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# MATERIALS MANAGEMENT REVIEW



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## *Special Issue on* **WAREHOUSING**

### Emerging Trends in Warehouse Automation for 2022



- |                                     |  |
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## *From the Desk of Chief Editor & National President*



The Indian warehousing industry has been able to receive attention from global and domestic institutional investors over the years and has maintained its pace of growth especially after the outbreak of Covid 19. The warehousing market in India is expected to grow to 2243.79 billion by 2026, expanding at a CAGR of 10.90%, as per the Report published by Netscribes (India) Pvt Ltd. The Indian e-commerce industry is playing a major role in this growth because of the increased capacity of usage of warehousing facilities by e-commerce platforms due to the shift in pattern of purchasing by consumers and pandemic induced lockdown.

From being mere stocking or low-grade godowns, warehouses have metamorphosed into smart buildings replete with insulation, ventilation, climate-proofing, surveillance and standard safety procedures, and IT infrastructure. From a largely unorganized, asset-heavy industry, warehousing has also undergone an evolution in India, especially after a multitude of factors like the expansion of pharmaceutical, e-commerce, and manufacturing sectors.

Warehousing has always remained a key enabler in any successful supply chain and its importance would have been analyzed well during the covid 19 outbreak. The emergency and essential supplies like healthcare supply segment and food delivery segment during the covid 19 period could be made possible because of better warehousing capacities at important locations. As a result, the warehousing industry has emerged as a resilient asset class in any supply chain. However, a lot of technological infrastructure updation and upgradation is needed in the warehousing sector to ensure automation and efficient operations.

The growth of third-party logistics is another factor which has caused spike in the demand for warehouses. If we talk about 2021, 3PL sector acquired the maximum warehousing space, succeeded by e-commerce. The newer industries like e-commerce with 30 minutes and 10 minutes deliveries in the last-mile segment, telecommunications, healthcare, and IT will be other stronger driving forces for 3PL warehousing. With increasing FDIs, infrastructural policy changes and relaxed policy reforms, the warehousing sector will continue to grow in future.

Further to above, Govt. has also introduced Production linked Incentive (PLI) Scheme resulting in attracting large investments from various sectors including food processing industry, mobile industry, automobile industry, pharmaceuticals etc. besides country's 'Make in India', 'Atmanirbhar Bharat', and 'Vocal for Local' campaigns that have induced a positive growth of Logistics industry thereby causing a simultaneous rise in warehousing operations in the country.

With technological advancements, consolidation, government support, newer business models, and investment coming into the space post the pandemic, the sector may well be set for a dream run for the next few years. It is therefore high time that SCM Professionals upgrade themselves about the latest and best practices and future prospects in Warehousing.

A handwritten signature in black ink, appearing to read 'H. K. Sharma', with a horizontal line underneath.

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# EMERGING TRENDS IN WAREHOUSING

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The business of any company depends upon the efficiency of manufacturing, supply chain and marketing and commercials. Supply chain efficiency depends on the effectiveness of logistics which includes warehouse operations. Warehouse operations can be effective provided warehouse design, layout, infrastructure, processes, staff and safety norms, transportation are appropriate to the requirements. For accomplishing the required requirements, these functions should satisfy the desired parameters. Above all, corresponding national legal requirements have to be met. The relevant international norms should be met as per agreements. In the case of warehouses that store chemicals and/or materials that may be hazardous to humans, plants, animals or the environment, it is extremely important to have a design that ensures safety.

The business of any company depends upon the efficiency of manufacturing, supply chain and marketing and commercials. Supply chain efficiency depends on the effectiveness of logistics which includes warehouse operations. Warehouse operations can be effective provided warehouse design, layout, infrastructure, processes, staff and safety norms, transportation are appropriate to the requirements. For accomplishing the required requirements, these functions should satisfy the desired parameters. Above all, corresponding national legal requirements have to be met. The relevant international norms should be met as per agreements.

**Warehouse Design Factors:** The main objective of Warehousing should be aligned with company business strategy.

The warehouse design should aim at desired utility of space, orderly layout, safe product storage according to hazard, safe warehouse operations, emergency handling, and security of warehouse.

The most important part of the design is the concept of inherently safe design, such as creating a stable building constructed for built in protection. This should cover design of walls, floor, roof, ventilation, retention water catchment basins, fire walls, fire doors, etc. The layout should take care of product storage, loading/unloading, parking, utility, safety equipment, welfare facilities. The chemical warehouse should ideally be situated away from residential areas, heavily populated places, area should have good connectivity of roads and emergency centres like hospitals, police controls, ambulances, fire services etc should be around the location.

Product storage plays an important role, as product characteristics may have health, safety and environmental hazards. Hazardous chemicals improperly stored and improperly handled in the warehouse, can cause fire or explosion resulting in injury of personnel at site, as well as the neighboring areas

and loss of property inside the warehouse and outside. An understanding of hazards and associated risks will help in selecting better control measures. The potential safety and health and environmental impacts can be prevented by implementing control measures in the early design stage.

The Globally harmonized system (GHS) hazard class can guide hazardous product storage. GHS also guides labeling and hazard communication which helps in identifying hazards and also helps in handling measures.

**Warehouse Operations :** Once we have a good warehouse design, then what is the next important factor to consider? It is safe warehousing operation. The warehouse management should cover all operations, activities and defined procedures should be laid down for operations and activities. These various activities include receiving, verifying, inventory, and dispatches as the main ones in addition to auxiliary ones. There will be operations of loading and unloading involving manual handling and machine handling, which should be carried out safely without having accidents.

**Warehouse trends for future :** A recent study found that 45% of businesses experienced supply chain disruptions due to the pandemic. To alleviate some of this pressure, warehouses must find new ways to optimize their practices and prepare their businesses for unprecedented conditions. The following will be areas that will be focussed more in future :

**1. Automation technology :** Advancements in technology have streamlined warehouse workflows by automating time-consuming tasks that otherwise require manual labor. An eMarketer report estimates that 42% of medium-to-large warehouse operators will utilize robotics in some capacity by 2022, up from 34% in 2020. Self-managing inventory systems, autonomous vehicles and mobile robots increase productivity and efficiency while freeing warehouse workers for more complex tasks.

**2. Sustainable practices :** While sustainable practices focus on reducing carbon footprints and environmental impacts, they can also benefit our business. For example, investing in energy-efficient lighting and improving warehouse insulation can save our warehouse money on electricity and heating and cooling expenses. Additionally, switching to efficient packaging practices and biodegradable materials can minimize shipping costs and reduce waste.

**3. Micro-fulfillment :** As more and more businesses look to provide customers with one-day or even same-day delivery, warehouses must be able to adapt to this service model. Deploying micro-fulfillment centers in localized areas of high demand can give our warehouse an advantage by increasing overall capacity and shipping efficiency while reducing delivery times. Whether added onto an existing location or functioning

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as a stand-alone facility in a key area, micro-fulfillment centers are a cost-effective, flexible solution for faster last-mile deliveries.

**4. Supply chain visibility :** Supply chain visibility is vital to warehouse operations, but many supply chain executives report a lack of such visibility. This can be problematic for modern consumer preferences as customers and retail partners increasingly want round-the-clock access to shipment information and delivery updates. Increasing supply chain visibility can help us quell customer concerns, spot supply chain trends early on and prepare for potential disruptions.

**5. Data-driven decisions :** Data analytics is already an essential aspect of warehouse operations, from inventory management and shipment tracking to monitoring consumer preferences; but new advancements in software and technology have allowed facilities to optimize long-overlooked processes. Warehouse operators are now adopting modern, data-driven solutions to increase workflow efficiency and productivity. For example, warehouse management systems can monitor facility metrics in real time to highlight any inefficiencies and identify and prevent potential technical issues from occurring. Utilizing these tools to drive decision-making and streamline processes will allow operators to reduce long-term costs for warehouses. Bringing that all together, enumerated below are a list of warehouse management and supply chain trends for the future .

**1. Supply Chain Resilience :** Establishing supply chain resilience requires a broad strategy, with agility being an essential component. With agility built into our supply chain, we can pivot when disruption occurs. We may even be able to pivot before the disruption has an impact. However, for our supply chain to become more agile, we need data. Data increases visibility and helps with decision-making, both of which are required for an agile approach. Therefore, we can expect more companies to develop supply chain resilience by creating digital supply chains that maximise integration at all points.

**2. Artificial Intelligence :** AI would make the list of top trends in most industries and sectors, and it is going to be important in warehouse and supply chain management too. It is a technology that is becoming more advanced, and with that improvement comes greater impact and familiarity. In warehouse and supply chain management, AI and machine learning can help with data analysis and decision-making, while also optimising processes and operational efficiency.

**3. Robotic Automation :** Robotic automation has been a growing trend over recent years, and this growth is set to continue , as companies seek to improve productivity and deal with warehousing and supply chain challenges. In particular, we will see a movement away from fixed automation systems to smaller mobile robots. 5G connectivity and machine vision systems will also play increasingly important roles, and cobots will become more common in warehousing and distribution operations.

**4. Cloud Technologies :** The rate of adoption of cloud technologies is increasing as companies make progress on their digital transformation strategies. Advances in hybrid cloud solutions is one of the reasons for this,

where cloud architectures now include cloud, multi-cloud, on-prem, and edge elements. Improving the performance of IT and operational technologies is an important motivating factor for migrating to the cloud, as is reducing IT infrastructure and maintenance costs. A move to cloud technologies also helps to eliminate the data silos that still exist in many warehousing and supply chain operations.

**5. Big Data :** Data is another point on this list that is not exclusive to warehousing or supply chain management, but its importance cannot be understated. There is an increasing reliance on data as companies improve collection, storage, and processing. This leads to the production of useful data that can be quickly digested in attractive data visualisations. Good access to data also makes it possible for warehousing and supply chain operations to start using predictive analytics.

**6. The Introduction of the Blockchain :** Blockchain technologies in warehousing and supply chain management are in their infancy, but they have the potential to be a substantial growth area. Blockchain technologies can also increase transparency in warehousing and supply chain operations, while also reducing risks and streamlining processes. We are still at the start of this journey, but it is a trend to look out for.

**7. Creating Sustainable Operations :** Warehousing and supply chain operations are increasingly adopting technologies and strategies to make their operations more sustainable. From introducing electric vehicles in warehouses to minimising the environmental footprint of supply chains, sustainability will be a hot topic for some time to come.

Emerging warehousing trends significantly improve operational efficiency and decision-making. In addition to risk prevention and safe labour management, innovative solutions are enabling the transition to sustainable processes in warehouses. As warehouse operations become more complex, advanced robots are adapting to the ongoing changes while becoming more worker friendly. The industry is witnessing continuous developments in warehouse management automation and management, focused on improving operations while reducing the need for human intervention. Further, technologies such as pick-to-light, electronic data interchange, automated storage, and retrieval systems( ASRS ), 3D printing, and composite panel technologies are increasingly finding use in warehouse operations.

The Warehouse Management Trends outlined above only scratch the surface of trends that we can identify during our data-driven innovation . Among others, sustainable warehousing, drone-based inventory management, and autonomous machines will transform the sector as we know it today. In addition, the list is slowly becoming endless wherein, the warehouse of the future will for sure change and will depend a lot more on customer requirements and automation , that will travel side by side and ease several of today's complex problems that depend a lot on manual interventions. This day is not far off, when all warehouse users and service providers shall breathe a sigh of relief big time.

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# OVERVIEW OF WAREHOUSING MANAGEMENT

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**W**arehousing is that part of a firm's logistics system which stores products at and between point of origin and point of consumption and provides information to the channel on the status, condition and disposition of items being stored."

All kinds of products can be stored in a warehouse where it handles most products in four cycles – receive, store, ship and pick. Warehouse focus on minimising the operating cost to meet shipping requirements. Ideally, a warehouse has to ensure that the materials not only have a smooth flow but also see to it that these do not stay in the warehouse for a long time. Modern warehousing lays emphasis on flow through of materials.

The goal of warehouse operations is to satisfy customers' needs and requirements while utilising space, equipment, and labour effectively.

**\*Managing a Warehouse:** No standard system can be universally recommended or applied, but in the course of time, certain practices of general application are evolved. Understanding of these are most important in the efficient practice of the ART of Warehouse Management.

**\*Importance of Warehousing in Distribution:** In a Supply Chain scenario, Distribution is a vital element in meeting the customer demand. Distribution activity is initiated from a warehouse. Packaging, Transportation and Control are the major operations from a Warehouse.

## WHY IS WAREHOUSE AN IMPORTANT LINK?

A warehouse matches Demand and Supply. We see lot of variability in lead-times of different products and warehouse helps to tackle this variability. It also aids in hedging against uncertainties like availability. It also assists in overcoming manufacturing constraints, if any. Warehouses also ensure quick delivery of goods to the customer. It takes care of seasonality / perishable nature of goods and during peak season for finished goods, ensures enough stocks are available. Lastly, it safeguards the material ensuring security, identification and environmental protection.

**Distribution Centre:** Entity receiving, stocking and shipping products on their way from suppliers to customer. Difference with Warehouse is listed as below

- (1) Warehouse stores all products. Distribution Centre hold minimum inventories and

predominantly high demand items.

- (2) Ware House handle most products in 4 cycles (receive, store, ship and pick) Distribution Centre handle it in two (receive and ship)
- (3) Ware House performs minimum of value – added activity Distribution Centre performs high percentage of value adding.
- (4) Ware House collects data in batches Distribution Centre collects data in real time.
- (5) Ware House focuses on minimising operating costs to meet shipping requirements Distribution Centre focuses on maximizing profit impact of meeting customer delivery.

**Warehouse Layout:** Technique of scheme of arrangement in a right location, so that the greatest possible output of high quality at the lowest total cost can be achieved in a warehouse.

Factors to be considered:-Area of Operation, Good Access, Provision of Proper Material Handling and Storage Equipments.

**Materials Handling:** Art of moving, packing and storing of products in any form. Can be reduced by proper layout but cannot be eliminated. Consumes around 50-70% of cost of production. Usual manufacturing cycle consist more in moving than making of things.

**Classification:** Manual Handling, Mechanical Handling — with fixed position/with mobile position and Order Picking and Storage equipment — Order picking or order fulfilment is an activity prelude to the packing / shipping operations. Sales Order is the reference and items arranged and checked before packaging is commenced. The equipments which support to hasten these activities are Part-to-picker systems– the pick location travels through an automated machine to the picker.

- Carousels: Horizontal and Vertical types available
- Mini-load automated storage and retrieval systems (AS/RS)

## Fork Lifts

A lift truck is a mobile, power-propelled industrial truck used to carry, transport, lift, stack and retrieve materials. The truck can be driven by a ride-on or pedestrian operator. The machine is powered by a traction battery or an engine. In material handling



selection aisle (moving space between racks) plays an important role. The following chart will help in choosing the right MHE.

CONVENTIONAL SYSTEM	NARROW AISLE SYSTEM	VERY NARROW AISLE SYSTEM
Gas, LPG or Electric Trucks	Electric Reach Trucks	Electric Very Narrow Aisle Trucks
Clear aisle 1200mm	Clear aisle 2700mm	Clear aisle 1650mm
Stack 4 high (1 on the ground; 3 in the air)	Stack 4 high (1 on the ground; 3 in the air)	Stack 4 high (1 on the ground; 3 in the air)
The truck loads & unloads trailers, loads & unloads rack plus pick up & deliver to manufacturing	The truck pick up & deposits loads from staging and pick & deposits loads in the rack systems	The truck pick up & deposits loads from staging and pick & deposits loads in the rack systems
80% Travel, 20% Lift	60% Travel, 40% Lift	50% Travel, 50% Lift
76% Aisle	71% Aisle	50% Aisle

### Equipment replacement policy:

- ✓ The factors which necessitate the replacement of machinery and equipment can be classified as: (i) Technical Factors, (ii) Financial or Cost Factors and (iii) Tangible Factors.
- ✓ Equipments which gradually deteriorate due to wear and tear.
- ✓ Equipments which fail suddenly without any warning.

Factors considered for replacement of equipments are

1. Demand for a greater number of equipments
2. Excessive and frequent maintenance
3. Advanced Technology
4. Decreasing Efficiency
5. Due to failure
6. To maintain symmetry

**Order Picking:** Order picking is the process of finding and extracting products from a warehouse to fulfill customer orders. Since the order picking process involves significant cost and can affect customer satisfaction levels, there has been an increasing number of improvements proposed to help companies with this supply chain issue.

### Key order picking functions:

1. Generate pick lists of customer orders
  - WHO - Inventory control manager, order entry clerks
  - WHAT - Compare customer orders to on-hand inventory levels and develop order selection documents
  - HOW - Manually - paper based orders vs. reports; Computerized - EDI orders vs. WMS data
  - GOALS - Keep accurate inventory data, update product receipts prior to pick list generation, fill 100% of customer orders
2. Select products according to pick lists
  - WHO - selectors, order pickers
  - WHAT - Travel from warehouse location to warehouse location pulling correct quantity of correct product, prepare order for shipment

(secure and identify), stage for loading

HOW - Manual - picker to product systems; Automated - product to picker systems, AS/RS

GOALS - speedy, accurate, cost-effective, safe selection of goods

**Storage:** The most commonly used storage systems are:

- Ø **BLOCK STORAGE:** Boxes, cartons or sacks containing material are stored in spread or stacked form in the area assigned for storage. Stacking is done on the floor or a wooden platform. Block stocking, however, has limitations in respect of the stack height.
- Ø **RACKING SYSTEM:** Racks are used for storage of items that are longer, apart from small containers, boxes, pallets etc. Racks could be stationary or movable. Racks can be designed for making good use of the vertical storage space of the warehouse. Racks are commonly used in Warehouses, where large volumes of uniform unit loads are to be stored.
- Ø **AUTOMATED STORAGE & RETRIEVAL SYSTEM (AS/RS):** Warehouses designed for high-rise storage normally use the AS / RS, along with an automated material handling system.

Automated equipment can be grouped into the same categories used to describe Non-Automated equipment. For example, Storage & Order picking, Transportation and Sorting or Shipping. The benefits of Automation include: Reduced labour cost, Reduced floor space, Increased inventory accuracy, Improved service levels and Increased control through better information.

Some of the Disadvantages are - High Initial capital cost, Software related issues, Capacity problems, Maintenance costs, User interface & training and Lack of flexibility to respond to changing environment [Worker acceptance, Obsolescence of Technology, or Product].

An organisation can decide on either PUBLIC or PRIVATE Warehousing, taking into consideration of the following factors :

Advantages of Public Warehousing	Disadvantages of Public Warehousing
<ul style="list-style-type: none"> <li>➤ Conservation of Capital.</li> <li>➤ Use of space to meet peak requirements.</li> <li>➤ Reduced risk.</li> <li>➤ Specific knowledge of costs for storage and handling.</li> <li>➤ Potential minimisation of labour disputes.</li> <li>➤ Flexibility.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Communication Problems.</li> <li>➤ Lack of specialised services.</li> <li>➤ Shortage of Space.</li> </ul>
Advantages of Private Warehousing	Disadvantages of Private Warehousing
<ul style="list-style-type: none"> <li>➤ Degree of Control.</li> <li>➤ Less costly over a long term.</li> <li>➤ Tax Benefits.</li> <li>➤ Intangible Benefits (customer service)</li> </ul>	<ul style="list-style-type: none"> <li>➤ Lack of Flexibility.</li> <li>➤ Financial Constraints.</li> <li>➤ Rate of return may be lower.</li> </ul>

**Warehouse size:** Factors affecting the size for the warehouse are— Customer service levels, Size of the

market/s served, Number of products marketed, Size of the product/s, Materials handling system used, throughput rate, Production lead-time, Stock layout, Aisle requirements, Office area planned in warehouse, Types of racks/shelves used and Level and pattern of demand.

### Warehousing Costs:

- Ø Inventory Costs — Inventory costs increase with the number of facilities as there is a tendency to keep stocks of the items at all the stock keeping facilities.
- Ø Infrastructure Costs — Increase because more warehouses mean more space to be owned, leased or rented.
- Ø Transportation costs — These may decline initially as the number of warehouses goes up, but after some time may start increasing depending on the quantum of inbound and outbound transportation costs.
- Ø Cost of Lost Sales — These costs are extremely important to a company and are most difficult to calculate and predict.

### Operational Efficiency of a Warehouse

Receipt and Issue Control can be effective if the following parameters are done meticulously:

- ü Selection of Racks, Shelves and Bins.
- ü Material Handling Equipments.
- ü Safety Practices.
- ü Inspection Procedures.

### Warehouse storage system requirements

- 1) An item must be found when it is required.
- 2) Must be possible to issue oldest stock without undue effort.
- 3) Item must be in good condition while issuing.
- 4) Must be possible to use handling equipment easily and quickly without risk.

**Based on the above points a basic warehousing decision has to be arrived.** This is diagrammatically represented below —



### BENEFITS OF GOOD WAREHOUSE MANAGEMENT SYSTEMS:

- v Automates the management of Orders and priorities.
- v Inventory Visibility and Accuracy, which could

result in reduction of inventory.

- v Improved Customer Service levels
- v Deliveries are timely and shipments are accurate.

**MODERN CONCEPTS:** Some of the modern concepts that are gaining prominence in Warehouse Management are:-

- Ø Alliances through Outsourcing.
- Ø Cross Docking and flow- through capabilities.
- Ø Line-side deliveries that can result in saving of time.
- Ø Modular design for ease of Storage and movement.
- Ø Automation blend.
- Ø Returnable packaging solutions.

### WAREHOUSING FUNCTIONS:

(1) MOVEMENT – Receiving, Transfer or put-away, Order selection / order picking, Cross-docking and Shipping; (2) STORAGE - Can be on temporary or semi-permanent basis; (3) INFORMATION TRANSFER: This occurs simultaneously with the other two functions.

**Storage and Handling:** Keeping items in a systematic manner for future use is STORAGE and Physical movement of items without causing damage in an efficient manner is HANDLING.

Stock Keeping Unit (SKU) is a unique combination of all the components that are assembled into the purchasable item. Therefore any change in the packaging or product is a new SKU. This level of detailed specification assists in managing inventory. Stock-out means running out of the inventory of an SKU.

Two inventory practices adopted in a warehouse while issuing are—

- Ø FIFO (First In First Out) - Goods first added to inventory are assumed to be the first goods removed from inventory for sale.
- Ø LIFO (Last In First Out) - Last item of inventory added is the first one to be sold.

### Order picking principles:-

- a) Time Related: Minimize idle time, establish time standards for picking operations, distance traveled, quantity, weight of orders, enforce time standards, have proper tools available, maintain adequate inventory in pick locations, avoid aisle congestion, keep picking and replenishment functions separated when possible.
- b) Travel Related: minimize travel distance and time, locate fast moving products near shipping dock and sequence / batch picks effectively
- c) Energy Related: minimize handling and thinking, combine operations when possible, keep like items together and automate whenever feasible.

**Warehousing Strategies:** Warehousing strategies may be strategic or operational!

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Strategic strategies deal with the allocation of logistics resources over an extended time in a manner consistent and supportive of overall enterprise policies and objectives. These can be either long term or project type. Other associated strategies such as Inventory Strategy and Transportation Strategy normally influence the Operational Strategy. The Warehouse strategy answers questions like where, how many, what size, allocation etc. The strategy is basically derived from the Customer Service Goals.

### Identification of Materials

**Material Stored for various purposes:** A chart has to be prepared in an organisation featuring the kind of materials handled. This will help in Coding, Planning Bin locations, Computerisation etc.

Classification and Codification of materials are steps in maintaining stores in a systematic way.

Materials are classified in such way that storing, issuing and identifying of materials become easy.

Generally, materials are classified on the basis of their nature. Materials can also be classified on the basis of quality and utility

What are the advantages of Classification and Codification of Materials?

- 1) Quick and easy identification of materials.
- 2) Helps to ensure a proper material control.
- 3) Secrecy of materials can be maintained.
- 4) Saving of time in material handling.
- 5) Eliminating the chances of wrong issue.

**Stock Control:** Constant fixing of standards based on requirements. The evaluation of the performance with respect to these standards in order to find out whether they are adequate and taking such corrective action as is necessary to bring forth the desired results.

**Packaging:** Packaging is the science, art and technology of enclosing or protecting products for sale, storage, distribution and use. Nowadays, packaging is not limited to the protection of a product alone, but it has been used as a marketing tool for building the brand equity.

Reusable packaging is manufactured of durable materials and is specifically designed for multiple trips and extended life. It is also important to the movement toward more sustainable packaging.

Most packaging is Recyclable but it will need to be separated and sorted. Food packaging comes in all shapes and sizes and is made from many types of materials. It is designed to protect the product on its journey through the supply chain – from the manufacturer to the shops and then on to consumers.

By Recovery, the aim is to reduce the amount of waste generated. A Packaging Recovery Note (PRN) is a type of document that provides evidence that waste packaging material has been recycled into a new

product. Packaging Recovery Notes can be issued by accredited reproprocessors when they have recovered and recycled a tonne of packaging material. While designing a package, all the above points have to be taken into consideration. There are professional packaging companies, which can take care of these.

**Communication in packaging:** Package should convey the contents as well as other relevant details such as batch number, count or Universal Product Code (UPC) etc. Present day packages carry the following which was developed by the latest technology—

- Ø Bar-Coding — Automated information management. Standard markings that can be read by automatic or handheld scanners that allow for labour saving of logistical activities for all supply chain members.
- Ø RFID — Automated information management
- Ø Symbols — Nationally and Internationally standardised.

### TRANSHIPMENT:

**Break Bulk:** Here shipments are sent from a number of manufacturing locations to a Central Warehousing facility. This Warehouse consolidates or combines supplies from different plants into a single despatch to the customer. Then there are Facilities or Hubs that receive large shipments of a product from manufacturing plants, break the same to smaller shipments and send the same to various customers. These shipments are known as “Break Bulk”.

**Mixing Warehouses:** Mixing often involves with multiple plant locations that ship products to a Central Warehouse. Each plant manufactures only a portion of the total products offered by the Firm. Shipments are usually made in large quantities to the Central Warehouse, where the orders of a Customer for multiple products are combined or mixed for despatch.

**Warehouse Interface with rest of Supply Chain:** Warehousing has a key role in a business. It is a cost centre and the customer retention is dependent on the warehousing performance.

- v Supply Chain Planning: Analyze how the actual order fulfillment, purchasing, production, inter-unit transfers, inventory levels, and capacity utilization aligns or deviates from the supply chain plan. Then make appropriate adjustments to keep the operations running efficiently.
- v Procurement: Capturing information about buyers, requisitions, purchase orders, shipments, and product quality, envisaging a complete picture of buyer and supplier performance.
- v Spend: Provide full visibility into the source-to-settle process to help in driving down unit costs without sacrificing product and service quality.
- v Manufacturing: Visibility into the cost, reliability, timeliness and efficiency of manufacturing



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operations so always make the most accurate decisions on plant, equipment, and production investments.

- v Inventory: Analyze inventory accurately, demand, movement, turns, handle excess without endangering flexibility.
- v Fulfillment and Billing: Involves tracking customers, orders, invoices, returns, and shipping transactions to help in evaluating order-to-cash processes and deliver high-quality products on time.
- v Flexible Information Access: Warehouse should deliver packaged reports with the help of third party B.I tools which can perform sophisticated business analysis with ad-hoc querying & reporting, personalised scorecards & dashboards, multidimensional analysis & exploration and formatted production-style reports.

How technology makes warehousing operations more efficient and effective:

The right service technology enablesthe organisation to create greater visibility within their supply chain, gain more control over inventory, reduce operating costs and ultimately outpace the competition.

1. Real-time, Actionable Data—In order to service customers, real-time inventory data should be available on a real-time basis that is accurate and actionable, no matter where the part is located worldwide.

Radio Frequency Identification (RFID) chips, Barcodes and Scanners are vital pieces of equipment that can provide innumerable benefits.

2. Visibility — Paired with RFID technology, cloud-based computerised shipping and tracking further simplifies the supply process and can dramatically reduce shipping errors. Software like Flash Trac and its mobile version Flash Lite enables businesses to consolidate all aspects of their materials administration to one place.

3. Simplify — The more links are there in a supply chain, the more convoluted and complex that chain becomes and the more prone to errors and delays. By optimising the number of links, lower the risks associated with shipping and receiving.

4. Enhance Customer Communication —Creating predictability, consistency and visibility within the service supply chain enables an organisation to communicate faster and more efficiently with customers. Ideally, the technology will give immediate access to all the real-time, actionable information needed, such as: Parts order tracking, Location of specific parts availability globally, Location of parts nearest the customer and Tracking field tech support personnel.

What is an RFID tag? RFID tags consist of an integrated circuit (IC) attached to an antenna—typically a small

coil of wires—plus some protective packaging (like a plastic card) as determined by the application requirements.

**SMART LABEL** — This goes beyond simple tag functionality by combining human-readable information and bar code technology with RFID. A smart label consists of an adhesive label that is embedded with an ultra-thin RFID tag “inlay” (which is a tag—IC plus antenna—mounted on a substrate). Smart labels combine the read range and unattended processing capability of RFID with the convenience and flexibility of on-demand label printing.

**RFID READER or INTERROGATOR:** A reader (now more typically referred to as an RFID interrogator) is basically a radio frequency (RF) transmitter and receiver, controlled by a microprocessor or digital signal processor. The reader, using an attached antenna, captures data from tags, then passes the data to a computer for processing.

#### HOW DOES RFID WORK?

Information is sent to and read from RFID tags by a reader using radio waves. In passive systems, which are the most common, an RFID reader transmits an energy field that “wakes up” the tag and provides the power for the tag to respond to the reader. In active systems, a battery in the tag is used to boost the effective operating range of the tag and to support additional features over passive tags, such as temperature sensing.

**Legislation applicable to warehouses:** Factors associated with legislation are Accreditation Agencies and

Registration of Warehouses.

Once the above has been done, layout / procedures / documentation has to be done as per the Rules and Regulations stipulated by the bodies concerned. Following statutory obligations as applicable are to be adhered to:- Factories act, Shop and Establishment act, Electrical inspectorate, Local body administration,

Pollution control board, Customs act [Bonded, CFS, ICD etc.]

#### Warehousing Development and Regulatory Authority

Formed under the Department of Food and Public Distribution, Govt. of India. The mission of Warehousing Development and Regulatory Authority (WDRA) is to regulate and ensure implementation of the provisions of the Warehousing (Development and Regulation) Act, 2007 for the development and regulation of warehouses, Regulations of Negotiability of Warehouse Receipts and promote orderly growth of the warehousing business.

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# LEAN WAREHOUSE CONCEPTS & BEST PRACTICES

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**Introduction :** Lean is a way of thinking about **Creating Needed Value with Fewer Resources and Less Waste** through a more organized, optimized and improved productive environment and manage tasks systematically and efficiently.

Lean principles help identify the **Non-Value-Added Components** (wastes) and work to **Eliminate** or Reduce them as much as possible.

When we talk about **Lean Warehousing**, it means **Managing a Warehouse Optimally** with the focus on **Eliminating Inefficient Processes** and **Removing all the Resources & Efforts** that do **Not Yield Positive Results** in the **Warehousing Operations or Processes**. This will help in **Improving Warehouse Operations**, **Smoothing the Flow of Goods**, **Maximizing Returns** and **Reducing Costs**.

In this Article we shall Discuss about “**Lean Warehouse Concepts & Best Practices**”

**Key Words:** Lean, 3M, 8 Wastes, Lean Warehouse, 5 / 6 S, Kaizen, Kanban, JIT, VSM

## What is Warehouse?

Now, let's first Discuss about Warehouse.

**Warehouse** is Defined as “**a Planned Space or Designated Location for the Efficient storage and handling of goods and materials which are coming in and going out.**”

Raw Materials and Inputs from Suppliers or Finished Goods from Manufacturing Operations come into the warehouse, the information then is collated for its storage and where goods have to go, and communicated down the distribution chain to the customer.

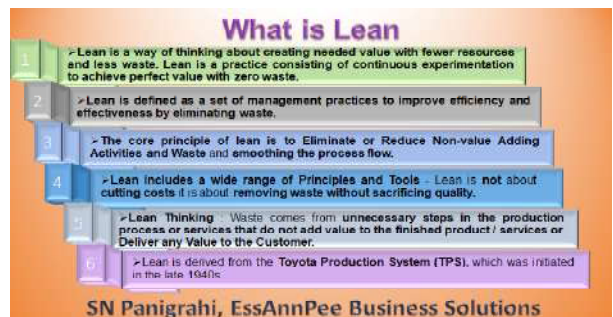
**Warehousing** can be defined as a **Process of Managing Receipt, Storage in Safe Custody of Goods and onward Distribution** on a Large Volumes in a Warehouse, Godown or any such Facility and involves **all it's Related Functions** like Processing, Packing, Re-Packing, Grading & Branding, Coding, Storing, Tracking / Retrieving for further Distributing to Various Distribution Centre's & Customer Places as Required including Documentation & Communication. Warehousing is to **Ensure Smooth and Regular Flow of Goods** or other Materials and **Avoid any Shortage or Excess of Stocks**.



## What is Lean?

**Lean** is a way of thinking about **creating needed value with fewer resources and less waste**. Lean is a practice consisting of continuous experimentation to achieve perfect value with zero waste. Lean is defined as a set of management practices to improve efficiency and effectiveness by eliminating waste. **The core principle of lean is to Eliminate or Reduce Non-value Adding Activities and Waste and Smoothing the Process Flow.**

Lean includes a wide range of Principles and Tools - Lean is not about cutting costs it is about **removing waste without sacrificing quality**. Lean Thinking based on notion that **Waste** comes from **unnecessary steps in the Production Process or Services that do Not Add Value to the Finished Product / Services or Deliver any Value to the Customer**. Lean originated in Japan and is derived from the **Toyota Production System (TPS)**, which was initiated in the late 1940s. It was created by Toyota's engineer and head of production, **Taiichi Ohno**, in the period after World War II. Taiichi, introduced Lean in the Toyota Production System (TPS). The aim is to **Eliminate Waste** and deliver value to the customer by using pull-based systems.

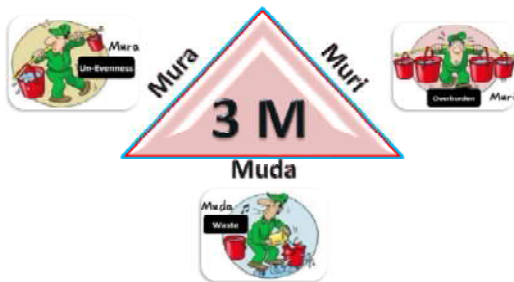


## Why Reduction / Elimination of Waste?

**Waste** means Any Activity or Features that **Doesn't Add Value** to the Product or Service, **from the Customer's Point of View or from Business Perspective**.

The main reason companies look to implement Lean Concepts & Strategies for eliminating all aspects of the process that **Add No Value from the Customer's or Business Perspective** is to **Improve Efficiency, Effectiveness, Reduce their Expenses and Maximize Profits** so that they can be more Competitive, and therefore more Successful.

**3M – Model of Lean** : Toyota has developed its production system for achieving the complete elimination of all waste in pursuit of the most efficient methods. These wastes are categorized as 3 M- namely **Muda (waste), Muri (overburden) and Mura (unevenness)** - are Japanese terms that refer to the three categories of waste found in a business.



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**MUDA** is a Japanese word, which means **"Waste"**. Muda are Non-Value Added (NVA) activities in the workplace. NVAs add cost, effort and time but add no value to the product or service. There are Eight Types of Wastes (7 defined by **Taiichi Ohno** of Toyota + 'non utilized skills') which shall be discussed further.

**MURA** means in Japan, **unevenness, non-uniformity, and irregularity**. Mura is the reason for the existence of any of the seven wastes. In other words, Mura drives and leads to Muda.

**MURI** in Japan, means **overburden, beyond one's power, excessiveness, impossible or unreasonableness**. Muri can result from Mura and in some cases be caused by excessive removal of Muda (waste) from the process.

### 8 Wastes of Lean : DOWN TIME

The 8 wastes of lean can be remembered by using the acronym, **"DOWN TIME"**, which stands for: **Defects, Overproduction, Waiting, Non-utilized talent, Transportation, Inventory, Motion, Excess Processing**.



### Lean Warehousing:

**Lean Warehousing** is a holistic approach with focus on Eliminating all efforts and investments that do Not yield Positive Results and Value Addition in Warehouse. The idea behind Lean Warehousing is to **Add Value** with **Zero Waste** and without adding the Inventory. Let's now discuss what are the 8 Wastes in Warehousing.

#### 8 Wastes in Warehousing:

**Defects:** Defects Means any **Imperfection, Deficiency, Flaw, Weakness, Wrong Doing, Any Deviation from the Requirement, Limitation or undesired outcome (Defective)** within a Product, Service or Process, Faulty Forecast, Faulty Planning & Estimates etc. These are the Efforts Caused by Rework, Scrap & Incorrect Information.

**Examples in Warehousing:** Wrong Pickup, Wrong Delivery, Wrong Placing or Storing, Mis-labelling or Coding, Damage During Storage, Wrong or Improper Packing, Pilferage, Mismatch of Inventory, Scraping, Reworking, Defective Documentation & Data Entry, Incorrect Information etc.

**Over-production:** **Overproduction** is the act of producing more than needed or before it is needed.

- Ø Making something too soon,
- Ø Making too much of something (greater Volumes), or
- Ø Making something faster than is needed.

It unnecessarily **consumes time, effort, money, materials and resources** that could have been better spent elsewhere, leaving your organization with the burden and logistics of dealing with **excess inventory**.

**Examples in Warehousing:** Receiving or Delivering or Filling an Order Before it is Needed, Ordering or Keeping Excess Inventory, Packing & Keeping Ready much before Needed, Use of Very Large Size Packing than Required etc.

**Waiting:** **Waiting** means Time Wasted for the Next



Process to Occur and involves **Delays to Process Steps**, often Extending Customer Lead Time. **Waiting Leads to Costs that are Not Adding Value at the Current Date.**

**Examples in Warehousing :** Waiting for Receipts, Operator waiting for the Next Pick Ticket, Equipment or Forklift or Vehicle Waiting for an Operator or for Loading, Process in Queue, Order waiting for Packing or Documentations / Invoicing

**Non-Utilization of Talent: Not fully utilizing or Underutilizing the Talent**, skills and knowledge of Resources represents the largest & Costly Waste of talent present in many organizations.

**Examples in Warehousing:** Engaging Highly Qualified & Creative Resource in Low grade Jobs or Clerical or Routine Assignments, Idle or Excess Manpower Engaged.

**Transportation: Transportation** Waste deals with **Unnecessary or Extra Movement** of Products that is **Not Directly Associated with the Value Adding Process.**

**Examples in Warehousing:** Transport waste can include the movement of Raw Materials, Tools, Inventory, Equipment or End Products more than is absolutely necessary, Wrong Route or Wrong Mode of Transportation Resulting in Extra Millage Movement, Reverse Logics - Wrong Receipt or Delivery & Return of Goods.

**Inventory: Inventory** or Stock Refers to the **Goods and Materials that a Business Holds** in the form of Raw Materials / Inputs, Work In Progress (WIP) and Finished Goods. Having excess products and materials that are not currently being Required are Real Waste. These are Money that has been tied up into the material not moving – used or sold. These result in a massive drain on the cash flow.

**Examples in Warehousing :** Excess Inventory – More than Required; Capital Goods not in use or Obsolete Items / SKUs Kept in Inventory.

**Motion: Unnecessary movement by People that does not add value.**

**Examples in Warehousing :** Walking around to Find the Goods or Set the Processes; Reaching; Lifting; Lowering; Bending; Stretching or otherwise unnecessary moving. Reaching repeatedly for a tool to use during a task, excessive walking to reach a work area, walking within the work area during the operations.

**Excess-Processing: Excess Processing** is **adding more value to a product than the customer actually requires**; More work or higher-quality than is required by the customer. Excess processing might be **extra steps in a**

**process, unnecessary customization, inefficient routings** and other things not necessary or valued by the customer.

**Examples in Warehousing:** Extra Packaging or Labeling; Multiple Markings; Over polishing an area that does not require it; Producing more detailed reports than necessary; Specifying the Product Tolerances that are too tight; Prescribing Higher Quality than Required.

**Waste Identification & Elimination Process :** As we discussed above some of examples of Warehouse Wastes, their actual Identification in Practical Situations is essential. We may adopt the below process with steps of 8 wastes of Lean from impacting the work flow & productivity of the Warehouse Operations:

Define, Identify, Prevent, Reduce, Eliminate and Continuously Improve.



**Lean Warehouse Principles & Good Practices:** Lean Warehousing Principles are aimed at Addressing Inefficiencies & Inconsistencies of the Warehouse Operations by Adopting and Following Good Practices like **5S, Kaizen, Kanban, JIT, Value Stream Mapping.**



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**LEAN 5S :** **LEAN 5S** refers to five Japanese terms that describe the steps in the 5S system for visual management. The Japanese terms are **Seiri (Sort), Seiton (Set in Order), Seiso (Shine), Seiketsu (Standardize) and Shitsuke (Sustain)**. The goal of 5S is to Improve Warehouse Cleanliness, Better Space Utilization, Operational Efficiency & Work Flow, Waste Elimination, Reduced Inventory. If 5S is used properly, it can make processes safer and more productive.

Addition of a 6th "S" :The 6th "S" stands for **Safety**.

**Kaizen :** Kaizen is a Japanese term meaning change for the better or continuous improvement. As a Philosophy, kaizen promotes a **mindset** where **small incremental changes create an impact over time**. In warehousing, Kaizen generally involves Creative Thinking to Improve Warehouse Operations & Processes to Reduce Costs, Save Time, Work Place Safety, Avoid Errors, and Build Better Inventory Management.

**Kanban :** The Japanese word "kanban", meaning "visual board" or a "sign" is a scheduling system for Lean Practices. Kanban method used in warehouses, where Materials are Received, Delivered, Replenished, or Processed only as needed. It used to track the inventory levels and re-ordering needs as well.

**JIT (Just in Time) :** Just-in-time, or JIT, is **an inventory management method in which goods are received from suppliers only as they are needed**. The main objective of this method is to reduce inventory holding costs and increase inventory turnover. It **aligns raw-material orders from suppliers directly with production schedules**.

**Value Stream Mapping (VSM) :** **Value Stream Mapping (VSM)** is a **Visual Diagramming tool** which **captures the Value Added & Non-Value Added Activities (Wastes)**. The use of value stream in warehouse mapping process is to visualize the Flow of Activities, Analyze and Improve all the steps in a Warehouse Processes. **VSM helps to identify and eliminate process waste within the Warehouse**.

### **Why Implement Lean Warehousing?**

Below are some of the **Advantages & Benefits of Lean Warehousing :**

- Ø **Efficient & Optimal utilization of the Floor (Warehouse) Space through proper Storage of Inventory.**
- Ø **Creates and Sustains an Efficient, Effective, Clean & Safe Workplace.**
- Ø **Higher Perfect Order Rate - Reduced Order Processing Time through the use of Standard**

### **Operating Procedures.**

- Ø **Able to Handle Customer Demands of Shorter Lead Times, Faster & Urgent Deliveries; Seasonal Fluctuations, Variations in the Volume & Peak Demands; Proper Distribution of SKUs & Manage Multiple Delivery Channels.**
- Ø **Reduced Operational Costs by Eliminating Inefficient Processes (like Inventory Handling) & Improving Operational Efficiencies.**
- Ø **Improves the Financial Health of the Company.**
- Ø **Better Manage an ever-increasing number of SKUs and a large inventory through Optimal Inventory Management - sorting and organizing functions**
- Ø **Improves Working Conditions – Employee Satisfaction, Boosts Employee Morale & Reduces Employee Turnover.**
- Ø **Aims at Optimization and hence promotes Continuous Improvement**

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## LATEST WAREHOUSING TRENDS

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**W**arehousing is the science and art of providing appropriate storage solution as per requirements of products. It is an integral and important part of supply chain management for proper inventory control.

A smart warehousing solution is crucial for achieving a balance between efficiency and responsiveness of Supply Chain. Indian storage concepts have evolved drastically over the years from traditional godowns to proper warehousing solutions specially during last 15-20 years.

Type of Warehousing depends upon the products to be stored and accordingly an appropriate solution is designed to ensure safety and efficiency. Economic development has led to demand for high quality warehousing however major challenge has been keeping cost under control.

This has been managed to a great extent by applying appropriate storage systems which not only use floor area but also vertical space in the warehouse. Large multiuser facilities have also helped to distribute the development and operational costs hence achieve economies of scale.

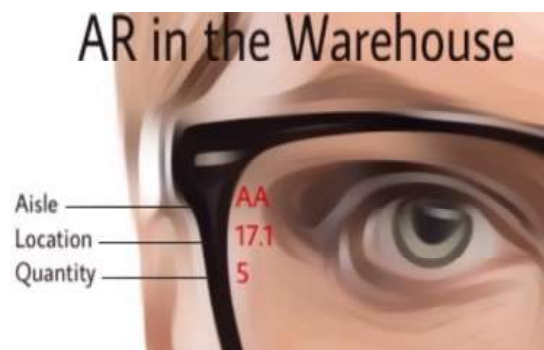
E-commerce has also been a driving force in developing warehousing infrastructure. Moreover lockdown situations during COVID have inclined consumers towards online purchase. This has also resulted in development of a new segment "Ecommerce Aggregators" which provide a platform for small manufacturers to reach out to wide spectrum of customers across the country.

With this ever increasing and diversified demand for organized warehousing we are witnessing many new trends as mentioned below :-

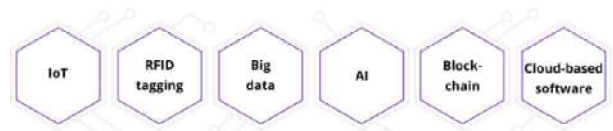
### Ø Automation

- o Inventory Mapping through Augmented Reality & Drones which helps in proper storage, retrieval and cycle count.
- o Robotic operations for efficient picking, palletizing, transportation, and inspection.

- o Asset & Inventory Tracking through RFID Tagging on real time basis.
- o Handheld devices minimize manual entries resulting into error free data management.
- o Wearable technology to track movement of inventory and people within warehouse.
- o Advanced Warehouse Management System (WMS).
- o Smart packaging solutions which provides data and status updates for the products within, current location and quality.



### Trends in warehouse and inventory management automation



### Ø Efficient Storage solutions

- o Smart design layouts for enhanced usage of warehouse space.
- o Storage segregated as per slow and fast moving inventory.
- o Multi Tier Shelving (MTS) specially for Ecommerce operations.





#### Ø **Eco-Friendly Material Handling Equipments (MHE).**

- o Battery operated Forklifts, Reach Stackers etc.
- o Conveyors for Automated Storage & Retrieval Systems (AS/RS).



#### Ø **Energy efficient illumination and ventilation solutions.**

- o Provision for natural lighting.
- o Usage of energy efficient LED lightings.
- o Insulated roofing to reduce temperature.
- o Smart natural ventilation design.
- o Solar powered energy system.



#### Ø **Leveraging technology for Security & Vigilance.**

- o High resolution AI enabled cameras with remote monitoring access and intrusion / fire detection systems.
- o Asset & Inventory Tracking through RFID Tagging& IoT.
- o Cloud based access management with face recognition.

#### Ø **Warehousing cost optimization**

- o Larger facilities ranging from 1 lakh to 5 lakh Sq.Ft. to justify capital expenditure and automation.
- o Multi-user facilities for cost distribution amongst various users.
- o High altitude structures with clear height of 40ft to leverage vertical space advantage.

Above mentioned technological solutions not only help in overall management of operations, but also help to reduce cost in the long run. Growth momentum primarily triggered by Ecommerce in warehousing sector is expected to yield 11% CAGR across India which has led to an ever increasing demand for Grade A warehouses not only in Tier 1 but also in Tier 2 cities.

This will not only create employment opportunities across India, it will also help in growth of ancillary industries involved in development and operation of warehousing facilities such as equipment, 3PL and manpower providers, automation solution designers etc.

New employment opportunities created in Tier 2 cities across India will help in holistic growth of the nation and thus help to decentralize development which has been mostly inclined towards Tier 1 metro cities in past.

**Conclusion :** Warehousing sector will be a major contributor towards India's GDP growth and become a US\$ 5 Trillion dollar economy by 2025.



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# MULTI-LEVEL WAREHOUSING – THE NEW SOLUTION OF STORAGE

**SAMPAD RATH**  
**CO-AUTHOR: PRIYESH MISHRA**

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**L**ogistics cost in India represents 13-17% of the Gross Domestic Product (GDP) which is about twofold (6-9%) to the logistics cost to GDP proportion in created nations, for example, the US, Hong Kong, and France. A significant part of the greater expense could be credited to the nonattendance of proficient multi-purpose and multimodal transport frameworks. Besides, warehousing which represents around 25% of the logistics cost has additionally been confronting significant difficulties. This further added to the logistics cost borne by the end-clients and different partners.

Prior, the motivating forces to enter India's warehousing segment was insignificant for composed players, as the occupiers themselves were substance to draw in with periphery accomplices offering minimal effort choices with a system of little storerooms close to factory setup.

**Key problems undermining warehouse management performance are:**



Various state and local level assessments made it reasonable for organizations to keep up a little warehouse in each state. Further, this restricted the attention to computerization and higher throughput. This demeanour of occupiers of wanting to save money on costs as their sole goal is evolving. There has been steady progress in the mentality of occupiers to utilize the administrations offered by sorted out portions. Plenty of variables is driving this rush of progress, for example, a prerequisite from consistence controllers (in the event of the pharma business), quality consistency affirmation required by customers/ controllers, legal punishments on rebellious warehousing offices, economies of scale being accomplished through bigger distribution centres, wellbeing and security of products, productivity in

activities, speedier turnarounds, a requirement for effective warehousing plans, and the approach of web-based business and other global organizations that like to involve just protest offices.

## MULTI-LEVEL WAREHOUSING: THE NEW SOLUTION

Multi-level warehouses inside the city cut off points on Indian land could be the next large thing in a market which at present is greatly impacted by the coronavirus pandemic. The impulses of quicker online business development in a post-pandemic world can launch interest for tech-empowered multi-storey warehousing. Such arrangements are currently followed in South Asian nations, for example, Hong Kong, Singapore, South Korea, and Tokyo. As of now, distribution centers in the main Indian urban areas are to a great extent confined to the city peripheries and a long way from the bigger client base.

COVID-19 has just underscored the significance of web-based business in the continuous lockdown. With an unsure post-pandemic future approaching over the retail segment, retail players may now require staggered distribution centres inside city cut off points to support urban areas. Other than encouraging greatest land use in urban areas like Mumbai, multi-story warehousing can help organizations to diminish transportation costs and improve conveyance time – the keys to progress for most retail organizations. With innovation as a key empowering influence, such alternatives can supplant various single-storey distribution centres on the city peripheries and in this way save money on by and large operational and inhabitation costs.

Today, the quick conveyance is a pivotal prerequisite for the consistent omnichannel methodology of web-based business players. The aftermath of the coronavirus pandemic can surpass the current lockdown and social distancing may turn into the new ordinary, at any rate over the mid-term. In such a market situation, retailers will be feeling the squeeze to make sure about warehousing areas near their client base. The essential interest for warehousing is presently thought around top urban communities like Delhi NCR, Mumbai, Bengaluru, Chennai, and Pune. Because of its location and dispersion advantage, Kolkata has likewise developed as a warehousing and coordination centre point in the east.

Multi-story warehouses of five or more stories with tech-enabled loading on every floor are the next logical move. Changing from customary warehousing to multi-storey warehousing can help spare essentially in rental

rates. Additionally, a solitary united warehouse practice can impressively spare transportation costs by improving the dissemination in prime coordination areas. The land limitation is developing in nations, for example, Hong Kong, Singapore, Tokyo, and South Korea brought about increment in asking rental rates. The warehousing market in these nations is the costliest in Asia with the most noteworthy rental rates; presently the rental rates show a development pace of 2-2.5 percent of CAGR Y-o-Y. Because of higher land costs and less land accessibility in these nations, buying another mechanical region is multiple times higher contrasted with other Asian nations. Likewise, with numerous organizations battling to fulfil the need from thickly populated urban communities in these nations, conventional warehousing has become a costlier practice.

#### **Which businesses can receive multi-story warehousing practice?**

Food and drink, synthetic compounds, excellence, and restorative, individual items, retail, and web-based business ventures are regularly rehearsing multi-story warehouse techniques with a worked to-suit commitment model.

#### **What are the significant money-saving advantages in multi-story distribution center practice over customary warehouse practice?**

Rental expenses can be set aside to 20-30 percent in significant expense areas, for example, Hong Kong, Singapore, Japan, and South Korea since the multi-story warehouse rental rates are lower contrasted with customary distribution centre sorts. Transportation expenses can likewise be spared if these distribution centres are situated in urban districts.

#### **How multi-story practice will profit acquisition associations?**

While working in land imperative territories, acquirement supervisors regularly pay high leases and the capacity of the items may include different distribution centres in a similar district. A multi-story practice with worked to-suit commitment model empowers obtainment associations to solidify the capacity of products in a single area for a lower lease and higher stockpiling limit.

#### **Is it possible in India?**

As far as what we can see from the current scenario, rather than going for multi-layer warehousing, the vertical expansion will be more favorable concerning present infrastructure. Most of the warehouses are operating on assemble to order systems for which vertical expansion is a more cost-effective method. The cost of acquiring land in India is much lower than in other countries. But no doubt with growing population and space crunch, this system can make its way into the Indian eco-system.

Source: [sourcingandsupplychain.com](https://sourcingandsupplychain.com)

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## OBI TUARY



### **SHRI ARVIND NAVADIKAR**

Former Chairman, IIMM-Pune branch  
(1993 – 1995)

Former National President, IIMM  
(2001 – 2003)

With profound grief we inform of the sad demise of Shri Arvind Navadikar on 26<sup>th</sup> August 2022.

We wish you farewell in your journey to eternity. You'd never be forgotten, rest in peace.

Fond memories are what we have in remembrance of our dearly departed.

Our most heartfelt condolences. In reverence & remembrance

**INDIAN INSTITUTE OF  
MATERIALS MANAGEMENT**

**Pune Branch**

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# ISO20400:2017(E)

## ORGANIZING THE PROCUREMENT FUNCTION TOWARDS SUSTAINABILITY

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**ISO20400:2017(E) - Organizing the procurement function towards sustainability** is in continuation to **ISO20400:2017(E): Sustainable Procurement – Integrating Sustainability into the Organization's Procurement Policy and Strategy** published in August 2022 on page no. 50.

### 6 Organizing the procurement function towards sustainability

#### 6.1 Governing procurement

##### 6.1.1 Governance

The procurement function should be thoroughly analyzed before focusing on the implementation of Sustainable procurement. This includes assessing the maturity of the procurement function and how it is represented within the organization.

It is important to integrate sustainability into existing governance arrangements and not to develop a new governance programme. Organizations often have a group of people to provide governance over issues such as approving procurement strategies, gateways and commitments, monitoring savings and other functional key performance indicators (KPIs). There should be a clear connection between how procurement is governed and the sustainability issues and impacts described in this document.

Procurement people should also be included within an existing sustainability group or internal committee.

##### 6.1.2 Procedures and systems

Governance requires a set of rules that people need to follow. For most organizations, this is supported by a set of procedures and tools, i.e. policies, charters, systems, standards and templates, etc. that are aligned with the organization's sustainability and procurement objectives. In addition, some organizations use systems (e.g. e-tendering, contract management systems, organization resource planning systems) to support their workflow and procedures.

#### 6.2 Enabling people

##### 6.2.1 Organizational culture

Effective delivery of the sustainable procurement policy and strategy requires that individuals involved in procurement, including internal stakeholders (e.g.

production workers, budget holders or others engaged with suppliers in any capacity), understand the reasons for implementing sustainable procurement. It is also important that all internal stakeholders understand how to play their part in such implementation, and are given the means to do so. This can involve advising top management, to enable them to better understand and support sustainability. Individual behaviour is also of fundamental importance to successfully implementing sustainable procurement. Those individuals tasked with delivering sustainable procurement should be enabled to do so through a supportive organizational culture, performance management, education, training and support.

Introducing a relatively new concept to staff requires carefully managed integration into the organizational culture. The organization should develop a culture that embraces change and an environment where collaboration, innovation, effective communication and appropriate taking of risks (including opportunities) is encouraged. Key stakeholders should be encouraged to network and engage in internal and external groups. This can provide both learning, benchmarking opportunities and capture mutual benefits.

The organization should identify the learning and development needs of those involved in the procurement process. However, people involved in procurement are not expected to be sustainability experts; and professional sustainability advice and support should be made available to them.

##### 6.2.2 Performance management

Ensuring that sustainable procurement is incorporated into performance management will help achieve cultural change. Sustainable procurement objectives and goals should be included, for example, in the following:

- collective and/or individual performance agreements and objectives;
- staff development reviews and evaluations;
- incentive plans or other reward and recognition arrangements.

##### 6.2.3 Learning through collaboration



It is important that the organization maintains an awareness of sustainability issues and good practices, which can change rapidly. Organizations might work collaboratively with their industry peers and supply chains to share knowledge and develop better practice. Bad examples or worst case scenarios can also be useful to learn from. Reports from non-governmental organizations, financial institutions or specialized media sources might also be beneficial.

### 6.2.4 Guidance

Appropriate tools and guidelines can assist procurement professionals to achieve sustainability objectives, e.g.

- sustainability guides per category or sector;
- guides on social and environmental certifications;
- management system standards, analytical tools and performance reporting;
- evaluation tools, such as life cycle costing (LCC);
- case studies;
- life cycle assessment of environmental and social impacts.

## 6.3 Identifying and engaging stakeholders

### 6.3.1 Identifying key stakeholders

The organization should consider mapping its stakeholders in relation to sustainable procurement. Table 1 identifies a typical range of stakeholders from a procurement perspective and why they should be engaged.

Table 1 — Different types of stakeholder with examples of their interests in and impacts on the

Type of stakeholder	Examples of stakeholder	Examples of stakeholder interests
Internal functions	Top management/entrepreneurs	Protect image Improve brand reputation Gain competitive advantage Support innovation Increase investor confidence
	Procurement employees	Manage procurements risk (including corruption) Reduce costs Sustain innovation Motivate buyers
	Specifiers	Buy or use goods or services that are more sustainable Ensure goods and services are fit for purpose Ensure goods are authentic
	Production employees	Comply with production schedules Improve efficiency Check product quality
	Social responsibility/sustainability people	Improve sustainability performance Support innovation Create value through social responsibility
	Other internal people (finance, health and safety, human resources, operational managers, etc.)	Improve health and safety Monitor payment terms before on investment
Supply chains	Suppliers (tier 1, 2 and beyond)	Receive prompt payment Receive a fair price Gain customer insights Obtain fair contracting conditions Create demand for goods or services that are more sustainable
	Subcontractors/workers	Receive fair contracting conditions

Other stakeholders		Be provided healthy and safe working conditions
	Business partners, consultants	Improve collaboration Innovate Create mutual benefits
	Customers, clients and users	Buy or use more sustainable goods or services
	Local community	Support local employment Promote wealth and income creation Enjoy healthy environment
	Governments, public sector, academic, inter-national agencies	Protect human rights Promote access to essential services Protect the environment Foster collaborative research
	Non-governmental organizations (NGO)	Create awareness for a more sustainable society
	Trade unions/workers	Achieve better working conditions
	Investors, financial sector, rating agencies	Mitigate negative financial impacts Reduce uncertainty Support responsible return on investment
	Sector association peers	Motivate industry actors  Promote good sustainability practices

### 6.3.2 Engaging the supply chains

In order to fully manage sustainability risks (including opportunities) throughout its supply chains, an organization might need to engage one or a group of suppliers, partners or subcontractors in initiatives that go beyond contractual requirements (see Clause 7). This could include:

- a longer-term initiatives that go beyond the duration of the contract or engagement; and/or
  - a broader scope of activity, i.e. across various contracts and engagement, if necessary, beyond tier 1 suppliers.
- These business-to-business initiatives are based on good faith and go beyond public relations. They are more likely to be successful if:
- the interests, needs and capacities of suppliers (beyond tier 1), subcontractors, partners and the organization have been identified;
  - the relationship that these interests establish between the organization and the supplier is direct or important;
  - a clear purpose and expectations for the engagement are understood;
  - the organization and its suppliers have the necessary information and understanding to make decisions; and
  - a fair and inclusive process and a balanced two-way communication are established.



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Various engagement techniques can be used by an organization in developing, integrating and managing sustainability objectives in its supply chains. Examples include:

- industry or commodity based sustainability initiatives;
- supplier development plans, when the organization supports suppliers individually to develop their capabilities over time, including sustainability;
- supplier relationship management initiatives, which aim to develop structured relationships with critical/strategic suppliers, subcontractors or partners in order to achieve greater levels of benefits and innovation, including sustainability;
- capacity building programmes, which might be required to improve alignment between the organization and suppliers, with a specific consideration to SMOs;
- supplier diversity initiatives, which aim to increase business opportunities for under-utilized groups of suppliers by including them in procurement decisions.

### 6.3.3 Engaging other stakeholders

External engagement should be aligned with the organization's approach and should be coordinated with externally facing functions such as customer and investor relations, public affairs and social responsibility.

Government can be an important stakeholder to assist and support a level playing field as regulators can offer incentives to improve sustainability practices, especially in cases where sustainability initiatives are insufficiently competitive. In these cases, an organization could exercise influence by working with the government to set policy and standards. Moreover, as a public buyer, government can also have an important role to play in driving external stakeholder behaviour towards sustainability.

Non-governmental organizations, trade unions and workers' representatives can be important stakeholders in assisting an organization to raise awareness of sustainable practices. Engaging these stakeholders might create conditions for a positive dialogue with other stakeholders including the local community.

External engagement can be on a one-to-one basis or can potentially be more effective through partnering with groups such as trade/sector organizations, government supported groups and non-governmental

organizations including those focused on improving sustainability performance.

When engaging in direct peer-to-peer dialogue, care should be taken to ensure that any engagement is ethical and cannot be deemed anti-competitive. Due consideration should also be given to protecting confidential information or intellectual property, protection against bribery or fraud to avoid complicity (see 4.5.5).

## 6.4 Setting sustainable procurement priorities

### 6.4.1 Applying risk management

Managing sustainability risks (including opportunities) can encompass three complementary activities:

- identifying short-, medium- and long-term risks (including opportunities) and assessing their criticality for the organization, including those originated by organizational practices influencing procurement;
- integrating appropriate activities to treat these sustainability risks (including opportunities) within the risk management process;
- implementing and managing risk treatment activities.

Due diligence aligns well with the structure of generic risk management frameworks. This alignment allows for direct integration of due diligence into existing risk management practices alongside other risk domains that an organization decides to address.

### 6.4.2 Using different approaches to set priorities

#### 6.4.2.1 Considering different approaches

The sustainability objectives of the procurement policy and strategy should be transformed into operational priorities for the procurement function through risk management. This can be done using a variety of approaches, e.g.

- categories, i.e. similar groups of goods or services;
- suppliers, i.e. across multiple contracts, and geographical locations;
- sustainability issues across categories, suppliers and contracts;
- organizational practices influencing procurement, including contracts, context analysis, etc.

#### 6.4.2.2 Using a category approach

The outcome of this work should be embedded into the key documents of the organization such as the

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sustainability strategy, procurement strategy, risk register and category plans.

Many procurement functions implement a category management approach. It usually results in a category plan, which should include sustainability considerations.

The category plan should be a collective exercise between relevant individuals in the organization.

This could include technical individuals who are responsible for the actual procurement with a deep understanding of the category of supply, sustainability specialists, or customer facing people who understand customers' needs and expectations. The organization should consider:

- the purchase volume and/or expenditure of the category, across the short, medium and long terms;
- the risks (including opportunities) related to goods or services, the supplier practices and key sustainability issues;
- criticality to the operations;
- the country context;
- application of public policies relating to sustainability, including expected changes;
- future operational requirements.

#### 6.4.2.3 Using a supplier approach

Mapping the sustainability issues to suppliers enables organizations to determine which suppliers (and their supply chains) significantly contribute to each issue and should thus be given careful consideration when implementing the policy and strategy.

This analysis can be considered in a number of ways depending on the current governance system and the availability of organizational resources.

- a) Understand the supply chain. When doing so, it can be helpful to:
- 1) understand where the most significant raw materials, goods or services come from;
  - 2) understand where the labour is sourced from;
  - 3) verify how, and by whom, the goods are transported;
  - 4) review the suppliers' historical performance.

Understanding supply chains below tier 1 can be facilitated by considering the following:

- understanding which suppliers below tier 1 have a high-level of sustainability maturity and can positively contribute or which suppliers below tier 1 have a low-level of sustainability maturity and

can be an obstacle;

- evaluating and working with suppliers below tier 1 transparently to identify key risks (including opportunities) further down the supply chain improving supplier capacity (see 6.3.2);
  - working with organizations with a significant influence in operational relationships, e.g. tier 1 suppliers, traders, dealers, merchants, intermediaries, distributors;
  - analysing how organizations' prices and commercial conditions make it easier for suppliers to manage their supply chains;
  - examining which suppliers the organization has developed a strategic relationship with, including the quality and depth of it.
- b) Consider the capacity to influence which might exist where the organization has the ability to effect change in the practices of the supply chain.
- c) Focus on risks (including opportunities).
- d) Map all suppliers in high priority categories.
- e) If the organization has a strategy to select critical suppliers for supplier relationship management, map those suppliers and address prioritized sustainability issues.

#### 6.4.2.4 Using a sustainability issue approach

Identifying top-priority categories, suppliers, contracts and organizational practices influencing procurement per sustainability issue can support consultation with key stakeholders such as those involved in risk management, social responsibility, occupational health and safety, environment, diversity and intellectual property.

**Figure 3 is an example of mapping categories to sustainability issues.**

**Add figure 3 here**

Figure 3 — Example of sustainability issues per category and their level of impact

Each sustainability issue should be:

- aligned with the core subjects of sustainable procurement (see 4.3); and/or
- aligned with the key issues as defined by the sustainability policy of the organization.

Once this mapping is done, it can be consolidated by a life cycle assessment if appropriate. The extent of the life cycle assessment should be decided by the

organization taking into account the purpose and the resources available.

It might also be useful to undertake the same type of analysis to include suppliers, contracts or organizational practices influencing procurement.

NOTE Annex C provides more detailed examples.

6.5 Measuring and improving performance

6.5.1 Defining metrics and indicators

To ensure that the organization is meeting its sustainable procurement priorities, it should implement a performance measuring system that:

- establishes a baseline measurement, associated sustainability goals and KPIs;
- monitors, assesses and continuously improves performance, taking corrective actions if necessary;
- assists in the selection of suitable suppliers;
- communicates results and engages with decision makers and internal stakeholders;
- benchmarks the organization against competitors and sustainability leaders;
- communicates to external stakeholders.

Metrics are the raw data that are collected to understand performance. Indicators are the information used to assist in decision-making, e.g. metrics related to sources and use of energy can be converted to an indicator related to carbon emissions.

There are different types of indicator that can be considered. These include:

- process indicators: related to the measurement and monitoring of progress towards the achievement of organizational policy, objectives and goals, etc.;
- output indicators: related to the measurement of the outputs of the sustainable procurement policy implementation and of the sustainable procurement process itself;
- outcome indicators: related to the performance of the organization, especially those aspects that are affected by the sustainable procurement process: these indicators can be aligned to the organization-wide sustainability issues to enable the organization to better monitor the impact of its sustainability practices;
- impact indicators: related to significant economic, environmental and social impacts that are: positive/negative, actual/potential, direct/indirect,

short-term/long-term, intended/unintended.

Measurement can be qualitative or quantitative and can be applied to both procurement practices and outcomes. Consideration should be given to surveys and feedback provided by individuals who are responsible for the actual procurement and to feedback provided by suppliers.

Time is needed for the impact of a sustainable procurement programme to progress from organizational indicators to outcomes, and eventually to the impact of the organization on society, the environment and the broader economy.

6.5.2 Reporting

Reporting can happen at a number of levels (see Table 4) and involve a large number of stakeholders, including suppliers that are increasingly being asked for sustainability data from a variety of customers.

The organization should ensure that:

- information moving through these levels is interconnected and transferable;
- the reporting burden on suppliers is minimized.

Table 4 — Levels of reporting and examples of reporting activities

Reporting levels	Examples of reporting activities
External stakeholders	Annual report, sustainability report
Organization's top mgt.	Top management reports summarizing progress on key initiatives, dashboards
Procurement function	Reports to procurement management on specific initiatives, supplier dashboards
Supplier/Contract	Supplier performance reviews, contract KPIs

Several measures can be taken to reduce this burden, e.g.

- identifying a limited number of significantly important indicators and metrics that are able to effectively communicate important issues for the organization and its stakeholders;
- drawing from internationally accepted sustainability reporting frameworks for

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sustainability metrics, which can ensure that the data that the organization is requesting is consistent internationally, thus creating a global language through which sustainability data are communicated.

Care should be taken to ensure sound reporting. This includes:

- reporting positive results and achievements as well as negative ones;
- ensuring comparability between reporting years, and not changing baseline indicators or presentation of information year on year;
- ensuring accuracy in the data reported upon;
- clearly stating the period for which data are reported, and reporting a regular time period (e.g. yearly);
- ensuring that the information is clear and without jargon;
- ensuring that the processes by which information is collected and reported is reliable and robust.

Communication should be complete, understandable, responsible, accurate, balanced, timely and accessible.

### 6.5.3 Benchmarking

An organization might choose to benchmark itself against peer organizations and document them. One way to do this is by means of comparison with formally established indices, e.g. a number of robust sustainability measurement indices are available, which take into account many aspects of an organization's practices, including how it manages its supply chains. These are not limited to supply chain activities but take into account many aspects of an organization's practices, including those relating to its supply chains.

The benefits of benchmarking relate to understanding current trends and comparing the organization's systems, process and performance with those of its peers. However, benchmarking can also lead to increased focus being placed away from the organization's significant issues, due to focus being placed on the issues deemed important by others outside the organization.

## 6.6 Establishing a grievance mechanism

Stakeholders, especially vulnerable ones, should be able to bring their problems, complaints and/or suggestions to the attention of the organization, and seek redress. The organization should facilitate this by establishing a grievance mechanism through different channels, depending on the sustainability issues being reported.

This mechanism could offer additional opportunities for recourse and redress, beyond available pre-existing channels. Non-state mechanisms could also contribute to strengthen state institutions.

For grievance mechanisms to be effective, they should be:

- a) based on engagement, dialogue and mediation: the process should look for mutually agreed solutions through engagement between the parties and the right to appeal;
- b) legitimate: to enable trust from the stakeholder groups for whose use they are intended, and being accountable for the fair conduct of grievance processes;
- c) accessible and easy to understand: known to all stakeholder groups for whose use they are intended, providing adequate assistance for those who might face particular barriers to access;
- d) safe: to protect the stakeholders against potential threats and retaliations through a secure, anonymous independent and two-way communication system;
- e) predictable: to provide a clear and known procedure with an indicative time frame for each stage, and clarity on the types of process and outcomes available and means of monitoring implementation;
- f) equitable: to ensure that aggrieved parties have reasonable access to sources of information, advice and expertise necessary to engage in a grievance process on fair, informed and respectful terms;
- g) transparent: to keep parties to a grievance informed about its progress, and provide sufficient information about the mechanism's performance to build confidence in its effectiveness and meet any public interest at stake;
- h) rights-compatible: to ensure that outcomes and remedies accord with international norms of behaviour;
- i) a source of continuous learning: drawing on relevant measures to identify lessons for improving the mechanism and preventing future grievances and harms.

In contributing to sustainable procurement, grievance mechanisms can play an important role in mitigating negative impacts in supply chains and in providing access to remedy for affected stakeholders.

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# DEMAND PLANNING IN NEW NORMAL 2021

SUNIL BHARDWAJ



The demand planning function has always had a very critical role to play within an extended and global supply chain. All the sub-steps and operations within the demand management side of every organization have been evolving constantly over the last decade or so. This evolution has been accelerated owing to the emergence and development of relevant tools, techniques, and technologies that facilitate end-to-end visibility, transparency, data management, and effective planning.

Moreover, Covid-19 has yet again brought the planning and forecasting function (the nerve center of every supply chain) to the spotlight and has emphasized the need to re-strategize our approach to this science as well as art.

## Notable Trends & Developments

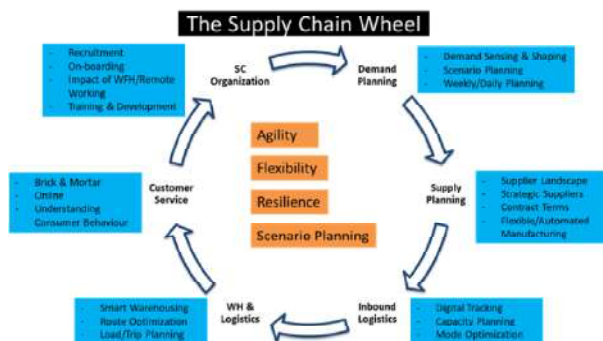


Figure 1 – The Supply Chain Wheel

I would like to focus on certain key trends and developments that have surfaced over the last 6-7 months. With reference to the figure above, which I call the "Supply Chain Wheel" – it is necessary to adopt a "systems approach" that views the value chain in its entirety. At the core lie four essential drivers or guiding principles that would impact both upstream and downstream activities and processes. They are – **Agility, Flexibility, Resilience, and Scenario Planning.**

**Key elements of the Wheel : Supply Chain Organization Structure** – the methods and approaches with regard to talent management are likely to undergo visible changes with regard to hiring, induction, training, and work locations.

**Demand Planning**– Traditional methods may not be effective anymore. There is a need to shift towards more frequent planning, end-to-end planning, exception-based planning, and scenario-based planning coupled with system-wide alerts and event management-based solutions. Scenario-based planning must encompass "What-If" planning and "Simulation" systems. Any demand planning and forecasting tool or software must enable the users and decision-makers to utilize "Demand Sensing" and "Demand Shaping" components.

**Supply Planning** – Supplier Relationship Management, Strategic Sourcing, Supplier Landscape Mapping, and investments in Smart & Flexible Manufacturing systems could potentially garner the attention of supply chain leaders moving forward.

**Inbound Logistics** – This step in the wheel would lay more emphasis on tracking and tracing of shipments, warehouse capacity planning, and transportation modes optimization.

**Warehousing & Logistics** – Firms would need to invest in smart and connected warehousing to enable process efficiencies, higher productivity, and throughputs. Warehouse and Transportation Management Systems (WMS & TMS) would need to be integrated with existing ERP systems to facilitate end-to-end visibility and planning.

**Customer Service** – This relates to order management, outbound logistics & distribution, and last-mile transportation activities. Here is where omnichannel distribution, customer and consumer analytics, and insights would play a critical role in the demand planning cycle. Customer Relationship Management (CRM) tools and related processes that enhance our understanding of consumer behaviour would go a long way in making the demand management processes and systems more agile, responsive, and connected.

## Role Of E-Commerce | Online Platforms

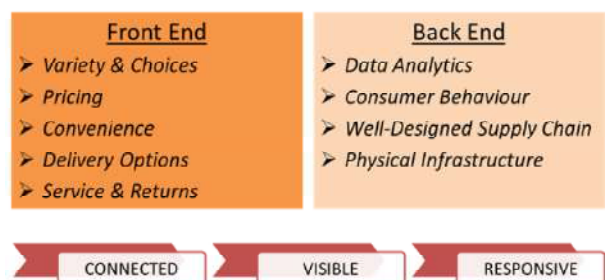


Figure 2 – Role of E-Commerce/ Online Platforms

**The Role of Online Channels / E-Commerce** : In the context of the pandemic, there has been a fairly clear and discernible shift in demand to the online space for certain categories of products such as – food, staples, medicines, personal hygiene, cleaning, and home-office. The future



of the demand planning function will be influenced to a large extent by the e-commerce companies that offer unparalleled customer service and convenience.

In my opinion, well-established e-commerce companies embody the principles of end-to-end supply chain excellence with regard to their people, process, and technology initiatives and practices. As shown in figure 2, e-commerce firms have well-designed back-end infrastructure and process with analytics at their core.

These companies are driven by three main objectives and success factors – connectivity, visibility, and responsiveness. These factors resonate well with the demand planning organizations of the future.

### Emerging Challenges & Opportunities

However, one must be mindful of the impending challenges and constraints as well. A switch to demand sensing, demand shaping, and scenario-based planning tools would necessitate making the correct choices.

A few points that companies and their demand management teams must consider:

- Every sector/industry has unique characteristics
- Demand & Supply strategies and priorities would differ
- Process maturity levels may vary
- A “One Size Fits All” approach shall not work
- A firm’s position on the technology/digital adoption curve could be different
- Its ability to invest in a suitable demand planning and forecasting tool/technology and to prioritize investments may differ
- There needs to be agreement, alignment, and consensus on specific Business problems/pain points
- People and Process related areas need to be factored in
- Culture and Change Management should be accorded top priority
- A thorough re-visit and audit of a company’s existing systems and data architecture needs to be carried out
- There is a need to adopt an “Outside-In” as well as an “Inside-Out” philosophy and thought process

### Way Forward

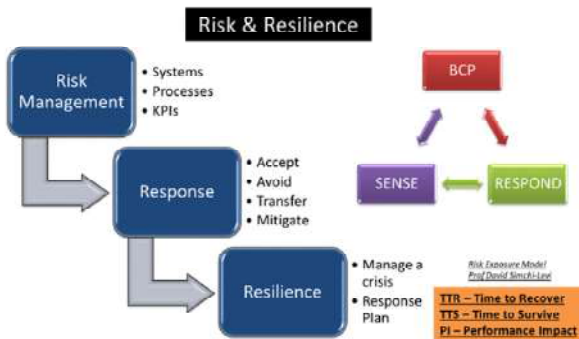


Figure 3 – Risk & Resilience

Any crystal ball gazing into the future paradigms or trends would be incomplete without providing a snapshot of the “Risk Management” strategies that should be adopted.

The demand drivers and all the related people, processes, and systems design and execution would be governed by a firm’s risk and resiliency ecosystem, as envisaged in figure 3.

In this context, it is absolutely essential to have a well-defined Business Continuity Plan (BCP) in place along with a sense and response strategy. The Enterprise Risk Management (ERM) system should comprise clearly mapped out risk events, response strategies, and monitoring and control metrics. The three key metrics propounded by renowned supply chain expert Prof. David Simch-Levi include – Time to Recover (TTR), Time to Survive (TTS), and Performance Impact (PI).



Figure 4 – Forecasting Control Tower

Finally, I wish to conclude this piece with a generic framework that could be used to set up the “Forecasting Control Tower”. This concept is akin to a supply chain and logistics control tower.

In my opinion, this control tower can complement the Sales and Operations Planning (S&OP) and the Integrated Business Planning (IBP) meetings so that the pressing issues are prioritized and discussed. Here, the implicit assumption, or rather the reality is that S&OP and IBP meetings would take place more frequently going forward.

The three key building blocks are:

**Core Team** – staffed with cross-functional experts drawn from key business domains/functions/departments such as Sales, Marketing, Product Development, Human Resources, Production, Supply Chain, Logistics, Finance& Systems.

**Operations Data** – comprises relevant data to enable demand planning and fine-tuning; near real-time data is fed back into the system (Decision Support System or ERP) to enable decision making and to initiate subsequent process steps.

**Monitor & Control** – Data is analyzed and it triggers a quick response and feedback loop based on actionable insights.

The broader end objectives are – superior ‘Responsiveness’, higher ‘Speed’, and enhanced customer ‘Service Levels’. A successful implementation would be geared towards reducing “Variability” and increasing system-wide “Velocity” and “Visibility”.

Source: [sourcingandsupplychain.com](http://sourcingandsupplychain.com)

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# WAREHOUSING QUIZ

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1. All of the following are strategies in a warehouse for locating pickup except
    - a) Boltless racks
    - b) FEFO
    - c) FIFO
    - d) LIFO
  2. AGVs & AMRs are highly successful under all circumstances except
    - a) An alternative to conventional material handling
    - b) Where high volumes of materials are moved
    - c) Where materials are moved in repetitive paths
    - d) Where frequent human decision skills are required
  3. All are high throughput sorters in a warehouse system except
    - a) Shoe sorter
    - b) Paddle & push sorter
    - c) Cross belt sorter
    - d) Split tray sorter
  4. A statement that is not true about Block Chain is
    - a) Centralized network
    - b) Enhanced data security
    - c) No third-party involvement
    - d) Provenance tracking
  5. Warehouse storage should provide \_\_\_\_\_ aisle space
    - a) 10%
    - b) 15%
    - c) 30%
    - d) 20%
  6. Cobot is a
    - a) Computer controlled robotic device
    - b) Collaborative robot
    - c) Sensing system
    - d) Coding technology
  7. Though the terms warehouse and distribution centre (DC) are used interchangeably, there are certain differences between them. Which of the following statement is NOT true about DC?
    - a) DC offers value added services like product mixing, packaging, kitting, etc.
    - b) In DCs products are stored for lesser time periods compared to a warehouse
    - c) DCs are customer centric
    - d) The flow velocity in a DC is comparatively lower than that of a warehouse
  8. Products received from multiple manufacturers in bulk are split into small lots and loaded to outgoing trucks as single shipment as per the requirements of specific customers is known as
    - a) Cross docking
    - b) Freight forwarding
    - c) Vehicle routing
    - d) Rapid response
  9. Virtual warehouse means
    - a) Data storage
    - b) Digitized warehouse
    - c) A technique used to segment inventory
    - d) Robot controlled warehouse
  10. Which of the following is not a green warehouse initiative?
    - a) More provisions are made for natural lighting compared to artificial lighting
    - b) Heat proofing the roof of the warehouse
    - c) All the waste generated are recycled
    - d) Number of items stored are reduced
- Circular Economy Quiz answers

1.	b
2.	a
3.	d
4.	b
5.	b
6.	b
7.	d
8.	d
9.	c
10.	b



## WTO Update

### INDIA'S UPCOMING FOREIGN TRADE POLICY NEED LASER FOCUS ON LOGISTICS SECTOR AND E-COMMERCE

**DHANENDRA KUMAR**

**FIRST CHAIRMAN OF THE COMPETITION COMMISSION OF INDIA**

India's upcoming Foreign Trade Policy (FTP) is expected to be rolled out in April 2022. During its re-engineering, there is need to capture crucial elements for boosting India's exports in the new normal in the post-pandemic world.

It must be equipped for responding to razor-sharp global competitiveness, accentuated by ever-expanding digitalisation and new technologies in every segment and increasing WTO restrictions in incentives.

The quality and efficiency of India's logistics services play an integral role in building efficiencies in cost and time, overall competitiveness and growth of economy by supporting building blocks of manufacturing and commercial activities and international trade, aided by technology tools. India's logistics sector is projected to expand at a compounded annual growth rate of over 10% from \$200 billion in early 2020 to at least \$320 billion in 2025. E-commerce which is so vital to providing global access to the produce and services of our MSMEs across the country, and indeed should have a separate chapter in new FTP, is also critically dependent on logistics efficiencies in the integrated global value chain, contributing to overall competitiveness in the process matrix.

The continuous growth in world trade depends on the efficiency of trade support structures such as the logistics services. As of 2018, India ranks 44th in the Logistics Performance Index. The

Indian logistics sector as it currently stands, has constraints at shipping and ports, loading/unloading and turn-around time, quality testing and certification facilities, smaller number of formal transport companies using efficient technologies, availability of storage and warehousing at strategic locations, lack of standardization in packaging leading to delays in handling and retrieval, bottlenecks in connectivity with railway wagons, optimal coordination and collaboration between the warehousing and transport functions.

According to a QBIS report, NhavaSheva port alone can help importers save Rs 17 billion (US\$ 228 Mn) through digitisation, and a country-wide digitisation can help save Rs 65 Bn (US\$ 872 Mn) annually. It must however be said to the credit of the government that infrastructure and those things are improving very rapidly in the recent past with great expectations for future!

There is an inevitable, extensive usage of trade policy instruments such as tariffs, export restrictions, export taxes, anti-dumping duties, and import licensing, much of which however needs to be operationally eased with digitalisation, artificial intelligence and newer technologies. Tariffs, restrictions, and strict regulatory compliances adds to the cholesterol in India's trade policy, adding to avoidable costs and delays.

The onset of COVID-19 has only exacerbated

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these cracks in India's logistics system. With lockdowns and mobility restrictions, the pandemic has impacted key functions of warehousing and transportation, highlighting India's overstrained highways and severe shortage of skilled manpower.

The disruption of the COVID-19 crisis exemplifies the need for structural reforms to make logistics more formal and streamlined. The pandemic has made the shift to a more formal, technologically capable logistical framework a necessity for the survival of smaller businesses, not merely a competitive advantage. But most of the small, informal logistics players in the country's supply chains are not equipped for this rapid technological change. Focus also needs to be given to skill

upgradation of the work force in the logistics sector, especially in critical segments and strategic geographical locations. Adapting innovations such as AI and cloud computing can add efficiency and value to each step of the logistics value chain.

The Indian logistics sector provides livelihood to more than 22 million people and increasing the scope in distribution and production activities has the potential to unlock abundant employment opportunities in the overall logistics and transportation. Overcoming the problem of allocating capacities and distribution of facilities across regions are imperative to help India's economy chart a faster post-covid road to efficiencies.

Ecommerce operations also bring economic development and fuel the growth of ancillary businesses such as packaging, transportation, logistics, and hospitality across the country. The big players like Amazon and Walmart-Flipkart with their commitments to speed up exports from India, using their logistics at both ends, can help MSMEs, artisans and craftsmen from across Bharat access global markets. There could

be specific linkages with schemes like "One district one product" in policy matrix.

The government must consider a holistic approach mirroring global transformation for trade through digitisation while also working toward reducing compliances to enhance freight efficiency and secure lower logistics costs. A more conducive investment climate with better logistics can result in a 10 % decrease in indirect logistics cost, leading to the growth of 5 to 8% in Indian exports.

The FTP must take into consideration both domestic and international complexities and include a sustainable policy regime where digital tools can be harnessed to add value to every step of the logistics value chain.

A successful logistics sector may not only bring more jobs but also economic prosperity. Hence, any provisions made must also be cognizant of small logistic businesses and associated rules, procedures and incentives for exports and imports with other initiatives such as Make in India, Digital India, and Skill India.

The upcoming FTP should rapidly roll out the policy so that it can help Indian exporters regain their competitive edge in global markets. A weak logistics infrastructure and operational processes can be a major obstacle to global trade integration. Hence, there is a crucial need to develop action-specific plans that works toward diversifying India's exports and strengthening the governance framework for India's compatibility with the global trade system.

The upcoming FTP can play a vital role in making India a competitive exporter, by mobilising international investment to boost India's trade competitiveness and pave the way for India to become a logistics hub.

Source: TOI



## CUTTING-EDGE TECHNOLOGY CHANGING DYNAMICS OF WAREHOUSING, E-COMMERCE

**AUTHORED BY KHURSHEEDALAM  
CO-FOUNDER, ATMOS SYSTEMS**

**N**owadays, people prefer to place their orders, from grocery to stationery, from clothes to gizmos, from electronics to decorative items, from books to toys, mostly through e-commerce platforms or specific websites of the vendors in case of D2C brands. While earlier a delivery took anything between 7-10 days, today there are portals claiming delivery as quick as ten minutes while overnight deliveries or same day deliveries are the new normal. As end consumers, we only enjoy the perks that technology offers, without really realizing how much things have evolved over the past few years.

Earlier, the delivery happened with manual inventories. But today, technology has changed the dynamics of the warehouses. Digitizing the data management system through Warehouse Management System (WMS) has been a crucial factor in ensuring that e-commerce portals are able to deliver quickly and track the deliveries as well.

Such software allows the companies to track the goods in stock, the ones that are hot sellers and need to be restocked again, as well as the ones that are slow in terms of sales. Then they track the order right from the time the order is placed to the time it reaches the customer. The software directs the order to the nearest warehouses. This leads to quick delivery for the customer, but also savings on cargo charges as the travel distance has been cut short, all thanks to technology.

ASRS or Automated Storage and Retrieval System, AGV or Automated Guided Vehicles, smart conveyors, a robust sorting and segregation system, robotic palletization are the crux of a smart warehouse, allowing it to

function to its full capability. Thus, when you think of automating a warehouse with the help of technology, there are various steps that need to be considered, and a solution for every problem is available in the market today.

In recent times, the warehouses have had a great facelift. Gone are the days when labourers manually loaded and unloaded the cargo, packed, and sorted it for delivery. The conveyor systems have eased the process of carrying the cargo manually.

Automating warehouses helps in reducing the operating costs, lowering the labour charges, and allows inventory transparency. Today many big and small warehouses are looking for automating warehouse solutions and we provide them with customised solutions according to their needs.

It is one time investment that pays back in the short term as well as long term. Allowing maintenance of records and understanding the pattern and requirement of bulk orders vis a vis storage, segregation, inbound and outbound transit of goods. It leads to faster delivery, minimal damage, zero errors, and neat and clean warehouse records of the available stock.

It is the era of technology, and one must leverage it adequately to increase work output, thereby manifesting that the system is working efficiently. With new innovations constantly happening, one can expect greater things from this industry.

Source: [cargotalk.in](http://cargotalk.in)

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## DECENTRALISE WAREHOUSE TO STREAMLINE BUSINESS

**MANSINGH JASWAL**  
DIRECTOR, GENEX LOGISTICS

**D**ecentralisation of warehousing network can be a game changer as it becomes an important part of business continuity plan. **Mansingh Jaswal**, Director, Genex Logistics stresses on rethinking the supply chain network and including the spreading out of their inventories to a decentralised network in a strategic way.

Business models are highly irreversible; they cannot be altered every day. Likewise, the basic supply chain models aligned to the business model cannot be changed abruptly and frequently. A business model coupled with the right supply chain model forms an integral part of the success story and these also form key part of the business continuity plans of organisations.

The warehouse network design or warehouse configurations form the building blocks of a successful supply chain model is generally seen as either centralised (Figure A), wherein all products are shipped from one primary location, or decentralised (Figure B), which shows a method of maintaining several smaller warehouses spread out to different areas in order to better serve different markets or stocking different products.

Each method has its own advantages and disadvantages. Centralised warehousing rests on the premise of reduced operating cost, enhanced customer service but it also faces increased shipping cost and lack of addressing emergencies. On the other hand, decentralised warehousing builds its premise on enhanced speed to the customer with faster deliveries and positive impact on sales. It potentially increases the overall operating cost of supply chain.

While no single rule of storage and distribution fits all the organisations alike, the

perception of a decentralised warehouse set-up increasing overheads and complexity has driven companies to bring resources into a central location. Further, the recent regulatory changes like implementation of GST and improved transport infrastructure etc. was tilting the action towards centralisation of warehouses.

However, COVID-19 crisis has caught the centralised warehousing model off-guard for being absolutely incapable of addressing emergencies. The crisis has also resulted in recognising the warehouses as key part of the business models and warehouse workers along with the delivery and retail workers as key workers. Occurrences such as these would shift the balance of supply chain models towards a decentralised warehouse system. This further gets reinforced by the fact that with technology at the helm of affairs and the rise of robust data collection and integration tools, the perceived challenges associated with warehouse decentralisation are almost eliminated. This shall give organisations an opportunity to rethink their supply chain network and include the spreading out of their inventories to a decentralised network in a strategic way.

Further, as the events unfold, the structure of the distribution model is likely to change further as the buying behaviours of the consumers is changing due to a host of factors including technology, e-commerce and now COVID-19. In the emerging context, it would not be unfair to say that you may have the best product in the world, but if you can't seamlessly distribute it to consumers, you're already behind.

Source: [cargotalk.in](http://cargotalk.in)

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# INCREASING DEMAND FOR WAREHOUSING AND LOGISTICS SPACES IN POST-LOCKDOWN INDIA

*According to experts, warehousing and logistics spaces will bounce back the strongest in the post-lockdown period.*

**RHITIMAN MAJUMDER, CO-FOUNDER AND CEO, Pickrr.com**

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**T**he warehousing industry has seen a solid growth pattern with demand increasing by 87 per cent in 2017 and 77 per cent in 2018. The demand further increased well in 2019 and in the beginning of 2020. However, a global pandemic followed by nationwide lockdown brought many industries and activities to a halt.

The global outbreak of coronavirus has given a new direction to consumerism. People are willingly moving to ecommerce and there is a growing adaption of omnichannel distribution by many companies. To prop the business up, these organizations are finding better alternatives to overcome the increased demand in the best possible manner. They are working on increasing their workforce to fill in the gaps. But most of all, the need for warehousing and logistic spaces is growing now than ever before. With this increased demand, empty retail and wholesale spaces could expect to be renovated as warehousing and logistics spaces.

Warehouses are, as of now, confined to a state's borders and far away from their customer base. With social distancing becoming the new normal in a post lockdown world, people will be more inclined towards the need for online deliveries of essential as well as non-essential items. Thus, retailers will have to make sure their warehousing area are closer to their customers prompting faster deliveries. This might give the necessary nudge to the whole micro warehousing industry, that has been around the corner but has not taken off, especially in India.

## ADVERTISING

According to experts, warehousing and logistics spaces will bounce back the strongest in the post-lockdown period. In order to understand why there will be a shift in the most robust real estate vertical of India, read on further.

### **The future is promising for the warehousing and logistics industry.**

Ecommerce space is in its fullest form right now with everything accessible is just one tap on your cell phone. The growing demand for warehousing and logistics spaces to store large quantities of essential items is noticeable, particularly in a country like India. In fact, this is just the beginning. The demand for more such spaces is going to increase in the coming years as experts have put it, 'the logistics and warehousing sector of India's retail space is going to get bigger in 2020 and afar.'

Warehousing in India is gradually turning into a well set up segment with probably the greatest land engineers, financial specialists becoming a part of this. Warehousing real estate of India seem to become the next massive wave of expansion with major brands and real estate investors taking interest in this fragment for profitability. A vast majority of the Indian real estate sector believes that warehousing and logistics spaces will attract a lot of business.

Source: entrepreneur.com

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# INDIA'S WAREHOUSING SECTOR CHECKS INTO THE FAST LANE

LAKSHMI AJAY, ASSOCIATE EDITOR  
STAT MEDIA GROUP

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**B**uoyed by the e-commerce sector and the growth of the Indian industry, warehousing in India has undergone a metamorphosis. With technological advancements, consolidation, government support, newer business models, and investment coming into the space post the pandemic, the sector may well be set for a dream run for the next five years.

Warehousing is a crucial part of the supply chain for businesses that are engaged in manufacturing, importing, exporting, and transporting of physical goods. From being mere holding places of stock or low-grade godowns, warehouses have metamorphosed into smart buildings replete with insulation, ventilation, climate-proofing, surveillance and standard safety procedures, and IT infrastructure.

From a largely unorganized, asset-heavy industry, warehousing has also undergone an evolution in India, especially after a multitude of factors like the expansion of pharmaceutical, e-commerce, and manufacturing sectors. Some growth can also be attributed to favorable government policies in recent years and an increase in the spate of institutional investments.

However, the unavailability of land, the high acquisition cost for land, and the lack of adequate warehouse infrastructure in the country are some drawbacks apart from the perennial power shortage crisis in India. As the industry expands, its growth is also set to be propelled by technological advancements like automation, robotics, and digitization. Incidentally, the Coronavirus pandemic which broke out in 2020 has only managed to accelerate the pace of development, investments, and technological advancement in the warehousing sector. However, Covid-19 and the resulting global supply chain crisis and fuel prices which impacted industries across the world have also caused a significant shift in construction costs, resulting in slightly higher material costs and supply chain disruptions leading to an increase in costs.

The pandemic and the ensuing e-commerce wave

which made consumers move towards online shopping from discretionary to essentials ensured that warehousing and logistics emerged as the most preferred real estate asset class for institutional investors who chose them over commercial office segments that were traditionally more favored. Up until 2020, the warehousing market in India was valued at Rs 1050 billion in 2020. The segment reportedly attracted an all-time high of \$743 million (more than Rs 5,500 crore) in investments, accounting for more than half of the \$1.36 billion attracted during the second quarter of 2021.

## BY THE NUMBERS

Global property consultancy Knight Frank India in their India Warehousing Market Report 2021 estimated that the annual warehousing transactions for the top eight Indian cities (primary markets) will grow at a compound annual growth rate (CAGR) of 19% to 76.2 mnsqft (7.08 mnsq m) by the financial year (FY) 2026 from 31.7 mnsqft (2.95 mnsq m) in FY 2021. As per the projections shared by the consultancy for the next 5 years (FY 2022 – FY 2026), the e-commerce segment is expected to take up significant space estimated to be 98 mnsqft (9.1 mnsq m) approximately registering an increase of 165% from the preceding period of FY 2017 – 2021.

Third-Party Logistics (3PL) and other sector companies are expected to take up 56% (83 mnsqft) and 43% (53 mnsqft) more space respectively, over the same reference period. While the warehousing industry in India is currently centered around Tier-1 cities like Mumbai, Kolkata, Bengaluru, Chennai, Delhi-NCR, Pune, and Hyderabad but with rising demand from e-commerce and quick commerce, it looks like tier 2 and 3 cities are also seeing some of this growth now. As per the report, warehousing demand in secondary markets has grown 31 percent y-o-y compared to a 23 percent y-o-y de-growth for primary markets, in FY 2021. Among the secondary markets, Indore and Jaipur noted exponential growth of 306 percent and 219 percent respectively in FY 2021.

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A significant development in the April-June 2021 period was the \$700 million deal in May when private equity major Blackstone announced the acquisition of Embassy Industrial Parks, a JV of Warburg Pincus and Embassy that controls 22 million sqft of Grade-A warehousing in major industrial hubs including Bangalore and Delhi. Earlier this April, FM Logistic, a French third-party logistics (3PL) company, opened its first owned multi-client facility in Farrukhnagar, Haryana, which is part of the \$150 million investment plan it announced in March 2019. Later in May 2022, leading Indian real estate developer Lodha announced a \$1 billion 'Green Digital Infrastructure Partnership' with real estate industry leader Ivanhoe Cambridge and global private investment firm Bain Capital. Their first project is a 110-acre logistics and industrial park development at Palava, Mumbai.

### **EMERGING TRENDS IN WAREHOUSING SPURT IN GRADE A FACILITIES**

In its April report earlier this year, Savills India estimated that in the first quarter of 2022, Mumbai and Kolkata witnessed the highest construction costs at Rs 2,115 per sq. ft. for grade-A warehousing space and Rs 3,295 per sq. ft. for a general manufacturing facility. This was followed by Pune which saw the costs at Rs 2,100 and Rs 3,265 per sq. ft. respectively. Construction costs have increased due to rising material prices such as crude oil, steel, aluminum, cement, labour, equipment rental costs, and costs of plumbing and fixtures. Additionally, Covid-19 has caused a significant shift in construction costs, resulting in slightly higher material costs and supply chain disruptions. When compared to its international counterparts, general manufacturing in Indian cities range from \$ 453- \$465 per sq. m whereas for Grade-A warehousing it ranges from \$291-\$299 per sq. m as of Q1 2022.

"The government is also planning to introduce a warehousing policy to help ease transportation and logistics costs. It aims to lay the roadmap for developing exclusive warehousing zones through public-private partnerships." Sundaresan Vaidyanathan, Welspun One Logistics Parks Srinivas N, Managing Director, Industrial and Logistics, Savills India said in a release, "Industrial and warehousing is one of the most resilient segments in India. The demand for industrial and warehousing facilities is expected to remain unscathed in the long term. We expect construction costs for industrial and warehousing projects to increase in 2022. However, the magnitude of growth is dependent on material costs, labour, equipment rental costs, interest rates,

and other related costs."

### **ON-DEMAND WAREHOUSING**

With India's warehousing sector gradually picking up pace with massive investments, the on-demand warehousing segment seems to be growing. "Everyone is moving to the D2C model and to facilitate quick deliveries, on-demand warehousing is a must. To facilitate the consumers on time or rather before time, everyone has started adopting micro warehousing models too," Harshad Vagdoda, Head of Innovations & New Engineering, Vinculum Group told Indian Transport & Logistics News (ITLN).

There is a move towards built to suit model of warehouses says Abhijit Verma, Executive Director and CEO of Avigna Group who told ITLN, "The changing technical specifications of the client, be it in the size of the boxes due to increasing total square feet requirement from 40K on an average up to 8 lakh square feet or the height requirements changing from 8 meters to 14 meters are some of the reasons for the insistent demands towards the creation of a more 'built-to-suit' model of warehouses from the previous ready-to-move models are some of the big changes at the top of my mind."

Varun Gada, Director of Contract Logistics at the Liladhar Pasoo (LP) Group told ITLN, "E-commerce majorly supported the metros during the pandemic and during that time a lot of start-ups like Zepto, PharmEasy grew along with the advent of many dark stores. The backbone of everyone's operations is the warehouse and these players are investing a lot into automation and robotics because they need to process a large number of orders and a smaller number of orders in lesser time. And they have the deep pockets to fund the entire automation and still work at a nominal fee to acquire market share. Most of these are also asset-light as they need to keep moving their warehouses on the basis of demand."

"Everyone is moving to the D2C model and to facilitate quick deliveries, on-demand warehousing is a must. To facilitate the consumers on time or rather before time, everyone has started adopting micro warehousing models too." Harshad Vagdoda, Vinculum Group

### **PUSH FOR 3PL WAREHOUSING**

The 3PL sector is likely to retain a large market share even as e-commerce and other sectors continue to outsource their warehousing and logistics requirements to them.

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Ronak Shah, Executive Director, V-Trans (India) Ltd., V-Trans(India) said, "Companies are now focusing on core business products to regain the economic dip they faced and are preferring to outsource warehousing operations. This will create a huge opportunity for third-party logistics (3PL) companies that can provide them with complete logistics solutions and the scale to grow. The uncertainty due to the Covid-19 pandemic and the focus of companies on regaining the market will further push the development of the 3PL segment. The development of outsourcing will result in increased demand and growth for the warehousing industry.

" IoT, ROBOTICS, AND AUTOMATION The warehousing industry holds immense potential for adopting the Internet of Things (IoT), robotics, and artificial intelligence (AI) driven automation, and most businesses in warehousing and logistics are looking to grow by harnessing these new technologies. Shah added, "Self-governing vehicles, warehouse industrialization, predictive analytics, and smart roads are all examples of technologies that are becoming the new norm in today's world." The creation of 'smart sectors' where storage, processes, and operations would be done with higher accuracy, shorter time span, and lesser to no hazardous incidents, all adapting to the consistently changing demands and environment is slowly gaining traction. This has led to a spate of Indian and global start-ups that specialize in the implementation of the very technologies of drones and robotics in the warehousing sector and heavy investments are flowing into the implementation of automation through AI and robotics in India. Verma told ITLN "The incorporation of RFID, GPS, IoT, automated monitoring systems along with Co-robotics or collaborative robots with human intervention and the surging use and implementation of autonomous robotics, have contributed to the agility and efficiency of work in the warehouse, logistics, and supply chain management. We can also imply that digitalization and automation of processes and operations kept the industry safe from the impact of the pandemic, which despite witnessing restrictions be it in terms of supply chain or operations could still deliver and also recover, thereby establishing fulfillment of the prime objectives of technology that is speed, span, and scope." The implementation of automation and robotics is imperative for the future of the supply chain and especially in a post-pandemic 'Just in case' world. Companies are increasingly trying to strike a healthy balance between automation and manual

intervention not only in terms of operations but also in warehouse management. GubbaKiran, CEO of GubbaPharma Cold Storage said, "Gubba has already finalized its investments for Automated Storage and Retrieval Systems in its food and pharma facilities. By December 2022, our warehouses will be more than semi-automated. We are on the path to bringing world-class innovations to our facilities. We will incorporate a barcoding system for elevating the levels of accuracy in inventory, our ERP system is getting upgraded, and we are talking about IoT and a lot more." "We can also imply that digitalisation and automation of processes and operations kept the industry safe from the impact of the pandemic, which despite witnessing restrictions be it in terms of supply chain or operations could still deliver and also recover."Abhijit Verma, Avigna Group  
**MULTIMODAL PARKS - NEXT BEST THING?** Multimodal parks provide a real big opportunity for warehouse developers as the volumes at these parks are going to be huge, and efficiency and technology support will enable better services. Planned infrastructure projects alongside multimodal logistics parks would help secure a drop in logistics costs from the current 14% to about 9%, observes SundaresanVaidyanathan, the Chief Investment Officer, Welspun One Logistics Parks.

**POLICY SUPPORT** In recent years we have seen a surge in infrastructure development through budget allocation as well as through private and foreign investments. As per Knight Frank's Warehousing Market Report, Indian Logistics' cost percentage of its GDP is nearly double the logistics cost of developed countries. The lack of efficient intermodal and multimodal transport systems could be considered a major attributor to the same. Therefore many industry players believe that the Indian government is working extensively to enhance the country's infrastructure, as it aims to reduce the logistics cost to less than 10% of its GDP, through various policy and project implementations. "Lack of efficient intermodal and multimodal transport system could be considered a major attributor to the same. Some of the notable mentions are the National Logistics Parks Policy, the inclusion of the logistics sector under Infrastructure by the Government, Bharatmala and the Sagarmala Project, Gati Shakti-National Modal Plan for Multi-modal Connectivity, Delhi- Mumbai Express Highway, Dedicated Freight Corridors, Sanctioning of REITs, Establishment of Goods and Services Tax and Make in India Initiative to name a few. The creation and development of industrial corridors, port and road



infrastructure, multi-modal connectivity, support through various initiatives, and digitalization are expected to attract better investments, improved quality of assets, cold storage, connectivity among major cities and industrial corridors, reducing logistic costs, time to travel, improved last-mile connectivity thereby making Indian business more attractive and competitive. The impact would not only benefit a single or related sector but would also affect and benefit multiple sectors," Verma tells ITLN. "Everyone is moving to the D2C model and to facilitate quick deliveries, on-demand warehousing is a must. To facilitate the consumers on time or rather before time, everyone has started adopting micro warehousing models too." Harshad Vagdoda, Vinculum Group Apart from systematic reforms like implementation of the GST and accordance of infrastructure status to the sector, it is going through many positive changes. On the policy front, there have been multiple reforms aimed toward infrastructure development by the government, which is slated to work well for the sector Sundaresan Vaidyanathan told ITLN, "New programmes like Bharatmala and Sagarmala are some of the classic examples of the government spending on infrastructure projects. The government is also planning to introduce a warehousing policy to help ease transportation and logistics costs. It aims to lay the roadmap for developing exclusive warehousing zones through public-private partnerships." Vaidyanathan added, "We at Welspun One have recently signed an MoU with the Haryana Government with a total investment of Rs 1500 crores in the state and aim to explore the available government land parcel for building Grade A warehousing facilities across key warehousing micro-markets. Last December, we acquired 40 acres of land located on the Malur-Hosur road to set up a large-scale warehousing facility. This is the first of six projects as part of the MoU that we signed with the Government of Tamil Nadu's nodal agency to set up warehousing facilities across the region. The projects to be executed under the MoU are expected to bring indirect investments of approximately Rs 2500 crores to the state." Speaking on the new warehousing policy that is on the anvil, Ronak Shah added, "The idea is to curtail pollution and traffic congestion in major cities. The modern-day warehouses will build cold-storage chains which will be able to store all kinds of cargo. These amenities are estimated to be built in the outskirts of the cities so that large trucks transporting the cargo need not enter the city to unload their goods." NEED FOR SKILLED

WORKFORCE Highlighting the need for a skilled workforce in a modern warehouse, Sanjay Tiwari, Co-founder of 21CC Education told ITLN "Specific product knowledge in warehousing and logistics is of the essence for employees. A box is not a box, i.e. what's inside matters as different products have different handling requirements, scanning requirements, packaging requirements, etc. With the changing and more stringent FSSAI and FDA requirements, it makes it even more important that employees understand what the composition of products is, what their sensitivity to temperature is, etc. The industry is scaling up and specializing at the same time, which is quite a challenge!" "Gubba has already finalised its investments for Automated Storage and Retrieval Systems in its food and pharma facilities. By December 2022, our warehouses will be more than semi-automated." GubbaKiran, CEO GubbaPharma Cold Storage Tiwari added, "We can help to close the skill gap by working directly with warehouse employees to skill them by using our digital platform. 21CC Education, in a tie-up with IndoSpace, has signed up more than thirty warehousing and distribution companies in Chennai, Bangalore, Mumbai, and Haryana, with a total of 7,500 employees. The 21CC content is being used to educate the frontline / blue-collar workers on the basics of logistics. We are helping DB Schenker do the on-boarding of all their new employees, using our app and content as well as DB Schenker's "day zero" module called 'Samvardhan'."

<https://www.itln.in/logistics/indias-warehousing-sector-checks-into-the-fast-lane-1345478>

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<https://www.itln.in/logistics/indias-warehousing-sector-checks-into-the-fast-lane-1345478>

Source : ITLN

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# IS OUR NATION READY FOR INDUSTRY 4.0?

**SURJITH KARTHIKEYAN**  
**DEPUTY SECRETARY, MINISTRY OF FINANCE**

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In spite of low automation and a young workforce, absolute job losses will be the second highest in the world due to the Fourth Industrial Revolution.

The Fourth Industrial Revolution (4IR) or Globalisation 4.0/Industry 4.0 is formed by technologies such as artificial intelligence, machine learning and the internet of things (World Economic Forum). It has multidimensional aspects such as social, economic, political and cultural upheavals and may unfold over the course of modern times. This is indeed a continuation of widespread digital technologies available as a result of the third industrial revolution.

This was preceded by the second one, the use of electric power for mass production, which lasted till 1920, and the first industrial revolution, wherein water and steam were a source of power. Globally, though the quality of life and global income levels have improved along with a reduction in cost of essential services and increase in overall productivity and efficiency, inequality with low-skill, low-pay and high-skill, high-pay segments prevailed leading to social tensions. The 4IR may further fuel supply-side miracles as above, paving the way for new avenues in economic growth, supported by the internet of things as a whole new experience of inter connectedness.

As these revolutions have their own potential opportunities and challenges, it may be interesting to explore how governments the world over are exploring the 4IR.

Japan has initiated the concept of "Society 5.0" or a super-smart society wherein one can resolve various social challenges by incorporating the innovations of the 4IR. The emphasis is on "sustainable and inclusive socio-economic systems" to be realised by digitalisation.

The internet of things, robots, artificial intelligence, big data, etc., will solve problems of ageing society, depopulation in regions, income inequality and so on, and people can focus more on creative work with full use of the five senses, collaboration and knowledge sharing. Germany, an European example where at present more than 15 million of the country's population depends on the manufacturing sector, had planned to build on its international competitiveness to explore the enormous potential of 4IR to become the leading factory-equipment supplier.

'Platform Industrie 4.0' was constituted in this regard with the involvement of 300 stakeholders from 159

organisations. Estonia, the most advanced digital society in the world, on the other hand, focuses on Industry 4.0 solutions development, specialising in helping electronics manufacturers and adopting a real-time factory approach.

Japan has formulated an act on special measures for productivity improvement wherein regulatory sandbox, promotion of industrial data utilisation, etc., are covered. Tax reduction on capital investment by Small and Medium Enterprises (SMEs) and companies actively investing in equipment and IT is another broad measure. This is coupled with subsidies for manufacturing and service of SMEs and promotion of regulatory reforms such as the "system improvements of self-driving cars". Regulatory reforms for digital platform businesses, promoting investment in infrastructure systems and technology, and partnership with private sector and academics for creating innovation are the key issues being addressed in this context. The challenges listed by Japan in this regard include concerns of "digital autocracy", influence and innovative power of social media, cybersecurity, and analysis and strategy for future unemployment figures, estimated to be around 2.4 million.

How is India placed? What are the opportunities and threats? Studies conducted by the World Bank, Oxford University, etc. on the relative global positioning of our country in the 4IR reveal that India is lagging in technology integration and adequate capital investment needed. In spite of low automation and a young workforce, absolute job losses will be the second highest in the world due to 4IR. Thus, without technology integration, India may lag in productivity as is expected to be achieved through 4IR.

India may be adding 138 million new workers in its workforce in due course, which is likely the highest in the world, and it may be a challenge to step up its growth rate to compensate for both high job loss and high incremental workforce. If the country has to grow, it may have to invest heavily in adoption of new technology and reskilling/redeployment of a large share of its current workforce.

The threats for India in the Fourth Industrial Revolution may be that the shift of manufacturing towards consumption centres may shrink the net exports, resulting in huge job losses in the manufacturing sector. Machine learning and AI may wipe out most of human analytics and programming-based high-end outsourcing jobs in India known as Knowledge Process Outsourcing.

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However, the opportunities for India in the 4IR is that the huge middle class and working class may be sustaining consumption-based growth for many decades. Lower taxation rates in India due to a low-dependency economy may be making it an attractive choice for foreign investment.

The government has already started the “Make in India” project, which may modernise the design and fabrication process in our manufacturing industry, keeping the requirements of 4IR. The government’s Smart Cities project, when revolutionised with the internet of things, can enable all appliances to be connected through a network, and services will be delivered through automation. The cities that are selected strategically for this project may allow equitable distribution across the country.

Way forward: The broad challenges of 4IR globally include loss of jobs due to advanced technology, loss of privacy, digital environment footprint, inequality due to haphazard economic development, fast spread of fake news and related issues.

So it is imperative for jurisdictions to continuously adapt to a new, fast-changing environment to understand what they are regulating and to be more transparent in public engagement and policymaking. The countries also need commitment to upskill the labour force in digital technology and to look at the changing threats to national and international security.

**(Views are personal)**

Source: [www.newindianexpress.com](http://www.newindianexpress.com)

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## HOW WAREHOUSES IN INDIA ARE KEEPING UP WITH THE INCREASED E-COMMERCE DEMAND?

NAVNEEL, FEATURES WRITER

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***Increased e-commerce adoption, need for faster deliveries and outsourcing of operations have increased the possibilities of growth in the warehousing sector***

In the pre-festive period, it was predicted that the demand for warehousing was going to grow owing to the increased demand through e-commerce. It has been observed that more people, even from Tier II and Tier III cities, are using online shopping as compared to the pre-pandemic period. Consequently, the warehousing companies should be getting increased demands, particularly leading up to the ongoing festive period.

Warehousing and logistics firm Shiprocket which only works with e-commerce firms has reported gaining a steady growth path, and on the warehousing side, they were able to double the business in the festive rush over the last few months.

“People are now being more and more conscious about the speed of delivery,” VisheshKhurana, Co-founder, Shiprocket said. In fact, the company, which currently has about

13 warehouses across the country, wants to set up 400-500 city-centric smaller warehouses, which will accelerate the speed of delivery.

“Outsourcing of operations will become pretty much standard – brands will decide not to own warehouses separately to execute it cost-effectively,” Khurana further added. The outsourcing of warehousing operations is also known as on-demand warehousing.

Along with that, another major trend that we see is enterprises preferring distributive warehousing where they want their inventory to be stored in 3, 4, or 5 locations across India for seamless delivery.

**Warehouses** are the storehouses that businesses use to store, manage, and track products that are yet to be shipped to customers. Traditional warehouses generally take more time and are difficult to execute. The demand for outsourcing and the better speed of delivery has led to newer categories in warehousing: distributive warehousing, on-demand warehousing, etc., Though these new-age warehousing options have only been

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explored by a few players, experts believe they will be in high demand in the upcoming years.

Warehousing Express, Stock Area, Boxmyspace, etc. are a few of the firms that are involved with on-demand warehousing. Distributive warehousing is a larger category of warehousing designed to service goods nearing the end of the supply chain. The sector however is mostly captured by major players like DHL Express, Gati, Snowman Logistics, and Mahindra Logistics, etc.

The current **warehousing** market in India was valued at Rs. 1,050 bn in 2020 is now expected to expand at a CAGR of 15 percent till 2025.

### Need For Integration

Given the fact that a firm selling goods online may be using multiple warehousing services, the challenge is to integrate all the warehouses on a single platform and allow sellers to have investor visibility across multiple warehouses, else working with multiple warehousing firms will turn out to be a cost-ineffective option. This is where players like technology solutions providers like Unicommerce, Zoho inventory, VineRetail, etc. come in. They play an instrumental role in the overall growth in the warehousing space.

“Over the last year with increasing e-commerce adoption, we have seen companies strengthening their supply chain with multi-warehouse operations to efficiently meet the rising consumer demand across the country,” said Kapil Makhija, CEO, Unicommerce. “Companies are investing in technology that can automate all the crucial tasks of warehouses and allow them to ensure fast and error-free deliveries.”

The rising demand is also leading to rising consumer expectations, which suggests that the supply-chain and warehouse need to be more responsive and should be able to solve sector-specific problems. Also, new sectors such as home decor, pharmaceutical and nutraceutical, FMCG, Beauty, and personal care are emerging in the industry and this creates a need for more holistic warehousing solutions, that can solve sector-specific problems.

“Companies that are structured to handle big warehouses will also set up small warehouses. We will also see companies adopting a hybrid model where they leverage fulfillment providers and also have their own supply chain. The warehouses will be more automated than ever before,” Makhija further said.

### Role Of Investors

Earlier, warehousing was seen as just another business process, but now it has become an integral part of a company's value chain and has attained a life of its own. This begs investments in this space so that further growth is possible.

Earlier this year, industrial real estate platform Welspun One Logistics Parks has introduced India's maiden **warehousing** AIF (Alternate Investment Fund) exclusively for domestic investors, who can directly invest in warehouses. The Rs. 500-crore fund was launched in January 2021, followed by a strong first close of over 60 percent, which the company is set to close. Through this AIF, the investor can reap the benefits of the returns by owning units of a fund, instead of an asset.

In fact, the warehousing segment has received a record Rs. 5,500 crore from investors in Q2 2021, making it the most active quarter for the sector in the last couple of years. The major one is the \$700 million Blackstone deal with Embassy Industrial Parks. Such developments only suggest a boom that is awaiting the segment.

“Last year we launched our flagship 110-acre, Grade-A warehousing park in Bhiwandi - a key warehousing market in Mumbai Metropolitan Region (MMR), India's largest consumption center. Recently, we have forayed into North India by acquiring spaces in Lucknow in Uttar Pradesh and Farukhnagar in Haryana,” said Anshul Singh, Managing Director, Welspun One Logistics Parks.

The sector is likely to see such expansion from other warehousing players in the field.

Source: [www.indianretailer.com](http://www.indianretailer.com)

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# THE GROWTH OF WAREHOUSING MARKET IN INDIA

KENISH SHAH, CO-FOUNDER, PROP RETURNS

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## Warehousing spaces are in demand post-pandemic, and the industry has emerged as a resilient asset class

The Indian warehousing market has garnered attention from global and domestic institutional investors over the years. In recent times, it has been on a high growth trajectory. Since the outbreak of COVID-19, the usage of **warehousing facilities** by e-commerce platforms has risen sharply as demand for goods has been at an unprecedented high, boosting the e-commerce market and warehousing space requirements alike. The organised food delivery segment has also grown because of the pandemic, augmenting cold chain warehousing space requirement. As a result, the warehousing industry has emerged as a resilient asset class and continues to show an uptrend within the real estate sector. A lot of capital is allocated to the technological infrastructure of the warehouse, to ensure automation and efficient operations.

Warehouse construction costs are much lower. As a result, the asset is a more affordable choice in the domain of commercial real estate. The occupancy rate for warehouses is also high because of their low cost. The tenants of a warehouse typically spend around nine to 15 years compared to commercial office leases, which have a lock-in period of around three to five years. A warehouse investment is, therefore, more reliable and stable.

**E-commerce expansion :** The warehousing market in India is expected to grow to ₹ 2243.79 billion by 2026, expanding at a CAGR of 10.90%, as per the Warehousing Market in India 2022 Report published by Netscribes (India) Pvt Ltd.

The Indian **e-commerce industry** is playing a major role in this growth. Due to the pandemic-induced lockdowns, consumers started to rely on e-commerce players for the delivery of food and grocery items.

There was more focus on the same-day delivery model. Consequently, e-commerce companies are trying to stock more inventories closer to customers' locations to improve the quality of products upon delivery, and optimise efficiency. This, in turn, increases their demand for warehousing in tier-1 and tier-2 cities.

**3PL revolution :** The growth of third-party logistics is the second-largest incentive causing the rise in demand for warehouses. In 2021, the 3PL (third-party logistics) sector acquired the maximum warehousing space, succeeded by e-commerce. Due to increasing Foreign Direct Investments and relaxed policy reforms, the agriculture and manufacturing sectors will continue to increase 3PL warehousing demand. The newer industries like e-commerce with 30 minutes and 10 minutes deliveries in the last-mile segment,

telecommunications, healthcare, and IT will be other stronger driving forces for 3PL warehousing.

Warehouse construction costs are much lower. As a result, the asset is a more affordable choice in the domain of commercial real estate.

After the government introduced the Production Linked Incentive (PLI) scheme, many sectors, including food processing, mobile devices, pharmaceuticals, and automobile components, poured large investments into setting up manufacturing plants in India. The country's 'Make in India', 'Atmanirbhar Bharat', and 'Vocal for Local' campaigns have also led to a positive response with a rise in demand. Moreover, the government's Bharatmala Project focuses on establishing 35 multimodal logistics parks throughout the country, with four proposed for development in Maharashtra under the Public-Private Partnership. Such a mix of logistics operations is expected to boost the logistics and warehouse operations in the country.

**Reforms and logistics :** In addition, with India's significant policy changes, the interest of foreign investors to increase their footprint in the country by way of investments in the warehousing and logistics sectors has witnessed an uptick. Systematic reforms such as the introduction of goods and services tax (GST), tax benefits to FDI investments, interest rate cuts, and corporate tax reforms have made investors keen to explore the new industrial asset class. A minimum investment of ₹ 2 crores is needed. Investors can buy standalone warehouses, which require higher capital allocation. They can also buy units/galas, which are demarcated areas of the warehouse (lower ticket size option).

The industrial and warehouse real estate market in India is witnessing a steady growth and expansion and this is likely to continue. The investment is more stable in terms of the consistency of rental as opposed to office spaces. Considering the potential of online sales, many businesses are switching to omnichannel business models and scrambling for additional warehouse capacity across cities. 3PL, the government's tax benefits to FDI investments, the growth potential of e-commerce, and India's cost advantage are all driving forces attracting a sizable foreign investment into the logistics, manufacturing, and warehousing sectors.

However, whether a warehouse investment is good or bad depends on its location, the economy, the real estate investor's capacity and risk appetite.

Real estate investors who are confident in their investment should opt for direct warehouse purchases.

Source: [www.thehindu.com](http://www.thehindu.com)

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# THE IMPORTANCE OF WAREHOUSING IN A LOGISTICS SYSTEM

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**W**arehousing is a requirement for most businesses that manufacture, import, export or transport goods. You might see it as an unnecessary expense, but it can actually **save you money and boost your productivity**. The customer journey doesn't end when an order is placed. A warehouse gives you better control over your inventory and ensures that customers will receive their products on time, which ultimately leads to higher profits.

**Better Inventory Management** : Approximately 8 percent of small businesses don't track their inventory. About 24 percent don't have inventory at all. This often leads to late shipments, delayed order processing and poor customer experience.

Warehouses provide a **centralized location for your goods**, making it easier to track and manage your inventory. By investing in a warehouse, you'll store, ship and distribute products more efficiently. If something is out of stock, you'll know it right away and provide customers with alternative options rather than leaving them waiting for days or weeks.

**More Efficient Packing and Processing** : Most warehouses **provide the equipment and supplies you need** to store, move, package and process orders from customers. Pallet racks, loading docks and packing materials are just a few to mention. This way, you'll have everything in one place, which will save you time and money.

A warehouse enables businesses to pack and grade their goods according to legal requirements and customer needs. The logistical cost is reduced, while flexibility is maximized. This type of facility can be an ideal distribution location, eliminating the need to arrange for pickup and hire employees to manage fulfillment.

**Superior Customer Service** : More than 63 percent of online customers expect to know the estimated or guaranteed delivery time. Approximately 88 percent would pay more for faster delivery. In fact, delivery speed is one of the first things buyers take into consideration when choosing a shipping carrier.

As a business owner, you want to keep your customer satisfied and engaged. If you fail to deliver their orders on time, your reputation will suffer. This can hurt your revenue and brand image.

Warehousing allows for **timely delivery and optimized distribution**, leading to increased labor productivity and greater customer satisfaction. It also **helps reduce errors and damage** in the order fulfillment process. Plus, it prevents your goods from getting lost or stolen during handling.

## Ensure Price Stabilization

The demand for goods and services varies from month to month and year to year, depending on customers' income, government policies, employment rates, climatic conditions and other factors. A warehouse allows you to **store your products for a later date** when the demand is high. This helps ensure price stabilization and reduces revenue losses.

Let's say your company manufactures and distributes sports equipment. If you offer ski accessories, you can store them in your warehouse rather than selling them for next to nothing when the cold season ends. This way, you'll maintain consistent stock levels and maximize your profits.

## Improved Risk Management

Warehousing not only protects against price fluctuations but also **provides safe storage of perishable products**. Depending on your needs and type of business, you can lease a warehouse equipped with refrigerators, freezers and optimal temperature control.

Plants, artwork, candles, food and medications are just a few examples of goods that require cold storage. A warehouse that offers this service will store your goods at the right temperature, preventing spoilage and changes in color and texture. This also helps **extend the product's shelf life** and ensures customer satisfaction.

Additionally, the products stored in warehouses are typically insured. This means that you have **higher chances to receive compensation** from your insurance company in case of damage, fire or theft.

Source: [smallbusiness.chron.com](http://smallbusiness.chron.com)

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# TOP WAREHOUSE MANAGEMENT TRENDS FOR 2022

VINCULUM

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**T**he warehouse management is a critical player in managing the e-commerce business platform diversely. The warehouse management system plays a vital role in enhancing the sales funnel in the market to grab the attention of the vast crowd. The warehouse management keeps track of in and out of the stocks effectively.

Despite the COVID-19 pandemic, the warehouse still prioritizes running the process in a crystal-clear way. Disruption was still a cause, but some of the warehouse trends for 2022 act as a savior to run the process in an advanced course. Opportunities and uncertainties go hand in hand to track the supply chain and warehouse management in one go. With the latest technologies and updated software, the workflow goes in a great way to attract the consumer in a gigantic way.

In this article, the top seven warehouse management trends for 2022 are clubbed up together to understand the system in a magnificent way better.

**Supply chain recovery:** Supply chain management is crucial to managing the process in a widespread manner. The lacking of the process includes shipping challenges, labor shortages, and increased costs. Such issues look into the disruption drastically to manage the supply chain resilience. The need for time is to build the supply chain resilience with solid strategies and plans to manage the component in a great way to look into the supply chain management. The time is to take a step back from the disruption and look into the advanced action to run the process significantly.

To update your supply chain database, you need to have sufficient data to enhance the sales magnificently. With data comes excellent visibility and the right decision-making attitude with an agile approach.

**Artificial Intelligence:** Artificial Intelligence is one of the latest technologies to serve the industrial sector and other sectors significantly. Such technologies are suitable for advancing the e-commerce business market and productively impacting the market. It also plays a vital role in managing the supply chain and warehouse system. AI helps in the decision-making and data analysis of the supply chain management and warehouse optimistically.

**Automation :** Robotic Automation is leading the trend for the advancement of the market in terms of sales and advertisement. The companies are looking to enhance their productivity to deal with supply chain and warehouse management issues appropriately.

Along with the robotic automation, 5G connectivity comes out as the best way to serve the purpose of managing the warehouse in broader terms.

**Cloud-based technologies :** Cloud technologies are making their way to improve the e-commerce business model with the advent of digitalization. The hybrid cloud solutions establish the cloud architecture that involves multi-cloud, edge element, cloud, and on-prem.

With the IT work and operational technologies, the cloud-based technologies come into play at an affordable cost. The switch in the technologies helps minimize the data silos that come into the role in supply chain and warehouse operations or systems.

**Big Data :** Data are gathered and stored in the right way to process the work significantly. The productive data helps comprehensively attract the customer to gain momentum in the market. Such a scenario helps in the data visualization prominently.

The proper data collection helps manage the supply chain and warehouse management productively.

**Blockchain :** Blockchain helps in the sustainable growth of the market by managing the transparency and accuracy of the work effectively. Blockchain technologies enhance the supply chain and warehouse management to streamline the workflow in diverse ways.

**Sustainable operations :** The supply chain and warehouse system are on the verge of adopting the latest technologies to sustain well in the market to operate effectively and in a full-fledged way. Sustainable operations are easy to access as it is simple to go through all the processes in a quick way to catch the customer's eyes.

The e-commerce business model is quite a trend in productively managing the warehouse and supply chain operations. It also helps keep track of the inventory, logistics, and product shipping in real-time delivery at the correct address. The business owner uses the newest software or technologies to manage the work accordingly to serve the purpose. The latest technologies or trends that make it more worthy are listed above to fetch the customer's attention in the broader term.

Source: [www.vinculumgroup.com](http://www.vinculumgroup.com)

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## WAREHOUSING IN INDIA - GROWTH FACTORS DRIVING TRANSFORMATION

**ADITYA VAZIRANI, CEO,  
ROBINSONS GLOBAL LOGISTICS SOLUTIONS**

**Traditionally, one of the most ignored sectors in logistics, warehouses today have developed into sophisticated stockrooms with advanced, real-time tracking mechanisms, and other state-of-the-art facilities, which have been instrumental in shaping the modern economy.**

**W**arehousing is an important component of the Logistic value chain and plays a significant role in quality storage of goods and merchandise during the varied stages of transportation. Until a few decades ago, warehouses were mere 'holding' areas, housed in dingy or dilapidated buildings with poor light or ventilation facilities. Since then, warehousing as a sector in India has evolved manifold, with the low-grade godowns being replaced by pre-engineered structures that are insulated, ventilated and climate-proof, with round the clock surveillance, and standard safety procedures.

The Indian warehousing industry, estimated to be worth INR 561 Billion (excluding inventory carrying costs, which amount to another ~INR 4,340 billion) in 2017, is estimated to grow at 9.5% CAGR to reach INR 968 Billion by 2024. Riding high on the structured reforms wave, including the recent infrastructure status granted to logistics, and the implementation of GST, the Indian warehousing and logistics sector is estimated to attract nearly 10 Billion USD investments over the next 4-5 years. With addition of around 200 million sqft warehousing space across India, total supply is expected to nearly double by 2022, estimated JLL India. It accounts for ~5% of the Indian logistics market (excluding inventory carrying costs, which amount to another ~30%).

**Indian Warehouse Market: Growth Drivers**  
Apart from conventional storing services, warehouses in India are now equipped to provide value-added services like consolidation and breaking up of cargo, packaging, labelling, bar coding, reverse logistics, kitting etc. The growth in warehousing in India is primarily being driven by the following factors:

- **Make-In-India:** With the government thrust, there has been an accelerated growth in the manufacturing sector, particularly in areas like Textiles, Pharmaceuticals, Telecommunications, Automobiles and Food and Beverages
- **Enhanced Trade:** Apart from manufacturing, sectors like organized retail, information technology, telecommunications, and healthcare have evolved dramatically over the last few years, driving consumption and thus a strong demand,

leading to growth of warehousing

- **Superior Technology and Digital India:** With a wider internet penetration, technology enabled growth drivers like automation, real time tracking, RFID for automated data collection and stock identification are becoming increasingly popular, even in warehouses in tier 2 cities and metros. Further, the modern Warehouse Management Systems (WMS) and other IT driven solutions, help create a sophisticated and efficient warehousing network that provides integration with automatic material handling equipment, cross-docking, yard management, labour management, billing and invoicing, etc.
- **Government Policies:** With the granting of infrastructure status to the logistics segment, there has been a significant rise in investments in the warehousing sector, especially for free trade warehousing, zones (FTWZs) and logistic parks. The government policies on relaxed international trade, implementation of superior and reformed tax structures like GST have further led to the fast growth of the sector

Efficiency is the buzzword in the warehousing sector today and technology has been a key enabler to drive this and has showcased its ability to make certain skills redundant, force the aggregation of certain skills while eliminating certain low-end jobs. This has also led to a new business trend of outsourcing logistics through 3PL and 4PL players, thus driving core competency for businesses while also reducing the expenses incurred on logistics.

This paradigm shift in warehousing has two sides: customers and logistics providers. It is driving innovation and digitalisation is imminent with the advances in technology. With the introduction of robotics and complex algorithms in software used in warehouses, the complexities have increased and traditional inventory management without real time tracking is a thing of the past. It is an exciting time to be part of the industry, even though we aren't comparable to our colleagues in the West. But the gap is lessening, and the talent pool is also getting better with a large investment in education making this segment exciting.

### **The Way Forward**

The warehousing industry in India is still at a nascent stage and has a long way to go before we can match global standards and business growth. Leveraging the fast-evolving trade, infrastructure, technology, and

human resources, warehousing can soon become the backbone of the logistics and modern trade in India. RGL's Warehousing & Distribution Solution Robinsons Global Logistics Solutions (RGL), an integrated warehousing and distribution solutions company, recently launched its operations independently after being spun off from its 65-year-old parent company Robinsons Cargo & Logistics (RCNL), with an aim to offer strategic solutions and create deep-rooted partnerships with its customers for the Indian market.

The exponential growth in the warehousing and supply chain industry in India has led to the entry of organized players in the sector, resulting in standardization of processes, introduction of IT-enabled services, and creation of structured systems and processes. However, there are still many challenges that need to be addressed. Today, logistics cost in India accounts for 13-17% of the Gross Domestic Product (GDP), which is nearly double (6-9%) the logistics cost to GDP ratio in developed countries such as the US, Hong Kong, and France. Much of the higher cost could be attributed to the absence of efficient intermodal and multimodal transport systems. Moreover, warehousing has also been facing major challenges, leading to increased logistics cost that is borne by the end-users and other stakeholders.

RGL, with over half a million square feet of warehousing space under its management, is amongst the modern and technologically enabled warehousing and distribution service providers in the country; catering largely to the exponentially growing demands of sectors like manufacturing, Retail, Infrastructure, IMPEX, and SME's and E-Commerce. Through superior technology enabled operations, RGL warehouses are governed through automated Warehouse Management Systems and implementation of Business Intelligence and Analytics. Key distribution services include Long-haul and inbound & outbound services, Last mile distribution, Reverse Logistics, Odd Dimension Cargo, Network Optimization and Route Planning.

Apart from warehousing and distribution services, the company also offers In-factory Logistics solutions that are customized to suit the needs of a vast variety of clients. Further, through efficient implementation of Single Line Feeding (SLF) process, RGL undertakes complex in-factory services like sequencing, kitting & trolley loading for Just-In-Time and Lean Manufacturing Processes for automotive and other manufacturers. In line with the company's philosophy of excellence, the SLF process is fully equipped to undertake functions like active inventory tracking on regular basis, triggering re-order flags, receipt & physical verification of materials, creating kits, trolley filling and managing high value parts, and, most importantly, ensuring that the right product is being dispatched as to avoid manufacturing stoppages.

Apart from the above, RGL also offers integrated solutions for supply chain, freight forwarding, and customs clearance, through its other company, RCNL.

Source : [www.nbmcmw.com](http://www.nbmcmw.com)



## Indian Institute of Materials Management

### MISSION

- To promote professional excellence in Materials Management towards National Prosperity through sustainable development.

### OBJECTIVE

- To secure a wider recognition of and promote the importance of efficient materials management in commercial and industrial undertakings.
- To safe guard and elevate the professional status of individuals engaged in materials management faculty.
- To constantly impart advanced professional knowledge and thus improve the skill of the person engaged in the materials management function.
- Propagate and promote among the members strict adherence to IIMM code and ethics.

### CODE OF ETHICS

- To consider first the total interest of one's organisation in all transactions without impairing the dignity and responsibility of one's office :
- To buy without prejudice, seeking to obtain the maximum ultimate value for each rupee of expenditure.
- To subscribe and work for honesty and truth in buying and selling; to denounce all forms and manifestations of commercial bribery and to eschew anti-social practices.
- To accord a prompt and courteous reception so far as conditions will permit, to all who call up on legitimate business mission.
- To respect one's obligations and those of one's organisation consistent with good business practices.



# BRANCH NEWS

## AURANGABAD BRANCH

Indian Institute of Materials Management (IIMM), Aurangabad Branch, has organized “MAT-SELECT-5” on theme - “Profit sustainability and growth in volatile business environment” as on 18th June 2022 at Hotel Rama International. The conference was attended by 500 plus delegates across the industries. Approximate 100 delegates from Aurangabad Industrial Suppliers association attended the Event.



*Lamp Lighting of 5th Mat Select Program*



*Mr.H.K.Sharma National President of IIMM Addressing to delegates of 5th Mat Select Program*



*Mr. Vinayak Pol Executive Director Aurangabad Electrical Ltd. A CIE Automotive Group Company*

Mr.Vinayak Pol – Executive director of Aurangabad Electricals Limited and Mr.RameshGehaney – Executive director of Endurance Technologies Ltd were the Guest of Honour of the event. Mr.H.K.Sharma, National President of IIMM was the Special guest of the Event. Mr.SurajDumne (AISA-President) and Mr.DattaBedade (AISA- Secretary) were also on dias as special Invitee and as associates of the Event.



*Mr. Ramesh Gehaney Executive Director COO Endurance Technologoies Ltd. Addressing to audience*



*A Souvenir Published by the Dignitaries during the inauguration function of 5th Mat Select Program*



*Group Photo of Conference Committee with Guest 5thMatSelectProgram*

Mr.Vinayak Pol said that all the Industry is passing through the challenging time. In his speech he explained about the VUCA world for volatility, uncertainty, complexity and ambiguity which describes the situation of constant, unpredictable change that is now the norm in certain industries and areas of the business world. He very well explained the strategies under uncertainties, understanding the potential benefits in Indian market, entering the business of manufacturing for electric vehicles parts and positive attitude in volatile business environment.

Mr.RameshGehaney said that the prevailing crisis in the industrial sector developed due to corona would come to an end only by jointly working towards the goal of development and looking for the new opportunities. He further said we need to look at the global market, not just the Indian market. Such opportunities have now arrived and we should make good use of it. How we meet the customer expectations is important. We need to have a strong record of how to adapt to changing times.

A Souvenir was also released on this occasion. There are total 25 articles from the supply chain professionals. Also the very first time an E-Souvenir was also released in the inauguration function.

A case study book on topic India's 2-Wheeler Electric Vehicle Market: Opportunities & Risks written by Mr.SushantPatore was released. This book will free for readers.

Mr.H.K.Sharma, National President of IIMM presented President Gold Medal to Mr.SanjaySanghai (National Council Member, IIMM), Mr.K.Srihari (Chairman), Mr.SushantPatore (Vice-Chairman) and Mr.ParasMutha (Conference Chairman).

Three important sessions of the event:

- 1) Dr.AnilLamba: Financial Literacy Activist and International Corporate Trainer.Topic: 3 super secrets of Increasing Profits.
- 2) Mr.T.A.B.Barathi: Vice-President (SCM), Wheels India Ltd, TVS Group. Topic: Challenges & Opportunities in Material Cost Optimization.
- 3) Lt.Gen.Balbir Singh Sandhu: Former Director General Supplies & Transport- Defense.Topic: Defining strategy for Optimization of Profit & Growth

IIMM Branch Chairman - K.Srihari, Hon Secretary – Shrikant Muley, Vice Chairman- Sushant Patore, Conference Chairman – Paras Mutha, Conference Vice Chairman- Mr.SunilVed, National Council Member – Dr.Narendra Joshi, Sanjay Sanghai, Executive Committee members& Co-Opted Members –Ravindra Kathavi, Yogesh Koshe, Phani kumar, Lalit Lohade, Ramesh Jaulkar, MilindGhogle, Prem Kadam, Ameya Kolte, SushilPande, Sunil Sonar, Kailash Gadekar, Dr.Vinay Lomte, Dr.Abhay Kulkarni, Ravindra Mohite, Sachin Raut, Vikas Narwade took efforts for the success of the event.

Mr.K.Srihari – Branch Chairman announced that very soon IIMM, Aurangabad Branch will be ready with the Excellence Training Centre cum Class & Office with various educational facilities in service of Industry and SCM fraternity.

## ALWAR BRANCH

Indian Institute of Materials Management Alwar Branch Organised a Seminar on "An Overview of Supply Chain Management - Today and Tomorrow" on "28/8/2022, 7.30 PM at Hotel Raj Mahal Residency, Bhiwadi Dist. Alwar Rajasthan.

The Seminar talk was delivered by Sh. Lalit Raj Meena Founder Chairman of Alwar branch. Sh. Junya Ueda Dy. Managing Director M/s TPR Auto India Pvt. Ltd., a Japan Company in Japan Zone at Neemrana Alwar. Mr. Chandan Kathuria Chairman of the Branch Welcomed the speakers. Total 35 Members of the branch attended the Seminar and was appreciated by one and all. The participating organizations were CSIR, JIT Numerics, KEI, Borg Warner, SRF, Sant Gobin, TPR India, Forall, SND Pharma, Govt. of Rajasthan, Accutect Industries, Forge MUGUL, Sidwak Group VE Commercial Vehicles, SLM Tech, SMEDA, Micromax, HPL and Students.



During The Seminar Mr. Meena gave an overall view of SCM in India, its concepts, applicability, areas of SCM and its implications on an Industry profitability, reputation efficiency and benefits of effective SCM.

Mr. Junya Ueda Dy. Managing Director M/s TPR Auto India Pvt. Ltd covered the present scenario of SCM the technologies available and future technologies



including AI, IOT, Cloud Computing effects of breaking Chain from the suppliers, supplier and his supplier.



## BANGALORE BRANCH

**24<sup>th</sup> June 2022 – Monthly Lecture Program / Free webinar:** IIMM Bangalore Branch organised a Monthly Lecture Program /Free Webinar on “Free-up Inventory Cash using Adaptive Intelligence” on 24th June 2022 at 6.30 pm on MS Team Meet. Lecture program was very informative and interesting, presented by Dr. Jay Bharatheesh Simha Head, Artificial Intelligence & Data Analytics, Vertex Star. About 110 members/participants participated and received excellent feedback.

**16<sup>th</sup> July 2022 - Industry Visit:** IIMM Team visited to TVS Group, Exide Batteries and Shahi Exports, discussed about IIMM and PGDMM & PGDSCM&L courses for their Executives and also discussed ITP, Consultancy, Membership and SCALE 2022 activities



*Team discussing with Executive Director HAL about IIMM Educational and SCALE Activities*

**21<sup>st</sup> July 2022 - Industry Visit:** IIMM Team visited to Titan Industries (Watch Division) discussed about IIMM and PGDMM & PGDSCM&L courses for their Executives and also discussed ITP, Consultancy, Membership and SCALE 2022 activities



*Team discussing with Titan Industry SCM Head*

**23<sup>rd</sup> July 2022 Annual General Body Meeting :** IIMM Bangalore Branch conducted their Annual General Body Meeting on 23<sup>rd</sup> July 2022 at Ajantha Hotel



*IIMM Bangalore AGM on 23rd July 2022 - view of Members participated with Executive Committee*

**2<sup>nd</sup> August 2022 Industry Visit:** IIMM Team visited to Rail wheel Factory discussed with Mr. Rajesh P. Khade, CMM/P about IIMM and PGDMM & PGDSCM&L courses for their Executives and also discussed ITP, Consultancy, Membership and SCALE 2022 activities

**4<sup>th</sup> August 2022 – CEO -CPO Meet:** CEO-CPO Meet Organized by IIMM- Mumbai In Bangalore on 4<sup>th</sup> August 2022 at Royal Orchid Central, Bangalore. IIMM Bangalore Team associated with IIMM Mumbai Branch and also participated CEO-CPO meet on 4<sup>th</sup> August 2022.



*Branch Chairman Dr. Sengottaiya giving presentation about IIMM on 4th Aug 2022 CEO Meet*

## KOLKATA BRANCH

**PROCEEDINGS OF THE MEETING OF THE 2<sup>ND</sup> FACULTY MEET OF 2021-'23 HELD ON FRIDAY, THE 26<sup>TH</sup> AUGUST, 2022 AT 6.30 P.M. AT IIMM HALL**



*CEOs -CPOs Meet group of IIMM Team participated*

**19<sup>th</sup> August 2022 – Industry Visit:** IIMM Team visited to HAL Corporate office met Executive Director discussed regarding Education Courses, Membership for HAL Employees. Discussed regarding signature event SCALE 2022 and asked for nominating Delegates. Also, team has visited different division of HAL discussed with division head.



*Team visited Rail wheel factory discussing with Mr. Rajesh P. KHADE, CMM*



Mr. Koushik Roy, Chairman, IIMM Kolkata Branch, attended the meeting. Mr. Roy steered the meeting in co-ordination with Mr. Debasish Mallik, Course Co-ordinator for GDMM and other NHQ related Courses, at 6.30 p.m. At the outset, the Chairman informed that since the last meeting of the Faculty members in February, 2022, Mr. Debasish Mallik, Course Coordinator informed the house that 35<sup>th</sup> Annual Convocation was held on 29<sup>th</sup> April, 2022 at ICCR Auditorium. This was a dazzling show in post pandemic period.



Valedictory Session of the One Year Diploma Course on "Materials, Logistics and Supply Chain Management" held on 5<sup>th</sup> August, 2022 at IIMM Hall where successful students were handed over Certificates. They also offered feedback, as asked for. They desire (a) Factory/Warehouse visiting to be included in the Course Curriculum. They also requested to include classes on International Trade & Business.

## KANPUR BRANCH

IIMM Kanpur branch have organised Annual General Meeting on 8<sup>th</sup> August 2022 at 1.30 PM in Hotel Kanishka opposite HAL township Kanpur with prior invitation/notice to all members of branch on 15<sup>th</sup> July 2022 with Agenda of meeting mainly passing of financials FY 2021-22.



IIMM Kanpur Branch Executive Committee on Dias during AGM for the year 2021-22. From Left: Mr. Ravi Ranjan, E.M. Mr. Sampurnanad Sharma, E.M. Mr. Gopi Krishna Agnihotri N.C., Mr. Sanjay Awasthi, Chairman, Mr. Abhishek Kandpal, Vice Chairman, Mr. Kailash Nath, Hony. Secretary.



Their suggestion has been well accepted.



Formal induction programme for 68 Batch of GDMM (July 2022 Session) was arranged on 24<sup>th</sup> July, 2022 at IIMM Hall followed by classes. Enrolled students' profile is encouraging and three women enrolled out of 36.

As directed by NHQ, Admission Test for PGDMM and PGDSC & LM was conducted before enrolment.

With the above reporting, Mr.Mallik invited opinion of the house whether Kolkata Branch should shift to offline as pandemic turns to endemic and most of the management schools have already turned to provisional offline mode. According to him the issue is of important considering financial impact on the Branch if only offline more is introduced and also taking into account that there are few outstation students enrolled for GDMM July 2022 Session having assured online classes to be continued.

Mr.Koushik Roy, in his concluding remarks, placed on record sincere thanks and gratitude to all faculty members for attending the meeting and taking part in the discussion to the cause of imparting professional management courses in SCM domain. Finally an Institute memento has been handed over to all faculty members along with a refreshment packet. The meeting ended with a Vote of thanks to Mr. Koushik Roy and Mr. Debasish Mallik.

## LUCKNOW BRANCH

Annual General body Meeting of IIMM, Lucknow Branch held on 21-08-2022 (Sunday) at 11:30 in IIMM conference Hall Iekhraj doller Indira Nagar, Lucknow.



Sri. P.K Bajpai secretary welcomed all members and informed about the agenda points. First of all he read the minutes of meeting last year A.G.M The minutes approved unanimously.

Past chairman Mr. ML Mangal & present chairman Mr.Prashant Singh gave his power point presentation for 2 years Balance sheet i.e. 2019-2020 and 2020-2021 and prospective plan of year 2022-2023.



Mr. C.B.S Rathore, treasurer, Lucknow branch presented the balance sheet through power point & requested the August body to adopt the account. Thus the account were adopted.



Mr. Brajesh Singh general manager TATA Motors, & NC of IIMM, Lucknow branch given their power point presentation for increase the income of the branch, to start small courses for six months. Committee appreciated & take this for discussion in monthly meeting.

Dr. Vikram Bisen, chairman, basudev charitable trust, Basudev management College, RACE IAS coaching announced in AGM that they have donated 100 NOS. Management Books to IIMM, LKO branch LKO.

## PUNE BRANCH

**EDP on MS Power Point :** IIMM, Pune Branch conducted an Executive Development Program on 30th July 2022 on topic "Preparing Effective Presentations Using Microsoft PowerPoint". Though MS PowerPoint is a commonly used application in current times, still many of us are not completely aware of most of its features. Considering this fact, the Executive Committee decided to organize a training program on this topic.

One of our young & dynamic EC Member, Mr. Shreyas Dhore volunteered to take up the role as faculty & covered the following topics in this One Day Training Program.

- ✓ Introduction to Microsoft PowerPoint
- ✓ Understanding components of Ribbon (menu & toolbar)
- ✓ Fonts, Shapes, Pictures, Smart Art, Charts & tables
- ✓ Setting up Slide Master and Slide Show
- ✓ Infographics, Animations & Transitions
- ✓ Visual Storytelling & Design Ideas

The program was attended by MSME Proprietors, Middle Management Executives & Students. We had 15 participants attending this program. The participants shared very positive feedback on enhanced learnings gained from this training, which were not known to them and will be put into use in their power point presentations.



**Wirtgen India - Training Program :** IIMM, Pune Branch recently conducted a 5-day onsite Training Program on "Warehouse Management" for Wirtgen India Pvt. Ltd, at their manufacturing unit at Daund, Pune. Wirtgen Group is a John Deere Company, covering the entire road construction process chain. The training program was conducted from 1<sup>st</sup> August 2022 to 5<sup>th</sup> August 2022

The Chairman of Pune Branch Mr. Shripad Kadam along with the Hon. Secretary, Mr. Arjunsingh Rajput, spearheaded this training program & worked meticulously to prepare the content of the program, covering topics on safety practices, 5S, inventory management & packaging practices in warehouse.

The topics were designed based on the current developments in the Warehouse sector. Actual onsite examples were discussed; group case studies were assigned & debated.

18 Warehouse Managers / Heads, from the various warehouses of Wirtgen, Pan India, had come together to their Pune plant to attend this one of its kind training programs.

The participants shared very positive feedback having gained immense knowledge & takeaways from the training. The Management of Wirtgen were very happy with the content, case studies, practical examples, delivery by our faculty & more importantly the efforts of IIMM-Pune team in conducting the training sessions very apt to their requirements. Way forward, Wirtgen Management wants to be closely associated with IIMM-Pune for more such training programs in future too.



## NEW DELHI BRANCH

**AGM OF NEW DELHI BRANCH :** Mr. Sanjay Shukla

Chairman Delhi Branch addressing the AGM Delhi Branch AGM was held on August 14, 2022.



LtoR – Mr. Narender Kumar, Hony. Secy.  
Mr. Sanjay Shukla Chairman & Mr. Srideb Nanda,  
Vice Chairman IIMM Delhi Branch

**WEBINAR :** Delhi branch organized a webinar on 28 August 2022 on the topic “Digital Supply Chain”. The speaker Mr. Subeer Oberoi, General Manager (North & East Region) Yusen Logistics presenting the topic mentioned that digital supply chain leveraged technology to integrate various elements of SCM. In his presentation he covered topics like Block Chain, Internet of Things, Cloud Computing, Augmented Reality, Artificial Intelligences, Gamification etc.



Chairman Mr. Sanjay Shukla welcomed the speaker and the audience Vice Chairman Mr. Srideb Nanda proposed a vote of thanks.

## NALCO NAGAR BRANCH

IIMM Nalconagar Branch / Bhubaneswar Chapter organized a seminar on the theme “Transparency in Public Procurement & Digital transformation in SCM” on 20th August 2022 at Sandy’s Tower Hotel, Bhubaneswar on the eve of NEC Meeting & NC Meeting on 21<sup>st</sup> August 2022 in the same venue at Bhubaneswar. The seminar was inaugurated by Shri H. K. Sharma, National President, IIMM by lighting the traditional lamp.



The seminar was graced by chief distinguished speaker, Shri Ramesh Chandra, Former CTE, CVC & currently member, RERA, NCT of Delhi & Chandigarh along with other distinguished speakers, Prof. (Dr.) Ashish Kumar Pani, Dean, XLRI, Jamshedpur and Shri Mihir Chandra, General manager (MM), MCL, Burla.



Participants and delegates from all major industries, both public and private joined this august programme. At the outset, Dr. (Er.) Dibakar Swain, Branch Chairman, IIMM NALCONAGAR branch briefed the participants about the profile and activities the branch and Bhubaneswar chapter and also the purpose of the selection of the theme of this seminar.

Shri Anshuman Dash, Vice-Chairman, IIMM, Nalconagar Branch welcomed the distinguished guests with brief introduction of each of them followed by inaugural address by National president, Shri H. K. Sharma. While inaugurating the seminar, Shri Sharma focused on the



relevance of the theme and outline of the public procurement with government laws, rules and guidelines for the same and digitalization of the supply chain.



Shri Ramesh Chandra, chief speaker detailed about the need for fair procurement practices for a good governance. Shri Chandra outlined the methodology of procurement of goods and services of defined quality within specified time frame at most competitive prices in a transparent manner with illustration of live examples and case studies.

Prof. (Dr.) A. K. Pani explained the fundamental differences between digitization, digitalization, and digital Transformation. He nicely presented how tools like AI, Machine learning, Deep learning, IoT, Ultra low power sensors and highspeed networks (5G), etc. will play the central role of digital transformation. He also elaborated the role of Information Technology in the domain of SCM.

Lastly Shri Mihir Chandra talked about coal logistics and comprehensively explained coal transportation and transshipment system and the plausible mechanisms of cost reductions over various scenarios of transportation.

Shri H. K. Sharma, National President, IIMM summarized the message of the seminar in his concluding address. He also presented the President (IIMM) medal to Dr. (Er.) Dibakar Swain, Chairman, IIMM NALCONAGAR branch and to organizations i.e., IOCL, NALCO and OMC for their significant contributions to the growth of the profession and IIMM.

The programme ended with vote of thanks to one and all and the sponsors of the programme by Shri S. N. Baghar, the honorary secretary of IIMM NALCONAGAR Branch.

Ms. MahimaSikhwai and Mr. Narayan Samal, students of MBA – Business Management, XIMB were the moderators of the program.

The seminar was followed by a cultural programme with great singer Mrs. Sagarika Pattanaik and her team and then dinner.

## THIRUVANANTHAPURAM BRANCH

The Annual General Meeting of IIMM Thiruvananthapuram Branch for 2021-22 was held on

27-08-2022 (Saturday) at 11.00 AM at the IIMM office hall.

Before starting the proceedings of the formal AGM, our Executive Committee member Shri R Sivananandan, VSSC made a presentation on YOGA. Yoga is a group of physical, mental, and spiritual practices or disciplines which originated in ancient India and aim to control and still the mind, recognizing a detached witness-consciousness untouched by the mind (Chitta) and mundane suffering (Dukha). Yoga offers physical and mental health benefits for people of all ages. Five main benefits of yoga are (1) Improve flexibility and strength, (2) Many poses in yoga can strengthen the core muscles in your stomach and back, (3) Ease stress and anxiety levels, (4) Reduce low back pain and (5) Improve sleep.

After the yoga presentation by Shri R Sivananandan, our National Council member Shri M Janardhanan made a demonstration of yoga practices for 15 minutes. The yoga presentation and the demonstration were well received by the audience. After ascertaining the quorum, Chairman Dr. Koshy M George declared the meeting open. The meeting started with a silent prayer.

Branch Chairman Dr. Koshy M George delivered the welcome address and expressed his gratitude to all Executive Committee Members for their co-operation and support during the year. He also briefed the details of the activities conducted during the report period. Chairman apprised in detail the charity activities done under the auspices of the Branch recently.

- (1) As part of educational activities, the Branch has joined with Malayala Manorama, a leading newspaper daily in Kerala to provide copies of newspaper to all classes in a selected High School in Thiruvananthapuram City. The programme is titled as "Vayanakalari". This is a programme aimed to inculcate reading habits among the school children. Students will get an opportunity to read newspaper daily and can be utilized for their project work also.
- (2) We have contributed for purchase of medicines to the inmates of Asha Bhavan for Men and Asha Bhavan for Women, Poojappura, Thiruvananthapuram. Asha Bhavan is a Rehabilitation Centre meant for the care and protection of the mental illness cured patients having nobody to look after them, administered by the Social Justice Department of Government of Kerala. For men there are three Asha Bhavans in the state of Kerala, at Thiruvananthapuram, Ernakulam and Kozhikode.
- For Women there are three Asha Bhavans in Kerala at Thiruvananthapuram, Thrissur and Kozhikode.
- (3) Also the Branch has provided a helping hand to one of the selected persons who can not do his

normal work due to severe diabetes and struggling hard for shortage of money to purchase his medicines and even his daily food. There is nobody to look after him in this pathetic situation.

Hon. Secretary Shri M G Narayanan Nair presented the minutes of the last AGM on 25/09/2022 and the general body adopted the same.

While presenting the Annual Report of the branch for the year 2021-22, Hon. Secretary Shri M G Narayanan Nair apprised the achievements of the last year 21-22.

Hon. Treasurer Shri Sasikumar P C presented the audit report and audited Statement of Accounts 2021-22 of the Branch.

After detailed discussion the AGM unanimously approved the Statement of Accounts and Balance Sheet for the year 2021-22.

He informed the AGM that in the national level we were the third branch completed the audit this year and that too without any query from the Auditors on the documents we have presented for audit.

Branch Chairman Dr. Koshy M George distributed the IIMM Membership Kits to the newly joined members Shri R Harikrishnan, VSSC, Shri Sasikumar P C, VSSC, Smt. Laly S, VSSC and Smt. Madhuri S, VSSC.

At the close of the meeting Chairman emphasized the need for inducting more youngsters as members for the upliftment of the branch keeping in mind the goals and objectives of the institute and requested the working members to make an extra and sincere effort to achieve this. Vice Chairman, Shri K. Raveendra Prasad proposed vote of thanks. The meeting ended with Lunch.



*Chairman Dr. Koshy M George delivering his presidential address*



*Hon. Secretary Shri M G Narayanan Nair presenting The Annual Report*



*Hon. Treasurer Shri Sasikumar P C presenting the Annual Accounts*



*Chairman Dr. Koshy M George handing over the IIMM Membership Kit to Smt. Laly S, VSSC*



*A view of the audience*



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## EXECUTIVE HEALTH

# THE UK BECOMES THE FIRST COUNTRY TO APPROVE A DUAL-STRAIN COVID-19 BOOSTER; THE LATEST HEALTH STORIES FROM AROUND THE WORLD

**LALITA PANICKER, CONSULTING EDITOR  
HINDUSTAN TIMES AND EDITOR, INSIGHT**

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Last week the United Kingdom became the first country to approve an updated COVID-19 booster directed at two different strains of the coronavirus. The “bivalent” booster, made by Moderna, will have the same dose of messenger RNA as the company’s prior boosters but will target both the original version of the coronavirus and the first Omicron variant, BA.1, which emerged in late 2021. ([www.science.org/content/article/news-glance-omicron-vaccine-colonial-era-exploitation-and-mapping-health-equity](http://www.science.org/content/article/news-glance-omicron-vaccine-colonial-era-exploitation-and-mapping-health-equity))

Clinical trials and other research by Moderna suggest its retooled booster generates a stronger immune response against BA.1 and other versions of Omicron now in circulation than its existing vaccine, introduced in December 2020. The new shot will be available in autumn. A similar booster is expected in the USA, although in June the Food and Drug Administration asked Moderna and a second manufacturer, Pfizer, to include the spike protein component for more recent versions of Omicron, BA.4 and BA.5, rather than BA.1.

Citing new data indicating poliovirus continues to circulate in at least eight of London’s 32 boroughs, UK authorities recommended last week that all the city’s children between the ages of 1 and 9 receive an additional booster dose of polio vaccine.

The virus, detected by routine wastewater samples starting in February, is a type derived from the oral polio vaccine, which contains live, weakened virus. Virus in the live vaccine, which is no longer used in richer countries, can spread and mutate into a version that can cause paralysis in unvaccinated people. Travelers probably introduced the virus into the UK; the country has had no cases of polio so far, but genetic analysis of the samples suggests the virus is spreading beyond a small group of people, according to a 10 August report by the UK Health Security Agency.

In the early days of the COVID-19 pandemic, when prevention seemed light years away, several scientists launched trials to see whether a tuberculosis vaccine developed in the early 1900s might protect people by bolstering the immune system.

The Bacillus-Calmette-Guerin (BCG) vaccine has long been known to have broad effects on the immune system, and is still given to infants in the developing world and in countries where TB is prevalent.

Scientists observed many years ago that the vaccine seems to train the immune system to respond to a variety of infectious diseases, including viruses, bacteria and parasites, and reduces infant mortality.

As new threats like monkeypox and polio re-emerge and the coronavirus continues to evolve, the potential of the old vaccine to provide a measure of universal protection against infectious diseases has gained renewed interest among scientists.

Now the results of clinical trials conducted during the pandemic are coming in, and the findings, while mixed, are encouraging.

The latest results, published last Monday in *Cell Medicine Reports*, come from a trial initiated before COVID-19 emerged. It was designed to see whether multiple B.C.G. injections could benefit people with Type 1 diabetes, who are highly susceptible to infection.

In January 2020, as the pandemic began, the investigators started tracking COVID infections among the trial’s 144 participants. All of them had Type 1 diabetes; two-thirds had received at least three BCG doses before the pandemic. The remaining one-third had received multiple placebo injections.

The scientists are still evaluating the vaccine’s long-term effects on Type 1 diabetes itself. But they commissioned an independent group to look at COVID infections among the participants for 15 months, before any of them had received COVID vaccines.

The results were dramatic: only one — or slightly more than 1 percent — of the 96 people who had received the B.C.G. doses developed COVID, compared with six — or 12.5 percent — of the 48 participants who received dummy shots.

Although the trial was relatively small, “the results are as dramatic as for the Moderna and Pfizer mRNA vaccines,” said Dr Denise Faustman, the study’s lead

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author and director of immunobiology at Massachusetts General Hospital.

People with Type 1 diabetes are particularly prone to infections. "We saw a major decrease in bladder infections, less flu and fewer colds, less respiratory tract infections and less sinus infections that diabetics get a lot of," DrFaustman added.

The vaccine "seems to be resetting the immune response of the host to be more alert, to be more primed, not as sluggish."

Another trial of BCG in 300 older Greek adults, all of whom had health problems like heart or lung disease, found that the BCG vaccine reduced Covid-19 infections by two-thirds and lowered rates of other respiratory infections, as well.

Only two individuals who received the vaccine were hospitalized with Covid-19, compared with six who received the placebo shots, according to the study, published in July in *Frontiers in Immunology*.

"We have seen clear immunological effects of BCG, and it's tempting to ask if we could use it — or other vaccines that induce training effects on immunity — against a new pathogen that emerges in the future, that is unknown and that we don't have a vaccine for," said Dr Mihai Netea, the paper's co-principal author and a professor at Radboud University Medical Centre in the Netherlands.

He called the results of the Type 1 diabetes trial "very strong," but urged caution, noting that other trials have had disappointing results. A Dutch study of some 1,500 health care workers who were vaccinated with B.C.G. found no reduction in COVID infections, and a South African study of 1,000 health care workers found no impact of B.C.G. on COVID incidence or severity.

The results of the largest trial of B.C.G., an international study that followed over 10,000 health care workers in Australia, the Netherlands, the UK, Spain and Brazil for a year, are still being analysed and are expected in the next few months. The study also followed health care workers after they received COVID vaccines to see if BCG improved their responses.

A number of factors could explain the disparate findings. BCG is composed of a live attenuated bacterium that has been cultivated in labs around the world for decades, introducing mutations that make for different strains.

DrFaustman's lab uses the Tokyo strain, which is considered particularly potent, according to Dr Nigel Curtis, a professor of paediatric infectious diseases at the University of Melbourne in Australia and leader of Murdoch Children's Research Institute's Infectious Diseases Group.

Dr Curtis said his own studies used the Denmark strain, which is easiest to obtain. The number of doses may

also have an effect on immunity, as many vaccines require repeated inoculations to maximize protection.

DrFaustman said her work has shown that it takes time for the vaccine to have its maximal effect. Type 1 diabetes patients in her study had received several B.C.G. shots before the pandemic.

In any case, scientists interested in B.C.G.'s potential to provide universal, broad-spectrum protection against pathogens have recast their aims. They are no longer looking at preventing COVID-19, since the current vaccines are very effective.

Instead, they want to develop tools for use in the next pandemic, which could be another coronavirus, a deadly new strain of influenza or an unknown pathogen.

The Open Source Pharma Foundation, a global non-profit that seeks to develop affordable new therapies in the areas of greatest need, is interested in repurposing off-patent vaccines for use in current and future pandemics, said its chairman and co-founder Jaykumar Menon.

"Imagine if we could use existing vaccines to curb pandemics — that would change world history," Menon said, adding that BCG is not the only vaccine with wide effects on the immune system.

"These narrow, very specific vaccines, like the Pfizer or Moderna mRNA vaccines, are homed in very tightly on the spike protein of the virus that causes Covid-19, but if that protein mutates — which it does — you lose efficacy," Menon said.

The alternative? "A broad universal vaccine that works on innate immunity puts up this fortified moat that repels all comers," he said.

This week scores of officials, ministers and other bigwigs descend on Lomé, Togo's capital, for an annual World Health Organization conference about the state of health in Africa. The past two sessions had to be held virtually. This year the four-day pow-wow includes a session on how countries have maintained essential health services while fighting COVID-19. Yet the pandemic is just one of many items on the agenda.

The health ministers have a myriad of problems to consider, from sickle-cell disease to tuberculosis; African countries have some of the highest rates in the world. Polio, non-communicable diseases and mental health will also be in focus. Most of the continent's health ministries are short on resources and struggle with unenviable decisions about how to prioritise COVID-19 vaccinations relative to perennial needs, such as jabs against tetanus and measles. And with just 22% of Africans fully vaccinated against COVID-19, another wave could force priorities to change quickly.

Source: [healthissuesindia.com](http://healthissuesindia.com)

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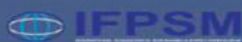
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