INTELLIGENT INVESTMENT

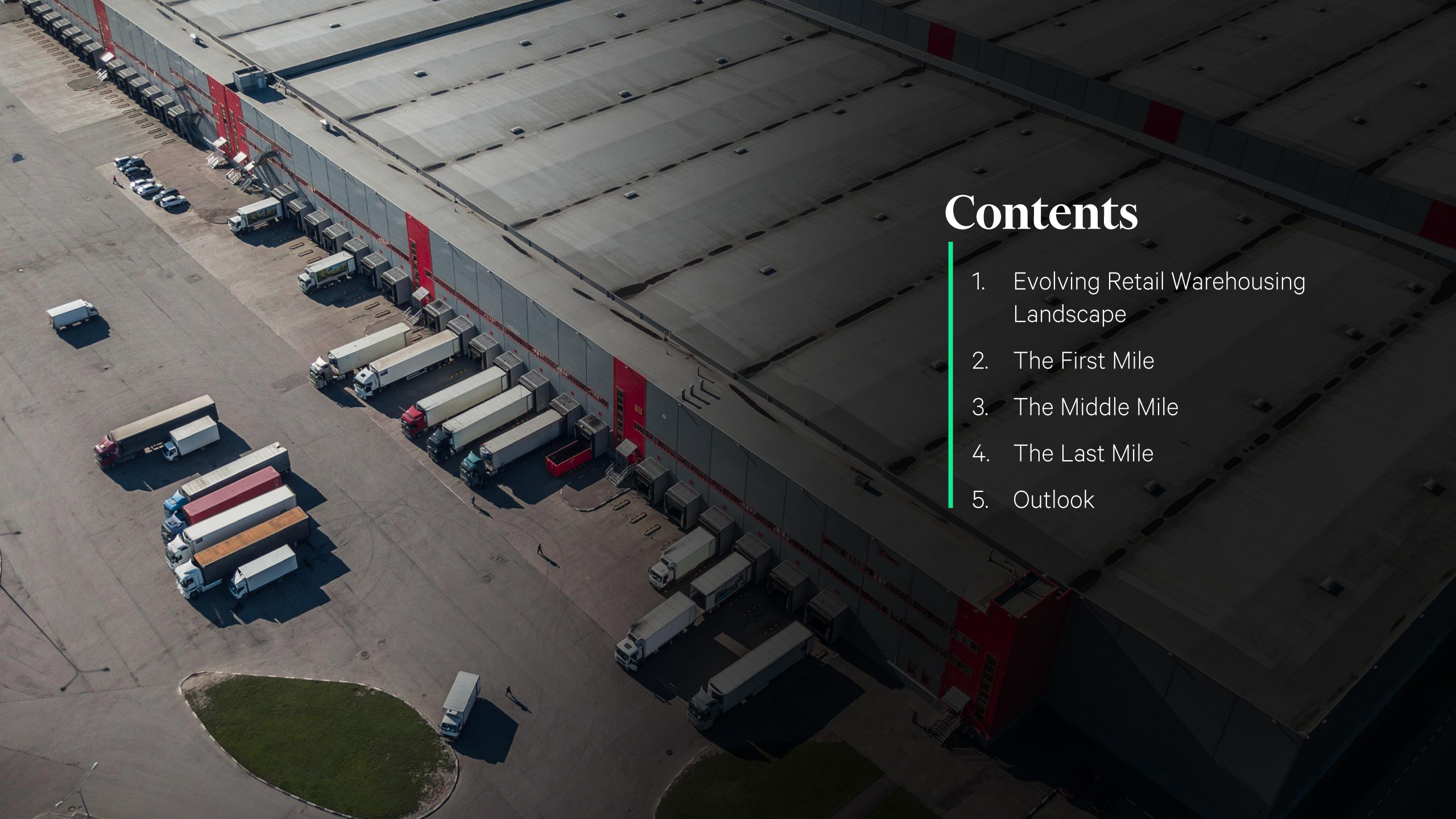
The Three-mile Tale: Dissecting The New-age Retail Supply Chain Network

REPORT — INDIA

REAL ESTATE

CBRE RESEARCH

SEPTEMBER 2023



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1 Evolving Retail Warehousing Landscape

Shift to Modern Retail Reshaping Warehousing Strategies

A growing proliferation of global retailers, expansion of stores, and growth in online shopping, has triggered a huge transformation in India's retail market. While access to social media and e-commerce platforms has narrowed the information gap and created a wider shopper network, increase in disposable income of consumers has also bolstered retail spending in the country.

India's per capita income is expected to rise from USD 2,278 in 2022 to USD 5,242 in 2031[1] which will further aid discretionary spend across most income brackets. Between 2022-2030, consumer spending across discretionary categories such as clothing and footwear, recreational and cultural services along with restaurants and hotels are expected to grow by 1.6x, 2x and 2.3x respectively.[2] The confluence of these factors is likely to result in the continued growth of the retail sector in the next few years.

Figure 1.1: Key indicators contributing to the growth of the retail market in India

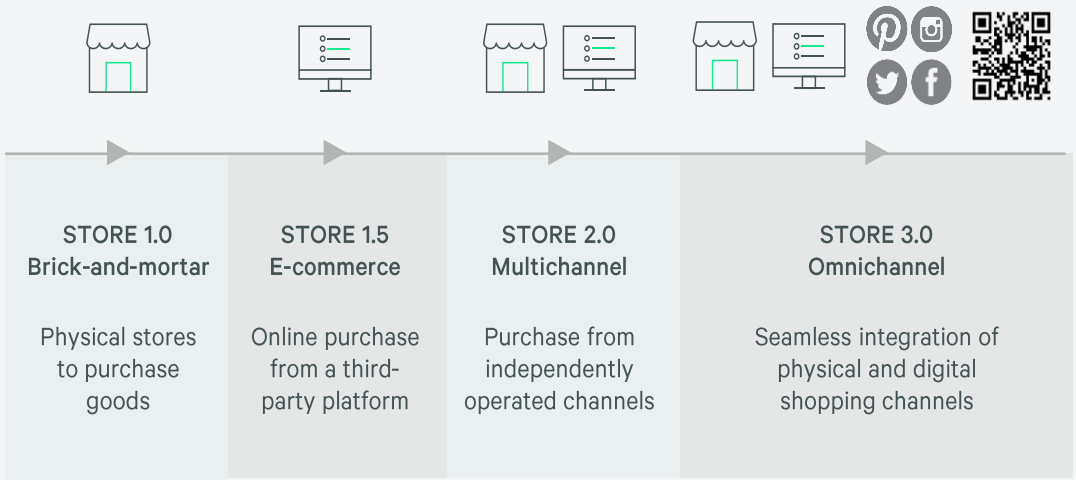
	2012		2021 / 22		2030 / 31
RETAIL SALES	USD 435 bn	1.9X	USD 826 bn	1.6X	USD 1,321 bn
CONSUMER SPENDING	USD 1,003 bn	1.8X	USD 1,827 bn	1.6X	USD 2,883 bn
PER CAPITA INCOME	USD 1,496	1.5X	USD 2,278	2.3X	USD 5,242
E-COMMERCE PENETRATION	-		6.5%	1.9X	12.3%

Source: Oxford Economics, Morgan Stanley, CBRE Research, Q3 2023

[1]Why this is India's Decade, Morgan Stanley, 2022; [2] Oxford Economics, Q2 2023

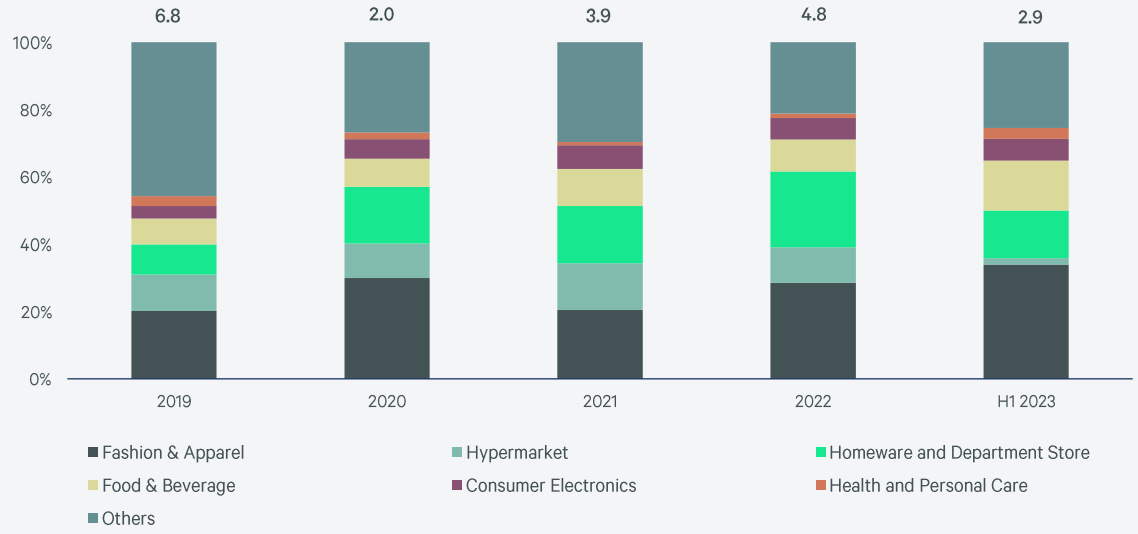
Post the pandemic, an increased proliferation of e-commerce has led several retailers to embrace an omnichannel retail strategy. The adoption of this strategy requires a complete overhaul of a retailers' business, from advertising and merchandising to payment, fulfilment, and delivery. A successful omnichannel retailer will offer a seamless shopping experience which is consistent across all channels, whether online, social media, or in-store. With the potential to expand fivefold to reach USD 55 billion by 2027, significantly up from USD 11 billion today, India's omnichannel industry is poised for remarkable growth. Currently, more than 60% of national brands have adopted some form of omnichannel strategy with the help of enhanced tech and logistics capabilities.[3]

Figure 1.2: Leveraging digital enablers to drive omnichannel network



Source: CBRE Research, Q3 2023

Figure 1.3: Share of leasing across categories in key retail assets* (2019 – H1 2023)



Source: CBRE Research, Q3 2023

Note: *Leasing across investment-grade malls, highstreets and standalone developments; the number above the bar denotes leasing in million sq. ft.

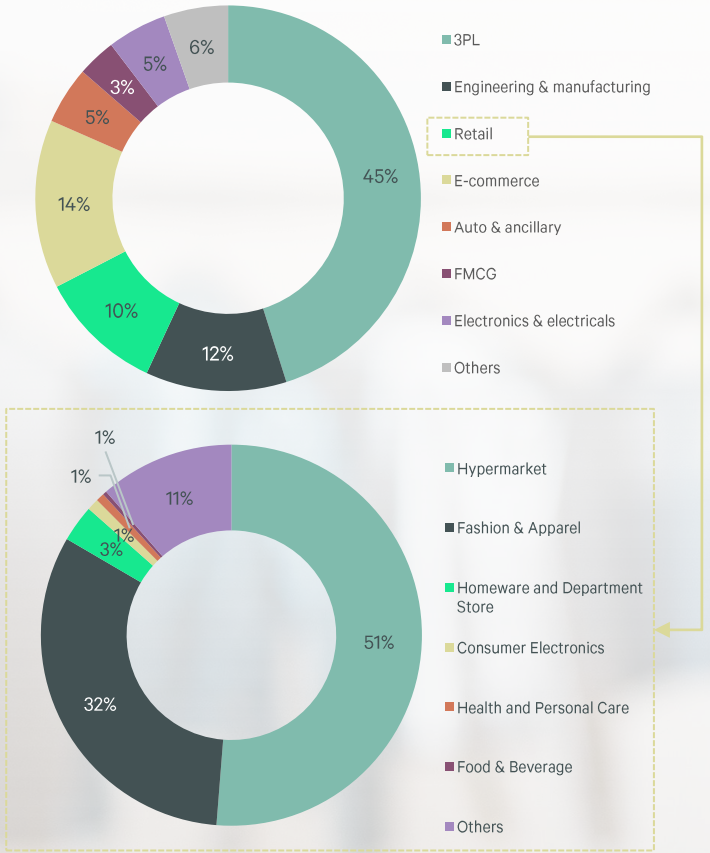
Backed by high expectations from empowered consumers, evolving social fabric and growth in discretionary spending, retail leasing has witnessed an uptick across organized spaces. These include investment-grade malls, key high streets, and standalone developments where demand has been primarily driven by select categories including fashion & apparel, homeware & department stores, along with hypermarkets. These categories together account for nearly 50 - 70% of space take-up every year (refer Fig 1.3).

Booming retail industry's diverse needs and changing dynamics, including the rise of e-commerce and amplified consumer expectations, have created a substantial demand for warehousing to support efficient inventory management and distribution. These factors have compelled retailers to rethink their supply chain networks and, consequently, conduct a comprehensive assessment of warehousing demand.

[3] India Brand Equity Foundation, May 2023

Increased omnichannel adoption, faster delivery requirements and holding buffer inventories amid supply chain disruptions have fuelled the demand for warehousing from retailers. Between 2019 - H1 2023, e-commerce, FMCG and retail categories together accounted for nearly 27% of the total warehousing demand. Within the retail segment, categories such as hypermarkets (51%) along with fashion & apparel (32%) dominated space take-up (refer Fig 1.4) during this period. Notably, the share of retail in total demand has increased from 8% in 2019 to 13% in 2022. Although it only touched 9% in H1 2023 (refer Fig 1.5), we expect the share to strengthen in H2 2023 backed by an anticipated increase in consumption during the festive season. Further, the share of FMCG has doubled from 3% in 2019 to 6% in H1 2023. Although e-commerce leasing tempered in 2022 and H1 2023, we expect a recovery in H2 2023 and 2024. Strong leasing momentum across these categories has also prompted a reassessment of warehousing size requirements. There has been a decline in small to mid-sized deals (<50,000 sq. ft.) over the last few years and the leasing activity is primarily powered by large-sized transactions (>100,000 sq. ft., refer Fig 1.6).

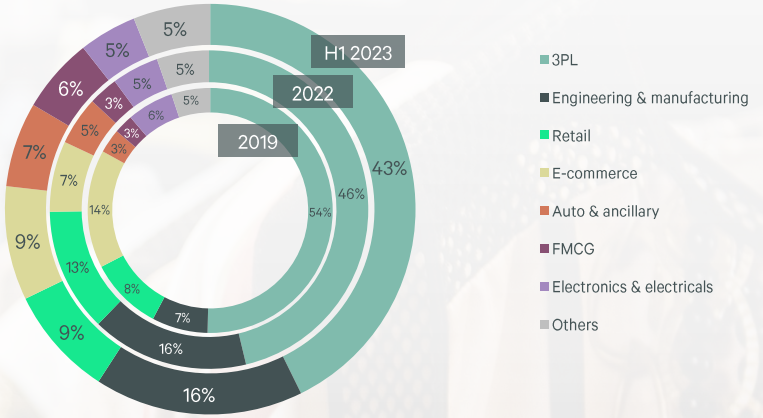
Figure 1.4: Share of the retail sector and other key categories in warehousing demand (2019-H1 2023)



Source: CBRE Research, Q3 2023

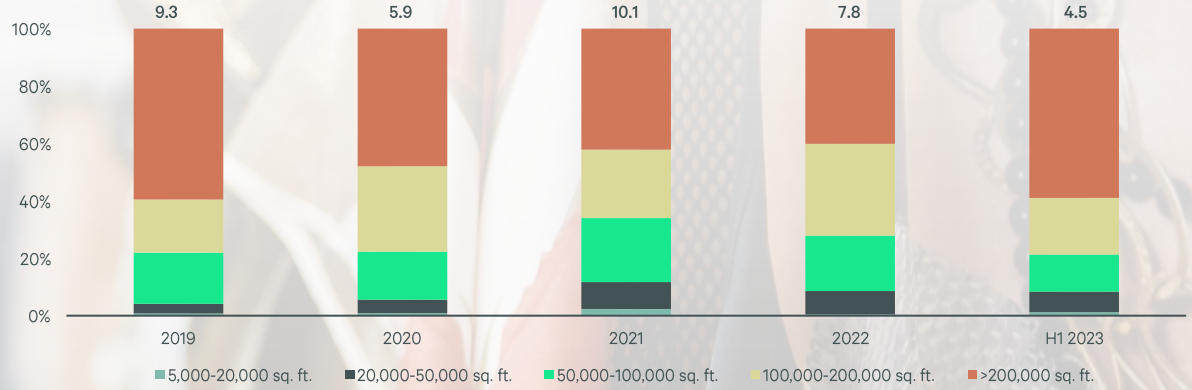
Note: 3PL and e-commerce players also include a retail warehousing component

Figure 1.5: Year-wise segmentation of warehousing demand as per industry sectors



Source: CBRE Research, Q3 2023

Figure 1.6: Size-wise segmentation of warehousing demand by selected categories**



Source: CBRE Research, Q3 2023

Note: The number above the bar denotes leasing in million sq. ft.; **E-commerce, retail and FMCG

Figure 1.9: Key trends impacting retailers' warehouse strategies

Growth in e-commerce

Proliferation of e-commerce during the pandemic led retailers to optimise their warehousing strategies for efficient online order fulfilment resulting in the surge of distribution centres and last-mile delivery hubs

Technology - an enabler

Innovation in robotics such as automated picking systems, robotic sorting and autonomous vehicles for material handling have enabled warehouses to streamline their operations

Multi-channel fulfilment needs

Seamless integration of offline and online channels necessitating implementation of warehousing solutions which can manage diverse inventory types and accommodate various fulfilment methods

Heightened demand for 3PL services

Rising demand from e-commerce and direct-to-consumer (D2C) brands which exerts immense pressure on 3PLs to meet a wide array of customer demands spurring the emergence of multi-tenanted warehousing facilities

Democratization of data analytics

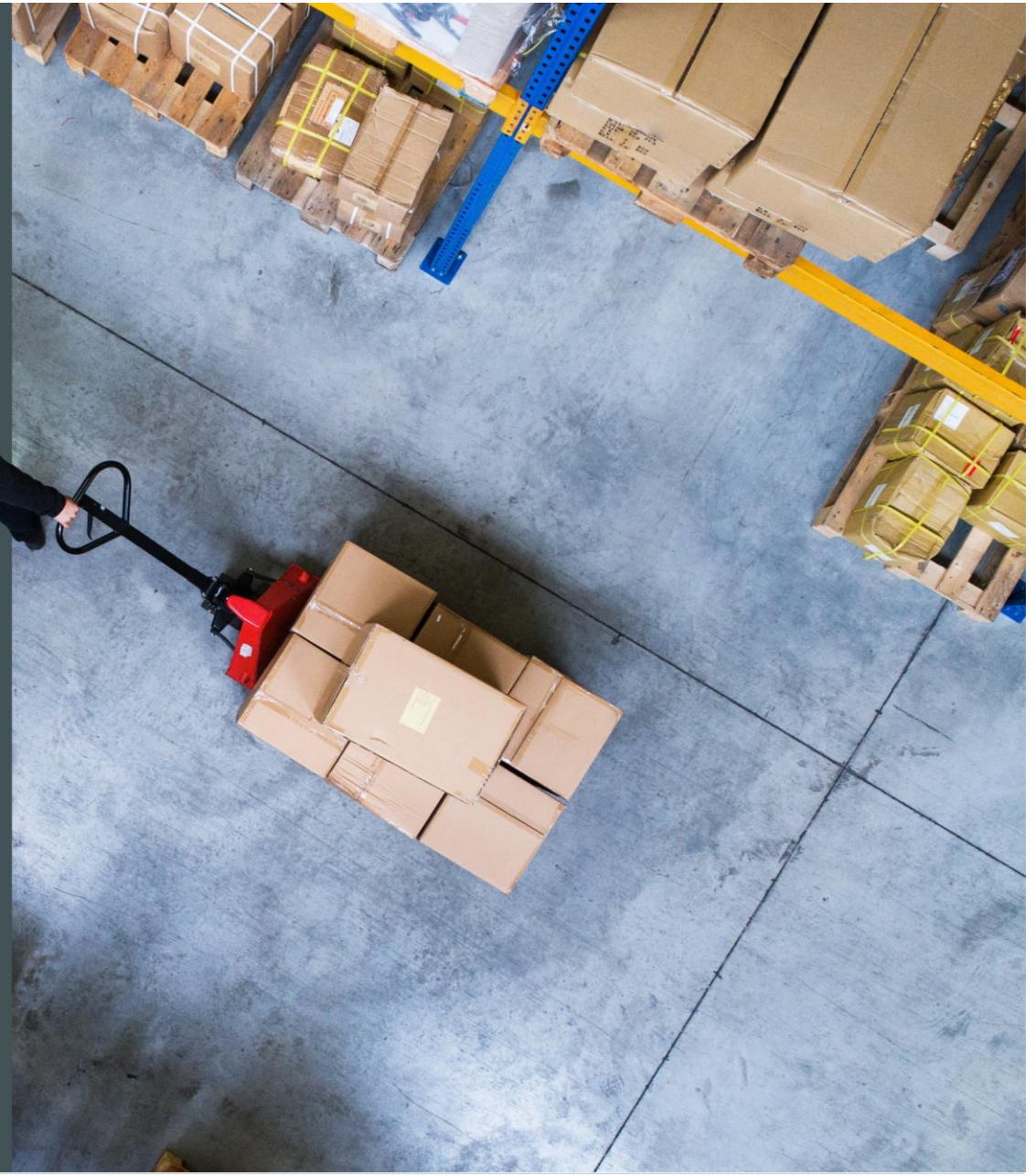
Data analytics not only empowering retailers to transform information into meaningful insights and formulate effective go-to-market strategies but also enabling optimization of inventory management, demand forecasting and enhancement of overall warehouse operations

Need for bolstering supply chain resilience

Retailers expanding the scope of warehousing networks in a bid to provide flexible pickup and delivery options, while simultaneously mitigating the susceptibility of supply chain networks to external disruptions

Demand for sustainable solutions

Sustainable prerogative encouraging retailers and landlords to adopt energy-efficient warehouse designs, green transportation methods, renewable energy solutions, and responsible sourcing of materials.

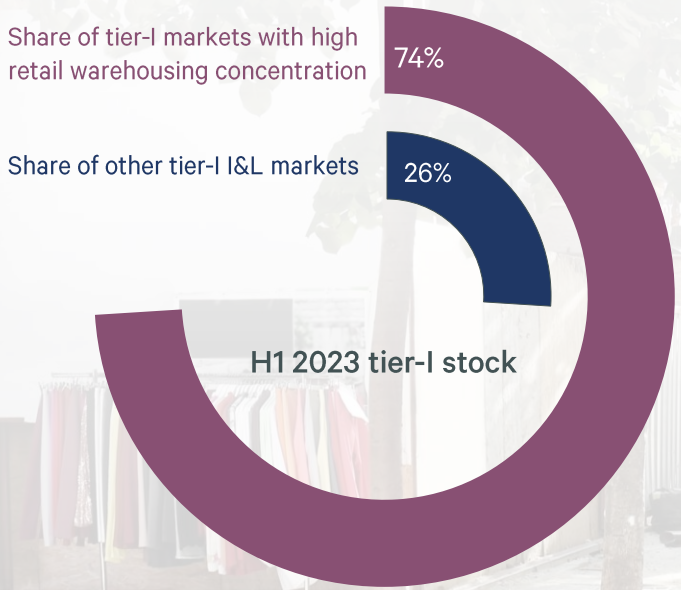


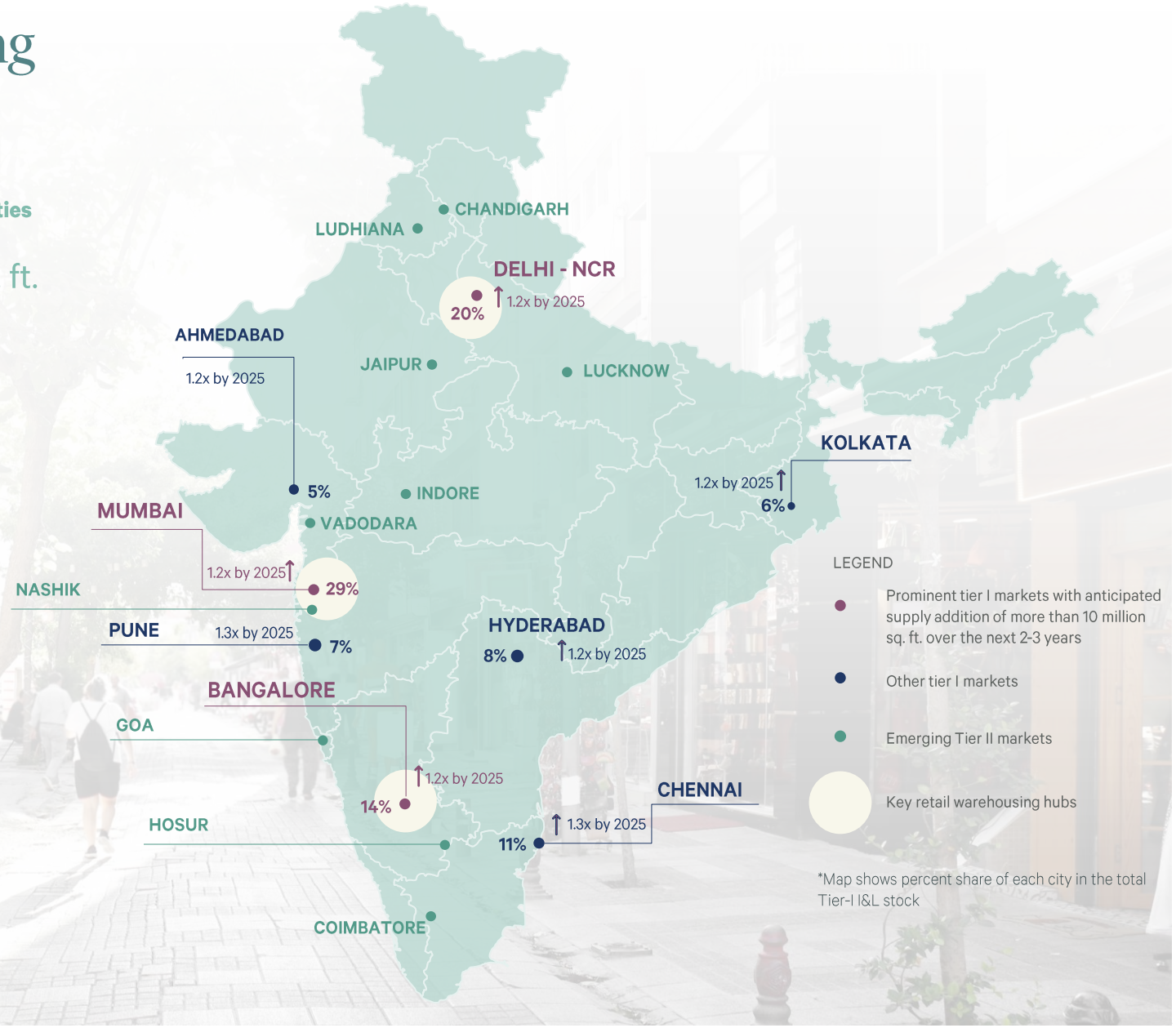
Source: CBRE Research, Q3 2023

Key I&L Hubs in India Supporting The Retail Growth

I&L stock in tier-I cities (as of H1 2023)
340+ million sq. ft.

I&L stock in tier-II cities (as of H1 2023)
~50 million sq. ft.

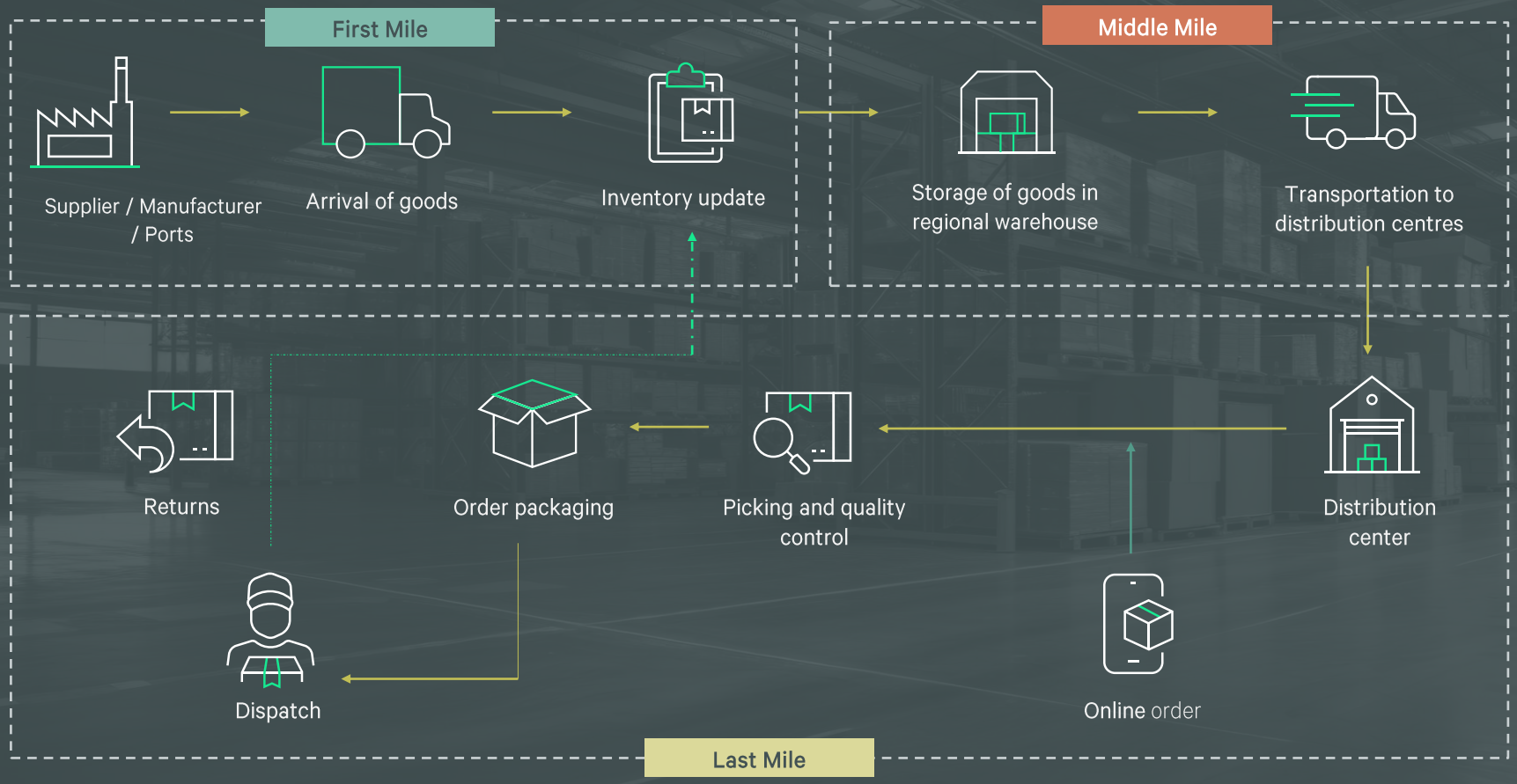




Source: CBRE Research, Q3 2023

Note: Tier-I markets with high retail warehousing concentration include Delhi-NCR, Mumbai and Bangalore

The Logistics Delivery Chain



Source: CBRE Research, Q3 2023

The logistical journey is not a linear progression and comprises a triad of interconnected stages, from the moment an order is initiated to the culmination of the customer's experience in receiving their package and providing feedback. While much attention has been devoted to the final leg of this journey – the “last mile” logistics, it is imperative to understand that each stage possesses its own distinctive intricacies and associated challenges. Efficient coordination and optimization of “first mile” and “middle mile” logistics are also crucial in ensuring timely and cost-effective deliveries in the logistics industry. The share of last mile warehousing in the e-commerce and retail sector space take-up is approximately 10 - 15%. While warehouse demand is expected to grow between 12 - 15% CAGR over the next 2 - 3 years, the last mile delivery segment is expected to grow by a relatively sharper CAGR of 15 -18%. This growth is expected to be driven by factors such as increased adoption of omnichannel retail strategies, outsourcing of last mile deliveries to 3PL players, among others.

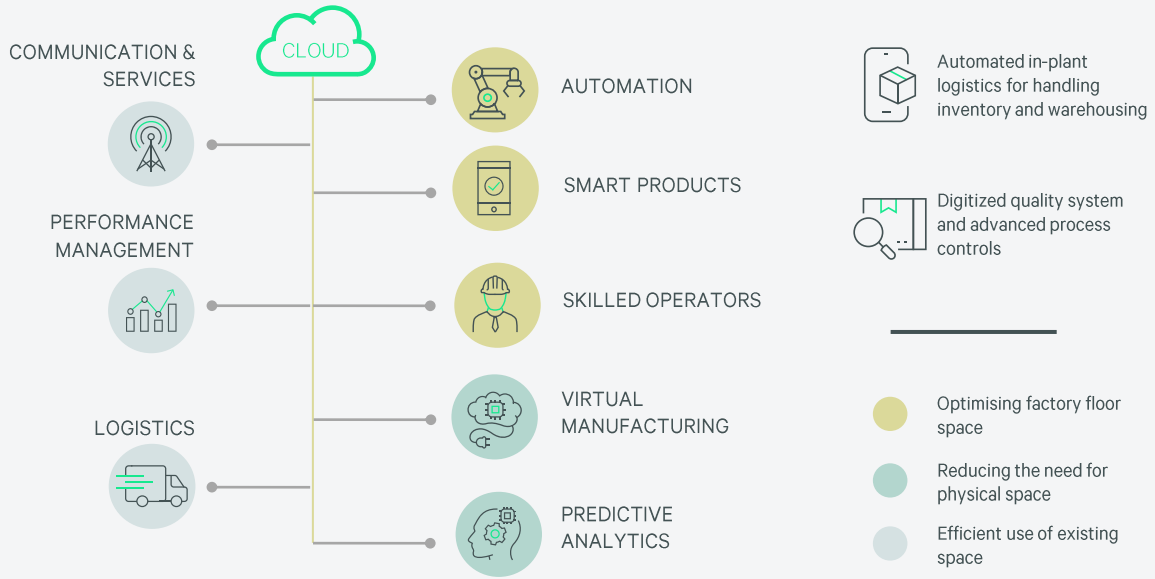
2 The First Mile

Foundation of the Supply Chain Network

First mile logistics refers to the first step of the delivery process from a production facility / supplier to a regional warehouse

First mile takes manufactured goods onward to the next destination – which could be a warehousing facility / fulfilment centre / store / port (in case of exports). Some of the key challenges during the first leg of the supply chain, especially for retailers and e-commerce players, include accurate selection of products, efficient packaging and implementation of information systems for inventory management, tracking and documentation purposes. Timeliness is critical at this stage to avoid causing any downstream delays.

Figure 2.1: Space optimization strategies - smart factories & key technologies



Source: CBRE Research, Q3 2023

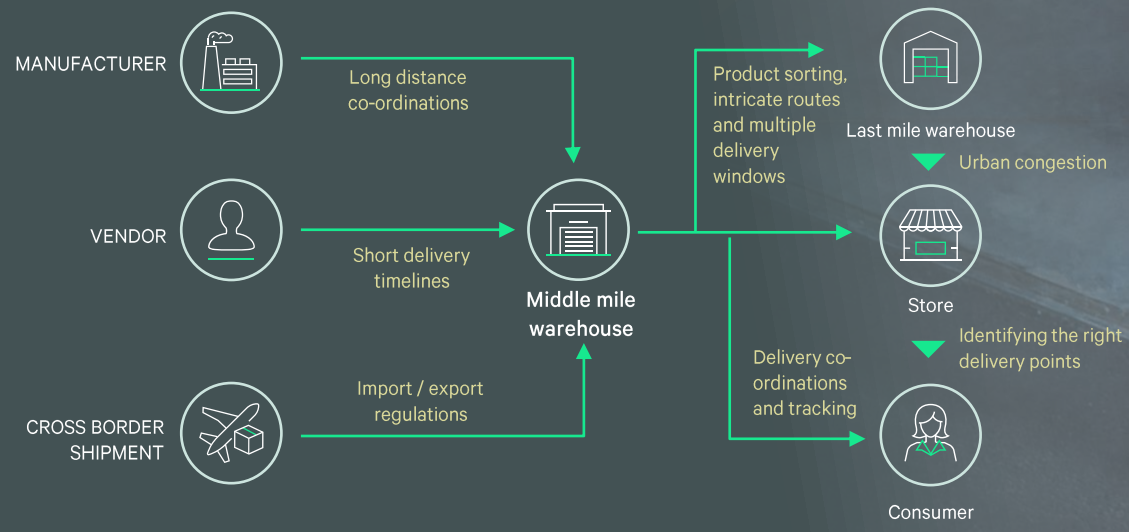
3 The Middle Mile

The Crucial Intermediate Between the First and the Last mile

Middle mile logistics refers to the delivery process from a regional warehouse to the distribution centres

Middle mile includes warehouses tasked with temporary storage and management of products until it is shipped off to a distribution centre. With its extensive geographical reach and complex co-ordination requirements, the mid mile encounters a range of formidable challenges. These include the need for effective long-distance coordination, navigating cross-border shipping regulations, selecting the optimal mode of transportation, and mitigating unexpected disruptions such as adverse weather conditions, political unrest, etc.

Figure 3.1. Key challenges impacting the middle mile logistics



Source: Cainiao Research; CBRE Research, Q3 2023.

Figure 3.2. Types of middle mile warehousing facilities

REGIONAL DISTRIBUTION CENTRES

- Facilities that distribute the goods received from vendors / manufactures to local fulfilment centres or directly to the retail stores
- Above 100,000 sq. ft. in size
- Duration of storage between 1 - 3 weeks
- Primarily cater to **e-grocers, department stores, consumer electronics, fashion & apparel players**

SORTATION CENTRES

- Tech-enhanced facilities that sort different batches of delivery based on unique zip codes / location pin codes
- Approx. 150,000 – 250,000 sq. ft. in size
- Duration of storage between 1 - 3 days
- Primarily cater to **e-commerce players**

THIRD-PARTY LOGISTICS (3PL) WAREHOUSES

- Facilities that have provisions for storage and distribution for multiple retail tenants and are managed by a 3PL player
- Above 25,000 - 500,000 sq. ft. in size
- Duration of storage varies from a few weeks to a few months depending on goods
- Primarily cater to **retailers across most of the categories and small e-commerce players**

TRANSHIPMENT WAREHOUSES

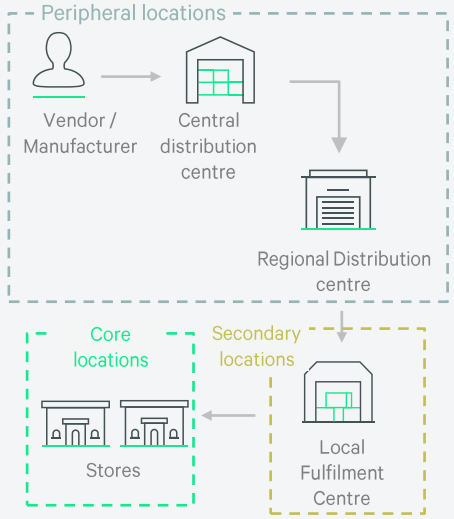
- Facilities that store import / export goods transported via sea-ports / airports for a short duration before moving them to a regional distribution centre
- Approx. 10,000 - 50,000 sq. ft. in size for import / export goods, 50,000 – 100,000 sq. ft. in size for seasonal goods & 100,000 – 200,000 sq. ft. in size for overstock goods
- Duration of storage varies from a few days to a few weeks depending on goods, destination & mode of transportation
- Primarily cater to **big-box retailers, e-commerce players, wholesale retailers, importers / exporters**

Source: CBRE Research, Q3 2023

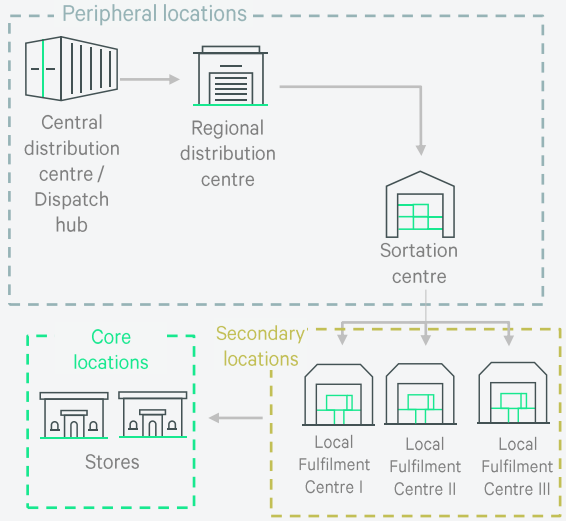
Space optimization strategies for various operating models

Figure 3.3. Operating models of key middle mile warehousing facilities

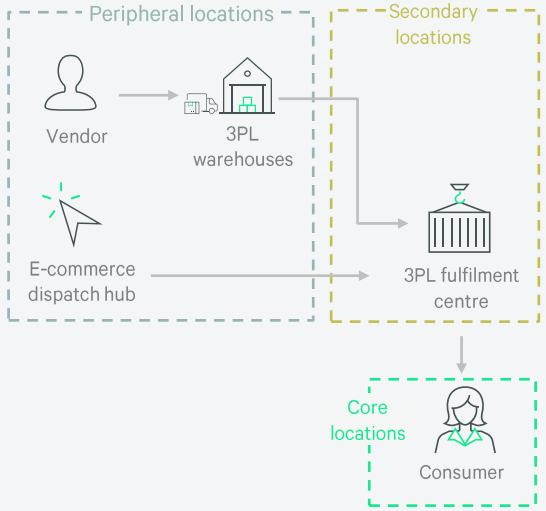
Regional Distribution Centre



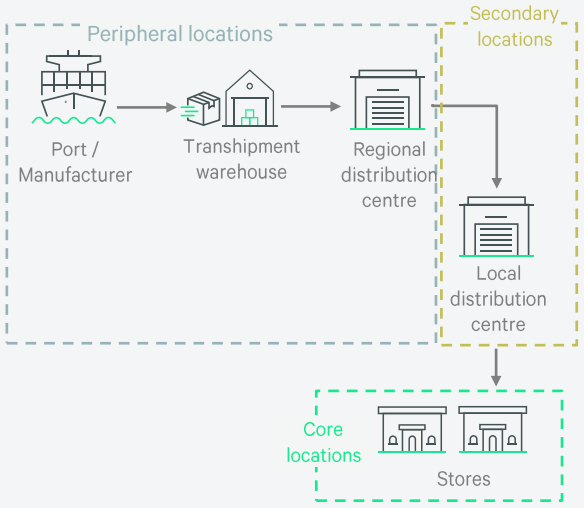
Sortation centres



3PL warehouses



Transhipment warehouses



Space optimization strategies

- Cross-docking: Rapid transfer of products from inbound to outbound trucks minimising the need for storage
- Cross-utilization: Repurpose areas with seasonal demand during off-peak seasons

- Pallet flow racking: Efficient vertical stacking of products and utilizing gravity flow to optimize picking and replenishment process
- Multi-level mezzanines: Elevated platforms for additional workflow processes

- Zone picking : Division of warehouse in zones for efficient inventory management
- Dynamic slotting: Continuous adjustment of product placement based on demand patterns to reduce picker travel time

- Yard management: Efficient placement of trailers, containers, and other equipment in the yard
- Real-time tracking: Tracking inventory and equipment to optimize space and resources

Source: CBRE Research, Q3 2023

Note: The above operating models denote a typical flowchart in each warehousing type and may vary basis the type of occupier, requirement of the occupier and the product type

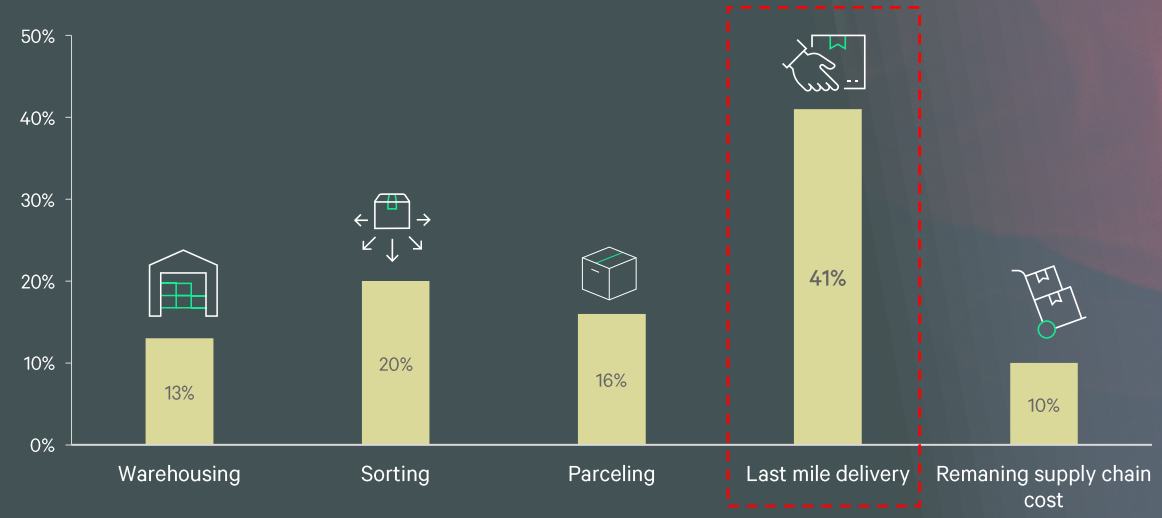
4 The Last Mile

The Last Precision to Elevate Logistics Efficiency

Last mile logistics refer to the final step of the delivery process from a distribution centre or a middle mile facility to the end-user

Retail and e-commerce players identify last mile services as a key differentiator for their businesses to ensure customer satisfaction. However, led by various factors such as warehousing cost, complexity of delivery routes, labour costs, vehicle costs, short delivery timelines, fragmented deliveries and return / failed deliveries, the last mile is the dominant cost driver in logistics supply chain (refer figure 3.1).

Figure 4.1: Share of last mile delivery cost in supply chain



Source: Cainiao Research; CBRE Research, Q3 2023.

Figure 4.2. Types of last mile warehousing facilities

MICRO-FULFILMENT CENTERS

- Small-scale semi / fully automated warehouses focusing on rapid order picking, packaging and deliveries
- Approx. 2,000 - 20,000 sq. ft. in size
- Primarily cater to **FMCG companies / e-grocers**

DARK STORES

- Brick-and-mortar facilities that are converted into fulfilment centres for online orders and are not open to offline visitors
- Approx. 2,000 - 10,000 sq. ft. in size
- Primarily cater to **q-commerce firms / big-box retailers**

MINI WAREHOUSES

- Compartmentalised facilities that provide consumer / commercial self-storage spaces on lease
- Approx. 200 - 1,000 sq. ft. in size
- Primarily cater to **fashion & apparel and consumer electronics companies**

GHOST KITCHENS

- Virtual kitchens operating from commercial / non-commercial premises that prepare delivery-only dishes
- Approx. 200 - 400 sq. ft. in size
- Primarily cater to the **food & beverage (F&B) segment**

REFURBISHED WAREHOUSES

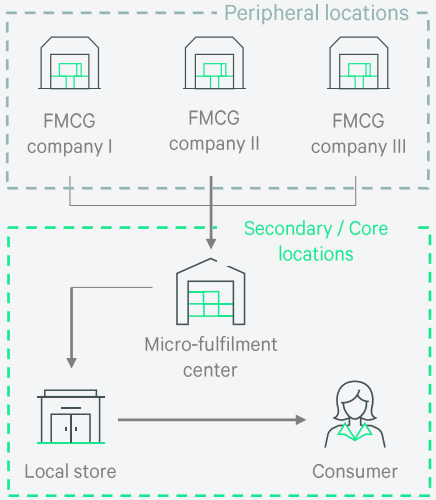
- Restored warehouses with extensive upgrades to improve their functionalities, efficiencies and storage capacities
- Primarily cater to various segments including **e-commerce, consumer electronics, consumer durables, automotive parts retailers etc.**

Source: CBRE Research, Q3 2023

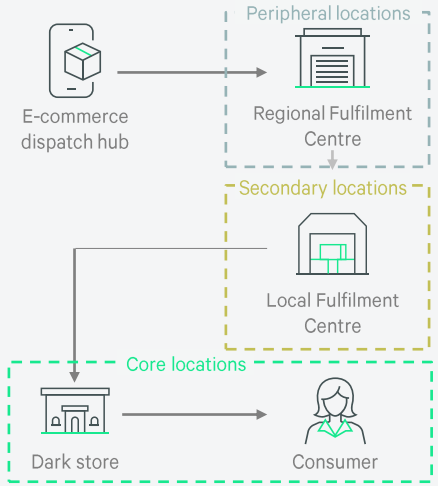
Space optimization strategies for various operating models

Figure 4.3. Operating models of key last mile warehousing facilities

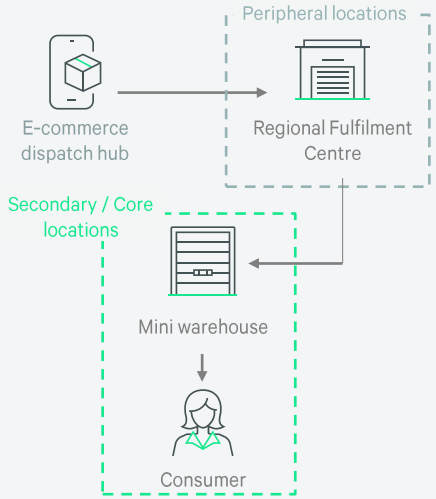
Micro-fulfilment centers



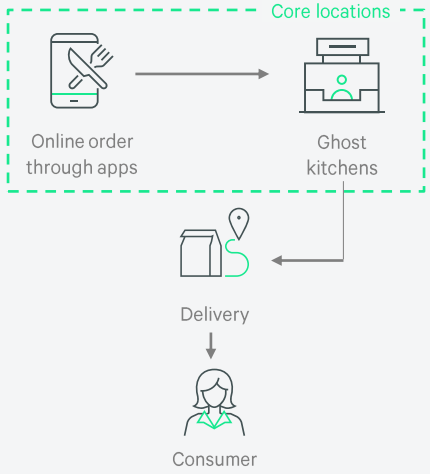
Dark stores



Mini warehouses



Ghost kitchens



Space optimization strategies

- Vertical storage: Usage of vertical space with multi-level shelves / racks
- Flexible storage: Adjustable storage spaces that can be reconfigured as per needs
- Buffer zones: Temporary storage spaces to avoid congestion during peak season
- Goods-to-person systems: Conveyors / robotics to deliver goods to order pickers
- Mobile compartments: Movable storage walls to adjust as per tenant demands
- Smart unit allocation: Automated allocation basis size / type of products to be stored
- Flexible layout: Easily convertible spaces adjustable as per menu offerings / peak hours
- Shared kitchens: Shared units with multiple cloud kitchens operating on a rotational basis

Source: CBRE Research, Q3 2023

Note: The above operating models denote a typical flowchart in each warehousing type and may vary basis the type of occupier, requirement of the occupier and the product type

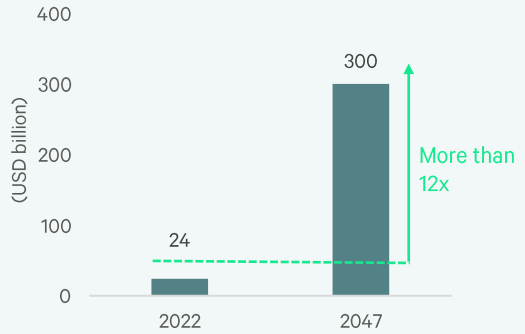
5 Outlook

Retail Categories Gearing Up for Multi-fold Growth in India

Figure 5.1: Market growth and warehousing requirements of key retail categories

Fashion & apparel*

Market size in India



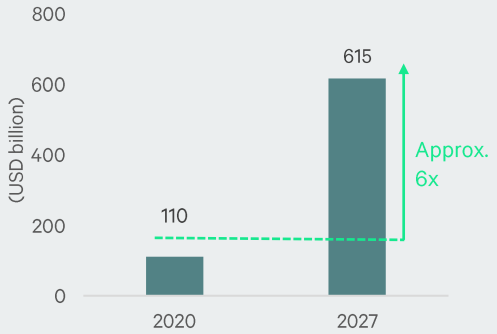
Source: Invest India website, GoI, 2023

Key warehouse requirements

- As fashion & apparel companies deal with seasonal demand, these occupiers may require **flexible storage solutions** to accommodate changing inventory needs
- As apparel items are sensitive to temperature and humidity, warehouses should ensure **controlled environments** to prevent product damages

FMCG

Market size in India



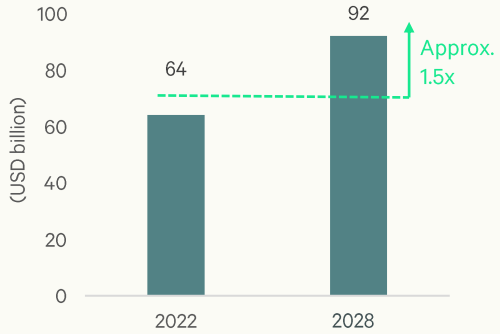
Source: Statista, 2023

Key warehouse requirements

- FMCG players would require **temperature-controlled storage facilities** to ensure product quality
- They may also require automated **First-In-First-Out (FIFO) rotational methods** in warehouses to ensure older products are sold out first to minimise wastages

Consumer electronics

Market size in India



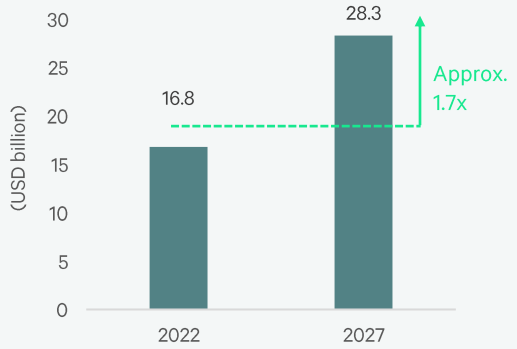
Source: Statista, 2023

Key warehouse requirements

- Consumer electronics require **anti-static flooring, packaging and handling** procedures to prevent electrostatic discharge as static electricity may damage the product components
- Warehouses should ensure **compliance with special standards and regulations** to facilitate storage of lithium batteries / any hazardous electronic materials / components

Beauty & personal care

Market size in India



Source: The Estée Lauder Companies, 2023

Key warehouse requirements

- Beauty products would require **temperature and humidity-controlled** environments to prevent product deterioration
- Warehouses should also ensure **fragile product handling facilities and dust-free areas** for delicate products which may require sterile conditions

Source: CBRE Research, Q3 2023

Note: *Data indicates market size for textile and apparel

Tech Advancements in Retail Logistics

Various technological breakthroughs continue to help retail businesses execute logistics operations with higher efficiencies, lower cost and greater flexibility based on seasonal demand. Innovations and futuristic technologies such as Artificial Intelligence (AI), Internet of Things (IoT), big data analytics, etc. help predict the future purchases and facilitate operational improvements led by collection and analysis of real-time data. This data is further used for warehouse management, inventory control and labour optimization in new-age warehouses.

Below are a few key new-age technologies that are likely to play a vital role in the future logistics.

Figure 5.2. Potential technology interventions in new-age logistics

- **Automated storage and retrieval systems (AS/RS):** Computed controlled systems to fast-track order fulfilment and material handling operations.
- **Automated Guided Vehicles (AGV):** To transport inventories between multiple points in a warehouse. They navigate with the help of sensors, tracks, magnetic strips, etc., embedded in the warehouse floors.
- **Cobots:** Semi-autonomous robots which work along-side human labours to assist in tasks that require high precision / heavy lifting within the warehouses.

- **Robotic arms & grippers:** For precise and automated order picking and packaging.
- **Blockchain:** Supports in verifying product authenticity, ensures traceability and provides quality control with the help of sensors for time and temperature sensitive goods. It also facilitates smart contracts that automate packaging instructions, labelling requirements and even payments when specific conditions are met.

- **Real-time tracking:** GPS and mobile apps enable real-time tracking of products that are out for delivery.
- **Drones:** Unmanned aerial vehicles to facilitate quick and efficient deliveries, both in busy areas and remote locations.
- **Delivery Bots:** Mobile robots used to deliver smaller goods and are designed to navigate sidewalks and streets in urban areas.

- **IoT sensors:** To verify the quality standards of returned goods, especially for products with temperature, time, humidity and shock sensitivity.
- **AI & machine learning:** To analyse data from retuned goods to identify patterns, reason for returns and help decision making with regards to restocking, refurbishing or recycling.

Source: CBRE Research, Q3 2023

Real Estate Trends Poised to Align with Expanding Retail Demand

Figure 5.3: Key retail warehousing trends

Resilient Demand

- Warehousing demand among retail occupiers is anticipated to remain resilient on the back of occupiers adopting a 'multipolar' supply chain strategy coupled with continued government impetus to improve logistics infrastructure and investments
- Retail occupiers are likely to continue focusing on deploying multi-sourcing and nearshoring strategies to handle fast growing market requirements

Robust Supply

- Developers are likely to focus on constructing new age warehouses with maximum technology integration to attract 'flight-to-quality' leasing
- Warehousing facilities with features such as high ceilings to accommodate automated stacking systems, sufficient loading / unloading zones and power back-up provisions are likely to gain more traction across retail categories
- Multi-level warehouses would be a preferred option to overcome challenges related to urban logistics in densely populated megacities with competitive land prices

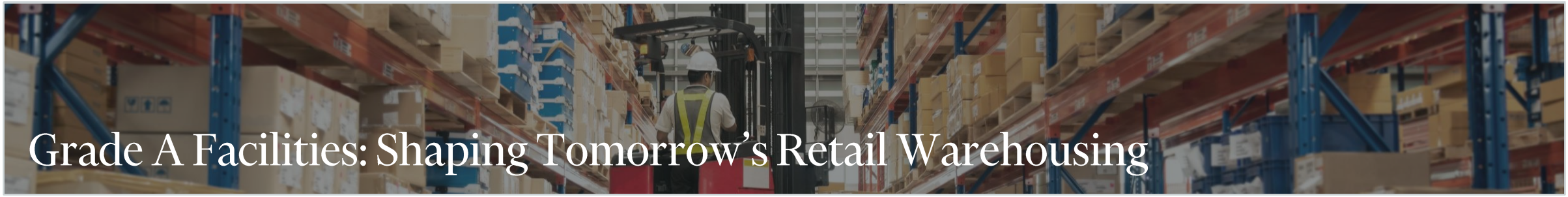
ESG integration

- ESG is expected to play a significant role in retail warehousing, with more corporates committing to decarbonisation and CO_2 neutrality. Thus, ESG may no longer be an additional feature; instead, it is becoming a necessity, marking the competitiveness of a new project amongst potential tenants
- Collaboration with occupiers to ensure intertwined decarbonisation strategies would become a key priority for developers

Growth beyond Tier-I cities

- Rising urbanisation, increase in per capita income, supply chain revamp after the pandemic and successful brand launches in tier-II, III and IV markets have led retailers to explore these emerging untapped locations to set up stores as well as for warehousing requirements
- Retail occupiers would prioritise prime locations closer to consumption hubs for expansion, but non-availability of ready-to-move-in supply would shift their focus towards secondary / tier-II locations which would also enable them to leverage comparatively low rentals

Source: CBRE Research, Q3 2023



Grade A Facilities: Shaping Tomorrow's Retail Warehousing

In the ever-evolving world of retail industry, the spotlight is increasingly turning to modern Grade A warehouses. Going forward, the retail players are likely to embrace these state-of-the-art facilities as they seek greater efficiency, flexibility and reliability in their supply chain operations.

Figure 5.4: Key features of Grade A warehousing facilities

	High density storage / vertical storage	End-to-end automation	Cross-docking facilities	Temperature controlled environment	Flexible storage options	Advanced security systems	Energy-efficient lighting / ventilation	Sustainable / eco-friendly practices	Compliance with current and future regulations
GRADE A	✓	✓	✓	✓	✓	✓	✓	✓	✓
GRADE B	✗	✗	✗	✗	✗	✗	✗	✗	✗

Source: CBRE Research, Q3 2023

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