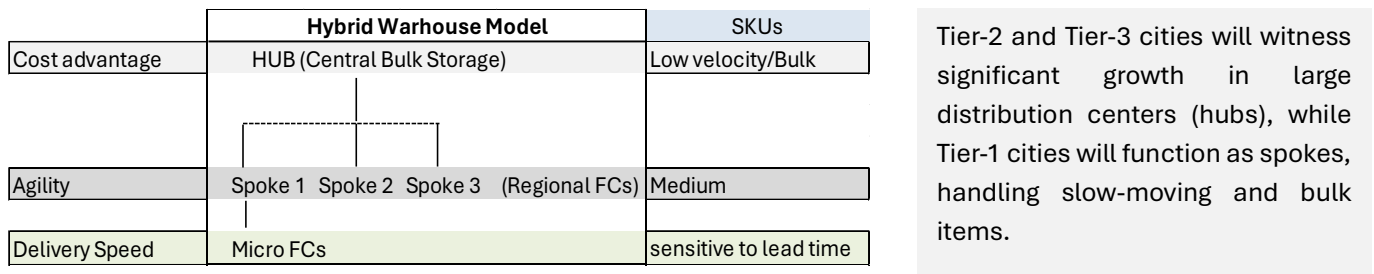
To remain cost-competitive and responsive, businesses must redesign their warehousing footprint by optimizing location, size, and network structure. This involves aligning warehouses with the nature of SKUs, regional consumer demand, and end-to-end fulfilment costs. Given the rising cost pressures and limited labor supply in Tier 1 cities, companies can increasingly leverage the cost advantages and labor availability in Tier 2 and Tier 3 cities.

This shift supports the evolution toward a **hybrid warehousing model**, combining:

- **Hub (centralized bulk storage)** for economies of scale,

- **Spoke (regional fulfillment centers)** for agility,

- and **Micro Distribution Centers (Micro DCs)** located closer to consumption centers for faster last-mile delivery.

As customer expectations for speed and efficiency grow, this **Hub + Spoke + Micro DC architecture** will become a dominant strategy—balancing cost, speed, and scalability in the evolving Indian logistics landscape.

Illustration #16

	Hybrid Warhouse Model	SKUs
Cost advantage	HUB (Central Bulk Storage)	Low velocity/Bulk
Agility	Spoke 1 Spoke 2 Spoke 3 (Regional FCs)	Medium
Delivery Speed	Micro FCs	sensitive to lead time

Tier-2 and Tier-3 cities will witness significant growth in large distribution centers (hubs), while Tier-1 cities will function as spokes, handling slow-moving and bulk items.

2. Accelerated adoption of advanced warehouse automation

In India, Tier-1 cities continue to drive the highest levels of consumption, and companies are fiercely competing to offer faster deliveries while keeping operational costs low. This competitive pressure, combined with the escalating cost of labor, real estate, and compliance, is pushing organizations to accelerate the adoption of advanced warehouse automation technologies.

To meet these demands, businesses will be increasingly deploying Automated Guided Vehicles (AGVs), collaborative robots, cloud-based WMS, and digital twin simulations to optimize and virtually test warehouse layouts and operations. These tools enable companies to operate intelligent, highly efficient fulfilment centres with minimal or even zero human intervention—particularly in high-demand urban zones.

However, this automation journey will not follow a one-size-fits-all model. Companies will adopt tier-specific automation strategies:
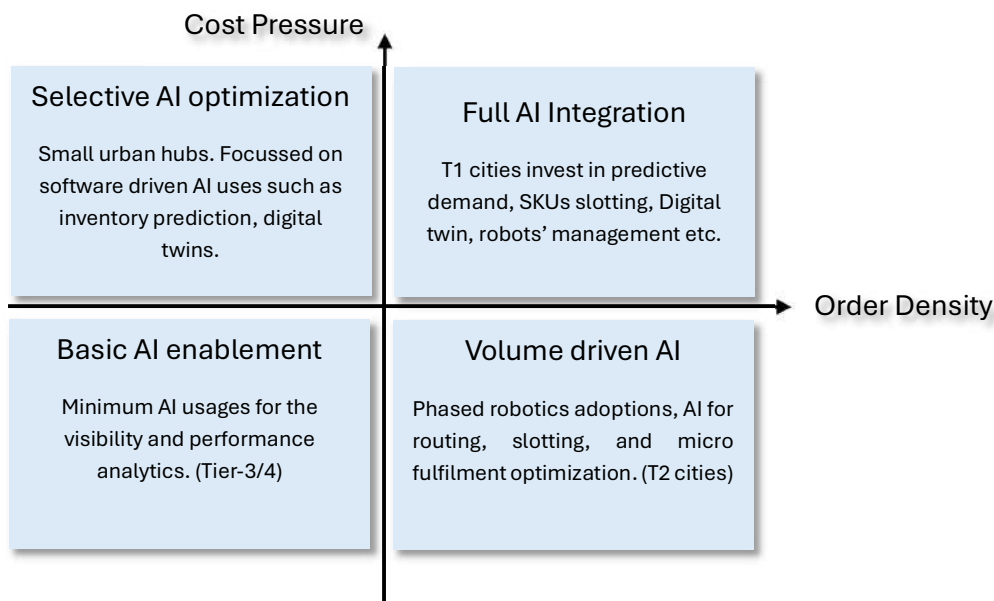
Illustrations #17

City Tier	Adoption Rate	Focus Areas	Leading Technologies
Tier 1	60–80% automation by 2030	E2E automation of picking, putaway, returns; robotics & AI	AGV/AMR, Pick-to-light, AI WMS, vision inspection, surveillance systems, cobots.
Tier 2/3	30–50% automation in key FCs by 2030	Robotics in mid-size hubs; selective automation in micro-FCs	Conveyor sortation, WMS modernization
Tier 4	<20% (2025), growing to 30–40%	Basic WMS, semi-automation	Cloud-WMS, barcode scanners, basic sortation

3. Faster adoption of AI solutions in the warehouse operations

The varied demand profiles across Tier-1 to Tier-3 markets, coupled with rising warehouse input costs, will intensify the pressure on businesses to boost productivity. This challenge is further amplified by the rapid growth of new business models (e.g., D2C), evolving customer behaviours, and shorter product life cycles. As a result, warehouse operations will become increasingly complex, paving the way for AI-driven solutions.

AI applications will include dynamic slotting and storage optimization, real-time traffic management for AGVs/AMRs, predictive failure analysis, and vision-based quality and compliance checks. Additionally, AI-powered digital twins will allow warehouse designers to simulate, optimize, and accelerate process adoption. However, AI adoption strategies will differ across industries and market tiers, aligning with specific demand profiles and customer expectations.

Illustrations #18

Cost Pressure / Order Density quadrant diagram:

- **Selective AI optimization** — Small urban hubs. Focussed on software driven AI uses such as inventory prediction, digital twins.
- **Full AI Integration** — T1 cities invest in predictive demand, SKUs slotting, Digital twin, robots' management etc.
- **Basic AI enablement** — Minimum AI usages for the visibility and performance analytics. (Tier-3/4)
- **Volume driven AI** — Phased robotics adoptions, AI for routing, slotting, and micro fulfilment optimization. (T2 cities)

4. 3PL business transformation

With shifting demand patterns, evolving customer behaviour, the rise of D2C, and shorter SKU life cycles, operational costs are climbing. This is pushing companies toward 3PL services. Over the past decade, the 3PL model has primarily focused on **space productivity** and **fleet utilisation**, offering storage and delivery capabilities.

However, rising competitive pressures and rapidly changing customer expectations are driving the next evolution of 3PL — from a traditional asset-based model (space, labour, fleet) to a **digital-first service model**. The new 3PL will integrate **agile networks**, **ESG compliance**, **digital-twin technology**, **AI-driven solutions**, and **sector-specific offerings**, enabling faster, smarter, and more customised logistics solutions.

	Present	New Model
Service Model	Space and delivery	Integrated solution *(customer pay for the outcome rather than space)* Sustainability as a service. *(use of AI to reduce carbon footprint)*
Network	Static network	Agile network - *dynamic network planning* *(shift of hub and spoke basis demand)*
New Revenue streams		AI analytics subscriptions Sector-specific value-add. *(compliance, temperature monitoring)*
Relationship	Transactional	Strategic partnership

Conclusion

In the past decade, India's warehousing has undergone a structural transformation driven by landmark policy reforms (GST, National Logistics Framework, E-way bill), rapid e-commerce and manufacturing growth, and evolving consumer demand. Labor dynamics have shifted markedly: wages have risen 60–100% across tiers, migration has become more circular with Tier-2/3 cities emerging as key hubs, and rising skill levels are reshaping workforce expectations. Simultaneously, new business models like Q-commerce, D2C, and omnichannel have altered warehouse roles—from bulk storage to fulfillment, returns, and rapid last-mile delivery.

Also, operational pressures have increased due to higher rents, faster product life cycles, and heightened demand uncertainty post-COVID, compelling companies to redesign their supply chain networks and adopt digital/AI-driven solutions. While the impact is not uniform across tiers in India, no uniform strategy across tiers is possible; instead, a differential hybrid approach for warehousing network design, automation, and 3PL models, along with differential AI models, will be required. Further, this opens diverse opportunity across industries:

IT and tech providers: rising demand for AI, cloud WMS, IoT, robotics, and digital twins, with Tier-1 cities driving advanced automation while Tier-2/3 markets look for modular, cost-efficient solutions, opening space for platform ecosystems in predictive planning, network optimization, and compliance.

E-commerce and Q-commerce: adapting to an explosion in small-order, fast-turnaround fulfillment, facing labor shortages and cost pressures while expanding hub–spoke–micro DC networks and embedding reverse logistics as a core capability.

consumer goods and manufacturing firms: GST and logistics reforms have enabled network consolidation, but shorter product life cycles and rising operating costs have shifted warehouses from storage centers to agile fulfillment hubs and margin levers.

Finally, **advisory firms:** experience strong demand for footprint optimization, 3PL transformation, and automation strategies, alongside broader roles in workforce and change management as companies restructure networks and adapt to shifting labor dynamics.

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