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MATERIALS MANAGEMENT REVIEW

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National President Mr. Lalit Raj Meena visited to
Andhra Pradesh Medical Technology Zone, Vishakhapatnam

203rd National Council Meet and 1st Anniversary Celebration of IIMM Ayodhya Branch

IIMM Officials Visited Andhra Pradesh MedTech Zone (AMTZ), Vishakhapatnam

From the Desk of National President & Editor in Chief

Greetings from your National President!!!

In a global economy still reeling from the aftershocks of the COVID-19 pandemic and geopolitical tensions, the resurgence of tariffs as a policy tool signals a new wave of disruption for global supply chains. While tariffs may be wielded with the intent of protecting domestic industries or leveraging geopolitical pressure, they often carry unintended consequences that reverberate far beyond their political goals—particularly in today's intricately connected world.

Recent rhetoric in Washington and other global capitals suggests a growing willingness to use tariffs to reshape trade relationships, encourage domestic manufacturing, and punish political adversaries. From steel and semiconductors to rare earth minerals and electric vehicles, the list of targeted industries is growing. Rising costs for manufacturers, longer lead times, and unpredictable market conditions that leave businesses scrambling to adapt.

Tariffs disrupt the foundational principle of supply chains: efficiency through global integration. When countries impose import taxes on critical inputs, businesses are forced to reevaluate sourcing strategies, often shifting production or seeking alternative suppliers in higher-cost or less efficient markets. The result is a reshuffling of supply chains—one that comes with logistical complexity and economic cost.

The cascading impact is felt by consumers, too. Tariffs increase input costs for manufacturers, who then pass those costs down the line. Price inflation, reduced product availability, and even job losses in downstream industries are all part of the ripple effect. Moreover, small and medium-sized enterprises, lacking the scale and capital of multinational corporations, are especially vulnerable.

However, this disruption is also a catalyst for rethinking resilience. The pandemic exposed the fragility of hyper-optimized global supply chains. Tariff-induced disruption adds another layer of urgency. More companies are now investing in regional diversification, reshoring, and dual sourcing strategies. While these measures come at a price, they provide greater insulation against future shocks—be they economic, political, or environmental.

Governments, too, have a role to play. Rather than using tariffs as blunt instruments, policymakers should consider more nuanced trade strategies. Investing in domestic capacity, incentivizing innovation, and forging targeted trade agreements could strengthen national interests without undermining global stability.

As we brace for what could be the next major disruption to global commerce, businesses must approach tariffs not just as a regulatory hurdle but as a signal to future-proof their supply chains. Agility, diversification, and collaboration will be the key pillars of supply chain strategy in this new era of geopolitical and economic uncertainty.

The question is not whether the world will face another supply chain disruption—but how prepared we are to navigate it.

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Volume 21 - Issue 10 (August 2025)

CONTENTS

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DIGITAL TRANSFORMATION AND SUPPLY CHAIN RESILIENCE IN INDIA- A SUSTAINABILITY PERSPECTIVE

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Introduction : In recent years, digital transformation has emerged as a critical driver for enhancing supply chain resilience. The Indian supply chain sector is at a transformative juncture. As one of the fastest-growing economies, India is rapidly modernizing its logistics and supply chain infrastructure to meet the demands of global trade, e-commerce, and domestic consumption. However, this transformation is occurring amidst a backdrop of significant disruptions—ranging from global pandemics and geopolitical tensions to climate change and resource scarcity. In this context, digital transformation is not merely a tool for optimization but a strategic necessity for building supply chain resilience and ensuring long-term sustainability. This abstract explores the intersection of these two pivotal concepts, highlighting how the integration of digital technologies—such as IoT, AI, and blockchain—can fortify supply chains against disruptions. The COVID-19 pandemic underscored vulnerabilities within global supply networks, prompting organizations to adopt digital solutions that improve visibility, agility, and responsiveness.

Digital transformation enables real-time data analytics, predictive modeling, and automated processes, which collectively enhance decision-making and operational efficiency. Furthermore, it fosters collaborative ecosystems among stakeholders, facilitating better risk management and adaptability to changing market conditions. This paper argues that organizations prioritizing digital initiatives are better positioned to withstand shocks and maintain continuity in their supply chains. It also explores how digital transformation is reshaping the Indian supply chain landscape, how it enhances resilience, and how sustainability is becoming a core part of the conversation. We delve into technologies, policy frameworks, case studies, and future roadmaps that define this critical intersection.

Ultimately, the synergy between digital transformation and supply chain resilience not only mitigates risks but also drives innovation and competitive advantage in an increasingly volatile business landscape. The findings underscore the necessity for companies to embrace digital strategies as integral components of their resilience-building efforts.

What is Digital Transformation in Supply Chains?

Digital transformation in supply chains involves integrating digital technologies across the entire value chain—from procurement and production to distribution and customer service.

A. Definition of Digital Transformation

Digital transformation refers to the integration of digital technologies into all aspects of a business, fundamentally changing how organizations operate and deliver value to customers. In supply chains, digital transformation involves using advanced technologies such as AI, IoT, and blockchain to optimize processes, increase efficiency, and improve visibility across the supply chain network.

B. Importance of Supply Chain Resilience

Supply chain resilience is the ability of a supply chain to adapt and recover from disruptions, maintaining continuous operations despite challenges. It is critical for ensuring that businesses can respond to unexpected events, such as global pandemics, natural disasters, or political instabilities, minimizing downtime and losses.

In India, this includes:

- **IoT and Sensor Technology**: Real-time tracking of goods and vehicle telemetry.
- **Artificial Intelligence and Machine Learning**: Predictive analytics for demand forecasting, inventory management.
- **Blockchain**: Transparent and tamper-proof transaction records, especially important for pharmaceuticals and food safety.
- **Cloud Computing**: Seamless collaboration between supply chain stakeholders.
- **Robotic Process Automation (RPA)**: Automating routine procurement and invoicing tasks.
- **Digital Twins**: Simulating supply chain processes to optimize operations.

The Indian Supply Chain Landscape: Challenges and Opportunities

India's supply chain sector is characterized by its complexity, fragmentation, and infrastructural

bottlenecks. The World Bank's Logistics Performance Index ranked India 38th out of 160 countries in 2023—a significant improvement from earlier years, but still indicative of challenges.

Key challenges include:

- Poor last-mile connectivity in rural and semi-urban areas
- Over-dependence on road transport (over 60% of freight moves by road)
- Inefficient warehousing and cold chain logistics
- Lack of real-time visibility and integration across supply chain partners
- Higher implementation cost, resistance to change and concerns about data security.

Opportunities:

- A booming e-commerce sector expected to reach $350 billion by 2030
- Government initiatives like PM Gati Shakti and National Logistics Policy
- India's demographic dividend with a young, tech-savvy population
- Increasing FDI in logistics and warehousing infrastructure

Building Resilience through Digital Transformation

Resilience in supply chains refers to the ability to anticipate, prepare for, respond to, and recover from disruptions. Key elements include redundancy, flexibility, and visibility, which help companies mitigate risks and ensure that essential goods continue to flow even in the face of challenges. Resilient supply chains are critical for maintaining customer trust, avoiding financial losses, and safeguarding brand reputation. Here's how digital transformation strengthens this capability in the Indian context:

1. **Real-Time Visibility**: Technologies like GPS, RFID, and IoT provide end-to-end visibility, helping companies monitor shipment status, identify bottlenecks, and reroute in case of delays.
2. **Predictive Analytics** : Machine learning models can forecast demand surges, supply shortages, or transport delays—enabling proactive decision-making.
3. **Scenario Planning and Digital Twins**: By simulating various disruption scenarios, companies can evaluate responses without impacting actual operations.
4. **Agile and Decentralized Networks**: Digital tools support the development of more agile supply chains with multiple sourcing points and distributed inventory, reducing single points of failure.
5. **Enhanced Supplier Collaboration** : Platforms for digital procurement and vendor management allow for better supplier communication and risk assessment.

Sustainability as a Strategic Imperative : Sustainability is no longer a buzzword; it's a business imperative. Indian companies are under increasing pressure—from regulators, investors, and consumers—to minimize their environmental impact.

1. **Sustainable Logistics** : Digital route optimization reduces fuel consumption. Electric vehicles (EVs) are being piloted for last-mile delivery by companies like Amazon India and Flipkart.
2. **Circular Supply Chains** : IoT and blockchain technologies are enabling circular models where products are returned, refurbished, and resold—especially in electronics and fashion.
3. **Energy-Efficient Warehousing**: Smart energy systems powered by IoT help reduce energy use in warehouses.
4. **Carbon Footprint Monitoring**: Platforms now offer real-time dashboards for carbon tracking, helping businesses meet their ESG (Environmental, Social, Governance) targets.
5. **Green Procurement**: Digital tools can assist in evaluating suppliers based on sustainability metrics, not just cost.

Case Studies from India

1. **Reliance Retail**: By implementing AI-driven demand forecasting and integrating their physical and digital retail channels, Reliance has significantly reduced stockouts and overstocking.
2. **Mahindra Logistics**: Mahindra has invested in IoT-enabled trucks and green warehousing. Their Control Tower system allows real-time visibility and proactive exception management.
3. **Indian Railways and Freight Operations Information System (FOIS)**: A fully digitized freight tracking system has improved transparency and reduced transit times.
4. **BigBasket**: This online grocery platform uses AI to predict local demand and reduce perishable waste. Their micro-fulfillment centers optimize last-mile delivery.

Government Initiatives and Policy Support

The Indian government is playing a catalytic role in driving digital transformation.

1. **PM Gati Shakti**: This National Master Plan aims to integrate infrastructure development with supply chain logistics using a digital platform.
2. **National Logistics Policy (2022)**: The policy promotes the use of technology and standardization to reduce logistics costs to 8% of GDP from the current 13-14%.
3. **e-Way Bills and GST** : Digitization of tax and transport compliance has streamlined interstate logistics.
4. **Unified Logistics Interface Platform (ULIP)**: ULIP aims to create a single window for all logistics data, facilitating smoother coordination among different departments.

Future Roadmap

To ensure the continued digital and sustainable transformation of supply chains in India, stakeholders must focus on:

- **Capacity Building**: Training programs for digital skills across the supply chain workforce.
- **Public-Private Partnerships**: Collaborations to fund infrastructure and innovation.
- **Interoperability Standards**: Common data protocols for seamless integration.
- **Incentivizing Green Practices**: Tax breaks or subsidies for sustainable supply chain initiatives.
- **Localized Innovation**: Tech solutions designed for the unique challenges of Indian geography and demographics.

Conclusion

Digital transformation offers an unprecedented opportunity to enhance the resilience, efficiency, and sustainability of Indian supply chains. However, this transformation must be inclusive, equitable, and future-focused. As India aspires to become a $5 trillion economy, its supply chain sector must not only keep pace but lead the charge through smart, green, and agile practices.

The convergence of digital innovation and sustainability is not just reshaping how goods move, but redefining the very fabric of economic progress in India. Stakeholders—from policymakers and business leaders to technologists and logisticians—must work collaboratively to harness this momentum and build a supply chain ecosystem that is not only robust and responsive but also responsible.

●●●

Indian Institute of Materials Management

MISSION

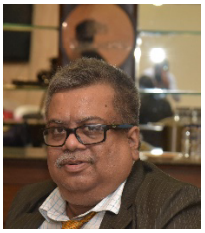
- To promote professional excellence in Materials Management towards National Prosperity through sustainable development.

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.



DECODING THE EVER-EXPANDING SPECTRUM OF CAREER OPPORTUNITIES IN SUPPLY CHAIN MANAGEMENT

RAJIB CHANDRA KUMAR, Trainer with Grade 'A' for the Qualification Pack of Trainer (MEP/Q2601)- v1.0 conforming to National Skill Qualification Framework Level - 5 (MEPSC & BOSCH), rajib2217@gmail.com

IIMM : "Indian Institute of Materials Management (IIMM)", with its headquarters at Navi Mumbai, is a Professional Body of Materials Management classified under the Engineering & Technology Group under the Apprenticeship Act, 1961, and is recognized by ISTE, MHRD. The institute's journey started as the National Association of Purchasing Executives Mumbai in 1960, and with time, post multiple name changes finally got rechristened into IIMM in 1983. Thus the rich legacy of this esteemed institution is worth 65 years now.

Through its wide network of more than 50 branches and 19 chapters having around 9500 members drawn from public and private sectors, IIMM is dedicated to the promotion of the profession of Materials Management through its multifarious activities including Educational Programs approved by AICTE (Post Graduate Diploma in Materials Management and Post Graduate Diploma in Logistics & Supply Chain Management), Seminars, National Conferences, Regional Conferences, Workshops, In-house training programs, Consultancy & Research Programs.

Lack of SCM/SCM Career Awareness: Unfortunately, despite the overwhelming presence of IIMM across the country and sincere efforts, the awareness and popularity of SCM as a practice lie abysmally low compared to other Management specializations/ functions like Marketing, Finance, HR, etc

Yet the prospect of careers in Supply Chain and related areas is immense and diverse post-globalization. Logistics and Supply Chain have not only been restricted to a function or department of an organization (manufacturing and retail) but have developed as a full-fledged Industry.

This is similar to the Advertising function, which has, on a parallel basis, emerged as a huge industry with the likes of WPP plc, Publicis Groupe, Omnicom Group, The Interpublic Group of Companies (IPG), and Dentsu Inc under its fold.

Careers in SCM as a Function & Industry

In the era of Outsourcing under Globalization, logistics function has been randomly offloaded to competent third parties so that the organization can focus on its core competencies to achieve a competitive edge. Hence, the scope of employment is not just restricted to the manufacturing, trading, services, and retail organizations, but flourishes in the ever-growing sector of logistics service providers who are rendering distribution support to producers and service providers.

Further, with the change in business model and expansion of the service sector, marketing and customer administration have interfaced with the supply chain. This, too, has expanded the scope of employment with greater demand for professionals having dual knowledge of marketing and logistics.

"Green" Supply Chain too has been around for a while underscoring the cause of environment-friendly supply chain practices requiring supply chain professionals with an acumen to address the cause of sustainability along with regular needs; What's more, pandemics and wars have thrown open the need for professionals who can swing into action swiftly, overcoming the barriers and ensuring seamless flow under the name and style of "Resilient Supply Chain"

The Purchase function until the late 80s was restricted to technically qualified candidates (Degree and Diploma Engineers) solely for the manufacturing sector. Today, those with purchasing and buying skills are required in the Retail Sector, involving buying finished goods, including consumer durables.

Technology in SCM : Technology has also become increasingly important in the SCM function, with a greater use of digital tools and systems to optimize the flow of goods, information, and finances from origin to consumption, as well as in the reverse direction. This involves a wide range of solutions, including software, automation, AI, Internet of Things (IoT), and blockchain, all working toward making the supply chain more efficient, resilient, visible, and collaborative.

In fact, since the late 80s, technologies like MIS, RDMS, and ERP have supported the integration of Materials Management and Supply Chain functions. The ERP (SAP) Materials Management Module has been one of the most comprehensive and sought-after modules. ERP

specialists have been in high demand over the years. Those with new-age technology skills in the areas identified are playing a crucial role in SCM today.

It is not just employment; there is tremendous scope for entrepreneurial ventures for enterprising young men and women in logistics and supply chain management. In fact, the frequency of entrepreneurial endeavors has been enormous in the area of electronic commerce.

Supply chains and the professionals who run them play a crucial role in keeping goods moving and economies running. With the fiery growth of e-commerce, plus the use of brand-new technologies such as AI and blockchain, the demand for supply chain professionals continues to swell.

A career in supply chain guarantees an extensive variety of work, great salaries, steadiness, and job satisfaction through empowered roles. And, whether you're just starting or making a career change, there is a good chance that the skills you already have are transferable to working in the supply chain! If you're in search of a career that offers more than just a paycheck, look no further than supply chain.

Career Progression in SCM : Professionals begin with entry-level roles before gaining additional responsibility and promotions. For example, inventory analysts and planners can work up to inventory manager positions. Logistics coordinators can often take on managerial roles, which lead to logistics or supply chain leadership roles.

Education : Roles within supply chain management require either a Bachelor's or a Postgraduate degree. The level of education one needs depends on the role one pursues. Generally, higher degrees lead to higher pay.

According to a report by The Association for Supply Chain Management (ASCM), the leading professional organization in the field, half of the supply chain professionals hold a Master's or another advanced academic degree.

Salaries in SCM : While the median is around $103,000, salaries can range from anywhere between $62,962 to $192,000 in the United States annually. In India, experience, location, and specifics (encompassing hazards associated) of the role are factored into the salary, with the range falling between INR 8 L to INR 15 L per annum. As an example, a Supply Chain Manager in Bengaluru might earn between INR 6.2 L to INR 26 L per annum, while in Kolkata the range would be restricted to INR 5.4 L and INR 15 L

The Indian Logistics and Supply Chain sector is experiencing significant growth with expectations of creating 10 million jobs by 2027 and a projected annual growth rate of 12% according to leading Business newspapers -Business Standard and Economic Times. This expansion is fuelled by increased production, consumption, rising disposable incomes, expansion of technology and marketing interface with supply chain and improved logistics infrastructure.

If one wants to become a supply chain manager, the highest-paid senior position in the industry, one will likely need a master's in supply chain management, an MBA degree, or a postgraduate degree in a relevant field alongside a basic engineering or technical classification.

Career Ladder : As in most fields, the supply chain industry offers opportunities for upward mobility. Professionals begin with entry-level roles before gaining additional responsibility and promotions.

For example, distribution executives, inventory analysts and planners can work up to inventory managerial positions. Logistics coordinators can often take on managerial roles, which lead to logistics or supply chain director roles. Inventory and regional managers can become operations managers before being promoted to operations director or supply chain manager.

Since the supply chain makes up a significant portion of the global economy, if you perform well and pursue professional development, you can advance.

Importance of Certification : Supply chain management is a technical, skills-based field. To demonstrate specific competencies, supply chain professionals pursue certification in their field.

According to ASCM, supply chain professionals with at least one certification are likely to earn 16% more than those with no professional certifications. Dual-certified professionals likewise are expected to earn 34% more than those without any certifications.

The industry considers APICS certifications awarded by ASCM particularly valuable, leading to much higher median annual salaries. Common certifications include Certified in Planning and Inventory Management, Certified in Logistics, Transportation and Distribution, and Certified Supply Chain Professional.

Supply chain jobs make up over one-third of the U.S. economy. As such, there is a significant demand for competent, skilled professionals in the field. Between 2021 and 2031, the U.S. Bureau of Labor Statistics (BLS) projects a 28% job growth for logisticians—more than

five times the average projected growth rate for all occupations (5%) during that period.

How to make a career in Supply Chain Management in India?

Career in Supply Chain Management

Do you have an interest in learning about the distribution system of goods and services across the country? Do you like to work outdoors? Are you technology/computer savvy? If yes, you should consider a career in supply chain management.

Supply Chain Management is all about managing the flow of goods and services from the purchase of raw materials/components/assemblies etc until it reaches the end-user. It is a series of planned actions that help in the delivery of the right product in the right place at the right time. A supply chain is the connected network of individuals, manufacturers, suppliers, distributors, technologies and processes. Technology ensures seamlessness in the process acting as enabler.

What are the some of the roles and responsibilities in Supply Chain Management?

- Consult with supply chain planners to forecast demand or create supply plans that ensure the availability of materials or products.
- Define performance metrics for measurement, comparison, or evaluation of supply chain factors, such as product cost or quality.
- Analyse inventories to determine how to increase inventory turns, lessen waste, or optimize customer service.
- Develop procedures for the coordination of supply chain management with other functional areas, such as sales, marketing, finance, production, or quality assurance etc
- Negotiate prices and terms with suppliers, vendors, or freight forwarders.
- Implement new or enhanced supply chain processes.
- Manage actions related to strategic or tactical purchasing, material requirements planning, inventory control, warehousing etc.
- Develop or implement procedures or systems to evaluate or select suppliers.

What education is required to study Supply Chain Management?

There are 3 ways

Career Path 1

A student can do 12th in any stream.

Then complete the BBA.

Diploma Programs in logistics/supply chain.

Further, you can Proceed with MBA/Post Graduate Program in logistics and supply chain.

Career Path 2

A student can do 12th any stream.

Then complete B.Tech/B.E/Diploma Engineering.

Further you can Proceed with MBA Logistics/ SCM/Post Graduate Programs in Logistics/SCM. **An Engineering qualification enhances your prospects.**

Career Path 3

Student can do 12-Any stream.

Then complete Graduation in any discipline.

Further you can Proceed with Post Graduate Programs in SCM or Certification in Supply Chain Management (SCM).

What is the salary and demand for Supply Chain Management?

- **Demand is High** for Supply Chain Management.
- **Salary levels are Medium** for Supply Chain Management. For fresher average salary is 3 to 4 Lacs.
- **Education Fees levels of the course is Low**. To pursue this course students need to spend lesser than 2 Lakhs.
- **Level of preparation for Supply Chain Management is Medium**. Students spend 1 Year. to prepare for the entrance test of Supply Chain Management.
- **Upgradation Opportunity and Scope is Immense**. Certifications. Research. Wide Scope: Purchasing, Stores, Housekeeping, Inventory, Distribution, Logistics, Reverse Logistics, Technology etc

1 Fees **Low**

2 Demand **High**

3 Level of Preparation **Medium**

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ARTIFICIAL INTELLIGENCE (AI) IN ROBOTIC PROCESS AUTOMATION (RPA)

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Abstract : The salient features and applications of Artificial Intelligence (AI) and Robotic Process Automation (RPA) are discussed. The Intelligent Automation (IA) concept has been highlighted. RPA use cases were included. Infosys BPM and its applications are discussed in detail. The relationship between AI and RPA are introduced. The AI applications adopted in retailing and operations are emphasized. The companies like Tata steel, Bosch and Carrefour have already implemented AI applications in their business. Examples of AI and RPA are highlighted.

Keywords: Artificial Intelligence, Robotic process automation, use cases

Introduction : Artificial Intelligence (AI) business process automation is the application of Artificial Intelligence (AI) technologies to optimize business processes, reducing human intervention and enhancing efficiency across various operational aspects. By using cognitive technologies, these new automation solutions can do more than just follow set rules.

AI-powered robots have the ability to collect, analyze, and act on information about their surroundings in near real-time to complete tasks, often autonomously. Robots use cameras, accelerometers, and sensors for vibration, proximity, and other conditions to collect information about their environment. Robotic Process Automation (RPA), cognitive and artificial intelligence have the potential to make business processes smarter and more efficient.

According to Grand View Research, the India RPA market is expected to surge from INR 627.7 crore in 2024 to INR 6,235 crore by 2030, at a remarkable CAGR of 48.8% between 2025 and 2030, driven by demand for intelligent workflows that learn, scale, and self-heal. According to McKinsey, the number is even higher, with at least one-third of job activities deemed automatable in about 60% of occupations. According to a recent Grand View Research Inc. report, the global RPA market is projected to reach USD 30.85 billion by 2030, with an anticipated CAGR of 39.9% from 2023 to 2030.

Whether its data collection, approvals, or updates, many tasks don't require creativity or intuition, essential attributes that serve to increase job satisfaction. Instead, the monotony of the work lowers satisfaction, leading to lower productivity and other inefficiencies. Organizations are turning to technology, particularly robotic process automation (RPA), to offload repetitious tasks, freeing workers to perform richer, more valuable work. Companies can redirect employee time to enhance customer care, perform complex problem-solving, and develop business insights that help the company succeed.

Robotic Process Automation (RPA) and Intelligent Automation (IA)

Robotic process automation (RPA) is a software technology that makes it easy to build, deploy, and manage software robots that emulate the way humans interact with digital systems and software.

Robot-led automation has the potential to transform today's workplace as dramatically as the machines of the Industrial Revolution changed the factory floor. Both Robotic Process Automation (RPA) and Intelligent Automation (IA) have the potential to make business processes smarter and more efficient, in very different ways. Both have significant advantages over traditional IT implementations. It is also found that combining AI tools and RPA process makes the Intelligent Automation stronger and robust.

Robotic process automation tools are best suited for processes with repeatable, predictable interactions with IT applications. These processes typically lack the scale or value to warrant automation via IT transformation. RPA tools can improve the efficiency of these processes and the effectiveness of services without fundamental process redesign.

Robotic process automation software "robots" perform routine business processes by mimicking the way that people interact with applications through a user interface and following simple rules to make decisions. Entire end-to-end processes can be performed by software robots with very little human interaction, typically to manage exceptions (Deloitte Guide, 2020) .

A software bot is a computer program designed to carry out specific actions. Built to perform simple or complex activities, bots automate processes that involve repetitive tasks. More elaborate versions of software bots simulate or interact with humans. Examples include virtual assistants such as Alexa from Amazon, Cortana

from Microsoft, and Siri from Apple.

RPA use cases:

i. Data entry and processing
ii. Invoice processing
iii. Customer service
iv. Report generation
v. Order processing
vi. HR Processes
vii. Compliance
viii. Healthcare
ix. Supply Chain Management
x. Finance and Accounting
xi. IT operations.

Infosys BPM : Infosys BPM automated several of the processes. The automation reduced the manual intensive aspects of the work, while speeding up the processes and reducing the possibilities of errors to almost nil. Below are selected examples of processes that benefitted from automation.

i. **Shift allowance calculation** : Infosys BPM designed the RPA bot to automatically read and validate the data from the multiple backend systems and calculate the allowance. The bot did this periodically leading to on-time clearance of the allowances. The shift allowance automation led to a 65% reduction of manual efforts and 83% reduction in average handling time (AHT) with zero errors.

ii. **Background verification for new employees** : Infosys BPM designed the RPA bot to receive the required details from the input sources, automatically cross-check the details with the backend databases. The background verification automation resulted in 85% reduction in total manual effort involved and 35% reduction in average processing time with zero errors ensuring no compliance faults.

iii. **Generation of offer letters for new employees** : Infosys BPM automated the entire process and reduced the processing time by 90% without compromising on the procedural steps and regulations.

iv. **Scheduling of client training programs for new employee :** Client scheduled training programs need to be blocked in the new employees' calendars along with their respective dates and location details. A huge amount of manual effort was involved, increasing the scope of errors and further compliance issues. Post automation, the process was error free and led to 95% savings on the manual effort.

v. **Training calendar mailers for employees:** The HR team sends out regular emails to the newly onboarded trainees as well as to existing employees as part of the client's training program. Infosys BPM completely automated this mass mailer system leading to 75% manual effort reduction.

vi. **Full and final settlement for employees :** Infosys BPM designed the RPA solution by embedding the business rules in the bot which followed these rules when processing the employee records. The bot increased the processing speed by 95% and also ensured all business rules were followed leading to complete compliance

Artificial Intelligence and Robotic Process Automation : Both AI and RPA play a complementary role. Figure 1 shows the complimentary relationship between the AI and RPA.

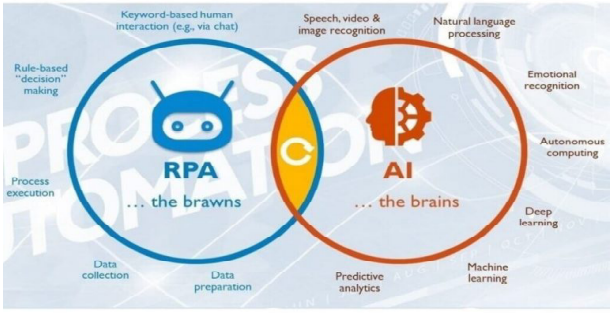

Figure 1: AI and RPA – A Complimentary Relationship (www.winactorsupport.com)

Table 1 exhibits the salient features of AI and RPA.

Table 1: Salient features of AI and RPA

AI	RPA
Encompasses technologies like Machine Learning (ML), Natural Language Processing (NLP) and computer vision, enabling systems to learn reason and solve problem like humans.	Focuses on automating repetitive rules based tasks using software robots that mimic human actions on computers.
Adds the intelligence to handle complexity and variability.	Provides the structure and execution.

Applications of AI and RPA

Table 2 describes the applications of AI and RPA

Table 2: Applications of AI and RPA

AI Applications	RPA Applications
Supply chain optimization	Automating Routine Tasks
Personalized Customer Experiences	Streamlining Processes
Fraud Detection	Improving Data Accuracy
Marketing Optimization	
Food Waste Reduction	
Customer Service	

(**www.carrefour.com)**

AI in Retailing : AI in retail can help improve demand forecasting, inform pricing decisions, optimize product ordering and placement, and track data from online channels to inform e-commerce and digital promotion strategies. AI in retail can also help recognize customer intent and optimize the buying journey accordingly.

AI in Operations

Bosch: Uses big data and machine learning to optimize manufacturing processes, focusing on automated optical inspection, anomaly detection, root cause analysis, and production scheduling.

Tata Steel: Invested in advanced AI platforms to build over 550 models for improving yield, productivity, and safety. They use AI for operational excellence, data management, and safety enhancements like real-time hazard detection.

In 2017, a paralyzed human was able to control a cursor mentally to type out words and sentences on a computer and in 2018, that same person was able to use a tablet functionally to browse the web, send emails and play games. Each of these tales constitutes a remarkable case study on AI in its own right.

With the help of Noibu, Carrefour is building systems that identify and prioritize the issues that matter most — before they affect revenue or loyalty.

Carrefour : It operates a chain of hypermarkets, grocery stores and convenience stores. The group is having more than 14,000 stores in 40 countries. It is the seventh-largest retailer in the world by revenue. Carrefour S.A.

Carrefour is leveraging AI and RPA to optimize various aspects of its operations, including supply chain management, customer experience, and fraud detection. AI-powered solutions are being used for demand forecasting, inventory management, personalized recommendations, and fraud prevention. RPA is automating tasks like data entry, report generation, and invoice processing, streamlining workflows and improving efficiency.

The integration of AI and RPA is helping Carrefour improve efficiency, reduce costs, enhance customer satisfaction, and stay competitive in the rapidly evolving retail landscape. By leveraging these technologies, Carrefour is transforming into a more data-driven and customer-centric organization.

Examples: AI in RPA

i. Using OCR and NLP to extract data from invoices, contracts and other documents for business solutions.

ii. AI powered chatbots can handle routine customer inquiries, freeing up human interventions for more complex issues.

iii. AI algorithms can analyze customer data to provide personalized product recommendations.

iv. In the insurance industry AI can analyze claim data, detect fraud and make decisions on approvals or rejections.

Conclusion

The integration of AI and RPA is helping companies to improve efficiency, reduce costs, enhance customer satisfaction, and stay competitive in the rapidly evolving retail landscape. By leveraging these technologies, the companies are transforming into a more data-driven and customer-centric. Both Robotic Process Automation (RPA) and Intelligent Automation (IA) have the potential to make business processes smarter and more efficient, in very different ways. Both have significant advantages over traditional IT implementations. It is also found that combining AI tools and RPA process makes the Intelligent Automation stronger and robust.

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CHALLENGES OF MANAGING INDUSTRIAL WASTE IN INDIA

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Managing waste has become one of the most incorrigible issues World over. India is no exception in this case.

Among 38 countries analysed, surprisingly a small country like Israel has emerged as the country with the highest per capita waste generation! They are reported to produce up to 650 kg of municipal waste per person annually. Out of this, a whopping 80% of the total waste, which is 524 kg is going for landfill, the highest landfill share among all analyzed nations. Chile and the United States continue to rank among the world's most significant waste polluters.

On the other hand, Japan and then Korea stands in the first and second place for least waste generation and land filling. Like Japan, Estonia is a country where almost nil waste going for landfill. Sweden and Finland also are among the world's least waste generating countries.

Our country faces a swelling waste management calamity which threatens the environment, public health and economic stability. Having a sizable number of population, India produces appx 62 million tonnes of waste annually with per capita rate of 0.2 kg to 0.6 kg and out of this only around 75–80% is collected, and less than 30% is treated or recycled. Most of the waste goes to landfills, open dumps, and water bodies. This has resulted in severe environmental pollution and public health hazards. In early times, before much industrialisation, most of the waste was organic which could be safely used for landfills, integrating naturally into bio and geochemical cycles. With the advent of modern industries, the nature of waste has transformed to inorganic materials like metals, glass, plastic, paper and e-wastes.

Handling the growing volume of waste and disposing them by adopting sustainable and innovative solutions to cope with rapid urbanization and changing consumption patterns is the real challenge. In urban areas, swelling population concentration, shifting consumer tastes, and lack of necessary infrastructure have led to the accumulation of massive quantities of municipal solid waste (MSW).

In India, urban and rural areas face different sort of issues in handling wastes. In rural areas there is limited facility for waste collection, dearth of recycling facilities, and improper disposal practices such as open burning and dumping in fields or water bodies. Absence of awareness as well as casual approach among people on the consequence of improper waste management is also a major factor. This has resulted in soil degradation, contamination of groundwater, and increased greenhouse gas emissions, mainly methane from decomposing organic waste.

Conservative waste disposal methods such as land filling, throwing to water bodies or incineration are not the sustainable approach to waste management. They will only help to deplete valuable land resources, release of toxic emissions, and chip in adverse climate change. In contrast, sustainable waste management practices focus on the 5 R's principles of Refuse, Reduce, Reuse, Repurpose, and Recycle. Additional natural methods like composting, waste-to-energy conversion, and circular economy models will minimize waste generation at the source and maximize resource recovery.

Grass roots efforts and participation of people for reducing and disposing waste at generation point itself play in creating scalable and sustainable waste management systems. Efforts of Government of India with the introduction of Swachh Bharat Mission (SBM) in 2014 has made commendable progress on strengthening urban sanitation and waste management, including waste segregation, scientific waste disposal, and addressing plastic waste. Industrial waste management under SBM includes segregation, collection, transportation, and disposal or recycling, often involving collaboration between industries and urban local bodies.

Legislations on Waste Management : Though it may seem preposterous, managers in SCM have a lot to contribute in improving waste management in their organisations. They cannot be absolved from their responsibilities like integrate new technologies, managing communication across different sectors, and reducing waste through strategies like sustainable procurement and circular procurement. SCM managers also focus on reducing costs, maximizing revenue, and ensuring efficient logistics, which are crucial for effective waste management.

Let's look at these areas in detail: To begin with, all SCM managers shall be well conversant with the relevant legislations applicable with all amendments from time to time. Main laws are briefed below:

1) Environmental Protection Act 1986 : "Polluter Pays": The major takeaway of this Act is that the polluter has to pay whatever penalty prescribed in order to restore the environment back to its previous position (Sec 9(3). With regard to corporate, the

interesting part is that, in case it is proved that the act of pollution is done with the connivance of any Director, or manager of the company, they will be personally held responsible!

2) The Hazardous Waste (Management, Handling & Transboundary Movement) Rules 2008.

These rules outline procedures for the safe handling, storage, transportation, treatment, and disposal of hazardous waste, as well as transboundary movement (import and export). Strict regulations are applicable on the responsibilities for waste generators, transporters, and operators of treatment, storage, and disposal facilities. Any transactions on these types of materials like re-processor or recycler are to be handled by those having specific approval of the State Pollution Control Board.

It is to noted that Occupiers (Waste Generators), Transporters and Treatment, Storage, and Disposal Facilities (TSDFs) shall adhere to the rules for handling and transporting hazardous waste.

3) The Plastic Waste (Management and Handling) Rules 2011

Rapid urbanization, industrialization, and economic growth, has led to a substantial increase in plastic waste generation. This Rule is enacted to deal with the mounting issue of plastic waste pollution. Dos and dont's of various stakeholders, including manufacturers, consumers, and municipal authorities are highlighted in the Rules. Major aspects dealt with is regulating the thickness and use of plastic carry bags, banning plastic sachets for certain products, and establishing a system for collecting and recycling plastic waste. The widespread use of plastics, especially single-use items and its indiscriminate disposal, poses a serious threat to the environment. Even now, we get vegetables and other provisions packed in single use covers having very less microns. Think of the plight of animals as well as plants which devour these kinds of plastic materials which directly threatens the very existence of mankind!

4) The Bio-Medical Waste (Management and Handling) Rules, 1998,

These Rules were enacted to regulate the handling, treatment, and disposal of bio-medical waste generated by healthcare facilities and other related institutions. This also aim to minimize adverse effects on human health and the environment by ensuring proper segregation, packaging, transportation, treatment, and disposal of bio-medical waste. Bio-medical waste shall be segregated into containers/bags at the point of generation in accordance with Schedule II prior to its storage, transportation, treatment and disposal. Bio medical waste shall be categorised as Yellow, Red, White and Blue depending on the type of waste generated. We should also be watchful of amendments published for all rules and laws which may be either more simplified or made more stringent.

5) The E-waste (Management and Handling) Rules, 2011

One of the major botheration of Industrialisation is the generation of electronic waste (e-waste) and finding ways and means to dispose of them in an environmentally sound manner. SCM Managers should be aware that there are provisions in the Rules with regard to the responsibility of producers of electrical and electronic equipment for managing the e-waste generated from their products. This includes setting up collection centres or take-back systems to collect e-waste from consumers.

6) The Batteries (Management and Handling) Rules, 2001

Improper handling of batteries can lead to various safety and environmental hazards, including fires, explosions, chemical leaks, and environmental pollution. The chemicals within batteries, such as lead, cadmium, and mercury, can leach into the soil and water sources, contaminating ecosystems and potentially harming wildlife and human health. in addition to this, lithium-ion batteries, common in EVs and electronics, can be volatile and cause landfill fires, releasing toxic fumes into the atmosphere Proper storage, usage, and disposal of batteries are crucial to mitigate these risks and protect both human health and the environment. The Batteries (Management and Handling) Rules is established to regulate the collection and recycling of lead-acid batteries in India. These rules aim to ensure environmentally sound disposal methods and reduce the harmful effects of improper battery handling. Rules describe responsibilities for manufacturers, importers, recyclers, and consumers, including collection, transportation, and recycling procedures.

Role of SCM Managers in Waste Control : A lot can be done by SCM Managers in mitigating the impact of poor handling of waste materials. They can play a crucial role in identifying, minimizing, and even repurposing waste to create new revenue streams. By focusing on waste reduction and circular economy principles, SCMs

can lower costs, improve efficiency, and enhance a company's environmental footprint, leading to both cost savings and increased revenue.

Wastes are generated in industries in various ways like:
scrap,
damaged materials,
expired items,
unused inventory,
defective items

Various factors like material or product faults, inefficient manufacturing processes, human errors, or equipment failures, can cause scrap. It is a challenge to SCM managers in identifying the primary reason for the occurrence of scrap during the manufacturing process.

A system has to be setup to measure and track scrap over a period of time. Employees have to be trained to use proper software to reduce scrap generation. Weekly monitoring has to done to assess the scrap generation.

Proper packaging and selecting apt transportation will reduce damage of items to a good extent. SCM managers can work with suppliers and other stake holders to promote the use of sustainable packaging and materials, reducing waste generation at the source promoting reuse, and encouraging responsible consumption.

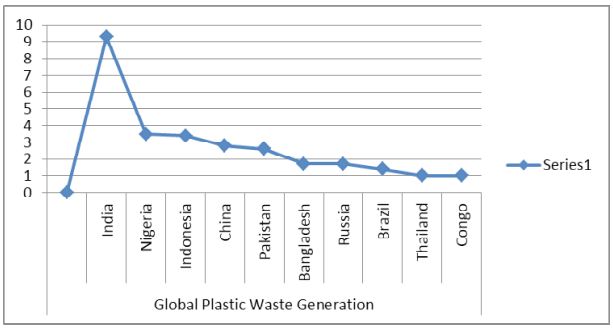
Monitoring date of manufacturing and proper storage of items will help in reducing the expiry date issue. It is needless to state that material planning by using AI, Block chain and ML to be utilised to control inventory from going beyond requirement. Again, defective items can be avoided when proper pre despatch inspection and quality control methods are implemented. SCM Managers can facilitate communication and collaboration among various stakeholders, including waste pickers, recyclers, and government agencies, to promote a more integrated and efficient waste management system.

Implementing Green Procurement: Implementing sustainable procurement practices involves sourcing materials and products from suppliers with strong environmental and social standards.

Making Profit from Waste : There is tremendous scope open for making profit from different kinds of items which we use in our industries.

One item is Paper. Recycled paper can help create new materials, including, Tissue papers, Cardboard boxes, Paper plates, Egg cartons, Newspapers and magazines. So waste paper in any form generated in the industry should not be thrown off but put to use to make profit as well as protect environment.

Next we will look at plastic recycling. India is a significant contributor to global plastic waste. India is the largest plastic polluter, responsible for roughly one-fifth of global plastic emissions, or 9.3 million tonnes annually. Plastic recycling involves the gathering, sorting, and processing plastic material into reusable items. Various recycled products, including Polythene Cans, Plastic bottles, buckets etc can be made out of waste plastics generated in the industry.



Broken and waste glass is creating much crisis on environment as glass cannot be used even for landfill. Hence converting glass for further use will be a major boost to control environmental hazards. Broken glass can be converted to refined jars, glass bottles, glass containers, crockery, fibre glass insulation and many more items.

Steel scrap recycling will be a profitable business for such steel based industries. As steel scrap fetches money, it is heartening to note that there are a number of poor scrap collectors.

Construction waste materials containing bricks and floor tiles to metals are another item which is creating a lot of environmental issues. Some of these materials can be reformed into the same product. However, others can be recycled into other useful materials.

Composting organic waste materials is now a lucrative business. Most of such materials are going for landfills. The nutrient-rich compost thus made can be used to enhance soil health, thereby improving fertility in agriculture farms, gardens, and landscapes. A number of municipalities are now converting organic waste materials to profitable compost fertilisers.

E-waste is another growing problem, accounting for over 50 million metric tons annually. As electronic devices become quickly outdated and are often replaced with new models, a large volume of waste is created. However, it can also be a profitable business, as there is an increasing demand for and awareness of recycled materials. Recently I had an experience of scrap collectors collecting old music tapes being bought by them fetching money for me. These items otherwise would have gone for landfills.

There are many other areas like recycling medical waste, old furniture etc.

Owing to the growing generation of different types of industrial waste, SCM managers have to keep their eyes and ears open to find out opportunities in making money out of such materials.

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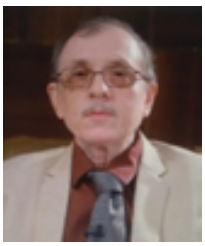

DIGITAL TRANSFORMATION, SUSTAINABILITY AND RESILIENCE FOR SCM.

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Supply Chain Management can broadly be defined now as supply and services through a chain function with proper management. At each point of supply and services digital transformation of each function is facilitating the transparency, mobility, process improvement and distribution function, Government clearance, vessel tracking and satisfaction survey for all the stake holders. If we analyze a product and its distribution pattern for the user and its satisfaction survey system we will see that 40 to 50% of the time we are saving and which is saving by digital application method applied by Information Technology and Artificial Intelligence.

Small start- up company and MSME through cloud management and Artificial Intelligence is doing business using this digital transformation and scope of business volume is being larger and larger. Repeatation of work and correction time in work has been minimized and if we analyze the data through Data analysis using digital methodology for determining production time and distribution time and time required for order booking through E-Tender, it will be found that organization is producing at least 50% more production than usually happened in earlier age within specified time. In all the service sector including Health and Hospital Management also,work has become so faster that people are not wasting time for any work related to SCM.

By integration of Digital Technology and Value Engineering in SCM function we have become more customer centric and always intending to go for innovation and cultural development. People in SCM are now valued based on the feedback comes out from Data Analysis and Satisfaction Survey. SCM function is not now limited to supply of Right materials at Right time from Right source at right price and right service but it is now supply of materials and service with improved function at reasonable cost from the source who can assure the improved quality specially applicable in consumer industry as well as industry sector based on the application. This has become possible only by transformation of digital technology from the existing age old system.

In regard to resilience it is clear that due to digital transformation only we will be able to be resilient against the volatility of market price and as well as to do the demand forecasting and solution to mitigate the risk without any additional cost considering the competition in the market and service.

In regard to sustainability of any product or services in the market or in social requirement of Digital Transformation in SCM function ,SCM professional has to be focused on the probable shocks, adaptation to changed function in case of odd situation. Then only SCM function will be able to sustain and resilient with massive change through Digital Transformation and Using Artificial Intelligence with cloud computation . This will not only reduce the repeatitive work in SCM function but also help to grow the organization as well as ultimate growth of the country in right spirit. From the statistical data analysis it can be found that after implementation of digital technology our nominal GDP has increased from Rs 106.57 lakhs crore (2014-15) to Rs 331.03 lakhs crore in (2024-25) expecting growth of further 6.3% to 6.8% in next year. Special growth of key sectors like renewable energy, pharmaceuticals, health care has contributed 12 -20% growth, Agricultural sector 3.8%, IT sector 11.2% etc and Infrastructure 3.4% etc. With the initiative of Government with Digital technology, Artificial Intelligence, Cloud computing and Digital payments with UPI (Unified Payments Interface} MSME sector has been able to contribute a major amount towards growth of country bridging the gap between urban and rural area. This has increased the productivity of MSME sector and has improved Governance.

However we have to still increase the research on Cyber Security and skill on this development not only for SCM but for all areas.

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CEV 5 EMISSION: INDIA'S MOVE TOWARDS FUTURE-PROOFING OPERATIONS

PRAJAKTA KARNIK

An article by Neville Mevawala, Head of Sales & Marketing, Material Handling Equipment business of Godrej Enterprises Group

India's industrial sector is undergoing a quiet but important transformation. The government's decision to implement CEV 5 emission norms for diesel powered material handling equipment signals a clear shift toward cleaner and more sustainable working environment in the factory and in industrial areas.

The government is also strengthening domestic manufacturing under the Make in India program, marking a decisive step where environmental responsibility and economic development go hand in hand.

The global angle : Across the world, industrialised nations are adjusting to a new normal driven by emission regulations. In logistics and manufacturing, companies face mounting pressure to cut carbon footprint. The European Union's emission mandates and the Paris Agreement's target of a 55 per cent reduction in carbon emissions by 2030 (compared to 1990 levels) are setting the tone for global industrial reform.

This international context and the government's thrust has pushed Indian manufacturers to reassess their operations. Many are investing in greener technologies, energy-efficient systems, and cleaner production methods. The introduction of CEV 5 norms in India is a result of this broader momentum. It not only sets new standards for environmental compliance but also positions Indian industry to compete in a market that is increasingly defined by sustainability.

CEV-5 norms: A new baseline : With CEV 5 emission norms now in force, India's material handling sector is moving forward on a cleaner trajectory. These norms apply to diesel forklift trucks with engines above 37KW, effectively replacing the earlier CEV-3 and CEV-4 standards. While the regulatory deadlines are clear—new CEV-3 engines are no longer being invoiced, and remaining inventory can only be sold until June 30, 2025—the shift has become about more than just compliance.

Many companies are embracing the change not simply because they must, but because they recognise the long-term value of cleaner operations. CEV 5 emission compliant forklifts emit roughly 60 per cent less particulate matter than CEV-3 models—a significant improvement, particularly in indoor environments like factories, warehouses, and logistics hubs, where air quality has a direct impact on worker health and productivity.

By investing in compliant technology ahead of the curve, manufacturers and fleet operators are signalling a broader shift: environmental responsibility is becoming part of core business strategy, not just a checkbox on a compliance list.

Manufacturing for Indian conditions

What sets this moment apart is that Indian companies are not only complying with the new regulations—they are doing so with products made indigenously. Under the Make in India initiative, the country's material handling equipment sector has expanded its capabilities. Manufacturers have invested in R&D, upgraded facilities, and acquired technologies that enable them to meet both domestic demand and export opportunities.

Indian forklifts are built to withstand challenges such as temperature extremes, dust-heavy environments, and irregular terrain. Domestic manufacturers account for factors such as power fluctuations, climate variations, and industry-specific usage. This results in equipment that is more reliable and cost-effective for Indian users.

More than compliance: A business case

There is often an assumption that environmental regulations come with high costs. In the case of CEV-5 norms, the opposite is true. Forklifts built to meet CEV-5 standards are around 4-6 per cent more fuel-efficient than their CEV-3 counterparts. Over the course of a machine's lifecycle, this leads to lower fuel costs and operating expenses. In industrial settings such efficiencies significantly enhance overall savings.

These machines also tend to require less maintenance. Advanced engines used in CEV-5 compliant forklifts are built for durability and smoother operation, which means less downtime and lower repair costs. From an operational and financial standpoint, the move to cleaner machinery offers clear benefits.

End-users across industries are beginning to view CEV-5 compliant equipment as a strategic investment rather than a regulatory burden. Businesses in sectors like automotive, FMCG, and logistics are increasingly prioritising sustainability in procurement decisions. For them, adopting cleaner forklifts aligns with broader

Environmental, Social, and Governance (ESG) goals, and helps meet supply chain compliance standards set by global partners.

Aligning policy, industry, and opportunity

The real story lies in the convergence of regulation and industrial capability. Indian companies like Godrej have already developed and are supplying CEV-5 compliant forklifts, manufactured entirely within the country. This reduces reliance on imports, supports local industry, and meets rising expectations for environmental performance—all at once.

For businesses, the message is straightforward. CEV-5 compliance is a step toward future-proofing operations, not about meeting the government requirement. It improves efficiency, supports environmental goals, and strengthens India's position as a serious player in sustainable manufacturing.

As this shift takes hold, India is moving toward a model where environmental standards and industrial development are not at odds but work in tandem.

Source: www.logisticsoutlook.com

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INDIA'S INDUSTRIAL AND LOGISTICS SECTOR SET FOR STRONG GROWTH IN 2025 DRIVEN BY E-COMMERCE DEMAND: CBRE

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The report attributed this growth to multiple factors, including the availability of high-quality supply, the completion of pending transactions, and rising demand from e-commerce players

India's industrial and logistics (I&L) sector is expected to witness strong growth in 2025, driven by increasing demand for warehousing, particularly from e-commerce companies, according to a report by CBRE.

The report highlighted that the sector's positive momentum, which picked up in the latter half of 2024, will likely continue in the coming year. It said, "This activity is expected to be driven by the influx of investment-grade supply, the finalisation of pending transactions, and the growth in warehousing demand by e-commerce players". The report attributed this growth to multiple factors, including the availability of high-quality supply, the completion of pending transactions, and rising demand from e-commerce players. The third-party logistics (3PL) sector is expected to remain the largest occupier group, alongside continued leasing demand from the engineering & manufacturing (E&M), e-commerce, and fast-moving consumer goods (FMCG) sectors.

The report also noted that the institutional investors are expected to play a crucial role in this expansion, with many backing developers to construct modern, sustainable warehouses. These developments will help meet the increasing need for advanced warehousing solutions. Major cities such as Delhi-NCR, Mumbai, Bengaluru, and Chennai are already seeing significant warehouse construction activity, ensuring a strong supply pipeline in 2025.

However, the report also pointed out that some challenges could impact project completion timelines. Factors such as rising land acquisition costs, extended acquisition processes, complicated land ownership structures, and ongoing legal proceedings may delay developments. To counter these hurdles, developers are likely to explore new locations, particularly in peripheral areas and along key infrastructure corridors.

Investment in India's I&L sector has seen steady growth, with a compound annual growth rate (CAGR) of 20 per cent from 2019 to 2024. Foreign investors have been the main contributors, accounting for about 68 per cent of the total investment during this period. In 2025, investor sentiment is expected to remain positive, though there may be a more detailed approach to deal execution and due diligence. With strong demand from e-commerce, growing investor confidence, and an increasing supply of modern warehouses, India's I&L sector is set to maintain its upward trajectory in 2025.

Source: www.thehindubusinessline.com

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FROZEN FOOD MARKET SIZE, SHARE & INDUSTRY ANALYSIS

Frozen Food Market Size, Share & Industry Analysis, By Type (Frozen Ready Meals, Frozen Seafood & Meat Products, Frozen Snacks & Bakery Products, and Others), Distribution Channel (Supermarkets/Hypermarkets, Specialty Stores, Convenience Stores, and Online Retail), and Regional Forecast, 2025-2032

KEY MARKET INSIGHTS

The global frozen food market size was USD 310.77 billion in 2024. The market is projected to grow from USD 325.09 billion in 2025 to USD 457.34 billion by 2032, exhibiting a CAGR of 5.00% during the forecast period. Europe dominated the frozen food market with a market share of 39.% in 2024. Moreover, the frozen food market size in the U.S. is projected to grow significantly, reaching an estimated value of USD 110.23 billion in 2032, driven by the growing importance of higher-shelf life products.

Frozen ready meals, frozen seafood & meat, frozen snacks & bakery, and others such as fruits and vegetables are different types of frozen products available in the global market which are distributed through supermarkets/hypermarkets, convenience stores, specialty stores, and online retail channels.

Countries such as the U.S., Germany, China, France, Spain, and others in Europe and the Asia Pacific region hold a significant share in the market. Furthermore, the demand for frozen ready-to-eat meals is estimated to exhibit substantial growth over the forecast period owing to the rapid growth in urban lifestyle in countries in the Asia Pacific and South America regions.

The global frozen food market experienced a sudden increase in sales due to the panic buying experienced by consumers with the fear of the lockdowns caused by the COVID-19 pandemic. Frozen items and other essentials were the immediate food products sold in the initial days of lockdown due to their longer shelf life.

According to the American Frozen Food Institute (AFFI) and FMI, The Food Industry Association frozen foods were a pandemic powerhouse bringing in USD 65.1 billion in retail sales in 2020, a 21% increase compared to a year ago and is forecasted to grow at a significant CAGR in 2021.

FROZEN FOOD MARKET TRENDS

Rising Consumer Awareness About Online Retailing to Favor Industry Growth

Online retail has shown rapid growth in recent times. This rapid growth is attributed to the rising technological advancements and the resulting launch of new e-commerce platforms and service providers. With the increasing penetration of the internet and rapid growth in smartphone development, the e-commerce industry has shown substantial expansion. In addition, the increasing regulations and support from government bodies to regulate the online shopping industry are expected to contribute toward its rapid growth during the forecast period. For instance, in September 2022, U.S. President Joe Biden announced the National Strategy, which aims to address hunger issues in the country. The strategy plans to promote healthier eating among the U.S. citizens. It includes the development of online grocery shopping and online food label information with assistance from the White House of Federal Nutrition Assistance Programs into the 21st century.

The recent trend among consumers is online shopping. Online retail is one of the major factors fueling the growth of the market. The introduction of various new apps makes it even more convenient for consumers to purchase edible products according to their preferences. There are a variety of products available which attracts the working population as they tend to avoid shopping from retail outlets. According to data published by Eurostat in 2021, around 19.7% of EU enterprises' e-commerce sales accounted for around 1% of their total turnover.

The growing penetration of smartphone usage and the internet is expected to drive the market growth and to create opportunities for new entrants. In addition, according to the American Frozen Food Institute (AFFI), the vast majority of online retail customers were adding frozen foods to their digital cart. For instance, as per AFFI, in 2020, the household penetration of frozen foods over an entire year of 2020 was 99%, 86% for food items, such as frozen pizza, vegetables or entrees. This trend is expected to sustain in the long run and is expected to boost the market growth during the forecast period.

FROZEN FOOD MARKET GROWTH FACTORS

Increase in Women Employment Rate to Drive Market Growth

In recent years, there has been a significant increase in the women's employment rate. Due to the increasing number of employed women, it has become difficult for them to cook or prepare fresh meals every day. This has resulted in the purchasing of ready meals and frozen meals. According to the U.S. Department of Labor in 2019, womens' employment rate in China is 43.7%. Similarly,

in the U.S., women's employment rate is 46%, and in South Africa, it is 45%. These are among the leading driving factors that are aiding the growth of the market.

According to the International Labor Organization in 2019, the unemployment rate in developed and high-income countries such as the U.S., U.K., Canada, and Germany has fallen drastically. Globally, the 3.3 billion working people are aged 15 and above.

Increasing Demand for Convenience Food to Boost Market Growth

The processed food industry is primarily driven by the convenience offered by ready to eat food products, which attract consumers from every age group. Consumer preference for convenience food and RTE foods has rapidly changed the global market. Packaged foods require less effort and time than cooked items, which is the main factor driving the demand for frozen or convenience food products. Increasing disposable incomes of consumers is another important reason for the market to flourish in the upcoming years.

According to the World Bank, it is estimated that 56% of the world population is expected to live in urban areas and is expected to reach at 68% by 2050. Therefore, the increasing population and hectic lifestyle would fuel the product adoption.

RESTRAINING FACTORS

Rising Consumer Preference for Natural and Fresh Foods to Restrain Industry Growth

Packaged foods, including frozen products, are considered an inferior substitute to fresh foods among certain consumers, which is the major drawback in this market. There is a myth among consumers that edibles stored for more than a year lose its nutrition content. However, these myths were dispelled by the U.S. Food and Drug Administration (FDA) and the IFIC (International Food Information Council). Frozen products can be as good as fresh and natural products. However, consumers in the lower-income group tend to prefer fresh food as they are more concerned about the freshness of the product. As fresh vegetables and fruits are preferred more over the frozen products, this factor may restrain the growth of the market during the forecast period.

FROZEN FOOD MARKET SEGMENTATION ANALYSIS

By Type Analysis

Frozen Seafood and Meat Products Hold Major Share in Market Due to Rising Frozen Dessert Demand

By type, this market is segmented into frozen ready meals, frozen seafood & meat products, frozen snacks & bakery products, and others.

Among these, the frozen snacks & bakery products segment is expected to hold the major share in the market. This is owing to the extensive demand for frozen snacks including frozen desserts such as ice cream among all age groups. The demand created by developed countries such as Germany, the U.S., the U.K., France, Canada, and developing countries of Asia Pacific and Africa for these products is driving the growth of this segment and is attributed to hold the largest share in the industry. Furthermore, the higher availability of frozen snacks globally and easy access through online sales has boosted the product sales and fueled the market growth.

An increase in the consumption of French fries and other fast food products such as burgers, pizzas, and wedges is expected to play a significant role in the frozen snacks segment. The frozen meal segment is estimated to grow at a significant CAGR over the forecast period. This is due to the availability and presence of frozen meal products in developing countries. Improved palates and increased disposable incomes are the driving factors for this segment.

By Distribution Channel Analysis

Availability of Various Products to Promote Sales in Supermarket/Hypermarket

Based on distribution channel, the market is segmented into supermarkets/hypermarkets, specialty stores, convenience stores, and online retail.

The supermarket/hypermarket sector is evolving rapidly and changing the face of retailing industry. Buyers' comfort is the major idea behind the supermarket/ hypermarket stores and to capitalize this idea manufacturers are also taking efforts to showcase their products in these stores. As the supermarkets are growing in developing countries, their presence can be seen spreading in tier 2 and tier 3 cities which makes products available in smaller towns. This factor is proving beneficial for the growth of the market in smaller countries and new markets.

Europe to Dominate Market due to Increasing Consumer Purchasing Power

Europe is expected to dominate the frozen food market share owing to the rising vegan population in the region, which is expected to drive the sales of frozen veggies. The major growth factors in the region include high consumer purchasing power, economic stability, and change in food preferences. Further, due to hectic lifestyles, the demand for ready-to-eat breakfast products has gained huge popularity. Europe is also one of the most attractive markets in the world, with a high growth potential for baked food products and potato products. The sudden outbreak of COVID-19 increased the sales of frozen edibles in the initial months, which drastically slumped in the following months.

Asia Pacific is set to register significant growth over the study period. This is due to the rising consumer adoption of digital retailing platforms. The increasing number of cold chain facilities in various developing countries is also helping regional frozen food market growth.

Moreover, an increase in the number of refrigeration facilities in retail shops and increasing availability of preserved foods and free sample offerings through online retails are facilitating the market growth in countries such as India, Japan, and China. Urbanization in various Southeast Asian countries is expected to show tremendous growth in the market.

North America is expected to hold the third-largest market share owing to high consumer awareness regarding the benefits of such eatables. Various regulations have been imposed by the FDA which minimizes the usage of harmful chemicals such as trans fats. Prepackaged foods require minimum cooking as these products are already prewashed, precut, and then frozen, making them portable and giving them an extended shelf life. These factors help aid the growth of the market in the region.

South America and the Middle East & Africa (MEA) are expected to grow at a moderate CAGR over the analysis period and increase its share of the global market. This is owing to increasing advancements in the packaging of packaged foods and beverages. Due to increasing consumer preference toward convenience foods and fast food consumption, the market is expected to display promising potential in the forecast years.

Source: www.fortunebusinessinsights.com

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INTERTWINED FUTURES: HOW DIGITAL TRANSFORMATION, SUSTAINABILITY, AND RESILIENCE ARE SHAPING INDIA'S SUPPLY CHAIN LANDSCAPE

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India's supply chain ecosystem stands at a transformative crossroads. Once focused primarily on cost-efficiency and speed, the sector is now evolving into a more dynamic, conscious, and future-ready network. Three forces—**digital transformation, sustainability, and resilience**—are no longer operating in silos; instead, they are becoming deeply interconnected drivers of competitiveness and survival.

Digital Transformation: From Visibility to Intelligence

India's adoption of digital technologies like **AI, blockchain, IoT, and cloud computing** has accelerated post-pandemic. These tools provide real-time visibility across the supply chain, enable predictive analytics, and streamline operations. Platforms that integrate procurement, inventory, and logistics are turning supply chains from reactive systems into **intelligent, data-driven ecosystems**.

Digitalization has also made collaboration seamless across suppliers, manufacturers, and distributors—often across borders. For Indian companies competing on a global stage, **this digital backbone is now a baseline expectation**.

Sustainability as a Core Supply Chain Mandate

Sustainability in India's supply chains is no longer a compliance checkbox—it's a business imperative. With growing pressure from investors, consumers, and regulators, organizations are rethinking everything from **materials sourcing and packaging to energy-efficient transportation**.

Initiatives like green warehousing, reverse logistics, and circular economy models are gaining ground. Digitization, once again, plays a key role—by **tracking emissions, measuring waste, and managing ESG disclosures**, companies can monitor their impact more transparently.

Resilience in the Age of Disruption

Whether it's geopolitical tensions, climate events, or global health crises, the supply chain shocks of recent years have pushed Indian businesses to build stronger buffers. Resilience now means **more than redundancy**—it involves agility, local sourcing strategies, smart forecasting, and a culture of continuous learning.

By leveraging digital twins and scenario planning, organizations can stress-test their networks and respond quickly to disruptions. And by embedding **sustainability goals within their risk frameworks**, they ensure that resilience isn't built at the environment's expense.

The Way Forward: Integration, Not Trade-Offs

Traditionally, efficiency came at the cost of resilience; speed came at the cost of sustainability. But with intelligent technology at the helm, Indian supply chains no longer have to choose. They can be agile, ethical, and efficient all at once.

Companies that weave these priorities together are more likely to thrive—not just in today's volatile environment, but in the future India is actively shaping.

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HOW AI IS CHANGING LOGISTICS & SUPPLY CHAIN IN 2025

Introduction : In 2025, putting **AI in supply chain** is no longer just a competitive advantage—it's become an essential survival tool for logistics providers and supply chain operators worldwide.

The global AI in logistics market has exploded to **$20.8 billion in 2025**, representing a staggering 45.6% CAGR from 2020, according to the latest McKinsey Global Institute report.

This revolutionary technology is fundamentally **reshaping how goods move across the globe**, with **78% of supply chain leaders** reporting significant operational improvements after implementing AI-powered logistics solutions.

As customer expectations for same-day deliveries, real-time tracking, and personalized service continue to rise, organizations that fail to leverage AI capabilities find themselves increasingly unable to compete. In an era where **65% of logistics costs are tied to last-mile delivery and inventory inefficiencies**, supply chain automation driven by **artificial intelligence** offers a pathway to not just survival but remarkable growth.

DocShipper has positioned itself at the **cutting edge of this transformation**, integrating AI across our entire operations, from sourcing to delivery. Our **AI-powered platform** is not just a tool, but a comprehensive approach to reimagining global logistics.

This comprehensive guide explores **how AI is revolutionizing the logistics and supply chain landscape in 2025**, and how forward-thinking companies can leverage these technologies to thrive in an increasingly complex global marketplace.

Understanding How AI is Changing Logistics & Supply Chain

The integration of artificial intelligence shows exactly how AI is changing logistics & supply chain operations from experimental to mission-critical.

To appreciate the full scope of this transformation, it's essential to understand the core technologies driving change and how they're reshaping traditional systems by integrating AI in supply chain.

AI Technologies Changing Logistics & Supply Chain : Real cases

AI-powered logistics platforms are delivering measurable impact across the industry, with real-world results that demonstrate the **technology's transformative potential in logistics operations**:

- Maersk's **AI-driven maritime logistics** has **decreased vessel downtime by 30% through predictive maintenance**, saving over $300 million annually and reducing carbon emissions by 1.5 million tons. Their **AI systems analyze over 2 billion data points daily from 700+ vessels**, **predicting** equipment failures up to **3 weeks in advance with 85% accuracy**.
- Amazon's **warehouse robotics program** now includes **over 520,000 AI-powered robots** working alongside humans, **cutting fulfillment costs by 20%** while **processing 40% more orders** per hour. Their computer vision systems have improved **picking accuracy to 99.8%**, virtually eliminating returns due to incorrect items.
- DHL's **AI-powered forecasting platform** has **reduced delivery times by 25% across 220 countries** while improving **prediction accuracy to 95%**. Their "Smart Trucks" utilize **machine learning algorithms** to **dynamically reroute deliveries** based on traffic, weather, and new pickup requests, **saving 10 million delivery miles annually.**
- Walmart has deployed **AI inventory management systems** across 4,700 stores, **reducing inventory costs by $1.5 billion annually** while maintaining **99.2% in-stock rates.** Their demand forecasting algorithms analyze **200+ variables per product** to optimize replenishment.
- UPS's ORION **route optimization system** uses AI to **calculate optimal delivery paths**, processing **30,000 route optimizations** per minute and **saving 38 million liters of fuel annually.** The system prevents approximately 100,000 metric tons of carbon dioxide emissions each year.
- Mid-sized logistics provider XPO has embraced **AI-powered freight matching**, **reducing transportation costs by 15%** and allowing them to compete effectively with industry giants. Their **AI platform** matches **99.7% of loads automatically** without human intervention.

These industry leaders demonstrate how AI is changing logistics & supply chain management concretely in 2025 through measurable results that directly impact the bottom line. The technology has moved far beyond theoretical benefits to provide **documented ROI** across

diverse logistics operations.

The Evolution: How AI is Changing Logistics & Supply Chain?

The journey from traditional to AI-driven supply chains represents a fundamental paradigm shift in how goods move from manufacturers to consumers. So let's understand it better via this comparison table:

Traditional Supply Chain	AI-Driven Supply Chain
Reactive decision-making based on historical data	Proactive decision-making using real-time data and predictive analytics
Manual planning and coordination	Automated planning with continuous optimization
Limited visibility across supply chain nodes	End-to-end transparency and traceability
Fixed, predefined routes and schedules	Dynamic routing and scheduling that adapts to conditions
Isolated systems with manual data transfer	Interconnected digital ecosystem with seamless data flow
Periodic forecasting with significant human input	Continuous forecasting with machine learning algorithms
Response time measured in days or weeks	Response time measured in minutes or hours
Exception-based management	Preventive management through early detection

This evolution has accelerated dramatically in recent years, **with 67% of supply chain executives** reporting that **their organizations have fully or partially automated key processes using AI by 2025**, according to Gartner's latest Supply Chain Technology User Survey.

Building on this momentum, the **shift from traditional to AI-powered supply chains** is not just a technological upgrade-it's a transformation in operational mindset and capability.

To visualize these changes, explore the infographic below, which highlights how **industry trends are rapidly moving** from **manual, reactive approaches** to more **automated, data-driven,** and **intelligent logistics** and supply chain methods.

DOCSHIPPER ADVICE

Ready to Modernize Your Logistics? Is your current system holding you back? Well know that DocShipper's AI Platform Offers:

- Real-time tracking
- 30% faster processing
- 99.5% accuracy
- Personalized logistics solutions

Digital Twins disrupting the old fashion supply chain and logistics operations

Digital twins now **replicate entire supply networks in virtual environments**, allowing companies to **simulate changes** and **anticipate disruptions before they occur**.

Meanwhile, **generative AI systems** are creating optimal transportation routes, warehouse layouts, and packaging designs that human planners could never conceive.

Key Benefits: How AI is Changing Logistics & Supply Chain

The strategic **implementation of artificial intelligence** across supply chain operations delivers multifaceted benefits that **extend far beyond simple cost reduction.** Organizations embracing AI are experiencing **transformative improvements** in **operational efficiency, forecasting accuracy, and risk management** capabilities.

AI upgrading Logistics & Supply Chain Efficiency and Cost Reduction

AI is Changing Logistics & Supply Chain by its **technologies** that are driving unprecedented **operational improvements** that translate directly to bottom-line benefits.

Predictive Maintenance and Resource Optimization

AI-driven predictive maintenance represents one of the most impactful applications in logistics operations, delivering substantial cost savings while maximizing asset utilization:

- **Port of Rotterdam's AI system** monitors 42 million vessel movements annually, **predicting maintenance needs for 100,000+ assets with 95% accuracy**. This has **reduced** unexpected **downtime by 20%** and **extended equipment lifespan by 25%,** saving €31 million annually.
- **FedEx's predictive maintenance platform** analyzes data from 35,000+ vehicles**, reducing fleet maintenance costs by $11 million annually** and **cutting** vehicle **downtime by 22%.** Their AI algorithms **identify potential failures up to 78 hours before they occur**.
- **Kuehne+Nagel's** A**I-powered resource allocation** optimizes workforce scheduling across 1,300 locations, **resulting in 15% labor cost reduction** while **handling 20% more shipments**. Their system

processes 1.5 million scheduling scenarios daily to find optimal staffing patterns.

These systems continuously monitor equipment health through **IoT sensors**, analyze historical failure patterns, and optimize maintenance schedules to **prevent costly breakdowns** while maximizing resource utilization.

DOCSHIPPER TIPS

Why DocShipper Stands Out in AI-Powered Logistics?

Because we are the agile alternative to tech giants !

While industry behemoths like Amazon and Maersk deploy massive, rigid AI systems,:

- **Personalized AI Solutions:** Custom-tailored to your specific logistics needs
- **Flexible Implementation:** Scalable AI that adapts to your business
- **Comprehensive Logistics Ecosystem:**
  – Integrated sourcing
  – Intelligent freight management
  – Automated customs processing
  – Smart client dashboard

Our AI isn't just a tool—it's a strategic partner that grows with your business.

Explore Our AI-Powered Logistics Solutions,

Automated Decision-Making and Process Streamlining

Supply chain automation through AI has advanced to handle increasingly complex decision processes:

- **Microsoft's global logistics network** uses AI to **automate fulfillment planning for hardware shipments**. Their system generates detailed plans covering inventory allocation, carrier selection, and scheduling across 40+ distribution centers, **reducing planning time from 4 days to 30 minutes** while **improving accuracy by 24%.**
- **Nike's AI-driven production** and distribution system **automatically allocates manufacturing capacity across 500+ facilities** and adjusts distribution plans for 120,000+ SKUs daily, **reducing lead times by 50%** while maintaining **99.7% fulfillment accuracy.**
- **Siemens' AI procurement platform automatically evaluates 15,000+ suppliers against 200+ criteria**, negotiates prices within approved parameters, and executes routine orders without human intervention. This has r**educed procurement cycle times by 60%** and generated 11% cost savings.

By delegating routine decisions to **AI systems**, these companies have **freed human experts to focus on strategic planning** and exception handling, dramatically improving both efficiency and effectiveness.

Real-Time Analysis and Response Capabilities

AI is changing logistics & supply chain by using modern AI systems that enable organizations to **process massive data volumes** instantaneously and respond to changing conditions with unprecedented speed:

- **Target's supply chain AI platform** monitors 1,900+ stores in real-time, **processing 4.5 million data points hourly** to detect inventory anomalies. This capability has **reduced out-of-stock incidents by 40%** and **cut response time to supply disruptions** from **2-3 days to under 4 hours**.
- **DB Schenker** deployed **AI-powered control towers** that **monitor 13 million shipments daily across 2,000+ locations.** Their system **detects disruptions within 3 minutes** and automatically reroutes affected shipments, **reducing delay incidents by 35%** and **saving €45 million annually** in expedited shipping costs.
- **Home Depot's AI demand sensing technology analyzes 160 terabytes of daily transaction data**, enabling real-time inventory adjustments. This has improved **in-stock availability by 15%** while **reducing excess inventory costs by $1.2 billion annually.**

These real-time capabilities ensure that organizations maintain service levels despite disruptions, dynamically reallocating resources to **address emerging challenges** before they impact customers.

AI is Changing Logistics & Supply Chain Forecasting and Demand Planning

Predictive analytics has revolutionized **how companies anticipate market needs** and **prepare their operations accordingly**. AI-powered forecasting systems now incorporate a vast array of both structured and unstructured data to deliver unprecedented accuracy.

Advanced Predictive Analytics

Today's AI forecasting systems extend far beyond traditional statistical methods:

- **Unilever's AI demand forecasting platform integrates 26 external data sources** including social media sentiment, weather patterns, and local events.. This is a real example of AI-powered logistics platforms in predicting market needs. IT has **improved forecast accuracy from 67% to 92%** on a SKU-location level, **reducing excess inventory by €300 million** while maintaining 99.1% service levels.
- **Coca-Cola's AI system** processes 600+ variables per product-market combination, **predicting demand fluctuations with 85% accuracy up to 12 weeks in advance.** The company has **reduced forecast error by 30%** and lowered safety stock requirements by €250 million globally.
- **Lenovo's global supply chain AI** platform **analyzes geopolitical news, currency fluctuations, and**

semiconductor industry trends to anticipate supply disruptions. Their early detection system identified **the 2021 chip shortage 4 weeks before it impacted competitors**, allowing them to secure critical components and gain 2.3% market share.

These systems continuously **learn from outcomes**, refining their models **to improve prediction accuracy over time**, which creates a virtuous cycle of increasingly precise forecasts.

Dynamic Inventory Management

AI is changing logistics & supply chain and has **transformed inventory management** from a periodic balancing act to a **continuous optimization process**:

- **Zara's AI inventory management platform** analyzes **300+ million transactions weekly to optimize stock levels across 7,500 stores**. The system **adjusts inventory 3 times daily** based on real-time sales, **reducing excess inventory by 20%** while **maintaining 98% product availability.**
- **Samsung's global inventory AI** manages **85,000+ SKUs across 200+ distribution centers**, dynamically **calculating optimal inventory levels** based on forecast reliability, lead time variability, and sales volatility. This has **reduced overall inventory by $1.2 billion** while **improving** perfect o**rder fulfillment by 15%.**
- **Best Buy's dynamic allocation system** uses **machine learning** in logistic to continuously rebalance inventory across 1,000+ stores and 5 e-commerce fulfillment centers. Their **AI redistributes overstock items** to high-demand locations daily, **reducing markdowns by 30%** and **saving $180 million annually**.

These AI-powered systems have **transformed inventory from a necessary cost center to a strategic asset** that enhances both capital efficiency and customer satisfaction.

Market Trend Identification

Advanced AI algorithms excel at **identifying emerging patterns** that human analysts might miss:

- **P&G's AI market sensing platform analyzes 4 billion social media posts daily alongside 300+ traditional data sources** to **identify emerging consumer trends**. The system detected the hand sanitizer shortage 8 days before traditional analytics, allowing P&G to increase production by 45% ahead of competitors.
- **IKEA's trend detection AI monitors 75 million monthly customer interactions across digital and physical channels.** The system identified a **22% increase in home office furniture interest two weeks before sales surged** during the pandemic, enabling IKEA to redistribute inventory and **capture €400 million in additional revenue.**
- **L'Oréal's AI trend forecasting tool** analyzes **6 million beauty-related social media posts** daily to **predict product preferences up to 4 months in advance** with **87% accuracy**. This capability has **reduced new product development time by 30%** and **increased** successful **product launches by 42%**.

By identifying emerging trends earlier than human analysts could, these AI systems enable companies to adapt their operations proactively rather than reactively.

Risk Management and Resilience

In an era of **increasing supply chain volatility**, **AI offers powerful tools** for **anticipating, mitigating, and responding to disruptions** of all kinds.

Modern AI systems **provide early warning of potential supply chain disruptions**:

- **Johnson & Johnson's risk detection AI monitors 27,000+ suppliers across 100+ countries, analyzing 10,000+ risk signals daily** including news events, financial indicators, and natural disasters. The system **provided early warning of 85% of major supply disruptions** in 2024, with an average lead time of **7 days before impacts** materialized.
- **Toyota's supply chain risk AI** monitors **175,000+ tier-1 through tier-3 suppliers**, detecting potential disruptions **with 91% accuracy.** During recent flooding in Southeast Asia, their system **identified at-risk components 11 days before physical impacts**, allowing Toyota to secure alternate sources and **avoid $280 million in lost production.**
- **Intel's AI-powered fraud detection system** analyzes **3 million daily procurement transactions**, identifying suspicious patterns with **96% accuracy**. The system has **prevented $47 million in procurement fraud** annually and detected compliance violations 35 days earlier than manual auditing.

Note : AI Risk Management in Logistics: Anticipating and Mitigating Challenges

Modern AI risk management in logistics goes beyond traditional approaches, offering:

– **Predictive disruption detection**
– Comprehensive supply chain **vulnerability assessment**
– **Real-time risk monitoring** and mitigation strategies

These capabilities ensure that companies can respond to emerging threats before they cascade into major disruptions, preserving business continuity and customer service levels.

Scenario Planning and Simulation

Digital twins and AI simulation tools enable organizations to test mitigation strategies in virtual environments:

- **Procter & Gamble's supply chain digital twin** simulates **3,500+ manufacturing facilities, 600+**

distribution centers, and 100,000+ shipping lanes. During the 2023 Suez Canal blockage, **P&G's AI simulated 15,000+ rerouting scenarios in 45 minutes**, identifying optimal alternatives that **limited disruption costs to $18 million** versus an industry average of $42 million.

- **Volkswagen uses AI scenario planning** to simulate complex **"what-if" situations** across their global supply network. When semiconductor shortages threatened production, **their system evaluated 27,000+ allocation scenarios across 120+ vehicle models**, optimizing limited chip supplies to prioritize high-margin vehicles and **minimizing profit impact by €1.3 billion**.
- **Nestlé's AI supply chain simulator** evaluated the impact of potential CO2 shortages on their beverage production, **testing 12,000+ mitigation strategies.** The simulation identified an optimal approach combining temporary reformulation and production reallocation that **maintained 96% of planned output** despite a 40% reduction in CO2 availability.

These simulation capabilities allow organizations to develop and t**est mitigation strategies before disruptions occur**, significantly enhancing their response effectiveness when real crises emerge.

Supply Chain Vulnerability Assessment

AI-powered risk assessment tools provide comprehensive visibility into supply chain vulnerabilities:

- **Apple's supplier risk AI** evaluates **350+ factors across 2,000+ direct suppliers**, generating vulnerability scores that are updated daily. Their system identified critical dependencies in power management **chips 7 months before industry-wide shortages emerged**, allowing Apple to secure long-term contracts and **maintain 98% component availability** while competitors struggled.
- **Adidas' supply chain vulnerability AI analyzes network dependencies across 500+ suppliers and 300+ logistics providers**. The system **identified that 47% of their athletic footwear relied on materials passing through three vulnerable ports,** leading to a strategic redistribution that **reduced this concentration to 23%** and **prevented $135 million in potential disruption costs** during recent port strikes.
- **Bristol Myers Squibb's pharmaceutical supply chain AI** maps **16,000+ inputs across 120+ critical medications**, identifying single points of failure. This analysis **revealed that 38% of their portfolio had dangerous dependencies on specific API suppliers**, leading to a strategic sourcing initiative that **reduced critical vulnerabilities by 65%.**

By providing visibility into hidden vulnerabilities, these AI tools enable strategic improvements that enhance supply chain resilience before disruptions occur.

DOCSHIPPER ADVICE

Struggling with supply chain disruptions? DocShipper's **AI-powered risk assessment tools** provide **real-time monitoring of potential threats** to your global logistics operations.

Our **predictive systems identified 78% of major shipping disruptions in 2024** an average **of 9 days before they impacted operations**, giving our clients the critical time needed to implement contingency plans.Contact our risk experts today !

Challenges and Limitations of AI Adoption in Logistics and Supply Chain

Despite its **transformative potential**, **AI implementation in logistics and supply chain operations** presents significant challenges that organizations must navigate carefully.

1. Implementation Costs and ROI Concerns

The financial barriers to AI adoption remain substantial, particularly for smaller organizations:

- The average enterprise-grade **AI-powered logistics platform** costs between **$500,000 and $2.5 million to implement**, with **ongoing maintenance representing 15-20%** of initial costs annually.
- According to Gartner, **62% of supply chain AI initiatives exceed their budgets by an average of 45%**, largely due to unforeseen data preparation requirements and integration complexities.
- While **AI investments show compelling ROI**—with McKinsey reporting **median returns of 3.5x investment over three years**—the upfront costs remain prohibitive for many. Only **28% of mid-sized logistics providers** ($10M-$100M annual revenue) **have implemented comprehensive AI solutions**, compared to 73% of large enterprises.
- **Cloud-based AI solutions** with consumption-based pricing models have reduced entry barriers, allowing organizations to start with targeted applications requiring **$50,000-$150,000 initial investment** rather than comprehensive transformations.

2. Data Quality and Integration Issues

AI is changing logistics & supply chain, as a result **AI effectiveness** depends entirely on the quality and accessibility of underlying data:

- **A 2024 MIT supply chain study** found that the average logistics organization utilizes only **23% of its available data for AI applications**, with the remainder trapped in legacy systems or suffering from quality issues.

- **Data consistency represents a major challenge,** with **transportation management systems** and **warehouse management systems** speaking different "languages." Companies report **spending 60-70% of AI project budgets on data preparation and integration** rather than on AI algorithms themselves.
- **Master data management** issues **plague 76% of supply chain organizations,** with duplicate records, inconsistent formats, and missing fields undermining **AI accuracy**. Companies with formal **data governance** programs **report 3.2x higher success rates for AI initiatives.**
- **Integration between operational technology (OT) and information technology (IT)** remains challenging, with **only 34% of organizations reporting seamless data flow** between physical equipment and AI decision systems.

3. Workforce Adaptation and Change Manageme

The human element often **determines AI implementation success or failure:**

- According to a 2024 Deloitte survey, **72% of logistics AI implementations that failed** cited **workforce resistance** rather than technical issues **as the primary cause.**
- **Skill gaps** present major obstacles, with **68% of supply chain organizations reporting difficulty recruiting qualified data scientists and AI specialists**. **The shortage of talent** has driven **a 35% premium on salaries for professionals** with both supply chain domain expertise and AI technical skills.
- Effective change management strategies have proven crucial, with companies that invested **at least 15% of their AI project budgets in training and change management** reporting **2.8x higher adoption rates and 3.5x higher ROI**.
- **Collaborative approaches to AI implementation**—where operational experts work alongside technical specialists—**show 65% higher success rates** than technology-led approaches that fail to incorporate domain expertise.

4. Ethical and Privacy Considerations

As **AI** is changing logistics & supply chain, and it becomes more pervasive in supply chains, **ethical concerns** demand careful attention:

- **Transparency issues** arise when AI makes decisions that impact suppliers and customers. According to a 2025 MIT study, **only 23% of logistics AI systems** provided sufficient explanation of their decision processes to satisfy stakeholder concerns.
- **Data privacy regulations** like GDPR and CCPA impact how **supply chain data** can be used for **AI training**, with cross-border data transfers creating particular complexity. Companies operating global supply chains must navigate 2**7 different major privacy frameworks** on average.
- **Algorithmic bias** can perpetuate or **amplify existing inequities in supplier selection**, with a recent Stanford study finding that unconstrained AI procurement systems favored larger, established suppliers by a margin of 3.5:1 over smaller or minority-owned businesses.

Cybersecurity vulnerabilities increase **as supply chains become more digitized and AI-dependent**. The World Economic Forum reports that AI-managed **supply chains experienced 47% more cyberattack attempts** in 2024 than traditional systems, requiring substantial security investments.

AI Applications Across the Supply Chain Ecosystem

Artificial intelligence is **delivering value** across **every stage of the supply chain**, from sourcing and procurement through to final customer delivery and service.

Let's discover how you can implement AI and automation within each step of the supply chain processes and operations to harness its total potential and optimize your logistics operations.

1. Procurement and Supplier Management

AI has revolutionized how organizations identify, evaluate, and collaborate with suppliers:

- **Intelligent Vendor Selection**: **AI systems** now **evaluate thousands of potential suppliers** against **dozens of criteria simultaneously**, analyzing elements like financial stability, ESG performance, and production capabilities **to identify optimal partners.**
- **Automated Contract Intelligence**: Advanced NLP systems **review supplier agreements** to identify savings opportunities, ensure compliance, and even **conduct routine negotiations** without human intervention.
- **Supply Chain Transparency**: **AI monitoring tools track environmental and social metrics** across extended supplier networks, using satellite imagery, social media analysis, and public records to verify sustainability claims.
- **AI Warehouse Automation**: Revolutionizing Inventory Management. AI warehouse automation has emerged as a critical technology in **modern logistics**, enabling unprecedented levels of efficiency and precision

Our AI-powered logistics platform demonstrates how intelligent systems can transform traditional warehouse operations.Key aspects of **AI warehouse automation** include:- Intelligent robot coordination

- Real-time inventory tracking
- Predictive stock management
- Automated picking and sorting systems

Our **AI-driven supplier evaluation system** processes over **10,000 potential manufacturing partners** across Asia, identifying optimal matches for client requirements **75% faster than traditional methods** while reducing procurement costs by **an average of 12%.**

2. Warehouse and Inventory Management

Smart warehouse operations have evolved beyond simple automation to **create facilities** that continuously adapt to changing conditions:

- **Collaborative Robotics**: **Advanced vision systems** enable robots to work safely alongside humans, **handling repetitive tasks** while adapting to dynamic environments.
- **Dynamic Inventory Optimization**: **AI algorithms adjust stock levels in real-time** based on hyperlocal demand patterns, **reducing capital requirements** while improving product availability.
- **Predictive Space Utilization**: **Digital simulations** identify **optimal warehouse layouts** and continuously reconfigure storage locations based on forecasted order patterns.
- **AI-Driven Door-to-Door Solutions:** These advancements extend beyond the warehouse, with **AI optimizing** the entire shipping process to provide **seamless door-to-door delivery** and comprehensive logistics support.

3. Transportation and Logistics Optimization

AI is changing logistics & supply chain but **has also transformed transportation networks** into dynamically adapting systems that maximize efficiency:

- **Continuous Route Recalculation**: Modern logistics platforms **evaluate thousands of potential delivery sequences hourly**, adapting to traffic, weather, and new orders in real-time.
- **Autonomous Transportation**: **Self-driving vehicles** and **drones** have moved beyond experiments to handling specific operational segments with remarkable efficiency and safety.

Capacity Marketplaces: **AI matching platforms** connect shippers with available transportation capacity, **reducing empty miles by 45%** while cutting carbon emissions significantly. This process has upgraded AI logistics operations 360° during 2024, 2025 but also the upcoming years.

DOCSHIPPER ADVICE

Our AI transportation platform analyzes **over 2,000 global shipping routes daily**, delivering an average 22% reduction in transit times and 15% decrease in shipping costs compared to traditional methods in 2024.

Ready to transform your supply chain with AI-powered optimization? Contact our experts today

4. Customer Experience and Service Enhancement

AI has **revolutionized customer interactions** through personalization and proactive service:

- **Tailored Delivery Experiences**: Advanced algorithms **predict ideal delivery windows and methods** for each customer, increasing first-attempt success while improving satisfaction.
- **Anticipatory Support**: **AI systems** identify **potential delivery issues** before they occur, enabling **proactive communication** that transforms potential failures into demonstrations of competence.

Simplified Returns: **Intelligent systems** determine optimal disposition paths for returned items, increasing recovery value while improving the customer experience.

Emerging AI Trends in 2025 and beyond applied to the Supply Chain field

The supply chain landscape is experiencing unprecedented technological evolution as **AI** is changing logistics & supply chain and its **capabilities** continue to advance rapidly. Forward-thinking organizations are deploying increasingly **sophisticated AI solutions** that transcend traditional analytics to **deliver transformative operational advantages**.

These emerging technologies promise to redefine industry standards for efficiency, resilience, and innovation across global supply networks. Let's dive into the new AI trends

Trend 1 : Generative AI Applications

Generative AI has moved beyond creative applications to deliver substantial business value:

- **Network Design Optimization**: These systems **explore thousands of potential supply chain configurations**, identifying non-obvious arrangements that simultaneously improve cost, service, and sustainability metrics.
- **Autonomous Planning**: **Generative AI creates and refines operational plans** without human intervention, continuously evaluating alternatives to optimize for changing conditions.
- **Synthetic Data Generation: AI creates realistic simulations of rare events** like disruptions or new product launches, enabling organizations to prepare for situations they've never encountered.

Trend 2 : AI-Powered Digital Twins

AI is changing logistics & supply chain, thus **digital**

replicas have evolved **from static models to dynamic systems** that continuously simulate and optimize physical supply chains:

- **Real-Time Replication**: **Modern twins** maintain **perfect synchronization** with physical operations, i**ncorporating data from thousands of sensors** to identify bottlenecks before they impact performance.
- **Scenario Testing:** These platforms **safely evaluate complex "what-if" scenarios,** predicting the impact of potential disruptions and policy changes before implementation.
- **Autonomous Implementation**: Leading digital twins now directly **execute optimizations**, adjusting production schedules, inventory policies, and transportation plans **without human intervention.**

o implement predictive logistics solutions for your business

Trend 3: Edge AI and IoT Integration

The influence of AI on logistics and supply chain demonstrates that **edge computing** combined with **AI** enables intelligent operation even in challenging connectivity environments:

- **Decentralized Intelligence**: **Processing at the edge** allows **continuous monitoring and decision-making** regardless of network availability, particularly valuable in remote transportation contexts.
- **Responsive Automation**: **Edge AI** enables **sub-millisecond responses** to changing conditions, critical for coordinating autonomous vehicles and robotics in dynamic environments.
- **Resilient Operations**: These systems **continue functioning during connectivity disruptions**, maintaining operational continuity despite challenging conditions.

The Future of AI in Logistics and Supply Chain

As **AI** is changing logistics & supply chain and its capabilities continue to advance, several emerging technologies promise to further **transform logistics operations.**

Emerging Technologies on the Horizon

- **Quantum Computing**: These systems promise to **solve previously intractable routing** and **allocation problems 100x faster** than classical approaches, with early pilots showing **potential cost savings of 15-22%.**
- **Augmented Reality Integration**: **AR technologies enhance human capabilities across logistics operations**, improving **accuracy to 99.9%** while **increasing productivity by 25%** and reducing training requirements.

Advanced Natural Language Processing: Conversational interfaces allow stakeholders to interact with complex systems using everyday language, democratizing access to supply chain intelligence.

Ethical AI and Responsible Implementation

As AI systems become increasingly autonomous, **ethical considerations** take on greater importance:

- **Transparency and Explainability :** Leading organizations now provide **human-readable justifications for automated decisions**, maintaining complete **audit trails of AI** recommendations and implementations.
- **Fairness Safeguards and Bias Prevention: Regular bias audits** ensure algorithms don't systematically disadvantage specific suppliers or customers, with corrective mechanisms to address unintended consequences.
- **Environmental Sustainability** : AI optimization now explicitly considers **carbon footprint** alongside traditional metrics, **reducing emissions while improving efficiency.**

Through responsible development and deployment, organizations can ensure that AI advances benefit all supply chain stakeholders while addressing critical **sustainability challenges** facing our global logistics networks.

Conclusion

The integration of AI into logistics and supply chain operations has transformed from a competitive advantage to an essential business requirement in 2025. Organizations **implementing AI strategies** are experiencing significant improvements in operational efficiency, forecasting accuracy, and risk management capabilities, with industry leaders like Maersk, Amazon, and Unilever demonstrating concrete ROI through reduced costs and enhanced service levels.

While challenges remain – from **implementation costs to data quality issues** – the path forward is clear. Companies that **strategically embrace AI** while addressing these challenges will thrive, while those that hesitate risk falling behind more agile competitors.

At DocShipper, we remain **committed to leading this AI revolution in logistics**, continuously enhancing our capabilities to deliver unprecedented speed, accuracy, and cost-effectiveness to our clients.

By combining **cutting-edge AI technologies** with **deep logistics expertise**, we're helping organizations navigate today's complex supply chains while positioning them for success in tomorrow's increasingly **AI-powered world.**

Source: docshipper.com

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INDIA'S DEFENCE ECOSYSTEM IS ENTERING A NEW ERA OF INNOVATION STRATEGIC SHIFT

PANKAJ KHURANA, LEADER AND PARTNER - DEFENCE AND SECURITY, TECHNOLOGY CONSULTING, EY INDIA

India's defence sector is transforming through integrated commands, digital infrastructure, and co-development ecosystems, aligning industry and innovation to build a more agile, mission-ready national security framework

India's approach to defence modernisation appears to be moving well beyond incremental upgrades or isolated production gains.

India's defence sector is being shaped by the convergence of structural reforms, digital innovation, and a maturing industrial base. These represent a systemic shift in how the country builds defence capability and secures its strategic interests.

While many of these developments have evolved in parallel—be it the establishment of joint theatre commands, the emergence of defence corridors, or the rise of start-up-led innovation—their convergence in 2025 signals something greater: the early architecture of a more integrated and innovation-led national security framework.

Synergy Through Theatre Commands

At the heart of India's ongoing defence reform is the creation of joint theatre commands, designed to enhance coordination among the Army, Navy, and Air Force. Currently, the armed forces operate through 17 separate service commands, each shaped by its own operational priorities. The proposed model envisions the creation of four integrated theatre commands that will include structures across land, maritime, air, cyberspace, and aerospace domains.

These commands are not merely collaborative arrangements but are designed to function as mission-oriented formations that centralise planning and operational readiness across all levels of warfare.

India is actively laying the groundwork for next-generation military capabilities through initiatives such as the Defence Cyber Agency, plans for a Defence Cloud, and early pilots in digital twins and predictive maintenance. On the global stage, countries such as the United States are advancing Joint All-Domain Command and Control (JADC2), the UK is developing its Defence AI Strategy, and France is investing in AI-enabled battlefield systems.

An integrated command dashboard offering real-time insights into equipment status, supply chain movements, and procurement activities could further enhance situational awareness, decision-making, and coordination across defence logistics and operations.

Defence Corridors as Manufacturing Hubs and Innovation Hotspots

India's Defence Industrial Corridors in Uttar Pradesh and Tamil Nadu exemplify how industrial policy is aligning with strategic goals. With investment targets exceeding 20,000 crore and participation from over 200 companies, these corridors are now producing advanced munitions, mobility systems, and aerospace components for both domestic and global markets.

A more significant development is the emergence of a co-creation ecosystem, where Defence Public Sector Undertakings (DPSUs), MSMEs, global OEMs, and start-ups collaborate to solve operational challenges. For example, BEL has partnered with start-ups under the iDEX framework to develop AI-based surveillance systems, while HAL is working with private firms on unmanned aerial platforms.

iDEX (Innovations for Defence Excellence) has been instrumental in catalysing this shift. Since 2018, it has supported over 350 start-ups and MSMEs through grants, mentoring, and access to procurement pipelines. These challenge-based innovation models are critical in closing tactical and technological gaps swiftly and cost-effectively.

In parallel, the Ministry of Defence has initiated an overhaul of the Defence Acquisition Procedure (DAP) 2020 to modernise procurement systems in

line with operational needs and emerging technologies. This review aligns closely with broader national objectives such as Aatmanirbhar Bharat and the designation of 2025 as the 'Year of Reforms'.

Its key focus areas include faster acquisition cycles, innovation-led procurement, and greater private sector participation. This signals a shift towards decentralised, collaborative R&D, where start-ups, MSMEs, and academia are not merely vendors but co-creators, actively shaping defence solutions in real time.

The Co-Development Imperative

The traditional vendor-client model in defence manufacturing—characterised by transactional procurement and rigid supply-chain processes—requires a procedural overhaul. The future lies in a shift towards mission-based partnerships, where industry, academia, and the armed forces co-own the problem and co-develop context-driven solutions.

With DRDO's annual budget now exceeding 26,000 crore and a greater emphasis on collaboration, there is real opportunity to strengthen ties between government research bodies and private enterprise. These steps can also attract patient capital into core technologies such as electronic warfare systems, robotics, AI/ML applications, and autonomous platforms.

Encouragingly, this shift is already taking shape. Several DPSUs are establishing innovation cells and satellite R&D centres in key technology clusters across the country. For instance, Bharat Electronics Limited (BEL) has launched innovation labs focused on AI and cyber defence. Similarly, HAL is setting up advanced R&D centres in Nashik and Bengaluru to support projects in unmanned aerial systems and next-generation avionics.

Looking ahead, each theatre could house a dedicated Tech Innovation Cell that collaborates with DRDO, iDEX, and regional start-ups to address real-time, theatre-specific challenges. This will require empowering mid-level leadership across the services with the autonomy, data, and digital tools they need to innovate at the edge.

For example, this could include rolling out mobile-first field applications that enable mid-level leaders to report, review, and respond to issues in real time. Additionally, deploying low-code/no-code platforms could empower department heads to prototype internal tools or automate routine processes without relying on central IT support.

Digital Infrastructure for the Supply Chain

Addressing challenges in the supply chain—such as procurement delays, limited visibility into asset health, and siloed operations—will be key to building a more responsive and mission-ready defence ecosystem.

This could be achieved through a unified digital system, built on secure cloud infrastructure, common data-sharing protocols, and integrated dashboards for the defence supply chain. Such a system could serve multiple functions, including tracking inventory across dispersed depots and providing predictive maintenance alerts for mission-critical equipment.

More importantly, it lays the foundation for joint logistics command models, where the three services can pool and manage resources more efficiently, particularly in contested or resource-constrained environments.

Looking Ahead

India's approach to defence modernisation appears to be moving well beyond incremental upgrades or isolated production gains. There is a marked shift towards building a more integrated and innovation-led network where industry, technology, and policy are increasingly aligned.

It may now be time to consider whether the next phase of progress lies in exploring deeper cross-sector collaboration and institutional frameworks that support long-term co-development. As challenges become more interconnected, there appears to be growing value in envisioning models that enable shared responsibility, mutual learning, and sustained alignment across sectors.

The path forward involves not only advancing individual capabilities but also enabling diverse actors to collaborate more effectively over time. This could mark the beginning of a new chapter, one in which India is not merely responding to future threats, but actively shaping how the future is secured.

Views are personal, and do not represent the stance of this publication

Source:www.moneycontrol.com

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INDIA GAINS TRADE MOMENTUM AMID TARIFF AND GLOBAL SUPPLY CHAIN SHAKEUP

In a rapidly evolving global trade landscape, India stands out with its competitive advantage stemming from relatively lower tariff rates compared to several key trading partners. With a tariff rate of 26%, as of July 2025, which might reduce to below 20% amid speculations of a trade deal with the US, India is positioned to leverage its trade potential, particularly in sectors such as chemicals, electrical machinery, pharmaceuticals, textiles and agricultural goods, says GlobalData, a leading data and analytics company.

Ramnivas Mundada, Director of Economic Research and Companies at GlobalData, comments: "India's tariff rate is relatively lower than other countries, including China (30%), Mexico (30%), and the EU (30%).

"This favorable environment not only presents a unique opportunity for Indian exporters to but also enhances the price competitiveness of Indian goods and encourages foreign investment, fostering innovation and growth. Against this backdrop, GlobalData forecasts an average growth rate of 6.5% from 2025 to 2027, positioning India to become the third-largest economy by 2027."

According to NITI Aayog, India can capitalise on 78 product categories (HS 4 codes) for exports to the US, accounting for 52% of its current exports. In the HS 2 code category, India enjoys lower tariffs than competitors in 22 of the top 30 products.

This advantage arises from significant tariff hikes on goods from China, Canada, and Mexico. Although India faces slightly higher tariffs in six product categories, there remains a substantial growth potential, particularly in sectors like pharmaceuticals, textiles, and electrical machinery, enhancing India's export competitiveness.

Data from the Ministry of Commerce and Industry reveals that India's exports to the US increased by 23.5% in June 2025 and by 22.2% from April to June 2025 compared to the same period last year. This growth has positioned the US as India's largest trading partner for the quarter.

Sector-wise opportunities : India has a notable comparative advantage in the chemicals and pharmaceuticals sectors. With China facing increased tariffs, Indian exporters have a prime opportunity to capture the US chemical import market.

India accounted for about 5% of the US apparel and clothing accessories imports in 2024, according to the ITC Trade Map. With new tariffs affecting Bangladesh, Cambodia, and Indonesia, Indian manufacturers have a significant opportunity.

To achieve this, improvements in cost efficiency, lead times, and support for large-scale textile manufacturers will be essential.

The tariff hikes on Asian countries create an opportunity for India to boost its agricultural exports to the US. With relatively lower tariffs, India can position itself as a viable alternative supplier of a range of products, including agricultural goods, livestock, processed foods, and scrap materials.

Companies shifting operations to India

In the first half of 2025, several multinational companies have begun shifting their manufacturing bases to India to capitalize on tariff advantages and reduce reliance on China.

Notably, Apple rerouted 97% of Foxconn's Indian iPhone exports to the US during March to May 2025, up from 50.3% in 2024, reflecting a strategic pivot amid US-China trade tensions. Similarly, in July 2025, Samsung Electronics announced plans to diversify smartphone production by moving some manufacturing from Vietnam to India.

India's trade competitiveness : To capitalize on the evolving trade dynamics, India must extend Production-Linked Incentive schemes to labor-intensive sectors like leather and handicrafts, while rationalising electricity tariffs to enhance competitiveness.

Additionally, pursuing a services-centric trade agreement with the US is essential, focusing on IT, finance, and digital trade. Addressing non-tariff barriers in sectors like pharmaceuticals is also crucial for unlocking export potential.

In June 2025, India urged the WTO to address non-tariff barriers impacting its merchandise exports, highlighting issues like opaque regulations and delays in dispute resolution that hinder competitiveness for Indian exporters, particularly MSMEs.

Mundada concludes: "Even if India's anticipated trade deal with the US falls short of expectations, the broader shifts in global tariffs present a strategic opportunity for India to reposition itself as a key export partner. With its resilience and sectoral strengths, India is well-equipped to diversify its export base. By implementing supportive trade and industrial policies, India can transform global tariff challenges into significant economic advantages. As the world navigates these changing trade landscapes, India's potential as a competitive exporter remains bright, promising growth and resilience in the face of adversity."

Source: asiamanufacturingnewstoday.com

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OPTIMIZING OVERSIZED INVENTORY: A COST-SAVING FULFILLMENT

DEBANSHU SHARMA, SENIOR SUPPLY CHAIN MANAGER, GUEST BLOGER

Introduction : In the evolving world of supply chain strategy, oversized inventory is often left behind. These bulky, non-conveyable SKUs place a heavy burden on both fulfillment operations and transportation costs. Yet many networks default to third-party carriers — even when internal capabilities could offer more cost-effective and scalable alternatives. Based on years of network modeling and strategic planning, this article explores how fulfillment systems can reclaim capacity, reduce cost per package, and create smarter flows for first-party oversized goods.

The Oversized Inventory Challenge : Oversized, or non-conveyable, inventory presents one of the most complex challenges in modern fulfillment. These SKUs typically bypass standard sortation systems and require unique handling, storage, and transportation workflows. In many networks, these products are routed through third-party delivery providers by default, increasing both cost-per-package and delivery variability.

Industry data shows that non-conveyable items typically incur 2–3x higher processing costs than standard packages. Peak season volume can surge 3–3.5x over regular weekly averages. Items often exceed dimensional thresholds (37–59 inches) or weights over 50 lbs, which introduces complex handling, limited routing options, and specialized equipment needs. Additionally, middle-mile bottlenecks are often more pronounced than the last-mile ones in the oversized segment.

The Missed Opportunity in 1P Fulfillment : Many supply chains underutilize their own fulfillment network when managing non-conveyable inventory. While third-party carriers offer broad reach, in-house capabilities often go untapped — especially during non-peak seasons. Detailed cost-benefit analysis reveals significant opportunities to shift non-conveyable items back into first-party fulfillment nodes, unlocking savings and improving asset utilization.

Scenario Modeling and Cost Impacts : By modeling fulfillment scenarios — from full third-party reliance to partial or full in-house fulfillment — a clear picture emerges. Key variables include PO volume attainment, labor capacity, transportation cost per unit, and contractual constraints. Simulations suggest up to $300M+ in annualized savings when oversized inventory is handled internally under optimal conditions.

When modeling cost impacts, key variables should include:

– Seasonal utilization levels
– Labor productivity between conveyable vs. non-conveyable SKUs
– Transportation cube utilization and fill rate
– Network sort density and transit times

The most significant cost savings — $5 to $6 per package — are realized when existing network connectivity and facility capacity allow for regional fulfillment. In some lanes, optimized internal routing has been shown to improve delivery speed by 1–2 days.

Reallocating Capacity and Smoothing Peaks : Off-peak season presents a unique opportunity to reroute non-conveyable volume to underutilized facilities. This improves asset utilization and decreases third-party costs. Aligning PO cycles and fulfillment cadence enables smarter carrier planning and fewer empty miles.

Dynamic routing systems can shift oversized volumes based on capacity availability and regional peak patterns. Planning fulfillment from nodes with complementary seasonal peaks improves throughput and stabilizes costs. Additionally, flexible arrangements between internal and external carriers are key to maximizing cost efficiency without service compromise.

Navigating Trade-offs : Shifting flow internally is not always feasible. Carrier contracts, labor schedules, and regional coverage must all be considered. However, simulation-based planning helps pinpoint when internal fulfillment becomes the superior option.

Design for Flexibility : The future of oversized fulfillment lies in building a flexible network that can shift between 1P and 3P fulfillment based on volume, seasonality, and cost triggers. Such networks are better positioned to control cost-per-package over time.

Conclusion : Oversized goods require thoughtful network design rather than default settings, with data-driven modeling revealing significant hidden capacity within existing networks. Success depends on building integrated planning capabilities that account for seasonal shifts, regular capacity reviews, and continuous cost monitoring. Standardizing operations at key hubs while maintaining workforce flexibility and smart routing technology is crucial for optimal oversized inventory performance.

Source: **www.allthingssupplychain.com**

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HOW INDIAN MSMES ARE NAVIGATING E-COMMERCE SUPPLY CHAIN HURDLES

PARIJAT SOURABH, NEWS CORRESPONDENT AT STAT MEDIA GROUP

India's e-commerce boom offers vast opportunities for MSMEs, but outdated supply chains, fragmented logistics, and digital gaps threaten to leave small sellers behind in the race for online growth. India's e-commerce boom has transformed retail, unlocking major opportunities for Micro, Small, and Medium Enterprises (MSMEs). With over 800 million internet users as of early 2025, the digital economy is expected to grow nearly twice as fast as the overall economy and contribute one-fifth of national income by 2029–30, according to the Ministry of Electronics and IT. However, despite this growth, Indian MSMEs continue to grapple with supply chain challenges that hinder their full participation in the e-commerce surge.

The MSME sector is a cornerstone of the Indian economy, contributing more than 30% to the country's GDP and providing employment to over 111 million people. These businesses now find themselves at a critical juncture where digital adaptation is no longer optional but essential for survival.

The Covid-19 pandemic significantly accelerated e-commerce adoption across India. According to data from the India Brand Equity Foundation (IBEF), online retail penetration is projected to rise to 14% by 2028, up from 8% in 2024.

This digital shift has been especially transformative for MSMEs, which have long depended on physical markets and intermediaries. Yet, moving online has exposed deep-rooted supply chain weaknesses that risk sidelining many smaller businesses. From inventory management to last-mile delivery, MSMEs are struggling to align their operations with the demands of the digital marketplace.

The digital divide in Indian MSME operations : The digital transformation of supply chains represents perhaps the most significant hurdle for Indian MSMEs entering the e-commerce space.

As Vineet Malik, CCO and Co-founder of Hexalog, observes: "Most MSMEs struggle with a disjointed logistics ecosystem, where freight forwarders, customs brokers, last-mile agents, and warehouse providers operate in silos. This lack of coordination leads to inefficiencies, higher costs, and shipment delays that can derail international deals."

This problem is particularly acute in the e-commerce context, where coordination failures result in customer dissatisfaction and lost sales.

"Scalability is a pressing concern. Without flexible logistics support and integrated multi-channel systems, MSMEs find it difficult to scale operations during peak periods." Ajay Rao, Emiza

For many traditional MSMEs, supply chain operations remain largely manual and paper-based. Order processing, inventory tracking, and fulfilment management often rely on outdated methods that cannot scale to meet e-commerce demands. Emiza, a third-party logistics and supply chain service provider, highlights key MSME challenges. Ajay Rao, Founder & CEO of Emiza, notes, "MSMEs often rely on manual processes that slow down operations. Moreover, integrating backend systems with major marketplaces like Amazon and Flipkart can be complex and resource-intensive."

This manual approach makes it hard to keep accurate inventory across multiple online marketplaces, causing stockouts or overselling that harm customer trust and brand reputation.

According to a 2025 report published by the Small Industries Development Bank of India (SIDBI), 18% of MSME respondents have availed digital lending platforms. However, a large emerging opportunity remains in the MSME digital lending space, as 90% of respondents reported accepting digital payments, reflecting significant progress in digitalisation.

The financial burden of digital transformation is a major hurdle for MSMEs. E-commerce-ready Enterprise resource planning (ERP) systems can cost 80,000–1.5 million, with ongoing maintenance adding to the strain. High implementation costs remain the top barrier to supply chain digitisation, trapping MSMEs in a cycle where inefficiencies cut into margins and limit funds for tech upgrades.

Inventory management and warehousing challenges : For MSMEs, e-commerce makes inventory management far more challenging. Unpredictable online demand requires flexible strategies, but higher forecasting errors often lead to excess costs and missed sales.

"Indian MSMEs face several hurdles while integrating into the e-commerce ecosystem. A lack of real-time visibility across multiple sales channels leads to overstocking or stockouts. Many MSMEs also struggle with limited access to scalable warehousing, which hampers their ability to handle surges in demand during festive or sales periods," mentions Rao of Emiza.

The challenge is amplified by what Ravi Goel, Chief Business Officer, RapidShyp, describes as "time-consuming shipping processes and operational inefficiencies." According to their research, "most

businesses continue to rely on single couriers and decentralised systems, resulting in inefficiencies, errors, and delays in dispatching and tracking."

Without integrated systems, MSMEs struggle to track inventory across multiple sales channels. Warehousing is another critical challenge, as most MSMEs lack access to strategically located facilities essential for rapid order fulfilment across India.

According to a report by the Ministry of MSMEs, logistics costs in India make up 13–14% of the GDP, considerably higher than the global average of 8–10%. This disparity is even more pronounced for enterprises in Tier-2 and Tier-3 cities, where warehousing infrastructure remains underdeveloped.

Nikhil Agarwal, President, CJ Darcl Logistics, notes, "For MSMEs, the challenges stem from three key areas: scale, cost, and visibility. Unlike large enterprises, MSMEs don't have the shipment volumes to negotiate preferential rates or secure dedicated trucking capacities. MSMEs often seek partners who can offer scalability and flexibility."

Multi-channel inventory synchronisation presents additional complexity. As MSMEs list products across various marketplaces, including Amazon, Flipkart, Meesho, and their own websites, maintaining inventory accuracy becomes increasingly difficult. "During peak seasons or promotional periods, such as Diwali, Christmas, Black Friday, or export surges, can severely strain their logistics and supply chain operations. Unlike larger players with scalable infrastructure and pre-negotiated freight contracts, MSMEs often lack the flexibility and buffer capacity to handle sudden order spikes. The result? Stockouts, missed delivery timelines, and inflated shipping costs, says Malik of Hexalog.

Logistics network fragmentation : India's complex geography and uneven infrastructure pose major logistics challenges for MSMEs. The fragmented logistics sector, with numerous freight forwarders, regional transporters, and last-mile providers, limits small businesses' ability to secure competitive shipping rates or build reliable delivery networks beyond their local areas.

"As 60% of India's MSMEs are making their presence online, logistical constraints are a giant hurdle to the long-term expansion of e-commerce. Excessive shipping charges penalise small merchants disproportionately, particularly when order volumes are low. The charges tend to eat into margins, and MSMEs cannot compete with their larger counterparts, who benefit from bulk shipping discounts," says Goel of RapidShyp.

The economic disparities between urban and rural areas further complicate logistics planning. "With e-commerce businesses thriving in the country, MSMEs surely have built a wide base of customers from multiple regions in the country. And, while there have been significant developments in the Indian logistics infrastructure, which have enhanced connectivity across most parts of India, there are certain regions that still lack efficient last-mile connectivity," says Agarwal of CJ Darcl Logistics.

Smaller businesses looking to serve a wider customer base across regions, proximity to high-demand zones significantly reduces delivery time, transportation costs, and the risk of stockouts." Vineet Malik, Hexalog

While major cities benefit from sophisticated delivery infrastructure with same-day or next-day delivery capabilities, rural areas representing over 65% of India's population often face delivery times extending to 5-10 days.

The lack of reliable logistics options in Tier 2 and Tier 3 cities presents additional challenges."Most Tier 2 and Tier 3 cities do not have trustworthy courier partners, and hence, there is late delivery, return to origin (RTO), and poor customer experience, which erodes trust and dissuades repeat business," adds Goel of RapidShyp.

The cost implications are equally challenging. MSME e-commerce sellers typically pay higher shipping costs than larger competitors who benefit from volume-based discounts. These higher logistics expenses directly impact pricing strategy, forcing many small businesses to either reduce profit margins or set higher prices that diminish competitiveness.

Working capital constraints and payment cycles : Most major e-commerce platforms operate on settlement periods ranging from 7-15 days, with some extending to 30 days during promotional periods. These delayed payments create significant liquidity pressures for small businesses already operating with limited capital reserves.

The working capital crunch is further exacerbated by the inventory requirements of online selling. To maintain competitive service levels, MSMEs must stock sufficient inventory for immediate dispatch, often 45-60 days' worth compared to the 30-day norm in traditional retail. This expanded inventory requirement, combined with delayed payment receipts, creates a substantial funding gap.

Financing options remain limited despite various government initiatives. Traditional banks typically require collateral and extensive documentation that many smaller enterprises struggle to provide. While specialised fintech lenders have emerged offering inventory and invoice financing solutions, their coverage remains limited to MSMEs with established digital footprints and transaction histories. "To address these challenges, MSMEs require flexible financing solutions including microloans, invoice factoring, and credit lines tied to sales performance to ease cash flow strain," says Rao of Emiza.

Cross-border e-commerce challenges : For MSMEs with global ambitions, cross-border e-commerce presents additional supply chain complexities. As Indian small businesses increasingly look to expand internationally, they face a distinct set of barriers that complicate their global market entry. Malik of Hexalog identifies customs clearance as "One of the most persistent challenges for Indian MSMEs in cross-border trade," noting that the process "remains complex, fragmented, and deeply

opaque. For smaller businesses, there is no standardised or scalable roadmap. Navigating licensing requirements, documentation protocols, and ever-evolving compliance regulations often feels like walking a minefield. The available support is scattered across a maze of brokers, agents, and government portals, all offering inconsistent guidance and little accountability."

Our commitment to providing end-to-end supply chain management solutions with transportation and warehousing & distribution services across the country, regardless of location, empowers MSMEs to continue creating what they do." Nikhil Agarwal, CJ Darcl Logistics

Documentation management presents a particularly significant hurdle. "From commercial invoices and packing lists to bills of lading, certificate of origin (COO), and customs declarations—any error or omission can delay shipments, incur penalties, or even cause cargo rejections," explains Malik. "Indian MSMEs often lack digital tools or expert support to handle this accurately." The stakes are high, with errors potentially leading to shipment delays, customs penalties, or even product seizures that can devastate a small business's finances and reputation.

"Navigating GST requirements and managing documentation for inter-state shipments can be cumbersome, while frequent policy updates from marketplaces can disrupt operational planning," says Rao of Emiza.

Country-specific regulations create additional complexity. "Navigating country-specific Regulations—like product certifications (e.g., CE, FDA), packaging standards, restricted items, or import duties—can be overwhelming for MSMEs, especially since these rules vary widely across markets and are constantly evolving. Most MSMEs don't have dedicated compliance teams, so they either rely on trial and error or inconsistent advice from intermediaries," Malik of Hexalog adds.

He further mentions that "AI-powered compliance platforms can now automatically validate documentation, flag missing or incorrect entries, and ensure that export or import filings align with destination-country regulations. This drastically reduces the manual burden on MSMEs and lowers the risk of non-compliance. Tools like automated HS code classification and real-time tariff calculators further simplify the process of determining duties, taxes, and applicable trade benefits—areas that often confuse small business owners."

Digital documentation systems are also reducing dependency on physical paperwork, streamlining the export process, and enabling MSMEs to manage international shipments more effectively.

Solutions and path forward : Despite these challenges, innovative solutions are emerging to help Indian MSMEs overcome supply chain barriers in e-commerce. Technology democratisation stands at the forefront of these solutions. Cloud-based supply chain management systems with pay-as-you-go pricing models are reducing the financial barriers to digitisation.

Platforms like Unicommerce, EasyEcom, and Shiprocket offer MSME-focused solutions that streamline inventory management across multiple marketplaces, a major improvement over traditional enterprise systems. RapidShyp exemplifies this approach by offering "integration with 15+ carriers for extensive coverage and service reliability" alongside "economical shipping rates with no minimum order volume," and a "tech-enabled, easy-to-use platform with zero sign-up fee."

Their AI-driven SmartSelect feature offers courier recommendations by considering shipping price, speed, and deliverability, enabling MSMEs to make optimal logistics decisions without specialised knowledge.

"Our association with India Post takes our reach to more than 19,000 pin codes across the country, with assured last-mile delivery even in the remotest of locations. This association also reinforces our commitment to making logistics efficient and accessible to MSMEs in the nation," says Goel of RapidShyp.

Similarly, Emiza enables MSMEs by "offering a comprehensive plug-and-play warehousing network across India, Emiza allows MSMEs to access storage and fulfilment infrastructure without heavy upfront investments. This flexibility helps them manage both seasonal and regional demand more efficiently."

"For ease of use, RapidShyp offers seamless integration with popular e-commerce platforms like Shopify and WooCommerce. The integration offers auto-order processing, real-time tracking, and label printing, reducing manual intervention and errors." Ravi Goel, RapidShyp

"Emiza simplifies the backend complexity of selling on platforms like Amazon and Flipkart. Its pan-India delivery network ensures faster, reliable last-mile services to Tier 2 and Tier 3 cities and even to remote areas, helping MSMEs broaden their reach," says Rao of Emiza.

CJ Darcl Logistics illustrates this approach with its "pan-India presence with over 180 + branches, an asset-right model, encompassing a fleet of over 1,600 owned vehicles and access to a large fleet through our trusted vendor partner base, customised containers provide MSMEs with adaptable transportation solutions."

"Our multimodal capabilities, including rail and coastal shipping, ensure cost-effective and reliable long-haul and inter-city movements, empowering MSMEs to meet their e-commerce demands efficiently. Our multi-user warehousing facilities are equipped with advanced capabilities such as shelf-life maintenance, product mixing, packaging, cross-docking, barcode scanning, and order fulfilment. These services are designed to accommodate varying volumes and frequencies, " says Agarwal of CJ Darcl Logistics.

For MSMEs ready to explore international markets, companies like Hexalog are simplifying cross-border logistics. Hexalog's "its integrated, end-to-end logistics platform" brings together "origin warehousing to freight booking, customs clearance, and final delivery" in a unified system that reduces the complexity of

international trade. This vertical integration is particularly valuable for MSMEs lacking specialised expertise in areas like customs compliance and documentation.

Further Government initiatives have also expanded to address specific MSME e-commerce challenges. The Open Network for Digital Commerce (ONDC), launched nationwide in 2023, aims to create a standardised e-commerce protocol that reduces marketplace dependency and promotes interoperability. The Ministry of MSME launched the "MSME Trade Enablement and Marketing Initiative" (MSME-TEAM) to help half a million MSMEs join the ONDC platform. The scheme offers awareness workshops, onboarding support, and financial aid to micro and small enterprises via seller network participants for catalogue creation, account management, logistics, and packaging. According to the Ministry of Commerce & Industry, the scheme will be in effect from 2024 to 2027.

The path forward requires a multi-stakeholder approach. Policy initiatives must continue to address structural barriers while promoting digital infrastructure development in underserved regions. Technology providers must further adapt their solutions to meet the specific needs and resource constraints of micro and small enterprises. Marketplaces must recognise their dependence on MSME participation and develop more inclusive policies that consider the operational realities of smaller sellers. As India's e-commerce market continues its rapid expansion, the MSMEs that successfully overcome today's supply chain challenges will be positioned not just to participate in the digital economy but to thrive within it.

Source: www.itln.in

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INDIA SEES 4,000% GROWTH IN SOLAR CAPACITY, FOCUS ON SUPPLY CHAIN RESILIENCE

India's installed solar capacity has grown by an unprecedented 4,000% over the past decade, taking the country's total renewable energy capacity to 227 GW. Addressing the 11th India Energy Storage Week (IESW) in the capital on Thursday, Union Commerce and Industry Minister Piyush Goyal said India may well be the first G20 nation to have achieved its Nationally Determined Contributions under the Paris Agreement. Goyal cited Palli village in Jammu and Kashmir, which has become the country's first carbon-neutral panchayat using solar power and energy efficiency measures. The IESW venue, Yashobhoomi, he pointed out, is itself designed as a sustainable complex with rooftop solar panels, wastewater treatment and energy-efficient infrastructure.

Outlining the scale of India's clean energy manufacturing push, the minister said the country's solar photovoltaic module capacity has expanded nearly 38-fold in the last decade, while photovoltaic cell capacity has grown 21 times. He highlighted flagship schemes like the PM Surya Ghar Yojana, which aims to install rooftop solar panels in one crore homes, and the PM Kusum Yojana, which supports the use of solar pumps in agriculture. The Production Linked Incentive (PLI) scheme for Advanced Chemistry Cells is also expected to boost domestic manufacturing, he added.

Goyal stressed that energy storage will be critical to India's plan to meet its future energy needs through renewable sources. He said technologies such as batteries, pumped storage, hydro storage and even nuclear power would play a role in ensuring round-the-clock clean energy.

Calling for a four-pronged strategy to advance India's clean energy ambitions, Goyal listed innovation, infrastructure development, supply chain resilience and an integrated value chain as key priorities. He said India must lead in research and development for next-generation battery technologies, including solid-state and hybrid storage, while also developing circular supply chains. He referred to the recent Cabinet approval of a 1 lakh crore Research, Development and Innovation Fund, which he said would help India match the scale of R&D spending in advanced economies due to its cost advantages.

Goyal urged industry players to ramp up efforts to build charging and battery-swapping infrastructure to accelerate adoption of electric vehicles. He also stressed the need to cut dependence on limited geographies for raw materials and components by investing in resilient supply chains and new technologies. Reiterating India's goal of achieving 500 GW of renewable energy capacity by 2030, he said the country's ambition should cover the entire clean energy value chain—from raw materials and cell manufacturing to battery packs, semiconductors, management systems and recycling.

"Ensuring energy security for our citizens is not just a priority but also a responsibility," Goyal said, quoting Prime Minister Narendra Modi. The India Energy Storage Week brings together global policymakers, researchers and industry leaders to discuss innovations and partnerships that will drive India's energy transition. The event also serves as a platform to showcase emerging technologies, skill development initiatives and policy frameworks aligned with national climate goals.

Source: ddnews.gov.in

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A NEW CASE FOR MANUFACTURING AND SUPPLY CHAINS IN INDIA WITHIN THE CURRENT GEOPOLITICAL CONTEXT

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Introduction : The May 6, 2025, India-Pakistan conflict has raised questions about the future of South Asia's regional economic integration. India has ceased all direct and indirect trade with Pakistan, halting a $10 billion annual exchange of goods. South Asia, as a region of aspiration, seems lost for some time. However, the geographical reality of proximity, common borders, and cultural affinity cannot be changed. India is a key destination for the shift of supply chains from China, and the region is the catchment area for these benefits. How, then, can the region play its role as the next big trade hub?

There are currently three imperatives for India to emerge as a manufacturing hub. The first is the Trump tariff effect, where India faces 26% reciprocal tariffs on exports to the US, the world's largest high-income market. A second factor is Pakistan, whose tepid growth, low productivity, and lack of domestic reform are hindering the region, depriving it of the benefits of developing a supply chain ecosystem and ultimately prosperity. Thirdly, China and East Asia's integration into global supply chains, which has generated jobs and unprecedented prosperity, provides valuable lessons for others, even amidst global trade policy uncertainty.

This indicates that South Asia is increasingly leaning towards trade in the new geopolitical context. Indeed, India is enhancing its trade engagement with the world, showcasing a series of free trade agreements (FTAs). Recently, Sri Lanka signed FTAS with Thailand and Singapore. Meanwhile, Bangladesh has been discussing FTAs with various Asian countries. This reflects a regional aspiration to establish the supply chain ecosystem necessary for an ambitious trade agenda.

It is none too soon. Starting in June, all of Apple's iPhones for the U.S. market will be made in India, still cheaper despite the new U.S. tariffs. Samsung, Volvo, Siemens, and Amazon have announced they will expand their manufacturing footprint in the country. This is not a sudden shift following the imposition of U.S. tariffs. Multinational companies had already begun reducing their dependence on China before Covid-19, and its popularity as a manufacturing source was receding, particularly among Western firms.

This essay, therefore, examines the prospects for India and the rest of South Asia. It seeks to address the following questions:

1. Is India rising as a global manufacturing hub?
2. Is trade diplomacy in high gear at last?
3. What lessons can we learn from China?
4. How can India's neighbours be lifted?

India's Role in Global Manufacturing : The disruption of China-centric global supply chains is underway, with reports indicating that inward Foreign Direct Investment (FDI) has fallen to historic lows for both the U.S. and China (Baldwin, Freeman & Theodorakopoulos, 2023). The migration of labour-intensive supply chains from China to lower-cost locations can be attributed to rising wages, domestic supply chain bottlenecks, and investor concerns about stricter regulation of foreign companies, along with the escalating trade war between Washington and Beijing. Vietnam and Thailand have emerged as significant beneficiaries of these supply chain shifts. India is now being positioned to become a complementary Asian manufacturing hub to China (Wignaraja, 2023), regarded as a reliable alternative destination among the largest global FDI recipients, driven by its rapid economic growth, a large educated labour pool, and a vast domestic market (Economic and Social Commission for Asia and the Pacific, 2023).

An influential view, most prominently presented by Rajan and Lamba (2024), argues that India's services sector is the primary driver of economic growth in an increasingly globalised world of services. They suggest that India should leverage its comparative advantages in labour to enhance its role in both the domestic economy and global services trade, particularly in digitally delivered services. They conclude that India ought to invest more in human capital and skills to capitalise on this strength in services. This view holds some merit, as India does possess favourable demographics with a youthful population, providing ample supplies of low-cost manpower. However, international development history indicates that relying solely on services development may be inadequate for a large economy like India to progress beyond lower middle status and create high-quality jobs.

The crucial role of manufacturing development in generating jobs and prosperity is emphasised by the East Asian miracle story. This narrative begins with the industrialisation of Japan during the inter-war period,

followed by the emergence of the four East Asian dragon economies (Korea, Taiwan, Hong Kong, and Singapore) in the 1960s and 1970s, and China since the 2000s. Looking further back in history, the rise of the UK, Germany, and the US occurred alongside the industrial revolutions of the 18th and 19th centuries.

Furthermore, the evidence suggests that pessimism regarding manufacturing and supply chains in India appears to be shifting at last. One indication comes from within the Indian manufacturing sector itself. The Purchasing Managers Index (PMI) summarises whether market conditions for manufacturing are expanding, remaining the same, or contracting, as perceived by purchasing managers. India's PMI is well above 50, relatively high compared to comparator economies including China and Indonesia (ADB, 2025). Furthermore, there have been significant micro-level investments by global MNCs in India. Prominent among these is Apple, which has been ramping up its manufacturing of iPhones in India since 2020; Toyota has increased its investment by establishing a new plant in Karnataka, and Hyundai's 2024 investment in Maharashtra has enhanced its capacity and encouraged technological advancement. India's manufacturing sectors in areas such as automotives, pharmaceuticals, and electronics assembly are already well-established and stand to benefit from a series of policy initiatives, which have resulted in a 69% increase in FDI equity inflow in the manufacturing sector over the past decade of 2014-24 compared to the previous decade of 2004-14.

Perhaps most important in uncertain global times has been the visible advancement in India's defence manufacturing sector, largely due to the Make in India initiative (Ahuja, 2024). In 2023-24, it experienced an increase of 174% (CK) over the past decade, along with a boost in exports. India aims to become a defence manufacturing hub, targeting 3 lakh crore ($35 billion CK) in defence production by 2029. Start-ups, large domestic companies, and multinationals are actively developing a range of products. For instance, in 2024, Airbus, in partnership with Tata Advanced Systems, inaugurated a C295 final assembly line complex in Gujarat for producing military transport aircraft for the domestic market.

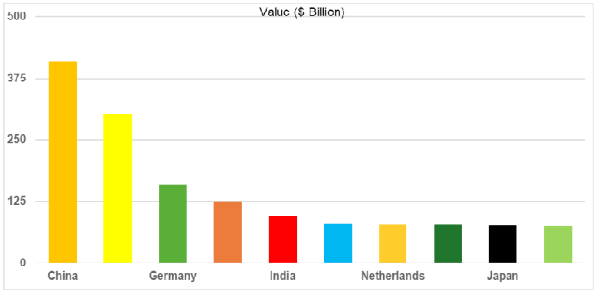
An impressive performance has been that of the BrahMos, a long-range supersonic cruise missile developed collaboratively by India's Defence Research and Development Organisation (DRDO) and Russia's NPO Mashinostroyeniya. India exported the BrahMos to the Philippines in 2024, and in 2025, it has been in talks with Vietnam and Indonesia for similar exports. In the conflict between India and Pakistan on 7-8 May 2025, the vastly superior performance of the BrahMos has resulted in increased inquiries for exports and enhanced discussions between India and Russia for advanced versions of the missile.

With this new confidence, India needs reforms that promote trade openness, reduce the red tape regulations strangling businesses, and facilitate investments in renewable green energy (Das, 2024; World Bank, 2024). Closer policy coordination between the central government and India's semi-autonomous states is essential in areas such as attracting foreign direct investment and cross-provincial infrastructure development (including national highways and high-speed road networks).

Is there some merit in revisiting India's landmark 1991 reforms? Influential commentators like Douglas Irwin (2025) suggest that the political economy of reforms matters. He argues that in 1991, reform-minded technocrats persuaded political leaders to reject what had been a standard response to balance of payments pressure (import repression to avoid a devaluation) and embrace a new approach (exchange rate adjustment and a reduction of import restrictions). Several other elements now need to coalesce. Supply chains rely on a multitude of service inputs. In this vein, India's service sectors (including information and communications technology, financial and professional services, and transport and logistics) are also positioned for growth.

The final goods produced in these factories rely on sophisticated semi-finished goods from abroad, which have contributed to the growing Indian imports of intermediate goods. Thus, a second indication of India's ascent in the global supply chain is its role as a major global importer of intermediate goods. In the fourth quarter of 2023, the WTO ranked India as the fifth-largest importer of intermediate goods (see Figure 1) – up from the 10th rank in the second quarter of 2021. In 2023, India was behind top global importers such as China, the U.S., Germany, and Hong Kong. The country is now positioned ahead of European developed country importers (the UK, Netherlands, and France) as well as Japan. Few foresaw India's emergence as a leading global importer of intermediates a decade ago.

Figure 1: World's Ten Largest Intermediate Goods Importers



Notes: Figures in $billion

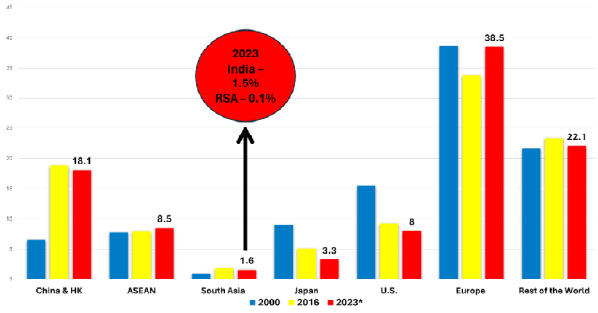
Source: World Trade Organisation, 2023

A third indication of India's role in global supply chains

is its position as an exporter of intermediate goods. Here, the data suggest that India and South Asia as a whole are relatively small players in supply chains compared to East Asian or developed economies. Between 2000 and 2023, India's share of world intermediate goods exports doubled from a modest 0.8% to 1.5% (see Figure 2). Adding the rest of South Asia (an estimated 0.1% of world intermediate goods exports) to India's share yields a tiny regional total of only 1.6% in 2023. Meanwhile, China and Hong Kong account for 18.1% of the world share, and ASEAN contributes another 8.5%. Although declining, Japan, the U.S., and the EU hold larger world shares than South Asia.

Furthermore, there are very limited regional spillovers from India's supply chain activities to the rest of South Asia. Intra-regional trade in South Asia, at 5% in 2017, is among the lowest globally. This positions South Asia as one of the world's most economically disconnected regions. Despite its increasing trade volume with the world, India's trade with its neighbours constitutes between 1.7% and 3.8% of its global trade. India's largest regional trading partner is Bangladesh, followed by Sri Lanka and Nepal.

Figure 2: South Asia in World Shares of Intermediate Goods Export (%)



Note: * represents estimates

Source: WTO (2023), Wignaraja (2023)

Trade Diplomacy in High Gear : Since 2022, the Modi government has renewed its emphasis on preferential openings with trading partners through a series of bilateral trade deals, such as the UAE-India Comprehensive Economic Partnership Agreement and the Australia-India Economic Cooperation and Trade Agreement (ECTA). Additionally, it has joined significant regional trade frameworks like the Indo-Pacific Economic Framework (IPEF) (Dhar 2022). A trade agreement signed with the UK in May 2025 offers notable gains in services and ambitious market access (Wignaraja, 2025). This will enhance ongoing negotiations with the EU to conclude an equally comprehensive, high-standard FTA and with the U.S. for a partial Bilateral Trade Agreement. India is a latecomer to Asia's FTA bandwagon but is striving to catch up with East Asia (Kawai and Wignaraja, 2013; Wignaraja, 2022). According to the Asian Development Bank's Asia Regional Integration Centre database, India has 17 concluded FTAs and another 19 under negotiation (see Table 1). In terms of concluded FTAs, India ranks alongside leading Southeast Asian countries like Indonesia (19), Malaysia (19), Thailand (16), and Viet Nam (18).

The geopolitical signalling regarding trade openness in 2025 is significant. India is progressing with free trade agreements with the Global North, which has positive implications across the board. Firstly, an India-EU FTA alongside an India-UK FTA could strengthen reformed global rule-making on international trade and potentially revitalise the WTO – a stated goal of India. Secondly, FTAs act as a stepping stone to India's membership in the Comprehensive and Progressive Trans-Pacific Partnership (CPTPP). The CPTPP, a high-standard mega FTA that reduces trade barriers for its members and which India declined to join, represents a significant share of world trade. The 12 members, including Japan and the UK, collectively account for 15% of global trade and 15% of world GDP.

The CPTPP includes agendas for services, trade, investment rules, intellectual property rights, government procurement, etc., which support the spread of supply chains. Consultations with businesses during FTA negotiations and the provision of business development services for FTA implementation are essential, as trade and investment do not necessarily increase merely because an FTA is signed.

As Indian businesses gain experience and confidence in trading under the agreements with the Global North, facilitating closer economic integration, India can effectively study the economic benefits and costs of CPTPP accession. It provides access to multiple markets at once, will benefit India from the China+1 strategy, and boost business for MSMEs, which account for 40% of India's exports. This will resonate throughout South Asia, where SMEs are the backbone of these economies but do not yet contribute significantly to exports.

Table 1: South Asia: Joining the bandwagon of FTAs

Country	Negotiations launched	Concluded FTAs
Japan	7	21
China, People's Republic of	8	25
Korea, Republic of	12	28
Hong Kong, China	1	9
Taipei,China	2	6
Brunei	1	11
Cambodia	1	11
Indonesia	11	19
Malaysia	8	19

Philippines	3	11
Singapore	7	35
Thailand	10	16
Vietnam	2	18
India	19	17
Sri Lanka	5	7
Bangladesh	3	5
Pakistan	6	13
Maldives	1	4
Bhutan	2	3

Source: Asia Regional Integration Center, February 2025

At home, the FTAs will provide the country with a unique opportunity to implement necessary reforms and open up its economy, as it did in 1991. This, in turn, will increase foreign capital, enhance skills, foster R&D and innovation, and drive the country towards a more competitive and open economy. Thus far, India has undertaken the following initiatives to enhance manufacturing:

Make in India: Launched in September 2014, it aimed to transform India into a global design and manufacturing hub. The focus was on facilitating business by reforming policies to make them more investor-friendly and emphasising infrastructure development.

- **Atmanirbhar Bharat:** Launched in May 2020, the Self-Reliant India Campaign focused on reforming seven key sectors, particularly to facilitate business.
- **Product Linked Incentive (PLI) Scheme:** Launched as a continuation of Atmanirbhar Bharat, this initiative provides financial incentives for increased production and incremental sales across an additional 14 sectors. The objective is to support and enhance India's manufacturing sector.

Lessons from China : Some aspects of China's industrial policy may be relevant to India, such as better targeting of multinationals with which to partner for new industrial endeavours that could provide potential comparative advantages. It necessitates improved coordination between the central government and state administrations. Equally important is investment in higher education in science, technology, engineering, and mathematics.

However, industrial policy is a contentious area, and caution should be exercised before India attempts to emulate China's state interventionist template. Significant risks include government failure and cronyism. It would be prudent to engage actively with think tanks to gain insights into what might work. Still, India can learn much from China's experience.

- **Lesson 1: Promoting export-oriented FDI.** Trade liberalisation entails an open-door policy towards FDI in manufacturing and encourages high-level investment, offering competitive incentives and establishing modern SEZs as public-private partnerships.
- **Lesson 2: Reducing business hurdles.** The digitalisation of taxes, customs fees, and business administration is essential. Industrial policy aimed at facilitating the green transition and trade is increasingly being employed and can yield significant benefits.
- **Lesson 3: Fostering regional supply chains.** India should promote regional supply chains by scaling up the Make in India programme to a Make in South Asia initiative. India can offer fiscal incentives to its manufacturers to expand into Bangladesh and Sri Lanka. The food processing, textiles, apparel, and automotive sectors are suitable for regional expansion, considering the factories and expertise of these neighbours.

Lifting Up India's Neighbours : At present, much of South Asia is not a significant part of India's trade narrative, despite the economic potential of certain countries. Therefore, it is economically beneficial for India to disseminate the advantages from this trade regionally, fostering resilient and cost-effective regional supply chains in South Asia. This will stabilise the region, create jobs, and render its neighbours less vulnerable to the potential risks associated with Chinese infrastructure investments, including debt distress linked to high interest, low return port projects, as well as environmental challenges (e.g. deforestation, habitat destruction, water pollution, and increased carbon emissions).

In this spirit, India-Sri Lanka FTA talks could be resumed, with a view to concluding an investment deal, followed by a more comprehensive FTA. Cutting redundant business regulations and strengthening investor protections in Sri Lanka are crucial for attracting Indian foreign investors to the country's ports, logistics, renewable energy, digital economy, and tourism ventures. Such ventures generate much-needed foreign exchange and provide Sri Lanka with a path away from indebtedness and towards transformative growth.

A sure way for South Asia to establish resilient and cost-effective regional supply chains is for Indian businesses to invest in the region and cultivate substantial local linkages and spillovers for their South Asian partners (Kathuria, Yatawara and Zhu, 2021). This is already occurring to a limited extent in Sri Lanka and Bangladesh. The Adani Group, for instance, has invested in a joint venture with John Keels Holdings to develop the West Container Terminal at Colombo Port. This project leverages Sri Lanka's advantageous geographical position along the main East-West global sea route and transhipment trade to India.

Bangladesh was growing rapidly, boasting a larger domestic market and cheaper wages than Sri Lanka, until its internal crisis. It had become an attractive destination for Indian FDI in the manufacturing sector. Tata Motors, Hero MotoCorp, Sun Pharma, Godrej, VIP, CEAT Tyres, and Aditya Birla Cement all established factories in Bangladesh. A natural corollary would have been increased private investment in consumer-oriented sectors and start-ups focused on fintech, healthcare, and agritech, aimed at developing a local ecosystem with access to seed funding and technology transfer from India. However, these potential developments are now on hold due to political events.

India-Sri Lanka: A Model for South Asian Cooperation : The joint statement released following Prime Minister Narendra Modi's visit to Colombo in April 2025, and Sri Lanka's President Anura Kumara Dissanayake's visit to New Delhi in December 2024, highlighted India's commitment to assist Sri Lanka in becoming an energy hub, strengthening India-Sri Lanka defence cooperation, enhancing educational, health, and technological exchanges, and promoting Indian FDI in Sri Lanka.

It is evident that India recognises Sri Lanka as a premier partner in transforming South Asia into a progressive economic region amid an uncertain global economy. Sri Lanka has recorded the highest GDP per capita in South Asia, peaking at $4,388 in 2017, driven by a robust machine of medium and small enterprises. Its decline over five years to $3,3431 per capita has dealt a blow to a country used to a comfortable standard of living. This is what Dissanayake has pledged to reverse. He has affirmed that Sri Lanka will proceed with its 17th IMF programme while increasing social spending to alleviate high poverty levels. He is enhancing governance by implementing anti-corruption measures, digitising the government, and modernising agriculture.

The bilateral agreements with India assist the new government in continuing these efforts and shifting the focus of the relationship from aid to trade. India has committed to supporting Sri Lanka in the digitalisation of its public services, a model that India has pioneered, which will aid in fulfilling some of the promises made by the NPP for targeted social protection and anti-corruption. A Memorandum of Understanding (MoU) was signed during PM Modi's visit to Colombo in April 2025 with Sri Lanka to establish a high-voltage direct current (HVDC) connection for importing and exporting power. A tri-partite agreement between India, the UAE, and Sri Lanka to develop Trincomalee into an energy hub is a model that can be replicated in other sectors.

It's a promising start that can elevate the bilateral relationship to resemble the close cooperation evident among Thailand, Cambodia, and the Lao People's Democratic Republic, for instance, in the Greater Mekong sub-region. New Delhi and Colombo can consider piloting a regional PLI scheme in Sri Lanka, similar to the Government of India's efforts to build domestic capabilities in sophisticated manufacturing industries, including solar panels, electric vehicles, and electronic components. A limited extension of the domestic PLI scheme to Indian businesses for manufacturing solar panels in Sri Lanka will mitigate the risks of overseas investment and foster regional supply chains in the neighbourhood – a key goal for India's China+1 strategy.

Such enhanced cooperation with Sri Lanka is almost a necessity. India is facing a hostile neighbourhood in 2025. Relations with Bangladesh are strained; the debt-distressed Maldives reluctantly accepted a short-term liquidity inflow from an RBI swap after China cooled towards its request for aid. Nepal's Prime Minister K.P. Sharma Oli has just signed a framework agreement with China to implement infrastructure projects under the Belt & Road Initiative. Struggling economically under Taliban rule, Afghanistan risks becoming a regional centre for narcotics trade and illegal migration, as does Myanmar to India's east. Relations with Pakistan remain in cold storage.

These issues concern both India and Sri Lanka. An effective economic partnership in South Asia can serve as a model for others, bolster India's Neighbourhood First Policy, and enhance India's position as a regional power.

Conclusion : The slowdown of the Chinese economy and the shift, particularly by MNCs, from China to other, more competitive locations, have opened up business opportunities for latecomers to supply chains in the developing world. The available evidence suggests that Southeast Asia and some South Asian countries, such as India, Sri Lanka, and Bangladesh, could benefit from the supply chain shift, particularly in labour-intensive segments. The shift is underpinned by geopolitics, as well as the availability of skilled and relatively low-cost labour and a large middle class. However, these factors carry constraints: Southeast Asia does not offer scale, and South Asia, which can, is a latecomer to trade-led regionalism, therefore constrained by policy barriers and infrastructure gaps.

Three policy implications arise from the analysis presented in this paper regarding the enhancement of India's and the broader South Asia's role in global supply chains. First, openness to trade and FDI inflows is fundamental for entering and deepening a country's position in global and regional supply chains. The Trump reciprocal tariffs might be viewed as an opportunity for South Asia to implement comprehensive trade and FDI reforms, reduce red tape, and digitise business procedures to improve the ease of doing business and minimise corruption vulnerabilities. It may be prudent to reconsider the case for 'big bang' comprehensive reforms, as gradual, incremental reforms have yielded mixed results.

Secondly, countries should invest in trade-related infrastructure, such as transhipment ports, logistics services, and connectivity between ports and roads, to significantly reduce trade costs. In this context, enhancing the performance of Special Economic Zones (SEZs) to attract both foreign and domestic investors, along with the clustering of business activities, is advantageous as trade and investment reforms may require time.

Third, concluding comprehensive free trade agreements with India's neighbours, such as Sri Lanka, would help to reduce regional trade barriers and establish rules-based trade in the region amidst global uncertainty. In this context, India should consider time-bound fiscal and financial incentives to encourage the regionalisation of supply chains in its neighbourhood, similar to its own PLI scheme.

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Source: indiafoundation.in

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IS YOUR SUPPLY CHAIN STRATEGY INSIDE-OUT OR OUTSIDE-IN?

MARTIN VERWIJMEREN, CEO AND CO-FOUNDER OF MP OBJECTS

Digitization has changed everything. It's changed not only how we interact but how we make decisions with readily available information. This accessibility to information and organizations has flattened the playing field for every organization as they look to market and sell their wares.

This accessibility has forced organizations to embrace better transparency with potential customers and in turn has brought competition. With more informed customers with more choices to spend their money, you see that organizations now have to compete across a wide variety of marketing differentiators including Price, Product, Promotion and Place. The Place differentiator in the marketing mix these days is becoming more important. This is the customer experience.

The truth is that the customer is in more control today than at any time in history. What they dictate goes and any company willing to provide to these growing expectations can usurp their competitors, not just in B2C but B2B as well. The day of low cost and unique products as company differentiators is for all intensive purposes over, it's experience that is winning.

In this post, I want to explore how we need to think about our supply chain strategies to drive true innovation and performance for our organizations.

Is Customer Experience Truly #1?

In 2013, Walker, a consulting firm, released a study on the Customer Experience. And their big revelation was that by 2020, customer experience will overtake price and product as the key brand differentiator.

However, that is not the only stats we see that are supporting this movement. Take the following stats collected by SalesForce and VisionCritical:

- 86% of buyers will pay more for a better customer experience
- A customer is 4x more likely to buy from a competitor if the problem is service related vs. price or product related
- According to Forrester's Customer Index, Customer Experience leaders gained 43% in performance – compared to Customer Experience laggards, who saw a 33.9% decrease.

Now, there are two things you probably notice with these stats.

First, they are a bit B2C focused and while I agree that is the case, we are seeing a ton of similar demands being asked by B2B customers (think Walmart and their delivery window mandate). Every trend in B2C environments shape and influence B2B business and this is just another example.

Second, many are customer service specific. Customer service is obviously important to maintain customer relationships, however, the cause of most customer service calls are interruptions in service and service levels. Efficient and timely supply chain processes have been proven to reduce the volume of customer service related calls.

How Supply Chain Can Take an Outside-In Approach

For years, supply chain has chased the holy grail of consistent cost savings through process efficiency but what we have seen in recent years is that these efforts while they sound good, organizations actually seeing limited value from the initiatives. Accenture recently saw that organizations that look to reduce costs by 3-4% year over year often don't see a tangible benefit to the bottom line from these efforts.

This is because we are taking an Inside-Out approach focusing on how we operate in our supply chains to create efficiency was built in another business environment. An environment that moved slower, evolved less readily. Efficiency is a tremendous strategy in this type of market as you can consistently improve your process through evaluation of known quantities.

But the world has changed. There are little known quantities and the ones that are have a short shelf life. Change is the new constant and process efficiency is being replaced with agility as our business plans and strategies evolve with our markets. Agility is the new driver of business success because successful companies have learned that adaptation is key to their existence.

For supply chain, this means being as agile as the other areas of the business and partnering with them to provide the best experience for the customer. This takes an Outside-In approach to supply chain strategy; one that's customer focused and agile to changing customer expectations.

How Can Supply Chain Get More Outside-In

When we look at supply chains that are truly agile, they look, plan, execute and analyze differently than traditional supply chains. They do this in the following ways:

- **External Parties are Internal Parties:** Outsourcing is a critical component to running a successful

supply chain but supply chain leaders don't just set and forget with these external parties but they look to build true collaboration with these parties with true visibility into their actions. Technologies are supporting Multi-Enterprise Business Networks are entering the supply chain space to help provide this type of collaboration.

- **Data is End-to-End, Not Siloed:** Over the years, technology categories grew up to solve specific problems in the supply chain from traditional ERPs to WMS and TMS solutions. And you're seeing this in every area of the supply chain. However, as we see organizations look to be more customer-centric, we see technologies such as supply chain control towers come along to help connect and extend existing systems for end-to-end supply chain visibility and control over every order. This is critical as customer requirements become more variable and diverse.
- **Flexibility to Customer Requirements:** Exceptions are the norm in today's supply chain environment for both B2C and B2B and this requires flexibility in your technology stack that can quickly and accurately respond to changes in customer requirements. This might be new product lines, expanding service options, increasing geographies, faster delivery options and other requirements that need to be automated and executed on in your supply chain. This requires technology that provides Supply Chain Orchestration.

The companies that succeed understand change isn't just the answer but is the only way to survive. They are looking for better ways to sell and serve to their target customer and that means agility in their supply chain processes.

Legacy Systems Are Not the Answer, Supply Chain Orchestration Is

When you have legacy systems that were built a long time ago, outside-in agility was not their immediate concern and you can see it. They do their job well and are a critical piece of technology stack, however, as we look to evolve our supply chain strategy and processes, it's integral we look for solutions that can work with these systems to provide true supply chain orchestration across all the parties and systems in the supply chain.

Fast growing companies in B2C and B2B quickly winning from global competition have invested in the customer experience and the strategies, processes and technologies such as supply chain control towers that help to ensure optimal experience across the end-to-end supply chain. Differentiating customer experience only comes with an evolution in focus and an evolution in approach and supply chain orchestration is the way to truly disruptive in your industries.

Source: supplychainminded.com

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BEST PRACTICES TO MANAGE COLD STORAGE WAREHOUSE

PRABHU MUTHUSAMY

Operating a cold storage warehouse is difficult owing to the necessity to maintain a consistent temperature for storage while keeping the equipment and people comfortable and ready to perform at their best.

The bulk of items housed in cold storage facilities is refrigerated and frozen foods. In fact, The global frozen market is projected to grow from USD 256.46 billion in 2021 to USD 385.04 billion in 2028 at a CAGR of 5.98% during the 2021-2028 period. Other sectors that rely on cold storage include pharmaceuticals, petrochemicals, and even high-tech electronics.

Here are some challenges impacting cold storage warehouse management:

1. **Food protection:** Regulating and maintaining the proper temperature and humidity to preserve and extend the life of your items may be difficult and dangerous because various products require different temperatures. Traditional temperature monitoring systems rely primarily on the operator's knowledge, who must be present on-site to change and operate the entire system.

- **Maintaining product's life cycle:** Maintaining the proper temperature of perishable items is critical for preserving their quality and safety from the point of manufacturing to the customer. Failure to maintain appropriate transportation results in food product textual deterioration, discoloration, bruising, and microbiological development.
- **Labeling products and racks:** Barcode labels serve as a vital interface between physical goods and the computer systems that track their receipt, storage, retrieval, and transportation. Appropriate freeze-grade rack labels are an important component of the overall traceability system. Freezer-grade rack labels provide a strong, permanent bind on typical rack surfaces and may withstand temperatures as low as -6.6°C.

- **Product traceability:** Finding and determining the impacted product in the case of temperature excursions is only achievable with precise location information. Fresh food, for example, need further control over elements like carbon dioxide and humidity. It is critical to have very exact and accurate documentation.
- **Fulfillment and courier shipments:** The goal of the entire cold chain process should be to reduce the amount of time it takes to transfer a product through it. Efficiency is critical because delays in transferring items from one facility to another create weaknesses.
- Food supplies in less-than-truckload quantities make up most shipments, both incoming from suppliers to distribution centers and outgoing to consumers.
- To avoid cross-contamination with the raw product and damage from the heavier things placed at the bottom, all products must be loaded appropriately.

If perishable items, such as seafood, pre-cut veggies, and ready-to-eat products, are not maintained at the proper temperature, they might become dangerous.

Here are some best practices in cold storage warehouse management:

1. **Form a contingency plan :** Even with the best monitoring technology, an unplanned delay or re-routing could jeopardize your shipment's stability. Shippers must work with their transportation partners to develop contingency plans that clearly map out a strategy in the event of a delay.
- **Guard against vulnerabilities :** To manage cold chain shipments well, all parties involved must foster a strong partnership. Everyone involved needs a good working knowledge of the best practices for cold chain handling and transportation. Food products must be moved as fast as possible to give consumers the most valuable, nutritious, wholesome products with as much shelf life as possible.
- **Balance temperature changes :** For warehouses that require multiple temperature zones according to the season, a modular curtain wall system is a flexible, low-risk option that can go up, come down, and be moved from building to building. Refrigerated air is expensive, so a single change to a cold room will help you realize cost savings.
- **Control heat loss :** High-density storage creates a smaller area to cool and an environment that minimizes heat loss. Automated storage also minimizes the amount of warmer air that enters the temperature-controlled area. The warmer a product is upon entering, the more it draws on refrigeration costs.
- **Install automatic palletizing solutions :** Use new robot technology, seals, cables, energy supply, and lubricants specifically designed for the harsh freezer environment. This technology enables palletizing to be done inside the freezer without the use of protective heating shrouds. This eliminates conveyors and ice buildups on the products while minimizing the handling of frozen goods by workers in sub-zero temperatures.
- **Effective Infra concept & maintenance plan :** The cold chain infrastructure includes temperature-controlled storage facilities and transportation-trained operations and maintenance personnel with efficient management procedures. Temperature-controlled storage locations include pack houses, aging chambers, bulk, and hub refrigerated warehouses that keep fresh food safe, delay deterioration, and extend shelf life. Refrigerated transportation (freezing) is an important element of the cold chain as it guarantees the safety and temperature of the product in transit. The presence of well-trained O & M (Operational and Maintenance) personnel and effective management procedures contribute to the smooth functioning of the cold chain. The cold chain infrastructure contributes to a resilient medical system by maintaining quality from production to administration of vaccines and temperature-sensitive medicines.
- **Pest and hygiene management :** Pests carry the risk of illness, pollution, and property damage. Serious pest problems in places such as warehouses and refrigerated warehouses can cause significant losses. Perishable items are especially at high risk of invasion by pests from mice and mice and are always attracted to food. Companies need to take steps to avoid corruption and loss. Populations of rats, cockroaches, spiders, and other types of pests can grow rapidly and cause serious financial loss to the business. Cold storage owners need to take appropriate steps to prevent rot by adhering to hygiene and regular pest control.
- **Packing material & VAS process plan :** The main trend in the cold storage industry today is the expansion of value-added services. This is an additional non-core service that Cold Storage companies can offer to their customers. As customer needs change, many operators in traditional warehouse spaces are diversifying and trying to find new sources of revenue. Some value-added services being offered by cold storage operators are Portion packaging, High-pressure processing (HPP) and high-temperature short-time heating (HTST), Blast freezing, and Custom pallet building.

Source: proconnect.co.in

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WHY FOREIGN BUSINESSES RELOCATE TO INDIA

A major investment hub in South Asia and well connected to central, west, southeast, and east Asian countries, India is a prime location for foreign multinationals. The country has doubled down on efforts to diversify its economy resulting in the prominence of its services sectors, boosted by Information and Communication Technologies (ICT) capabilities and wide-spread use of English.

On top of **why foreign investors choose India as an investment destination** in the first place, i.e.:

- **Strong economic track-record**: Despite the pandemic blip, and key reforms to liberalize market access and ease doing business make the country an attractive investment destination for foreign investors.
- **Marketing liberalization**: Most sectors are open to FDI.
- Growing digital economy: Offers some of the brightest prospects with over 300 million internet subscribers.
- **Significant and growing middle-class**: presenting new opportunities for market penetration in areas like tier-2 and tier-3 cities for goods ranging from consumer durable goods to automobiles to healthcare besides digital services.
- **Improving ease of doing business**: Business reforms have quickened the set-up process through single-window and electronic platforms. Indian states compete to provide the most efficient turnaround of bureaucratic services, which can be a key market-entry consideration above operating cost.
- **Seventh largest country in the world by land area**: Land availability across the country is also being made transparent through an online GIS-based industrial land bank, which includes vacant plots and industrial parks.
- **Long term vision for foreign trade**: India's Foreign Trade Policy (FTP) 2023 announced new export hubs as well as measures targeting the e-commerce, dairy, and apparel and clothing sectors, among others. The new FTP also seeks the internationalization of domestic currency and will facilitate global trade payments in rupees.

Upgradation of manufacturing capabilities and incentives

For companies interested in or already manufacturing in India, the Production-Linked Incentive (PLI) Schemes provides financial incentives to manufacturers in 14 target sectors based on the value of their committed investment in the country, product innovation and addition to the existing value chain, and incremental sales of finished output.

Production-Linked Incentive Schemes in India: Target Sectors and Incentives

	Sectors	Incentives
1	Mobile manufacturing and specified electronic components	4% to 6% for a period of five years
2	Manufacturing of medical devices	5% for a period of five years
3	Critical key starting materials (KSM)/drug intermediaries(DI) and active pharmaceutical ingredients(API)	5% to 20% for a period of six years
4	White goods (ACs and LEDs)	4% to 6% for a period of five years
5	Telecom and networking products	4% to 7% for a period of five years
6	Electronic/technology products	1% to 4% for a period of four years
7	Pharmaceuticals drugs	3% to 10% for a period of six years
8	Food products	4% to 10% for a period of six years
9	Solar PV modules	Based on sales, performance criteria, and local value addition for a period of five years
10	Advanced chemistry cell (ACC) battery	Based on sales, performance criteria, and local value addition for a period of five years

11	Textile products	Based on sales, performance criteria, and local value addition for a period of five years
12	Automotive industry and drone industry	Based on sales, performance criteria, and local value addition for a period of five years and three years, respectively
13	Specialty steel	4% to 12% for a period of 5 years
14	Drones and drone components	· A total of Rs. 120 crore (approximately US$14 .54 million) has been provided for Indian manufacturers of drone and drone components over three financial years (starting 2021-22). · The value addition is determined by subtracting the purchase cost (net of GST) from the annual sales revenue (net of GST) for drones and drone components. · The incentive rate is 20% of the value addition, and it is constant for all three years. · A minimum of 40% of net sales is required to be added for value addition. · The PLI for each beneficiary is capped at 25% of the total annual outlay, ensuring a wider distribution of benefits. · If a manufacturer fails to meet the required value addition in one year, they can carry forward the lost incentive to the subsequent year if they make up for the shortfall.

Cumulatively, the PLI schemes aim to boost domestic manufacturing, increase exports, and attract more FDI by inviting both foreign and local companies to set up, engage in R&D, or expand their manufacturing units in the country. Companies that are currently beneficiaries of the PLI schemes (both foreign-invested and domestic enterprises) will be important targets for joint ventures, business matchmaking, supply chain partnerships, private equity investment, and other forms of investment. The PLI scheme coverage ranges from a period of four to six years, depending on the sector.

The regional locations of the target sector beneficiaries could prove to be ideal for setting up – based on the nature of the business operation.

Strategic location with superb connectivity

India's location at the head of the Indian oceans is of strategic importance and connects it with the Middle East, Europe, and West Africa from the western coast and Southeast Asia and East Asia from the eastern coast. India's transit sea routes thus connect Europe with East Asia. India also has the longest coastline in the Indian oceans.

Besides, India's internal connectivity has also drastically improved. The country has the second largest road network and fourth largest rail network in the world and seventeen international airports according to **Airports Authority of India** .

China +1 strategy

Businesses adopt the China plus one model to reduce operating costs, diversify workforces and supply chains, as well as access new markets. Businesses that adopt the strategy become less vulnerable to shocks like supply

chain disruption, currency fluctuations, and tariff risks. Businesses can quickly scale up in one country if market or operating conditions deteriorate in the other. India previously represented a more difficult alternative to China in comparison to Southeast Asian countries, but many businesses that are invested in China are now taking a second look at India.

Extensive Double Tax Avoidance Agreements : India has one of the largest networks of tax treaties for the avoidance of double taxation and prevention of tax evasion. The country has Double Tax Avoidance Agreements (DTAAs) with over 94 countries. The purpose of such tax treaties is to develop a fair and equitable system for the allocation of the right to tax different types of income between the 'source' and 'residence' countries.

DTAAs provide protection to taxpayers against double taxation and prevent any deterrence in the free flow of international trade, investment, and transfer of technology between two countries. Foreign companies that are resident in the countries that India has a DTAA with, can claim more beneficial provisions and rates between the IT Act and the DTAA.

Reforms to corporate income tax regime and incentives : India reduced the corporate tax rate for domestic companies, whereby new companies are now subject to a 22 percent rate and new domestic manufacturing companies, 15 percent. The effective tax rate for these domestic companies is around 25.17 percent inclusive of surcharge and cess.

Those companies opting for the concessional corporate tax rate also do not have to pay minimum alternate tax. As a result, India's current effective tax rate brings it at par, on average, with leading Asian investment destinations and manufacturing hubs like China, Vietnam, Malaysia, Singapore, and South Korea.

Incentives : There are multiple forms of tax and non-tax incentives available to businesses in India, such as tax exemptions, tax reductions, lower tax rates, tax refunds or rebates, tax credits, etc.

These can be primarily categorized as incentives based on:

- Corporate tax incentives for eligible companies;
- Tax incentive for Capital Expenditure on specified businesses;
- Incentives for Special Economic Zones (SEZs); and
- Tax incentives in different Indian states.

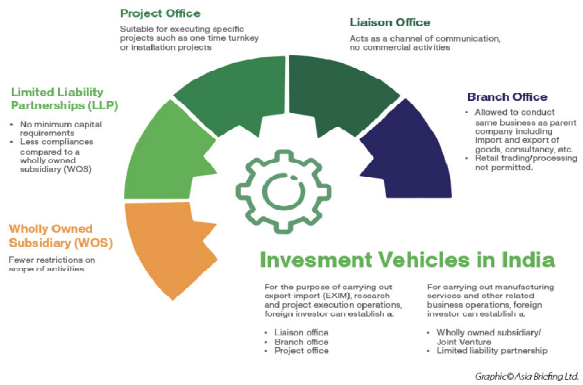
Fastest growing economy : According to estimates from the International Monetary Fund (IMF), India's economy surpassed that of the United Kingdom in terms of size in 2022 and rose to become the fifth largest in the world, with a 7.2 percent growth forecast for FY 2023. Despite global headwinds, India is well positioned to register impressive growth, backed by robust demand from its large domestic markets. A recent World Bank report titled "Navigating the Storm" underlines that the Indian economy has proved remarkably resilient to the ongoing impacts of the deteriorating external environment, growing faster than most major emerging market economies (EMEs). With the banking system in good health to support the nation's economic recovery, it is anticipated that private sector investment will rise in the forthcoming year, making India the bright spot in the Asian business and investment landscape.

Availability of skilled and presence of a large English-speaking workforce : India has the world's largest adolescent and youth population. It will continue to have one of the youngest populations in the world till 2030. The country has the third-largest group of scientists and technicians in the world. About 10 percent of the country's population speaks English; it is among the country's official languages. India is also an information technology hub, and the IT sector employs 3.9 million, making it the largest private sector jobs creator in the country.

Efficient legal system : India follows the common law system and has a written constitution, which has both federal and unitary features. It provides for the distribution of legislative and executive powers between the central government and state governments while also providing for a unified judiciary. The legislative powers are divided between the central and state legislatures.

Legislatures and regulations are well-defined. Indian companies are governed by the Companies Act, 2013. Limited liability partnerships are governed by a separate legislation, the Limited Liability Partnership Act, 2008. The government has also launched a series of initiatives aimed at enhancing the ease of doing business. India's Competition Act, 2002 is the principal legislation dealing with anti-trust issues. The Act prohibits or regulates (a) anti-competitive agreements, (b) abuse of a dominant position, and (c) combinations (mergers, acquisitions, de-mergers).

Entry options for foreign companies : Several entry options are available for foreign investors to enter the India market.



Source: www.india-briefing.com

BRANCH NEWS

MUMBAI BRANCH

Highlights of Performance 12-7-2025

1) " Orientation Training Program in Public Procurement" for Senior Executives of Mumbai Port Authority : 4th Batch was conducted at Port Management Training Centre (PMTC) Mazagon , Mumbai on 24th March & 25th March 2025

IIMM Mumbai Branch have a " Running contract " with Mumbai Port Authority since November 2022 to conduct such a In house Training Program after approx. 6 – 9 months to a new Batch of Executives & their staff . IIMM Mumbai conducted the First batch of such Training during January 2023

The Topics covered were :

1) Indian Contract Act
2) Non Disclosure Agreement
3) Workmen Compensation Act
4) GFR rules for Goods , Services , Works Contracts
5) Inco Terms & Customs Duty
6) GST Act : Overview
7) Case Studies & MCQ

The Speakers were 1) Mr Alok Ranjan Sarkar, former G.M - Materials & G.M (Engineering & Projects) BPCL & Advisor IIMM Mumbai Branch 2) Mr Pankaj Sinha Former G.M , Indian Oil Corporation Ltd - Pipelines Division and 3) Mr Jeetender Kumar, DGM Finance BPCL

IIMM Mumbai Branch Chairman, Mr Swapnil Dubey attended the above Training Program on first day and delivered the inaugural Session covering details about IIMM Mumbai Branch activities and also provided details of the Two AICTE approved Post Graduate Diploma Programs on Materials Management & Logistics Management & Supply Chain Management ,which IIMM offers .

Swapnil Dubey also assisted in converting Presentation PPT of Speakers into " IIMM Standard Proprietary Format "

Total 25 nos participants attended the subject Training Program.

Soft Copy of presentation PPT were shared with all the Participants.

IIMM Certificates of Participaton were presented at the Valedictory Function at end of second day of Training

A Very Positive feedback report was obtained from Mumbai Port Authority.

The above In House Training Program was Co - ordinated by Mr Alok Ranjan Sarkar Advisor - IIMM Mumbai Branch and was very well supported by IIMM Mumbai Branch Dy Director Mr RB Menon and IIMM Mumbai Branch Office staff

2) **IIMM Mumbai Branch conducted a Half day In House Training Program on "Import Procedures , Letter of Credit ,& Inco Terms " on 26th May 2025 for Mazagon Docks Shipbuilders Ltd(MDL) an**d another Half Day In House training program on " Disposal of Scrap " on 2nd July 2025 for Mazagon Docks Shipbuilders Ltd

The Speakers were Mr S.M Chaturvedi IIMM Empanelled Consultant (for Import Procedures) and Mr Arun Mehta , Controller of Stores , Konkan Railway (For Disposal of Scrap)

Mr Swapnil Dubey , IIMM Mumbai Branch Chairman attended the above Training program on 26th May 2025 and delivered the inaugural session and covered IIMM Mumbai Branch activities and also provided details of Two AICTE approved Post Graduate Diploma Courses on Materials Management & Logistics Management & Supply Chain Management , which IIMM offers

IIMM Mumbai Branch conducted another Half Day in house training program for Mazagon Docks Shipbuilders Ltd on " Disposal of Scrap " on 2nd July 2025

Both the Training Programs were highly interactive

Total 35 nos Participants participated

Soft copy of Presentation PPTs were shared with the participants

IIMM Certificates of Participation were handed over to the participants through Management Development Centre (MDC) of Mazagon Docks Shipbuilders Ltd

The Subject training Program was Co ordinated by Mr Alok Ranjan Sarkar , Advisor - IIMM Mumbai branch and was obtained from Mazagon Docks Shipbuilders Ltd by meeting their " Training Need Requirements . for FY 2025 – 2026 "

Excellent Adminstrative support was provided by Dy Director Mr RB Menon and IIMM Mumbai Branch Office staff

3) IIMM Mumbai Branch completed the writing work of " Review & Updation of Procurement Manual for Non - Aircraft parts " for Air India Engineering Services Ltd (AISEL) Indias biggest MRO Company in Aviation Sector — a CPSU under Ministry of Civil Aviation . (This Division of AIR

INDIA was not sold to Tatas in the year 2022)

AIESLs old Draft Manual (December 2023) has been completely updated in line with latest amendments of GFR Rules 2017 , Department of Expenditure, Ministry of Finance (DOE) Manual for Procurement of Goods 2nd Edition July 2024 , DOE Manual for Procurement of Consultancy & Other Services June 2022 and DOE Manual for Procurement of Works Contracts June 2022 .

Total of 16 New Chapters & 22 New Sections , 30 nos Annexures and detailed Appendix (covering detailed Govt Guidelines on Public Procurement) were part of Consolidated New AIESL Manual consisting of about 280 pages

This Comprehensive work was carried out in contractual time schedule of 16 weeks from date of Letter of Award (LOA) on 12- 2-2025 . The Work also involved detailed "Formatting work" of Each Chapter & Each Section to meet AISEL Standards

5 Nos Review Meetings were held with the Customer - AIESL Representatives headed by AIESL GM (PPMM) "on line" on MS Teams Platform to understand Customer requirements and obtain in-principle approval of contents

This work was carried out by Team Members consisting of Mr Swapnil Dubey , Chairman , IIMM Mumbai Branch , Mr Alok Ranjan Sarkar - former G.M - Materials & G.M (Engineering & Projects) BPCL & Advisor IIMM Mumbai Branch , Mr Arun Mehta , Controller of Stores , Konkan Railway , and Mr RB Menon Dy Director , IIMM Mumbai Branch with Mr Alok Ranjan Sarkar Advisor IIMM Mumbai Branch as the Lead Member .. ..

This Prestigious Work was obtained by IIMM Mumbai Branch from AISEL HQ New Delhi "Production Planning & Materials Management" (PPMM Department) "- on Nomination basis and was co ordinated by Mr Alok Ranjan Sarkar, Advisor - IIMM Mumbai Branch

As requested by the Customer viz AISEL HQ , New Delhi , IIMM Mumbai Branch would also provide assistance in obtaining Approval of this Updated Manual from AIESL Board of Director.

VADODARA BRANCH

IIMM Vadodara Branch successfully organized an engaging Evening Talk on the theme "Logistics & Operation Sindoor" by Air Warrior Dinesh Patel on 12th July, 2025 at IIMM Conference Room. The session featured esteemed Ex-Army officers who shared valuable insights drawn from their firsthand experience with logistics during wartime operations. Their in-depth perspectives on the strategic and operational aspects of military logistics captivated the audience. The event received high appreciation for the speakers, the subject matter and the overall execution. Around 50 members have attended the Evening Talk. The event was followed by light dinner.

KOLKATA BRANCH

Admission Test for PGDMM/PGDSCM&L At IIMM Kolkata Branch : There has been an overwhelming response from

the aspiring students of supply chain management to pursue the post graduate programme in material, supply chain and logistics management. The admission test for PGDMM and PGDSCM&L for July 2025 session was held at the institute hall of Kolkata branch of IIMM on 13th July. Forty-three students appeared in the written test which was followed by viva voce. At least 20% students appeared from states other than West Bengal. Ninety percent of students are already employed mostly in the purchase, stores and logistics sector of various industries. Their decision to pursue a professional course such as this is due to their eagerness to excel in their career in supply chain management. Another notable feature of the student profile this year has been the increase in the number of engineering students opting to specialize in the supply chain management profession.

Overall, it has indeed been a proud moment for IIMM Kolkata to get the type of response such as this we got this year. Kolkata branch expects the present batch to exceed fifty, that itself is a record for this branch.

Valediction programme of the DMLM students : On 29th June 2025, IIMM Kolkata branch organized a valediction programme for its DMLM students for April 2024 to March 2025 session. The event was held in the IIMM hall, Short Street.

Thirty-seven students were awarded certificates on successful completion of the Diploma over two semesters. Sreyoshi Nag was the first ranked student who was awarded a gold medal. The other rank holders were Uttam Maity, Amit Baran Das and Sujoy Sardar. Kaushik Mukherjee, Vice President, Sanjay Gupta, Secretary, Debotosh Dey, Treasurer, Debasis Mallick, Course coordinator and Sajal Das, Member (EC) addressed the students on this occasion. The entire session became very interactive when some of the students were motivated to speak about the existing course curriculum, the quality of study notes and further improvements needed to make the programme more attractive to the students. Students were informed that a module on ERP has been introduced from the latest batch of DMLM students.

The event was organized and conducted by K Gupta, Tapas Chakraborty and Sudip Sengupta from the Education Department of Kolkata branch. At the end, the students, committee members and the administrative staff joined a get together over luncheon.

VISHAKHAPATNAM BRANCH

Mr. L.R. Meena, National President, Visits AMTZ, Visakhapatnam : Mr. L.R. Meena, National President of IIMM, along with Former National President Mr. S.K. Sharma, recently visited Andhra Pradesh MedTech Zone (AMTZ) in Visakhapatnam — India's largest medical technology and pharmaceutical manufacturing hub, spread over 800 acres.

The visit was hosted by Dr. Jitendra Sharma, Managing Director and Founding CEO of AMTZ, who invited the IIMM leadership to explore avenues for collaboration in training, consultancy, and education. All executive committee members of IIMM Visakhapatnam Branch

were present during the highly productive discussions. Mr. Sharma and his full team of department heads dedicated over half a day to detailed interactions, leading to the identification of multiple potential areas of cooperation between AMTZ and IIMM. The AMTZ team extended warm hospitality and ensured a meaningful and engaging visit for the delegation.

ALWAR BRANCH

Indian Institute of Materials Management Alwar branch Conducted it's Annual General Meeting on 20 th July 25 at Hotel Moti Dungri Palace Alwar. Annual accounts were passed by the General body. The Branch decided to Host Northern region conference and Elected the Executive committee for the year 2025-2027. Mr. Lalit Raj Meena National President and Founder Chairman of the Branch was felicitated by the Members of IIMM Alwar branch.

The following are the New EC members
Mr. Satish Kumar - Chairman
Mr. Tariq Badar - Hon Secretary
Mr. Banwari Lal Meena - Jt. Secretary
Mr. Vinit Singhal - Hon Treasure
Dr. Ramavtar Meena - Jt. Treasurer
Mr. Lalit Raj Meena- National Council Member
Dr. Samar Roy Chowdhury -National Council Member
Mr. Rajesh Kumar - EC member
Mr. Jagmohan soni - EC member
MR. Rajesh Luthra - EC member
Mr. R R Meena. - EC member

NEW DELHI BRANCH

Indian Institute of Materials Management Delhi organised a seminar on "Public Procurement for Developed India" on June 28, 2025 at Hotel Le Meridien, New Delhi to deliberate upon various aspects of Public Procurement in India. The seminar was attended by about 150 delegates including many senior officers of GM and above from Govt. and PSUs. Shri Srideb Nanda, Member of Executive Committee informed about IIMM and its National & International activities.

SAD DEMISE

We are deeply saddened by the demise of Mr. Agarwal, National Council Member of IIMM from Ranchi Branch. He was a valued colleague, a committed professional, and a kind soul who contributed immensely to the growth and activities of the Institute. His loss is deeply felt across the IIMM fraternity.

Our heartfelt condolences to his family during this difficult time. We pray that the Almighty gives them strength to bear this irreparable loss.

May his soul rest in peace.

On behalf of the IIMM National Council.

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EXECUTIVE HEALTH

BEHIND INDIA'S FOOD REFORM MOVEMENT: A LOOK AT THE EAT RIGHT INDIA STRATEGY

India's top food regulator's initiative, called Eat Right India, is set to transform the country's food environment through training and sustainable practices.

In Short

- Eat Right India launched in 2018 by FSSAI to promote safe food
- Over 12 lakh food handlers trained under the campaign
- Around 55 lakh litres of used cooking oil repurposed into biodiesel

India's top food safety and nutrition movement, Eat Right India, is making progress in improving the country's food environment.

Launched in 2018 by the Food Safety and Standards Authority of India (FSSAI), the initiative promotes safe, healthy, and sustainable food for all. Now in its seventh year, the campaign has trained over 12 lakh food handlers and repurposed 55 lakh litres of used cooking oil, of which 39 lakh litres have been converted into biodiesel.

Prime Minister Narendra Modi earlier praised the movement during his Mann Ki Baat address on June 29, calling on citizens to reduce oil in their diets and embrace healthy eating habits.

"Reduce oil in food by 10%, reduce excess weight. When you are fit, you will be superhit in your life," he said, underlining the need for public participation in tackling obesity and other lifestyle diseases.

INDIA'S CHANGING FOOD LANDSCAPE

Modern lifestyles and urbanisation have led to rising rates of obesity, diabetes, and heart disease in India.

At the same time, concerns around food safety, from chemical residues to unhygienic cooking practices, have become more pressing. Eat Right India was designed as a response to these challenges, aiming to make both food safety and nutrition a public health priority.

The movement works across three pillars: improving food safety standards, educating consumers, and promoting environmentally sustainable practices.

CERTIFIED STATIONS AND CLEAN FOOD HUBS

As of July 6, 2025, India has 284 certified Eat Right Stations at railway hubs and 249 Clean Street Food Hubs where vendors have been trained to maintain hygiene and serve safe food.

Initiatives like FoSTaC (Food Safety Training and Certification) are ensuring that street vendors, restaurant workers, and other food handlers are equipped with proper knowledge of food safety standards.

Campaigns like "Aaj Se Thoda Kam" encourage the public to cut down on salt, sugar, and oil. Meanwhile, Trans Fat-Free India is working to eliminate harmful industrial fats from processed foods.

EAT RIGHT CAMPUSES IN OFFICES AND SCHOOLS

From Eat Right Campuses in offices and hospitals to Eat Right Schools that include nutrition in the curriculum, the campaign is bringing healthier food practices to everyday spaces.

Even places of worship and fruit and vegetable markets are being certified under the programme.

FSSAI is also pushing sustainability, urging businesses to cut down on single-use plastics and manage food waste responsibly. One of the major successes has been the RUCO (Repurpose Used Cooking Oil) initiative, where used oil from restaurants is collected and turned into biodiesel.

GLOBAL RECOGNITION

The campaign has earned international praise, winning the Rockefeller Foundation's Food Systems Vision Prize in 2021 and being recognised by the World Health Organisation as a global best practice for reducing trans fats.

With strong support from government bodies, private businesses, NGOs, and citizen groups, Eat Right India could make nutritious, safe, and eco-friendly food a reality for every Indian.

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Source: www.indiatoday.in

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IIMM **Research Centre**

CENTRE FOR RESEARCH IN MATERIALS MANAGEMENT (CRIMM)

IIMM has set up CRIMM in Kolkata jointly with the Techno India University which is one of the renowned and largest Private University in West Bengal. A MOU was signed with TIU on 17th of November, 2017. Techno India University, West Bengal, promoted by the well-known Techno India Group is a leading Private University in the state and the country

Objectives and Activities of CRIMM in brief

- To promote research in materials management discipline.
- To collaborate with industry for furthering the academic advancement of materials management and its application to industry.
- To render assistance to industries in problem solving projects, development activities, etc
- To take up project consultancy work in Materials Management. Centre will act as a nodal point for co-ordination and integration of research information in the field of Materials Management for on-going and completed research work in other countries

Research Fellowship

The candidate should have a Master Degree in any subject/discipline or equivalent professional Management qualification i.e. PGDBM, PGDMM etc. with at least 50% marks in aggregate at the graduation and post-graduation level. The candidate should have experience in working in Materials Management discipline or allied areas in industries. In case of highly experienced candidate in the field of Materials Management, and/or Engineering Graduates, Master Degree may be dispensed with. Preference will be given to industries sponsored candidates

The fees for such research studies will depend on the specific problem/area and the tenure, which will be borne by the sponsoring organisation. Those who will take up such Fellowship research studies on their own expenses, will have to bear the expenditure on their own. Successful Research Fellow from CRIMM shall have the unique opportunity to pursue PhD in Techno India University, West Bengal with condensed course work.

Governing Committee

A steering Committee has been constituted to oversee the working of the centre consisting of nineteen members, eight from Techno India University, West Bengal, eight from IIMM, and three from industry.

For more information please contact

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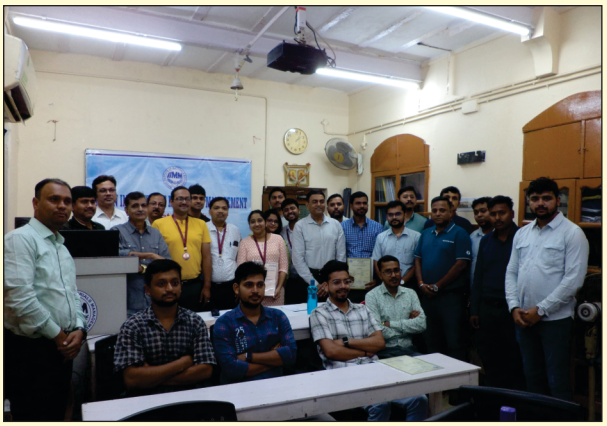

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