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MATERIALS MANAGEMENT REVIEW



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Opening of the IIMM 56th Branch at GURUGRAM



The IIMM Gurugram Branch was inaugurated by the National President, Mr. P. M. Biddappa, in the presence of National Office Bearers and Distinguished Members of IIMM on 21 June 2026.

The 56th IIMM Branch at Gurugram

All 26 new members were presented with their Membership Certificates during the Inauguration Ceremony, marking the beginning of their Professional Association with IIMM.





From the Desk of National President & Editor in Chief



Greetings from your National President!!!

Dear All Members of IIMM,

Every year on **5th June**, the world observes **World Environment Day**, emphasizing that environmental protection is a collective responsibility. In 2026, the focus is on **climate action**, encouraging governments, industries, and communities to adopt sustainable practices that support economic growth while protecting the environment. Among all business functions, **Supply Chain Management (SCM)** plays a crucial role in achieving sustainability. Supply chains connect suppliers, manufacturers, transporters, warehouses, retailers, and consumers. Every stage—from sourcing raw materials to delivering finished products—has an environmental impact through energy consumption, transportation, packaging, and waste generation. Therefore, modern supply chains must balance efficiency with environmental responsibility.

Climate change has become one of the greatest challenges facing global supply chains. Floods, cyclones, droughts, and other extreme weather events frequently disrupt transportation, manufacturing, and logistics operations. India has also experienced several climate-related disruptions affecting ports, highways, agriculture, and industrial production. These challenges highlight the need for resilient and adaptable supply chains supported by risk management, supplier diversification, and digital technologies.

Green Supply Chain Management has emerged as an effective approach to reduce environmental impact. It incorporates sustainable procurement, energy-efficient manufacturing, eco-friendly packaging, low-carbon transportation, waste reduction, recycling, and responsible resource utilization. Green supply chains not only conserve natural resources but also improve operational efficiency, reduce costs, and strengthen business competitiveness. Technology is accelerating the transition towards sustainable supply chains. Artificial Intelligence (AI), the Internet of Things (IoT), blockchain, cloud computing, digital twins, and predictive analytics enable organizations to optimize inventory, monitor shipments in real time, reduce fuel consumption, and improve warehouse operations. These digital innovations help businesses lower carbon emissions while enhancing productivity and customer service.

Another significant development is the adoption of the **circular economy**, which replaces the traditional “take, make, and dispose” model with one focused on reuse, repair, refurbishment, remanufacturing, and recycling. Reverse logistics has become an essential component of supply chain management, allowing products and materials to be recovered and reused instead of ending up in landfills. This approach conserves valuable resources and supports long-term sustainability. Sustainable logistics is equally important. Organizations are increasingly adopting electric vehicles, alternative fuels, multimodal transportation, rail and inland waterways, route optimization, and renewable energy-powered warehouses to reduce emissions and improve efficiency. India’s investments in multimodal logistics infrastructure and green logistics initiatives are supporting the country’s transition towards environmentally responsible supply chains.

Sustainability also begins with responsible procurement. Today’s organizations evaluate suppliers not only on cost, quality, and delivery but also on environmental compliance, carbon footprint, ethical sourcing, renewable energy use, waste management, and water conservation. Close collaboration with suppliers helps improve sustainability across the entire value chain. India is steadily strengthening its position as a global manufacturing and logistics hub by promoting renewable energy, electric mobility, digital logistics, infrastructure modernization, and Environmental, Social, and Governance (ESG) practices. These initiatives are helping Indian industries build globally competitive and environmentally sustainable supply chains.

On the occasion of **World Environment Day 2026**, supply chain professionals have an important responsibility to integrate sustainability into every business decision. Every procurement choice, transportation plan, warehouse operation, and production process offers an opportunity to reduce environmental impact. A sustainable supply chain is no longer just a corporate responsibility—it is a business necessity. Organizations that embrace green practices today will be better prepared for future environmental, regulatory, and market challenges. By working together, governments, industries, logistics providers, suppliers, and consumers can build resilient supply chains that promote economic growth while protecting our planet for future generations.

A sustainable supply chain is not merely a pathway for moving goods—it is a pathway toward protecting our planet.

Thanking you and wishing all the best.

A handwritten signature in black ink, appearing to read 'P.M. Biddappa'.

P.M. BIDDAPPA
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CONTENTS

PAGE NO.

■ THE AUGMENTED PROFESSIONAL – REDEFINING PROCUREMENT INTELLIGENCE IN THE AGE OF AI	5
■ THE ROLE OF INNOVATION AND MAPPING IN DECARBONIZING THE SUPPLY CHAINS	8
■ ARTIFICIAL INTELLIGENCE: A CURSE OR A BLESSING?	10
■ UN-ALLOCATED INVENTORY OR OSMI OBSOLETE & SLOW- MOVING INVENTORY	12
■ PROCUREMENT OF SPECIAL STEELS FOR PRESSURE VESSELS	13
■ AI FOR DIGITAL TRANSFORMATION IN LOGISTICS AND SUPPLY CHAIN MANAGEMENT	15
■ HOW REDUCING LEAD TIMES IMPROVES OVERALL PERFORMANCE	17
■ FOMO AND FOFO IN SUPPLY CHAIN	19
■ GREENING THE FUTURE: THE RISE OF SUSTAINABLE PACKAGING IN A CONSCIOUS WORLD	21
■ FOUR FULFILLMENT PRACTICES PACKAGING REGULATIONS ARE FORCING COMPANIES TO IMPROVE	22
■ HOW PROCUREMENT FUELS VITAL WORLD ENVIRONMENT DAY ACTION	24
■ “INDIA SHOULD BE AMONG THE TOP THREE AI SUPERPOWERS GLOBALLY”: PM MODI SETS 2047 VISION	26
■ INDIA'S STRATEGIC AUTONOMY IN A CHANGING WORLD	29
■ LOGISTICS INDUSTRY IN INDIA GAINS COMPETITIVE EDGE WITH ADVANCED DATA ANALYTICS FOR QUICK COMMERCE	34
■ PACKAGING OPTIMIZATION IS BOOSTING COLD CHAIN GROWTH	35
■ MANUFACTURERS BALANCE COSTS, INVENTORY AMID UNCERTAIN RATE ENVIRONMENT	37
■ MANUFACTURING HUBS: BUILDING INTEGRATED INDUSTRIAL ECOSYSTEMS	39
■ PUBLIC PROCUREMENT 2026 – TRENDS & DEVELOPMENTS	43
■ RENEWABLE ENERGY – POWERING A SAFER AND PROSPEROUS FUTURE	48
■ THE ROLE OF AUTOMATION IN MANAGING COMPLEX REVENUE WORKFLOWS IN LOGISTICS	49
■ WHEN A MEGA-3PL ISN'T THE RIGHT FIT AND WHAT TO CHOOSE INSTEAD	51
■ EMERGING ROLE OF TIER 2 AND 3 CITIES IN INDIA'S WAREHOUSING AND LOGISTICS GROWTH	53
■ BRANCH NEWS	54

NO. OF PAGES 1-60

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4

THE AUGMENTED PROFESSIONAL – REDEFINING PROCUREMENT INTELLIGENCE IN THE AGE OF AI

SWAPNIL DUBEY, CHAIRMAN - IIMM MUMBAI
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For over three decades, we have watched the procurement profession navigate a relentless current of change. We have evolved from clerical purchasers to commercial negotiators, and from cost center managers to value creators. We have adapted to the age of the ERP, the internet, and global sourcing. Yet, today, we stand at the precipice of what is undoubtedly our most significant transformation yet: **the age of Artificial Intelligence.**

The dominant narrative surrounding this shift is often fueled by anxiety. It paints a dystopian picture of a future dominated by cold, flawless algorithms, where human intuition is sidelined by data-driven automation. The question whispered in conference rooms from Mumbai to Manhattan is the same: **“Will AI replace the procurement team?”**

However, after examining the trajectory of our function, it’s clear that this narrative is myopic. The future I see is not a binary choice between human and machine. Instead, we are witnessing the emergence of a symbiotic partnership - a new alloy that blends the scale and speed of AI with the strategy, empathy, and creativity of the human spirit.

The traditional differentiators—analytical capability, process efficiency, commercial rigour—are being absorbed into digital platforms. But the emerging differentiators—empathy, ethical courage, creativity, relationship advisory—cannot be automated. They can only be amplified. By automating the transactional, AI is amplifying the relational.

In this future, procurement is not automated; it is elevated. It is becoming more “HumAIne”.

The Great Paradox: Why Digital Means More Human

We face a striking paradox: the more digital procurement becomes, the more human it must be. As algorithms rapidly absorb the transactional load—automating spend categorisation, generating RFX documents, and routing workflows—they are creating unprecedented space for human skills that were always valuable but often buried under administrative burdens.

Historically, our value rested on hard skills: negotiation, category expertise, spend analysis, RFX management, price benchmarking, risk/ financial assessments etc. While these remain essential, they are now table stakes. The production boundary of what technology can do has shifted. AI can now answer the questions of “what” and “how much” with inhuman precision.

Therefore, the differentiating value of the senior procurement professional is shifting upward:

- From reading data to interpreting meaning.
- From running RFPs to architecting business outcomes.
- From transactional execution to ecosystem orchestration.
- From cost savings to risk mitigation, innovation, and resilience

The most successful procurement leader of the next decade will not be the one who competes with the machine on computation, but the one who integrates with it to unlock wisdom. The future belongs to the integrator.

The “HumAIne” Handshake: Symbiosis in Action

To understand this synthesis, we must look at how the “AI-Led Paradigm” (quantitative, fast, efficient) and the “Human-Centric Paradigm” (qualitative, contextual, empathetic) come together. This is the “HumAIne Handshake” - a deliberate partnership where the output of one becomes the input for the other.

Let us examine three critical domains where this handshake is redefining our function.

1. The Augmented Negotiator

In the traditional model, negotiation preparation was a labour-intensive process of gathering distinct data points.

- **The AI Prelude:** Today, the AI engine acts as the ultimate analyst. It can analyse terabytes of historical spend, real-time market indices, and supplier financial data to define the optimal price point and the Zone of Possible Agreement (ZOPA). It provides a data-backed benchmark invisible to the human eye.
- **The Human Overture:** Armed with this intelligence, the procurement professional enters the room not as a haggler, but as a value architect. The human focuses on the dynamics no spreadsheet can capture: reading the room, sensing hesitation, and understanding the strategic value of a concession. By taking over repetitive, data-heavy, rules-based activities, AI frees professionals to focus on the skills that no machine can replicate.

The AI handles the arithmetic; the human handles the architecture. This allows us to craft win-win terms that secure not just a price, but a commitment to shared innovation.

2. Crisis Management and Resilience

Nowhere is this symbiosis more potent than in risk management, particularly within the complex supply chains we manage in India.

- **The AI Nervous System:** Imagine an AI dashboard scanning global news and satellite imagery. It identifies that a sub-tier supplier located in a specific industrial belt in Tamil Nadu is in a region experiencing unprecedented flooding. It flags this instantly, long before a manual check would occur.
- **Human Response:** The procurement leader does not send an automated penalty notice. Instead, they make an empathetic phone call to the Tier-1 supplier: "Our systems indicate a potential disruption. We are in this together. What alternate capacity can we help you secure?"

This approach transforms a potential contractual failure into a demonstration of partnership. It leverages the Indian spirit of Vishwas (trust) and Jugaad (innovative problem solving) to build resilience that is culturally aligned and strategically sound.

Negotiation outcomes rarely hinge on data alone. They hinge on:

- Reading the room—the micro-expressions, tone, timing
- Managing power asymmetries in cross-cultural environments
- Navigating internal politics and external constraints
- Crafting win-win solutions beyond numbers
- Building trust that endures beyond a single contract

3. The Ethical Guardian

As ESG moves from a buzzword to a boardroom mandate, the "HumAlne" model becomes our moral compass.

- **Transparency at Depth:** AI serves as a transparency machine, scanning thousands of entities to flag potential financial distress, geopolitical disruption, or non-compliance events in sub-tier suppliers. It can detect patterns in public disclosures that suggest emerging ESG risks.
- **Courage and Compassion:** However, data without context is dangerous. The human professional provides ethical reasoning. Instead of simply delisting a struggling MSME supplier identified by AI, the human leader can provide mentorship and patient capital to help them grow.

This aligns perfectly with national initiatives like "Make in India," where strengthening the domestic supply chain requires not just auditing, but capability building.

4. Architecting the New Foundation: Data for the "HumAlne" Era

This visionary partnership cannot be built on the fractured data foundations of the past. Our legacy ERP systems, designed for transactional recording and linear reporting, are the equivalent of trying to power a supercomputer with a car battery. They feed the AI paradigm but starve the human one.

To enable the "HumAlne" handshake, we must architect a new data bedrock.

The Unified Procurement Knowledge Graph

Traditional ERPs store data in rigid structures. While functional, they do not reflect the interconnected nature of supply ecosystems.

The Problem

- Supplier risk is linked to logistics, which is linked to geopolitical factors.
- Carbon emissions are connected to materials, locations, and production methods.
- Contract obligations relate to pricing models, service levels, and timelines.

These relationships cannot be captured with tables alone.

We must move beyond isolated databases to a "Knowledge Graph." In this model, every entity—a supplier, a part, a contract, a logistics route—becomes a "node". These nodes are interconnected by "edges" that define relationships, such as "supplies," "is located in," or "has a risk event with".

This allows us to ask profoundly strategic questions. For instance: "Show me all single-source suppliers for

our new EV battery module, whose primary factory is in a water-stressed district, and who are also supplying our main competitor”.

In a traditional setup, this is a week-long data excavation. With a knowledge graph, it is a single, instant query. The AI navigates the graph to find the answer, and the human applies strategic context to decide the action.

The Unstructured Data Reservoir

We must also tap into the 80% of data we have largely ignored: the unstructured data reservoir. This includes the qualitative essence of our operations—contract clauses, email sentiments, audit reports, and news articles.

By applying Natural Language Processing (NLP) and sentiment analysis, we can mine this reservoir for early warnings. Is the tone of communication with a strategic partner becoming increasingly negative? AI can flag it, allowing the human professional to intervene and repair the relationship before it fractures.

Federated Learning and Trust : In an Indian context, where suppliers (especially MSMEs) may be hesitant to share sensitive data due to trust issues, we must explore “Federated Learning”. This approach sends the AI model to the data source rather than extracting the data into a central repository. It preserves supplier confidentiality while providing the ecosystem-wide insights we need. This is how we build a trust-based digital ecosystem.

5. Cultivating the “HumAlne” Procurement Leader : This new era demands a new breed of procurement leader. The traditional competency model, which prized tactical negotiation and process management above all, is becoming obsolete. We are now building “T-shaped” professionals.

This requires a shift in two distinct “muscle groups”:

1. From “Soft Skills” to “Essential Human Skills”

We must stop referring to empathy, ethical reasoning, and storytelling as peripheral “soft skills”. They are core strategic capabilities. They enable us to translate AI-driven insights into compelling narratives for the C-suite.

- **Empathetic Influence:** The ability to understand motivations and fears across stakeholders.
- **Storytelling:** Crafting narratives that translate data into alignment and urgency.
- **Ethical Judgment:** Making decisions based on integrity and values, not just algorithmic outputs.

2. From “IT Literacy” to “AI Fluency”

Leaders need not be data scientists, but they must be fluent in the language of AI.

- **Prompt Engineering:** Knowing how to ask the right strategic questions to extract value from AI.
- **Bias Detection:** The wisdom to detect when an algorithm is basing its output on skewed or incomplete data.
- **Systems Thinking:** Recognizing how suppliers, markets, and risks interlink.

We must be able to look a machine in the eye, metaphorically speaking, and challenge its output.

A Leadership Provocation

Procurement transformation cannot be software-led alone. It must be behaviour-led.

Does your organisation invest equally in emotional intelligence and AI training?

Are you promoting the best negotiator—or the best relationship builder?

The leaders of the next decade will not be those who control processes, but those who influence ecosystems.

Conclusion: The Integrated Ascension

The journey ahead is not about resisting the rise of AI, nor is it about nostalgically clinging to purely human past. It is about deliberate and thoughtful integration.

We are shedding the tactical to embrace the relational. We are moving from being cost-takers to value-creators, from process managers to ecosystem architects. By automating the transactional, AI is amplifying the relational.

The most successful procurement organizations of the future will be those that fuse the computational power of the machine with the wisdom of the human. They will understand that the true power of AI is not in replacing our judgment, but in illuminating the path so our judgment can be applied where it matters most.

We are not being automated out of existence. We are being augmented into a new realm of strategic relevance. The ultimate competitive advantage will go to organisations that pair advanced AI with profound human skills—empathy, ethics, creativity, and courage.

We are becoming, in the most profound sense, more HumAlne.

I leave you with a question to reflect upon for your own function: **What is one process you can automate tomorrow to free up your team for a more human conversation today?**





THE ROLE OF INNOVATION AND MAPPING IN DECARBONIZING THE SUPPLY CHAINS

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Climate crisis is not a distant possibility any more but an immediate challenge that business organizations are forced to deal with. Various stakeholders including the investors, regulators, customers, and global markets are putting pressure on business organizations to reduce carbon emissions. Increasingly organizations are moving towards cleaner energy and sustainable manufacturing. Optimizing the supply chain process provides an opportunity for organizations to reduce Carbon emission. As globalization is increasing the supply chain has become more interconnected and complex. Business organizations source the raw materials from multiple countries, manufacturing happens in dispersed locations and is soled in an entirely different set of countries. There is a huge need for transportation, packaging, and warehousing which multiplies the energy consumption. To decarbonize the supply chain there is a need for transforming the supply chain practices.

A recent study titled “Decarbonization through Supply Chain Innovation: Role of Supply Chain Collaboration and Mapping” published in the journal of cleaner productions in 2025 by Mubarik, M. S., Gunasekaran, A., Khan, S. A., & Mubarak, M. F, studied the SCM innovations practices influencing decarbonization efforts in the Malaysian electrical and electronics (E&E) sector. This article is based on this research publications.

Sustainable innovations in Supply Chain.

In this highly globalized world innovations in supply chains holds a key to reducing carbon emissions. Organizations that adopt innovative practices in procurement, logistics, production and information management would be in a better position to reduce emissions. Innovations in Supply chain could be in several ways. They could be in a) adopting green technologies, b) through sustainable sourcing practices, c) having energy efficient logistic process, d) implementing digital supply chain system, e) process optimization, f) circular economy and g) through advanced analytics and artificial intelligence. These innovations could reduce waste, improve resource efficiency, optimize transportation routes and monitor sustainability performance on real time. This would need a break away from the traditional understanding of material management which focus on cost reduction, inventory optimization and supplier coordination. Today, Supply chain need to ensure all these without compromising the environment sustainability.

Organizations that integrate sustainability into materials planning and supplier management can, a) Reduce operational costs through energy efficiency, b) Better compliance with environmental regulations, c) Stronger brand reputation as more and more people are opting for sustainable products, d) Improved stakeholder trust (both investors and customers are equally insists on sustainability), and e) Enhanced competitiveness in global markets. Innovation today is no more optional but has become a strategic requirement.

Collaboration Alone Is Not Enough.

Supply chain collaboration refers to organizations working together through information sharing, joint planning, shared logistics, and coordinated sustainability initiatives. The belief is that collaborations lead to better environmental outcomes. This research challenges this commonly accepted assumption. They look at collaboration as a bridge between innovation and decarbonization. The researchers explored whether supply chain collaboration acts as a bridge between innovation and decarbonization. The study finds that simply partnering with suppliers and stakeholders is not enough to guarantee carbon reduction. Some of the reasons they outlined are:

- 1. Misaligned Sustainability Goals:** Organizations have different priorities. While some prioritize sustainability others may prioritize cost and speed.
- 2. Lack of Transparency:** There is limited visibility into supplier operations. Many organizations are not aware of operations beyond first-tier suppliers.
- 3. Complexity in Coordination:** Coordination a global supply chain is difficult with suppliers spread across continents and countries making int complex.
- 4. Unequal Distribution of Costs and Benefits:** Some partners may bear higher costs of sustainability investments while others receive greater benefits, leading to resistance.

For materials managers, this finding offers an important lesson. Collaboration should not be treated as a standalone sustainability strategy. It must be supported by clear metrics, shared accountability, measurable goals, and strong visibility systems.

The Rising Importance of Supply Chain Mapping

The study strongly recommends supply chain mapping as a means for decarbonization. This refers to a detailed visualization of the flow of materials, information, suppliers, logistic networks, and processes across the entire supply chain. This gives a clear picture to the organization on the origin of the material, the movement of the products and the environmental risk if any. The study observed that mapping of the supply chain strengthens the relationship between innovation and decarbonization. You cannot reduce what you cannot measure. Mapping helps in measuring and hence reduce the risk. It helps organizations:

- Identify carbon-intensive suppliers and processes
- Monitor energy usage and transportation emissions
- Detect supply chain bottlenecks
- Improve traceability and compliance
- Strengthen risk management
- Support sustainable sourcing decisions
- Enhance responsiveness during disruptions

For example, a company may discover through mapping that a significant portion of emissions comes from long-distance transportation of raw materials. This insight can encourage sourcing from regional suppliers or redesigning logistics networks. Similarly, mapping can reveal suppliers using outdated energy-intensive manufacturing systems. Organizations can then work with these suppliers to improve sustainability performance or explore alternative sourcing options.

Role of Digital Technologies in Transforming Materials Management

Technologies associated with Industry 4.0 and Industry 5.0 are reshaping how organizations manage materials and operations. Some of the key technologies include:

- Internet of Things (IoT)
- Artificial Intelligence (AI)
- Big Data Analytics
- Blockchain
- Cloud Computing
- Predictive Analytics

These technologies help improve real-time visibility of the movement of the goods, help in demand forecasting, manage inventory planning and supplier coordination, and helps in emissions tracking. AI-powered analytics can help optimize transportation routes to reduce fuel consumption. Blockchain can improve transparency and traceability across supplier networks. IoT sensors can monitor warehouse energy consumption and equipment efficiency. Technological innovations are helping organizations to decarbonize in a major way.

How is it relevant to Indian Industry?

Although the research studied the Malaysian E&E sector it is very relevant to Indian industries as well. With the introduction of Business Responsibility and sustainability Reporting (BRSR) Indian companies are increasingly under pressure to report their sustainability practices. The export oriented organizations are also facing pressure from their international partners to become sustainable. Indian organizations can benefit from

- Investing in supply chain visibility tools
- Building sustainable procurement systems
- Developing supplier sustainability programs
- Integrating carbon metrics into materials management
- Leveraging digital technologies for tracking and optimization

Organizations that proactively adopt sustainable supply chain practices are likely to gain long-term strategic advantages.

What is the way ahead?

Reducing Carbon is not just the responsibility of the environmental departments. It is a collaborative activity of all the department including the supply chain. The study clearly demonstrates that innovation and visibility can improve this collaboration. Organizations must go beyond partnerships and focus on actionable insights through supply chain mapping and digital innovation. For materials management professionals' sustainability will be an added role to perform. This will require more transparency, resilience and environmental responsibility. Companies that recognize this shift early and invest in innovative, data-driven supply chain systems will be better prepared for the low-carbon economy of the future.

Based on the research article Mubarik, M. S., Gunasekaran, A., Khan, S. A., & Mubarak, M. F. (2025). Decarbonization through supply chain innovation: Role of supply chain collaboration and mapping. *Journal of Cleaner Production*, 507, 145492.

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ARTIFICIAL INTELLIGENCE: A CURSE OR A BLESSING?

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Artificial Intelligence (AI) has emerged as one of the most transformative technologies of the 21st century. It is changing the way we live, work, communicate, learn and conduct business. From smartphones that understand our voice commands to machines that can diagnose diseases, AI is becoming an integral part of our daily lives. Yet despite its remarkable capabilities, AI remains a subject of intense debate. Some view it as humanity's greatest achievement, capable of solving complex global challenges and improving the quality of life for billions of people. Others fear that it could lead to unemployment, loss of privacy, ethical dilemmas and even pose a threat to human existence. This raises a fundamental question, Is Artificial Intelligence a blessing or a curse?

To answer this question, it is important to understand that AI, like any other technology, is inherently neutral. It does not possess intentions or emotions. Its impact depends entirely on how it is designed, deployed and controlled by human beings. Throughout history, every major technological advancement has been met with both enthusiasm and skepticism. The Industrial Revolution, electricity, automobiles, computers and the internet all sparked concerns about their potential consequences. Yet these innovations ultimately transformed society and contributed significantly to human progress. AI represents the next chapter in this long journey of technological evolution.

One of the strongest arguments in favour of AI is its ability to enhance human productivity. Modern businesses generate enormous amounts of data every day and analyzing this information manually is often quite difficult. AI systems can process vast datasets within seconds, identify patterns and generate insights that help organizations make better decisions. Tasks that once required hours or days can now be completed in minutes. This allows employees to focus on strategic thinking, creativity, innovation and customer relationships rather than repetitive administrative work. Instead of replacing human intelligence, AI often amplifies it, enabling individuals and organizations to achieve more with fewer resources.

The healthcare sector provides one of the most compelling examples of AI's positive impact. Medical professionals are increasingly using AI-powered tools to detect diseases, interpret diagnostic images and develop personalized treatment plans. In some cases, AI systems can identify signs of cancer, heart disease or neurological disorders with remarkable accuracy. By assisting doctors in diagnosis and treatment, AI can improve patient outcomes and potentially save millions of lives. Furthermore, AI is accelerating drug discovery by analyzing biological data and predicting how different compounds might interact with diseases. What once took years of research can now be

accomplished in a fraction of the time. For societies facing shortages of medical professionals, AI also offers the possibility of expanding access to quality healthcare.

Education is another field being transformed by artificial intelligence. Traditional classroom systems often struggle to accommodate the unique learning needs of every student. AI powered educational platforms can adapt lessons to individual learning styles, strengths and weaknesses. Students can receive personalized guidance, immediate feedback and customized learning paths that help them progress at their own pace. This has the potential to democratize education and reduce inequalities in access to knowledge. A student in a remote village could theoretically access learning opportunities comparable to those available in major urban centres, thereby narrowing educational gaps across regions and socioeconomic groups.

In the industrial sector, AI is driving unprecedented levels of efficiency and innovation. Manufacturers use AI to monitor machinery, predict equipment failures, optimize production schedules and improve quality control. Predictive maintenance systems can analyze data from sensors and identify potential problems before they result in costly breakdowns. This not only reduces downtime but also extends equipment life and lowers operating costs. In industries such as automotive manufacturing, aerospace, logistics and industrial lubrication, AI is helping businesses improve productivity while maintaining higher standards of quality and reliability. Smart factories powered by AI are becoming increasingly common, representing a new era of industrial competitiveness.

AI is also making transportation safer and more efficient. Human error remains one of the leading causes of road accidents worldwide. Advanced driver assistance systems, powered by artificial intelligence, can detect obstacles, monitor driver behavior and respond faster than human reflexes in certain situations. While fully autonomous vehicles are still under development, AI-driven technologies are already contributing to safer roads. Beyond personal transportation, AI is optimizing traffic management systems, reducing congestion, lowering fuel consumption and minimizing environmental impact in urban areas.

The contribution of AI to scientific research cannot be overlooked. Researchers often face the challenge of analyzing enormous volumes of data generated through experiments, observations and simulations. AI enables scientists to identify patterns that would otherwise remain hidden, accelerating discoveries in fields such as climate science, genetics, astronomy and material engineering. The ability of AI to process information at extraordinary speed may help humanity tackle some of its most pressing challenges, including climate change, food security and disease prevention.

Despite these benefits, concerns about AI are neither irrational nor unfounded. One of the most significant fears is the potential impact on employment. As AI systems become more capable, many routine and repetitive jobs may become automated. Workers involved in data entry, administrative support, customer service and other predictable tasks could find their roles increasingly vulnerable. While technological progress historically creates new industries and employment opportunities, the transition can be difficult for those whose skills become obsolete. Governments, educational institutions and businesses will need to invest heavily in reskilling and workforce development to ensure that people can adapt to the changing employment landscape.

Privacy is another major concern associated with artificial intelligence. AI systems rely heavily on data and much of this data comes from individual's online activities, purchases, communications and personal preferences. While data-driven insights can improve services and customer experiences, they also raise important questions about surveillance and personal freedom. If organizations or governments misuse AI powered monitoring systems, individuals could lose control over their private information. Striking the right balance between innovation and privacy protection will be one of the defining challenges of the digital age.

The rise of AI generated content has introduced new risks related to misinformation and manipulation. Modern AI systems can create realistic images, videos, audio recordings and written content that are often indistinguishable from authentic material. Deepfake technology, in particular, has demonstrated how easily false information can be manufactured and distributed. In an era where public trust is already under strain, the ability to fabricate convincing content poses serious risks to politics, business, journalism and social stability. Ensuring the authenticity of information may become increasingly difficult as AI generated media continues to improve.

Another challenge lies in the issue of bias. AI systems learn from historical data and if that data contains biases or inequalities, the resulting decisions may reflect and amplify those problems. AI powered hiring systems, lending platforms and predictive analytics tools have occasionally demonstrated unfair outcomes because they inherited biases present in the datasets used for training. This highlights the importance of transparency, accountability and ethical oversight in AI development. Technology should serve all sections of society fairly rather than reinforcing existing disparities.

Cybersecurity also presents a growing area of concern. Just as AI can strengthen security systems by identifying threats and anomalies, it can also be used by malicious actors to conduct sophisticated cyberattacks. AI driven phishing campaigns, automated hacking tools and advanced fraud schemes have the potential to become more effective and difficult to detect. As AI capabilities evolve, organizations will need to continuously upgrade their defences to stay ahead of emerging threats.

Perhaps the deepest concern surrounding AI relates to human dependence on technology. Throughout history, technological convenience has often reduced the need for certain human skills. The widespread use of GPS has

diminished people's ability to navigate independently, while calculators have reduced reliance on mental arithmetic. Excessive dependence on AI could potentially weaken critical thinking, decision-making and problem solving abilities if people begin accepting machine generated recommendations without question. Maintaining a healthy balance between technological assistance and human judgment will be essential.

The discussion becomes even more complex when considering the possibility of highly advanced AI systems that surpass human intelligence in many domains. Although such systems remain largely theoretical, they have become the subject of serious debate among scientists, entrepreneurs and policymakers. Some experts believe advanced AI could help solve humanity's greatest challenges, while others worry about losing control over systems that continuously improve themselves. While these concerns may seem distant today, they underscore the need for responsible governance and long-term planning.

History teaches us that technology itself is rarely the problem. Fire can cook food or destroy forests. Electricity can power hospitals or cause accidents. The internet can educate billions or spread misinformation. The same principle applies to artificial intelligence. The technology is merely a tool. Whether it becomes a blessing or a curse depends on the values, ethics and wisdom of the people who create and use it.

The future workforce will not be defined by competition between humans and machines but by collaboration between them. The most successful individuals and organizations will be those that learn how to leverage AI while preserving uniquely human qualities such as creativity, empathy, leadership, ethical reasoning and emotional intelligence. These are attributes that machines may simulate but cannot truly replicate.

Ultimately, the question of whether AI is a curse or a blessing has no simple answer. Artificial Intelligence possesses extraordinary potential to improve healthcare, education, manufacturing, transportation, scientific research and countless other areas of human life. At the same time, it introduces significant challenges related to employment, privacy, security, ethics and social responsibility. The technology itself is neither inherently good nor inherently bad. Its impact will depend on the choices humanity makes in the coming decades.

If developed responsibly and governed wisely, AI may become one of the greatest blessings ever bestowed upon humanity, enabling unprecedented levels of prosperity, innovation and progress. However, if pursued recklessly without adequate safeguards, it could create new forms of inequality, instability and risk. The future of AI is therefore not predetermined. It is a reflection of human decisions, human values and human responsibility. In the end, Artificial Intelligence is not a test of machine capability, it is a test of human wisdom. Whether it becomes a blessing or a curse will depend not on the intelligence of our machines, but on the wisdom with which we choose to use them. At last it can be easily said that AI is necessary evil.

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UN-ALLOCATED INVENTORY OR OSMI OBSOLETE & SLOW- MOVING INVENTORY

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In layman terms, in Plant, ware house, any business, we have generally major Two type of inventory Good and bad.

What is Unallocated inventory?

It is like it has no parent- child relation and it is not going to be consumed in near future. In finance terminology, it is Dead lock Money. To explain in simple terms let us consider solar system of our company /Business and as we have many product- division, each product has its own periphery, and it runs in that cycle.

Any item other than that is UFO.



On 8 November 2016, the Government of India announced the demonetization of all 500 and 1,000 banknotes of the Mahatma Gandhi Series. It also announced the issuance of new 500 and 2,000 banknotes in exchange for the demonetized banknotes.

What has happened that Rs 500 & 1000 became **obsolete** and went into unallocated inventory account. You can only keep notes in photo frame.

In Any plant-business, if change process is not robust it will lead to more un-allocated inventory as Old parts has been made obsolete and new parts are entering the plant along with obsolete parts. For any business, CEO, CFO, plant head must visit their scrap yard at regular interval to know and stop how much money is being drained. This is straight effect on your top line.

Please consider case of House, the more the food goes into your trash bin – garbage, you are worried more & monitor the trash. At home or office scrap due to Research-development is always good. Thanks to our women team at home who are doing great job.

Always compare at home to get an idea for reducing wastage at office, warehouse, plant. We carry out lots of work at home to reduce un-allocated inventory.

✓ Ten commandments for reducing unallocated Inventory.

Open communication and all changes are advised and communicated to each related member. Which means Robust ECN – Engineering change Notice process.

o It is advisable to have more or extra communication than less communication

o Changes could be design change, obsolesce and seasonal effect on requirements.

✓ Make a team with Cross functional team members consisting of SCM, Planning, Engineering, Manufacturing , or as per organization structure to discuss hurdle and preventive action & salvage of current unallocated inventory.

✓ Re cycle – reuse of unallocated inventory by thinking out of box.

✓ New product to use unallocated inventory such as use of seasonal items in new product such as perishable food items with extract like mango, pomegranate etc. or long-life storages in cold storages. Firecrackers can be bundled (as a kit) to suit other function like marriage etc.

✓ Gamba – Visit the area, store the un allocated inventory with special area , mark -color code for ease of identification by all employee. Sometimes down line members can suggest best use of unallocated inventory.

✓ Regular review of OSMI parts, how can be used as substitute with support from Engineering team, sell to supplier, Auction etc..

✓ Take Support of spare division so as to reduce inventory. Work proactively with festive discount for item with shelf life such as National Flag cannot be sold after 26 Jan and 15 Aug.

Prevention to reduce unallocated inventory: -

✓ Reviewing PR- Purchase Request for major parts so that OSMI items can be eliminated. Hence, we shall not be raising PO where parts are not required at this stage.

✓ Review of data in the system. Is it some wrong data which is triggering for extra or wrong procurements like safety stock, re order point, demand fence, MOQ-

minimum order quantity, fixed order qty, minimum re order point etc at optimum level.

Plan for weekly or monthly bucket, consider spill over to be carried forward or not in forecast planning.

- v In India, 70 % + of the organization do not work on correct lead time. It is always approximately so it becomes very difficult to impellent change management. we can bring material little late or in time – JST etc and hence increasing the cash flow.

- v Great & open communication to all the supplier, stake holder of Inventory. We often do not consider part of our channel partner. Share what new product is coming, what product is likely to be obsoleted or in pipeline of obsolesce and how they are affected.

These Two-way communications shall help you to reduce Lots of Money and last minutes hassle. We can save even on our storage space too.

- v Let me also state that each business has it's own model of working and we may have to try one or another technique (business model) to reduce the wastage and OSMI Parts without any allocation so that money is not blocked.
- v DIT- daily inventory or virtual inventory for A, B class so that inventory is reconciled and matches with book stock. Kan Ban for low value items so as to reduce time spent on low value item and it is available as and when requirement and to take care of minor error in BOM.

We as Materials Manager -Plant controller think of only Inventory which is in production items and it is as per Schedule III - Companies Act, 2013, we need to report all type of inventory like finish goods, WIP - work in progress, physical inventory in warehouse -store etc. and needs to be audited by external agency.

But in industry or business, we never think of inventory of unproduction or service items inventory such as Inventory of machine parts, office stationery, office supply, administrative articles, other items as an inventory & it is Holding our company's / organization's MONEY....

Consider the case of Air lines, railway or vey big industry, where even people at top level never ever thinks of inventory of Spare Parts for plane or train. Some spare parts may have been purchased but never have been used in lifetime. Even the Model is discontinued or not in operation but by mistake we, may re order consumable parts, which are in our auto indent mode. major plane may be considered as Capital good and may be scarped as per guideline but what about its remaining spare parts.

Consider the case of organization's Merger and Acquisition, we may need to scrap lots of parts or items starting with stationary, furniture, computer system – Software and hardware, Signage etc are scrapped. . The expense and scrap are so huge. We need to add these expenses in our balance sheet to visualize and take corrective action for salvaging.

It is ok to scarp parts and capital goods, when we move for better technology like typewriter or fax to today's computer or laptop. But with due extra care including proper disposal system.

So as not to harm even the environment.

Learn to Accommodate with Changes

In the 14.13 excerpt of Bhagavad Gita, Krishna says to Arjuna, "Arjuna, when inertia is predominant; ignorance, inactivity, carelessness, and delusion arise." Change is the rule of life and adding excitement to your activities helps give a boost. Leaders should imbibe this practice to be successful in the long run.

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PROCUREMENT OF SPECIAL STEELS FOR PRESSURE VESSELS

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Introduction : Procurement of special steels for pressure vessel manufacturing carries a quiet weight. Long before a shell is rolled or a weld is struck, decisions taken at the sourcing stage determine whether fabrication flows smoothly or becomes a sequence of approvals, rework, and delays. Boiler quality plates, stainless steels, and high-nickel alloys behave differently from structural steels. They respond to heat, forming, and welding in ways that demand foresight and hindsight rather than reaction. For procurement teams, this category is more about protecting the integrity of the entire manufacturing cycle.

This article reflects practical learnings from sourcing special steels used in pressure vessels and heat exchangers, where metallurgy, mill discipline, and lead-time realism shape outcomes far more than unit price.

Understanding the Nature of Special Steels : Special steels such as ASME SA516 grades, austenitic stainless steels, duplex and super-duplex steels, and high-nickel alloys are selected for their performance under pressure, temperature, corrosive environments and welding stress. Their properties are closely linked to chemical composition, heat treatment, and rolling practice. Small deviations often remain invisible during receipt inspection and surface only after forming, welding, or post-weld heat treatment.

Procurement therefore begins with respect for the material itself. These steels do not forgive casual substitutions, undocumented stock transfers, or partial traceability. Each plate carries a metallurgical history that must remain intact until the final inspection dossier is closed.

Mill Selection and Approval Discipline : In pressure vessel manufacturing, the supplier is not only the stockist issuing an invoice. The real supplier is the mill that rolled the plate. Mill approval becomes the first quality gate, even before commercial negotiations begin. Approved mills are evaluated for consistency rather than capability alone. Rolling practices, heat treatment control, testing frequency, and certification discipline matter more than installed capacity. Procurement teams quickly learn that a mill capable of producing a grade once may not be reliable across multiple heats and thickness ranges.

Stockists play an important supporting role, especially during schedule pressure, but their value depends on discipline in segregation, storage, and documentation. Material sourced through stockists still carries mill responsibility, and procurement must ensure that traceability remains unbroken from mill to shop floor.

Lead Time as a Technical Reality : Lead times for special steels often reflect metallurgical constraints rather than production capabilities. Thickness, rolling schedule, heat treatment cycles, and testing requirements add weeks that cannot be compressed without risk. Procurement planning works best when lead time is treated as a technical parameter.

Rolling schedules agreed upfront create stability. They allow fabrication planning, forming trials, and welding procedure qualifications to proceed without uncertainty. When rolling slots are left undefined, projects absorb the risk in the form of rushed approvals or compromised sequencing.

Traceability Beyond Documentation : Traceability in special steel procurement extends beyond possession of a mill test certificate. Heat numbers, plate markings, and cutting maps connect material identity to fabrication records. Once plates are cut and formed, traceability can easily dilute unless controlled deliberately. Procurement’s role includes ensuring that plates arrive with clear markings, that documentation matches physical identification, and that shop-floor practices preserve this link. Pressure vessel failures rarely originate from missing paperwork alone; they emerge when physical traceability fades during processing.

MTCs and Independent Verification : Mill Test Certificates form the backbone of acceptance, yet experienced procurement professionals learn to read them with absolute sincerity. Chemical composition ranges, impact test temperatures, and heat treatment statements deserve attention beyond signature and stamp.

Positive Material Identification checks at receipt provide quiet reassurance. They challenge compliant material, yet they prevent the far greater cost of discovering a mismatch after forming or welding. This verification step protects not only quality but also relationships between procurement, quality, and production teams.

Commercial Structures that Support Stability :

Commercial agreements for special steels work best when aligned with technical realities. Price variation clauses linked to steel indices reduce friction during long lead cycles. Clear delivery commitments tied to rolling schedules create accountability without forcing unrealistic promises. Inspection rights, audit access, and clear rejection protocols establish confidence on both sides. When these elements are addressed upfront, procurement discussions remain calm even when schedules tighten.

The Role of Procurement in Risk Reduction : Procurement in pressure vessel manufacturing often remains invisible when done well. Plates arrive as planned, documentation aligns, forming proceeds without surprises, and welding qualifications remain valid. When challenges do appear, they usually trace back to early compromises in sourcing discipline. This category rewards patience, preparation, and long-term supplier relationships. Procurement professionals who respect the material, the mill process, and the manufacturing sequence create conditions where engineering and production can perform at their best.

A Practical View of Risk Concentration in Special Steel Procurement

Dimension	What Procurement Observes in Practice
Material grade availability	Limited mills for SA516, duplex, and nickel alloys create natural concentration
Rolling slot dependence	Missed or shifted rolling schedules cascade into fabrication delays
Documentation sensitivity	Minor gaps in MTCs or heat numbers surface late during audits
PWHT impact	Material behaviour issues often appear only after heat treatment Mitigation approach Dual mill approvals, early slot booking, disciplined traceability

Conclusion : Special steel procurement is an exercise in anticipation. It asks procurement teams to think several steps ahead, to understand how a plate will behave months after it is ordered, and to safeguard traceability through every transformation. When handled with care, it becomes a stabilising force within pressure vessel manufacturing. When rushed or simplified, it quietly accumulates risk.

The true value of procurement in this space lies in ensuring that material decisions support safe, predictable, and compliant manufacturing from the first cut to final inspection.

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AI FOR DIGITAL TRANSFORMATION IN LOGISTICS AND SUPPLY CHAIN MANAGEMENT

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Customer expectations and customer service standards have gone up in recent years due to globalization and digitalization of supply chains. So companies need to take up digital transformation of their supply chains and in-house operations to stay competitive, profitable, resilient and sustainable.

Digital transformation is not a buzzword but a survival and growth long-term strategy. It is a shift from manual processes to data-driven, technology enabled systems and processes that can be scaled up while maintaining flexibility and resilience. The transformation is full of complexities and needs adequate investment to ensure infrastructure availability and workforce readiness to accomplish the transformation.

Supply chains and Logistics systems are inherently complex systems involving intricate networks of suppliers, carriers, warehouses, distribution centres, intermediaries and customers requiring a high level of stake holder collaboration and information sharing practices in proactive ways for achieving optimum productivity, efficiency, resilience and customer service.

Modern technologies like artificial intelligence and machine learning algorithms are used extensively in logistics nowadays to achieve better tracking of products and vehicles and better last-mile deliveries without delays and fuel wastages. Route optimization using AI is used extensively now to reduce fuel and energy consumption and achieve timely deliveries to customers of critical products and materials.

The explosive growth of e-commerce companies has put logistics firms under pressure to innovate and come out with better logistics models with better performances. New benchmarks have been set and maintained for performance and delivery efficiency by some of these companies and there is more room for further improvements.

Global disruptions like covid and other pandemics, wars, geo-political tensions and other force-majeure reasons can put added pressure on logistics networks and disrupt them. So it is imperative that supply chains are designed and operated with adequate in-built resilience in terms of alternate sources of supply, near-shoring if required, better or alternative shipping routes, trucks and ships using renewable sources of energy to tide over oil supply crisis etc.

As part of emissions reduction programs, companies are trying to measure and control indirect Scope 3

greenhouse gas emissions that are caused in their upstream and downstream supply chains including product usage and disposal. Emissions at the facilities of suppliers and distributors are also to be controlled for achieving improvements in this area.

AI tools and technologies like Machine Learning/Deep Learning, Gen AI/LLM, IOT or Internet of Things, AI Agents, Computer Vision, AI-driven Cobots/Robots and Drones, Predictive Data Analysis, Cyber-Security, Supply Chain Control Tower Dashboards and other related technologies have a lot to contribute in Supply chain Management and Logistics. Companies are identifying improvement areas and designing and implementing KPIs i.e. key performance indicators to improve performance and efficiency in different SCM areas using these technologies.

AI technologies are extensively used in different areas of supply chains and logistics like warehouses and distribution centres – some examples are AI controlled fixed or mobile robots and cobots, automated guided vehicles or drones, conveyor systems, computer vision assisted placement or inspection of materials, augmented reality equipment for quicker picking, sorting and packing of materials etc.

IOT i.e. Internet of Things devices like sensors and cameras can send data streams related to tracking of goods and materials in transit vehicles and this data can be analysed in real time basis to make continuous course corrections for improved delivery times. Automated driverless trucks and trains using renewable energy could also be used for materials transport in the near future if not already used.

Predictive Analytics and AI for Demand Management: AI tools and technologies are widely used in demand forecasting and inventory management nowadays so that seasonal factors, demand variations and other variables are more fully accounted when planning demand volumes, production batch quantities, inventory locations and inventory replenishment quantities to streamline supply chain operations and avoid stockouts and excess inventories. Supply chain planning and Inventory optimization are better done with AI integrated systems that can fix target inventory levels for each SKU or stock keeping unit based on demand variability, replenishment lead times and other related variables.

AI for Routing Optimization and Transportation Management: By processing data on traffic conditions,

fuel or energy costs and delivery windows AI reduces transit times, minimizes fuel and energy consumption and improves on-time delivery rates. UPS uses an AI powered tool i.e. ORION – On-Road Integrated Optimization and Navigation system for achieving on-time deliveries.

AI for Warehouse Automation and Robotics: AI driven robotics and automation systems enhance warehouse operations by streamlining picking of materials, packing of materials, sorting of materials and inventory management. Computer vision systems, a sub-set of AI allows robots to identify and sort products and items with higher levels of precision, reducing errors and delays and accelerating and optimizing order processing and fulfilment times.

AI for Autonomous Last-Mile Delivery: Autonomous guided vehicles, drones and delivery robots are transforming last-mile logistics, offering faster, cost-efficient and sustainable solutions for deliveries. AI enables these systems to navigate complex environment, avoid obstacles and deliver packages in an efficient way. Amazon's Scout delivery robot, powered by AI, autonomously delivers packages to customers in different locations. This innovation can reduce delivery costs and environmental pollution or emissions.

AI for Customer Service: AI-powered chatbots and virtual assistants streamline customer service by providing real-time tracking updates, answering FAQs, improving communication and collaboration and resolving problems to achieve enhanced customer service and satisfaction levels. These systems also operate on 24/7 basis and so can be accessed by customers any time depending on their urgent needs or requirements.

Some of the possible challenges in AI powered Digital transformation programs:

- High Program Implementation Costs
- Data Quality and Availability
- Legacy Systems Integration
- Workforce Training & Upskilling
- Data Privacy and Regulatory Compliance
- Algorithmic Bias
- Ensuring adequate ROI – return on investment
- Program Implementation On-time
- Ensuring high level of renewable energy usage in AI programs and projects

Navigating regulations and compliance: Data privacy laws like GDPR in Europe or CCPA in California, USA or other applicable regulations in Asia need to be complied with when implementing digital transformation programs. The IT Act 2000 and the DPDP Act 2023 i.e. Digital Personal Data Protection are the applicable rules in India. By proactively addressing these requirements, organizations can successfully implement data transformation programs that are not only efficient but also ethical, inclusive and sustainable.

Measuring success and continuous improvement: Digital

transformation is not a finite process. While adopting AI technologies can deliver quick results, the enduring success of such initiatives rests on the ability to measure impacts and results, refine approaches and strategies and adapt to new challenges over time. Key performance indicators need to be identified, tracked and monitored continuously to confirm that progress and improvements are on the right track.

Digital transformation involves multiple stakeholders from top to lower levels of organizations and misaligned goals or unclear communication can lead to resistance. So cross-functional and collaborative goal-focused clear and timely communication can help in better implementation of the initiatives. A culture of learning and continuous improvements needs to be built and maintained in organizations to make the transformation easier and sustainable.

Real Time Visibility and Control Towers: Control Towers serve as the nerve centre of modern international supply chains providing four critical functions:

- Centralized Visibility and Coordination
- Breaking down Operational silos
- Continuous Shipment monitoring and real-time status
- Improving Efficiency and reducing Costs

Resilience and Risk Management: AI systems can anticipate and detect potential threats before they escalate, shifting from reactive to predictive risk management. Optimized response strategies improve risk responses, mitigate the impacts of risks thus transforming and improving overall organizational resilience to disruptions and threats. Competitive advantage is improved in the marketplace because of these added AI-driven capabilities.

Conclusion : It maybe better to initially launch a carefully identified pilot AI driven digital transformation program in a single area or function of the company. After ensuring the success of this limited project, the strategy and approach can be scaled up to cover the operations of the entire company at multiple locations and benefits achieved can be increased on a continuous improvement approach. Digitally transformed organizations are able to demonstrate better annual performances and better shareholder returns improving their competitiveness levels and sustainability levels.

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HOW REDUCING LEAD TIMES IMPROVES OVERALL PERFORMANCE

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Abstract : Procurement lead time is often viewed as an operational metric confined to tracking the duration of purchasing cycles. However its impact extends far beyond administrative efficiency. Procurement lead time directly influences production continuity, project execution, working capital, cost structures and customer satisfaction. This article examines the broader business implications of procurement lead time, identifies root causes of delays and outlines strategic interventions to enhance speed without compromising governance and control.

1. Introduction : In most organisations procurement lead time is measured as the time taken from requisition to delivery of materials or services. While this metric is routinely tracked it is rarely viewed through a strategic lens.

In reality procurement lead time is a **critical driver of business performance**. When procurement cycles are prolonged:

- Production schedules are disrupted
- Projects face delays
- Inventory levels increase
- Emergency purchases become frequent
- Customer commitments are compromised
- Working capital gets locked

Conversely when procurement becomes faster and more responsive the entire organisation benefits.

2. Why Procurement Lead Time Matters : Procurement is deeply interconnected with multiple business functions including:

- a) Production and operations
- b) Maintenance and engineering
- c) Projects and capital expenditure
- d) Logistics and supply chain
- e) Finance and working capital management

Every critical input viz. raw materials, spare parts, consumables, services and equipment depends on timely procurement.

A delay at any stage of procurement can trigger a cascading impact:

- a) A delayed purchase order can halt production
- b) A delayed spare part can increase equipment downtime
- c) A delayed contractor mobilisation can stall project

execution

- d) A delayed shipment can affect customer delivery timelines

Thus procurement lead time affects not only cost efficiency but also **revenue, productivity and reliability**.

3. Business Impact of Reducing Procurement Lead Times

3.1 Improved Production Continuity : Faster procurement ensures timely availability of materials and spares reducing:

- Production stoppages
- Machine downtime
- Operational disruptions

3.2 Lower Inventory Holding Costs : Shorter and predictable procurement cycles reduce the need for excess inventory buffers leading to:

- Lower warehousing costs
- Reduced carrying costs
- Minimized risk of obsolescence

3.3 Reduced Emergency Purchases : Long lead times often force organisations into urgent procurement which typically results in:

- Higher costs
- Limited supplier competition
- Increased risk of control lapses

Efficient procurement reduces dependency on such reactive buying.

3.4 Faster Project Execution : Procurement delays are a major contributor to project overruns. Reduced lead times enable:

- Timely availability of materials and service
- Shorter project cycles
- Better cost control

3.5 Improved Working Capital Management : Faster procurement enhances planning accuracy allowing organisations to:

- Align purchases with actual demand
- Avoid premature procurement
- Reduce excess inventory

This leads to more efficient utilisation of working capital.

3.6 Enhanced Customer Satisfaction : Timely procurement supports consistent production and service delivery ensuring:

- On time order fulfilment
- Improved reliability
- Stronger customer relationships

3.7 Greater Agility and Responsiveness : Organisations with shorter procurement cycles can respond more effectively to:

- Market demand fluctuations
- Supply disruptions
- Policy or regulatory changes

This agility provides a significant competitive advantage.

4. Why Procurement Lead Times Become Long : Procurement delays are often attributed to external factors but in many cases the root causes are internal.

Key Contributors to Delays

- Ø Multiple and complex approval layers
- Ø Incomplete or inaccurate purchase requisitions
- Ø Poor demand forecasting and planning
- Ø Delays in finalising technical specifications
- Ø Limited supplier responsiveness
- Ø Weak coordination across departments
- Ø Manual processes and excessive paperwork
- Ø Restricted supplier base
- Ø Repetitive tendering for routine purchases
- Ø Delays in contract negotiation and finalisation

These inefficiencies cumulatively extend procurement cycles and reduce organisational responsiveness.

5. Strategies to Reduce Procurement Lead Times : Reducing lead time requires a structured approach that balances speed with governance.

5.1 Standardisation of Materials: Define standard specifications for frequently procured items to avoid repetitive clarification and approvals.

5.2 Rate Contracts and Framework Agreements: Establish long-term agreements for routine categories to eliminate repeated tendering.

5.3 Supplier Base Strengthening: Develop a reliable and responsive supplier network including alternate sources.

5.4 Digital Procurement Systems: Adopt e-procurement platforms and workflow automation to reduce manual intervention and improve transparency.

5.5 Simplification of Approval Hierarchies: Streamline approval processes to eliminate unnecessary delays while maintaining control.

5.6 Improved Demand Planning: Enhance forecasting accuracy to enable proactive procurement.

5.7 Master Data Accuracy: Maintain updated and standardised material master data to avoid processing delays.

5.8 Vendor Performance Monitoring: Track supplier lead times responsiveness and reliability to improve overall efficiency.

5.9 Cross-Functional Coordination: Strengthen alignment between procurement, operations, engineering and finance.

5.10 Pre-Qualification of Suppliers: Ensure readiness of suppliers for critical and time-sensitive requirements.

6. Governance Considerations : Speed should not come at the cost of control. Organisations must ensure:

- Compliance with procurement policies
- Transparency in supplier selection
- Audit readiness of procurement decisions
- Risk assessment for critical purchases

The objective is to eliminate inefficiencies not bypass governance.

7. Redefining Procurement Performance : Traditionally procurement performance has been measured by:

- Ø Cost savings
- Ø Compliance
- Ø Vendor negotiations

In today's environment an additional metric is critical:

Speed with Reliability : Procurement must not only be cost effective but also fast, predictable and responsive.

8. Conclusion : Reducing procurement lead time is not merely an operational improvement it is a business transformation lever.

Faster procurement leads to:

- Ø Smoother operations
- Ø Lower costs
- Ø Better working capital utilisation
- Ø Improved project execution
- Ø Higher customer satisfaction
- Ø Stronger organisational agility

In a competitive and dynamic environment, the ability to move faster often determines success.

And in many organisations that speed begins with procurement.

Procurement excellence lies not only in negotiating better prices but in enabling the organisation to operate with speed, efficiency and resilience. Reducing lead times is one of the most effective ways to achieve this transformation.

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FOMO AND FOFO IN SUPPLY CHAIN

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FIG 1

Abstract: Representing two distinct features in corresponding with behavioural, psychological, having risk, disruption in supply chain, **Fear of Missing Out (FOMO)**, also of **Fear of Finding Out (FOFO)** drives significant impact on the strategic decisions, becoming more digitalised, volatile, on emotions, having more paced with actions in supply chain.

Adoption of technology, better strategy, having fear of competitors of supplier's, is likely to gain an advantage in **Fear of Missing Out (FOMO)**, if investment in artificial intelligence, forecasting, with the adoption of Block chain, traceability having clear business opportunity, accumulating high inventory, during the period of shortage fearing stock out, **the Fear of Finding Out (FOFO)** encourages innovation, faster adoption of technology, competition, having risks on wasteful spending, with poor return on investment as competitors in supply chain.

Review: Organisation avoid finding out on keeping additional stock, safety stock, as they are found to cumbersome, accounting procedures, unable to find suitable audit systems, as supplier's with supplier's unable to supply at the right time, quantity, price, giving poor results, unable to service the customer with **the Fear of Finding Out (FOFO)**, tries to avoid perfect inventory control system, goes in to the problem of shrinkages, obsolete stock, thus tries to avoid logistic cost,

analysis, as transportation efficiency is likely to affect on short term advantage of **Fear of Missing Out, (FOMO)** caused without disruption, as problems are not very emphatic, (forceful, clear, deceive approach to strategy) but enlarged, as correction delayed, with the exact position of action lowering resilience, profitability in supply chain.



FIG 2

Creating a sense of urgency, leading to emergency procurement, high demand, volatility, increase in the need for agile logistic system, (highly flexible approach designed quickly to adapt to market volatility), **Fear of Missing Out (FOMO)** risks, causing an experience of dissatisfaction on procurement of a product, causing emotions, reduced trust, lower customer identity, as **Fear of Finding Out (FOFO)** that comes into business is to describe the reluctance to uncover the different ideas implemented in supply chain.

Introduction: Behaviour of the consumer includes unplanned buying in supply chain, trade mark, brand management, which is likely to influence **the Fear of Missing Out (FOMO)** on consumer behaviour as psychological, social, technological factors **drive Fear-on-Finding Out (FOFO)** as it does motivates consumers on the state of being deeply focused, leveraging transferable skills like data analytics which results in different outcomes like increased operational spending in supply chain.

Choosing into data analytics **Fear of Moving Out (FOMO)** is to continually get connected, but not into the data of inventory records, supplier performance, logistic costs, fearing that data is liable to bring errors, on delayed decision, **as Fear of Finding Out (FOFO)** is making action crucial, disruption on issues, eventual problems harder to adjust in stock outs, with increased cost, efficiencies

leading to higher operational cost, penalties, reduced to profitability in supply chain.

Risk assessment not accepted, on continuing to evaluate as a strategy, but as analysis is likely to bring out the vulnerability in **Fear of Moving Out (FOMO)** on managing supplier's, who do not necessarily meet the Key Performance indicators, as failure of this lead to risks, disruption, creating environmental failure as **Fear of Finding Out (FOFO)** where fear of failure in future becomes an opportunity among the pickers in a warehouse, are unable to identify the problems leading to a loss of trust in supply chain.

Results: Specific benefits lacks clarity, on the device that keeps up the manufacturing, procurement, inventory, as **Fear of Moving Out (FOMO)** as misaligned priorities (occur when different department procurement, operation pursue conflicting goals, rather than unified objectives) can lead to priorities, where focus on reactive meaning-full strategic improvement in **Fear of Finding Out (FOFO)**, owns organisation's operations, managing day-to-day functions of operations of warehouse, distribution with the support of retailers, wholesalers, addressing the brand equity, operational guidance, thus sharing the revenue, so as to expand the market, quality, without any significant expenditure in supply chain.

Identifying the optimisation on the flow of goods (enhancing efficiency from raw-materials procurement, to final product, minimising cost, maximising speed) for having become an essential in supply chain, as business strategy measures the current performance of **Fear of Moving Out (FOMO)** evaluates technology, improvement, strengthens procurement, distribution, operations, planning, validating on the adoption of artificial intelligence, as the organisational behaviour with **Fear of Finding Out (FOFO)** in avoiding data, feedback so as to avoid better distribution, having negative objectivity, in internal audit effectiveness in supply chain.

Discussions: Adoption of technology, strategy, trends such as artificial intelligence, block chain, **Fear of Moving Out (FOMO)**, as competitors in supply chain, are adopting the solution without any clear understanding, benefits using Key Performance Indicators, the operation ownership in supply chain is managing of efficient manpower, providing better quality to products, having **Fear of Finding Out (FOFO)** to better cost system, create profit on operational cost, better control, expansion of product image, in supply chain.

Rapid digitalisation, automation, implementation often created by necessity, in supply chain, creates immediate procurement, creating **Fear of Moving Out (FOMO)** in organisation, to build inventory holding, which is likely to create overstock, obsolete stock, non-moving stock, as **Fear of Finding Out (FOFO)** would likely create shortage in inventory, for day to day operation in supply chain, also to ensure better distribution, having smooth back end operations for product flow to retail outlets,

so as to retain profit, in operations in supply chain.

Findings: Driven by powerful consumer behaviours, influenced by procurement decisions, as matter of urgency in supply chain, **Fear of Moving Out (FOMO)** does of sometimes becoming highly effective in supply chain, due to scarcity, as a short tenure engagement for sales, as the psychological affects the barriers of **Fear of Finding Out (FOFO)** affects psychological barrier thus affecting internal audit, giving no preference to risk, data, bringing out inefficiency in potential problems of safety, supplier's risk, in supply chain.

Future: Rapid unpredictable often dealing products physically, the needs of consumer, offering high quality, security, **Fear of Moving Out (FOMO)** with deep knowledge, creating an incompetent in the field of growing psychological operation barrier, where supply chain avoids data on analysis, on the **Fear of Finding Out (FOFO)** as a new technology, due to the inability, of discovery of inefficiency, recognition, exposing vulnerability in supply chain.

Conclusions: Organisational changes relating to materials management in supply chain, moving from the **Fear of Moving Out (FOMO)** becomes inefficient, fear of re-location, change in manual systems, backend function to strategic learning, having reference to the reluctance in organisation analysis, on **Fear of Finding Out (FOFO)** the position of uncovering, uncomfortable, so as to avoid the depth of audits, as to discover suppliers with the ability to supply, not choosing child labour, sub-contracting, as it becomes liable to reduce expensive time in supply chain.

Recommendations: Research conducted on procurement decisions, is given the preference on limited promotion of suppliers, vendors, promoting to rapidly liquidate inventory, to increase perceived scarcity (is a strategic approach designed to increase product value, drive demand accelerate purchase decisions) in supply chain. having **Fear of Moving Out (FOMO)**, on overcoming solutions which include normalisation of supply chain, having **Fear of Finding Out (FOFO)** feedback, trying to build up unauthorised reporting, fostering better culture, that is liable to treat internal auditing as a system rather than as an not required system in supply chain.

Limitations: :Expansion rapidly does have limitation, also the significant regarding the operations, consistency, control capital investment the **Fear of Finding Out (FOFO)** can lead to inconsistent consumer, but on having a single supplier is often efficient in **Fear of Moving Out (FOMO)** on outdated technology, risks, costs, uncertainties, involving in transforming to new sustainable agile system, driven by high failure, cost, implemented to lack of trust, in new technology in supply chain.

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GREENING THE FUTURE: THE RISE OF SUSTAINABLE PACKAGING IN A CONSCIOUS WORLD

ARYA AMESHI

Sustainable packaging is no longer just a buzzword but a critical element in the global push for environmental responsibility. It refers to packaging solutions designed to minimize their environmental footprint, while ensuring they meet the functional requirements of the product. As consumer awareness grows, governments worldwide introduce regulations to support eco-friendly initiatives, and businesses innovate to embrace sustainability in packaging. But this transition is not without its challenges. India had already banned manufacture, import, stocking, distribution, sale and use of identified single use plastic items, which have low utility and high littering potential, all across the country from July 1, 2022.

In recent years, the global focus on sustainability has transcended industries, with packaging emerging as a critical area for innovation and change. Packaging, once a functional necessity, is now a significant contributor to environmental degradation due to the widespread use of non-biodegradable materials like plastics. As consumers, governments, and corporations recognize the urgency of addressing environmental challenges, sustainable packaging has become a key strategy in mitigating the impact of packaging waste on our planet.

The Global Push for Sustainable Packaging

As eco-consciousness grows, both businesses and governments are taking proactive steps to promote sustainable packaging. The global agenda is gaining momentum, with many countries incentivizing the use of sustainable materials. For example, nations like Ireland, Italy, and Japan offer tax exemptions for companies using compostable packaging. On the other hand, the UK is making strides with its Extended Producer Responsibility (EPR) schemes, which hold manufacturers accountable for the entire lifecycle of their packaging.

The urgency of these measures is underscored by an alarming increase in plastic pollution and growing pressure on industries to transition to more sustainable alternatives. These moves are part of a global effort to push towards zero-waste packaging, healthier for both the planet and consumers.

Top Trends Reshaping the Packaging Industry

Several trends are defining the shift toward sustainable packaging. These innovations are not only reshaping how packaging is made but also how it is used and disposed of.

Seaweed-Based Packaging: Seaweed is rapidly emerging as a promising alternative to plastic. It is biodegradable, ocean-friendly, and offers a completely renewable resource for packaging. Companies are now exploring seaweed's potential for creating edible packaging and single-use wraps, which offer a sustainable alternative to plastics in food packaging.

Upcycled Waste Materials: Upcycling waste materials to create new packaging is gaining popularity. Materials like food waste, plastic waste, and even agricultural by-products are being transformed into packaging solutions. Not only does this reduce landfill waste, but it also decreases the need for virgin resources, making it an eco-friendly alternative.

Reusable Systems: Packaging that can be used multiple times is gaining traction. Reusable packaging systems offer long-term benefits by reducing the volume of single-use packaging waste. Brands are beginning to embrace these models, with some offering refillable containers or reusable packaging in various industries, including beauty, beverages, and food.

Mono-Material Packaging: Mono-material packaging, which uses a single material for both the primary packaging and its components, simplifies the recycling process. This trend is particularly important in reducing contamination during recycling and streamlining the recycling process.

Compostable Plastic Alternatives: The search for biodegradable alternatives to traditional plastic continues to grow. Materials like plant-based plastics, which break down faster than conventional plastic, are gaining popularity. These alternatives are helping reduce the long-lasting impact of plastic waste on the environment.

Digital Printing Innovations: Digital printing is changing the packaging industry by offering customized, smaller-scale runs with less material waste. It's a more sustainable option compared to traditional printing methods, which often involve larger setups and excess material use.

Smart Packaging Solutions: Smart packaging integrates technology into packaging materials, such as QR codes or sensors that monitor product quality. These innovations help optimize inventory management, reduce waste, and improve recycling processes.

Plantable Packaging: A creative development in sustainable packaging is plantable packaging, where packaging materials are embedded with seeds. After use,

the packaging can be planted to grow herbs, flowers, or even trees, turning waste into something beneficial for the environment.

Concentrates and Refills: Packaging solutions that focus on concentrates or refills are reshaping industries like cleaning, personal care, and beverages. These solutions use less packaging material, which leads to a reduction in waste and carbon emissions.

Packaging On-Demand: Customization and on-demand production are emerging trends, allowing companies to create packaging only when needed. This reduces waste generated from excess packaging and lowers the environmental impact of manufacturing.

Major Challenges in Adopting Sustainable Packaging

While the benefits of sustainable packaging are clear, the path to full adoption is filled with challenges.

Meeting Consumer Expectations & Standards: Consumers increasingly demand eco-friendly packaging, but they also expect the same level of convenience, durability, and quality. This creates a significant challenge for businesses trying to switch to sustainable materials without compromising product integrity. This highlights the complexity of balancing sustainability with consumer experience.

Optimizing Material Performance to Protect Goods: One of the primary challenges in sustainable packaging is ensuring that eco-friendly materials still provide the protection needed for goods, particularly food and beverages. Packaging must maintain its protective function without increasing food waste or product damage. If the packaging fails in this regard, it could inadvertently contribute to higher carbon emissions,

counteracting the benefits of using sustainable materials.

High Costs of Sustainable Packaging: Sustainable packaging remains more expensive than traditional alternatives due to higher material sourcing costs, underdeveloped supply chains, and lower economies of scale. Although more than half of consumers are willing to pay more for sustainable products, brands—particularly in the FMCG sector—often operate on tight margins and may find price hikes challenging.

Infrastructure Development for Recycling and Waste Management: Another major hurdle to the adoption of sustainable packaging is the lack of proper infrastructure for waste collection and recycling. Even if businesses innovate with eco-friendly packaging, without a robust recycling and waste management system in place, the benefits of these materials are not fully realized. Effective infrastructure is critical to ensure a circular economy, where materials are reused and recycled efficiently.

Way Forward

Sustainable packaging is an essential part of the global move toward a more environmentally responsible future. With innovations like seaweed-based packaging, upcycled materials, and reusable systems, the industry is making significant strides. However, challenges such as high costs, consumer expectations, and the need for infrastructure development still need to be addressed. To achieve true sustainability, collaboration between businesses, governments, and consumers will be essential in creating a more sustainable packaging landscape that benefits both the planet and future generations.

Source: thecsr universe.com



FOUR FULFILLMENT PRACTICES PACKAGING REGULATIONS ARE FORCING COMPANIES TO IMPROVE

TAYLOR PACIFICO
CONTENT MARKETING SPECIALIST, PACCURATE

New regulations such as the EUs Packaging and Packaging Waste Regulation (PPWR) are pushing companies to look beyond packing materials and examine how orders are actually packed. For many fulfillment operations, improving dimensional data, packaging assortments, packing processes and monitoring will be essential to reducing waste and meeting rising compliance expectations.

For years, the sustainability of packaging was related solely to materials. Companies focused on recyclable boxes, biodegradable void fill, and reducing plastic in

packaging. These were the improvements most often highlighted in sustainability reports and ESG commitments.

But switching to alternative materials or minimizing usage alone does not solve one of the most persistent problems in fulfillment: wasted space.

Research by DHL found that roughly 24% of the volume inside e-commerce shipments is empty space. At scale, shipping that air is expensive. Oversized packaging

increases material usage, triggers dimensional weight charges, and consumes valuable transportation capacity. Over time, inefficient packing practices can add up to millions in avoidable costs while drawing growing scrutiny from regulators, investors and sustainability stakeholders.

That focus is expanding. Governments are increasingly targeting not only what packaging is made of, but how its used. The question “Is this box recyclable?” is now joined by another: “Is this the right size container for this shipment?”

The PPWR is one of the clearest examples. Packaging accounts for roughly 35% of municipal waste in the EU, making it a major environmental policy priority. PPWR introduces rules aimed at reducing unnecessary packaging, and minimizing empty space in shipments. These requirements place new scrutiny on operational decisions made inside fulfillment centers where boxes are selected, items are arranged, and void fill is added.

While the U.S. has yet to introduce an equivalent regulation, companies that ship globally can't treat packaging rules as regional issues. Businesses that place goods on international markets must still meet the standards of those markets.

As regulations like PPWR raise expectations around packaging efficiency, many fulfillment operations are discovering that improving packing performance requires fixing several long-standing operational gaps.

In practice, these gaps tend to fall into four core areas of fulfillment operations:

Product dimensional data. Efficient packing starts with accurate product data. That means having reliable length, width, height and weight measurements for every SKU in a catalog. Many fulfillment operations work with incomplete or unreliable dimensional data, oftentimes provided by suppliers.

Without reliable inputs, packers choose boxes based on experience rather than data. The result is oversized boxes, excess void fill, and shipments carrying more air than product.

Packaging assortment. Once reliable dimensional data is available, another issue often becomes visible: The packaging assortment itself may not fit the products the business ships.

Most fulfillment centers maintain a limited set of box sizes for practical reasons. A smaller mix simplifies procurement, reduces storage requirements, and keeps packing operations familiar for associates. But those choices may no longer reflect the current mix of products

and orders. In some cases, they were never optimized using real order data in the first place.

When an appropriately sized box is unavailable, packers choose a box larger than necessary, creating a steady pattern of over-boxing. Companies increasingly need to evaluate whether their box lineups, and where appropriate mailers or other packaging formats, support efficient packing.

Standardized packing processes. Most fulfillment operations still rely on packers to decide how an order should be packed, with no formal packing guidance. Experienced associates develop instincts about how to place items, and when to add protective materials, while newer employees rely on quick decisions.

Consistency is important when regulators expect companies to demonstrate packaging efficiency. If packing decisions vary widely, it becomes difficult to show that packaging practices are controlled and repeatable. Providing clear, data-driven packing guidance helps ensure that similar orders are packed the same way every time.

Packing performance monitoring. Many of these inefficiencies persist for a simple reason: Packing performance is rarely measured. Fulfillment operations closely track metrics such as throughput, order accuracy, and on-time delivery, but metrics such as fill rate, void fill usage, and volume utilization reveal where packaging inefficiencies occur and whether operational changes are improving results.

For sustainability teams, these measurements provide operational data that reflects real environmental impact. For supply chain leaders, they connect packing decisions directly to material costs and transportation efficiency. In many cases, the necessary data already exists within warehouse systems.

PPWRs emphasis on improving shipment efficiency and increasing volume utilization exposes operational gaps that are common across fulfillment operations worldwide.

Companies that use this moment to strengthen packaging discipline by improving dimensional data, aligning packaging assortments with order profiles, standardizing packing decisions, and monitoring packing performance will be better prepared for the regulatory environment ahead. Just as importantly, they will correct inefficiencies that have long existed within fulfillment operations.

Source: SCB



HOW PROCUREMENT FUELS VITAL WORLD ENVIRONMENT DAY ACTION

GEORGIA COLLINS

World Environment Day 2026 shows how procurement professionals drive climate mitigation through sustainable sourcing and green infrastructure purchases

Procurement teams hold substantial influence over organisational climate impact through purchasing decisions made across supply chains, energy contracts and infrastructure projects. World Environment Day, observed annually on 5 June, shows how these choices shape ecosystems and species in today's atmosphere.

According to the International Organization for Migration, climate change is reshaping lives in areas where procurement operates: where people live, how they earn a living and whether they can stay in their current locations. This year's theme, Climate Action, examines the impact climate change has on global ecosystems and the environment, as well as mitigation, restoration and prevention methods. Procurement professionals can influence these outcomes through supplier selection criteria, renewable energy purchasing agreements and specifications for sustainable materials and services.

Supplier engagement for emissions reduction

Climate change is already affecting the planet, with rising temperatures, changing rainfall patterns and increasing sea levels. These changes are contributing to more frequent and severe heatwaves, floods, droughts and wildfires, while also impacting food production, water supplies, ecosystems and human health. Many species face a greater risk of extinction, and some communities may be forced to relocate as environmental conditions worsen. According to the UK Met Office, reducing GHG emissions as quickly as possible can help limit the severity of future climate change impacts.

Procurement teams can address these challenges by requiring suppliers to disclose carbon footprints, setting emissions reduction targets in contracts and prioritising vendors with verified environmental management systems. The United Nations Environment Programme (UNEP) states that acting on climate change could help to prevent millions of deaths and trillions in economic losses by 2025.

The annual event has become one of the world's largest platforms for environmental outreach, involving millions of people, thousands of organisations and more than 150 governments.

"This World Environment Day, warning signals are

everywhere. The past eleven years have been the eleven hottest on record," says António Guterres, Secretary General of the United Nations, in the 2026 World Environment Day message. "And the damage goes far beyond rising temperatures: from polluted air to degraded land, collapsing ecosystems and vanishing biodiversity. Harming health, destroying homes and deepening hunger. The world is heading for a temporary overshoot above 1.5 degrees.

"Every fraction of a degree brings greater harm, especially to the most vulnerable.

"Our task is to make that overshoot as small, as short and as safe as possible, and rapidly bring temperatures back down. That means slashing emissions. Accelerating a just transition away from fossil fuels and towards renewables, the only sustainable path to lower costs and to real energy security. Cutting methane, one of the fastest, cheapest ways to limit near-term warming.

"Protecting forests, land and seas. Helping communities adapt to the devastating impacts already here. And it means fulfilling climate finance promises to developing countries, to save lives, protect livelihoods and strengthen economies.

"This is the moment to act, for our environment and for our future."

Procuring green infrastructure assets

According to UNEP, sustainable buildings reduce energy consumption, support resilient economic growth and help cities address climate challenges. Procurement specifications for construction projects, facilities management contracts and building materials can embed these sustainability requirements from project inception.

Clean energy and electric mobility are expanding rapidly, with solar and wind power now surpassing coal in some markets, marking a shift toward a cleaner energy future. Procurement teams can accelerate this transition through renewable energy purchasing agreements and specifications for electric vehicle fleets.

Green infrastructure, such as urban forests and parks, cools cities, improves quality of life, reduces flooding and can lower urban temperatures by up to four°C. Procurement professionals can include these nature-based solutions in infrastructure tenders and landscaping contracts.

"Continuity of operations has been a government and

business imperative since the dawn of civilisation. Today, resilient infrastructure is the absolute key to the continuity of society itself,” says Chris Bradshaw, Chief Sustainability & Education Officer at Bentley Systems.

“Yet, that continuity is under unprecedented threat. While accelerating climate change and extreme weather remain the ultimate stress tests for our built environment, they are now compounded by ageing legacy systems and cyber vulnerabilities.

“This World Environment Day is a stark reminder that climate resilience is an infrastructure necessity and a merely reactive approach is no longer an option.

“We must anticipate climate and operational disruption before it strikes. By combining deep engineering expertise with digital intelligence, we can build and better manage physical infrastructure networks that actually endure. The leaders who embrace data-driven resilience today will be the ones safeguarding our environment and essential services tomorrow.”

Renewable energy purchasing strategies

Climate action is not only an environmental necessity but also an economic opportunity, driving growth, jobs and investment. Procurement teams are positioned to capture these benefits through strategic purchasing decisions that balance cost, performance and environmental impact. “World Environment Day highlights the growing importance of how infrastructure choices shape environmental impact,” says Nicolas Frapard, Senior Director and Regional Lead, EMEA at WD.

“It is a timely moment to consider how AI is fundamentally changing what we ask of our infrastructure. Today, the scale, speed and persistence of data on storage are all impacted. That brings enormous opportunity, as well as responsibility. “The IEA projects that data centre electricity consumption will double by 2030, driven largely by AI workload growth. The industry response cannot be limited to renewable energy commitments alone. It calls for a deeper focus on the infrastructure itself and storage is a meaningful place to start.

“World Environment Day also reinforces that sustainability is not separate from innovation. It is embedded within it. The most responsible infrastructure decisions are increasingly the most effective ones. The role of technology leaders is to ensure customers have the tools to grow AI capabilities while reducing their environmental footprint at the same pace.”

Procurement teams purchasing data centre services, cloud computing contracts and IT infrastructure can specify renewable energy requirements and energy efficiency standards. By transitioning away from fossil fuels in a just, orderly and equitable manner and investing in climate resilience, organisations can build a healthier, greener and more prosperous future.

Sustainable sourcing from natural systems

UNEP states that “healthy ecosystems absorb carbon, regulate water and protect communities.” Procurement decisions around raw materials, agricultural products and natural resource extraction can protect or degrade these systems. Forests, wetlands, peatlands, oceans and other ecosystems help regulate the Earth’s climate by absorbing and storing vast amounts of CO. Procurement specifications for timber, paper, agricultural commodities and seafood can require certification schemes that protect these carbon sinks. For example, coastal ecosystems like wetlands, mangroves, coral reefs, oyster reefs and barrier beaches all provide natural shoreline protection from storms and flooding in addition to many other services. Procurement teams can support restoration projects through purchasing decisions and supplier requirements. According to the European Commission (EC), terrestrial and marine ecosystems currently absorb roughly half of human-generated carbon emissions, making them essential natural carbon sinks. Procurement policies that protect these systems can maintain this capacity.

Forests play a role in the carbon cycle by capturing CO through photosynthesis and storing it in biomass, deadwood, litter and soils. According to the United Nations Economic Commission for Europe, when carbon sequestration exceeds carbon release from natural processes or human activities such as deforestation and wildfires, forests act as both carbon reservoirs and tools for removing additional carbon from the atmosphere.

Beyond carbon storage, healthy ecosystems increase resilience to climate impacts by reducing flood risks, protecting coastlines from storms, improving water security and cooling urban areas. Procurement teams can embed ecosystem protection requirements in supplier contracts and material specifications. However, climate change, biodiversity loss and ecosystem degradation are weakening nature’s ability to provide these services. The EC states that restored natural shorelines with seagrass beds or mangroves form a buffer against storm surges and create nurseries for fisheries.

Protecting groundwater recharge zones or restoring flood plains, securing water resources so that entire communities can cope with drought. Procurement professionals can support these outcomes by selecting suppliers with verified environmental practices and requiring sustainable sourcing certifications across supply chains. Conserving and restoring forests, wetlands and other natural habitats is a cost-effective and sustainable way to mitigate climate change while supporting biodiversity, human wellbeing and long-term environmental resilience. Procurement decisions made today will determine whether these natural systems continue to provide climate regulation services for future generations.

Source: procurementmag.com

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“INDIA SHOULD BE AMONG THE TOP THREE AI SUPERPOWERS GLOBALLY”: PM MODI SETS 2047 VISION

The transcript of the interview is as follows:

ANI: India is hosting the AI Impact Summit 2026 for the first time anywhere in the Global South. The Motto of the Summit is “Sarvajana Hitay, Sarvajana Sukhaye” (Welfare for all, happiness of all). What’s the vision of this Summit, and why this motto?

PM Narendra Modi: Today, AI stands at a civilisational inflection point. It can expand human capability in unprecedented ways, but it can also test existing social foundations if left unguided. That is why we have deliberately framed this Summit around Impact that ensures meaningful and equitable outcomes, not just innovation.

The guiding spirit, “Sarvajana Hitay, Sarvajana Sukhaye”, reflects India’s civilisational philosophy. The end goal of technology should be ‘Welfare for All, Happiness of All’. Technology exists to serve humanity, not replace it.

The Summit is structured around People, Planet and Progress. AI systems draw upon knowledge and data generated across societies worldwide. Therefore, we want AI’s benefits to be diffused to everyone and not just hoarded by early adopters.

As the first global AI summit hosted in the Global South, India is creating a platform that amplifies under-represented voices and development priorities.

AI governance, inclusive datasets, climate applications, agricultural productivity, public health, and multilingual access are not peripheral issues for us. They are central. Our vision is clear: AI must accelerate global development while remaining deeply human-centric.

ANI: You have always spoken about using technology for empowerment and development. How do you see AI’s role in Viksit Bharat 2047?

PM Narendra Modi: AI represents a transformative opportunity in India’s journey towards Viksit Bharat 2047. Leveraging AI mindfully, with a strategic lens, helps address deep developmental challenges while creating entirely new economic opportunities, enabling inclusive growth, bridging the urban-rural divide and expanding access to opportunity.

In healthcare, AI is already delivering impact. We are seeing AI-based solutions addressing early detection of tuberculosis, diabetic retinopathy, epilepsy and many other ailments at primary and district health centres.

In education, AI-powered personalised learning platforms in Indian languages are helping students in rural and government schools receive customised academic support.

In a very unique initiative, Amul is leveraging AI to reach 36 lakh women dairy farmers across thousands of villages, providing real-time guidance in Gujarati on cattle health and productivity, empowering grassroots women producers.

In agriculture, the Bharat Vistara initiative aims to integrate AI into crop advisory, soil analytics and weather intelligence, helping farmers make better, localised decisions.

Even in heritage preservation, AI is enabling the digitisation and interpretation of ancient manuscripts, unlocking India’s civilisational knowledge systems.

At a time when the world is worried about AI deepening divides, India is using it to dissolve divides. We are making it an efficient tool for delivering healthcare, education and economic opportunity to every village, every district, and every citizen.

ANI: In your speech at AI Action Summit 2025 in Paris, you emphasised the bias and limitations of AI. From now and then, has the scenario changed? How do you see India addressing this issue?

PM Narendra Modi: The concerns regarding bias and limitations in AI remain deeply relevant. As AI adoption accelerates, the risks also scale. AI systems can inadvertently perpetuate biases related to gender, language and socio-economic background.

The AI Impact Summit 2026 is bringing together various stakeholders and creating global awareness on matters such as biases and limitations of AI. This is an issue that needs global cooperation.

For India specifically, we face unique challenges and opportunities. Our diversity – linguistic, cultural, regional – means that AI bias can manifest in ways that might not be obvious in Western contexts. An AI system trained primarily on English data or urban contexts may perform poorly for rural users or speakers of regional languages.

The positive development is that India is beginning to address this more systematically. We’re seeing increased focus on creating diverse datasets that represent India’s plurality, greater emphasis on AI development in regional

languages, and growing research on fairness and bias in Indian academic institutions and tech companies.

ANI: India's success in building low-cost Digital Public Infrastructure (DPI) like Aadhaar and UPI is phenomenal. The convergence of DPI and AI could significantly improve public service delivery. What is India's learning on this, which could help Global South?

PM Narendra Modi: India's Digital Public Infrastructure journey offers crucial and practical lessons for the Global South. The convergence of DPI and AI is the next frontier of inclusive development.

Our success with Aadhaar, UPI and other digital public goods was not accidental. It stemmed from a few replicable principles.

First, we built digital infrastructure as a public good, not a proprietary platform. This open and interoperable architecture allowed innovation to flourish on top of a common base layer.

Second, we designed for scale and inclusion from day one. Our systems work for 1.4 billion people, irrespective of their socio-economic status, literacy level, region or language.

When AI is layered onto this foundation, governance can become far more responsive and efficient. AI can improve welfare targeting, strengthen fraud detection, enable predictive maintenance of infrastructure, support urban planning, and enhance transparency in public systems.

At the same time, we understand the importance of robust digital infrastructure, strong data privacy protections, thoughtful regulatory frameworks and AI literacy across society.

With its experience of building a human-centric Digital Public Infrastructure, India is best placed to ensure that AI's benefits reach the last mile, to farmers in villages, students in small towns, MSMEs, women entrepreneurs, informal workers and youth across rural and urban India, and not remain confined to a narrow urban elite. Technology must serve every citizen, regardless of geography, gender or income. The goal is not AI adoption for its own sake. It is AI that genuinely empowers citizens and accelerates India's journey toward becoming a developed nation by 2047, and offers a scalable model for the Global South.

ANI: India is a powerhouse of engineering talent. We contribute a large tech workforce to the world. How could we further deepen this in the AI era?

PM Narendra Modi: India has the talent and entrepreneurial energy to become an AI powerhouse, not just as a consumer, but a creator.

Our startups, research institutions and tech ecosystem can build AI solutions that enhance manufacturing,

improve governance and generate new jobs.

I am confident that our youth can build AI solutions for Indian realities, designed for farmers, MSMEs, women entrepreneurs and grassroots innovators.

We remain committed to strengthening every effort by our talented youth to make AI a force-multiplier for innovation and inclusion.

The Union Budget 2026-27 reinforces this vision. It expands support for data centres and cloud infrastructure, strengthening domestic compute capacity.

Under the IndiaAI framework, startups and research institutions are being supported with access to high-performance AI compute resources.

Continued push for semiconductor manufacturing, electronics PLI, AI Centres of Excellence and digital skilling strengthens both hardware and human capital foundations.

In short, we are not just nurturing talent, but we are building the infrastructure, policy ecosystem and skills base required for India to move from participating in the AI revolution to shaping it.

ANI: India has a vibrant IT sector contributing significantly to our service exports. How do you see AI impacting our IT sector? And what are the steps the Government is taking to bolster our IT sector?

PM Narendra Modi: India's IT sector has been the backbone of our services exports and a key driver of economic growth. AI presents both a tremendous opportunity and a challenge for this sector. AI market projections show India's IT sector could reach \$400 billion by 2030, driven by new waves of AI-enabled outsourcing and domain-specific automation. The fundamental shift is that AI isn't replacing the IT sector. It is transforming it. While general-purpose AI tools have become widespread, enterprise-grade AI adoption is still concentrated in specific sectors, and incumbent IT firms continue to play crucial roles in solving complex business problems.

To enable a strong Indian AI ecosystem, the government has responded with a comprehensive strategy centered on the IndiaAI Mission. We've already exceeded our initial target of GPUs and we are committed to do more, to provide affordable access to world-class AI infrastructure for startups and enterprises.

We have established four Centres of Excellence in Healthcare, Agriculture, Education and Sustainable Cities plus five National Centres of Excellence for Skilling to equip our workforce with industry-relevant AI expertise.

We want our IT sector to lead not just in service delivery but in building AI products, platforms, and solutions that work for India and the world.

ANI: We have seen many examples of AI being misused. How are we ensuring safety of Indians from possible harm of AI technology?

PM Narendra Modi: Technology is a powerful tool, but it is only a force-multiplier for human intent. It is up to us to ensure that it becomes a force for good. While AI may enhance human capabilities, the ultimate responsibility for decision-making must always remain with human beings. Around the world, societies are debating how AI should be used and governed. India is helping shape this conversation by showing that strong safeguards can coexist with continued innovation.

For this, we need a global compact on AI, built upon certain fundamental principles. These should include effective human oversight, safety-by-design, transparency and strict prohibitions on the use of AI for deepfakes, crime and terrorist activities.

India is moving toward a more structured governance approach in AI regulation. With the launch of the IndiaAI Safety Institute in January 2025, the country created a dedicated mechanism to promote the ethical, safe, and responsible deployment of AI systems.

As AI becomes more advanced, our sense of responsibility must grow stronger. What makes India's approach distinctive is its focus on local risks and societal realities. The emerging risk assessment framework considers national security concerns as well as harms to vulnerable groups, including deepfakes targeting women, child safety risks, and threats affecting the elderly.

The urgency of these safeguards is becoming evident to everyone due to the surge in deepfake videos. In response, India notified rules requiring watermarking of AI-generated content and the removal of harmful synthetic media. Alongside content safeguards, the Digital Personal Data Protection Act strengthens data protection and user rights in the digital ecosystem.

India's commitment also extends globally. Just as there are global norms in aviation and shipping to ensure safety and accountability across borders, similarly, the world must work towards common principles and standards in AI. Whether through its role in the 2023 GPAI declaration, the Paris AI discussions, or in the current summit, India has consistently advocated a balanced path of advancing innovation while building safeguards for safe and inclusive #AIForAll.

ANI: In some section of youth, there is fear that AI will take away their jobs. India's demographic dividend will be difficult to harness if that is the case. How is the Government of India tackling this challenge?

PM Narendra Modi: I understand the concern of our youth about AI-driven disruptions in the job market. Preparation is the best antidote to fear. That is why we have been investing in skilling and re-skilling our people

for an AI-driven future. The Government has launched one of the most ambitious skilling initiatives in the world. We're not approaching this as a future problem but we're treating it as a present imperative.

I view AI as a force-multiplier which will further help us push the boundaries of what we thought possible. It will help doctors and teachers and lawyers to reach out to and help a larger group of people.

History has shown that work does not disappear due to technology. Its nature changes and new types of jobs are created. While some jobs may be redefined, digital transformation will also add new tech jobs to India's economy. For centuries, there have been fears that innovation and technological revolutions will eliminate jobs. Yet history teaches us that whenever innovation happens, new opportunities emerge. The same will be true in the age of AI.

India is already well equipped to adapt to this change. In the Stanford Global AI Vibrancy Index 2025, India ranked 3rd, reflecting strong growth in AI R&D, talent, and economy.

Combining innovation with inclusion, we are confident that AI will strengthen India's workforce. With the right skills and preparation, our youth will lead the future of work.

ANI: Under your leadership, India has developed indigenous technologies such as 4 G and 5 G, as well as drone technology. What is your vision on AI for Aatmanirbhar Bharat?

PM Narendra Modi: Our journey toward Aatmanirbhar Bharat has been built on a fundamental principle: India must not just consume technology but create it. My vision for AI in Aatmanirbhar Bharat rests on three pillars: sovereignty, inclusivity, and innovation. My vision is that India should be among the top three AI superpowers globally, not just in the consumption of AI but in creation. Our AI models will be deployed worldwide, serving billions in their native languages. Our AI startups will be valued in hundreds of billions, creating millions of high-quality jobs.

Our AI-powered public services will be studied globally as benchmarks for efficient, equitable governance. And most importantly, every Indian will experience AI as an enabler of opportunity, a multiplier of capability, and a servant of human dignity, not as a threat to their livelihood or an instrument of control.

Aatmanirbhar Bharat in AI means India writing its own code for the digital century, and through the IndiaAI Mission, we are ensuring that code reflects our values, serves our people, and positions India as a responsible AI leader for the world.

Source : ANI

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INDIAS STRATEGIC AUTONOMY IN A CHANGING WORLD

AMB D.B. VENKATESH VARMA
DISTINGUISHED FELLOW, VIF

Speech delivered by Amb. DB Venkatesh Varma in memory of late Amb PS Raghavan, at the National Institute of Advanced Studies, Bengaluru on 23 February 2026. It is adapted from an article by the author to be published as special issue on strategic autonomy by Natstrat.

Any discussion on foreign policy, here in India or elsewhere, involves a search for the one idea, the one catch phrase which can explain its core organising principle. Of course, such phrases are rarely able to capture the full complexity of forces that led to foreign policy decision-making or for that matter explain the varied foreign policy responses. Despite these limitations, the allure is there and the quest continues. Strategic autonomy is one such phrase and I will attempt to analyse Indias strategic autonomy in a changing world, keeping this background in mind.

In our foreign policy discourse, the term strategic autonomy is of a more recent vintage- perhaps only in the last 10-15 years have we seen its widespread use. For India, the key question during the Cold War was whether we would align with one of the two blocs. Non-alignment provided a clear answer- no alignment. This national policy was further buttressed by a wider political mobilization through the NAM as a movement. Non-alignment had its critics-both during the Cold War and after, but its centrality as an organising principle for Indias foreign policy during that period was not disputed. Its relevance after the Cold War was seriously questioned. The end of the Cold War had produced clear winners and losers- so it was felt at that time- and the Movement itself was in great disarray. For non-alignment, both in content and context, the bottom seemed to have fallen off.

In the following three decades of the post-Cold War period, one of US primacy and globalisation, Indian foreign policy found it difficult to settle on one organising principle- veering from Non-Alignment 2.0 to multi-alignment, Rules-based international order to multipolarity or some combination of these or other passing fads. The drift reflected an inherent ambiguity in Indias self-perception of where it stood in the global order- the sort of ambiguity that is rooted in an unresolved dilemma- whether it is better for India to find its place in the current if marginally reformed global order- such as permanent membership of the UNSC or

work for a different order that elevates Indias rise as one of its defining pillars. A majority of those who support the former approach also happen to be the most opposed to our adherence to any form of non-alignment. Our foreign policy instincts have been largely accommodative rather than transformative, especially after the Civil Nuclear deal with the US in 2008, following which Indias global agitational reflexes have by and large tapered down.

During the hey days of globalisation- the first two decades of this century- strategic autonomy was either reluctantly cited or fully frowned upon, as an archaic concept that prevented India from securing the full benefits of US led-globalisation. The latters fragmentation after the 2008 financial crisis, the rise of protectionism in trade and technology relations and the advent of sanctions as an instrument of pressure on India emanating from conflicts of the West with Russia, Iran and Venezuela tilted the balance in Indian foreign policy, inducing a turn away from a more romantic vision of the benefits of global engagement. If there were any doubts, these were set aside by India becoming the target of US pressure under the Trump Administration and the on-going changes in global politics.

What then are these changes? These can be tracked along some specific dimensions but cannot be accounted for fully as they are still evolving and perhaps will do so for some time to come. That said, there is clearly on part of the US a determined effort to reconfigure its domestic political- economy, referred to as the Make America Great Again (MAGA) campaign, which involves resort to what has been called regressive modernization- re-industrialisation of America through imposition of tariffs, or other levies- even after the US Supreme Court ruling last week, a major military buildup, speculative high-tech and a stringent migration policy.

In its external dimension- America is in the process of a major re-configuration and consolidation of its global priorities and commitments, which have been elaborated in two key documents- its National Security Strategy and the more recent National Defence Strategy. There is a clear geopolitical logic to US policy, accompanied by a firm determination to pursue its own national interests, practically without consultation and certainly without apology. This has led to fears of abandonment amongst its NATO allies who are now the biggest proponents of

the theory of the breakdown of the international order. This may not be entirely true, and our EAM Dr Jaishankar alluded to this in his comments at the recent Munich Security Conference, but what is clear is that the zones of comfort that US allies were used to, have all but collapsed. “Under Destruction” is the telling title of the Munich Security Conference report for 2026.

The rest of the world, India included, are a little more sanguine- the international order was never perfect, and its further distortions are not so much a matter of surprise. The rise of China, as a comprehensive global power, the strategic overextension of Russia with its back to the wall in Ukraine, struggling to find a peace settlement sponsored by the US, fragmentation of the global trading and technology supply chains into smaller groupings in the form of bilateral or plurilateral trading arrangements, the rise of new technologies AI and the massive deployment of capital even before the technology has fully matured and weaponisation of trade and technology supply chains are signs that geopolitical conflict now permeates almost all aspects of international life. The guardrails have been allowed to wither away, particularly in the field of arms control, non-proliferation and disarmament, weakening classical nuclear deterrence immeasurably. As the ongoing Iran crisis demonstrates, where there is a contradiction between the logic of geopolitical power and the restraints of international law, punitive counter-proliferation will prevail. A prolonged US-Iran conflict could have profound and unpredictable consequences.

What then will determine international politics for the coming decade? A few key trends are discernible. As the foremost global maritime power, the US is seeking a continental beachhead on the Eurasian continent, primarily to encircle Russia and China, as is clearly stated in the US National Defence Strategy, and in doing so is seeking to shore up its position in key geopolitical choke points- Venezuela, Cuba, Greenland, Arctic, Iran and in different points in the Indo-Pacific. If the emergence of multipolarity is a fact, not in terms of slogans but in distribution of decision-making power, the US is determined, not surprisingly, to impede its emergence through the shoring up of its unipolar dominance. Secretary of State Rubios important speech at the Munich Security Conference is a good indicator of the broader direction of US policy. In addressing his European Allies he said, “we in America have no interest in being polite and orderly caretakers of the Wests managed decline.” As you know, he received a standing ovation.

Hence, if multipolarity is to emerge at all, it will do so, not through a negotiated redistribution of decision-making power through multilateral bodies as the UN, or the UNSC, the G20 or even BRICS, but at specific points of resistance, through a cumulative aggregation of efforts of those unwilling to pay the price of submission to a

unipolar order. Apart from isolated instances, there is not much evidence of this, as yet, particularly in the Global South. Multi-polarity has multiple dimensions, and not all dimensions will change in tandem, leading to asynchronous multi-polarity. The transition will be crisis-prone, conflict-ridden and messy.

Against this background, how do we assess Indias strategic autonomy? Its meaning remains vague and its use is often for multiple and sometimes contradictory purposes. There is therefore need for a working definition, to see what it means for India in practise.

Working Definition

We can unpack the meaning of strategic autonomy through delineating its four dimensions- declaratory, operational, economic/technological and societal, in the context of Indias needs and priorities. But first it is necessary to start with a working definition to set out the parameters, as very often strategic autonomy is used as a synonym for an independent foreign policy or even as justification for multi-alignment or the pursuit of multi-polarity. This is partly due to the general nature of the term - means different things to different people- but more importantly its use is often for multiple purposes- to assert a national policy choice or sometimes a convenient tool to avoid difficult policy outcomes. As a slogan, it is difficult to argue against, as it has a sort of mother-hood-and-apple pie quality about it. But as a national objective to be achieved in specific terms and targets, its complexities come to the fore.

A working definition of strategic autonomy must first pay attention to its first phrase - strategic for it is from here that the main source of confusion arises. While in general parlance, strategic is anything that is central or critical or long-term, in the realm of strategic studies the study of the use of armed force for national security objectives balancing ends and means, it has a more specific meaning. Hence, a working definition of strategic autonomy could be the will and capacity to think and act independently on matters of war and peace that affect the vital interests of the country. Seen from this standpoint, strategic autonomy is but a subset of an independent foreign policy but is not co-terminus with it, even as one is a necessary condition for the fulfilment of the other. Vital interests are not merely military but also economic and cultural. It means protecting not just our territory. Protecting our economy as also our cultural identity is also an act of independence; the right to do so is an act of sovereignty; the will and capacity to do so is a measure of strategic autonomy.

In terms of scope, strategic autonomy focuses mainly but not exclusively on the countrys ability and willingness to engage in the use of armed force to secure its national interests- the use of armed force can be both direct and indirect- and in the current era, increasingly indirect and

hybrid, without being unduly constrained by externally determined factors. There is a significant internal security dimension maintaining security against multiple threats, societal cohesion and vitality that reinforce rather than impede national objectives. Thus, strategic autonomy is both a policy prescription and a pathway to prioritise, mobilise, and channelize national resources to fulfil long-term objectives that impinge on our national security interests -for objectives that are nationally determined and through resources that can be nationally mobilised.

Placed in the international context, which is the main focus of this lecture, a key question for assessing strategic autonomy is when does engagement become dependency and where does dependency slip into vulnerability? Strategic autonomy ceases to be autonomous when that redline is crossed. The viability of strategic autonomy diminishes if national decision-making is constrained, outsourced or subordinated to decision-makers beyond national control. Diminished strategic autonomy will hollow out national independence over time. Once lost, national independence takes generations to recover - history's brutally unforgiving lesson.

Declaratory Dimension

In recent years, strategic autonomy has been mentioned prominently both as a characteristic and objective of India's foreign policy. The context is often to assert India's independent view on global issues. However, contradictions tend to appear when strategic autonomy is juxtaposed with multi-alignment or our adherence to a Rule-based international order when in fact many of the challenges to India's autonomy arise from that very order. The pursuit of multipolarity through forums such as G20 or BRICS is projected as a means to strengthen India's options in pursuit of strategic autonomy. Multi-alignment presumes a certain maturity in multipolarity. In its absence, when the world is still largely unipolar in power terms, advocating multi-alignment then becomes in practice a way of justifying alignment with the sole custodian of unipolarity. In the absence of multipolar options, such unipolar alignment- cohabitation with military alliances under the label of multi-alignment- can potentially cripple the pursuit of strategic autonomy even in its infancy. These power calculations are thus a necessary backdrop to the declaratory dimension of strategic autonomy - whatever the public statements, it presupposes a permanent search for options, however difficult those options might be.

While the declaratory dimension, with all its contradictions is often a necessary function of Indian diplomacy, the real content of strategic autonomy is judged by its operational dimension, to which I will now turn.

Operational Dimension

We know defining war aims and the terms of war termination is perhaps the most important attribute of sovereignty, for there is no other state function that defines independence of decision making as on the issue of war and peace. On numerous occasions, India has demonstrated substantive independence of decision-making, most recently in the case of Op Sindoor. To further underline the unique operational dimension, India declared that it reserved the right to use armed force in retaliation against terror perpetrators and their sponsors across the border even if it involved the use of armed force within the nuclear overhang.

With changing geopolitical conditions, India's ability to respond to China's growing asymmetric power and its linkages with Pakistan (and perhaps even Bangladesh) will be severely tested unless it is able to come up with an updated military doctrine that is capable of defending India's national security interests within its national resources- broadly defined as military forces, supporting industry, economy and technology, where external support supplements but has no controlling function on the operational dimensions of India's military doctrine. The way India should and can fight is dependent on the nature of the threat posed by its adversaries but also on the resources at its command. Reconciling these two parameters is of paramount importance.

In operational terms, India's military doctrine would be constrained if its military capacities were critically linked to unreliable external supplies even for a short duration conflict, or the military equipment in its inventory has external linkages in the name of interoperability that doesn't preclude a kill switch or the Indian armed forces have external commitments that detract from their exclusive use for our own national priorities. This latter divergence could well occur if there is a large gap between the maritime and continental aspects of our security as China develops the capabilities to challenge us on both dimensions simultaneously. Overdependence on a few or dependence on unreliable external powers for defence material or getting sucked into an alignment with war fighting doctrines of external powers are factors that degrade strategic autonomy significantly.

In the recent past, there has been a welcome emphasis on the part of our Government on the need for comprehensive defence reforms and modernization. This process should be taken to its logical conclusion. A good military doctrine for India would presume that the available external diplomatic options would be limited. This would reinforce the national focus on dealing with a huge asymmetry in power with China largely through our own resources. This focus has been somewhat blurred until now as there was an unreal expectation of external balancing through such mechanisms as Quad. With its uncertain future, it would be imprudent for our Armed Forces to count on its deterrent potential against

China. Similarly, the elevation of Pakistan in US CENTCOM strategy is an ominous development that requires further analysis. In a conflict-ridden world, Indias ability to choose to fight its own wars, only when absolutely necessary and on its own terms, will be the litmus test of its strategic autonomy.

Economic/Technological Dimension

The latest Economic Survey sets out a masterly narrative on how India must continue its global engagement to sustain its growth path, while at the same time building strategic resilience- the ability to absorb shocks and preserve stability and then move towards strategic indispensability the ability to become a source of reliability, capability and value for the global economy. This will also require a major upgrade in state capacity to act decisively and adaptably. The Economic Survey, especially Chapter 16, are well worth reading in full. Thus, strategic resilience of the economy is an integral part of strategic autonomy as it strengthens the material wherewithal for independent policy and action.

Given the changing nature of warfare, the economic and technological dimensions assume increasing importance. A growing economy is necessary to fund a military build-up but equally important is a military doctrine that is commensurate with the allocated resources and equal to the prevailing threat scenario. While there has been a welcome increase in the allocations for defence in our 2026 budget, presented by Finance Minister Nirmala Sitharaman, there is a case for its gradual increase up to 3% of GDP in the coming years. There is equally a case to be made that such increases should spur military modernisation rather than be a case of throwing good money after bad. There has been a determined emphasis by PM Modi and the top defence leadership on Make-in-India/ Aatmanirbharta programmes including participation of the private sector with steady increase in indigenous production becoming the main stay of procurement for our armed forces. External dependencies can and should be progressively reduced. However, finding the right balance between indigenous production and doctrinal requirements will not be easy. On the battlefield, it doesnt matter how India acquired the firepower as long as it is effective and sustainable. Hence, reform in procurement procedures should go hand-in-hand with doctrinal reform, for ultimately, it is the latter that finally matters on the battlefield.

With regard to technology development, Indias slow and until now underfunded R&D efforts pose a particular challenge in balancing external procurement and its consequent costs to strategic autonomy, especially with regard to critical inputs such as space surveillance, aircraft engine tech transfers, critical materials, shared data centres, cloud-services or cyber space which create long-term dependencies, with hidden vulnerabilities, including in the domain of cognitive warfare where the

opponent uses disinformation and manipulation to paralyse national security responses to external threats even before the first shot is fired. Wars cannot be fought with shared data and borrowed algorithms. The key question for the operational dimension of our military doctrine is the line where dependencies slip into vulnerabilities that undercut our capacity for strategic autonomy. The notion of interoperability must be thoroughly scrutinised, especially by our Armed Forces, from this critical standpoint, to assure the nation that there will be no external finger on the firing-trigger.

The opening up of the defence industry sector to the private industry and to foreign investors create both an opportunity for growth but also a dependency that may undercut the primacy that the Indian armed forces should enjoy with respect to defence industry production in the country. With a massive military buildup underway in the US and Europe, and several hundred-billion-dollar investments expected in the AI and Semiconductor industry, Indian domestic capacities in both the defence and high-tech fields, run the risk of getting sucked into external priorities drowning domestic ones, by the sheer size of the CAPEX involved which dwarf several fold our own capital allocations. A similar challenge might also arise with respect to unregulated defence exports, which under all circumstances should be fully aligned to our foreign policy goals.

Technology is now closely intertwined with trade and finance. This is one of the reasons why India has focussed on engaging through FTAs with major market economies with UK, EU, US, and others. The hope is that open trade will also open the door for high tech transfers. This in particular is relevant with regard to India building its own AI stack in terms of GPU, CPU, cloud/data centres, capital and talent. The US has a lead in all these indicators, China coming a distant second with India, Taiwan and Europe towards the lower end. The AI revolution will magnify the existing power asymmetry as it begins to afford its top possessors US and China - not just the benefits of higher productivity but also the power of rulemaking. Thus, we must of cognizant of the long-term consequences of the growing gap between our geopolitical challenges and our geo-economic commitments.

In the case of strategic minerals, where China has global dominance, India faces a tough choice of engagement with the US and Chinese led supply chains with their inherent opportunities and risks for our strategic autonomy. India has joined the US-led Pax Silica initiative, which offers hope of jump starting our capabilities in the short term which through sustained engagement will enable us to develop our indigenous capabilities in the medium term. However, there are no easy answers. Chinas energy dominance from solar to battery supply chains to electric vehicles to nuclear- is also a fact that

will weigh heavily on our global options- as discounting geographical proximity in favour of distant partners cannot be viable beyond a point. De-risking will thus be a trade-off between reliability and feasibility of the global options available to India. However, we must recognize that the mother of all de-risking is the development of our indigenous capabilities.

PM Modi hosted the AI Impact Summit last week, which was a milestone in the democratization of the AI debate globally with focus on making intelligence affordable and accessible to all- in India and the Global South. Over 88 countries and International Organizations signed on to the Summit Declaration. The enthusiasm of our young tech-generation for embracing the AI age was truly remarkable. Indias ambitious plan for AI deployment in the coming years include responsible use of data, services-as-software and as an attractive global hub for AI related data centres. Like India had to master all aspects of the nuclear fuel cycle last century before it became a nuclear power, we will have no option but to master all elements of the AI stack if India is to gain global respect for its capabilities as an AI power. Technological sovereignty is not a gift that will be given by others but a byproduct of our national capabilities extracting benefits out of our external engagement. This will take time, but if the positive momentum is maintained there is no reason why in the coming decade, given its talent, innovation and diffusion of tech applications at scale, India cannot emerge as one of the top AI global powers.

Global Capability Centres are looking at India as a key part of global supply chains, which is to be welcomed, but if there is no corresponding growth in Indias domestic R&D capabilities over time, creating islands of isolated tech excellence with little diffusion into the Indian economy, then what is the net benefit? Indias vulnerabilities to pressure on its textile, diamond and marine products export markets as well as import restrictions on concessional crude supplies from Russia were recently in evidence. Unless addressed, such vulnerabilities arising from asymmetries in leverage, will naturally erode the material basis for our strategic autonomy in the future. While resilient supply chains are important and all avenues must be pursued for securing them, we must ask ourselves the question resilient for whom and at what cost, constantly looking for that redline- where does dependency cross over into vulnerability? A supply chain risk for a company affects its business-bottom line; a supply chain risk for the country could endanger its national independence.

Societal Dimension

India is a fast-growing economy; with a young demographic profile whose aspirations guide national goals. Indias growing middle class has been a big beneficiary of our global engagement especially in the

high-tech sectors and thus would view from its own perspective as deeply concerning the new pressure points that have emerged in our relations with the West- such as rising racism and restrictive visa practices. The advent of AI may also be disruptive of existing employment patterns; transitions can be painful and disruptive. Despite this, Indian middle-class aspirations are as much global as national, and they see no contradiction between the two. While young Indian talent is now an important part of the global talent pool, at some point Indias growth potential will get impacted if this trend is not reversed, something that China has been able to achieve for its talent pool in recent years. The broadly optimistic outlook of our think-tank community with regard to Indias external engagement, is explained by the legacy association with the benefits of globalization. A fundamental intellectual re-tooling is needed for dealing with a more troubled world. Lastly, civilisational awareness and self-confidence are important to shore up the national character and social solidarity for facing the challenges of the future. The country should be the primary beneficiary of Indian talent and Indian values, even as we engage with the outside world.

Conclusion

Thus, we can see strategic autonomy both as an aspirational concept as well as an operational objective. Its four dimensions as described are mutually reinforcing. It is easy to articulate strategic autonomy as a slogan; it is far more difficult to chart a pathway for its implementation in practice. External engagement and mutual dependencies are necessary but not at the cost of weakening national capabilities or perpetuating national vulnerabilities. India should be confident about the former and vigilant about the latter. For a Viksit Bharat, a determined pursuit of strategic autonomy is vital. It will not be easy, but we must persevere, for no country has ever risen as a great power without perseverance.

Such persistent and purposeful optimism permeated the work of Amb Raghavan, in all the important responsibilities that he held in his very distinguished career leaving a lasting inspiration for all of us here in NIAS and for all his friends and admirers everywhere.

Reference

[1] This is text of speech delivered in memory of late Amb PS Raghavan, at the National Institute of Advanced Studies, Bengaluru on 23 February 2026. It is adapted from an article by the author to be published as special issue on strategic autonomy by Natstrat.

Source: www.vifindia.org

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LOGISTICS INDUSTRY IN INDIA GAINS COMPETITIVE EDGE WITH ADVANCED DATA ANALYTICS FOR QUICK COMMERCE

Logistics providers in India are leveraging real-time analytics and technology to serve quick commerce brands, helping them optimise inventory and reduce supply chain costs as the market grows.

India's rapid embrace of quick commerce is transforming the logistics landscape, with data-driven strategies now separating market leaders from the rest. As consumer demand for instant deliveries reshapes supply chains, logistics providers are racing to offer brands not just movement of goods, but actionable business intelligence that can make or break retail performance.

Quick commerce fuels demand for supply chain insights : With the quick commerce market projected by Bain & Co. to reach a gross merchandise value of 10 to 11 billion dollars in 2025, brands are under unprecedented pressure to keep shelves stocked and fulfilment costs in check. Retailers that sell on platforms promising deliveries in minutes are demanding deep, real-time visibility into inventory, delivery performance, and customer returns. Logistics partners have responded by developing sophisticated technology platforms, dashboards, and analytics tools that plug directly into brands' commerce and warehouse systems.

From package movers to data partners : Traditionally, logistics firms operated in the background, quietly facilitating shipments while offering basic tracking. Today, players such as Shiprocket, Delhivery, DTDC Express, and Emiza are positioning themselves as strategic data partners. According to industry executives quoted by livemint.com, these companies are now focused on helping retailers drive profitability, optimise stock, and enhance customer experience through data-driven decision-making.

IPO-bound Shiprocket, for example, has rolled out an appointment-based delivery service that allows brands to preschedule bulk dispatches to dark stores and marketplace warehouses. This service, which has achieved 98 per cent on-time adherence since

its debut, is credited with helping sellers reduce logistics costs by up to 27 per cent, according to Gautam Kapoor, Shiprocket's chief operating officer, in comments to livemint.com.

Building a competitive intelligence layer : What brands seek now goes beyond basic order tracking. They want granular insights such as pin code-level demand, return-to-origin probabilities, and courier performance by geography. Emiza, which serves over 150 brands, is extending its analytics to cover every aspect of quick commerce fulfilment—from live inventory updates to monitoring at-risk shipments. Jitendra Kumar, co-founder and executive director of Emiza, told livemint.com that brands have shifted from passively receiving data to actively using it to shape their business strategies.

Across Emiza's network, these data-driven interventions have helped brands lower logistics costs by up to 20 per cent, reduce return-to-origin rates by as much as 30 per cent, and recover more than half of potentially lost shipments through proactive management, according to Kumar.

DTDC Express, meanwhile, has integrated its proprietary technology stack with retailers' commerce and warehouse infrastructure, offering real-time insights into demand trends, fulfilment efficiency, and inventory movement. Abhishek Chakraborty, CEO of DTDC Express, noted that brands are increasingly leveraging logistics data for business decisions, not just for monitoring operations.

Quick commerce as a strategic growth driver : Although quick commerce currently accounts for less than 10 per cent of revenue for most logistics companies, according to industry estimates shared with livemint.com, its share is rising rapidly. Market research analyst Satish Meena of Datum Intelligence highlighted that logistics firms are investing early to secure their positions as essential partners to brands, especially as this vertical becomes a significant growth engine.

The need for sophisticated intelligence is most acute

in categories with high order volumes and tight margins, such as beauty and personal care, FMCG, fashion, health, and consumer electronics. The complexity of managing inventory across multiple so-called dark stores and micro-markets means brands can no longer rely on instinct. As one Bengaluru-based snack brand founder explained, knowing which products are selling fastest in each area is critical to avoiding both overstocking and stockouts.

Challenges and the road ahead : Despite the rapid progress, the industry's intelligence build-out is still evolving. Dark store inventory planning remains a pain point, with brands and logistics firms working to fine-tune stock positioning across distributed locations. While large platforms such as Amazon, Blinkit, and Zepto provide some aggregated data to sellers, the granularity needed for precise decision-making often comes from third-party logistics partners.

As direct-to-consumer brands increasingly view quick commerce as central to their growth, logistics

companies are doubling down on data innovation. The shift marks a broader trend: supply chain partners are no longer just service providers, but technology-enabled collaborators who help retailers compete in a market defined by speed and efficiency.

Implications for India's retail ecosystem : India's logistics sector, already one of the largest globally, stands to gain a competitive edge by embracing this new role. The integration of real-time analytics into supply chain operations is expected to reduce inefficiencies, cut costs, and improve customer satisfaction across the board.

For logistics firms, the ability to offer differentiated intelligence will not only deepen brand relationships but also drive business growth as quick commerce expands. As the sector matures, those that invest in advanced technology and data-driven processes are likely to emerge as leaders in the next phase of India's retail evolution.

Source: ETSupplyChain



PACKAGING OPTIMIZATION IS BOOSTING COLD CHAIN GROWTH

LUKE VACCARO, CHIEF OPERATING OFFICER OF COLDTRACK AND SCB CONTRIBUTOR

For years, cold chain packaging has been treated as a solved problem. Many businesses have kept to routine practices, often relying on standard materials proven for insulation, durability and cost-effectiveness. It was simple and, for a long time, it worked. However, as cold chain businesses grow, and corporations look for strategic advantages throughout their operations, packaging is no longer a passive element in the background. It is starting to shape how efficiently the entire operation runs. Because the cold chain itself is evolving.

As demand for temperature-sensitive logistics grows across food, pharma and e-commerce, shipping operations are becoming more complex, cost-intensive and time-sensitive. The market is expanding quickly, projected to more than double in value over the next decade. This growth is driven by biologics, global food trade and direct-to-consumer delivery models. With that growth comes the need for packaging systems that can evolve alongside it, maintaining cold chain integrity as volumes and complexity increase.

In early-stage operations, traditional packaging formats do what they need to do. They are familiar, easy to deploy, and reliable for smaller volumes. This is part of the reason materials such as Styrofoam became the default, since they offer consistent thermal protection, and are simple to integrate into existing workflows. And while dependability matters, scale changes what "good enough" means.

When the number of orders goes up, packaging starts affecting parts of the business it didn't before. It begins to influence how often supplies need to be replenished, how much space a warehouse needs to function, and how quickly teams can move through fulfillment. Even the customer experience starts to reflect these decisions. At that point, packaging is part of the operating model.

Here's where things get interesting. Besides protecting products, packaging also moves through the supply chain like any other asset. And sometimes, it moves inefficiently.

Pre-formed packaging, like many traditional Styrofoam cooler formats, travels fully assembled. It offers a considerable amount of volume for a limited amount of foam boxes. Barely noticeable at small volumes, this inefficiency starts to show up in the cost structure at scale.

More inbound shipments. More storage. More handling. None of this is inherently problematic. Although, it does raise a new question: How much of the system is moving product, and how much is moving packaging? That distinction starts to matter as margins tighten and volumes grow.

The Warehouse Tipping Point

Inside the warehouse, packaging becomes even more visible. Because packaging takes up space whether it is being used or not, higher throughput gradually pushes it into competition with other operational needs. What follows is a steady set of subtle inefficiencies. Time gets spent navigating around inventory, restocking becomes more frequent, and pressure builds on layout and flow.

Cold chain logistics is already resource-intensive by nature. It requires controlled environments, specialized handling and precise timing. Packaging becomes embedded in that system, influencing how efficiently it runs rather than simply supporting it. And in some cases, business expansion decisions are formed as much by packaging requirements as by product growth.

Then comes delivery. Packaging is one of the few parts of the cold chain that customers actually interact with, and that interaction is becoming more consequential as expectations shift toward sustainable or “intelligent” packaging plus reduced waste. Packaging is now a decisive factor in brand choice. Receiving a bulky foam container that is difficult to dispose of creates friction at the exact moment a brand should be reinforcing value. Increasingly, that friction influences whether a customer returns.

A package that is easy to handle, unpack and dispose of shapes the experience in subtle ways that can influence perception. This is where traditional formats such as Styrofoam are also being reconsidered, not because they don't perform, but because customer expectations around disposal, recyclability and overall experience are changing.

Rethinking Packaging as a System

The conversation is progressing. It's no longer only about whether packaging can keep products within a temperature range. Though that remains essential, the focus is expanding to how packaging performs across the entire system. This includes freight efficiency, storage density, labor productivity, sustainability compliance, and the customer experience it ultimately creates. Seen this way, packaging becomes less about material choice and

more about system design. That shift is opening up new possibilities.

Across the industry, there is growing interest in packaging formats that behave differently—solutions designed for protection, for movement and for scale. Styrofoam is, of course, still being widely used, but newer materials are proving just as effective, if not more so. These new approaches are designed with system efficiency in mind.

Flat-pack systems, modular designs and reusable containers are gaining traction because they align more naturally with high-volume operations. Foldable thermal liners, for example, are specifically designed for high-velocity e-commerce, built to move efficiently, store efficiently and adapt to demand. As a result, freight requirements decrease with higher transport density; warehouse expansion can be delayed or reduced through smaller storage footprints; pack-out becomes faster and more efficient; and outbound shipping costs can decrease through lower dimensional weight.

Advances in materials are supporting this shift. Organic materials and fiber-based liners are enabling thinner, lighter and more flexible packaging without compromising performance. Individually, these adjustments are incremental, but together they begin to realign the economics of fulfillment.

Reducing material volume reduces waste. Improving transport efficiency lowers emissions. Reusable systems extend lifecycle value. At the same time, innovation in biodegradable and recyclable materials is expanding the range of viable options. The result is a shift away from trade-offs, as performance and sustainability are starting to move in the same direction.

Cold chain logistics is entering a new phase. As critical as temperature control remains, performance is now measured across a broader set of factors as volumes increase and expectations tighten.

This is where packaging starts to take on a more active role. Lifecycle assessments show that factors like the weight of the packaging, the choice of materials, and the distance travelled can have a big effect on the overall environmental impact, changing emissions as much as the product journey itself.

The cold chain industry is evolving and packaging strategies must keep up. What was once a straightforward operational choice now demands a more deliberate approach. In today's cold chain, growth is not only about moving more product more frequently. It is about building systems that can consistently, efficiently and without friction handle that growth. Packaging is central to how that gets done.

Source:www.supplychainbrain.com

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MANUFACTURERS BALANCE COSTS, INVENTORY AMID UNCERTAIN RATE ENVIRONMENT

KEESA SCHREANE

As companies watch to see if the Federal Reserve may change its posture on interest rates later in the year, they're getting more comfortable navigating the complexity.

As manufacturers move into the second half of 2026, they continue to navigate a complex mix of interest rates, inventory decisions, energy volatility and geopolitical uncertainty.

While inflation accelerated to 4.2% year over year in May, according to the latest Consumer Price Index report, executives and advisors say companies are still planning investments to help them compete beyond 2026.

One piece of good news for manufacturers is that the Federal Reserve kept interest rates unchanged at the last Wednesday's Federal Open Market Committee meeting.

Experts say this steadiness in an otherwise uncertain environment can be especially helpful, given the difficulty large manufacturers may have shifting course after their factories are built and their machinery is purchased.

Preparing for 2027 through targeted investments

Alex Krutz, managing director at Patriot Industrial Partners, said issues such as oil price volatility stemming from the war in Iran may prove to be minor disruptions compared to the economic shocks triggered by COVID-19 in 2020.

"I don't think that companies in manufacturing, which is usually years in investment and planning, will make drastic decisions based upon a short-term shock," he said.

Krutz, who served as deputy assistant secretary for manufacturing at the Commerce Department in 2025, believes companies will take a more measured, strategic approach to navigating uncertainty.

"I think that company leaders need to be cognizant of laying out a plan that shows the roadmap for their investors, where they're going to go for their investors, and what it's going to take to get there," he said.

Krutz sees five trends that manufacturers are investing in as they prepare for the second half of the year:

- A shift from global sourcing toward more localized supply chains, ensuring suppliers are located closer to production facilities and end customers.
- Efforts to develop an energy strategy by evaluating energy costs, grid reliability and emerging technologies.
- Increasing localized production of high-value and strategically important components, such as semiconductors, pharmaceuticals and other specialized products, to reduce supply chain vulnerabilities.
- A growing connection between industrial strategy, economic security and national security. Manufacturers are paying closer attention to how sourcing decisions, production capabilities and supply chain resilience align with broader economic priorities.
- Plans to pursue targeted, shorter-term artificial intelligence projects that can generate measurable operational improvements and productivity gains.

Initiatives like these support competitive positioning and may not always be out of reach financially, according to experts.

Scott Spyker, a supply chain technology expert who works closely with manufacturers, said uncertainty, not necessarily costs themselves, is often what causes companies to hesitate.

"Companies really don't care what the game is. As long as they know what it is, they can play it," said Spyker, a partner at Neos by Argon & Co.

The challenge, he said, is that ongoing geopolitical events and economic volatility make it difficult for organizations to confidently plan investments months or years into the future. When companies are unsure what conditions will look like six months from now, they often become more cautious with spending and

capital deployment.

“Cost inflation is likely the biggest earnings risk for U.S. industrials beyond the next two quarters as input costs rise,” said Mustafa Okur, a senior research analyst for Bloomberg Intelligence, in a May 29 report.

The report noted that while many manufacturers benefit from short-term protection through hedging contracts, recovering margins through pricing actions can take considerably longer. It also noted that many industrial companies report being better prepared for inflationary pressures today than they were during the last major inflation cycle.

While inflation remains a concern, historical performance suggests many manufacturers have become more effective at protecting profitability once pricing actions and operational adjustments take hold.

Permission granted by Bloomberg Finance L.P.

Prioritizing inventory and supply chain flexibility

One area where manufacturers may have a higher degree of control is inventory management.

During the pandemic and its aftermath, many companies learned costly lessons about supply chain disruptions and shortages. Today, manufacturers are taking a more nuanced approach, balancing the need for product availability against the financial burden of carrying excess inventory.

“There’s been a lot more talk about optimizing not only inventory quantities, but optimizing inventory placement,” Spyker said.

Companies are increasingly looking at the total cost of inventory throughout the supply chain rather than focusing solely on reducing stock levels.

Inventory remains one of the most important ways manufacturers can manage costs and margins. According to Spyker, organizations must carefully balance inventory levels with customer service expectations and demand forecasts.

“There are a couple of big levers from a manufacturing perspective that you can pull,” he said. “One is how much inventory are you carrying.”

Success increasingly depends on manufacturers having accurate forecasts and supply chains that can respond quickly to changing economic conditions, transportation disruptions or geopolitical developments.

Even when geopolitical tensions ease, the financial consequences often linger. For example, ships that cross the Strait of Hormuz can face significantly higher insurance premiums and operating costs, creating ripple effects across supply chains months after the original disruption.

Valencia Davis, a senior supply chain consultant at Neos by Argon & Co, says many manufacturers are focused on understanding exactly where inventory sits across their networks and how those decisions affect cash flow.

“A lot of focus is where should our inventory be to ensure that our service levels are on target,” she said.

That focus reflects a broader reality for manufacturers: Protecting customer relationships remains critical, even when economic conditions become challenging, and losing product availability can mean losing customers.

Not all manufacturers are approaching inventory the same way in this mid-year economic environment.

Spyker noted that healthcare manufacturers continue to maintain larger inventory positions than many other sectors because product availability provides a significant competitive advantage. Companies producing pharmaceuticals and medical devices are often willing to absorb additional inventory costs rather than risk shortages that could push customers toward competitors.

Manufacturers may face a new layer of uncertainty in the months ahead.

Federal Reserve Chair Kevin Warsh’s recent statement omitted any forward guidance, a communication tool the bank has long used to signal its future interest rate intentions, even as the White House has pushed for rate cuts. Warsh himself did not participate in the latest forecasting exercise, and FOMC members were split on the question of rate cuts or increases. As a result, while today’s rate environment is relatively well understood, the outlook for the remainder of the year is far less predictable.

Still, Davis said uncertainty has become a familiar operating condition for many manufacturing organizations.

“Most of our customers live in this chaotic space,” she said. “They’re just finding new creative ways to solve the problem.”

Source: Supply Chain Dive

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MANUFACTURING HUBS: BUILDING INTEGRATED INDUSTRIAL ECOSYSTEMS

Key Takeaways :

- Manufacturing policy has shifted to **infrastructure-led, integrated hub development** to enable scale, reliability, and long-term industrial competitiveness.
- Union Budget has proposed **3 chemical parks, 7 PM MITRA parks, MSME clusters, and 10,000-crore Biopharma SHAKTI**.
- Public capital expenditure has expanded from **2 lakh crore in FY2014–15 to 12.2 lakh crore in FY2026–27 (Budget Estimate)**, supporting infrastructure creation.
- MSMEs**, which comprise **7.47 crore enterprises, account for 35.4% of manufacturing output and anchor manufacturing hubs nationwide**.

Introduction : Manufacturing is a foundational pillar of India's economy, contributing around 16–17 per cent of GDP and employing over 27 million workers. As the country works towards transforming from a \$3.7 trillion economy to a \$30–35 trillion economy by 2047, manufacturing is expected to play a central role, with its share in GDP rising to at least 25 per cent.

In this context, India's manufacturing strategy has increasingly focused on the development of **integrated manufacturing hubs**, spatial ecosystems that combine physical infrastructure, regulatory support, common facilities, and connectivity. These hubs are designed to support scale, reduce transaction costs, and anchor long-term manufacturing activity, strengthening India's position within domestic and global production networks.

Manufacturing Hubs in a Changing Global Context : The Economic Survey 2025–26 observed that global manufacturing is undergoing a structural transition, with competitiveness shaped less by low-cost production and more by reliability, resilience, and strategic indispensability. As production processes become more technology-intensive and system-dependent, the ability to operate within stable, integrated manufacturing environments has emerged as a critical determinant of long-term industrial competitiveness.

Countries that are able to provide stable production environments are supported by **infrastructure, logistics, skills, and institutional coordination, and they are better positioned** to sustain manufacturing activity and retain long-term production mandates.



This global shift and the ongoing industrial momentum have been underpinned by a move towards **high-technology manufacturing** and a growing emphasis on **strategic indispensability within GVCs**. As manufacturing becomes increasingly technology-intensive and system-dependent, it underscores the importance of preparedness, productivity, and the capacity to scale. Manufacturing hubs providing integrated ecosystems with shared infrastructure, supply chain linkages, and logistics connectivity, enable firms to operate at scale, move up the value chain, and integrate more effectively into global production networks.

A **Global Value Chain (GVC)** consists of a series of stages involved in producing goods or services, with each stage adding value and at least two stages occurring in different countries.

India's Industrial Manufacturing Trajectory: India's infrastructure approach has undergone a structural transformation, with the focus moving from **project-level execution to system-level planning**. Such system-level planning directly enhances the effectiveness of manufacturing hubs by reducing bottlenecks, improving logistics efficiency, and supporting timely execution.

Global investment trends increasingly recognise India as a preferred manufacturing destination. The country is currently ranked as the third most sought-after

manufacturing location worldwide. At the same time, the composition of production is evolving, with **medium- and high-technology activities accounting for 46.3% of total manufacturing value added**, indicating a gradual shift towards more sophisticated industrial structures.



India's Manufacturing Hub Landscape : The manufacturing hub landscape across the country has evolved into a **multi-layered ecosystem**, reflecting differences in **scale, sectoral requirements, and spatial planning**. Rather than following a single model, policy interventions have supported diverse forms of manufacturing hubs. The manufacturing landscape today comprises **large integrated parks, sector-specific ecosystems, MSME clusters, and corridor-linked industrial nodes**, each designed to address specific production, logistics, and value-chain needs.

Large Integrated Manufacturing Hubs : These are **master-planned industrial zones** with **plug-and-play infrastructure** that host **anchor manufacturers and their supplier ecosystems** in one location. They provide **shared utilities, logistics, and support infrastructure**, enabling quick project implementation and economies of scale. These parks may be **multi-sector or sector-anchored** and can be developed **independently or within industrial corridors**.

Plug-and-play Infrastructure: Ready-to-use facilities that minimize setup time and costs, enabling industries to operationalize quickly and achieve faster returns on investment.

National Industrial Corridor Development Programme (NICDP) is a transformative initiative designed to establish Greenfield Industrial Smart Cities across India, positioning the country as a global manufacturing hub. Till date, 20 industrial smart cities have been approved by the Government of India which cover 7 industrial corridors and 13 States. Of these, 4 industrial smart cities namely Dholera (Gujarat), Shendra-Bidkin (Maharashtra), Integrated Industrial Township at Greater Noida (Uttar Pradesh) and Integrated Industrial Township at Vikram Udyogpuri near Ujjain (Madhya Pradesh) have been completed and other 16 are under various stages of development. These industrial nodes are being

developed with **plug-and-play infrastructure and multimodal connectivity**.

PM MITRA (Pradhan Mantri Mega Integrated Textile Region and Apparel) represents **large integrated manufacturing hubs** tailored for the textile value chain, combining **processing, manufacturing, logistics, and common facilities** within a single park framework. These parks have been announced in seven states, including **Tamil Nadu, Telangana, Gujarat, Karnataka, Madhya Pradesh, Uttar Pradesh, and Maharashtra**.

Sector-Specific Manufacturing Ecosystems : Certain manufacturing sectors require specialised and capital-intensive infrastructure, making ecosystem-based manufacturing hubs essential. These hubs integrate production units with supplier networks, testing, regulatory, and skilling infrastructure to support complete value chains.

- **Bulk Drug Park Scheme:** This scheme is facilitating the establishment of three **Bulk Drug Parks** in Gujarat, Himachal Pradesh, and Andhra Pradesh to reduce the cost of bulk drug manufacturing through the creation of world-class common infrastructure. These parks provide shared facilities, including solvent recovery plants and common effluent treatment systems, to improve efficiency and environmental compliance.
- Semiconductor and electronics ecosystems are supported under **the Semicon India Programme and Electronics Components Manufacturing Scheme (ECMS) 2.0**, covering fabrication, assembly, packaging, and testing. These hubs are designed to strengthen domestic manufacturing capacity in critical sectors while improving integration with global value chains.
- **Biopharma SHAKTI** (Strategy for Healthcare Advancement through Knowledge, Technology and Innovation) has been announced, with an outlay of 10,000 crores over the next 5 years to develop India as a global Biopharma manufacturing hub.

Micro, Small, and Medium Enterprises (MSME) Manufacturing Clusters

Micro, Small, and Medium Enterprises (MSMEs) constitute a **core pillar of India's manufacturing ecosystem**, with significant implications for manufacturing hubs at the regional level. MSMEs account for **35.4%** of manufacturing output, contribute **48.58%** of exports, and generate **31.1%** of GDP, highlighting their substantial role in India's industrial economy.

The MSME sector comprises over **7.47 crore enterprises** and employs more than **32.82 crore persons**, making it the second-largest source of employment after agriculture. With such scale, MSMEs are central to the development of manufacturing hubs, particularly in Tier-2 and Tier-3 cities, where clusters often form around shared skills, local supplier networks, and cost

advantages.

- The **Micro & Small Enterprises – Cluster Development Programme (MSE-CDP)** supports infrastructure creation, **Common Facility Centres (CFCs)**, and technology upgradation in MSME clusters. Under MSE-CDP, a total of 580 projects have been approved, comprising **227 Common Facility Centres (CFCs) and 353 Infrastructure Development (ID) projects**.
- The **India Industrial Land Bank (IILB)** maps industrial estates, clusters, parks, and zones across the country.
- State Industrial Development Corporations develop and **manage industrial estates** for MSMEs.

Corridor-Linked Industrial Nodes : Complementing these hub models are corridor-enabled industrial regions, which emphasise spatial integration and logistics efficiency as part of a broader industrial ecosystem, rather than functioning as standalone production units. These corridors provide **trunk infrastructure, freight connectivity, and multimodal logistics, enabling industrial concentration at scale**.

Trunk infrastructure is the higher-order infrastructure development with the primary purpose of serving ‘catchment’ areas to be shared between developments, commonly provided by local governments. It includes the development of the main line of infrastructure, such as water supply, drainage, sewerage/septage, roads, streetlight, electricity, etc.

Industrial corridors such as the Delhi–Mumbai Industrial Corridor (DMIC), Chennai–Bengaluru Industrial Corridor (CBIC), Amritsar–Kolkata Industrial Corridor (AKIC), and Vizag Chennai Industrial Corridor (VCIC) are designed to support manufacturing hubs and clusters by improving connectivity and facilitating integrated planning across regions.

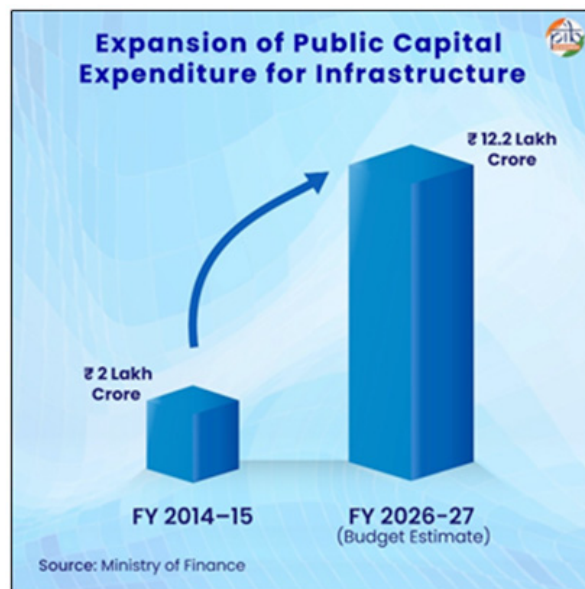
State Capacity and On-Ground Execution : The performance of manufacturing infrastructure hubs is overall shaped by **state capacity in land aggregation, trunk infrastructure provisioning, and regulatory approvals**. Strengthening execution and coordination has therefore been a key focus of recent infrastructure policy initiatives.

To address coordination challenges in infrastructure planning and delivery, the Government has launched the **PM Gati Shakti National Master Plan**, an integrated platform that brings together infrastructure-related data and projects of **44 central ministries and 36 states/Union Territories**. The initiative enables coordinated planning of transport, logistics, and utility infrastructure, with a focus on multimodal connectivity, last-mile linkages, and time-bound execution.

To reinforce infrastructure creation, public capital expenditure has increased substantially in recent years. The Government capital outlay has grown from **2 lakh crore** in FY2014–15 to a Budget Estimate of **12.2 lakh**

crore in 2026–27. This sustained increase has strengthened the physical backbone required for large manufacturing ecosystems, including industrial parks, logistics infrastructure, and freight connectivity.

What Is Capital Expenditure? When the Government incurs expenditure to create assets such as schools, hospitals, buildings, roads, bridges, canals, railway lines, etc., or reduces its liability, such as repayment of loans, etc., such expenditure is known as capital expenditure.



Institutional mechanisms have also been introduced to improve project preparedness and execution capacity. The **India Infrastructure Project Development Fund (IIPDF)** supports Central and State authorities by financing transaction advisers to develop **bankable infrastructure projects**, helping create a robust project pipeline. In parallel, the **National Infrastructure Enablement Index (NIEI)** has been developed to assess the **institutional preparedness of States/UTs and Central Ministries/Departments** for infrastructure delivery.

2026-27 KEY BUDGET Announcements: Manufacturing hubs

Sector/Area	Announcement
Chemicals	Three new Chemical Parks to be established to strengthen cluster-based chemical manufacturing with shared utilities, safety infrastructure, and logistics connectivity.
Textiles	Continued implementation of 7 PM MITRA (Mega Integrated Textile Region and Apparel) Parks approved earlier, aimed at creating large, integrated textile manufacturing hubs.

MSME (Micro, Small, and Medium Enterprises) Manufacturing Clusters
Strengthening of **cluster-based manufacturing and Common Facility Centres (CFCs)** to support MSME access to shared production, testing, and quality infrastructure.

Capital Goods / Industrial Support Infrastructure
Support for **tool rooms, testing, and calibration facilities** to strengthen domestic capital goods and industrial manufacturing capability.

Infrastructure Planning Linked to Manufacturing
Continued rollout of **PM GatiShakti** for coordinated, multimodal planning of infrastructure connected to industrial and manufacturing locations.

Global Biopharma & Manufacturing Hub: Biopharma SHAKTI Outlay of 10,000 crore over five years to build a **biopharma-focused manufacturing ecosystem**, including **three new National Institute of Pharmaceutical Education and Research (NIPERs)** and a nationwide network of over **1,000 accredited clinical trial sites**.

These measures have improved the enabling environment for manufacturing hubs. State-level initiatives across the country illustrate the development of manufacturing hubs across different sectors and regions:

- **Uttar Pradesh is developing the Defence Industrial Corridor across six nodes**, including Aligarh, Agra, Chitrakoot, Jhansi, Kanpur, and Lucknow, to support defence and aerospace manufacturing.
- **Tamil Nadu, also known as the Detroit of Asia, has expanded electronics and automobile manufacturing clusters**, supported by dedicated industrial parks and logistics infrastructure.
- **Gujarat continues to leverage industrial estates and port-linked manufacturing hubs** to attract large-scale manufacturing investment.

Meanwhile, industrial corridors, including the **Delhi–Mumbai Industrial Corridor** and the **Chennai–Bengaluru Industrial Corridor**, further reflect coordinated Centre–State execution, with industrial nodes developed through joint institutional frameworks and phased infrastructure provisioning.

Policy Support for Infrastructure Hubs & Budget Announcement

The policy framework in recent years has focused on the creation of **integrated infrastructure-led manufacturing**, recognizing that sustained industrial competitiveness depends on infrastructure, coordination, and execution rather than firm-level interventions alone.

This strategic approach is reflected in **mission-oriented initiatives such as the National Manufacturing Mission, PM-MITRA Park, PM-Gati Shakti**, Digital Public Platforms (like ULIP), sector-specific capacity-building measures, and the development of industrial corridors, parks, and clusters that combine physical infrastructure with institutional support. Together, these interventions aim to minimise logistics friction, financing delays, and coordination losses that previously constrained industrial competitiveness.

The Union Budget 2026-27 lays the foundation by advancing infrastructure-led manufacturing through focused support for manufacturing parks, shared facilities, and improved connectivity. The Budget reinforces the hub-based approach to manufacturing, with an emphasis on scale, reliability, and stronger linkages across value chains.

Conclusion : As India works towards its goal of becoming a Viksit Bharat by 2047, manufacturing is expected to play a crucial role in supporting sustained economic growth and employment generation. The Economic Survey and Union Budgets reflect the importance of policy support and public investment in strengthening manufacturing through infrastructure-led development and integrated industrial ecosystems.

An important element of this strategy is the growing focus on Tier-2 and Tier-3 cities, where manufacturing hubs are benefiting from cost advantages, local skills, and improved connectivity. Continued emphasis on such regions, supported by coordinated government policies and infrastructure development, will be essential for ensuring that manufacturing-led growth is broad-based, resilient, and aligned with India's long-term development objectives.

Source - PIB



PUBLIC PROCUREMENT 2026

– TRENDS & DEVELOPMENTS

Introduction : Indias public procurement landscape has witnessed significant developments in recent years, reflecting its global ambitions, bolstered by increased economic activity, the expansion of public infrastructure, an enabling regulatory framework, and a stable government at the Centre, all of which emphasise domestic capacity building. Publicly available information indicates that Indias public procurement now accounts for approximately 24% of its gross domestic product, which is expected to rise given the governments focus on enhancing private sector participation in infrastructure and social development. The policy-making over the past decade has demonstrated an encouraging trend toward creating an ecosystem in which private entities can transact with the government, its agencies or public sector undertakings, with reduced bureaucracy and regulatory barriers.

The recurring theme, however, at the core of Indias public procurement policy-making has been the focus on indigenisation of procurement and domestic capacity building. Initiatives such as “Make in India” the governments flagship indigenisation programme have created a paradigm shift, resulting in the creation of manufacturing, technology and service capabilities across various sectors. In an economy like India, which has relied significantly on foreign technology or foreign bidders for specialised procurement in sectors such as defence, medical equipment, specialised chemicals, etc, the “Make in India” initiative has greatly benefited domestic entities, including medium, small and micro enterprises.

The recent global geopolitical unrest is expected to significantly influence the public procurement framework in critical sectors, including national security, energy security, and strategic industries, necessitating adaptive policies and risk management strategies. These factors have also impacted the economic decision-making of governments across the world, making them increasingly susceptible to supply chain disruptions, trade disruptions, logistical and transportation challenges, sanctions, tariff hikes and other regulatory and political barriers. Indias procurement framework is adapting to address the evolving nature of challenges by balancing approaches of “protectionism” and “free trade policy”. The recent free trade agreements executed by India with the United States, New Zealand, the European Union, the United Kingdom and Australia reflect this balance between expanding its supplier base by encouraging foreign participation and incentivising domestic capabilities by creating an international market for domestic

manufacturers.

Recent Trends and Developments

Make in India the flagship indigenisation programme

Originally introduced in 2014, the “Make in India” initiative has been envisioned to transform India into a manufacturing hub by incentivising Indias production capabilities across 25 identified sectors. The re-imagined “Make in India 2.0” initiative now focuses on 27 sectors (including service sectors):

- manufacturing sectors include aerospace and defence, pharmaceuticals, shipping, railways, construction and new and renewable energy; and
- service sectors include information technology and information technology-enabled services, tourism and hospitality services, transport and logistics services.

The Department for Promotion of Industry and Internal Trade (“DPIIT”) and the Department of Commerce (“DOC”) have been designated as the implementation agencies for the manufacturing sector and service sector, respectively, under the “Make in India” initiative. Both these departments operate under the aegis of the Ministry of Commerce and Industry, Government of India and are empowered to issue executive instructions for implementing the “Make in India 2.0” programme.

Local content requirement the indigenisation test

The DPIIT issued the Public Procurement (Preference to Make in India) Order of 2017, which has subsequently been revised, with the latest revision effective on 19 July 2024 (“Public Procurement Order”). The Public Procurement Order was issued as a framework guideline to promote manufacturing and production of goods and services in India under the “Make in India” initiative and is applicable to all ministries or departments, subordinate offices and autonomous bodies controlled by the Government of India (“GoI”) and includes government companies as defined in the Companies Act of 2013.

The genesis of the “local content” requirement is in the Public Procurement Order and it applies to various categories of suppliers and service providers prescribed therein. The Public Procurement Order defines “local content” to mean “the amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of the item procured

(excluding net domestic indirect taxes) minus the value of imported content on the item (including all custom duties) as a proportion of the total value, in percent.” The procuring authorities are therefore required to adopt or follow the local content requirements provided in the Public Procurement Order or those prescribed by the respective ministries or departments.

Production-linked incentive scheme

The “production-linked incentive” scheme (“PLI Scheme”) was introduced by the GoI in 2020 under the “Aatmanirbhar Bharat Abhiyan” (ie, self-reliant India) mission to incentivise the so-called sunrise sectors of economic development. The PLI Scheme allows the nodal ministries of the identified sectors to design sector-specific incentives tailored to the challenges and growth prospects of each sector. It contemplates fiscal subsidies based on the value added to a product or incremental sales, the budget for which is directly allocated under the central budget and varies based on unique sectoral challenges.

At present, the PLI scheme includes 14 sectors, such as mobile manufacturing and specified electronic components, manufacturing of medical devices, automobiles and auto components, specialised steel, telecom and networking products and advanced chemistry cell battery.

Creation of the GeM Portal

In India, government procurement has traditionally been bureaucratic, and bidders have often faced difficulties accessing information on existing tenders and the associated processes, which has often created a perception of a lack of transparency. The Government e-Marketplace portal and the GeM-Central Public Procurement Portal (“GeM Portal”), introduced by the GoI an online national public procurement platform designed for government departments and public sector enterprises to procure goods and services from vendors registered in the portal have revolutionised government procurement in India. The vendors registered on this portal have access to all tenders listed by the procuring entity and can choose to participate in them online, subject to the tender conditions contained therein. The GeM Portal has significantly simplified public procurement by offering a seamless user experience for registered vendors and procuring authorities, providing access to a wide range of tenders with an online submission process, and ensuring fair treatment of all vendors.

The GeM Portal has been one of the key initiatives by the GoI to:

- ease procurement processes;
- increase the bidder base; and
- ensure transparency, efficiency and cost savings.

Further, a nuanced feature of the GeM Portal, specifically in the context of the micro-, small- and medium-scale

enterprises (“MSMEs”), is the lending platform (called the GeM SAHAY) forming part of the GeM Portal, which connects registered vendors with lenders and enables access to instant loans sanctioned and disbursed digitally.

Increased Opportunities for MSMEs

The growth trajectory of the MSME segment in India has shown mixed results owing to limited access to advanced technology, supporting infrastructure, cheaper capital and an assured market for the goods manufactured or services provided by MSMEs. In India, the MSMEs are spread across sectors and are sizable in number. Similarly, the untapped growth opportunity they present is also significant.

In a growing economy like India, which has reset the focus on enhancing domestic capabilities, with initiatives such as “Make in India with zero defect and zero effect”, the PLI Scheme, the digital India revolution and an enabling environment for start-ups, MSMEs are being provided with the framework necessary for their emergence as key growth drivers. The GoI has issued guidelines for the formation of national, regional and state-level business clusters aimed at providing the necessary support infrastructure, access to technology and financial assistance to MSMEs establishing businesses within these clusters. The objective of the cluster-based development is to ensure:

- complementary methods of production, quality control and testing and energy consumption;
- similarity in the level of technology and marketing strategies and practices;
- common channels of communication for the MSMEs forming part of the business clusters; and
- access to state-of-the-art infrastructure to support the MSMEs.

These business clusters are being developed under a public-private partnership (“PPP”) model, under which the concessionaire (that is, the entity developing the business cluster) is required to design, build, operate and maintain the business clusters for use by MSMEs.

The GoI's initiatives, however, have not been limited to only increasing the supply-side incentives or enhancing manufacturing capabilities. In fact, the GoI has issued a dedicated public procurement policy for MSMEs, which is amended from time to time, and currently all central government ministries, the respective departments and central public sector undertakings are required to undertake at least 25% of their annual procurement from micro and small-scale enterprises. The latest edition of the Manual for Procurement of Goods, issued in 2024 by the Department of Expenditure, Ministry of Finance, GoI (“DOE”), creates a specific reservation for items to be mandatorily procured from micro and small-scale enterprises.

Evolving FDI Policy

The foreign direct investment policy (“FDI Policy”) issued by the DPIIT regulates and sets the sectoral thresholds for foreign direct investment (“FDI”) into India either through the automatic route (up to the prescribed threshold) or the government approval route (beyond the prescribed threshold). The FDI Policy, under the current government, has considerably evolved towards a more liberal framework wherein 100% (one hundred per cent) FDI has been allowed in most sectors under the automatic route, other than in strategically important sectors (such as defence and atomic energy). In recent times, the FDI limits (under the automatic route) have either been increased or removed altogether such as:

- in the defence sector, FDI is now allowed upto 74% against the earlier 49% under the automatic route, for companies seeking new industrial licenses; and
- in the telecom sector, FDI is now allowed up to 100% under the automatic route.

The shift in the FDI Policy indicates a recognition of the need for foreign capital in India's efforts to become a self-reliant economy, which has infrastructure, technology and manufacturing capabilities of global standards, and for the overall success of the Make in India programme. In the energy and infrastructure sectors, especially, where public infrastructure is built through the PPP mode by grant of concession contracts by the government (at the central and state level) and requires considerable capital, the creation of an investor-friendly framework, bankable contracts and a stable regulatory framework to attract foreign investment has been of primary importance.

Further, most procurement contracts of significant value in the telecom, defence and infrastructure sectors also allow foreign participation under the international competitive bidding route. The inflow of foreign capital, in addition to global capabilities and technology, is, therefore, an undeniable necessity. The FDI Policy, in its current form, reflects this understanding by liberalising foreign investment restrictions in sectors such as defence and telecom (which are also key sectors under the “Make in India” programme).

Land Border Restrictions and Press Note No 3 Notification

While the FDI regime in India has shown movement towards a more liberalised regime, an exception to this trend has been the Press Note No 3 (2020 Series) (“PN3 Notification”) released by the DPIIT with the primary objective of “curbing opportunistic takeovers and acquisitions of Indian companies due to the COVID-19 pandemic”. The consolidated FDI Policy was subsequently amended, requiring prior mandatory government approval for all FDI originating from countries sharing land borders with India. For the purposes of the PN3 Notification, India recognises Pakistan, Afghanistan, Nepal, Bhutan, China (including Hong Kong), Bangladesh and Myanmar as countries sharing land border with India (“LBC Jurisdiction”). While the PN3 notification was

issued in the backdrop of the COVID-19 pandemic, the restrictions introduced in 2020 continue to subsist to date.

The current FDI Policy also clarifies that this approval is required for:

- (i) investments made by entities incorporated in countries sharing land border with India;
- (ii) where the “beneficial owner” of the investment in India is situated in or is a citizen of such country; and
- (iii) direct or indirect transfer of ownership of existing or future FDI resulting in the beneficial ownership falling within restrictions stated in (i) and (ii).

Further, entities incorporated in Pakistan are permitted to invest in India only through the government approval route and are not permitted to invest in prohibited sectors such as defence, space or atomic energy. In March 2026, the GoI issued a press release indicating that non-controlling beneficial ownership of up to 10%, originating from LBC jurisdictions, would be allowed under the automatic route, subject to the prevailing sectoral caps. In this context, the GoI also clarified that the determination of beneficial ownership would be in accordance with the threshold set out under the Prevention of Money Laundering Rules, 2005. The press release also envisages prescribing defined timelines for process of approvals in critical sectors.

In the context of the procurement laws, the DOE issued Order (Public Procurement No 4) under Rule 144(xi) of the General Financial Rules, 2017 (“PP4 Notification”), imposing further restrictions on entities from countries which share a land border with India. The PP4 notification requires these restricted entities to register with the competent authority to be eligible to participate in any bid. The registration requirement will apply to the following categories of bidders in case of any procurement, whether of goods, services (including consultancy and non-consultancy services) or works (including turnkey projects):

- any bidder from a country which shares a land border with India;
- any bidder (including an Indian bidder) who has a specific transfer of technology arrangement with an entity from a country which shares a land border with India.

The PP4 Notification further clarifies that, in works contracts (including turnkey contracts), contractors will not be allowed to sub-contract works to any contractor from a country that shares a land border with India, unless the contractor is registered with the competent authority. The PP4 Notification mandates that tender documents require bidders to provide an undertaking that they have complied with the registration requirements under this notification and that, in the

event of a false undertaking, the defaulting bidder may be debarred from participating in future tenders.

Guidelines on Dispute Resolution

Due to a severe backlog of cases before the various courts in India, including the High Court and the Supreme Court, legal proceedings can often be prolonged and cumbersome. This has often been an area of considerable concern for businesses, especially foreign companies and investors, who perceive India's dispute resolution procedure as an entry barrier. In the context of government procurement, where most disputes carry monetary consequences, long-drawn-out legal proceedings discourage greater bidder participation in government tenders. Arbitration, as a mode of alternative dispute resolution (particularly in the context of government procurement contracts), has also faced similar criticism with respect to the length of proceedings and the complexity of enforcing arbitral awards, especially foreign awards.

In the context of this background, the DOE, on 3 June 2024, issued new dispute resolution guidelines ("Dispute Resolution Guidelines"), which provide that in government procurement contracts (issued by its departments, central public sector enterprises, public sector banks and government companies), the following principles are to be followed:

- arbitration should not be the automatic choice in government contracts, especially in large contracts;
- arbitration may be restricted to disputes with a value less than INR 100 million;
- including arbitration clauses for disputes with a value of more than INR100 million will require approval from the competent authority;
- institutional arbitration may be preferred (after considering the cost of arbitration relative to the value of the dispute); and
- procuring authorities are encouraged to amicably settle disputes as per the mechanism provided under the contracts.

The Mediation Act, 2023 ("Mediation Act"), was also introduced to provide a statutory framework for the conduct of mediation proceedings as a mechanism for resolving contractual disputes between parties. The Dispute Resolution Guidelines also encourage procuring authorities to adopt mediation under the Mediation Act.

Ease of Doing Business

One of the key features of governance under the current regime has been to reduce bureaucracy and simplify the process for obtaining registrations, licenses and approvals to conduct business in India. A large part of the entry strategy for foreign entities is centred on this key area of concern, especially since each state prescribes

its own regulatory framework for business, in addition to the central-level requirements.

To allay such concerns and create an investor-friendly framework, the GoI launched the National Single Window Clearance portal ("NSWC Portal") a one-stop digital platform for investors and entrepreneurs to obtain necessary approvals at both the central and state levels. The NSWC Portal allows entities to apply for registrations, licenses and approvals (except for a few local-level or sector-specific approvals) through a common platform. It also allows applicants to track the status of their applications in real time, thereby ensuring transparency and clarity in the business decision-making process.

India has also introduced the Jan Vishwas (Amendment of Provisions) Act, 2023 ("Jan Vishwas Act") on 11 August 2023, which seeks to amend 42 central legislations and decriminalise technical and procedural non-compliances. As part of the central budget, the GoI has also proposed the introduction of Jan Vishwas 2.0 with the objective to further decriminalise procedural non-compliances under legislations such as:

- the Companies Act, 2013;
- Consumer Protection Act, 2009; and
- Environment Protection Act, 1986.

Anti-Bribery and Corruption

In India, procuring entities have a constitutional obligation to ensure fairness in public procurement and in awarding contracts to private parties. As these constitutional obligations affect the fundamental rights of citizens granted under the Constitution of India, any citizen (typically, the participating bidders or excluded bidders in such cases) has the right to invoke the writ jurisdiction of the courts in case it has reasons to believe that the procurement process, the evaluation criteria or the awarding of contract itself was arbitrary, irrational, discriminatory or mala fide. They also have the right to initiate public interest litigation if any decision-making by the procuring authority affects the larger public interest, including loss to the public exchequer. Often, such challenges before the courts have been on grounds of fraud, corruption, bribery or procedural malpractice. The most notable examples of such challenges were in the telecom and mining sectors, wherein the Supreme Court cancelled the license auction process altogether, as well as the licenses so granted. The cancellation of licenses posed a serious risk for investors and foreign participants, leading to the perception that the procurement process in India lacks transparency and accountability.

There has been a marked shift in this perception in recent years, as India has strengthened its anti-bribery and anti-corruption framework by improving enforcement of laws such as the Prevention of Corruption Act, 1988 and Prevention of Money Laundering Act, 2002 and empowering authorities such as the Directorate of Enforcement with quasi-judicial powers to investigate

money laundering and violations of foreign exchange laws. The procurement framework in India now also requires bidders and procuring authorities to be bound by the Code of Integrity for Public Procurement and the integrity pact (included as part of the tender documents) to increase accountability across all stakeholders and reduce ethical risks in public procurement. The digitisation of certain segments of public procurement through the GeM Portal and the adoption of the e-reverse auction process have also enhanced transparency and process clarity by eliminating the human factor often prevalent in the public procurement process.

Free Trade Agreements

With global geopolitical uncertainties caused by the recent war in the Gulf countries involving the United States and Israel, the ongoing Russia-Ukraine War, and China's economic slowdown and its consequent impact on global trade and energy security, most countries economic policies are having to adapt to dynamic realities. However, India has emerged as a key stakeholder in global geopolitics largely owing to its diplomacy in recent times and the opportunities that the Indian economy presents. This global recognition of India's economic importance is evidenced by the complexity and significance of the free trade agreements India has negotiated in recent years (notably with the United Kingdom). In most instances, India has been negotiating bilateral procurement arrangements under which entities from the respective countries would be eligible to participate in government tenders in India and vice versa.

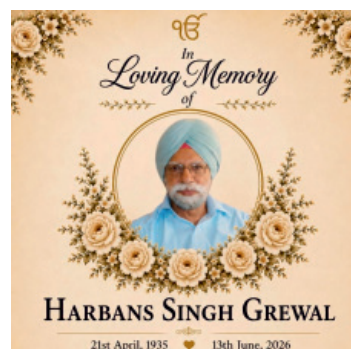
Conclusion

As India envisions becoming a USD30-35 trillion economy by 2047, government procurement will remain a critical contributor to overall economic growth. The policy-making by the GoI signals creation of an ecosystem that not only incentivises supply-side domestic capacity building (through "Make in India" and the PLI Scheme) but also endeavours to create a demand-based market for the products and services offered by Indian businesses. In recent times, procurement contracts have also addressed several contractual risks, especially regarding payment security and termination, thereby improving their bankability, particularly in concession agreements for the development of public infrastructure. These contracts are designed to balance risk allocation among stakeholders and reflect an understanding of investor sentiment, sectoral risks and commercial realities. Therefore, with recent developments in the procurement framework and the broader regulatory framework for businesses, along with the tremendous increase in economic activity, government procurement presents immense opportunities for stakeholders across sectors to participate and contribute to India's growth story.

Source: www.azbpartners.com



OBITUARY



MR. H. S. GREWAL

Former National President,

Indian Institute of Materials Management (1987–1989)

It is with profound sorrow and deep respect that we mourn the passing of Mr. H. S. Grewal, former National President of the Indian Institute of Materials Management, who led the Institute during the period 1987–1989. ?

IIMM

Mr. Grewal was a distinguished professional, visionary leader, and a dedicated champion of the materials management and supply chain profession. His tenure as National President was marked by his unwavering commitment to strengthening the Institute, promoting professional excellence, and advancing the recognition of materials management as a vital discipline in industry and commerce. Prior to becoming National President, he also served the Institute in senior leadership roles, contributing significantly to its growth and development.

Throughout his association with IIMM, Mr. Grewal inspired generations of professionals through his leadership, integrity, and commitment to the profession.

His passing is a great loss to the IIMM fraternity and the entire materials management community. While we mourn his departure, we also celebrate a life dedicated to professional excellence, institution building, and service to society.

On behalf of the National Council, members, and the entire IIMM family, we convey our heartfelt condolences to his family, friends, and associates. We pray to the Almighty to grant eternal peace to the departed soul and strength to his loved ones to bear this irreparable loss.

May his soul rest in peace.

"His legacy of leadership, professionalism, and service will continue to inspire future generations of IIMM members."

RENEWABLE ENERGY – POWERING A SAFER AND PROSPEROUS FUTURE

Energy is at the heart of the climate challenge – and key to the solution. Most of the greenhouse gases that trap heat in the Earth's atmosphere come from burning fossil fuels to produce energy, mainly for electricity and heat. In 2023, the power sector was the largest source of global greenhouse gas emissions.

The science is clear: to avoid the worst impacts of climate change, emissions must be reduced by almost half by 2030, and reach net-zero by 2050. To achieve this, we need to end our reliance on fossil fuels and invest in alternative sources of energy that are clean, accessible, affordable, sustainable, and reliable.

Renewable energy sources — such as sunlight, wind, water, organic waste, and heat from the Earth — are abundant, replenished by nature, and emit little to no greenhouse gases or air pollutants. Fossil fuels still account for nearly 60 per cent of electricity generation, but cleaner sources of energy are gaining ground. Between 2015 and 2024, annual electricity capacity of renewables increased by around 2,600 gigawatts (GW) - a 140 per cent increase. In the same period, fossil fuels electricity capacity only increased by around 640 GW (16 per cent).

Here are **five reasons why accelerating the transition to clean energy is the pathway to a healthy, livable planet** today and for generations to come.

1. Renewable energy sources are all around us

About 80 per cent of the global population lives in countries that are net-importers of fossil fuels - that's about 6 billion people who are dependent on fossil fuels from other countries, which makes them vulnerable to geopolitical shocks and crises.

In contrast, renewable energy sources are available in all countries, and their potential is yet to be fully harnessed. The International Renewable Energy Agency (IRENA) estimates that 90 percent of the world's electricity can and should come from renewable energy by 2050.

Renewables offer a way out of import dependency, allowing countries to diversify their economies and protect them from the unpredictable price swings of fossil fuels, while driving inclusive economic growth, new jobs, and poverty alleviation.

2. Renewable energy is cheaper

Today, renewable energy is the most affordable source of power in most parts of the world. Prices for renewable energy technologies are dropping rapidly. Over 90 per cent of new renewable projects are now cheaper than fossil fuels alternatives. At the same time, solar and offshore wind are

now respectively 41 per cent and 53 per cent cheaper than fossil fuels.

Declining prices are making renewable energy more attractive worldwide—including to low- and middle-income countries, where most of the future demand for new electricity will arise. This creates a real opportunity for much of the new power supply over the coming years to come from low-carbon sources. By 2040, for instance, Africa could generate 10 times more electricity than it needs – entirely from renewables.

Renewable energy can also help meet new electricity demand, particularly for Artificial Intelligence (AI) and data centres. A typical AI data centre eats up as much electricity as 100,000 homes. Every major tech firm should switch to 100 per cent renewables to power data centres by 2030.

Cheap electricity from renewable sources could provide 65 per cent of the world's total electricity supply by 2030. It could decarbonize 90 per cent of the power sector by 2050, massively cutting carbon emissions and helping to mitigate climate change.

3. Renewable energy is healthier

According to the World Health Organization (WHO), about 99 percent of people in the world breathe air that exceeds air quality limits and threatens their health. Air pollution is associated with 7 million premature deaths every year.

The unhealthy levels of fine particulate matter and nitrogen dioxide originate mainly from the burning of fossil fuels. The economic health damage caused by air pollution amounts to \$8.1 trillion a year, equivalent to 6.1 per cent of global GDP.

Switching to clean sources of energy, such as wind and solar, helps address not only climate change but also air pollution and health.

4. Renewable energy creates jobs

Clean energy sector jobs already outnumber fossil fuel jobs – employing almost 35 million people worldwide. In 2023, 16.2 million people were employed in the renewable energy sector, up from 13.7 million in 2022.

For every dollar invested, renewable energy creates three times as many jobs as the fossil fuel industry. The IEA estimates that the transition towards net-zero emissions will lead to an overall increase in energy sector jobs: while about 5 million jobs in fossil fuel production could be lost by 2030, an estimated 14 million new jobs would be created in clean energy, resulting in a net gain of 9 million jobs.

In addition, energy-related industries will need 16 million more workers, for instance to take on new roles manufacturing electric vehicles and hyper-efficient appliances, or in innovative technologies such as hydrogen economy. This means that a total of more than 30 million jobs could be created in clean energy, efficiency, and low-emissions technologies by 2030.

Ensuring a just transition, placing the needs and rights of people at the heart of the energy transition, will be paramount to make sure no one is left behind.

5. Renewable energy makes economic sense

In 2024, \$2 trillion went into clean energy – \$800 billion more than fossil fuels and up almost 70 per cent in ten years. In 2023 alone, clean energy sectors drove 10 per cent of global GDP growth.

Furthermore, energy-related carbon dioxide emissions are growing more slowly than the global economy. Emissions growth slowed to 0.8 per cent in 2024, while the global economy expanded by more than 3 per cent.

Yet, the fossil fuel industry continues to be heavily

subsidized. About \$7 trillion was spent on fossil fuels in 2022, including through explicit subsidies, tax breaks, and health and environmental damages that were not priced into the cost of fossil fuels.

In comparison, about \$4.5 trillion a year needs to be invested in renewable energy until 2030 – including investments in technology and infrastructure – to allow us to reach net-zero emissions by 2050.

The upfront cost can be daunting for many countries with limited resources, and many will need financial and technical support to make the transition. But investments in renewable energy will pay off. Additionally, the reduction of pollution and climate impacts could save the world up to \$4.2 trillion per year by 2030.

Moreover, efficient and reliable renewable technologies can create a system less prone to market shocks and improve resilience and energy security by diversifying power supply options.

Source: UN.ORG.



THE ROLE OF AUTOMATION IN MANAGING COMPLEX REVENUE WORKFLOWS IN LOGISTICS

EDYTA SAINI, SENIOR DIRECTOR OF REVENUE SOLUTIONS AT RECVUE

In logistics, revenue complexity isn't an exception. It's the operating model. Between fluctuating freight rates, amendment-heavy contracts and data spread across multiple systems, finance teams are often forced to reconstruct revenue manually after the fact. As supply chains become more global and more digital, these fractures deepen, turning billing, revenue recognition and reconciliation into persistent sources of operational risk.

In practice, automation is less about efficiency and more about control. It ensures that revenue is captured accurately, consistently and in alignment with contractual and operational reality.

Research from the American Productivity & Quality Center (APQC) shows that top-performing organizations close in four to five days, while others may take ten days or more. The difference reflects structural process design, not just effort.

At the same time, standards such as ASC 606 and IFRS 15 require GAAP revenue recognition to be recognized based on clearly defined performance obligations, increasing the need for consistency and traceability across systems.

For logistics providers operating at scale, automation is no longer optional. It is foundational.

Drivers of revenue complexity

Revenue workflows in logistics are shaped by fragmented systems, dynamic contracts and high transaction volumes.

Shipment data may originate across transport management systems, proof-of-delivery tools and contract repositories. When these systems are not unified, finance teams are forced to reconstruct a single invoice from fragmented inputs rather than generating a cohesive view of revenue across services, fees and adjustments.

At the same time, contracts are rarely static. Pricing structures often include fuel surcharges, rebates, accessorial charges and performance-based adjustments. Vehicles are reassigned, routes change and terms evolve continuously. Applying these conditions consistently at scale becomes nearly impossible without systems that treat the contract itself as the system of record.

Revenue recognition adds another layer of complexity. Depending on the nature of the service, revenue may be

recognized at delivery, over time or at multiple milestones. Misalignment between operational events and accounting entries remains one of the most common sources of audit risk in logistics environments. The Financial Accounting Standards Board (FASB) reinforces the importance of accurately aligning transaction prices to performance obligations.

The result is a system where finance teams spend significant time reconciling data instead of controlling revenue. Organizations such as the International Federation of Accountants (IFAC) have emphasized that digital finance transformation is essential for improving control, transparency and decision-making in complex environments.

Best practices for revenue automation

Addressing these challenges requires more than digitizing manual processes. It requires rethinking how revenue workflows are structured.

Operational and financial systems must first be connected at the data layer. Transport management, warehouse and billing systems should share information in real time, allowing shipment milestones to trigger billing events automatically. This reduces reliance on manual handoffs and ensures that billable events are captured as they occur.

Contracts must also be translated into system-driven rules. Pricing terms, surcharges and performance conditions should be configured directly into calculation engines, ensuring consistent application across transactions. This removes manual interpretation and creates a clear, auditable link between contract terms and financial outcomes.

Revenue recognition should be aligned natively to operational events. When performance obligations are mapped directly to milestones such as pickup, delivery or completion, revenue is recognized consistently and transparently without requiring reconciliation after close.

Automation should also extend beyond routine entries to exception management. Increasingly, advanced platforms use embedded intelligence to flag anomalies in shipment, pricing and billing data mid-cycle rather than after close. By surfacing issues early, organizations reduce disputes, prevent revenue leakage and avoid last-minute adjustments.

Strong controls must be embedded directly into workflows. Segregation of duties, approval processes and audit trails should be system-driven, ensuring compliance is continuous rather than dependent on manual review. APQC research shows that top-performing finance functions achieve lower cost per invoice and faster cycle times, often supported by automation.

Key benefits of automation

The impact of automation in logistics revenue workflows is both operational and strategic.

First, accuracy improves significantly. System-driven calculations reduce errors caused by manual entry and ensure revenue is recognized consistently in line with accounting standards.

Second, invoicing speed increases. When billing is triggered automatically by operational milestones, the time between service delivery and invoice issuance is reduced, supporting stronger cash flow and reducing working capital pressure.

Third, administrative burden decreases. Automation reduces time spent on reconciliation, dispute resolution and manual adjustments, allowing finance teams to focus on analysis and performance management.

Fourth, transparency improves. Real-time visibility into revenue, margins and performance enables better pricing, capacity planning and customer-level profitability analysis.

Finally, organizations gain scalability. As shipment volumes grow and business models evolve, automated systems can handle increasing complexity without a proportional increase in headcount.

More importantly, automation reduces revenue leakage by ensuring every billable event is captured and priced correctly. Finance teams shift from reconciling past activity to actively managing performance, profitability and risk.

Automation as a strategic advantage

For logistics organizations, revenue complexity is not going away. As business models expand to include usage-based services, telematics and partner ecosystems, the number of variables influencing revenue will continue to grow.

Well-designed automation enables organizations to manage this complexity without increasing operational overhead. Systems can process higher transaction volumes while maintaining consistency, accuracy and auditability, while ERP platforms remain clean and stable rather than absorbing operational complexity through customization.

In an industry defined by thin margins and high transaction volumes, the organizations that succeed will be those that can manage revenue with precision – turning complexity from a source of friction into a source of control.

Source: tlimagazine.com

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WHEN A MEGA-3PL ISNT THE RIGHT FIT AND WHAT TO CHOOSE INSTEAD

A practical guide for supply chain decision-makers evaluating 3PL and 4PL partners.

Not all logistics challenges are the same size. Yet a surprising number of procurement processes default to the same shortlist: a handful of global mega-3PLs with household names, massive infrastructure footprints, and marketing budgets larger than some companies annual revenue.

For many shippers particularly mid-market and growth-stage enterprises that default is the wrong choice. Not because the mega-3PLs arent capable, but because scale cuts both ways. The same infrastructure that makes a provider right for a Fortune 50 retailer can make them slow, expensive, and inattentive for a company shipping \$50M to \$500M in freight annually.

This guide is designed to help supply chain leaders make a more honest, needs-based evaluation.

The honest case for mega-3PLs : Lets give credit where its due. Providers like DHL Supply Chain, Kuehne+Nagel, DSV, and Maersk are genuinely exceptional at a specific set of problems:

- Highly regulated, multi-continent compliance pharmaceutical cold chain across 60+ markets, hazmat handling under multiple regulatory regimes, customs brokerage in high-complexity jurisdictions
- Massive, fully automated distribution infrastructure networks requiring dozens of large-format DCs with robotics, conveyor systems, and labor management at scale
- Fortune 50 outsourcing relationships where a shippers freight volume warrants a dedicated business unit from the provider and SLA structures that only make financial sense at enormous scale

If your supply chain genuinely fits this profile, a mega-3PL belongs on your shortlist.

Where mega-3PL becomes a liability : Heres what rarely gets said in RFP processes: size creates friction.

Mega-3PLs operate through layers of account management, regional divisions, and global service centers. For a shipper outside their top revenue tier, that means slower escalation paths, standardized solutions that dont flex to your industrys quirks, and pricing structures built for volume that you may not yet have.

The symptoms show up quickly after onboarding: dedicated contacts who turnover frequently, technology platforms that require months of integration work, and service recovery processes that route through a call center rather than to a decision-maker.

For companies with \$500M-\$5B in revenue, complex multi-modal or project-based freight requirements, or

operations spanning multiple regions without full Fortune 50 scale, theres a better fit.

The high-touch mid-market alternative : A differentiated class of global 3PLs and 4PLs has emerged to serve exactly this segment. The defining characteristics are:

Genuine global reach without the bureaucratic overhead

Logistics Plus, for example, operates in 55+ countries with 1,400+ supply chain professionals worldwide but is structured to deliver executive access and customized solutions rather than one-size-fits-all service programs.

Multi-modal capability with vertical fluency : This tier excels at the kinds of freight problems that fall between the cracks of standard programs: project cargo, mission-critical expedites, specialized handling for industrial or healthcare shipments, emerging-market origin/destination pairs, and hybrid managed transportation arrangements.

Technology that integrates, not dominates : Rather than requiring shippers to adopt a proprietary TMS as the cost of doing business, high-touch providers typically connect into existing client infrastructure and configure around the shippers needs.

Orchestration model : For scenarios requiring on-the-ground infrastructure in markets where no single provider has full density, the right answer is often a 3PL acting as orchestrator coordinating a curated network of specialized carriers, in-country agents, and local partners under a single point of accountability. This is frequently a better outcome than forcing a mega-3PL to serve markets where its own network is thin.

A practical decision framework : Before issuing your next RFP, answer these questions honestly:

The framework above isnt about ruling out any provider category its about matching your actual requirements to the right model.

When collaboration beats consolidation : One overlooked outcome: some of the most effective supply chain arrangements are not single-provider consolidations. Theyre orchestrated partnerships in which a high-touch 3PL manages the relationship and visibility layer, while specialist providers handle execution in specific lanes or regions.

Logistics Plus has operated alongside mega-3PLs in exactly this configuration stepping in as the orchestrator for lanes, modes, or customer segments where a primary providers program didnt extend effectively. The result is often better service performance, more competitive pricing, and a single point of escalation for the shipper.

The challenge : In early 2021, a global industrial distributor serving leading manufacturers ran a

competitive RFP to find a 3PL partner to help it optimize outbound multimodal shipping across its six warehouses, improve inbound vendor routing compliance, and gain a consolidated view of supply chain invoices to identify cost-reduction opportunities.

The core issue wasn't capacity or global reach. It was operational fragmentation. Warehouse personnel were manually selecting carriers without real-time rate-comparison tools. Vendor routing compliance was inconsistent, meaning inbound shipments weren't always moving cost-effectively. And critically, the company had no consolidated view of freight invoices across modes, making it nearly impossible to identify overpayment patterns or negotiate from a position of data.

Why Logistics Plus was selected : After an extensive review process, the client selected Logistics Plus for its customizable technology capabilities, complete multimodal transportation management expertise, and overall cultural fit not on price alone. That distinction matters: it reflects exactly the kind of engagement where a high-touch provider outperforms a mega-3PL on the criteria that actually drive outcomes.

What Logistics Plus built : Working directly with the client's in-house development team, LP's technology group implemented a customized version of its cloud-based MyLogisticsPlus™ portal configured to interface directly with the client's existing warehouse management system. Warehouse staff could now scan and weigh parcel and freight orders, instantly compare carrier options by cost or customer routing preference, and generate all required documentation from a single interface.

On the international side, LP's team assigned proper HTS codes across the client's imported and exported goods catalog and developed streamlined standard operating procedures for international shipment processing eliminating the ad hoc handling that had previously created compliance exposure.

LP also established a dedicated vendor routing center to help the client's inbound suppliers route shipments cost-effectively to its facilities. And LP implemented its freight audit and payment (FAS) solution to consolidate invoice management, handle carrier disputes, and generate business intelligence reporting across all modes.

The outcome : With logistics operations consolidated under a single managed solution, the client redirected internal resources toward its core business. The company has since recorded year-over-year growth in sales and profitability. Using business intelligence derived from LP's freight audit and payment process, LP successfully renegotiated carrier contracts across parcel and LTL modes, delivering more competitive shipping rates without changing service quality.

The most telling detail: this engagement was won on the strength of customizable technology, multi-modal expertise, and cultural fit—the differentiators that don't show up in a standard mega-3PL comparison matrix.

Source: www.logisticsplus.com



Indian Institute of Materials Management

MISSION

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

OBJECTIVE

- To secure a wider recognition of and promote the importance of efficient materials management in commercial and industrial undertakings.
- To safeguard 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.

EMERGING ROLE OF TIER 2 AND 3 CITIES IN INDIA'S WAREHOUSING AND LOGISTICS GROWTH

India's logistics and warehousing sector continues to expand in 2025, driven by infrastructure advancements, government-led initiatives, and the rapid growth of e-commerce. While major metropolitan areas have historically dominated the industry, tier 2 and tier 3 cities in the country are emerging as crucial logistics hubs, reshaping India's supply chain landscape.

India's logistics and warehousing sector is expected to play a vital role in India's economic development in the coming years. On March 2, 2025, the Union Minister of Consumer Affairs, Food, and Public Distribution, Pralhad Joshi, highlighted that the **domestic warehousing market** is projected to grow at a compound annual growth rate (CAGR) of 15 percent, reaching an estimated US\$35 billion by 2027.

This growth trajectory is fueled by increasing demand for warehousing facilities across the country, improved infrastructure, and strategic promotion in the tier 2 and tier 3 cities.

Decentralization and strengthening regional supply chains

Several industry leaders and media reports suggest the emergence of tier 2 and tier 3 cities as the country's preferred logistics hubs, thereby reducing dependence on India's major metropolitan centers, enhancing supply chain resilience, and lowering transportation expenses. Strengthening regional supply chains is also fostering job creation and industrial development in smaller urban areas.

A key driver of this shift is the expanding online consumer base in non-metropolitan cities. With rising digital adoption and improved last-mile connectivity, there is a growing need for efficient logistics and warehousing facilities in these regions. Additionally, central government policies such as the **Urban Infrastructure Development Fund (UIDF)**, which allocates INR 100 billion (US\$1.14 billion) annually for infrastructure enhancement in tier 2 and tier 3 cities, are playing a crucial role in supporting this transformation.

Technological advancements influencing India's warehouse preference

Beyond infrastructure development, technological innovations are advancing the country's logistics sector. Industry experts believe that adoption of automation and artificial intelligence (AI) in supply chain management has improved efficiency and reduced operational costs. AI-driven analytics are optimizing inventory management, while automated sorting and packaging systems are streamlining warehouse processes.

India's goals towards sustainability are also steering sectoral growth, with the industry increasingly integrating green warehousing practices. Industry is adopting energy-efficient storage solutions, the use of renewable energy sources, and eco-friendly packaging materials to minimize the environmental impact of logistics operations.

India's total warehouse space is projected to reach approximately 1.2 billion square feet by 2027, encompassing Grade A, B, and C warehouses. A report by JLL, published on October 16, 2024, namely **Future of logistics:**

warehousing market India, highlights a notable shift towards high-quality infrastructure, with Grade A warehousing stock expected to increase from 290 million square feet in 2023 to 400 million square feet by 2027.

A key factor in this growth is the domestic logistics sectors increasing preference for Grade A warehousing facilities. Grade A warehouse facilities are constructed using high-quality materials, incorporate advanced automation, and are strategically located to optimize transportation and distribution.

In contrast, Class B and C warehouses require substantial upgrades to align with contemporary logistics standards. Class B warehouses may require modifications such as the installation of high-capacity freight elevators and enhanced shelving systems to improve operational efficiency. Meanwhile, Class C warehouses, which have fewer dock-type gates, pose challenges for large-scale logistics operations and are less effective in meeting the demands of high-speed supply chains.

The report further states that India is poised to become one of the top six users of warehouse automation systems globally by 2026, with the market value expected to reach US\$2 billion annually.

India's quick-commerce industry boosts warehouse demand

Rapid expansion of the **quick-commerce sector** in the country is a major contributor to the increasing demand for warehousing space. Domestic companies, such as Zepto and Blinkit, are aggressively expanding their regional warehousing networks to assist with faster delivery services.

It is worth noting that a surge in warehousing demand continues to be dominated by India's top eight cities: Mumbai, Pune, the National Capital Region (NCR), Bengaluru, Hyderabad, Chennai, Kolkata, and Ahmedabad. An industry observation made by Knight Frank India, a global property consultancy, notes approximately 37.5 million square feet of warehousing space was leased between January and September 2024, marking a 4 percent year-on-year increase. In the third quarter of FY2024-25, lease transactions reached 14.6 million square feet, reflecting a 20 percent rise compared to the earlier period.

Future outlook

As the demand for warehousing space continues to grow, investments in logistics parks are also increasing in the country. Both public and private sector stakeholders are recognizing the potential of **India's logistics sector**, leading to establishments of advanced storage facilities, improved transportation infrastructure, and wider digital integration.

With ongoing modernization efforts, India's tier 2 and tier 3 cities are evolving from emerging markets into critical components of the country's next phase of economic growth.

Source: www.india-briefing.com

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BRANCH NEWS

LUCKNOW BRANCH

Grand Success of Seminar on “AI in Supply Chain Management” at IIMM Lucknow Branch : The IIMM Lucknow Branch successfully organized an insightful seminar on “AI in Supply Chain Management” on 7th June 2026 at Royal Café, Lucknow. The event witnessed enthusiastic participation from supply chain professionals, academicians, industry leaders, and members from various IIMM branches across the country.

The programme was inaugurated by Shri P. M. Biddappa, National President, Mr. Pankaj Panchbhai NST, Mr. L R Meena Immediate Past President, Dr. Sureshkumar Sharma Co Chairman BOS and FNP Mr. Prashant Kumar Singh Chairman and Mr. P K Bajpai ji from IIMM Lucknow, in the presence of Shri Ravi Prakash, Executive Director, Hindustan Aeronautics Limited (HAL), Korwa, who graced the occasion as the Chief Guest and Keynote Speaker.

The event commenced with a warm welcome by Shri Prashant Kumar Singh, Chairman, IIMM Lucknow Branch, who greeted all distinguished guests, delegates, and participants. The seamless execution of the seminar reflected the excellent leadership, meticulous planning, and tireless efforts of Shri P. K. Bajpai, whose dedication once again demonstrated why he is regarded as a pillar of the Lucknow Branch. The entire programme stood as a testimony to his commitment, vision, and organizational excellence.

In his keynote address, Shri Ravi Prakash, Executive Director, HAL, shared valuable practical insights into the application of Artificial Intelligence and digital technologies in modern supply chain management. He elaborated on the successful implementation of IFS software for procurement and inventory management in HAL’s helicopter manufacturing operations. Through practical examples, he explained how HAL has significantly reduced procurement lead times, optimized inventory levels, enhanced operational efficiency, and generated substantial savings in procurement costs. He further highlighted global examples, including Tesla’s advanced use of AI and automation, emphasizing the growing necessity of AI-driven decision-making in modern supply chains.

Shri P. M. Biddappa, National President, IIMM, apprised the gathering about the various initiatives, achievements, educational programmes, professional certifications, and development activities being undertaken by IIMM across the country. He emphasized the Institute’s continued efforts in preparing supply chain professionals for the emerging digital economy.

Dr. Prof. Suresh Sharma, Former National President, IIMM and Co-Chairman, Board of Studies, welcomed all distinguished members and guests in his unique and engaging style. He provided a detailed overview of the

educational programmes offered by IIMM and encouraged professionals, students, and industry executives to enroll in IIMM’s diploma and certification courses to enhance their professional competencies.

Addressing the gathering, Shri Pankaj Panchbhai, National Secretary & Treasurer, IIMM, appreciated the remarkable participation of Chairmen, office bearers, and members from more than nine IIMM branches, including Ahmedabad, Bangalore, Alwar, Greater Noida, Raebareli, Kanpur, Ayodhya, and the host branch Lucknow. He highlighted the increasing significance of Artificial Intelligence in supply chain management and requested Shri Ravi Prakash, Executive Director, HAL, to encourage HAL executives and team members to become members of IIMM and take advantage of its educational and professional development programmes.

Shri L. R. Meena, Immediate Past National President, IIMM, shared his rich professional experience and explained how concepts akin to Artificial Intelligence and advanced analytics had been implemented in procurement and supply chain functions during his service career nearly two decades ago. He emphasized that AI is not merely a technological trend but a strategic necessity for organizations striving for excellence and competitiveness.

The first technical session was delivered by Prof. J. V. Vaishampayan, Former Vice Chancellor, CSJM University, Kanpur, on “Management of Global Supply Chains and Artificial Intelligence.” Through a thought-provoking presentation, he explained the evolution of global supply chains, emerging challenges in international trade, and the transformative role of AI in forecasting, planning, logistics, and decision-making. He also cautioned participants about the potential environmental and sustainability challenges arising from excessive and uncontrolled use of AI technologies, urging industry leaders to adopt responsible and sustainable AI practices. The audience was deeply impressed by his vast knowledge, experience, and insightful presentation and expressed their appreciation by offering him a standing ovation.

The second technical session was delivered by Dr. Dipti Sharma Professor Chandigarh AI University Lucknow, who presented an enlightening overview on the evolution of Artificial Intelligence in Supply Chain Management over the last few decades. She traced the journey of AI from basic automation and data processing systems to today’s advanced predictive analytics, machine learning, and intelligent decision-support systems. Through practical case studies of Walmart, Amazon, and Flipkart, she demonstrated how leading global organizations are leveraging AI in warehouse management, inventory optimization, demand forecasting, order fulfilment, and logistics operations. Her presentation highlighted how AI-driven warehouses are improving productivity,

reducing operational costs, enhancing customer satisfaction, and creating agile supply chain networks capable of responding to dynamic market conditions.

A special recognition ceremony was also held during the programme to honour Dr. Padamprakash Gothwal, Chief Scientist, CSIR – Central Food Technological Research Institute (CFTRI), on the occasion of transferring his IIMM membership from the Alwar Branch to the Lucknow Branch. The gathering warmly welcomed Dr. Gothwal into the Lucknow Branch fraternity and acknowledged his distinguished contributions to scientific research, technology development, and professional excellence. His association is expected to further strengthen the academic and technical capabilities of the branch.

The overwhelming response, quality deliberations, and flawless arrangements made the event a grand success. Special appreciation is due to Shri P. K. Bajpai, truly a “One-Man Army” and a pillar of IIMM Lucknow Branch, whose dedication, meticulous planning, and relentless efforts ensured the successful organization of this memorable event.

The seminar once again demonstrated IIMM’s commitment to promoting professional excellence, technological awareness, and continuous learning while preparing supply chain professionals for the opportunities and challenges of an AI-driven future.

The programme concluded with a heartfelt Vote of Thanks by Shri P. K. Bajpai, who expressed gratitude to the Chief Guest Shri Ravi Prakash, National President Shri P. M. Biddappa, Former National President, Mr. Pankaj Panchbhair NST Dr. Prof. Suresh Sharma, Immediate Past National President Shri L. R. Meena, Prof. J. V. Vaishampayan, Prof. Dipti Sharma, Dr. Padamprakash Gothwal, delegates from various IIMM branches, distinguished guests, participants, and all those who contributed to the success of the seminar. He particularly thanked the visiting office bearers and members from different branches for their enthusiastic participation and support, which made the event truly memorable.

Dr. Swati Mishra Master of Ceremony conducted event seamlessly

The seminar ended on a high note with networking and fellowship over lunch, leaving participants enriched with valuable insights on the transformative role of Artificial Intelligence in Supply Chain Management and inspired to embrace technological innovation for future growth.



NHQ NAVI MUMBAI

IIMM NHQ Successfully organised Four-Day Training Program on Strategic Sourcing to Boost the Bottom Line from 13.5.26 to 16.5.26. First time, NHQ has planned a four day flexi training program which provided flexibility to delegates to choose day/s according to their choice. Total 20 participants from Mumbai, Pune, Ahmedabad Kolkata etc participated. Program was aimed at equipping procurement and supply chain professionals with advanced sourcing strategies, cost optimization techniques, and digital procurement practices.

The program was inaugurated under the guidance of Mr. S. K. Sharma, Former National President and Chairman of the Training Program, who emphasized the critical role

of strategic sourcing in enhancing organizational competitiveness, profitability, and sustainable growth.

The training featured distinguished industry experts and faculty members:

• Mr. Swapnil Dubey • Ms. Bharati Trivedi • Mr. Jayanta Chakraborty • Mr. Samar Roy Choudhary • VendX AI

The expert faculty delivered insightful sessions covering key aspects of strategic sourcing, supplier relationship management, negotiation strategies, spend analysis, digital transformation in procurement, and the application of Artificial Intelligence in sourcing and supply chain management.

Participants from diverse industries actively engaged in interactive discussions, case studies, practical exercises, and knowledge-sharing sessions. The program provided valuable insights into contemporary procurement challenges and emerging opportunities in the rapidly evolving business landscape. A special highlight of the program was the session by VendX AI, who demonstrated how Artificial Intelligence is transforming sourcing processes, enabling data-driven decisionmaking, improving supplier performance, and delivering measurable cost savings.

The participants highly appreciated the practical orientation of the program and the rich industry experience shared by the faculty members. The training served as an excellent platform for learning, networking, and exchanging best practices among procurement and supply chain professionals.

The successful completion of this four-day program reaffirms IIMM NHQ commitment to developing world-class supply chain and procurement professionals through industry-relevant education, training, and knowledge-sharing initiatives. Certificates were awarded to the participants upon successful completion of the program. IIMM NHQ continues to organize such professional development programs to strengthen the capabilities of materials management, procurement, logistics, and supply chain professionals across industries.



KOLKATA BRANCH

IIMM Kolkata Conducts 38th Annual Convocation : The Indian Institute of Materials Management (IIMM), Kolkata Branch, successfully organized its **38th Annual Convocation** on **31st May 2026** at **Rotary Sadan, Kolkata**, celebrating the academic achievements of professionals who successfully completed the Graduate Diploma in Materials Management (GDMM) and Diploma in Materials & Logistics Management (DMLM) programs in respective batches.

The event was graced by **Mr. Bidhan Sinha, Chief Supply Chain Officer, Indorama India Pvt. Ltd., as Chief Guest**, and **Mr. Nirmalya Bhattacharyya, Plant Head-HR, Century Plyboards (India) Ltd., as Special Guest of Honour**. The dignitaries highlighted the growing importance of technology, sustainability, innovation, ethics and continuous learning in shaping future-ready supply chain professionals.

The Convocation commenced with the ceremonial lamp lighting, followed by reports on IIMM's educational activities and a small presentation by Dr. Jayanta Biswas, EC member on future initiatives of IIMM, Kolkata in Artificial Intelligence, Sustainability, Lean Manufacturing, Digital Supply Chain Transformation, and Entrepreneurship Development.

A total of **42 GDMM diploma recipients** from various batches were awarded diplomas during the ceremony. **Subhodeep Das (R-69), Suvranil Poddar (R-70), and Avinash Kumar Choubey (R-71)** secured First Rank and received the prestigious **D.K. Acharya Memorial Gold Medal**, while **Arabinda Choudhary, Joydeep Paul, and Swadesh Saha** received the **Pranata Chatterjee Memorial Silver Medal** for securing Second Rank. Special Awards were given to gold medalists and silver medalists by **Shri R K Maheshwari** in the memory of his respected father Late Dr. Jagdish Prasad Maheshwari, Annapurna Homeo Clinic, Balkampet, Hyderabad- 500016.

The event concluded with a vote of thanks by Shri Jaydip Basak, Treasurer, IIMM, Kolkata and followed by a high tea arrangement, marking another milestone in IIMM Kolkata's commitment to developing future-ready supply chain leaders.





GURUGRAM BRANCH

Congratulations to the Young and Energetic Team of IIMM Gurugram Branch under the Leadership of Mr. Pankaj Verma

On **21 June 2026**, during the morning session, the **56th Branch of the Indian Institute of Materials Management (IIMM)** was inaugurated at Gurugram by the National President, **Mr. P. M. Biddappa**, in the presence of National Office Bearers, distinguished leaders, and esteemed members of the Institute. The inaugural function commenced at **10:00 a.m.** and was attended by newly enrolled members, senior industry professionals, and invited guests from various organizations.

Addressing the gathering as the Chief Guest, **Mr. P. M. Biddappa** highlighted IIMM's vision, achievements, and future roadmap. The Senior Vice President spoke on membership development, branch expansion, and the immense opportunities available for IIMM in Gurugram, one of India's fastest-growing industrial hubs. The gathering was also addressed by Immediate Past President **Mr. L. R. Meena**, Former National President **Mr. V. K. Jain**, National Secretary **Mr. Pankaj Panchbhaj**, and Vice President (North) **Mr. Rajendra Raj**. They congratulated the newly formed branch and encouraged members to actively participate in the Institute's professional and knowledge-sharing activities.

A total of **26 new members** were presented with their Membership Certificates during the ceremony. The occasion was further marked by the enrolment of a major Institutional Member, adding strength and momentum to the newly established branch.

The successful inauguration of the Gurugram Branch reflects the growing reach of IIMM and the dedication

of its leadership team under **Mr. Pankaj Verma**. We extend our heartfelt congratulations and best wishes to the Gurugram Branch for achieving new milestones and emerging as one of the Institute's leading branches in the years ahead.

PUNE BRANCH

IIMM-Pune Branch, organized an enriching **Interactive Knowledge Dissemination Session** on the contemporary topic, **"Boosting Productivity with Generative AI: Real-World Business Use Cases,"** for its members and industry professionals. The objective of the session was to create awareness about the rapidly evolving field of Artificial Intelligence and demonstrate its practical applications in enhancing workplace productivity. The session was conducted by **Dr. Anshul Saxena**, an accomplished expert in Generative AI, Artificial Intelligence, Business Analytics, IT Strategy, and Digital Transformation. Through a well-structured and engaging presentation, Dr. Saxena introduced the participants to the fundamentals of Artificial Intelligence, its various categories, and the evolution of Generative AI. He also highlighted both the immense opportunities and the limitations associated with AI, emphasizing the importance of its ethical and responsible use.

One of the key attractions of the session was the live demonstration of several Generative AI tools. Using real-world business scenarios, Dr. Saxena illustrated how these tools can automate routine tasks, generate high-quality content, analyse data, prepare presentations, and support informed decision-making. The practical demonstrations enabled participants to appreciate how AI can significantly improve efficiency, creativity, and productivity across different business functions, including supply chain and materials management.

The session witnessed enthusiastic participation from members, with an interactive question-and-answer segment that encouraged meaningful discussions on the future of AI in industry. The overwhelming response reflected the growing interest among professionals in adopting AI-driven solutions to remain competitive in an increasingly digital business environment. The session reaffirmed IIMM-Pune's commitment to equipping professionals with contemporary knowledge and emerging technologies through its continuous learning and knowledge dissemination initiatives.





IIMM Research Centre
**CENTRE FOR RESEARCH IN
MATERIALS MANAGEMENT (CRIMM)**



**Minutes of meeting of CRIMM at SAP conference room
of TIU, WB on 27th March, 2026**

**Agenda of BOG Meeting of CRIMM at SAP Conference
Room on 27 th March 2026 at 3.30 pm**

1. Introduction of BOG members of CRIMM
2. Proposed activities of CRIMM during the next financial year to be discussed and adopted
3. Introduction of Certificate program, if any, proposed for the next financial year to be discussed and adopted.
4. Introduction of Project Management programs in collaboration with Project Management Institute USA, if any, proposed for the next financial year to be discussed and adopted.
5. Scope of fundamental research in Supply Chain Management
6. e-Journal of CRIMM
7. Discussions on Financial Performance of CRIMM
8. Support from IIMM
9. Opening of overseas Research Centres
10. Execution of renewal of CRIMM Agreement
11. Press release
12. Any other point of relevance
13. Close of Meeting

Introduction of BOG members of CRIMM

BOG Member nominated by IIMM

- 1) Mr. Malay Chandan Mazumdar Jt, Chairman
- 2) Dr. Nripendra Kumar Member
- 3) Dr. Y Venkata Ramana Member
- 4) Dr. Dibakar Swain Member
- 5) Gajanan Palankar, Fellow - CRIMM Member
- 6) P Sengottaiyan, Fellow - CRIMM Member
- 7) Dr. Samar Roy Chowdhury Member
- 8) Mr. Animesh Chattopadhyay Member

BOG Member nominated by TIU,WB

- 1) Prof. (Dr) Goutam Sengupta, Rector TIU, WB - Joint Chairman
- 2) Prof. (Dr) Debashis Chaudhuri, Dean (Engineering, Projects, Students Affairs), TIU, WB- Member
- 3) Prof. (Dr) S N Roy, Adjunct faculty, TIU,WB- Member
- 4) Prof. (Dr) Tripti Chakrabarti, Dean Basic Sciences, TIU,WB- Member
- 5) Prof. Asoke Kumar Paul, Associate Professor, TIU,WB- Member

- 6) Prof. (Dr.) Debabrata Bhattacharjee, Professor, TIU,WB- Member
- 7) Mr. Soumitra Bhowmick, Vice President and CFO, Techno India Group-Member
- 8) Dr. Paramita Sen, Assistant Professor, Rector's Office, TIU,WB- Member

Advisor

- 1) Mr. Asok Dasgupta, Advisor
- 2) Dr. PK Dey, Professor, Aston Business School, UK
- 3) Prof. (Dr) Gautam Majumdar, Pro Vice Chancellor, TIU,WB

Board of Research Studies

- 1) Prof (Dr) Goutam Sengupta,(Chairman)
- 2) Prof.(Dr.)S N Roy
- 3) Prof (Dr) Debashis Chaudhuri
- 4) Dr. D. Rajasekar
- 5) Dr. A.V. Shama Sundar

Proposed activities of CRIMM discussed and adopted

- 1.0 Target of CRIMM fellowship :
Target for the Calendar year 2026:
10 – 15 Fellowship
- 2.0 National and Global Summits: 4 per year
- 3.0 Consultancy
Kept in abeyance. Prof SN Roy will prepare an approach paper BY MID MAY, 2026

**Introduction of Certificate/Diploma program -proposed
and adopted.**

- 1.0 Certificate program on Supply Chain Management may be launched by TIU in collaboration with CRIMM (It will be discussed and National President of IIMM to revert back.
- 2.0 Certificate program on Purchasing Management may be launched by TIU in collaboration with CRIMM (It will be discussed and National President of IIMM to revert back.).
- 3.0 Certificate/Diploma program on Logistics Management
- 3.1 Diploma program may be launched by TIU in collaboration with CRIMM (It will be discussed and National President of IIMM to revert back.
- 3.2 Kolkata Branch of IIMM should give a preference TIU/CRIMM while approaching other Universities on matters of launching joint certificate courses. TIU will send a request letter to Chairman Kolkata Branch to this effect.

For more information please contact

MALAY C MAZUMDAR, Jt. Chairman – CRIMM

M: 9909910964 / 9726425331 Email: malay_mazumdar@yahoo.co.in, crimm.malayimm@gmail.com

IIMM BRANCHES ACTIVITIES



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भारतीय सामग्री प्रबंधन संस्थान Indian Institute of Materials Management

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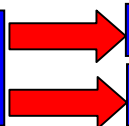
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S. No.	Programmes	Approved	Eligibility	Duration
1.	Post Graduate Diploma in Materials Management (PGDMM)	AICTE	Graduate in any discipline from any Recognized University	2 Years
2.	Post Graduate Diploma in Logistics & SCM (PGDL&SCM)	AICTE	Graduate in any discipline from any Recognized University	2 Years

**PROSPECTUS CAN BE OBTAINED FROM FOLLOWING IIMM BRANCHES
Prospectus Cost Rs.1000/- & By Post Rs.1100/-**

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CENTRAL REGION	BHOPAL 8085856437 BHILAI 9407984081 BILASPUR 9425531806 INDORE 9826625417 NAGPUR 0712-2229446/9423074072

A form can be downloaded from www.iimm.org.in/register and can be submitted to nearest IIMM Branch

For more information, please visit : www.iimm.org
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